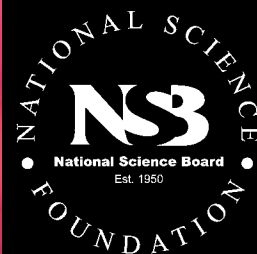


NATIONAL SCIENCE BOARD  
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VOLUME 2

NATIONAL SCIENCE FOUNDATION



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# Science and Engineering Indicators 2006

## Volume 2 Appendix Tables



**National Science Board**

## Cover Image

Computer simulation of the merger of two black holes and the ripples in spacetime—known as gravitational waves—born of the merger.

This simulation is one of a series depicting orbiting black holes and represents the first time that three-quarters of the full orbit of a black hole has been computed. Researchers from the Max Planck Institute for Gravitational Physics (Albert Einstein Institute) in Potsdam, Germany, created the simulations in 2002 on the National Center for Supercomputing Applications (NCSA) Itanium-based Linux computational cluster. The visualizations are by Werner Bengert of the Albert Einstein Institute and the Konrad-Zuse-Zentrum in Berlin. (*Credit: scientific contact, Ed Seidel, eseidel@aci.mpg.de; Max Planck Institute for Gravitational Physics—Albert Einstein Institute [AEI]; Werner Bengert, Zuse Institute and AEI.*)

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Appendix table 1-1

**First-time kindergartners demonstrating specific mathematics skills and knowledge, by child and family characteristics: Fall 1998 and spring 1999**

(Percent)

Child and family characteristic	Number and shape			Relative size			Ordinality and sequence			Add and subtract			Multiply and divide		
	Fall	Spring	Change	Fall	Spring	Change	Fall	Spring	Change	Fall	Spring	Change	Fall	Spring	Change
All students.....	93	99	6	57	87	30	21	56	36	4	18	14	—	2	2
Sex															
Male.....	92	99	6	55	86	31	22	56	34	4	19	14	1	3	2
Female.....	94	99	5	58	87	30	20	57	37	3	17	14	—	2	1
Race/ethnicity															
White, non-Hispanic.....	96	99	4	64	91	27	26	64	38	5	22	17	—	3	3
Black, non-Hispanic.....	89	98	9	41	76	35	9	37	28	1	8	7	—	—	—
Asian/Pacific Islander.....	97	100	3	68	92	24	32	68	36	9	28	19	1	6	5
Hispanic.....	90	99	9	43	81	38	12	46	33	2	12	10	—	1	1
Other.....	88	99	11	45	81	37	13	45	32	2	11	9	—	1	1
Mother's education															
<High school.....	83	97	14	31	72	41	6	32	26	1	6	6	—	1	1
High school diploma.....	91	99	8	48	83	35	14	49	35	2	13	11	—	1	1
Some college <sup>a</sup> .....	95	99	4	59	89	30	21	59	38	3	18	14	—	2	2
Bachelor's or higher degree....	99	100	1	76	95	19	38	75	37	9	31	23	1	5	4
Family risk factors <sup>b</sup>															
0.....	96	99	4	65	91	26	27	64	37	5	22	17	—	3	3
1.....	91	99	8	47	82	35	14	48	34	2	13	11	—	1	1
≥2.....	84	97	14	33	72	39	7	32	25	1	6	5	—	—	—

— = <0.5%

<sup>a</sup>Includes vocational and technical education.

<sup>b</sup>Index consists of family having received welfare assistance, non-English primary home language, single-parent family, and maternal education less than high school diploma or equivalent credential (e.g., General Educational Development certificate).

NOTES: Estimates based on first-time kindergartners assessed in English in both fall and spring (approximately 19% of Asian children and approximately 30% of Hispanic children not included in these estimates). Change calculated on unrounded numbers.

SOURCES: J. West, K. Denton, and L. Reaney, *The Kindergarten Year*; National Center for Education Statistics (NCES) 2001-023, table 4 (2000); and data from U.S. Department of Education, NCES, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99 (ECLS-K), fall 1998 and spring 1999.

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Appendix table 1-2

**Mean mathematics scores of fall 1998 first-time kindergartners, by time of assessment and child and family characteristics: Fall 1998 and spring 1999, 2000, and 2002**

Child and family characteristic	Fall 1998 kindergarten	Spring 1999 kindergarten	Spring 2000 first grade	Spring 2002 third grade	Gain from fall 1998 to spring 2002
All students.....	22	32	55	85	63
Sex					
Male.....	22	32	56	86	65
Female.....	22	32	55	83	62
Race/ethnicity					
White, non-Hispanic.....	23	34	58	89	66
Black, non-Hispanic.....	18	26	47	73	55
Hispanic.....	19	29	52	82	63
Asian/Pacific Islander.....	23	34	56	88	65
Other, non-Hispanic.....	20	29	51	80	60
Family risk factors <sup>a</sup>					
0.....	24	34	59	89	65
1.....	20	29	51	81	61
≥2.....	17	25	47	74	57

<sup>a</sup>Index consists of family living below federal poverty level, non-English primary home language, single-parent family, and maternal education less than high school diploma or equivalent credential (e.g., General Educational Development certificate).

NOTES: Estimates reflect sample of children assessed in English in all assessment years. Early Childhood Longitudinal Study, Kindergarten Class of 1998–99 (ECLS-K) assessment was not administered in 2001 when most children were in second grade. Although most children in the sample were in third grade in spring 2002, 10% were in second grade, and about 1% were in other grades. Gain calculated on unrounded numbers.

SOURCES: A. Rathbun and J. West, *From Kindergarten Through Third Grade: Children's Beginning School Experiences*, National Center for Education Statistics (NCES) 2004-007, table A5 (2004); and data from U.S. Department of Education, NCES, ECLS-K, fall 1998, spring 1999, spring 2000, and spring 2002.



Appendix table 1-3  
**Fall 1998 first-time kindergartners demonstrating proficiency in specific mathematics skills and knowledge areas in spring of third grade, by child and family characteristics: Spring 2002**  
 (Percent)

Child and family characteristic	Ordinality and sequence	Add and subtract	Multiply and divide	Place value	Rate and measurement
All students.....	100	97	78	42	16
Sex					
Male.....	100	97	79	46	19
Female.....	100	97	77	38	12
Race/ethnicity					
White, non-Hispanic.....	100	98	84	50	19
Black, non-Hispanic.....	100	93	58	20	5
Asian/Pacific Islander.....	100	97	75	35	11
Hispanic.....	100	98	83	49	22
Other.....	100	95	70	34	11
Family risk factors <sup>a</sup>					
0.....	100	98	85	50	20
1.....	100	96	72	34	11
≥2.....	100	93	61	21	5

<sup>a</sup>Index consists of family living below the federal poverty level, non-English primary home language, single-parent family, and maternal education less than high school diploma or equivalent credential (e.g., General Educational Development certificate).

NOTES: Estimates reflect sample of children assessed in English in all assessment years. Early Childhood Longitudinal Study, Kindergarten Class of 1998–99 (ECLS-K) assessment not administered in 2001 when most children were in second grade. Although most children in the sample were in third grade in spring 2002, 10% were in second grade, and about 1% were in other grades.

SOURCES: A. Rathbun and J. West, *From Kindergarten Through Third Grade: Children's Beginning School Experiences*, National Center for Education Statistics (NCES) 2004-007, table A11 (2004); and data from U.S. Department of Education, NCES, ECLS-K, spring 2002.

Appendix table 1-4  
**Mean science scores of fall 1998 first-time kindergartners in spring of third grade, by child and family characteristics: Spring 2002**

Child and family characteristic	Mean science score
All students.....	35
Sex	
Male.....	36
Female.....	34
Race/ethnicity	
White, non-Hispanic.....	37
Black, non-Hispanic.....	27
Hispanic.....	32
Asian/Pacific Islander.....	35
Other, non-Hispanic.....	32
Family risk factors <sup>a</sup>	
0.....	37
1.....	33
≥2.....	28

<sup>a</sup>Index consists of family living below federal poverty level, non-English primary home language, single-parent family, and maternal education less than high school diploma or equivalent credential (e.g., General Educational Development certificate).

NOTES: Estimates reflect sample of children assessed in English in all assessment years. Although most children in the sample were in third grade in spring 2002, 10% were in second grade, and about 1% were in other grades.

SOURCES: A. Rathbun and J. West, *From Kindergarten Through Third Grade: Children's Beginning School Experiences*, National Center for Education Statistics (NCES) 2004-007, table A7 (2004); and U.S. Department of Education, NCES, Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K), Longitudinal Kindergarten-First Grade Public-Use Data File and Third Grade Restricted-Use Data File, fall 1998, spring 1999, spring 2000, and spring 2002.

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Appendix table 1-5

**Average mathematics score of students in grades 4, 8, and 12, by student characteristics:  
Selected years, 1990–2003**

Student characteristic	Accommodations not permitted				Accommodations permitted		
	1990	1992	1996	2000	1996	2000	2003
Grade 4 .....	213	220	224	228	224	226	235
Sex							
Male .....	214	221	226	229	224	227	236
Female .....	213	219	222	226	223	224	233
Race/ethnicity							
White, non-Hispanic .....	220	227	231	235	232	234	243
Black, non-Hispanic .....	188	193	199	204	198	203	216
Hispanic .....	200	202	205	209	207	208	222
Asian/Pacific Islander <sup>a</sup> .....	225	231	226	NA	229	NA	246
American Indian/ Alaska Native .....	—	—	—	212	217	208	223
Free/reduced-price lunch <sup>b</sup>							
Eligible .....	NA	NA	207	210	207	208	222
Not eligible .....	NA	NA	231	236	232	235	244
Score percentile							
10th .....	171	177	182	186	182	184	197
25th .....	193	199	204	208	203	205	216
50th .....	214	221	226	230	225	227	236
75th .....	235	242	246	250	245	248	255
90th .....	253	259	262	266	262	265	270
Grade 8 .....	263	268	272	275	270	273	278
Sex							
Male .....	263	268	272	277	271	274	278
Female .....	262	269	272	274	269	272	277
Race/ethnicity							
White, non-Hispanic .....	270	277	281	285	281	284	288
Black, non-Hispanic .....	237	237	242	246	240	244	252
Hispanic .....	246	249	251	253	251	253	259
Asian/Pacific Islander <sup>a</sup> .....	275	290	NA	278	NA	288	291
American Indian/ Alaska Native .....	—	—	—	255	—	259	263
Free/reduced-price lunch <sup>b</sup>							
Eligible .....	NA	NA	252	255	250	253	259
Not eligible .....	NA	NA	280	285	277	283	287
Score percentile							
10th .....	215	221	224	227	221	223	230
25th .....	239	243	248	252	245	249	254
50th .....	264	269	273	277	273	275	279
75th .....	288	294	298	301	297	300	303
90th .....	307	315	317	321	316	320	323

Appendix table 1-5

(Page 2 of 2)

**Average mathematics score of students in grades 4, 8, and 12, by student characteristics:  
Selected years, 1990–2003**

Student characteristic	Accommodations not permitted				Accommodations permitted		
	1990	1992	1996	2000	1996	2000	2003
Grade 12 <sup>c</sup> .....	294	299	304	301	302	300	NA
Sex							
Male .....	297	301	305	303	303	302	NA
Female .....	291	298	303	299	300	299	NA
Race/ethnicity							
White, non-Hispanic .....	301	306	311	308	309	307	NA
Black, non-Hispanic .....	268	276	280	274	276	273	NA
Hispanic .....	276	284	287	283	284	281	NA
Asian/Pacific Islander .....	311	316	319	319	310	317	NA
American Indian/ Alaska Native .....	—	—	279	293	—	292	NA
Free/reduced-price lunch <sup>b</sup>							
Eligible .....	NA	NA	281	280	NA	NA	NA
Not eligible .....	NA	NA	307	305	NA	NA	NA
Score percentile							
10th .....	247	254	261	255	NA	NA	NA
25th .....	270	276	282	277	NA	NA	NA
50th .....	296	301	305	302	NA	NA	NA
75th .....	319	324	327	326	NA	NA	NA
90th .....	339	343	345	346	NA	NA	NA

— = sample size insufficient to permit reliable estimate; NA = not available

<sup>a</sup>Special analyses raised concerns about accuracy and precision of national grade 8 Asian/Pacific Islander results in 1996 and grade 4 Asian/Pacific Islander results in 2000. Therefore, they are omitted from National Center for Education Statistics (NCES) reports and this report.

<sup>b</sup>Information on student's eligibility for free/reduced-price lunch first gathered in 1996.

<sup>c</sup>Grade 12 was not assessed in 2003.

NOTES: Scores on 0–500 scale across grades. The National Assessment of Educational Progress (NAEP) is in the process of changing the way it includes students with disabilities and limited English proficiency in assessments. Before 1996, these students were not allowed to use testing accommodations (e.g., extended time, one-on-one testing, bilingual dictionary). In 1996 and 2000, the assessment was administered to split samples: accommodations not permitted and accommodations permitted. In 2003, the NAEP mathematics assessment completed the transition to an accommodations-permitted test. Includes students in both public and private schools.

SOURCES: U.S. Department of Education, NCES, *The Nation's Report Card: Mathematics Highlights 2003*, NCES 2004-451 (2003); *The Nation's Report Card: Mathematics 2000*, NCES 2001-517 (2001); and data from NCES, NAEP, 1990, 1992, 1996, 2000, and 2003 mathematics assessments.

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Appendix table 1-6

**Students in grades 4, 8, and 12 scoring at or above proficient level in mathematics for their grade, by student characteristics: Selected years, 1990–2003**

(Percent)

Student characteristic	Accommodations not permitted				Accommodations permitted		
	1990	1992	1996	2000	1996	2000	2003
Grade 4 .....	13	18	21	26	21	24	32
Sex							
Male.....	13	19	24	28	22	26	35
Female.....	12	16	19	24	20	22	30
Race/ethnicity							
White, non-Hispanic .....	16	22	27	33	27	31	43
Black, non-Hispanic.....	1	2	4	5	3	5	10
Hispanic.....	5	6	7	9	7	7	16
Asian/Pacific Islander <sup>a</sup> ....	22	28	21	NA	27	NA	48
American Indian/ Alaska Native .....	—	—	—	11	10	8	17
Free/reduced-price lunch <sup>b</sup>							
Eligible .....	NA	NA	9	9	8	8	15
Not eligible .....	NA	NA	26	33	27	32	45
Grade 8 .....	15	21	24	27	23	26	29
Sex							
Male.....	17	21	25	29	25	27	30
Female.....	14	21	23	25	22	24	27
Race/ethnicity							
White, non-Hispanic .....	18	26	30	34	30	34	37
Black, non-Hispanic.....	5	2	5	5	4	5	7
Hispanic.....	7	7	9	9	8	8	12
Asian/Pacific Islander <sup>a</sup> ....	29	43	NA	41	NA	41	43
American Indian/ Alaska Native .....	—	—	—	9	—	10	15
Free/reduced-price lunch <sup>b</sup>							
Eligible .....	NA	NA	8	10	8	9	12
Not eligible .....	NA	NA	30	35	28	34	37
Grade 12 <sup>c</sup> .....	12	15	16	17	16	16	NA
Sex							
Male.....	15	17	18	20	18	19	NA
Female.....	9	13	14	14	14	14	NA
Race/ethnicity							
White, non-Hispanic .....	14	18	20	20	20	20	NA
Black, non-Hispanic.....	2	2	4	3	3	2	NA
Hispanic.....	4	6	6	4	6	4	NA
Asian/Pacific Islander .....	23	30	33	34	23	32	NA
American Indian/ Alaska Native .....	—	—	3	10	—	9	NA
Free/reduced-price lunch <sup>b</sup>							
Eligible .....	NA	NA	4	4	NA	NA	NA
Not eligible .....	NA	NA	18	19	NA	NA	NA

— = sample size insufficient to permit reliable estimate; NA = not available

<sup>a</sup>Special analyses raised concerns about accuracy and precision of national grade 8 Asian/Pacific Islander results in 1996 and grade 4 Asian/Pacific Islander results in 2000. Therefore, they are omitted from National Center for Education Statistics (NCES) reports and this report.

<sup>b</sup>Information on student's eligibility for free/reduced-price lunch first gathered in 1996.

<sup>c</sup>Grade 12 was not assessed in 2003.

NOTES: The National Assessment of Educational Progress (NAEP) is in the process of changing the way it includes students with disabilities and limited English proficiency in assessments. Before 1996, these students were not allowed to use testing accommodations (e.g., extended time, one-on-one testing, bilingual dictionary). In 1996 and 2000, the assessment was administered to split samples: accommodations not permitted and accommodations permitted. In 2003, the NAEP mathematics assessment completed the transition to an accommodations-permitted test. Includes students in both public and private schools.

SOURCES: U.S. Department of Education, NCES, *The Nation's Report Card: Mathematics Highlights 2003*, NCES 2004-451 (2003); *The Nation's Report Card: Mathematics 2000*, NCES 2001-517 (2001); and data from NCES, NAEP, 1990, 1992, 1996, 2000, and 2003 mathematics assessments.

Appendix table 1-7

(Page 1 of 2)

**Average science score of students in grades 4, 8, and 12, by student characteristics: 1996 and 2000**

Student characteristic	1996	2000
Grade 4 .....	150	150
Sex		
Male.....	151	153
Female.....	149	147
Race/ethnicity		
White, non-Hispanic .....	160	160
Black, non-Hispanic.....	124	124
Hispanic.....	128	129
Asian/Pacific Islander <sup>a</sup> .....	151	NA
American Indian/Alaska Native .....	144	140
Free/reduced-price lunch		
Eligible.....	133	130
Not eligible.....	159	159
Score percentile		
10th.....	105	105
25th.....	130	129
50th.....	153	153
75th.....	173	174
90th.....	190	191
Grade 8 .....	150	151
Sex		
Male.....	151	154
Female.....	149	147
Race/ethnicity		
White, non-Hispanic .....	159	162
Black, non-Hispanic.....	121	122
Hispanic.....	129	128
Asian/Pacific Islander .....	152	156
American Indian/Alaska Native .....	148	134
Free/reduced-price lunch		
Eligible.....	133	128
Not eligible.....	156	160
Score percentile		
10th.....	104	103
25th.....	128	128
50th.....	153	154
75th.....	174	177
90th.....	192	195

Appendix table 1-7

(Page 2 of 2)

**Average science score of students in grades 4, 8, and 12, by student characteristics: 1996 and 2000**

Student characteristic	1996	2000
Grade 12 .....	150	147
Sex		
Male.....	152	148
Female .....	148	145
Child's race/ethnicity		
White, non-Hispanic .....	159	154
Black, non-Hispanic.....	124	123
Hispanic .....	130	128
Asian/Pacific Islander .....	149	153
American Indian/Alaska Native .....	145	134
Free/reduced-price lunch		
Eligible .....	125	126
Not eligible .....	154	150
Score percentile		
10th .....	104	190
25th .....	128	171
50th .....	152	148
75th .....	174	125
90th .....	191	102

NA = not available

<sup>a</sup>Special analyses raised concerns about accuracy and precision of grade 4 Asian/Pacific Islander results in 2000. Therefore, they are omitted from National Center for Education Statistics (NCES) reports and this report.

NOTES: Scores on 0–300 scale for each grade. The National Assessment of Educational Progress (NAEP) is in the process of changing the way it includes students with disabilities and limited English proficiency in assessments. Before 1996, these students were not allowed to use testing accommodations (e.g., extended time, one-on-one testing, bilingual dictionary). In 1996 and 2000, the assessment was administered to split samples: accommodations not permitted and accommodations permitted. The scores reported here are for the accommodations not permitted sample. See report listed below for scores for the accommodations permitted sample, which are very similar to scores for the accommodations not permitted sample. Includes students in both public and private schools.

SOURCES: U.S. Department of Education, NCES, *The Nation's Report Card: Science Highlights 2000*, NCES 2003-453 (2003); and data from NCES, NAEP, 1996 and 2000 science assessments.

Appendix table 1-8  
**Students in grades 4, 8, and 12 scoring at or above proficient level in science for their grade, by student characteristics: 1996 and 2000**  
 (Percent)

Student characteristic	1996	2000
Grade 4 .....	29	29
Sex		
Male .....	31	33
Female .....	27	26
Race/ethnicity		
White, non-Hispanic .....	37	38
Black, non-Hispanic .....	7	7
Hispanic .....	9	11
Asian/Pacific Islander <sup>a</sup> .....	29	NA
American Indian/Alaska Native .....	26	19
Free/reduced-price lunch		
Eligible .....	13	11
Not eligible .....	36	38
Grade 8 .....	29	32
Sex		
Male .....	31	36
Female .....	27	27
Race/ethnicity		
White, non-Hispanic .....	37	41
Black, non-Hispanic .....	5	7
Hispanic .....	11	12
Asian/Pacific Islander .....	30	37
American Indian/Alaska Native .....	24	14
Free/reduced-price lunch		
Eligible .....	14	12
Not eligible .....	34	40
Grade 12 .....	21	18
Sex		
Male .....	25	21
Female .....	17	16
Race/ethnicity		
White, non-Hispanic .....	27	23
Black, non-Hispanic .....	4	3
Hispanic .....	7	7
Asian/Pacific Islander .....	22	26
American Indian/Alaska Native .....	10	9
Free/reduced-price lunch		
Eligible .....	7	6
Not eligible .....	23	20

NA = not available

<sup>a</sup>Special analyses raised concerns about accuracy and precision of national grade 4 Asian/Pacific Islander results in 2000. Therefore, they are omitted from National Center for Education Statistics (NCES) reports and this report.

NOTES: The National Assessment of Educational Progress (NAEP) is in the process of changing the way it includes students with disabilities and limited English proficiency in assessments. Before 1996, these students were not allowed to use testing accommodations (e.g., extended time, one-on-one testing, bilingual dictionary). In 1996 and 2000, the assessment was administered to split samples: accommodations not permitted and accommodations permitted. See report listed below for scores for the accommodations permitted sample, which are very similar to scores for the accommodations not permitted sample. Includes students in both public and private schools.

SOURCES: U.S. Department of Education, NCES, *The Nation's Report Card: Science Highlights 2000*, NCES 2003-453 (2003); and data from NCES, NAEP, 1996 and 2000 science assessments.



Appendix table 1-9  
**Average mathematics score of fourth grade students, by country: 2003**

Country	Score
International average .....	495
Singapore .....	594
Hong Kong, China .....	575
Japan .....	565
Chinese Taipei .....	564
Belgium .....	551
Netherlands .....	540
Latvia .....	536
Lithuania .....	534
Russian Federation .....	532
England .....	531
Hungary .....	529
United States .....	518
Cyprus .....	510
Moldova .....	504
Italy .....	503
Australia .....	499
New Zealand .....	493
Scotland .....	490
Slovenia .....	479
Armenia .....	456
Norway .....	451
Iran .....	389
Philippines .....	358
Morocco .....	347
Tunisia .....	339

Average higher than U.S. average

Average lower than U.S. average

SOURCES: P. Gonzales, J.C. Guzman, L. Partelow, E. Pahlke, L. Jocelyn, D. Kastberg, and T. Williams, *Highlights From the Trends in International Mathematics and Science Study (TIMSS) 2003*, U.S. Department of Education, National Center for Education Statistics, NCES 2005-005 table 2, (2004); and data from International Association for the Evaluation of Educational Achievement, *Trends in International Mathematics and Science Study (TIMSS)* (2003).

Appendix table 1-10  
**Average mathematics score of eighth grade students, by country: 2003**

Country	Score
International average .....	466
Singapore .....	605
South Korea .....	589
Hong Kong, China .....	586
Chinese Taipei .....	585
Japan .....	570
Belgium .....	537
Netherlands .....	536
Estonia .....	531
Hungary .....	529
Malaysia .....	508
Latvia .....	508
Russian Federation .....	508
Slovak Republic .....	508
Australia .....	505
United States .....	504
Lithuania .....	502
Sweden .....	499
Scotland .....	498
Israel .....	496
New Zealand .....	494
Slovenia .....	493
Italy .....	484
Armenia .....	478
Serbia .....	477
Bulgaria .....	476
Romania .....	475
Norway .....	461
Moldova .....	460
Cyprus .....	459
Macedonia .....	435
Lebanon .....	433
Jordan .....	424
Iran .....	411
Indonesia .....	411
Tunisia .....	410
Egypt .....	406
Bahrain .....	401
Palestinian National Authority .....	390
Chile .....	387
Morocco .....	387
Philippines .....	378
Botswana .....	366
Saudi Arabia .....	332
Ghana .....	276
South Africa .....	264

Average higher than U.S. average

Average not measurably different from U.S. average

Average lower than U.S. average

SOURCES: P. Gonzales, J.C. Guzman, L. Partelow, E. Pahlke, L. Jocelyn, D. Kastberg, and T. Williams, *Highlights From the Trends in International Mathematics and Science Study (TIMSS) 2003*, U.S. Department of Education, National Center for Education Statistics, NCES 2005-005, table 3 (2004); and data from International Association for the Evaluation of Educational Achievement, *Trends in International Mathematics and Science Study (TIMSS)* (2003).

Appendix table 1-11  
**Average science score of fourth grade students, by country: 2003**

Country	Score
International average .....	489
Singapore .....	565
Chinese Taipei .....	551
Japan .....	543
Hong Kong, China .....	542
England .....	540
United States .....	536
Latvia .....	532
Hungary .....	530
Russian Federation .....	526
Netherlands .....	525
Australia .....	521
New Zealand .....	520
Belgium .....	518
Italy .....	516
Lithuania .....	512
Scotland .....	502
Moldova .....	496
Slovenia .....	490
Cyprus .....	480
Norway .....	466
Armenia .....	437
Iran .....	414
Philippines .....	332
Tunisia .....	314
Morocco .....	304

Average higher than U.S. average

Average not measurably different from U.S. average

Average lower than U.S. average

SOURCES: P. Gonzales, J.C. Guzman, L. Partelow, E. Pahlke, L. Jocelyn, D. Kastberg, and T. Williams, *Highlights From the Trends in International Mathematics and Science Study (TIMSS) 2003*, U.S. Department of Education, National Center for Education Statistics, NCES 2005-005, table 8 (2004); and data from International Association for the Evaluation of Educational Achievement, *Trends in International Mathematics and Science Study (TIMSS)* (2003).

Appendix table 1-12  
**Average science score of eighth grade students, by country: 2003**

Country	Score
International average .....	473
Singapore .....	578
Chinese Taipei .....	571
Souh Korea .....	558
Hong Kong, China .....	556
Estonia .....	552
Japan .....	552
Hungary .....	543
Netherlands .....	536
United States .....	527
Australia .....	527
Sweden .....	524
Slovenia .....	520
New Zealand .....	520
Lithuania .....	519
Slovak Republic .....	517
Belgium .....	516
Russian Federation .....	514
Latvia .....	512
Scotland .....	512
Malaysia .....	510
Norway .....	494
Italy .....	491
Israel .....	488
Bulgaria .....	479
Jordan .....	475
Moldova .....	472
Romania .....	470
Serbia .....	468
Armenia .....	461
Iran .....	453
Macedonia .....	449
Cyprus .....	441
Bahrain .....	438
Palestinian National Authority .....	435
Egypt .....	421
Indonesia .....	420
Chile .....	413
Tunisia .....	404
Saudi Arabia .....	398
Morocco .....	396
Lebanon .....	393
Philippines .....	377
Botswana .....	365
Ghana .....	255
South Africa .....	244
Average higher than U.S. average	
Average not measurably different from U.S. average	
Average lower than U.S. average	

SOURCES: P. Gonzales, J.C. Guzman, L. Partelow, E. Pahlke, L. Jocelyn, D. Kastberg, and T. Williams, *Highlights From the Trends in International Mathematics and Science Study (TIMSS) 2003*, U.S. Department of Education, National Center for Education Statistics, NCES 2005-005, table 9 (2004); and data from International Association for the Evaluation of Educational Achievement, *Trends in International Mathematics and Science Study (TIMSS)* (2003).

Appendix table 1-13  
**Average mathematics literacy score of 15-year-old students, by country: 2003**

Country	Score
OECD countries.....	500
Finland .....	544
South Korea.....	542
Netherlands.....	538
Japan .....	534
Canada.....	532
Belgium.....	529
Switzerland .....	527
New Zealand .....	523
Australia.....	524
Czech Republic.....	516
Iceland .....	515
Denmark .....	514
France.....	511
Sweden .....	509
Austria.....	506
Germany.....	503
Ireland.....	503
Slovak Republic.....	498
Norway.....	495
Luxembourg .....	493
Poland .....	490
Hungary.....	490
Spain.....	485
United States.....	483
Portugal.....	466
Italy.....	466
Greece.....	445
Turkey .....	423
Mexico .....	385
Non-OECD countries	
Hong Kong, China .....	550
Liechtenstein.....	536
Macao-China .....	527
Latvia .....	483
Russian Federation .....	468
Serbia and Montenegro .....	437
Uruguay.....	422
Thailand .....	417
Indonesia.....	360
Tunisia.....	359

Average higher than U.S. average

Average not measurably different from U.S. average

Average lower than U.S. average

OECD = Organisation for Economic Co-operation and Development

SOURCES: M. Lemke, A. Sen, E. Pahlke, L. Partelow, D. Miller, T. Williams, D. Kastberg, and L. Jocelyn, *International Outcomes of Learning in Mathematics Literacy and Problem Solving: PISA 2003 Results From the U.S. Perspective: Highlights*, U.S. Department of Education, National Center for Education Statistics, NCES 2005-003, table 2 (2004); and data from OECD, Programme for International Student Assessment (PISA) (2003).

Appendix table 1-14  
**Average science literacy score of 15-year-old students, by country: 2003**

Country	Score
OECD countries.....	500
Finland .....	548
Japan .....	548
South Korea.....	538
Australia .....	525
Netherlands.....	524
Czech Republic.....	523
New Zealand .....	521
Canada.....	519
Switzerland .....	513
France .....	511
Belgium.....	509
Sweden .....	506
Ireland.....	505
Hungary.....	503
Germany.....	502
Poland .....	498
Slovak Republic.....	495
Iceland .....	495
United States.....	491
Austria.....	491
Spain.....	487
Italy .....	487
Norway.....	484
Luxembourg.....	483
Greece.....	481
Denmark .....	475
Portugal.....	468
Turkey .....	434
Mexico .....	405
Non-OECD countries	
Hong Kong, China .....	540
Liechtenstein.....	525
Macao-China .....	525
Russian Federation .....	489
Latvia .....	489
Uruguay.....	438
Serbia and Montenegro .....	436
Thailand .....	429
Indonesia.....	395
Tunisia.....	385

Average higher than U.S. average

Average not measurably different from U.S. average

Average lower than U.S. average

OECD = Organisation for Economic Co-operation and Development

SOURCES: M. Lemke, A. Sen, E. Pahlke, L. Partelow, D. Miller, T. Williams, D. Kastberg, and L. Jocelyn, *International Outcomes of Learning in Mathematics Literacy and Problem Solving: PISA 2003 Results From the U.S. Perspective: Highlights*. U.S. Department of Education, Center for Education Statistics, NCES 2005-003, table B-17 (2004); and data from OECD, Programme for International Student Assessment (PISA) (2003).

Appendix table 1-15

**High school graduates who attended schools offering advanced mathematics courses, by student and school characteristics: Selected years, 1990–2003**

(Percent)

Class and characteristic	Trigonometry/ algebra III	Precalculus/ analysis	Statistics and probability	Calculus	
				Any calculus	AP/IB calculus
1990 graduates .....	83.4	73.5	24.1	79.2	NA
1994 graduates .....	78.3	76.9	34.8	84.9	NA
1998 graduates .....	70.6	80.7	35.5	85.9	64.2
2000 graduates					
Overall .....	68.0	86.7	50.9	92.6	76.7
Race/ethnicity					
White .....	68.7	85.8	48.5	91.9	73.3
Black .....	77.8	88.6	59.2	92.5	83.1
Hispanic .....	53.7	88.8	47.0	94.2	83.0
Asian/Pacific Islander .....	62.1	90.4	67.7	97.0	89.7
Other .....	80.6	84.8	63.5	95.3	81.2
School sector					
Public .....	67.8	85.8	52.2	93.4	76.9
Private .....	70.0	98.1	35.9	83.8	75.2
Community type					
Urban .....	68.4	91.0	60.6	97.9	86.7
Suburban .....	66.4	89.1	59.1	95.1	86.9
Rural .....	70.8	77.4	23.6	81.6	45.1
Size (enrollment)					
Small (1–599) .....	70.2	68.8	22.5	76.7	31.3
Medium (600–1,799) .....	65.4	91.7	49.3	94.0	82.1
Large ( $\geq 1,800$ ) .....	71.5	88.6	72.0	100.0	95.3
Poverty rate <sup>a</sup>					
Very low .....	68.6	88.9	63.0	96.0	86.1
Low .....	66.5	85.8	53.6	92.3	74.3
Medium .....	64.3	84.0	40.2	92.2	74.5
High .....	61.4	83.4	47.6	83.2	69.5

NA = not available

AP = Advanced Placement; IB = International Baccalaureate

<sup>a</sup>Students eligible for national free/reduced-priced lunch program: very low =  $\leq 5\%$ , low = 6–25%, medium = 26–50%, and high = 51–100%.

NOTES: AP and IB courses coded separately in 1998 and 2000 but not in prior years. AP/IB calculus courses appear in two columns: alone in their specific column and along with other calculus courses in any-calculus column.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, 1990, 1994, 1998, and 2000 High School Transcript Studies.

Appendix table 1-16

**High school graduates who attended schools offering advanced science courses, by student and school characteristics: Selected years, 1990–2003**

(Percent)

Class and characteristic	Chemistry		Physics		Advanced biology		Chemistry, physics, and advanced biology	AP/IB environmental science
	Any chemistry	AP/IB chemistry	Any physics	AP/IB physics	Any advanced biology	AP/IB biology		
1990 graduates .....	99.1	NA	97.4	NA	93.0	NA	90.2	NA
1994 graduates .....	99.0	NA	97.0	NA	96.7	NA	93.3	NA
1998 graduates .....	98.0	39.4	94.6	27.3	95.5	46.3	90.6	NA
2000 graduates								
Overall.....	99.5	57.1	99.2	46.8	96.4	66.5	96.1	9.9
Race/ethnicity								
White .....	99.9	54.5	99.5	41.1	96.8	63.7	96.5	8.3
Black.....	99.6	58.6	99.6	58.0	97.4	70.5	97.4	12.1
Hispanic.....	97.4	62.6	97.4	55.2	92.9	73.6	92.9	12.3
Asian/Pacific Islander ...	98.5	77.3	98.5	67.6	95.7	74.4	95.7	17.3
Other.....	99.0	51.2	98.6	66.6	98.1	72.3	97.7	4.1
School sector								
Public.....	99.4	58.1	99.2	48.6	96.4	66.2	96.2	10.4
Private .....	100.0	45.2	99.2	26.0	96.2	70.7	95.4	3.4
Community type								
Urban.....	100.0	65.2	100.0	62.0	97.4	74.9	97.4	17.6
Suburban .....	98.9	65.9	98.8	51.4	96.0	74.8	95.8	9.5
Rural.....	100.0	30.3	99.2	21.1	96.1	40.4	95.3	2.5
Size (enrollment)								
Small (1–599) .....	96.9	26.8	95.5	9.0	89.8	32.4	88.4	0.0
Medium (600–1,799) ...	100.0	53.4	100.0	45.3	97.8	67.9	97.8	10.3
Large (≥1,800) .....	100.0	83.5	100.0	73.6	97.9	85.5	97.9	15.3
Poverty rate <sup>a</sup>								
Very low.....	100.0	75.8	99.7	61.4	98.8	83.8	98.5	9.3
Low.....	100.0	52.0	100.0	44.6	95.3	61.2	95.3	13.2
Medium.....	100.0	47.2	99.1	43.5	98.5	67.2	97.6	11.1
High.....	96.0	52.9	96.0	45.2	90.4	60.6	90.4	8.2

NA = not available

AP = Advanced Placement; IB = International Baccalaureate

<sup>a</sup>Students eligible for national free/reduced-priced lunch program: very low = ≤5%, low = 6–25%, medium = 26–50%, and high = 51–100%.

NOTE: AP and IB courses coded separately in 1998 and 2000 but not in prior years.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, 1990, 1994, 1998, and 2000 High School Transcript Studies.



Appendix table 1-17

**High school graduates who completed advanced mathematics courses, by selected student and school characteristics: Selected years, 1990–2000**

(Percent)

Class and characteristic	Trigonometry/ algebra III	Precalculus/ analysis	Statistics and probability	Calculus	
				Any calculus	AP/IB calculus
1990 graduates .....	20.7	13.6	1.0	7.2	NA
1994 graduates .....	24.0	17.4	2.1	10.2	NA
1998 graduates .....	20.8	23.1	3.7	11.9	6.4
2000 graduates					
Overall .....	19.6	26.7	5.7	12.6	8.4
Race/ethnicity					
White .....	20.8	28.2	6.1	13.5	8.9
Black .....	17.1	16.2	3.8	5.1	2.9
Hispanic .....	9.8	19.3	2.3	6.4	4.2
Asian/Pacific Islander .....	28.4	49.0	11.5	33.7	26.6
Other .....	16.9	26.3	11.8	12.4	7.1
Sex					
Male .....	17.9	25.4	5.8	13.3	9.2
Female .....	21.1	27.9	5.6	12.0	7.8
School sector					
Public .....	18.8	24.2	5.5	12.0	8.1
Private .....	27.6	53.8	7.9	18.3	12.4
Community type					
Urban .....	21.4	29.1	5.5	13.4	9.3
Suburban .....	18.9	30.0	7.0	13.9	9.8
Rural .....	18.9	17.7	3.3	9.2	4.7
Size (enrollment)					
Small (1–599) .....	22.0	23.8	5.2	11.9	4.0
Medium (600–1,799) .....	18.5	28.4	6.6	12.7	9.6
Large ( $\geq 1,800$ ) .....	20.1	25.2	4.3	12.8	9.2
Poverty rate <sup>a</sup>					
Very low .....	23.9	38.7	9.3	18.0	12.2
Low .....	16.7	23.3	4.6	11.8	7.6
Medium .....	15.1	19.2	3.5	9.7	6.5
High .....	15.1	19.7	2.9	6.2	4.0

NA = not available

AP = Advanced Placement; IB = International Baccalaureate

<sup>a</sup>Students eligible for national free/reduced-priced lunch program: very low =  $\leq 5\%$ , low = 6–25%, medium = 26–50%, and high = 51–100%.

NOTES: AP and IB courses coded separately in 1998 and 2000 but not in prior years. AP/IB calculus courses appear in two columns: alone in their specific column and along with other calculus courses in any-calculus column.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, 1990, 1994, 1998, and 2000 High School Transcript Studies.

Appendix table 1-18

**High school graduates who completed advanced science courses, by selected student and school characteristics: Selected years, 1990–2000**

(Percent)

Class and characteristic	Chemistry		Physics		Advanced biology		Chemistry, physics, and advanced biology	AP/IB environmental science
	Any chemistry	AP/IB chemistry	Any physics	AP/IB physics	Any advanced biology	AP/IB biology		
1990 graduates .....	45.0	NA	21.5	NA	27.5	NA	7.4	NA
1994 graduates .....	50.4	NA	24.5	NA	34.8	NA	9.9	NA
1998 graduates .....	56.4	2.9	28.6	1.7	37.4	4.9	12.1	NA
2000 graduates								
Overall.....	62.7	3.2	33.4	2.4	36.3	6.6	11.7	0.7
Race/ethnicity								
White .....	63.0	2.9	34.6	2.3	38.4	6.4	12.5	0.7
Black.....	61.9	1.1	26.0	1.2	32.7	4.3	8.6	0.5
Hispanic.....	55.7	2.8	25.9	1.1	27.3	6.8	7.0	0.2
Asian/Pacific Islander ...	75.8	14.6	54.5	10.1	38.9	15.7	23.1	2.1
Other.....	63.3	0.9	32.9	2.1	32.2	5.3	8.6	0.0
Sex								
Male.....	58.1	3.1	35.6	3.1	31.5	5.2	11.1	0.6
Female.....	66.8	3.2	31.5	1.7	40.5	7.8	12.4	0.7
School sector								
Public.....	60.2	3.1	32.0	2.4	36.2	6.4	11.1	0.7
Private.....	89.3	3.2	48.5	2.7	36.8	8.5	18.4	0.0
Community type								
Urban.....	68.1	3.8	38.2	2.5	37.8	7.2	12.9	1.1
Suburban.....	65.0	3.6	33.5	2.8	36.5	6.8	12.9	0.7
Rural.....	52.4	1.7	28.4	1.4	34.4	5.6	8.2	0.0
Size (enrollment)								
Small (1–599).....	60.3	2.0	36.0	0.8	37.7	4.8	10.5	0.0
Medium (600–1,799) ...	64.9	3.6	34.1	2.8	34.7	7.0	12.6	0.8
Large (≥1,800).....	59.8	3.0	30.3	2.6	38.5	7.1	10.9	0.8
Poverty rate <sup>a</sup>								
Very low.....	74.6	5.9	47.0	4.7	38.3	9.7	17.4	0.8
Low.....	57.0	1.9	28.8	2.0	31.0	4.9	8.7	1.3
Medium.....	57.2	2.1	27.5	1.3	44.1	6.3	10.7	0.2
High.....	63.6	3.5	27.1	1.3	32.7	7.1	8.2	0.6

NA = not available

AP = Advanced Placement; IB = International Baccalaureate

<sup>a</sup>Students eligible for national free/reduced-priced lunch program: very low = ≤5%, low = 6–25%, medium = 26–50%, and high = 51–100%.

NOTES: AP and IB courses coded separately in 1998 and 2000 but not in prior years. AP/IB courses appear in two columns: alone in their specific column and along with other courses in “any” column.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, 1990, 1994, 1998, and 2000 High School Transcript Studies.

Appendix table 1-19

**U.S. students who took mathematics and science Advanced Placement tests and percentage with passing scores, by sex and race/ethnicity: 1997 and 2004**

Subject	Sex				Race/ethnicity							
	1997		2004		1997				2004			
	Male	Female	Male	Female	White	Black	Hispanic	Asian	White	Black	Hispanic	Asian
<b>Students taking AP tests</b>												
<b>Mathematics</b>												
Calculus AB .....	57,255	51,182	88,809	81,521	73,219	4,019	5,144	16,183	116,704	6,930	12,184	25,111
Calculus BC .....	14,022	8,327	29,567	19,765	13,032	394	630	6,027	31,069	1,024	2,232	12,127
Statistics .....	4,163	3,388	32,538	32,525	4,849	313	390	1,334	43,946	2,641	4,293	10,416
<b>Science</b>												
Biology .....	30,387	39,081	45,237	63,651	44,508	2,860	3,280	11,255	69,606	5,373	7,672	18,754
Chemistry .....	23,517	17,286	37,208	31,824	25,548	1,394	1,550	8,269	43,688	2,585	4,271	14,202
Computer science A .....	5,584	1,408	11,620	2,252	4,301	320	337	1,350	8,735	483	856	2,849
Computer science AB .....	3,841	526	5,291	628	2,798	65	124	934	3,737	101	225	1,453
Physics B .....	13,471	7,139	27,200	14,644	13,328	541	902	3,667	27,171	1,396	2,766	7,705
Physics C: electricity and magnetism .....	4,407	1,310	8,178	2,325	3,421	125	183	1,388	6,693	178	365	2,620
Physics C: mechanics .....	8,591	3,149	15,986	5,555	7,164	291	485	2,580	14,062	490	1,016	4,640
<b>Passing scores<sup>a</sup> (%)</b>												
<b>Mathematics</b>												
Calculus AB .....	63.2	55.0	62.6	55.1	60.5	31.7	42.2	64.3	62.3	30.1	36.8	62.9
Calculus BC .....	81.1	75.2	81.0	77.1	79.8	59.6	70.3	78.7	80.6	58.1	62.1	81.7
Statistics .....	70.4	51.8	65.4	54.2	64.7	28.8	31.8	67.5	63.7	26.8	34.2	63.5
<b>Science</b>												
Biology .....	73.4	62.6	66.9	56.4	68.9	35.9	46.5	72.3	64.5	29.6	35.9	66.9
Chemistry .....	63.1	51.2	60.6	51.5	58.7	29.1	35.3	63.9	58.1	27.7	31.0	64.5
Computer science A .....	49.7	36.6	59.3	46.1	50.3	13.4	30.9	47.0	61.0	26.9	33.1	59.3
Computer science AB .....	71.6	72.2	63.4	62.1	72.7	52.3	52.4	72.7	64.1	39.6	43.6	65.9
Physics B .....	64.8	50.3	62.2	47.2	61.1	33.1	41.8	61.1	61.4	23.1	30.7	57.1
Physics C: electricity and magnetism .....	68.2	58.2	66.7	58.3	67.5	27.2	41.0	67.8	65.8	47.8	43.3	66.8
Physics C: mechanics .....	75.1	59.0	72.6	61.1	72.1	40.2	49.1	73.1	71.6	43.1	47.4	72.5

AP = Advanced Placement

<sup>a</sup>Most U.S. colleges and universities grant college credit or advanced placement for scores of 3, 4, or 5 on Advanced Placement tests (on a scale of 1–5).

NOTES: Subjects with more than one AP course/test distinguished as follows: calculus AB and calculus BC are both yearlong courses and cover some of same material at similar level of depth. However, calculus BC extends to additional topics and aims to substitute for additional college course beyond course(s) calculus AB replaces. Computer science A includes subset of the topics addressed in computer science AB and covers some in less depth (e.g., algorithms, data structures, design, and abstraction). Physics B and physics C differ primarily in depth and level of mathematics required. Physics B rarely uses calculus but requires knowledge of algebra and trigonometry. Equivalent to 1-year terminal college course often taken by students majoring in fields such as life sciences, certain applied sciences, or premedicine. Physics C requires extensive use of calculus methods and is equivalent to college courses of up to 2 years' duration designed for students majoring in physical sciences or engineering. Students take one physics C exam, but components scored separately for electricity/magnetism and for mechanics.

SOURCE: *Advanced Placement Program National Summary Reports, 1997 and 2004*. Copyright 1997, 2004 by the College Board. Reproduced with permission. All rights reserved. [www.collegeboard.com](http://www.collegeboard.com).

Appendix table 1-20

**1992 12th graders who had earned bachelor's degree by 2000, by selected academic characteristics and current or most recent occupation: 2000**

(Percent distribution)

Academic characteristic	K-12 teaching <sup>a</sup>	Nonteaching occupation											
		Total	Business/ management	Engineering/ architecture	Computer science	Medical professionals	Editors/ writers/ reporters/ performers	Human/ protective services or legal support	Research/ science/ technical	Administrative/ clerical	Mechanics/ laborers	Service industries	Military
All students.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
High school achievement levels													
Academic curriculum intensity <sup>b,c</sup>													
Low .....	4.5	2.0	1.9	0.0	1.2	1.8	1.7	3.3	0.7	6.2	2.4	0.0	0.0
Middle .....	64.7	53.0	53.8	33.8	48.7	48.9	59.5	56.5	50.0	50.3	74.5	54.3	47.5
High .....	30.8	45.0	44.3	66.2	50.1	49.3	38.9	40.2	49.3	43.5	23.1	45.7	52.5
Achievement test scores at 12th grade <sup>e</sup>													
Low .....	2.1	1.9	2.2	0.0	1.8	0.7	0.6	2.6	0.6	1.8	2.2	4.4	0.0
Middle .....	59.4	51.3	56.9	27.6	40.3	49.6	56.5	55.5	36.2	40.9	66.3	61.8	23.1
High .....	38.5	46.8	40.9	72.4	58.0	49.7	42.9	41.9	63.2	57.3	31.5	33.8	76.9
SAT/ACT composite scores <sup>c</sup>													
Did not take/missing .....	28.3	23.5	22.1	20.4	21.4	22.2	31.9	24.2	16.9	33.2	25.8	16.1	56.5
Low .....	8.5	3.9	4.2	0.6	7.7	1.2	2.9	5.2	0.7	2.5	6.3	5.2	1.6
Middle .....	45.8	45.7	49.4	31.7	41.4	50.4	43.0	46.0	36.1	38.6	52.3	57.3	18.1
High .....	17.4	26.8	24.3	47.3	29.4	26.2	22.2	24.6	46.2	25.8	15.6	21.5	23.8
Postsecondary selectivity <sup>d</sup>													
First postsecondary institution enrolled													
Nonselective .....	77.8	70.4	71.8	47.4	77.4	71.6	59.7	77.6	54.1	70.6	84.0	77.3	36.5
Selective .....	22.2	29.5	28.2	52.6	22.6	28.4	40.3	22.1	45.9	29.4	16.0	22.7	63.5
Bachelor's degree institution													
Nonselective .....	77.3	65.9	68.6	42.0	70.5	69.5	57.8	73.6	47.6	62.7	67.3	77.9	29.4
Selective .....	22.7	34.1	31.4	58.0	29.5	30.5	42.2	26.4	52.4	37.3	32.7	22.1	70.6

ACT = American College Test; SAT = Scholastic Aptitude Test

<sup>a</sup>About 11% reported current or most recent occupation was teaching grades K-12.<sup>b</sup>Composite index constructed based on following high school curriculum components: highest level of mathematics, total mathematics credits, total Advanced Placement courses, total English credits, total foreign language credits, total science credits, total core laboratory science credits, total social science credits, total computer science credits. See more information in C. Adelman, *Answers in the Toolbox: Academic Intensity, Attendance Patterns, and Bachelor's Degree Attainment*. PPLI 1999-8021, U.S. Department of Education, Office of Educational Research and Improvement (1999).<sup>c</sup>Low level includes bottom 20% of all students with valid data, middle level includes middle 60%, and high level includes top 20%.<sup>d</sup>Institutional selectivity has five values: highly selective, selective, non selective, open door, and not ratable. Variable based on selectivity developed by Cooperative Institutional Research Project at University of California-Los Angeles for its annual survey (since 1966) of entering freshmen. Highly selective and selective institutions combined into selective group; nonselective, open door, and not-ratable institutions combined into nonselective group. See C. Adelman, *Principal Indicators of Student Academic Histories in Postsecondary Education, 1972-2000*, U.S. Department of Education, Institute of Education Sciences (2004) for more information.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, NELS:88/2000, fourth follow-up, Postsecondary Education Transcript Study (PETS), 2000.

Science and Engineering Indicators 2006

Appendix table 1-21

**Public school grades 7–12 mathematics and science teachers with full certification in assigned teaching field: 1999–2000**

(Percent)

State	Certification	State	Certification
<b>Mathematics</b>		<b>Science</b>	
United States .....	88	United States .....	88
Rhode Island .....	100	Idaho .....	100
West Virginia.....	100	Vermont.....	100
South Dakota.....	99	Wyoming .....	100
Arkansas .....	98	South Dakota.....	99
New Jersey .....	98	Indiana .....	98
North Dakota.....	98	Washington.....	98
Georgia .....	96	Iowa .....	97
Indiana .....	96	Montana .....	96
Minnesota .....	96	Florida .....	95
Nebraska.....	96	Georgia.....	95
Idaho.....	95	Maine .....	95
Montana.....	95	New Jersey .....	95
Nevada.....	95	North Dakota .....	95
Vermont.....	95	Oklahoma.....	95
Wisconsin.....	95	West Virginia.....	95
Kansas .....	94	Arkansas .....	94
Massachusetts .....	94	Delaware .....	94
Wyoming .....	94	Nevada .....	94
Alabama .....	93	Rhode Island.....	94
Washington .....	93	Minnesota .....	93
Illinois .....	92	Pennsylvania .....	93
Ohio .....	92	Utah .....	93
Oklahoma.....	92	Hawaii .....	92
Oregon.....	92	Nebraska.....	92
Utah .....	92	Wisconsin .....	92
Virginia .....	92	Illinois.....	91
Iowa .....	91	Kansas .....	91
South Carolina.....	90	Michigan .....	91
Kentucky .....	89	Alaska .....	90
Maryland.....	88	Texas .....	90
Missouri .....	88	Alabama .....	89
Pennsylvania .....	88	Mississippi .....	89
District of Columbia.....	87	Oregon .....	89
Maine.....	86	New Mexico.....	87
Mississippi .....	86	South Carolina .....	87
Tennessee .....	86	Virginia .....	87
Texas.....	86	Connecticut .....	86
New Hampshire.....	85	Tennessee .....	83
Florida.....	84	Colorado.....	82
Connecticut.....	83	Louisiana.....	82
Delaware.....	83	New York .....	82
New Mexico .....	83	Ohio .....	82
Michigan .....	82	Maryland .....	81
Arizona .....	81	New Hampshire .....	81
Colorado.....	81	North Carolina .....	81
New York.....	81	Arizona .....	80
Alaska .....	79	Massachusetts .....	80
Louisiana.....	78	California .....	79
California.....	77	Missouri .....	79
North Carolina .....	77	Kentucky .....	77
Hawaii .....	65	District of Columbia .....	NA

NA = not available

SOURCE: Council of Chief State School Officers, *State Indicators of Science and Mathematics Education: 2003* (2003).

Appendix table 1-22

**Public school grades 7–12 mathematics and science teachers with undergraduate or graduate major or minor in assigned teaching field: 1999–2000**

(Percent)

State	Major or minor	State	Major or minor
<b>Mathematics</b>		<b>Science</b>	
United States .....	71	United States .....	77
Arkansas .....	90	Minnesota .....	93
Minnesota .....	88	New Jersey .....	92
Delaware .....	87	Iowa .....	89
Rhode Island .....	87	New York .....	89
Alabama .....	86	Utah .....	89
North Dakota .....	86	Wisconsin .....	88
Ohio .....	86	Alaska .....	87
Wisconsin .....	86	Idaho .....	87
Wyoming .....	86	North Dakota .....	86
Nebraska .....	85	Connecticut .....	85
New Jersey .....	85	Indiana .....	85
Pennsylvania .....	85	Nevada .....	85
Indiana .....	81	Wyoming .....	85
South Carolina .....	80	Delaware .....	84
New York .....	79	Hawaii .....	84
Oklahoma .....	79	Illinois .....	84
District of Columbia .....	77	Nebraska .....	83
Missouri .....	77	Vermont .....	83
New Hampshire .....	77	Virginia .....	82
Hawaii .....	76	Alabama .....	81
Montana .....	76	California .....	81
South Dakota .....	75	Colorado .....	81
Michigan .....	74	Rhode Island .....	81
Kansas .....	73	Kentucky .....	79
Massachusetts .....	73	Kansas .....	78
West Virginia .....	73	Maryland .....	78
Illinois .....	72	Missouri .....	78
Iowa .....	72	New Hampshire .....	78
Maryland .....	71	Pennsylvania .....	78
Virginia .....	70	Massachusetts .....	77
Maine .....	69	Michigan .....	77
Washington .....	69	Montana .....	76
Texas .....	68	Ohio .....	75
Florida .....	66	Arkansas .....	74
Louisiana .....	66	South Carolina .....	74
Colorado .....	65	South Dakota .....	74
New Mexico .....	64	Washington .....	74
Utah .....	64	Oklahoma .....	73
Kentucky .....	62	West Virginia .....	73
Georgia .....	61	New Mexico .....	72
Idaho .....	61	Texas .....	69
Connecticut .....	60	Arizona .....	68
Mississippi .....	59	Georgia .....	68
Oregon .....	59	Maine .....	67
North Carolina .....	58	Oregon .....	67
Arizona .....	57	Florida .....	66
Alaska .....	56	Mississippi .....	66
California .....	56	Tennessee .....	57
Tennessee .....	56	North Carolina .....	50
Vermont .....	54	Louisiana .....	49
Nevada .....	48	District of Columbia .....	NA

NA = not available

NOTES: Mathematics teachers had undergraduate or graduate major or minor in mathematics or mathematics education. Science teachers had undergraduate or graduate major or minor in science or science education.

SOURCE: Council of Chief State School Officers, *State Indicators of Science and Mathematics Education: 2003* (2003).

Appendix table 1-23

**Salary trends of public school K-12 and beginning teachers: Selected years, 1972-2002**

(2002 constant dollars)

Year	All teachers	Beginning teachers
1972.....	41,769	29,504
1974.....	39,330	NA
1976.....	39,809	27,225
1978.....	39,200	NA
1980.....	35,150	23,267
1982.....	35,318	NA
1984.....	38,047	24,722
1986.....	41,462	NA
1988.....	42,688	28,372
1990.....	43,147	NA
1992.....	43,503	28,866
1994.....	43,414	29,046
1996.....	43,071	28,680
1998.....	43,441	29,255
2000.....	43,597	29,882
2002.....	44,367	30,719

NA = not available

SOURCE: F.H. Nelson and R. Drown, *Survey and Analysis of Teacher Salary Trends 2002*, American Federation of Teachers (2003).

Appendix table 1-24

**Annual statutory salaries of public school teachers at beginning, after 15 years of experience, and at top of scale; salary per instructional hour after 15 years of experience; and ratio of salaries after 15 years of experience to gross domestic product per capita, by level of schooling and OECD country: 2002**

(U.S. dollars)

OECD country	Primary education					Lower secondary education					Upper secondary education				
	Beginning	After 15 years	At top scale	Per instructional hour after 15 years	Ratio after 15 years/ GDP per capita	Beginning	After 15 years	At top scale	Per instructional hour after 15 years	Ratio after 15 years/ GDP per capita	Beginning	After 15 years	At top scale	Per instructional hour after 15 years	Ratio after 15 years/ GDP per capita
Mean .....	22,910	31,366	37,778	38	1.33	24,236	33,345	40,177	47	1.37	25,292	35,691	42,684	54	1.40
Australia .....	27,493	40,480	40,480	46	1.44	27,394	40,479	40,479	50	1.44	27,394	40,479	40,479	50	1.44
Austria .....	23,511	31,112	46,540	39	1.08	24,363	33,139	50,071	53	1.15	24,846	34,444	52,294	57	1.19
Belgium (Flemish) .....	25,731	34,913	41,652	42	1.26	25,731	36,032	43,927	50	1.30	31,924	46,076	55,383	68	1.66
Belgium (French) .....	24,319	33,334	40,106	47	1.20	24,713	34,874	42,717	48	1.26	30,793	44,854	54,100	68	1.62
Czech Republic .....	13,558	16,453	20,558	21	1.09	13,558	16,453	20,558	26	1.09	15,476	18,898	23,452	31	1.25
Denmark .....	31,745	35,809	35,809	56	1.23	31,745	35,809	35,809	56	1.23	30,384	43,063	46,096	77	1.47
England .....	25,403	39,350	39,350	NA	1.41	25,403	39,350	39,350	NA	1.41	25,403	39,350	39,350	NA	1.41
Finland .....	26,647	31,687	33,558	46	1.20	30,514	36,552	38,249	61	1.38	32,136	40,482	42,652	73	1.53
France .....	22,688	30,519	45,031	34	1.12	25,101	32,933	47,562	52	1.21	25,563	33,394	48,070	56	1.23
Germany .....	36,934	44,671	47,921	57	1.72	38,319	47,166	49,239	64	1.82	41,441	50,805	53,085	74	1.96
Greece .....	20,906	25,563	31,013	33	1.39	20,906	25,563	31,013	41	1.39	20,906	25,563	31,013	41	1.39
Hungary .....	7,585	10,412	14,104	13	0.75	7,585	10,412	14,104	17	0.75	8,790	12,851	16,798	21	0.93
Iceland .....	17,244	19,377	20,346	31	0.68	17,244	19,377	20,346	31	0.68	22,017	27,941	30,551	50	0.99
Ireland .....	22,980	38,066	43,137	42	1.17	23,767	38,066	43,137	52	1.17	23,767	38,066	43,137	52	1.17
Italy .....	22,915	27,726	33,575	37	1.08	24,710	30,220	36,906	49	1.18	24,710	31,074	38,604	51	1.22
Japan .....	23,493	44,345	56,579	72	1.65	23,493	44,345	56,579	86	1.65	23,493	44,372	58,286	99	1.65
Mexico .....	12,375	16,324	27,039	20	1.77	15,862	20,722	34,181	18	2.25	NA	NA	NA	NA	NA
Netherlands .....	28,003	35,307	40,406	38	1.22	29,050	38,697	44,388	44	1.33	29,326	51,444	58,913	59	1.77
New Zealand .....	18,109	35,034	35,034	36	1.61	18,109	35,034	35,034	36	1.61	18,109	35,034	35,034	37	1.61
Norway .....	26,637	30,533	32,695	43	0.86	26,637	30,533	32,695	48	0.86	26,637	30,533	32,695	61	0.86
Portugal .....	19,445	31,876	51,829	42	1.73	19,445	31,876	51,829	50	1.73	19,445	31,876	51,829	60	1.73
Scotland .....	27,789	40,619	40,619	43	1.45	27,789	40,619	40,619	46	1.45	27,789	40,619	40,619	46	1.45
Slovak Republic .....	5,134	6,611	9,786	9	0.54	5,134	6,611	9,786	10	0.54	5,134	6,611	9,786	11	0.54
South Korea .....	26,983	46,400	74,672	57	2.73	26,852	46,270	74,541	84	2.72	26,852	46,270	74,541	87	2.72
Spain .....	28,161	33,521	41,860	38	1.50	31,550	36,930	45,958	65	1.65	32,679	38,067	47,323	70	1.70
Sweden .....	23,059	27,359	30,162	NA	1.01	23,059	27,359	30,162	NA	1.01	24,544	29,315	31,711	NA	1.08
Switzerland .....	34,818	46,713	55,304	NA	1.53	41,045	55,431	64,544	NA	1.82	48,704	63,200	74,689	NA	2.08
Turkey .....	11,214	12,700	14,283	20	1.98	NA	NA	NA	NA	NA	10,273	11,759	13,342	21	1.84
United States .....	29,513	42,801	52,104	38	1.19	29,525	42,801	51,170	38	1.19	29,641	42,918	51,308	38	1.19

NA = not available

GDP = gross domestic product; OECD = Organisation for Economic Co-operation and Development

NOTES: Statutory salaries refer to salaries set by official pay scales. Converted to equivalent 2002 U.S. dollars using OECD purchasing power parities.

SOURCE: OECD, *Education at a Glance: OECD Indicators 2004* (2004).



Appendix table 1-25

**Public school teacher stayers, movers, and leavers who agreed with various statements about their current or former schools: 2000–2001**

(Percent)

Statement	Mathematics and science teachers			Other teachers		
	Stayers	Leavers	Movers	Stayers	Leavers	Movers
<b>Satisfaction with salary, benefits, job, and teaching</b>						
<i>I was satisfied with my salary</i> .....	48.3	40.0	38.2	39.7	46.8*	42.4
<i>The school or district offered satisfactory benefits</i> .....	60.6	76.7*	66.4	65.6	69.6	63.8
<i>I was satisfied with the level of job security at the school</i> .....	90.1	80.0	73.8*	82.1	79.4	71.8*
<i>In thinking of all the factors that influenced my satisfaction with teaching in current or last year's school, I was satisfied</i> .....	82.2	63.7*	NA	77.4	62.4*	NA
<i>In thinking of all the factors that influenced my satisfaction with teaching in general, overall, I was satisfied</i> .....	73.6	66.6*	76.1	72.4	70.7	73.5
<b>School safety, climate, and resources</b>						
<i>The school was located in a safe neighborhood</i> .....	88.7	91.4	75.5*	82.0	78.3	73.1*
<i>I felt safe at the school</i> .....	91.5	90.3	76.3*	86.2	85.5	77.6*
<i>The school emphasized academic success</i> .....	84.4	81.0	71.6*	87.5	88.4	75.9*
<i>I received little support from parents</i> .....	35.2	33.0	46.2	36.9	35.0	44.2*
<i>The school received little support from the community</i> .....	24.7	30.0	43.6*	27.3	28.1	37.3*
<i>The professional caliber of the faculty at the school was high</i> .....	89.0	79.9	69.9*	82.9	76.5*	60.1*
<i>The school administrators' behavior toward the staff was supportive and encouraging</i> .....	73.8	60.4	48.6*	68.3	66.3	51.8*
<i>Student behavior was a problem</i> .....	37.2	47.2	57.7	46.6	47.3	56.3*
<i>Resources and materials/equipment for my classroom(s) were sufficiently available</i> .....	62.8	67.2	65.1	62.2	64.5	52.1*
<i>Computers and other technology for my classroom(s) were sufficiently available</i> .....	62.5	38.7*	55.4	56.2	55.2	46.2*
<b>Teaching and instruction</b>						
<i>The procedures for teacher performance evaluation were satisfactory</i> .....	68.3	54.6	68.1	66.6	58.7*	57.5*
<i>I was satisfied with the grade(s) I was assigned to teach</i> .....	94.1	92.0	87.6	91.2	87.3*	81.8*
<i>I was satisfied with the subject(s) I was assigned to teach</i> .....	95.3	92.1	86.7*	93.1	91.4	87.3*
<i>Some of the classes or sections I taught were too large</i> .....	57.4	55.0	55.3	49.0	55.6*	51.3
<i>There was not enough uninterrupted class time available for instruction</i> .....	29.5	23.6	42.8*	37.7	40.1	38.7
<b>Teacher autonomy and professional development</b>						
<i>I was satisfied with the amount of autonomy and control I had over my own classroom</i> .....	91.6	78.2*	73.4*	88.1	83.4*	76.9*
<i>I was pleased with the opportunities for professional development offered to teachers at the school</i> .....	61.0	40.6*	58.4	57.5	58.5	52.4

\*p = .05, statistically significant difference between movers and stayers and between leavers and stayers; NA = not available

SOURCES: U.S. Department of Education, National Center for Education Statistics, 1999–2000 School and Staffing Survey; and 2000–01 Teacher Follow-up Survey.

Appendix table 1-26

**Student access to and use of computers and Internet at home, and use of both information technology resources at school, by student and family characteristics: 2003**

(Percent)

Student and family characteristic	Computer access at home	Computer use at home	Internet access at home	Internet use at home	Computer use at school	Internet use at school
Total .....	76.6	69.1	67.0	47.4	87.2	46.6
School sector						
Public.....	75.2	67.6	65.3	46.3	87.4	46.7
Private.....	88.6	82.5	82.4	57.0	85.2	46.2
Student grade level						
Elementary (K-6).....	74.1	64.2	64.0	34.5	83.6	33.5
Secondary (7-12).....	79.3	74.5	70.4	61.5	91.1	61.0
Sex						
Male.....	76.2	68.4	66.8	46.4	87.2	45.6
Female.....	77.0	69.9	67.3	48.4	87.2	47.7
Race/ethnicity						
White.....	87.1	80.2	79.5	58.0	89.2	52.9
Black.....	55.3	47.4	42.9	28.4	85.2	38.6
Hispanic.....	57.3	49.2	44.0	27.9	83.3	33.1
Asian/Pacific Islander.....	85.7	75.2	75.0	48.5	81.1	42.7
Other.....	76.7	69.2	65.9	45.8	88.3	48.3
Family income <sup>a</sup>						
Low.....	47.7	39.9	31.8	20.9	83.5	33.5
Middle.....	76.0	68.1	65.6	44.9	86.9	46.0
High.....	94.4	88.3	90.4	68.1	89.8	55.6
Parental education						
No high school completion.....	42.8	35.1	26.8	17.3	80.4	29.2
High school or GED <sup>b</sup> .....	64.8	56.6	52.8	35.9	86.6	43.0
Some college.....	81.8	73.7	71.2	50.4	88.6	48.4
Bachelor's or higher degree.....	92.6	86.5	88.1	63.9	89.1	54.0

GED = General Educational Development certificate

<sup>a</sup>Low income includes families in lowest 20% income distribution, middle income includes middle 60%, and high income includes highest 20%.<sup>b</sup>GEDs awarded when applicants pass a set of tests and treated as equivalent to high school diplomas for most purposes.

SOURCE: U.S. Census Bureau, Current Population Survey 2003 (October), School Enrollment and Computer Use Supplement File.

Appendix table 1-27

**Third grade students' frequency of accessing Internet and using computers (from teacher reports), by school and teacher characteristics: 2002**

(Percent)

School and teacher characteristic	Access Internet			Use computers for other purposes		
	<1 time/week	1-2 times/week	At least 3 times/week	<1 time/week	1-2 times/week	At least 3 times/week
Total .....	57.8	20.1	22.2	19.7	23.8	56.5
School						
Sector						
Public.....	55.4	20.6	24.0	17.5	23.5	59.1
Private .....	74.3	16.4	9.4	35.7	26.2	38.1
Community type						
Central city.....	59.5	19.5	20.9	23.2	22.0	54.7
Suburban .....	56.8	19.7	23.5	19.0	25.7	55.3
Rural.....	57.5	22.1	20.4	16.6	23.4	60.0
Minority enrollment (%)						
<10.....	62.3	20.0	17.7	19.0	24.8	56.2
10-39.9.....	56.3	18.8	24.9	17.5	23.3	59.2
≥40.....	55.0	21.3	23.7	21.9	23.6	54.5
Teacher						
Teaching experience (years)						
≤3.....	58.9	22.0	19.1	23.4	26.4	50.2
4-9.....	57.0	19.3	23.7	22.6	24.2	53.2
≥10.....	58.0	19.8	22.2	17.8	23.0	59.3
Age (years)						
<30.....	60.1	21.4	18.5	22.4	29.2	48.4
30-39.....	52.5	24.3	23.2	19.1	20.9	60.0
40-49.....	57.5	16.7	25.8	20.9	20.7	58.4
≥50.....	60.3	19.1	20.6	18.0	24.9	57.1
Teachers' agreement with statements						
<i>I am adequately prepared to use computers for instruction</i>						
Strongly agree .....	37.5	24.3	38.1	10.8	17.3	71.9
Agree.....	55.4	20.8	23.8	15.5	23.2	61.3
No opinion .....	68.3	19.3	12.4	27.3	29.3	43.4
Disagree .....	71.7	15.9	12.4	30.1	26.7	43.2
<i>I am able to get sufficient support to solve computer problems</i>						
Strongly agree .....	46.5	22.4	31.1	12.9	20.0	67.1
Agree.....	57.8	20.9	21.3	18.0	24.0	58.0
No opinion .....	63.9	17.8	18.3	26.1	26.6	47.3
Disagree .....	64.1	17.9	17.9	25.0	25.4	49.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Fall 1998 Kindergartners in Spring 2002.

Appendix table 1-28

**Among students with access, those who used computers at home or accessed Internet anywhere for specific tasks, and frequency of Internet use, by student and family characteristics: 2003**

(Percent)

Student and family characteristic	Use home computer			Use Internet					Frequency of Internet use		
	Schoolwork	Playing games	E-mail	School assignments	Online course	Purchases	News/sports/weather	Radio/TV/movies	≥1 time/day	≥1 time/week, not daily	<1 time/week
Overall.....	73.6	82.7	48.7	79.6	2.1	13.6	36.9	21.6	42.4	41.1	16.5
School sector											
Public.....	73.7	82.6	48.7	79.8	2.0	13.3	36.8	21.4	42.0	41.4	16.6
Private.....	72.1	83.4	49.0	77.7	2.3	16.4	38.5	23.0	45.8	38.8	15.5
Student grade level											
Elementary (K-6).....	55.4	87.2	26.6	64.0	0.9	5.5	21.4	12.8	27.3	47.7	24.9
Secondary (7-12).....	90.7	78.5	69.7	90.6	2.8	19.4	48.0	27.8	53.1	36.4	10.5
Sex											
Male.....	72.0	84.8	45.4	78.3	2.2	15.6	40.5	21.8	41.7	41.4	17.0
Female.....	75.1	80.5	52.1	80.8	1.9	11.6	33.3	21.3	43.2	40.8	16.0
Race/ethnicity											
White.....	73.3	84.4	52.6	80.2	1.9	15.8	39.2	21.2	44.1	40.4	15.4
Black.....	77.5	82.3	40.2	79.7	2.1	6.4	31.5	24.7	35.3	43.3	21.4
Hispanic.....	72.5	78.1	36.1	75.3	2.8	8.5	30.9	21.5	40.1	42.6	17.2
Asian/Pacific Islander.....	72.4	72.7	47.1	84.0	2.9	16.7	39.6	20.9	47.3	38.7	14.0
Other.....	71.2	80.8	44.7	78.5	0.9	12.3	30.9	18.4	36.3	43.8	19.9
Family income <sup>a</sup>											
Low.....	69.6	80.9	34.8	75.9	2.0	7.4	27.5	18.5	33.9	45.7	20.3
Middle.....	72.4	81.8	46.4	78.3	2.1	11.7	35.0	20.5	41.4	41.2	17.3
High.....	76.6	84.8	56.4	83.1	2.0	19.2	43.5	24.4	47.0	39.3	13.7
Parental education											
No high school completion.....	69.1	77.4	32.0	75.0	3.4	4.7	26.5	17.5	36.5	44.0	19.5
High school or GED <sup>b</sup> .....	72.6	81.5	44.9	78.3	2.1	9.4	30.9	19.6	38.9	43.2	17.9
Some college.....	73.5	83.6	48.1	79.7	1.8	13.1	35.9	22.1	41.4	42.0	16.6
Bachelor's/higher degree.....	74.8	83.5	53.4	81.2	2.0	17.9	42.9	23.0	46.3	38.7	15.0

GED = General Educational Development certificate

<sup>a</sup>Low income includes families in lowest 20% income distribution, middle income includes middle 60%, and high income includes highest 20%.<sup>b</sup>GEDs awarded when applicants pass a set of tests and treated as equivalent to high school diplomas for most purposes.

SOURCE: U.S. Census Bureau, Current Population Survey 2003 (October), School Enrollment and Computer Use Supplement File.

Appendix table 1-29

**Teachers' familiarity with computers, percentage who spent >32 hours on IT-related training, and percentage who had training that mentioned or focused on various IT-related topics, by teacher characteristics: 2000–01**

(Percent)

Teacher characteristic	<i>I am reasonably familiar and comfortable with using computers</i>				Spent >32 hours IT training	Mechanics of IT use		Integrating IT with instruction		Internet use		Creating multimedia presentations	
	Disagree	Neither	Somewhat agree	Strongly agree		Mentioned	Central topic	Mentioned	Central topic	Mentioned	Central topic	Mentioned	Central topic
Overall .....	18.7	5.9	40.4	35.0	7.2	25.0	26.8	24.3	27.5	24.5	24.9	20.4	13.3
School sector													
Public .....	18.3	5.7	40.9	35.1	7.7	25.9	28.1	25.4	28.6	25.3	26.1	21.1	13.9
Private .....	22.2	7.0	36.7	34.2	4.3	18.2	17.5	16.4	19.3	18.6	16.0	15.6	9.2
Main teaching field													
Elementary .....	16.9	6.1	48.5	28.5	6.9	24.6	26.0	25.0	27.0	24.5	23.0	20.4	12.1
Math/science .....	13.5	3.3	30.7	52.5	10.8	33.0	23.6	23.3	27.1	24.4	26.6	21.2	12.8
Other .....	21.0	6.2	36.9	35.9	6.8	23.7	27.9	24.1	27.9	24.5	25.8	20.2	14.2
Teaching experience (years)													
≤3 .....	16.0	4.6	34.0	45.4	7.7	23.6	25.4	22.9	24.9	23.5	21.6	17.7	12.6
4–9 .....	11.9	2.9	41.3	43.9	5.0	23.6	22.7	21.4	26.5	20.7	24.8	19.8	11.0
≥10 .....	22.0	7.3	41.2	29.5	8.1	25.7	28.7	25.7	28.3	26.2	25.5	21.1	14.4
Public school teachers													
Main teaching field													
Elementary .....	16.0	6.1	49.0	28.8	7.5	25.4	27.5	26.3	27.9	25.9	23.7	21.3	12.6
Math/science .....	12.9	2.9	30.9	53.2	11.1	36.0	24.2	25.1	27.6	25.5	28.1	22.8	12.7
Other .....	20.6	6.0	37.5	35.8	7.1	24.5	29.2	24.9	29.3	24.9	27.3	20.6	14.9
Teaching experience (years)													
≤3 .....	16.8	3.9	34.7	44.5	8.4	24.2	27.9	24.1	27.4	24.7	23.2	19.0	13.2
4–9 .....	11.2	2.7	41.6	44.5	5.1	25.6	23.4	22.5	27.8	21.5	26.3	20.5	11.4
≥10 .....	21.3	7.3	41.8	29.7	8.5	26.3	30.0	26.8	29.2	26.9	26.6	21.6	15.0

IT = information technology

SOURCES: U.S. Department of Education, National Center for Education Statistics, 1999–2000 School and Staffing Survey; and 2000–01 Teacher Follow-up Survey.

Science and Engineering Indicators 2006

Appendix table 1-30

**Third grade teacher assessments of their preparation to use computers for instruction and of their school's technical support, by school and teacher characteristics: 2002**

(Percent)

School and teacher characteristic	<i>I am adequately prepared to use computers for instruction</i>				<i>I am able to get sufficient support to solve computer problems</i>			
	Strongly agree	Agree	No opinion	Disagree	Strongly agree	Agree	No opinion	Disagree
All teachers.....	17.0	45.3	17.8	19.9	18.9	45.8	14.9	20.4
School								
Sector								
Public.....	17.8	46.2	16.8	19.3	18.9	45.5	14.3	21.3
Private.....	12.0	39.4	24.3	24.3	18.8	47.5	19.3	14.4
Community type								
Central city.....	17.7	44.7	17.8	19.8	19.5	44.0	15.6	21.0
Suburban.....	16.8	44.8	18.5	19.9	19.7	44.9	14.9	20.4
Rural.....	16.0	46.5	17.3	20.2	16.2	48.6	14.4	20.7
Minority enrollment (%)								
<10.....	16.2	43.4	18.7	21.6	19.5	45.2	15.5	19.8
10–39.9.....	15.1	47.1	18.9	18.9	17.6	47.3	15.3	19.9
≥40.....	19.4	45.5	16.3	18.8	19.6	45.5	14.1	20.8
Teacher								
Teaching experience (years)								
≤3.....	19.1	45.7	15.6	19.5	22.3	41.3	14.6	21.7
4–9.....	19.0	45.4	18.7	16.8	19.3	43.6	17.3	19.8
≥10.....	15.8	45.2	17.8	21.2	17.9	47.8	14.0	20.3
Age (years)								
<30.....	19.9	45.0	17.7	17.3	22.1	42.4	13.7	21.8
30–39.....	19.3	47.9	16.0	16.8	18.7	45.4	16.3	19.7
40–49.....	16.6	43.5	18.2	21.7	17.4	48.3	15.4	18.9
≥50.....	14.5	44.8	18.4	22.3	18.8	45.5	14.2	21.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Fall 1998 Kindergartners in Spring 2002.

Science and Engineering Indicators 2006

Appendix table 1-31

**High school graduates enrolled in college October after completing high school, by sex, race/ethnicity, family income, and institution type: 1973–2003**

(Percent)

Year	Total	Sex		Race/ethnicity			Family income <sup>a</sup>			Institution type	
		Male	Female	White	Black	Hispanic	Low	Middle	High	4-year	2-year
1973.....	46.6	50.0	43.4	47.8	32.5	54.1	20.3	40.9	64.4	31.7	14.9
1974.....	47.6	49.4	45.9	47.2	47.2	46.9	NA	NA	NA	32.4	15.2
1975.....	50.7	52.6	49.0	51.1	41.7	58.0	31.2	46.2	64.5	32.6	18.2
1976.....	48.8	47.2	50.3	48.8	44.4	52.7	39.1	40.5	63.0	33.3	15.6
1977.....	50.6	52.1	49.3	50.8	49.5	50.8	27.7	44.2	66.3	33.1	17.5
1978.....	50.1	51.1	49.3	50.5	46.4	42.0	31.4	44.3	64.0	33.1	17.0
1979.....	49.3	50.4	48.4	49.9	46.7	45.0	30.5	43.2	63.2	31.8	17.5
1980.....	49.3	46.7	51.8	49.8	42.7	52.3	32.5	42.5	65.2	29.9	19.4
1981.....	53.9	54.8	53.1	54.9	42.7	52.1	33.6	49.2	67.6	33.5	20.5
1982.....	50.6	49.1	52.0	52.7	35.8	43.2	32.8	41.7	70.9	31.5	19.1
1983.....	52.7	51.9	53.4	55.1	38.2	54.2	34.6	45.2	70.3	33.5	19.2
1984.....	55.2	56.0	54.5	59.0	39.8	44.3	34.5	48.4	74.0	35.8	19.4
1985.....	57.7	58.6	56.8	60.1	42.2	51.0	40.2	50.6	74.6	38.1	19.6
1986.....	53.8	55.8	51.9	56.8	36.9	44.0	33.9	48.5	71.1	34.5	19.3
1987.....	56.8	58.3	55.3	58.6	52.2	33.5	36.9	50.0	73.8	37.9	18.9
1988.....	58.9	57.1	60.7	61.1	44.4	57.1	42.5	54.7	72.8	37.1	21.9
1989.....	59.6	57.6	61.6	60.7	53.4	55.1	48.1	55.4	70.7	38.9	20.7
1990.....	60.1	58.0	62.2	63.0	46.8	42.7	46.7	54.4	76.6	40.0	20.1
1991.....	62.5	57.9	67.1	65.4	46.4	57.2	39.5	58.4	78.2	37.7	24.9
1992.....	61.9	60.0	63.8	64.3	48.2	55.0	40.9	57.0	79.0	38.9	23.0
1993.....	62.6	59.9	65.2	62.9	55.6	62.2	50.4	56.9	79.3	39.8	22.8
1994.....	61.9	60.6	63.2	64.5	50.8	49.1	43.3	57.8	77.9	40.9	21.1
1995.....	61.9	62.6	61.3	64.3	51.2	53.7	34.2	56.1	83.5	40.4	21.5
1996.....	65.0	60.1	69.7	67.4	56.0	50.8	48.6	62.7	78.0	41.9	23.1
1997.....	67.0	63.6	70.3	68.2	58.5	65.6	57.0	60.7	82.2	44.3	22.8
1998.....	65.6	62.4	69.1	68.5	61.9	47.4	46.4	64.7	77.5	41.3	24.4
1999.....	62.9	61.4	64.4	66.3	58.9	42.3	49.4	59.4	76.1	41.9	21.0
2000.....	63.3	59.9	66.2	65.7	54.9	52.9	49.7	59.5	76.9	42.0	21.4
2001.....	61.7	59.7	63.6	64.2	54.6	51.7	43.8	56.3	79.9	42.0	19.7
2002.....	65.2	62.1	68.3	68.9	59.4	53.3	56.4	60.7	78.2	43.5	21.7
2003.....	63.9	61.2	66.5	66.2	57.5	58.6	52.8	57.6	80.1	42.5	21.5

NA = not available

<sup>a</sup>Low income includes families in lowest 20% income distribution, middle income includes middle 60%, and high income includes highest 20%.

NOTE: Includes students ages 16–24 years completing high school in survey year.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *The Condition of Education 2005*, NCES 2005-094.

Appendix table 1-32

**First-time entry rates into postsecondary (tertiary) education for selected OECD countries, by program type and sex: 1998 and 2001**

Country	1998						2001					
	Tertiary type A			Tertiary type B			Tertiary type A			Tertiary type B		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Average.....	40	37	43	19	16	22	47	41	51	15	13	16
Australia.....	53	45	61	NA	NA	NA	65	58	72	NA	NA	NA
Austria.....	28	25	31	8	7	9	34	31	37	NA	NA	NA
Belgium.....	28	28	28	27	22	33	32	32	33	36	29	43
Czech Republic.....	22	26	18	13	10	17	30	26	35	7	5	10
Denmark.....	30	29	32	32	23	42	44	33	56	9	12	7
Finland.....	58	49	67	12	9	15	72	62	83	na	na	na
France.....	NA	NA	NA	NA	NA	NA	37	30	43	22	22	21
Germany.....	28	28	28	14	10	17	32	32	33	14	10	19
Hungary.....	45	41	49	NA	NA	NA	56	50	63	3	3	4
Iceland.....	38	29	48	16	13	19	61	43	80	10	11	9
Ireland.....	28	27	30	25	23	26	38	33	43	18	18	19
Italy.....	42	37	47	1	1	1	44	38	50	1	1	2
Japan.....	36	45	27	33	22	45	41	48	33	31	22	41
Mexico.....	21	22	21	NA	NA	NA	26	26	25	2	2	1
Netherlands.....	52	50	54	1	1	1	54	51	58	2	1	2
New Zealand.....	68	56	79	36	28	44	76	62	89	41	34	47
Norway.....	56	45	68	6	6	6	62	48	76	6	7	5
Poland.....	NA	NA	NA	NA	NA	NA	67	NA	NA	1	0	1
Slovak Republic.....	NA	NA	NA	NA	NA	NA	40	40	39	3	2	5
South Korea.....	43	48	37	46	49	43	49	52	45	55	56	54
Spain.....	41	36	46	9	9	9	48	42	54	19	19	19
Sweden.....	59	50	69	NA	NA	NA	69	55	84	6	6	6
Switzerland.....	NA	NA	NA	NA	NA	NA	33	37	29	13	15	12
Turkey.....	20	25	15	11	12	10	20	23	18	10	11	9
United Kingdom.....	48	45	51	27	25	30	45	41	49	29	25	33
United States.....	44	40	48	14	13	15	42	36	49	13	12	15

NA = not available; na = not applicable

OECD = Organisation for Economic Co-operation and Development

NOTES: Tertiary type A programs provide education that is largely theoretical and is intended to provide sufficient qualifications for gaining entry into advanced research programs and professions with high-skill requirements. Entry into these programs normally requires successful completion of upper secondary education (i.e., high school); admission is competitive in most cases. Minimum cumulative theoretical duration at this level is 3 years of full-time enrollment. Tertiary type B programs are typically shorter than tertiary type A programs and focus on practical, technical, or occupational skills for direct entry into labor market, although they may cover some theoretical foundations in respective programs. They have minimum duration of 2 years of full-time enrollment at tertiary level. OECD calculates entry rates by dividing number of first-time entrants of specific age in each type of tertiary program by total population in corresponding age group and then adding results for each single year of age. Entry rates for tertiary type A and B programs cannot be combined to obtain total tertiary-level entry rate because entrants into both types of programs would be counted twice.

SOURCES: OECD, *Education at a Glance: OECD Indicators 2000* (2000); and *Education at a Glance: OECD Indicators 2003* (2003).



Appendix table 2-1

**Institutions awarding S&E degrees, by field, degree level, and Carnegie institution type: 2002**

Degree and institution type	Institutions	S&E field					
		All S&E <sup>a</sup>	Physical/ biological/ agricultural sciences	Mathematics/ computer sciences	Social/ behavioral sciences	Engineering	Engineering technologies
Bachelor's .....	1,886	1,521	1,334	1,329	1,390	424	338
Research I .....	88	87	87	87	86	81	17
Research II .....	38	38	38	38	38	35	12
Doctorate-granting I .....	48	47	45	45	47	24	19
Doctorate-granting II .....	59	59	59	57	57	40	21
Comprehensive I .....	435	432	421	420	430	139	140
Comprehensive II .....	91	91	87	84	89	15	15
Liberal arts I .....	162	157	155	151	157	18	0
Liberal arts II .....	453	442	392	357	412	40	56
2 year .....	132	48	14	33	19	4	26
Specialized .....	343	101	27	49	45	20	24
Other .....	20	15	8	5	10	8	3
Not classified .....	17	4	1	3	0	0	5
Master's .....	1,424	826	490	465	676	286	84
Research I .....	87	87	87	84	85	81	9
Research II .....	38	38	38	38	38	35	4
Doctorate-granting I .....	49	49	45	45	47	22	9
Doctorate-granting II .....	59	58	55	48	53	35	7
Comprehensive I .....	435	351	202	195	303	84	48
Comprehensive II .....	90	37	9	8	24	4	2
Liberal arts I .....	65	23	9	6	18	2	0
Liberal arts II .....	236	68	8	12	52	4	2
2 year .....	6	2	0	1	1	0	0
Specialized .....	322	81	34	27	24	19	3
Other .....	34	30	3	0	30	0	0
Not classified .....	3	2	0	1	1	0	0
Doctoral .....	413	345	283	180	263	193	0
Research I .....	88	88	88	85	87	83	0
Research II .....	38	38	38	33	38	33	0
Doctorate-granting I .....	49	49	41	27	47	22	0
Doctorate-granting II .....	59	54	47	22	40	33	0
Comprehensive I .....	80	47	22	4	23	13	0
Comprehensive II .....	2	1	1	0	0	0	0
Liberal arts I .....	9	5	3	2	4	0	0
Specialized .....	69	47	40	4	11	6	0
Other .....	18	15	2	3	13	3	0
Not classified .....	1	1	1	0	0	0	0

<sup>a</sup>Engineering technologies data not included in S&E total.

SOURCES: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Appendix table 2-2

**S&E degrees awarded, by degree level, Carnegie institution type, and field: 2002**

Degree and institution type	All fields	All S&E <sup>a</sup>	S&E field				
			Physical/ biological/ agricultural sciences	Mathematics/ computer sciences	Social/ behavioral sciences	Engineering	Engineering technologies
Bachelor's .....	1,305,730	415,611	97,128	61,408	196,436	60,639	15,406
Research I .....	306,220	136,531	32,780	12,559	61,894	29,298	1,695
Research II .....	103,772	36,334	8,979	3,372	16,202	7,781	1,203
Doctorate-granting I .....	83,514	23,133	4,624	3,640	11,222	3,647	1,066
Doctorate-granting II .....	88,322	29,922	6,537	4,529	12,868	5,988	833
Comprehensive I .....	413,836	107,488	24,929	18,597	54,774	9,188	5,515
Comprehensive II .....	41,378	9,988	2,235	2,321	4,872	560	483
Liberal arts I .....	56,908	27,916	8,073	2,620	16,723	500	0
Liberal arts II .....	138,739	32,132	7,277	8,502	15,463	890	1,711
2 year .....	11,171	1,428	221	839	308	60	946
Specialized .....	55,135	7,792	1,120	4,187	652	1,833	1,657
Other .....	5,655	2,919	351	216	1,458	894	47
Not classified .....	1,080	28	2	26	0	0	250
Master's .....	481,132	99,173	15,383	19,990	37,534	26,266	1,444
Research I .....	129,268	38,973	7,325	6,137	10,808	14,703	298
Research II .....	34,370	10,619	1,899	1,700	3,686	3,334	23
Doctorate-granting I .....	44,070	9,538	1,122	2,512	3,816	2,088	223
Doctorate-granting II .....	37,132	9,318	1,426	2,612	2,807	2,473	85
Comprehensive I .....	164,379	23,356	2,807	5,557	12,182	2,810	680
Comprehensive II .....	11,327	720	75	189	418	38	45
Liberal arts I .....	5,664	740	144	33	532	31	0
Liberal arts II .....	18,550	1,318	56	287	914	61	34
2 year .....	114	49	0	24	25	0	0
Specialized .....	33,021	2,615	501	933	453	728	56
Other .....	3,050	1,785	28	0	1,757	0	0
Not classified .....	187	142	0	6	136	0	0
Doctoral .....	39,964	24,571	10,574	1,725	7,201	5,071	0
Research I .....	25,731	17,005	7,561	1,263	4,352	3,829	0
Research II .....	4,657	2,870	1,207	186	902	575	0
Doctorate-granting I .....	4,265	1,837	445	159	999	234	0
Doctorate-granting II .....	2,225	1,318	503	94	402	319	0
Comprehensive I .....	971	302	108	11	116	67	0
Comprehensive II .....	3	1	1	0	0	0	0
Liberal arts I .....	105	26	13	3	10	0	0
Specialized .....	1,223	791	707	5	60	19	0
Other .....	761	398	6	4	360	28	0
Not classified .....	23	23	23	0	0	0	0

<sup>a</sup>Engineering technologies data not included in S&E total.

SOURCES: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Appendix table 2-3  
**Enrollment in higher education, by Carnegie institution type: 1967–2001**

Year	All institutions	Research		Doctorate-granting		Comprehensive		Liberal arts		2 year	Specialized	Other	Not classified
		I	II	I	II	I	II	I	II				
1967.....	6,962,403	1,510,037	494,527	437,195	354,542	1,661,080	109,288	203,663	411,402	1,426,640	179,602	26,108	148,319
1968.....	7,570,446	1,564,981	517,844	455,455	389,249	1,813,653	119,785	209,398	431,035	1,710,382	187,032	27,560	144,072
1969.....	8,065,047	1,644,645	538,934	483,378	410,395	1,935,194	127,377	215,618	442,279	1,913,492	196,017	29,914	127,804
1970.....	8,648,124	1,748,776	570,365	509,450	436,660	2,071,351	137,056	221,996	451,198	2,181,141	209,561	32,862	77,708
1971.....	9,023,721	1,717,735	577,538	519,572	457,251	2,160,655	143,124	228,947	463,429	2,436,324	219,397	35,281	64,468
1972.....	9,296,311	1,768,282	581,139	521,856	466,371	2,183,621	142,270	233,939	462,885	2,611,113	229,979	31,451	63,405
1973.....	9,692,665	1,771,632	592,051	526,349	479,905	2,249,865	141,812	236,910	477,097	2,872,341	250,854	36,007	57,842
1974.....	10,319,864	1,826,768	612,510	545,772	497,963	2,324,124	153,182	238,868	494,426	3,272,382	271,195	34,553	48,121
1975.....	11,289,129	1,921,415	642,703	560,827	532,135	2,464,953	163,672	240,097	541,017	3,837,994	304,449	35,149	44,718
1976.....	11,120,093	1,893,269	613,142	568,570	526,247	2,415,834	168,445	240,730	551,890	3,755,371	307,803	33,066	45,726
1977.....	11,417,253	1,877,142	619,941	579,896	543,360	2,474,300	174,612	243,738	573,678	3,926,266	322,106	35,077	47,137
1978.....	11,391,377	1,864,590	626,213	581,343	542,558	2,452,812	178,964	251,607	579,494	3,910,980	334,175	34,665	33,976
1979.....	11,705,797	1,903,347	639,287	594,589	547,418	2,462,361	183,554	251,231	603,830	4,103,418	349,860	34,984	31,918
1980.....	12,234,644	1,947,444	655,874	604,769	570,666	2,531,409	188,971	260,645	633,712	4,404,276	371,317	35,861	29,700
1981.....	12,517,753	1,961,015	659,114	610,640	578,653	2,564,542	197,462	257,592	644,924	4,598,599	382,781	37,109	25,322
1982.....	12,588,520	1,933,340	650,946	606,683	582,638	2,570,690	200,403	252,029	651,192	4,671,136	398,143	37,800	33,520
1983.....	12,633,930	1,957,038	648,369	612,818	589,126	2,592,710	205,689	254,700	668,374	4,640,343	408,894	39,412	16,457
1984.....	12,400,392	1,952,748	644,056	604,742	591,400	2,576,072	203,725	253,604	656,099	4,456,709	410,816	38,571	11,850
1985.....	12,411,945	1,959,685	641,723	603,961	589,103	2,589,406	208,603	254,972	656,146	4,452,391	406,846	38,467	10,642
1986.....	12,670,121	1,988,839	653,298	609,772	590,694	2,629,336	210,267	257,998	657,695	4,600,773	409,815	39,097	22,537
1987.....	12,925,116	2,013,832	664,997	619,854	601,073	2,675,959	219,167	262,649	665,726	4,739,689	404,679	41,729	15,762
1988.....	13,201,196	2,029,004	685,709	631,050	608,610	2,738,209	227,912	269,134	693,026	4,843,313	422,564	39,942	12,723
1989.....	13,621,203	2,046,868	704,842	644,062	623,988	2,831,502	238,431	266,907	716,902	5,072,690	420,495	40,260	14,256
1990.....	13,983,255	2,080,412	714,852	657,824	635,833	2,926,402	243,690	268,223	732,654	5,220,767	442,899	42,149	17,550
1991.....	14,527,724	2,094,841	720,127	660,908	643,519	2,962,524	255,272	268,960	758,023	5,624,420	459,146	44,370	35,614
1992.....	14,657,118	2,089,045	714,126	655,985	649,549	2,964,105	259,253	266,735	781,247	5,695,378	483,070	46,705	51,920
1993.....	14,477,792	2,078,622	701,058	648,068	644,533	2,944,113	261,163	264,222	791,140	5,545,475	494,944	48,122	56,332
1994.....	14,449,476	2,079,559	694,454	639,831	650,816	2,927,198	266,854	264,737	797,156	5,499,655	502,771	49,764	76,681
1995.....	14,445,438	2,080,163	691,292	638,157	659,197	2,925,255	265,523	267,327	810,206	5,471,342	503,929	49,261	83,786
1996.....	14,481,915	2,082,713	684,608	632,288	661,015	2,926,182	267,133	269,258	814,037	5,494,333	515,296	50,151	84,901
1997.....	14,521,994	2,089,243	692,798	633,836	665,881	2,927,240	272,653	272,071	822,304	5,487,309	524,508	48,902	85,249
1998.....	14,835,140	2,109,348	701,177	636,460	673,467	2,960,640	276,662	275,722	839,075	5,679,793	543,075	46,968	92,753
2000.....	15,592,671	2,144,926	714,249	650,496	689,922	3,061,764	288,870	282,285	870,362	6,170,926	566,643	47,333	104,895
2001.....	15,749,338	2,192,261	734,580	663,147	719,045	3,129,957	298,090	284,240	886,180	6,029,905	612,249	51,849	147,835

NOTE: Data not available for 1999.

SOURCES: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Fall Enrollment Survey (various years); and National Science Foundation, Division of Science Resources Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Science and Engineering Indicators 2006

Appendix table 2-4

## U.S. population ages 20–24 years, by sex and race/ethnicity: Selected years, 1985–2020

Sex	All races		White		Asian/Pacific Islander		Black		Hispanic		American Indian/ Alaska Native	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
<b>Both sexes</b>												
1985 .....	20,694,001	100.0	15,393,698	74.4	456,493	2.2	2,642,882	12.8	2,042,290	9.9	158,638	0.8
1990 .....	18,613,683	100.0	13,142,195	70.6	603,986	3.2	2,423,770	13.0	2,295,364	12.3	148,368	0.8
1995 .....	17,664,652	100.0	11,979,033	67.8	714,402	4.0	2,457,636	13.9	2,356,723	13.3	156,858	0.9
2000 .....	18,516,000	100.0	12,167,000	65.7	744,000	4.0	2,638,000	14.2	2,801,000	15.1	166,000	0.9
2005 .....	20,159,000	100.0	13,022,000	64.6	894,000	4.4	2,827,000	14.0	3,224,000	16.0	192,000	1.0
2010 .....	21,152,000	100.0	13,253,000	62.7	995,000	4.7	3,099,000	14.7	3,599,000	17.0	206,000	1.0
2015 .....	21,747,000	100.0	12,973,000	59.7	1,205,000	5.5	3,127,000	14.4	4,251,000	19.5	191,000	0.9
2020 .....	21,020,000	100.0	12,130,000	57.7	1,322,000	6.3	2,855,000	13.6	4,528,000	21.5	185,000	0.9
<b>Male</b>												
1985 .....	10,183,871	100.0	7,555,833	74.2	232,410	2.3	1,232,681	12.1	1,083,161	10.6	79,786	0.8
1990 .....	9,277,563	100.0	6,505,454	70.1	308,080	3.3	1,142,368	12.3	1,246,935	13.4	74,726	0.8
1995 .....	8,825,001	100.0	5,973,789	67.7	355,023	4.0	1,186,814	13.4	1,230,194	13.9	79,181	0.9
2000 .....	9,432,000	100.0	6,226,000	66.0	366,000	3.9	1,304,000	13.8	1,454,000	15.4	83,000	0.9
2005 .....	10,268,000	100.0	6,661,000	64.9	439,000	4.3	1,403,000	13.7	1,670,000	16.3	95,000	0.9
2010 .....	10,777,000	100.0	6,776,000	62.9	495,000	4.6	1,543,000	14.3	1,860,000	17.3	103,000	1.0
2015 .....	11,077,000	100.0	6,628,000	59.8	602,000	5.4	1,559,000	14.1	2,193,000	19.8	95,000	0.9
2020 .....	10,698,000	100.0	6,191,000	57.9	658,000	6.2	1,425,000	13.3	2,332,000	21.8	92,000	0.9
<b>Female</b>												
1985 .....	10,510,130	100.0	7,837,865	74.6	224,083	2.1	1,410,201	13.4	959,129	9.1	78,852	0.8
1990 .....	9,336,120	100.0	6,636,741	71.1	295,906	3.2	1,281,402	13.7	1,048,429	11.2	73,642	0.8
1995 .....	8,839,651	100.0	6,005,244	67.9	359,379	4.1	1,270,822	14.4	1,126,529	12.7	77,677	0.9
2000 .....	9,084,000	100.0	5,942,000	65.4	379,000	4.2	1,334,000	14.7	1,347,000	14.8	83,000	0.9
2005 .....	9,889,000	100.0	6,360,000	64.3	454,000	4.6	1,424,000	14.4	1,554,000	15.7	97,000	1.0
2010 .....	10,375,000	100.0	6,477,000	62.4	500,000	4.8	1,556,000	15.0	1,739,000	16.8	103,000	1.0
2015 .....	10,670,000	100.0	6,345,000	59.5	603,000	5.7	1,568,000	14.7	2,058,000	19.3	96,000	0.9
2020 .....	10,321,000	100.0	5,938,000	57.5	664,000	6.4	1,430,000	13.9	2,196,000	21.3	93,000	0.9

SOURCES: U.S. Census Bureau, Population Division, 1990 Census, <http://www.census.gov/population/estimates/nation>; and Population Projections Program, Projections of the Resident Population by Age, Sex, Race, and Hispanic Origin: 1999 to 2100 (2000), [http://www.census.gov/population/projections/nation/detail/d2001\\_10.pdf](http://www.census.gov/population/projections/nation/detail/d2001_10.pdf).

Science and Engineering Indicators 2006

## Enrollment in major types of institutions, by citizenship and race/ethnicity: Selected years, 1992–2001

Citizenship and race/ethnicity	All institutions	Research	Doctorate granting	Master's	Liberal arts	Two year	Specialized	Other/not classified
	Number							
<b>1992</b>								
All students .....	14,657,118	2,803,171	1,305,534	3,223,358	1,047,982	5,695,378	483,070	98,625
U.S. citizen/permanent resident .....	14,208,630	2,627,450	1,250,647	3,144,173	1,023,798	5,603,791	461,780	96,991
White .....	10,876,214	2,144,509	1,003,566	2,408,743	795,838	4,100,032	351,524	72,002
Asian/Pacific Islander .....	704,645	182,880	52,485	123,445	24,996	294,689	23,264	2,886
Underrepresented minority .....	2,627,771	300,061	194,596	611,985	202,964	1,209,070	86,992	22,103
Temporary resident .....	448,488	175,721	54,887	79,185	24,184	91,587	21,290	1,634
Unknown citizenship/race/ethnicity .....	NA	NA	NA	NA	NA	NA	NA	NA
<b>1996</b>								
All students .....	14,481,915	2,767,321	1,293,303	3,193,315	1,083,295	5,494,333	515,296	135,052
U.S. citizen/permanent resident .....	14,016,305	2,589,062	1,235,022	3,109,475	1,058,668	5,401,456	489,603	133,019
White .....	10,226,732	2,013,170	940,583	2,283,751	810,598	3,731,434	355,132	92,064
Asian/Pacific Islander .....	832,413	231,924	63,983	142,626	29,339	330,023	30,698	3,820
Underrepresented minority .....	2,957,160	343,968	230,456	683,098	218,731	1,339,999	103,773	37,135
Temporary resident .....	465,610	178,259	58,281	83,840	24,627	92,877	25,693	2,033
Unknown citizenship/race/ethnicity .....	NA	NA	NA	NA	NA	NA	NA	NA
<b>2001</b>								
All students .....	15,749,338	2,926,841	1,382,192	3,428,047	1,170,420	6,029,905	612,249	199,684
U.S. citizen/permanent resident .....	15,188,940	2,707,162	1,307,250	3,323,705	1,141,442	5,928,227	583,955	197,199
White .....	9,909,525	1,940,292	897,096	2,202,231	799,032	3,606,791	344,236	119,847
Asian/Pacific Islander .....	930,981	246,191	72,502	150,886	30,292	390,020	35,398	5,692
Underrepresented minority .....	3,446,570	360,000	259,973	757,520	251,384	1,620,224	133,442	64,027
Temporary resident .....	560,398	219,679	74,942	104,342	28,978	101,678	28,294	2,485
Unknown citizenship/race/ethnicity .....	901,864	160,679	77,679	213,068	60,734	311,192	70,879	7,633
Percent distribution								
<b>1992</b>								
All students .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
U.S. citizen/permanent resident .....	96.9	93.7	95.8	97.5	97.7	98.4	95.6	98.3
White .....	74.2	76.5	76.9	74.7	75.9	72.0	72.8	73.0
Asian/Pacific Islander .....	4.8	6.5	4.0	3.8	2.4	5.2	4.8	2.9
Underrepresented minority .....	17.9	10.7	14.9	19.0	19.4	21.2	18.0	22.4
Temporary resident .....	3.1	6.3	4.2	2.5	2.3	1.6	4.4	1.7
Unknown citizenship/race/ethnicity .....	NA	NA	NA	NA	NA	NA	NA	NA
<b>1996</b>								
All students .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
U.S. citizen/permanent resident .....	96.8	93.6	95.5	97.4	97.7	98.3	95.0	98.5
White .....	70.6	72.7	72.7	71.5	74.8	67.9	68.9	68.2
Asian/Pacific Islander .....	5.7	8.4	4.9	4.5	2.7	6.0	6.0	2.8
Underrepresented minority .....	20.4	12.4	17.8	21.4	20.2	24.4	20.1	27.5
Temporary resident .....	3.2	6.4	4.5	2.6	2.3	1.7	5.0	1.5
Unknown citizenship/race/ethnicity .....	NA	NA	NA	NA	NA	NA	NA	NA

## Enrollment in major types of institutions, by citizenship and race/ethnicity: Selected years, 1992–2001

Citizenship and race/ethnicity	All institutions	Research	Doctorate granting	Master's	Liberal arts	Two year	Specialized	Other/not classified
2001								
All students .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
U.S. citizen/permanent resident.....	96.4	92.5	94.6	97.0	97.5	98.3	95.4	98.8
White .....	62.9	66.3	64.9	64.2	68.3	59.8	56.2	60.0
Asian/Pacific Islander .....	5.9	8.4	5.2	4.4	2.6	6.5	5.8	2.9
Underrepresented minority .....	21.9	12.3	18.8	22.1	21.5	26.9	21.8	32.1
Temporary resident .....	3.6	7.5	5.4	3.0	2.5	1.7	4.6	1.2
Unknown citizenship/race/ethnicity .....	5.7	5.5	5.6	6.2	5.2	5.2	11.6	3.8
Percent distribution								
1992								
All students .....	100.0	19.1	8.9	22.0	7.1	38.9	3.3	0.7
U.S. citizen/permanent resident.....	100.0	18.5	8.8	22.1	7.2	39.4	3.2	0.7
White .....	100.0	19.7	9.2	22.1	7.3	37.7	3.2	0.7
Asian/Pacific Islander .....	100.0	26.0	7.4	17.5	3.5	41.8	3.3	0.4
Underrepresented minority .....	100.0	11.4	7.4	23.3	7.7	46.0	3.3	0.8
Temporary resident .....	100.0	39.2	12.2	17.7	5.4	20.4	4.7	0.4
Unknown citizenship/race/ethnicity .....	NA	NA	NA	NA	NA	NA	NA	NA
1996								
All students .....	100.0	19.1	8.9	22.1	7.5	37.9	3.6	0.9
U.S. citizen/permanent resident.....	100.0	18.5	8.8	22.2	7.6	38.5	3.5	0.9
White .....	100.0	19.7	9.2	22.3	7.9	36.5	3.5	0.9
Asian/Pacific Islander .....	100.0	27.9	7.7	17.1	3.5	39.6	3.7	0.5
Underrepresented minority .....	100.0	11.6	7.8	23.1	7.4	45.3	3.5	1.3
Temporary resident .....	100.0	38.3	12.5	18.0	5.3	19.9	5.5	0.4
Unknown citizenship/race/ethnicity .....	NA	NA	NA	NA	NA	NA	NA	NA
2001								
All students .....	100.0	18.6	8.8	21.8	7.4	38.3	3.9	1.3
U.S. citizen/permanent resident.....	100.0	17.8	8.6	21.9	7.5	39.0	3.8	1.3
White .....	100.0	19.6	9.1	22.2	8.1	36.4	3.5	1.2
Asian/Pacific Islander .....	100.0	26.4	7.8	16.2	3.3	41.9	3.8	0.6
Underrepresented minority .....	100.0	10.4	7.5	22.0	7.3	47.0	3.9	1.9
Temporary resident .....	100.0	39.2	13.4	18.6	5.2	18.1	5.0	0.4
Unknown citizenship/race/ethnicity .....	100.0	17.8	8.6	23.6	6.7	34.5	7.9	0.8

NA = not available

NOTE: Underrepresented minority includes blacks, Hispanics, and American Indians/Alaska Natives.

SOURCES: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Fall Enrollment Survey (various years); and National Science Foundation, Division of Science Resources Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Appendix table 2-6

**Freshmen intending S&E major, by sex, race/ethnicity, and field: Selected years, 1983–2004**

(Percent distribution)

(Page 1 of 4)

Sex, race/ethnicity, and field	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003	2004
All intending S&E major .....	35.0	32.6	28.9	30.6	32.2	33.3	32.4	34.2	33.7	33.1	33.5	33.5	32.6	33.1
Physical sciences .....	2.2	2.2	1.8	2.0	2.1	2.5	2.3	2.1	1.9	1.8	1.9	2.0	2.0	2.3
Biological/agricultural sciences.....	5.7	5.6	5.1	5.3	6.6	8.2	9.4	9.1	8.2	7.5	7.5	7.8	7.7	8.3
Mathematics/statistics.....	1.2	1.1	0.9	0.8	0.8	0.8	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.7
Computer sciences.....	7.7	4.1	2.3	2.3	2.4	2.1	3.0	4.1	5.1	5.2	4.7	3.1	2.4	2.0
Social/behavioral sciences.....	6.7	8.6	9.4	10.3	9.5	9.7	8.9	8.5	8.9	9.2	9.6	10.4	10.5	10.2
Engineering.....	11.5	11.0	9.4	9.9	10.8	10.0	8.1	9.7	9.0	8.7	9.1	9.5	9.3	9.6
Male.....	46.2	41.9	36.5	38.2	40.1	41.1	39.2	42.4	42.4	41.4	42.2	41.2	39.6	40.8
Physical sciences.....	3.1	3.1	2.7	2.8	2.9	3.2	2.8	2.7	2.4	2.3	2.4	2.4	2.5	2.9
Biological/agricultural sciences.....	6.8	6.1	5.6	6.0	7.0	8.8	9.2	8.4	7.3	6.5	6.5	6.6	6.7	7.4
Mathematics/statistics.....	1.2	1.1	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.8	0.7	0.8	0.9	1.0
Computer sciences.....	9.4	5.5	3.5	3.4	3.4	3.5	5.1	7.1	9.1	9.3	8.8	6.0	4.7	4.1
Social/behavioral sciences.....	5.8	7.2	7.0	7.7	7.0	7.5	6.7	6.3	6.4	6.6	7.1	7.5	7.7	7.5
Engineering.....	19.9	18.9	16.8	17.4	18.9	17.3	14.6	17.2	16.5	15.9	16.7	17.9	17.1	17.9
Female.....	25.0	24.6	22.3	24.5	25.3	26.8	27.1	27.7	26.8	26.2	26.7	26.7	26.2	26.3
Physical sciences.....	1.3	1.4	1.1	1.3	1.5	1.9	1.8	1.6	1.5	1.5	1.5	1.6	1.7	1.9
Biological/agricultural sciences.....	4.8	5.3	4.8	4.9	6.2	7.7	9.6	9.7	9.0	7.9	8.3	8.5	8.5	9.0
Mathematics/statistics.....	1.1	1.1	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.6	0.6	0.7	0.6	0.6
Computer sciences.....	6.2	2.8	1.4	1.4	1.5	1.1	1.3	1.7	1.8	1.9	1.6	0.9	0.5	0.4
Social/behavioral sciences.....	7.8	10.2	11.3	12.8	11.6	11.5	11.0	10.5	11.0	11.3	11.7	12.0	12.0	11.5
Engineering.....	3.8	3.8	2.9	3.3	3.7	3.9	2.7	3.5	2.9	3.0	3.0	3.0	2.9	2.9
White.....	34.5	31.7	27.8	29.6	30.5	31.7	30.9	32.8	31.7	30.6	31.9	31.3	30.1	30.1
Physical sciences.....	2.4	2.3	1.9	2.0	2.3	2.6	2.5	2.4	2.0	2.0	2.1	2.1	2.1	2.3
Biological/agricultural sciences.....	5.5	5.3	4.7	5.1	6.0	7.6	9.0	8.6	7.9	6.6	7.0	7.0	6.4	7.0
Mathematics/statistics.....	1.2	1.1	0.9	0.9	0.8	0.9	0.7	0.7	0.6	0.7	0.7	0.8	0.8	0.8
Computer sciences.....	7.0	3.4	2.1	1.9	1.8	1.8	2.5	3.5	4.1	4.3	4.0	2.8	2.3	1.9
Social/behavioral sciences.....	6.8	8.9	9.3	10.1	9.3	9.4	8.7	8.6	8.6	8.7	9.1	9.4	9.6	9.1
Engineering.....	11.6	10.7	8.9	9.6	10.3	9.4	7.5	9.0	8.5	8.3	9.0	9.2	8.9	9.0
Male.....	45.8	41.0	35.6	37.4	38.8	39.8	37.5	40.6	40.0	39.6	41.0	39.6	38.3	38.7
Physical sciences.....	3.4	3.2	2.8	3.0	3.1	3.3	2.9	3.0	2.4	2.5	2.6	2.8	2.8	3.0
Biological/agricultural sciences.....	6.3	5.8	5.3	5.5	6.5	8.1	8.6	7.8	7.1	6.0	6.1	6.2	5.8	6.4
Mathematics/statistics.....	1.3	1.2	1.0	1.0	0.9	0.9	0.8	0.7	0.7	0.9	0.7	0.9	0.9	1.0
Computer sciences.....	9.1	5.1	3.3	3.1	3.0	3.2	4.6	6.4	7.7	8.2	7.7	5.5	4.7	3.9
Social/behavioral sciences.....	5.6	7.2	7.0	7.8	7.1	7.6	6.9	6.3	6.3	6.7	7.0	7.2	7.7	7.4
Engineering.....	20.1	18.5	16.2	17.0	18.2	16.7	13.7	16.4	15.8	15.3	16.9	17.0	16.4	17.0
Female.....	23.5	22.9	20.9	22.7	23.1	25.2	25.3	25.8	24.9	23.8	24.2	23.9	23.9	23.9
Physical sciences.....	1.3	1.3	1.2	1.3	1.4	2.0	1.9	1.8	1.6	1.5	1.5	1.5	1.7	1.9
Biological/agricultural sciences.....	4.5	4.9	4.3	4.5	5.7	7.3	9.1	9.3	8.8	7.5	7.6	7.6	7.4	7.7
Mathematics/statistics.....	1.2	1.1	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.7	0.7	0.7	0.7
Computer sciences.....	5.1	1.9	0.9	0.8	0.8	0.6	0.7	1.0	1.1	1.1	0.8	0.5	0.4	0.3
Social/behavioral sciences.....	7.8	10.5	11.2	12.5	11.4	11.2	10.5	10.1	10.4	10.6	11.1	11.1	11.2	10.6
Engineering.....	3.6	3.2	2.4	2.8	3.0	3.4	2.4	3.0	2.4	2.5	2.5	2.5	2.5	2.7

Appendix table 2-6

**Freshmen intending S&E major, by sex, race/ethnicity, and field: Selected years, 1983–2004**

(Percent distribution)

(Page 2 of 4)

Sex, race/ethnicity, and field	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003	2004
Asian American .....	52.6	51.3	47.5	44.0	44.6	42.8	41.5	45.9	47.5	44.5	42.5	43.2	44.2	45.5
Physical sciences .....	3.9	4.2	2.9	2.3	2.5	2.5	2.1	2.0	1.6	1.5	1.7	1.9	2.1	2.4
Biological/agricultural sciences .....	11.0	11.6	12.1	9.8	12.2	13.4	13.2	11.8	11.2	10.2	10.1	11.9	14.6	16.1
Mathematics/statistics .....	1.7	1.1	0.9	0.8	0.8	0.7	0.6	0.6	0.6	0.6	0.7	0.8	0.9	0.9
Computer sciences .....	8.8	3.0	3.7	2.4	3.5	2.7	5.2	7.9	12.6	11.0	9.3	4.6	3.2	2.2
Social/behavioral sciences .....	5.6	7.5	8.2	9.4	8.4	8.8	7.1	6.8	6.7	7.4	7.3	8.1	8.6	8.8
Engineering .....	21.6	23.9	19.7	19.3	17.2	14.7	13.3	16.8	14.8	13.8	13.4	15.9	14.8	15.1
Male .....	63.6	61.0	56.0	52.7	55.3	51.1	50.3	57.5	60.0	56.3	54.3	55.0	53.4	54.3
Physical sciences .....	4.9	5.5	3.2	3.0	3.2	2.8	2.8	2.2	2.0	1.7	1.8	2.2	2.7	2.6
Biological/agricultural sciences .....	12.1	10.2	11.1	10.0	12.2	13.4	12.2	9.9	8.9	8.5	8.4	10.2	13.0	14.1
Mathematics/statistics .....	1.3	1.2	0.7	0.6	0.8	0.6	0.6	0.6	0.6	0.7	0.7	0.9	1.1	1.0
Computer sciences .....	9.0	3.1	4.6	3.3	5.4	4.2	8.0	12.5	19.4	17.8	15.5	8.1	5.4	4.1
Social/behavioral sciences .....	3.9	6.4	5.4	5.7	5.8	6.5	4.7	4.9	4.8	5.5	5.6	6.1	6.3	6.7
Engineering .....	32.4	34.6	31.0	30.1	27.9	23.6	22.0	27.4	24.3	22.1	22.3	27.5	24.9	25.8
Female .....	40.8	40.9	38.1	34.7	34.0	34.5	32.9	34.3	35.9	34.5	32.8	33.5	35.9	37.6
Physical sciences .....	2.7	2.9	2.4	1.9	1.8	2.2	1.6	1.5	1.4	1.3	1.5	1.6	1.8	2.0
Biological/agricultural sciences .....	10.0	13.1	13.0	9.4	12.3	13.5	14.0	13.4	13.3	11.7	12.0	13.5	16.1	18.0
Mathematics/statistics .....	2.0	1.2	1.2	1.0	0.8	0.8	0.6	0.6	0.6	0.7	0.7	0.8	0.7	0.8
Computer sciences .....	8.5	2.8	2.6	1.5	1.6	1.4	2.5	3.4	6.2	5.2	4.0	1.6	1.0	0.6
Social/behavioral sciences .....	7.6	8.7	11.3	13.4	10.9	10.7	9.3	8.8	8.5	8.9	8.9	9.9	10.6	10.6
Engineering .....	10.0	12.2	7.6	7.5	6.6	5.9	4.9	6.6	5.9	6.7	5.7	6.1	5.7	5.6
Black .....	35.0	33.3	31.0	32.0	35.5	37.9	35.8	38.0	37.2	36.8	35.2	35.4	33.6	34.3
Physical sciences .....	1.1	1.6	1.0	1.2	1.2	1.6	1.6	1.2	1.2	1.2	1.0	1.2	1.4	1.8
Biological/agricultural sciences .....	4.2	4.2	4.1	4.6	5.3	7.4	8.7	8.8	7.9	7.5	7.8	8.4	8.6	9.5
Mathematics/statistics .....	0.6	0.7	0.6	0.4	0.6	0.6	0.7	0.6	0.6	0.5	0.4	0.5	0.4	0.5
Computer sciences .....	13.3	10.4	5.2	5.9	5.6	5.4	6.3	7.1	8.4	8.1	7.4	4.7	3.3	3.3
Social/behavioral sciences .....	7.0	6.8	9.6	10.6	10.4	10.0	9.9	10.3	11.4	11.1	12.5	12.0	12.2	11.5
Engineering .....	8.8	9.6	10.5	9.3	12.4	12.9	8.6	10.0	7.7	8.4	6.1	8.6	7.7	7.7
Male .....	41.3	39.1	36.8	36.3	41.3	44.6	40.5	43.6	41.7	41.7	37.7	40.2	36.7	38.2
Physical sciences .....	1.3	1.9	1.3	1.1	1.1	2.0	1.7	1.6	1.4	1.4	1.0	1.3	1.4	1.7
Biological/agricultural sciences .....	4.9	3.9	4.1	4.2	4.9	6.8	7.6	7.4	5.8	5.8	5.6	5.8	5.7	7.5
Mathematics/statistics .....	0.8	0.8	0.7	0.4	0.6	0.6	0.8	0.5	0.6	0.4	0.4	0.4	0.7	0.6
Computer sciences .....	13.5	11.2	6.3	6.9	6.0	6.6	8.5	9.8	13.2	12.4	12.2	8.2	6.1	6.2
Social/behavioral sciences .....	5.3	5.4	6.9	7.7	7.4	7.4	6.4	6.6	7.4	6.5	7.4	8.0	8.1	7.1
Engineering .....	15.5	15.9	17.5	16.0	21.3	21.2	15.5	17.7	13.3	15.2	11.1	16.5	14.7	15.1
Female .....	30.1	28.9	26.8	29.1	31.7	34.0	32.8	34.7	34.0	34.3	33.1	32.5	31.5	31.9
Physical sciences .....	0.9	1.3	0.9	1.1	1.2	1.7	1.5	1.1	1.0	1.2	1.0	1.3	1.4	1.9
Biological/agricultural sciences .....	3.5	4.5	3.9	4.7	5.7	7.8	9.4	9.7	9.2	8.6	9.0	10.0	10.2	10.9
Mathematics/statistics .....	0.4	0.6	0.6	0.5	0.6	0.6	0.7	0.8	0.6	0.5	0.4	0.5	0.3	0.4
Computer sciences .....	13.3	9.9	4.4	5.2	5.3	4.6	4.8	5.2	5.3	5.5	4.3	2.5	1.7	1.5
Social/behavioral sciences .....	7.9	7.7	11.2	12.4	12.3	11.7	12.0	12.8	13.8	14.1	15.3	14.5	14.7	14.3
Engineering .....	4.1	4.9	5.8	5.2	6.6	7.6	4.4	5.1	4.1	4.4	3.1	3.7	3.2	2.9



Appendix table 2-6

**Freshmen intending S&E major, by sex, race/ethnicity, and field: Selected years, 1983–2004**

(Percent distribution)

(Page 3 of 4)

Sex, race/ethnicity, and field	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003	2004
<b>Mexican American/Chicano and</b>														
Puerto Rican American .....	37.6	38.9	35.1	33.5	30.6	33.2	36.0	36.9	36.2	33.3	33.6	34.7	34.7	37.2
Physical sciences .....	1.5	1.9	1.5	1.7	1.4	1.6	1.3	1.4	1.0	1.4	1.2	1.6	1.7	1.6
Biological/agricultural sciences .....	7.3	7.1	6.7	5.6	6.2	6.9	7.9	9.3	8.6	7.1	7.4	8.2	8.1	9.3
Mathematics/statistics .....	1.1	0.7	0.5	0.6	0.3	0.4	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.7
Computer sciences .....	6.9	4.7	2.6	2.2	2.8	2.1	2.9	3.4	3.8	3.8	3.8	2.4	2.1	2.2
Social/behavioral sciences .....	8.5	11.9	12.4	12.9	9.9	12.5	12.2	11.4	10.9	12.3	11.6	13.2	13.1	12.6
Engineering .....	12.3	12.6	11.4	10.5	10.0	9.7	11.2	10.8	11.3	8.1	8.9	8.6	8.9	10.8
<b>Male .....</b>	<b>43.0</b>	<b>47.5</b>	<b>41.9</b>	<b>40.2</b>	<b>35.6</b>	<b>38.8</b>	<b>42.0</b>	<b>43.0</b>	<b>45.0</b>	<b>40.6</b>	<b>40.4</b>	<b>40.8</b>	<b>40.8</b>	<b>45.0</b>
Physical sciences .....	2.2	2.8	1.9	2.2	1.7	2.2	1.7	1.8	1.1	1.7	1.3	1.8	2.2	2.1
Biological/agricultural sciences .....	6.7	7.4	6.8	5.9	5.5	7.4	6.8	7.7	7.3	7.1	5.9	6.8	6.3	7.9
Mathematics/statistics .....	1.4	0.8	0.8	0.8	0.5	0.5	0.3	0.6	0.8	0.6	0.9	1.0	1.0	0.8
Computer sciences .....	7.2	6.5	3.2	3.1	3.9	3.1	4.7	5.7	6.8	7.3	7.1	5.2	4.6	4.5
Social/behavioral sciences .....	6.5	9.3	9.7	10.0	7.3	9.8	7.8	8.0	6.9	7.7	7.6	7.9	8.2	8.7
Engineering .....	19.0	20.7	19.5	18.2	16.7	15.8	20.7	19.2	22.1	16.2	17.6	18.1	18.5	21.0
<b>Female .....</b>	<b>32.2</b>	<b>31.7</b>	<b>29.4</b>	<b>28.3</b>	<b>26.3</b>	<b>28.2</b>	<b>31.0</b>	<b>31.5</b>	<b>28.7</b>	<b>27.6</b>	<b>28.4</b>	<b>30.7</b>	<b>30.5</b>	<b>31.7</b>
Physical sciences .....	0.8	1.1	1.0	1.3	1.3	1.1	1.2	1.2	0.8	1.2	1.3	1.5	1.2	1.3
Biological/agricultural sciences .....	7.9	7.0	6.6	5.6	6.7	6.5	8.7	10.3	9.4	6.9	8.2	9.2	9.2	10.4
Mathematics/statistics .....	0.8	0.5	0.3	0.4	0.2	0.4	0.5	0.4	0.4	0.5	0.5	0.5	0.7	0.7
Computer sciences .....	6.5	3.1	2.2	1.6	1.9	1.1	1.5	1.5	1.4	1.5	1.4	0.6	0.4	0.6
Social/behavioral sciences .....	10.2	14.0	14.9	15.2	12.5	14.7	15.8	14.2	13.8	15.3	14.3	16.7	16.4	15.6
Engineering .....	6.0	6.0	4.4	4.2	3.7	4.4	3.3	3.9	2.9	2.2	2.7	2.2	2.6	3.1
<b>Other Latino .....</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>38.0</b>	<b>39.5</b>	<b>38.2</b>	<b>37.2</b>	<b>35.2</b>	<b>36.6</b>	<b>35.4</b>	<b>37.6</b>	<b>38.3</b>
Physical sciences .....	NA	NA	NA	NA	NA	2.0	1.4	1.8	1.3	1.3	1.4	1.6	1.7	1.9
Biological/agricultural sciences .....	NA	NA	NA	NA	NA	9.5	10.9	9.4	7.6	7.6	7.9	7.8	8.4	9.1
Mathematics/statistics .....	NA	NA	NA	NA	NA	0.2	0.5	0.4	0.4	0.3	0.4	0.7	0.6	0.9
Computer sciences .....	NA	NA	NA	NA	NA	2.2	3.5	4.4	5.0	5.7	4.4	2.5	2.4	1.8
Social/behavioral sciences .....	NA	NA	NA	NA	NA	13.1	12.7	11.9	13.1	12.7	13.4	13.9	14.6	14.4
Engineering .....	NA	NA	NA	NA	NA	11.0	10.5	10.3	9.8	7.6	9.1	8.9	9.9	10.2
<b>Male .....</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>40.4</b>	<b>44.5</b>	<b>43.9</b>	<b>45.4</b>	<b>43.9</b>	<b>45.5</b>	<b>42.2</b>	<b>43.8</b>	<b>45.1</b>
Physical sciences .....	NA	NA	NA	NA	NA	1.8	2.0	2.2	1.9	1.8	2.1	2.0	2.1	2.7
Biological/agricultural sciences .....	NA	NA	NA	NA	NA	8.7	8.3	7.9	5.3	6.8	7.1	6.9	6.4	7.4
Mathematics/statistics .....	NA	NA	NA	NA	NA	0.3	0.6	0.6	0.4	0.3	0.5	0.9	0.8	1.1
Computer sciences .....	NA	NA	NA	NA	NA	2.9	5.8	7.2	9.4	11.2	8.7	4.8	4.7	3.4
Social/behavioral sciences .....	NA	NA	NA	NA	NA	9.0	9.0	7.6	9.7	8.5	9.0	10.0	10.6	10.5
Engineering .....	NA	NA	NA	NA	NA	17.7	18.8	18.4	18.7	15.3	18.1	17.6	19.2	20.0
<b>Female .....</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>35.4</b>	<b>35.8</b>	<b>33.3</b>	<b>31.3</b>	<b>29.9</b>	<b>30.3</b>	<b>31.1</b>	<b>33.1</b>	<b>33.8</b>
Physical sciences .....	NA	NA	NA	NA	NA	2.0	1.2	1.3	1.1	0.9	0.9	1.5	1.4	1.6
Biological/agricultural sciences .....	NA	NA	NA	NA	NA	9.9	13.2	10.6	9.4	8.5	8.3	8.3	9.7	10.4
Mathematics/statistics .....	NA	NA	NA	NA	NA	0.2	0.5	0.3	0.3	0.3	0.3	0.6	0.5	0.7
Computer sciences .....	NA	NA	NA	NA	NA	1.5	1.5	2.1	1.7	2.1	1.6	0.9	0.8	0.7
Social/behavioral sciences .....	NA	NA	NA	NA	NA	17.0	16.1	15.1	15.5	15.3	16.4	16.6	17.5	17.0
Engineering .....	NA	NA	NA	NA	NA	4.8	3.3	3.9	3.3	2.8	2.8	3.2	3.2	3.4

Appendix table 2-6

**Freshmen intending S&E major, by sex, race/ethnicity, and field: Selected years, 1983–2004**

(Percent distribution)

(Page 4 of 4)

Sex, race/ethnicity, and field	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003	2004
American Indian .....	31.3	29.2	31.5	33.9	31.2	31.9	30.6	34.9	35.4	33.8	35.3	32.0	34.2	33.8
Physical sciences .....	2.2	1.6	2.2	2.0	2.0	1.5	2.0	2.5	2.7	2.6	1.8	1.7	1.7	2.5
Biological/agricultural sciences .....	4.8	5.5	6.3	4.8	6.5	8.0	9.3	8.8	9.3	6.9	8.4	7.9	9.7	8.6
Mathematics/statistics .....	0.6	0.5	1.0	0.6	0.3	0.7	0.4	0.5	0.7	0.4	0.6	0.6	0.8	0.6
Computer sciences.....	8.7	5.1	2.7	2.2	3.0	2.3	3.0	5.0	4.4	4.0	4.4	2.8	2.3	2.2
Social/behavioral sciences .....	6.0	9.9	9.3	13.5	9.7	11.0	9.5	10.7	10.4	11.9	12.7	11.5	13.4	12.1
Engineering.....	9.0	6.6	10.0	10.8	9.7	8.4	6.4	7.4	7.9	8.0	7.4	7.5	6.3	7.8
Male.....	35.2	33.0	39.7	38.8	37.0	35.9	36.5	37.0	39.0	36.6	41.0	36.8	40.9	40.7
Physical sciences.....	3.6	2.6	3.6	2.5	2.4	2.0	2.4	3.2	2.9	3.6	2.3	2.2	2.1	3.2
Biological/agricultural sciences .....	6.2	7.7	7.2	5.9	6.1	9.5	9.6	6.8	7.9	4.9	6.9	5.3	8.8	8.2
Mathematics/statistics .....	0.6	1.0	0.8	0.4	0.3	0.8	0.2	0.8	0.7	0.4	0.6	0.8	0.6	0.7
Computer sciences.....	4.5	3.8	2.6	1.5	3.0	1.9	4.1	5.8	5.4	5.1	7.2	4.0	5.3	4.7
Social/behavioral sciences .....	5.5	6.4	7.2	11.2	6.7	8.2	7.5	6.9	7.0	8.2	8.3	8.6	10.0	8.7
Engineering.....	14.8	11.5	18.3	17.3	18.5	13.5	12.7	13.5	15.1	14.4	15.7	15.9	14.1	15.2
Female.....	18.9	20.8	23.4	28.3	25.3	26.5	25.1	30.7	30.0	28.4	30.6	27.2	30.7	29.4
Physical sciences.....	1.0	0.7	0.9	1.3	1.7	1.0	1.9	1.9	2.4	1.8	1.6	1.4	1.7	2.1
Biological/agricultural sciences .....	3.7	3.1	5.6	4.0	6.7	6.7	9.1	10.2	10.4	7.9	9.0	8.8	10.2	9.0
Mathematics/statistics .....	0.7	0.2	1.2	0.6	0.3	0.6	0.5	0.3	0.5	0.3	0.7	0.4	0.9	0.5
Computer sciences.....	3.7	1.9	0.7	1.0	1.5	1.6	0.7	2.3	1.3	0.9	1.1	0.5	0.4	0.5
Social/behavioral sciences .....	6.1	12.4	11.3	15.5	12.0	12.4	11.2	12.9	12.7	14.4	15.2	13.3	15.7	14.4
Engineering.....	3.7	2.5	3.7	5.9	3.1	4.2	1.7	3.1	2.7	3.1	3.0	2.8	1.8	2.9

NA = not available

NOTE: Physical sciences include physics, chemistry, astronomy, and earth, atmospheric, and ocean sciences.

SOURCE: Higher Education Research Institute, University of California at Los Angeles, Survey of the American Freshman: National Norms, special tabulations (2005).

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Appendix table 2-7

**Freshmen intending to major in selected S&E fields, by sex and race/ethnicity: Selected years, 1983–2004**

(Percent)

Sex, race/ethnicity, and field	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003	2004
Male .....	62.5	61.4	59.2	57.3	57.9	56.1	54.5	55.6	56.2	55.9	55.8	55.5	54.8	55.0
Female .....	37.5	38.6	40.8	42.7	42.1	43.9	45.5	44.4	43.8	44.1	44.2	44.4	45.2	45.0
White .....	85.4	83.7	83.1	81.8	76.9	79.1	76.2	76.3	74.4	72.4	71.2	72.1	71.6	72.1
Physical sciences .....	90.5	86.3	88.3	87.6	85.0	85.7	84.7	84.6	84.9	82.5	80.8	80.6	78.6	79.7
Biological/agricultural sciences.....	86.3	84.2	82.9	81.9	77.5	79.4	76.6	77.0	75.3	71.5	68.9	68.3	65.1	65.1
Mathematics/statistics.....	90.8	89.7	89.1	89.8	84.7	86.9	83.5	82.9	82.7	82.8	81.4	80.0	78.6	80.8
Computer sciences .....	79.0	71.2	73.4	68.5	61.3	66.3	65.2	68.0	63.7	64.0	62.6	68.8	71.7	71.6
Social/behavioral sciences.....	86.4	88.2	85.6	83.5	79.0	81.3	78.6	78.5	76.9	74.3	71.9	73.0	73.2	74.1
Engineering .....	87.2	83.3	81.5	81.1	76.1	77.2	74.3	75.2	74.5	73.3	74.1	72.6	72.8	73.6
Asian American.....	2.7	4.2	4.7	4.7	5.9	5.7	7.2	8.1	9.4	9.7	9.6	10.2	11.6	11.9
Physical sciences .....	3.2	5.4	4.5	4.0	5.2	4.6	5.5	5.4	6.2	6.5	6.9	7.3	9.5	9.2
Biological/agricultural sciences.....	3.7	5.6	6.9	6.2	8.2	7.4	8.5	8.3	9.4	10.8	10.9	12.7	16.4	16.8
Mathematics/statistics.....	2.6	2.8	3.1	3.3	4.3	4.2	4.5	5.1	6.3	6.9	8.0	8.3	10.3	9.0
Computer sciences .....	2.0	1.9	4.5	3.4	6.2	5.5	9.3	11.4	16.1	14.8	14.4	11.8	10.6	9.2
Social/behavioral sciences.....	1.5	2.4	2.5	3.0	3.8	4.0	4.3	4.8	5.0	5.6	5.8	6.4	7.2	7.8
Engineering .....	3.4	5.7	6.0	6.4	6.7	6.3	8.9	10.3	10.8	11.1	10.9	12.8	13.3	13.4
Black .....	10.0	10.0	9.6	10.5	13.1	11.4	11.6	11.4	10.4	11.5	11.0	10.7	9.8	10.1
Physical sciences .....	5.2	6.9	5.3	6.1	7.0	7.2	7.2	6.5	6.3	7.4	6.6	6.5	7.0	7.8
Biological/agricultural sciences.....	7.7	7.8	7.3	9.0	10.0	9.3	10.6	10.5	9.6	11.3	11.4	11.3	10.9	11.3
Mathematics/statistics.....	5.1	6.2	6.6	5.3	8.7	7.3	10.0	10.0	8.5	6.6	5.5	6.7	5.6	5.3
Computer sciences .....	17.3	24.9	19.3	25.1	27.5	24.1	20.8	17.0	15.3	15.6	15.7	14.4	12.7	15.1
Social/behavioral sciences.....	10.2	7.7	9.2	10.3	13.0	10.3	11.4	12.2	11.9	12.1	13.3	12.1	11.3	11.4
Engineering .....	7.6	8.5	9.8	9.4	13.4	12.7	10.9	10.3	7.9	9.7	6.9	8.7	7.5	7.6
Hispanic .....	1.3	1.5	1.9	2.1	2.6	3.9	5.1	5.0	6.4	7.1	7.6	6.9	7.4	8.1
Physical sciences .....	0.9	1.1	1.3	1.7	1.8	2.6	2.8	3.6	3.8	5.3	5.1	5.3	5.3	5.5
Biological/agricultural sciences.....	1.6	1.7	2.1	2.1	2.6	3.6	4.6	5.0	6.1	7.4	7.6	7.0	7.3	8.1
Mathematics/statistics.....	1.1	0.7	1.0	1.5	1.1	1.9	2.6	3.3	5.2	4.7	6.4	6.1	6.7	6.9
Computer sciences .....	1.0	1.4	1.8	1.9	3.3	3.6	4.5	4.1	4.9	5.9	6.1	5.2	6.0	7.0
Social/behavioral sciences.....	1.4	1.7	2.1	2.4	2.8	5.0	5.9	6.1	7.5	9.1	9.2	8.7	9.0	9.5
Engineering .....	1.3	1.5	1.9	2.2	2.5	3.7	5.9	4.9	7.0	6.1	7.1	5.8	6.7	7.6
American Indian.....	1.1	0.9	1.0	1.0	1.6	1.7	2.1	3.1	2.3	1.9	1.3	1.2	1.3	2.0
Physical sciences .....	1.2	0.8	1.1	0.9	1.6	1.1	2.1	3.5	3.3	2.5	1.2	1.1	1.1	2.0
Biological/agricultural sciences.....	1.1	1.1	1.1	0.8	1.7	1.8	2.2	3.1	2.5	1.8	1.4	1.3	1.5	2.0
Mathematics/statistics.....	0.7	0.5	1.1	0.6	0.6	1.6	1.1	2.1	2.4	0.9	1.1	1.0	1.2	1.4
Computer sciences .....	1.4	1.3	1.1	0.9	2.1	1.9	2.2	3.7	1.9	1.4	1.1	1.1	1.1	2.2
Social/behavioral sciences.....	1.0	1.2	0.9	1.2	1.7	2.1	2.4	3.7	2.6	2.4	1.6	1.5	1.7	2.4
Engineering .....	0.9	0.6	1.0	1.0	1.5	1.5	1.8	2.3	2.0	1.7	1.0	1.0	0.9	1.6

**Freshmen intending to major in selected S&E fields, by sex and race/ethnicity: Selected years, 1983–2004**

(Percent)

Sex, race/ethnicity, and field	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003	2004
Unknown .....	1.5	1.6	1.9	1.9	2.6	1.9	2.5	3.3	3.9	3.8	3.3	3.2	3.3	3.4
Physical sciences .....	1.8	1.4	1.8	1.8	2.1	1.7	2.5	3.4	4.0	3.2	3.2	2.9	3.1	3.3
Biological/agricultural sciences.....	1.6	1.7	2.1	1.9	2.9	2.0	2.9	3.7	3.8	3.7	3.8	3.7	4.2	4.0
Mathematics/statistics.....	1.0	0.8	1.3	1.3	2.2	2.1	1.3	2.5	3.6	3.5	1.7	2.5	2.5	2.3
Computer sciences.....	1.2	1.0	2.2	1.6	2.3	1.6	2.2	2.9	4.0	4.1	3.4	2.8	2.0	2.4
Social/behavioral sciences.....	1.6	1.5	2.0	1.9	3.1	2.1	2.5	3.2	4.0	4.2	3.5	3.6	3.6	3.7
Engineering .....	1.5	1.9	1.8	2.0	2.3	1.6	2.5	3.2	3.6	3.3	2.9	2.6	2.6	2.8

NOTES: Physical sciences include physics, chemistry, astronomy, and earth, atmospheric, and ocean sciences. Hispanic includes three group designations from freshman norms survey: Mexican American/Chicano, Puerto Rican American, and other Latino. Detail may not add to total because students may check more than one race/ethnicity, e.g., white and Hispanic.

SOURCE: Higher Education Research Institute, University of California at Los Angeles, Survey of the American Freshman: National Norms, special tabulations (2005).

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Appendix table 2-8

**Freshmen reporting need for remediation in mathematics or science, by sex and intended major: 1984 and 2002**

(Percent)

Intended major	1984						2002					
	Science			Mathematics			Science			Mathematics		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
S&E .....	7.9	6.4	10.2	17.0	14.2	21.4	9.7	6.8	13.3	20.2	14.9	26.9
Mathematics .....	4.2	3.4	4.8	4.1	3.1	4.9	5.6	4.6	6.6	4.7	4.6	4.7
Physical sciences .....	5.0	3.8	7.5	12.9	11.4	16.2	8.3	5.4	12.1	14.7	10.0	20.7
Computer sciences .....	8.0	5.9	11.5	16.1	13.0	21.3	6.2	4.8	14.1	16.1	14.0	28.0
Biological/agricultural sciences.....	8.6	7.0	10.3	20.9	18.8	23.3	12.2	8.9	14.2	22.8	16.7	26.5
Social/behavioral sciences.....	8.9	7.0	10.1	25.1	22.5	26.8	11.1	7.1	13.1	27.9	20.5	31.6
Engineering .....	7.6	6.8	11.5	11.7	11.5	12.5	8.1	7.0	13.3	14.0	13.4	16.9
Non-S&E.....	11.3	9.3	12.9	24.8	22.5	26.6	10.7	8.1	12.5	24.7	20.8	27.3

NOTES: Physical sciences include physics, chemistry, astronomy, and earth, atmospheric, and ocean sciences. Data not available for 2004.

SOURCE: Higher Education Research Institute, University of California at Los Angeles, Survey of the American Freshman: National Norms, special tabulations (2003).

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Appendix table 2-9  
**Foreign undergraduate student enrollment in U.S. universities, by selected places of origin:  
 Selected years, 1987–2004**

Place of origin	Students
1987	
All locations.....	199,821
Malaysia.....	15,331
Japan.....	13,790
Canada.....	9,775
Indonesia.....	6,424
Taiwan.....	5,785
South Korea.....	5,581
India.....	5,463
China.....	4,782
Mexico.....	4,288
Thailand.....	2,810
Other locations.....	125,791
1993	
All locations.....	248,711
Japan.....	36,015
South Korea.....	15,291
Canada.....	14,200
Taiwan.....	12,958
Malaysia.....	11,640
Indonesia.....	8,345
China.....	8,011
India.....	7,263
Mexico.....	5,166
Thailand.....	3,916
Other locations.....	125,906
1999	
All locations.....	289,340
Japan.....	37,975
South Korea.....	21,106
Taiwan.....	14,343
Canada.....	13,411
India.....	11,804
China.....	10,339
Indonesia.....	8,592
Malaysia.....	7,090
Mexico.....	6,581
Thailand.....	4,111
Other locations.....	153,988
2004	
All locations.....	255,859
Japan.....	27,925
South Korea.....	22,727
Canada.....	13,996
India.....	13,531
Taiwan.....	8,501
Mexico.....	8,303
China.....	8,034
Indonesia.....	6,249
Hong Kong.....	5,494
Kenya.....	5,297
Other locations.....	135,802

NOTES: Data for temporary residents only. Student counts other than total foreign student enrollment imputed from data reported by institutions. Large discrepancy between academic-level values reported by country and those provided by U.S. institutions for foreign students because of differential response rates to nationality question and academic-level question.

SOURCES: Institute of International Education, Annual Census of Foreign Students, special tabulations (2001); and *Open Doors 2004: Report on International Educational Exchange* (2004).

Appendix table 2-10

**Undergraduate enrollment in engineering and engineering technology programs: Selected years, 1983–2003**

Enrollment level and institution	1983	1985	1987	1989	1991	1993	1995	1997	1998	1999	2000	2001	2002	2003
<b>Engineering</b>														
Students.....	441,205	420,864	392,198	378,277	379,977	375,944	363,315	365,358	366,991	361,395	390,803	409,557	421,178	421,791
Full time.....	406,144	384,191	356,998	338,529	339,397	337,817	325,489	326,458	329,657	323,713	353,118	367,954	383,109	384,612
Freshman.....	109,638	103,225	95,453	95,420	93,002	88,875	86,299	90,882	94,909	93,951	101,773	106,825	107,086	103,834
Sophomore.....	89,515	79,627	73,317	71,267	71,257	69,974	67,981	67,879	69,608	69,941	76,706	78,348	81,854	82,542
Junior.....	91,233	84,875	77,085	70,483	73,516	73,449	68,894	68,812	67,638	66,975	74,055	76,938	79,806	80,703
Senior or fifth year.....	115,758	116,464	111,143	101,359	101,622	105,519	102,315	98,885	97,502	92,846	100,584	105,843	114,363	117,533
Part time.....	35,061	36,673	35,200	39,748	40,580	38,127	37,826	38,900	37,334	37,682	37,685	41,603	38,069	37,179
<b>Engineering technologies</b>														
Students.....	163,226	123,571	128,501	127,687	127,135	106,976	105,809	108,459	108,993	108,754	107,165	108,886	112,654	110,250
Full time.....	112,745	83,038	80,600	76,179	75,340	65,581	63,929	67,864	68,545	69,173	66,771	71,147	72,704	72,040
First year.....	53,032	34,389	32,685	32,225	31,302	24,824	25,665	30,227	28,367	29,490	29,531	31,588	30,252	28,033
Second year.....	33,799	23,293	22,906	21,627	20,815	19,962	18,863	19,106	18,426	17,326	18,318	19,171	20,360	21,009
Other years associated.....	925	466	1,404	1,810	2,221	2,564	2,007	3,442	6,080	5,289	2,474	2,207	2,786	3,876
Bachelor's of engineering technologies third and later years.....	24,989	24,890	23,605	20,517	21,002	18,231	17,394	15,089	15,672	17,068	16,448	18,181	19,306	19,278
Part time.....	50,481	40,533	47,901	51,508	51,795	41,395	41,880	40,595	40,448	39,581	40,394	37,739	39,950	38,210

SOURCE: Engineering Workforce Commission, *Engineering & Technology Enrollments, Fall 2003*, American Association of Engineering Societies (2004).

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Appendix table 2-11

**Engineering enrollment, by enrollment level and attendance: 1983–2003**

Year	Undergraduate						Graduate					
	Total		Full time		Part time		Total		Full time		Part time	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1983.....	441,205	100.0	406,144	92.1	35,061	7.9	91,040	100.0	57,366	63.0	33,674	37.0
1984.....	429,499	100.0	394,635	91.9	34,864	8.1	93,165	100.0	57,277	61.5	35,888	38.5
1985.....	420,864	100.0	384,191	91.3	36,673	8.7	95,505	100.0	60,641	63.5	34,864	36.5
1986.....	407,657	100.0	369,520	90.6	38,137	9.4	107,196	100.0	67,333	62.8	39,863	37.2
1987.....	392,198	100.0	356,998	91.0	35,200	9.0	110,778	100.0	69,343	62.6	41,435	37.4
1988.....	385,412	100.0	346,169	89.8	39,243	10.2	112,007	100.0	69,226	61.8	42,781	38.2
1989.....	378,277	100.0	338,529	89.5	39,748	10.5	114,048	100.0	68,967	60.5	45,081	39.5
1990.....	380,287	100.0	338,842	89.1	41,445	10.9	117,834	100.0	72,456	61.5	45,378	38.5
1991.....	379,977	100.0	339,397	89.3	40,580	10.7	123,497	100.0	74,568	60.4	48,929	39.6
1992.....	382,525	100.0	344,126	90.0	38,399	10.0	128,854	100.0	78,651	61.0	50,203	39.0
1993.....	375,944	100.0	337,817	89.9	38,127	10.1	128,081	100.0	78,885	61.6	49,196	38.4
1994.....	367,298	100.0	328,463	89.4	38,835	10.6	122,242	100.0	74,596	61.0	47,646	39.0
1995.....	363,315	100.0	325,489	89.6	37,826	10.4	118,506	100.0	72,215	60.9	46,291	39.1
1996.....	356,177	100.0	317,772	89.2	38,405	10.8	113,063	100.0	70,129	62.0	42,934	38.0
1997.....	365,358	100.0	326,458	89.4	38,900	10.6	112,257	100.0	70,447	62.8	41,810	37.2
1998.....	366,991	100.0	329,657	89.8	37,334	10.2	110,355	100.0	69,519	63.0	40,836	37.0
1999.....	361,485	100.0	323,713	89.6	37,682	10.4	105,006	100.0	67,634	64.4	37,372	35.6
2000.....	390,803	100.0	353,118	90.4	37,685	9.6	118,257	100.0	81,821	69.2	36,436	30.8
2001.....	409,557	100.0	367,954	89.8	41,603	10.2	128,764	100.0	87,187	67.7	41,577	32.3
2002.....	421,178	100.0	383,109	91.0	38,069	9.0	140,240	100.0	97,752	69.7	42,488	30.3
2003.....	421,791	100.0	384,612	91.2	37,179	8.8	147,940	100.0	103,223	69.8	44,717	30.2

SOURCE: Engineering Workforce Commission, *Engineering & Technology Enrollments, Fall 2003*, American Association of Engineering Societies (2004).

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Appendix table 2-12

**Employment and education status of S&E bachelor's and master's degree recipients, by degree level and undergraduate GPA: 1995, 2001, and 2003**

(Percent distribution)

Degree and GPA	Graduates	Employment and education status					
		Continuing in S&E		In school, not studying S&E		Not in school, other	
		In school, studying S&E <sup>a</sup>	Employed in S&E/not in school	Employed in S&E	Employed outside S&E or unemployed	Employed outside S&E	Unemployed
<b>1995</b>							
Bachelor's .....	698,200	12.1	16.7	2.3	17.4	46.8	4.7
3.75–4.0 .....	83,400	20.5	15.7	3.3	22.7	33.3	4.5
3.25–3.74 .....	237,300	14.5	15.0	3.1	21.3	42.0	4.3
2.75–3.24 .....	287,000	9.7	17.6	1.7	15.0	51.2	4.8
<2.75 .....	89,400	5.7	19.7	1.3	9.8	57.8	5.9
Master's .....	146,300	22.5	39.6	2.4	4.8	26.5	4.2
3.75–4.0 .....	33,600	31.8	36.6	3.0	3.2	21.5	4.0
3.25–3.74 .....	56,700	23.2	40.1	2.6	5.5	24.8	3.9
2.75–3.24 .....	43,900	16.6	40.6	1.6	4.6	31.5	5.2
<2.75 .....	11,300	12.1	43.2	2.8	6.9	31.8	3.2
<b>2001</b>							
Bachelor's .....	758,300	12.9	20.4	1.6	14.9	44.9	5.2
3.75–4.0 .....	116,900	18.4	17.3	2.5	22.6	34.4	4.9
3.25–3.74 .....	283,500	16.1	18.3	1.8	17.8	41.5	4.5
2.75–3.24 .....	282,600	9.2	23.5	1.3	10.6	49.9	5.4
<2.75 .....	74,400	6.7	21.9	1.0	8.2	54.9	7.3
Master's .....	160,100	17.1	45.7	1.3	4.6	27.0	4.2
3.75–4.0 .....	41,800	24.4	41.7	1.5	5.7	22.3	4.5
3.25–3.74 .....	63,600	17.1	45.6	0.9	4.3	28.7	3.4
2.75–3.24 .....	45,600	11.4	50.6	2.0	3.7	28.0	4.4
<2.75 .....	8,200	10.7	40.3	0.0	7.4	33.1	8.6
<b>2003</b>							
Bachelor's .....	937,700	11.9	15.7	2.0	21.0	43.2	6.3
3.75–4.0 .....	166,600	17.8	9.9	1.7	26.8	38.6	5.2
3.25–3.74 .....	362,100	13.6	14.1	2.1	24.1	40.1	6.1
2.75–3.24 .....	308,900	8.5	19.5	1.9	16.9	46.8	6.4
<2.75 .....	98,800	6.7	19.3	2.0	13.0	51.1	7.8
Master's .....	246,700	14.5	29.1	2.5	6.6	40.6	6.8
3.75–4.0 .....	71,600	18.2	29.2	1.9	4.8	39.0	7.0
3.25–3.74 .....	99,700	13.8	31.2	2.9	5.3	40.3	6.6
2.75–3.24 .....	58,400	12.0	26.7	2.5	9.6	41.8	7.2
<2.75 .....	15,900	10.1	24.6	2.2	11.1	47.5	4.6

GPA = grade point average

<sup>a</sup>All graduates studying S&E, including those employed in S&E and non-S&E and those unemployed. Definition based on assumption that field being studied in school is better indicator of future career plans than current employment.

NOTES: 1995 survey—S&E degrees earned in 1993 and 1994; 2001 survey—S&E degrees earned in 1999 and 2000; and 2003 survey—S&E degrees earned in 2001 and 2002. Retention in S&E measured through education and job codes rather than graduate self-evaluation. Detail may not add to total because of rounding and because a few graduates who reported that their undergraduate courses were ungraded were excluded from GPA categories but included in total rows.

SOURCE: National Science Foundation, Division of Science Resources Statistics, National Survey of Recent College Graduates, 1995, 2001, and 2003, special tabulations (2005).

Appendix table 2-13

## First-time full-time S&amp;E graduate students, by field: Selected years, 1983–2003

Field	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
S&E .....	81,606	80,678	80,843	84,532	93,147	92,748	89,482	89,177	92,214	94,340	98,112	104,179	107,842
Engineering .....	19,081	18,277	19,440	19,831	22,542	20,349	18,076	18,848	20,513	22,191	23,306	24,596	24,441
Aerospace .....	614	722	920	982	1,125	963	650	735	727	775	767	712	845
Chemical .....	1,828	1,546	1,372	1,343	1,527	1,532	1,421	1,467	1,491	1,595	1,541	1,616	1,600
Civil .....	3,804	3,536	3,221	3,404	4,210	4,019	3,825	3,792	3,726	3,840	3,820	4,107	4,363
Electrical .....	4,668	4,892	5,462	5,768	6,231	5,484	5,002	5,548	6,369	7,195	7,882	8,221	7,841
Industrial .....	1,206	1,195	1,506	1,754	2,056	1,663	1,541	1,549	1,851	2,005	2,216	2,238	2,022
Materials .....	766	806	881	920	1,012	892	822	870	892	1,005	975	1,044	958
Mechanical .....	3,121	3,030	3,270	3,306	3,771	3,514	2,832	2,829	3,119	3,269	3,583	3,698	3,476
Other .....	3,074	2,550	2,808	2,354	2,610	2,282	1,983	2,058	2,338	2,507	2,522	2,960	3,336
Science .....	62,525	62,401	61,403	64,701	70,605	72,399	71,406	70,329	71,701	72,149	74,806	79,583	83,401
Natural sciences .....	40,182	40,397	39,954	41,671	44,725	45,309	46,055	45,825	48,677	49,626	51,215	54,130	55,898
Agricultural sciences .....	2,905	2,525	2,281	2,420	2,495	2,363	2,290	2,157	2,253	2,335	2,338	2,320	2,424
Biological sciences .....	9,694	9,713	9,621	9,882	10,570	11,017	11,356	11,053	10,959	10,955	11,608	12,133	12,698
Earth, atmospheric, and ocean sciences .....	3,735	3,218	2,566	2,636	2,908	2,985	2,801	2,681	2,746	2,649	2,794	3,085	3,104
Atmospheric sciences .....	210	286	256	211	224	214	198	224	203	222	205	213	268
Earth sciences .....	2,704	2,133	1,554	1,451	1,503	1,505	1,423	1,339	1,296	1,230	1,383	1,437	1,412
Oceanography .....	421	392	367	440	474	488	420	410	474	479	511	533	567
Other geosciences .....	400	407	389	534	707	778	760	708	773	718	695	902	857
Mathematics/computer sciences .....	7,490	8,678	9,006	9,716	9,920	8,786	8,361	8,320	9,948	11,850	12,763	12,955	12,333
Computer sciences .....	3,892	4,703	5,092	5,487	5,570	4,742	4,783	5,018	6,677	8,431	9,077	9,037	8,148
Mathematics/statistics .....	3,598	3,975	3,914	4,229	4,350	4,044	3,578	3,302	3,271	3,419	3,686	3,918	4,185
Medical/other life sciences .....	9,651	9,616	9,702	10,164	11,724	13,468	15,118	15,577	16,767	16,008	15,701	17,357	18,498
Medical sciences .....	3,288	3,435	3,635	3,838	4,024	4,419	4,743	4,531	5,037	5,127	5,361	5,780	6,118
Other life sciences .....	6,363	6,181	6,067	6,326	7,700	9,049	10,375	11,046	11,730	10,881	10,340	11,577	12,380
Physical sciences .....	6,707	6,647	6,778	6,853	7,108	6,690	6,129	6,037	6,004	5,829	6,011	6,280	6,841
Astronomy .....	123	155	171	160	153	153	147	125	171	183	193	194	225
Chemistry .....	3,997	3,882	3,764	3,861	4,088	3,842	3,708	3,758	3,672	3,482	3,651	3,746	3,983
Physics .....	2,562	2,550	2,772	2,784	2,820	2,642	2,188	2,074	2,074	2,101	2,102	2,231	2,543
Other physical sciences .....	25	60	71	48	47	53	86	80	87	63	65	109	90
Social/behavioral sciences .....	22,343	22,004	21,449	23,030	25,880	27,090	25,351	24,504	23,024	22,523	23,591	25,453	27,503
Psychology .....	7,766	7,597	7,859	8,516	9,457	9,686	9,241	8,800	8,305	7,545	7,691	8,420	8,922
Social sciences .....	14,577	14,407	13,590	14,514	16,423	17,404	16,110	15,704	14,719	14,978	15,900	17,033	18,581
Anthropology .....	854	986	988	1,055	1,271	1,309	1,247	1,196	1,193	1,157	1,119	1,177	1,279
Economics .....	3,515	3,337	2,988	3,128	3,516	3,407	3,097	2,835	2,837	2,963	3,058	3,418	3,457
History of science .....	52	53	65	67	69	69	70	79	91	78	72	97	101
Linguistics .....	798	685	648	655	675	611	594	579	422	454	495	466	588
Political science/public administration .....	5,136	5,130	4,639	5,213	6,121	6,567	5,916	5,264	4,837	5,142	5,562	6,241	6,948
Sociology .....	1,443	1,380	1,554	1,665	1,710	1,932	1,650	1,696	1,451	1,464	1,591	1,690	1,722
Other social sciences .....	2,779	2,836	2,708	2,731	3,061	3,509	3,536	4,055	3,888	3,720	4,003	3,944	4,486

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

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**S&E graduate enrollment, by field and sex: Selected years, 1983–2003**

Field and sex	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
<b>Both sexes</b>													
S&E.....	390,432	404,021	421,497	434,478	471,212	504,304	499,640	487,208	493,256	493,311	509,620	540,513	566,835
Engineering.....	91,146	96,018	103,983	104,065	113,535	116,872	107,201	101,148	101,691	104,112	109,493	119,668	127,375
Aerospace.....	2,305	2,538	3,015	3,524	4,120	3,940	3,343	3,083	3,349	3,407	3,451	3,685	4,048
Chemical.....	7,590	7,177	7,141	6,482	7,157	7,554	7,452	7,288	6,883	7,056	6,913	7,414	7,516
Civil.....	14,910	14,902	14,682	14,909	17,398	19,583	19,218	17,193	16,226	16,451	16,665	17,713	18,838
Electrical.....	25,295	28,203	31,399	33,257	35,111	35,290	30,861	30,787	31,822	33,611	36,100	39,948	41,745
Industrial.....	9,247	10,525	12,353	11,333	12,996	13,905	13,475	11,957	11,803	12,119	12,940	14,033	14,295
Materials.....	3,477	3,959	4,397	4,635	5,203	5,410	4,956	4,688	4,481	4,377	4,721	4,992	5,154
Mechanical.....	12,911	14,157	16,366	16,265	17,730	18,477	16,363	15,045	14,956	15,235	15,852	17,139	18,440
Other.....	15,411	14,557	14,630	13,660	13,820	12,713	11,533	11,107	12,171	11,856	12,851	14,744	17,339
Science.....	299,286	308,003	317,514	330,413	357,677	387,432	392,439	386,060	391,565	389,199	400,127	420,845	439,460
Natural sciences.....	187,044	197,318	203,637	210,734	225,574	244,098	249,363	246,849	254,854	255,406	263,978	279,465	292,609
Agricultural sciences.....	12,728	11,846	11,405	11,461	11,766	12,305	12,768	12,203	12,312	12,023	12,235	12,698	13,197
Biological sciences.....	45,253	45,709	46,317	48,449	51,365	55,950	58,344	56,705	56,959	56,282	57,639	61,133	64,684
Earth, atmospheric, and ocean sciences.....	15,443	15,414	14,357	13,630	14,466	15,721	15,716	14,548	14,083	13,941	13,841	14,240	14,655
Atmospheric sciences.....	896	964	952	912	968	1,112	1,072	1,092	913	963	924	1,036	1,150
Earth sciences.....	10,311	10,288	8,976	8,032	7,544	7,759	7,582	6,959	6,637	6,596	6,544	6,712	6,889
Oceanography.....	2,063	2,081	2,135	2,214	2,395	2,627	2,723	2,479	2,624	2,668	2,585	2,618	2,695
Other geosciences.....	2,173	2,081	2,294	2,472	3,559	4,223	4,339	4,018	3,909	3,714	3,788	3,874	3,921
Mathematics/computer sciences.....	40,691	47,332	50,559	51,729	54,633	56,213	51,962	52,710	58,735	63,000	68,847	73,432	73,143
Computer sciences.....	23,333	29,769	32,051	32,482	34,681	36,213	33,458	35,991	42,478	47,350	52,196	55,269	53,678
Mathematics/statistics.....	17,358	17,563	18,508	19,247	19,952	20,000	18,504	16,719	16,257	15,650	16,651	18,163	19,465
Medical/other life sciences.....	43,466	46,030	48,258	51,836	58,620	68,581	77,174	79,578	82,074	79,775	80,378	85,621	92,632
Medical sciences.....	12,414	13,276	14,256	14,914	16,702	19,224	20,659	20,895	23,479	22,815	24,012	26,921	29,944
Other life sciences.....	31,052	32,754	34,002	36,922	41,918	49,357	56,515	58,683	58,595	56,960	56,366	58,700	62,688
Physical sciences.....	29,463	30,987	32,741	33,629	34,724	35,328	33,399	31,105	30,691	30,385	31,038	32,341	34,298
Astronomy.....	618	671	719	789	829	880	912	778	832	888	916	990	1,080
Chemistry.....	17,802	18,305	18,827	18,828	19,407	20,131	19,570	18,774	18,416	18,105	18,366	19,045	20,049
Physics.....	10,806	11,672	12,807	13,657	14,081	13,841	12,425	11,147	10,869	10,841	11,248	11,701	12,555
Other physical sciences.....	237	339	388	355	407	476	492	406	574	551	508	605	614
Social/behavioral sciences.....	112,242	110,685	113,877	119,679	132,103	143,334	143,076	139,211	136,711	133,793	136,149	141,380	146,851
Psychology.....	40,905	40,721	42,612	45,528	51,343	54,557	53,641	53,126	51,727	50,466	50,467	51,165	52,025
Social sciences.....	71,337	69,964	71,265	74,151	80,760	88,777	89,435	86,085	84,984	83,327	85,682	90,215	94,826
Anthropology.....	5,644	5,631	5,835	6,128	6,731	7,361	7,693	7,560	7,633	7,626	7,491	7,481	7,806
Economics.....	15,224	14,698	14,201	14,415	15,071	15,629	15,011	13,140	12,576	12,827	13,569	14,196	14,603
History of science.....	253	272	294	304	337	369	401	443	557	532	571	663	677
Linguistics.....	3,022	3,055	3,282	3,286	3,425	3,321	3,194	3,068	2,799	2,674	2,744	2,875	3,028
Political science/public administration....	27,417	26,621	27,429	29,194	31,707	35,076	34,298	32,083	31,372	31,131	31,805	34,934	36,855
Sociology.....	8,149	7,620	7,968	8,393	9,292	10,360	10,505	10,361	9,707	9,397	9,620	9,665	9,900
Other social sciences.....	11,628	12,067	12,256	12,431	14,197	16,661	18,333	19,430	20,340	19,140	19,882	20,401	21,957
<b>Male</b>													
S&E.....	250,928	258,216	267,941	268,725	284,897	294,476	279,305	264,497	262,675	262,109	271,157	287,087	298,530
Engineering.....	81,337	84,935	91,012	90,457	97,837	99,184	89,188	82,428	81,804	83,366	87,236	94,701	99,786

**S&E graduate enrollment, by field and sex: Selected years, 1983–2003**

Field and sex	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
Chemical.....	6,572	6,170	5,979	5,445	5,897	6,050	5,885	5,568	5,150	5,181	5,084	5,419	5,416
Civil .....	13,051	12,755	12,579	12,474	14,296	15,725	14,986	13,029	12,069	12,174	12,162	12,808	13,446
Electrical.....	23,227	25,768	28,301	29,742	31,260	30,977	26,707	26,237	26,689	28,075	29,888	32,678	33,954
Industrial.....	7,729	8,743	10,085	9,180	10,594	11,260	10,652	9,301	9,144	9,406	10,132	10,957	11,035
Materials.....	3,025	3,352	3,659	3,820	4,208	4,373	3,882	3,571	3,397	3,336	3,548	3,741	3,822
Mechanical .....	12,106	13,146	15,070	14,867	16,219	16,703	14,686	13,266	13,168	13,403	13,908	15,056	16,076
Other .....	13,445	12,626	12,548	11,648	11,570	10,513	9,398	8,744	9,261	8,853	9,548	10,873	12,592
Science.....	169,591	173,281	176,929	178,268	187,060	195,292	190,117	182,069	180,871	178,743	183,921	192,386	198,744
Natural sciences .....	109,989	115,931	119,402	119,883	124,821	130,391	127,014	122,954	124,771	125,060	129,753	136,379	141,106
Agricultural sciences.....	9,506	8,769	8,367	8,224	8,098	8,058	8,169	7,497	7,263	6,935	6,892	7,045	7,171
Biological sciences .....	26,013	25,932	26,013	26,348	27,372	29,081	29,629	28,229	27,338	26,475	26,590	27,706	28,812
Earth, atmospheric, and ocean sciences	11,548	11,489	10,581	9,776	10,015	10,695	10,282	9,132	8,358	8,188	7,949	7,993	8,100
Atmospheric sciences.....	766	807	784	734	778	887	835	829	671	695	626	703	776
Earth sciences .....	7,804	7,806	6,819	6,078	5,546	5,665	5,299	4,663	4,237	4,141	4,061	4,099	4,125
Oceanography .....	1,497	1,471	1,497	1,484	1,543	1,611	1,616	1,424	1,402	1,401	1,330	1,309	1,303
Other geosciences.....	1,481	1,405	1,481	1,480	2,148	2,532	2,532	2,216	2,048	1,951	1,932	1,882	1,896
Mathematics/computer sciences	28,877	34,417	36,948	37,756	40,045	41,144	37,571	36,961	40,147	43,140	47,275	50,521	51,063
Computer sciences .....	16,719	22,208	24,036	24,494	26,391	27,782	25,325	26,110	29,933	33,270	36,894	39,244	38,887
Mathematics/statistics.....	12,158	12,209	12,912	13,262	13,654	13,362	12,246	10,851	10,214	9,870	10,381	11,277	12,176
Medical/other life sciences.....	10,465	10,846	11,869	11,955	13,135	15,291	17,049	18,878	19,889	19,052	19,345	20,839	22,440
Medical sciences.....	6,545	6,634	7,388	7,172	8,044	8,967	9,355	9,626	10,303	9,748	10,136	11,054	12,030
Other life sciences.....	3,920	4,212	4,481	4,783	5,091	6,324	7,694	9,252	9,586	9,304	9,209	9,785	10,410
Physical sciences.....	23,580	24,478	25,624	25,824	26,156	26,122	24,314	22,257	21,776	21,270	21,702	22,275	23,520
Astronomy.....	526	563	601	649	657	682	689	570	607	621	651	688	735
Chemistry.....	13,290	13,516	13,649	13,158	13,145	13,279	12,742	12,052	11,799	11,349	11,511	11,720	12,210
Physics.....	9,605	10,175	11,134	11,789	12,101	11,865	10,590	9,403	8,993	8,931	9,206	9,500	10,189
Other physical sciences.....	159	224	240	228	253	296	293	232	377	369	334	367	386
Social/behavioral sciences.....	59,602	57,350	57,527	58,385	62,239	64,901	63,103	59,115	56,100	53,683	54,168	56,007	57,638
Psychology.....	16,648	15,597	15,683	15,673	16,556	16,567	15,877	15,507	14,456	13,594	13,149	13,437	13,357
Social sciences.....	42,954	41,753	41,844	42,712	45,683	48,334	47,226	43,608	41,644	40,089	41,019	42,570	44,281
Anthropology.....	2,438	2,510	2,482	2,548	2,778	2,969	3,140	3,059	2,989	2,941	2,929	2,864	2,942
Economics.....	11,603	11,134	10,683	10,591	10,876	11,023	10,352	8,940	8,362	8,273	8,739	9,084	9,208
History of science.....	161	180	198	192	205	227	262	281	345	313	327	362	390
Linguistics.....	1,217	1,198	1,305	1,334	1,512	1,301	1,194	1,051	966	930	951	984	1,023
Political science/public administration	16,924	16,276	16,563	17,024	17,971	19,320	18,348	16,679	15,799	15,204	15,304	16,315	17,025
Sociology.....	3,850	3,583	3,616	3,828	4,191	4,280	4,168	3,968	3,498	3,354	3,388	3,444	3,493
Other social sciences.....	6,761	6,872	6,997	7,195	8,150	9,214	9,762	9,630	9,685	9,074	9,381	9,517	10,200
Female													
S&E.....	139,504	145,805	153,556	165,753	186,315	209,828	220,335	222,711	230,581	231,202	238,463	253,426	268,305
Engineering.....	9,809	11,083	12,971	13,608	15,698	17,688	18,013	18,720	19,887	20,746	22,257	24,967	27,589
Aerospace.....	123	163	224	243	327	357	351	371	423	469	485	516	603
Chemical.....	1,018	1,007	1,162	1,037	1,260	1,504	1,567	1,720	1,733	1,875	1,829	1,995	2,100
Civil.....	1,859	2,147	2,103	2,435	3,102	3,858	4,232	4,164	4,157	4,277	4,503	4,905	5,392
Electrical.....	2,068	2,435	3,098	3,515	3,851	4,313	4,154	4,550	5,133	5,536	6,212	7,270	7,791
Industrial.....	1,518	1,782	2,268	2,153	2,402	2,645	2,823	2,656	2,659	2,713	2,808	3,076	3,260

**S&E graduate enrollment, by field and sex: Selected years, 1983–2003**

Field and sex	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
Materials.....	452	607	738	815	995	1,037	1,074	1,117	1,084	1,041	1,173	1,251	1,332
Mechanical .....	805	1,011	1,296	1,398	1,511	1,774	1,677	1,779	1,788	1,832	1,944	2,083	2,364
Other .....	1,966	1,931	2,082	2,012	2,250	2,200	2,135	2,363	2,910	3,003	3,303	3,871	4,747
Science .....	129,695	134,722	140,585	152,145	170,617	192,140	202,322	203,991	210,694	210,456	216,206	228,459	240,716
Natural sciences .....	77,055	81,387	84,235	90,851	100,753	113,707	122,349	123,895	130,083	130,346	134,225	143,086	151,503
Agricultural sciences.....	3,222	3,077	3,038	3,237	3,668	4,247	4,599	4,706	5,049	5,088	5,343	5,653	6,026
Biological sciences .....	19,240	19,777	20,304	22,101	23,993	26,869	28,715	28,476	29,621	29,807	31,049	33,427	35,872
Earth, atmospheric, and ocean sciences	3,895	3,925	3,776	3,854	4,451	5,026	5,434	5,416	5,725	5,753	5,892	6,247	6,555
Atmospheric sciences.....	130	157	168	178	190	225	237	263	242	268	298	333	374
Earth sciences .....	2,507	2,482	2,157	1,954	1,998	2,094	2,283	2,296	2,400	2,455	2,483	2,613	2,764
Oceanography .....	566	610	638	730	852	1,016	1,107	1,055	1,222	1,267	1,255	1,309	1,392
Other geosciences.....	692	676	813	992	1,411	1,691	1,807	1,802	1,861	1,763	1,856	1,992	2,025
Mathematics/computer sciences	11,814	12,915	13,611	13,973	14,588	15,069	14,391	15,749	18,588	19,860	21,572	22,911	22,080
Computer sciences.....	6,614	7,561	8,015	7,988	8,290	8,431	8,133	9,881	12,545	14,080	15,302	16,025	14,791
Mathematics/statistics.....	5,200	5,354	5,596	5,985	6,298	6,638	6,258	5,868	6,043	5,780	6,270	6,886	7,289
Medical/other life sciences.....	33,001	35,184	36,389	39,881	45,485	53,290	60,125	60,700	62,185	60,723	61,033	64,782	70,192
Medical sciences.....	5,869	6,642	6,868	7,742	8,658	10,257	11,304	11,269	13,176	13,067	13,876	15,867	17,914
Other life sciences .....	27,132	28,542	29,521	32,139	36,827	43,033	48,821	49,431	49,009	47,656	47,157	48,915	52,278
Physical sciences.....	5,883	6,509	7,117	7,805	8,568	9,206	9,085	8,848	8,915	9,115	9,336	10,066	10,778
Astronomy .....	92	108	118	140	172	198	223	208	225	267	265	302	345
Chemistry .....	4,512	4,789	5,178	5,670	6,262	6,852	6,828	6,722	6,617	6,756	6,855	7,325	7,839
Physics.....	1,201	1,497	1,673	1,868	1,980	1,976	1,835	1,744	1,876	1,910	2,042	2,201	2,366
Other physical sciences .....	78	115	148	127	154	180	199	174	197	182	174	238	228
Social/behavioral sciences .....	52,640	53,335	56,350	61,294	69,864	78,433	79,973	80,096	80,611	80,110	81,981	85,373	89,213
Psychology .....	24,257	25,124	26,929	29,855	34,787	37,990	37,764	37,619	37,271	36,872	37,318	37,728	38,668
Social sciences.....	28,383	28,211	29,421	31,439	35,077	40,443	42,209	42,477	43,340	43,238	44,663	47,645	50,545
Anthropology .....	3,206	3,121	3,353	3,580	3,953	4,392	4,553	4,501	4,644	4,685	4,562	4,617	4,864
Economics.....	3,621	3,564	3,518	3,824	4,195	4,606	4,659	4,200	4,214	4,554	4,830	5,112	5,395
History of science .....	92	92	96	112	132	142	139	162	212	219	244	301	287
Linguistics .....	1,805	1,857	1,977	1,952	1,913	2,020	2,000	2,017	1,833	1,744	1,793	1,891	2,005
Political science/public administration	10,493	10,345	10,866	12,170	13,736	15,756	15,950	15,404	15,573	15,927	16,501	18,619	19,830
Sociology.....	4,299	4,037	4,352	4,565	5,101	6,080	6,337	6,393	6,209	6,043	6,232	6,221	6,407
Other social sciences.....	4,867	5,195	5,259	5,236	6,047	7,447	8,571	9,800	10,655	10,066	10,501	10,884	11,757

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Science and Engineering Indicators 2006

**S&E graduate enrollment, by field, citizenship, and race/ethnicity: Selected years, 1983–2003**

Field, citizenship, and race/ethnicity	1983	1985	1987	1989	1991	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003
S&E .....	390,432	404,021	421,497	434,478	471,212	504,304	499,640	494,079	487,208	485,627	493,256	493,311	509,620	540,513	566,835
Engineering .....	91,146	96,018	103,983	104,065	113,535	116,872	107,201	103,224	101,148	100,038	101,691	104,112	109,493	119,668	127,375
Aerospace .....	2,305	2,538	3,015	3,524	4,120	3,940	3,343	3,208	3,083	3,137	3,349	3,407	3,451	3,685	4,048
Chemical .....	7,590	7,177	7,141	6,482	7,157	7,554	7,452	7,408	7,288	7,093	6,883	7,056	6,913	7,414	7,516
Civil .....	14,910	14,902	14,682	14,909	17,398	19,583	19,218	18,528	17,193	16,517	16,226	16,451	16,665	17,713	18,838
Electrical .....	25,295	28,203	31,399	33,257	35,111	35,290	30,861	29,941	30,787	31,384	31,822	33,611	36,100	39,948	41,745
Industrial .....	9,247	10,525	12,353	11,333	12,996	13,905	13,475	12,675	11,957	11,221	11,803	12,119	12,940	14,033	14,295
Materials .....	3,477	3,959	4,397	4,635	5,203	5,410	4,956	4,747	4,688	4,680	4,481	4,377	4,721	4,992	5,154
Mechanical .....	12,911	14,157	16,366	16,265	17,730	18,477	16,363	15,509	15,045	14,696	14,956	15,235	15,852	17,139	18,440
Other .....	15,411	14,557	14,630	13,660	13,820	12,713	11,533	11,208	11,107	11,310	12,171	11,856	12,851	14,744	17,339
Science .....	299,286	308,003	317,514	330,413	357,677	387,432	392,439	390,855	386,060	385,589	391,565	389,199	400,127	420,845	439,460
Natural sciences .....	187,044	197,318	203,637	210,734	225,574	244,098	249,363	249,098	246,849	248,979	254,854	255,406	263,978	279,465	292,609
Agricultural sciences .....	12,728	11,846	11,405	11,461	11,766	12,305	12,768	12,301	12,203	12,168	12,312	12,023	12,235	12,698	13,197
Biological sciences .....	45,253	45,709	46,317	48,449	51,365	55,950	58,344	57,749	56,705	56,695	56,959	56,282	57,639	61,133	64,684
Earth, atmospheric, and ocean sciences .....	15,443	15,414	14,357	13,630	14,466	15,721	15,716	15,183	14,548	14,258	14,083	13,941	13,841	14,240	14,655
Atmospheric sciences .....	896	964	952	912	968	1,112	1,072	1,086	1,092	965	913	963	924	1,036	1,150
Earth sciences .....	10,311	10,288	8,976	8,032	7,544	7,759	7,582	7,304	6,959	6,687	6,637	6,596	6,544	6,712	6,889
Oceanography .....	2,063	2,081	2,135	2,214	2,395	2,627	2,723	2,615	2,479	2,562	2,624	2,668	2,585	2,618	2,695
Other geosciences .....	2,173	2,081	2,294	2,472	3,559	4,223	4,339	4,178	4,018	4,044	3,909	3,714	3,788	3,874	3,921
Mathematics/computer sciences .....	40,691	47,332	50,559	51,729	54,633	56,213	51,962	52,634	52,710	54,512	58,735	63,000	68,847	73,432	73,143
Computer sciences .....	23,333	29,769	32,051	32,482	34,681	36,213	33,458	34,626	35,991	38,027	42,478	47,350	52,196	55,269	53,678
Mathematics/statistics .....	17,358	17,563	18,508	19,247	19,952	20,000	18,504	18,008	16,719	16,485	16,257	15,650	16,651	18,163	19,465
Medical/other life sciences .....	43,466	46,030	48,258	51,836	58,620	68,581	77,174	78,898	79,578	80,771	82,074	79,775	80,378	85,621	92,632
Medical sciences .....	12,414	13,276	14,256	14,914	16,702	19,224	20,659	20,594	20,895	22,331	23,479	22,815	24,012	26,921	29,944
Other life sciences .....	31,052	32,754	34,002	36,922	41,918	49,357	56,515	58,304	58,683	58,440	58,595	56,960	56,366	58,700	62,688
Physical sciences .....	29,463	30,987	32,741	33,629	34,724	35,328	33,399	32,333	31,105	30,575	30,691	30,385	31,038	32,341	34,298
Astronomy .....	618	671	719	789	829	880	912	874	778	820	832	888	916	990	1,080
Chemistry .....	17,802	18,305	18,827	18,828	19,407	20,131	19,570	19,334	18,774	18,482	18,416	18,105	18,366	19,045	20,049
Physics .....	10,806	11,672	12,807	13,657	14,081	13,841	12,425	11,728	11,147	10,809	10,869	10,841	11,248	11,701	12,555
Other physical sciences .....	237	339	388	355	407	476	492	397	406	464	574	551	508	605	614
Social/behavioral sciences .....	112,242	110,685	113,877	119,679	132,103	143,334	143,076	141,757	139,211	136,610	136,711	133,793	136,149	141,380	146,851
Psychology .....	40,905	40,721	42,612	45,528	51,343	54,557	53,641	53,122	53,126	52,557	51,727	50,466	50,467	51,165	52,025
Social sciences .....	71,337	69,964	71,265	74,151	80,760	88,777	89,435	88,635	86,085	84,053	84,984	83,327	85,682	90,215	94,826
Anthropology .....	5,644	5,631	5,835	6,128	6,731	7,361	7,693	7,773	7,560	7,577	7,633	7,626	7,491	7,481	7,806
Economics .....	15,224	14,698	14,201	14,415	15,071	15,629	15,011	14,197	13,140	12,696	12,576	12,827	13,569	14,196	14,603
History of science .....	253	272	294	304	337	369	401	409	443	508	557	532	571	663	677
Linguistics .....	3,022	3,055	3,282	3,286	3,425	3,321	3,194	3,156	3,068	2,935	2,799	2,674	2,744	2,875	3,028
Political science/public administration .....	27,417	26,621	27,429	29,194	31,707	35,076	34,298	33,252	32,083	30,828	31,372	31,131	31,805	34,934	36,855
Sociology .....	8,149	7,620	7,968	8,393	9,292	10,360	10,505	10,348	10,361	9,915	9,707	9,397	9,620	9,665	9,900
Other social sciences .....	11,628	12,067	12,256	12,431	14,197	16,661	18,333	19,500	19,430	19,594	20,340	19,140	19,882	20,401	21,957
U.S. citizen/permanent resident .....															
S&E .....	317,185	324,081	329,350	332,503	358,025	393,985	396,755	391,095	383,327	378,560	377,802	364,954	368,840	387,628	412,467
Engineering .....	63,649	67,187	70,594	67,365	72,181	77,577	71,717	68,168	64,642	62,249	60,188	56,711	56,971	61,362	67,554
Aerospace .....	1,506	1,729	2,144	2,431	2,892	2,739	2,157	1,935	1,765	1,720	1,817	1,894	1,805	1,999	2,361
Chemical .....	5,071	4,747	4,643	3,681	3,956	4,369	4,483	4,521	4,424	4,208	3,869	3,726	3,418	3,701	3,752

**S&E graduate enrollment, by field, citizenship, and race/ethnicity: Selected years, 1983–2003**

Field, citizenship, and race/ethnicity	1983	1985	1987	1989	1991	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003
Civil .....	9,680	9,515	9,095	9,074	10,854	13,299	13,559	13,263	12,090	11,555	10,801	10,306	10,072	10,553	11,439
Electrical .....	17,675	19,760	21,282	22,109	22,297	22,839	19,585	18,489	18,032	17,459	16,517	15,315	15,534	16,579	18,098
Industrial .....	7,537	8,578	9,734	8,392	9,190	10,428	10,123	9,349	8,616	7,869	8,073	7,574	7,607	8,318	8,877
Materials .....	2,229	2,590	2,704	2,687	3,027	3,237	3,029	2,827	2,721	2,670	2,438	2,265	2,385	2,482	2,561
Mechanical .....	8,313	9,370	10,855	10,450	11,056	12,199	10,905	10,026	9,351	9,046	8,760	8,097	8,183	8,604	9,638
Other .....	11,638	10,898	10,137	8,541	8,909	8,467	7,876	7,758	7,643	7,722	7,913	7,534	7,967	9,126	10,828
Science .....	253,536	256,894	258,756	265,138	285,844	316,408	325,038	322,927	318,685	316,311	317,614	308,243	311,869	326,266	344,913
Natural sciences .....	155,380	161,021	160,976	162,407	171,451	190,145	198,753	198,278	196,206	196,819	198,867	193,036	195,259	205,805	219,465
Agricultural sciences .....	9,868	9,096	8,401	8,422	8,466	9,083	9,567	9,283	9,414	9,514	9,774	9,612	9,722	10,085	10,619
Biological sciences .....	39,370	38,961	37,768	37,795	39,001	43,175	46,276	46,377	45,641	45,359	45,770	44,521	45,205	47,307	49,914
Earth, atmospheric, and ocean sciences .....	13,597	13,549	12,167	11,055	11,569	12,713	12,769	12,417	12,033	11,759	11,563	11,249	11,059	11,472	11,892
Atmospheric sciences .....	705	755	713	663	658	815	806	803	801	710	639	659	639	730	882
Earth sciences .....	9,301	9,263	7,763	6,628	6,010	6,088	6,039	5,847	5,666	5,443	5,413	5,294	5,189	5,333	5,456
Oceanography .....	1,661	1,736	1,731	1,651	1,785	2,037	2,102	2,058	1,972	2,029	2,108	2,142	2,071	2,152	2,206
Other geosciences .....	1,930	1,795	1,960	2,113	3,116	3,773	3,822	3,709	3,594	3,577	3,403	3,154	3,160	3,257	3,348
Mathematics/computer sciences .....	30,285	34,490	35,653	35,352	36,375	38,170	35,358	35,026	34,249	34,669	35,653	34,681	36,309	39,342	41,679
Computer sciences .....	17,880	22,272	23,274	22,788	23,057	24,304	22,663	22,779	23,074	23,605	25,323	25,088	26,142	28,203	29,535
Mathematics/statistics .....	12,405	12,218	12,379	12,564	13,318	13,866	12,695	12,247	11,175	11,064	10,330	9,593	10,167	11,139	12,144
Medical/other life sciences .....	40,422	42,880	44,874	47,927	54,041	63,928	72,793	74,020	74,659	75,681	76,548	74,243	74,129	78,348	85,135
Medical sciences .....	10,322	11,002	11,769	12,051	13,305	15,827	17,522	17,082	17,440	18,734	19,646	19,090	19,784	21,853	24,768
Other life sciences .....	30,100	31,878	33,105	35,876	40,736	48,101	55,271	56,938	57,219	56,947	56,902	55,153	54,345	56,495	60,367
Physical sciences .....	21,838	22,045	22,113	21,856	21,999	23,076	21,990	21,155	20,210	19,837	19,559	18,730	18,835	19,251	20,226
Astronomy .....	510	517	537	625	612	663	680	658	593	607	593	617	633	687	747
Chemistry .....	13,992	13,934	13,528	12,721	12,509	13,456	13,156	13,059	12,662	12,457	12,331	11,883	11,797	11,792	12,210
Physics .....	7,120	7,278	7,692	8,188	8,511	8,557	7,745	7,098	6,608	6,379	6,140	5,757	5,991	6,259	6,757
Other physical sciences .....	216	316	356	322	367	400	409	340	347	394	495	473	414	513	512
Social/behavioral sciences .....	98,156	95,873	97,780	102,731	114,393	126,263	126,285	124,649	122,479	119,492	118,747	115,207	116,610	120,461	125,448
Psychology .....	39,472	39,229	41,073	43,897	49,355	52,676	51,554	51,149	51,118	50,371	49,488	48,203	47,946	48,308	48,845
Social sciences .....	58,684	56,644	56,707	58,834	65,038	73,587	74,731	73,500	71,361	69,121	69,259	67,004	68,664	72,153	76,603
Anthropology .....	5,163	5,090	5,173	5,365	5,907	6,561	6,999	7,083	6,858	6,838	6,810	6,797	6,722	6,634	6,957
Economics .....	10,202	9,234	8,493	8,182	8,589	9,204	8,624	7,776	6,837	6,552	6,118	6,006	6,233	6,530	6,944
History of science .....	212	217	251	264	286	314	355	359	376	441	498	463	501	595	616
Linguistics .....	2,083	1,983	2,179	2,109	2,166	2,260	2,197	2,154	2,086	1,912	1,837	1,714	1,782	1,893	2,065
Political science/public administration .....	24,076	23,446	23,712	25,648	28,099	31,545	30,920	29,709	28,657	27,276	27,453	26,972	27,582	30,280	31,978
Sociology .....	6,667	6,044	6,267	6,589	7,570	8,809	9,209	9,130	9,107	8,696	8,449	8,065	8,228	8,275	8,485
Other social sciences .....	10,281	10,630	10,632	10,677	12,421	14,894	16,427	17,289	17,440	17,406	18,094	16,987	17,616	17,946	19,558
White S&E .....	259,261	259,332	266,111	269,670	288,765	309,131	304,438	297,164	286,607	279,450	275,325	261,112	260,380	270,085	282,768
Engineering .....	48,626	50,159	53,818	51,503	54,738	57,415	51,931	49,089	46,093	44,098	42,063	39,083	38,459	40,559	43,437
Aerospace .....	1,121	1,342	1,631	2,015	2,196	2,071	1,774	1,577	1,440	1,391	1,437	1,451	1,434	1,512	1,747
Chemical .....	4,279	3,883	3,844	3,107	3,157	3,407	3,429	3,394	3,365	3,124	2,805	2,627	2,417	2,565	2,554
Civil .....	7,564	7,327	7,066	7,337	8,684	10,415	10,434	9,983	9,208	8,665	8,088	7,759	7,492	7,707	8,316
Electrical .....	12,107	13,461	14,922	15,818	15,508	15,606	12,630	11,759	11,092	10,729	9,897	8,982	8,876	9,121	9,700

**S&E graduate enrollment, by field, citizenship, and race/ethnicity: Selected years, 1983–2003**

Field, citizenship, and race/ethnicity	1983	1985	1987	1989	1991	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003
Industrial.....	6,279	7,055	8,021	6,731	7,275	7,681	7,262	6,864	6,391	5,764	5,761	5,329	5,255	5,668	5,679
Materials .....	1,886	2,108	2,276	2,226	2,533	2,575	2,402	2,261	2,019	2,079	1,935	1,751	1,839	1,882	1,923
Mechanical .....	6,788	7,159	7,984	7,633	8,416	9,029	8,059	7,461	6,979	6,657	6,491	6,005	5,932	6,254	6,847
Other .....	8,602	7,824	8,074	6,636	6,969	6,631	5,941	5,790	5,599	5,689	5,649	5,179	5,214	5,850	6,671
Science.....	210,635	209,173	212,293	218,167	234,027	251,716	252,507	248,075	240,514	235,352	233,262	222,029	221,921	229,526	239,331
Natural sciences .....	132,716	133,142	133,184	134,647	141,586	152,198	156,251	154,536	149,950	148,560	148,357	142,528	141,957	148,299	155,893
Agricultural sciences.....	8,926	8,062	7,627	7,460	7,628	7,977	8,233	7,983	7,990	8,093	8,383	8,152	8,147	8,486	8,740
Biological sciences .....	34,451	33,741	32,370	32,107	32,823	34,819	36,279	36,116	34,778	34,323	34,319	33,255	33,193	34,586	35,787
Earth, atmospheric, and ocean sciences.....	12,238	11,756	10,912	10,126	10,519	11,076	11,245	10,873	10,402	10,098	10,007	9,812	9,573	9,799	9,995
Atmospheric sciences.....	597	708	657	594	589	714	691	709	657	601	552	557	547	623	713
Earth sciences .....	8,489	7,912	7,081	6,109	5,492	5,365	5,388	5,212	4,989	4,776	4,796	4,720	4,603	4,639	4,691
Oceanography .....	1,422	1,507	1,431	1,473	1,556	1,711	1,825	1,752	1,699	1,732	1,815	1,872	1,769	1,845	1,871
Other geosciences.....	1,730	1,629	1,743	1,950	2,882	3,286	3,341	3,200	3,057	2,989	2,844	2,663	2,654	2,692	2,720
Mathematics/computer sciences ...	23,802	25,511	26,806	26,560	26,984	27,376	24,427	23,675	22,413	22,045	22,036	21,423	22,443	23,885	25,614
Computer sciences.....	13,543	15,724	17,156	16,496	16,527	16,804	14,773	14,479	14,062	13,948	14,377	14,468	15,057	15,962	17,199
Mathematics/statistics.....	10,259	9,787	9,650	10,064	10,457	10,572	9,654	9,196	8,351	8,097	7,659	6,955	7,386	7,923	8,415
Medical/other life sciences .....	34,643	35,744	37,370	40,065	45,218	52,359	58,581	59,132	58,600	58,783	58,575	55,543	54,353	56,923	60,650
Medical sciences .....	8,351	8,769	9,154	9,195	10,077	11,546	12,372	11,967	11,915	12,456	12,763	12,017	12,492	14,364	15,846
Other life sciences.....	26,292	26,975	28,216	30,870	35,141	40,813	46,209	47,165	46,685	46,327	45,812	43,526	41,861	42,559	44,804
Physical sciences .....	18,656	18,328	18,099	18,329	18,414	18,591	17,486	16,757	15,767	15,218	15,037	14,343	14,248	14,620	15,107
Astronomy .....	461	472	486	553	544	580	577	570	514	507	511	523	527	570	610
Chemistry.....	11,746	11,378	10,763	10,498	10,414	10,687	10,297	10,203	9,712	9,484	9,394	9,028	8,977	8,926	8,955
Physics.....	6,272	6,227	6,561	7,003	7,164	7,005	6,250	5,696	5,268	4,967	4,840	4,514	4,485	4,789	5,209
Other physical sciences.....	177	251	289	275	292	319	362	288	273	260	292	278	259	335	333
Social/behavioral sciences.....	77,919	76,031	79,109	83,520	92,441	99,518	96,256	93,539	90,564	86,792	84,905	79,501	79,964	81,227	83,438
Psychology .....	32,716	32,757	34,785	37,227	40,990	42,662	40,146	39,327	38,724	37,622	36,267	33,801	33,578	33,473	33,409
Social sciences.....	45,203	43,274	44,324	46,293	51,451	56,856	56,110	54,212	51,840	49,170	48,638	45,700	46,386	47,754	50,029
Anthropology .....	4,559	4,553	4,448	4,631	5,116	5,581	5,815	5,867	5,641	5,549	5,440	5,311	5,190	5,153	5,311
Economics.....	8,287	7,166	6,674	6,527	6,832	7,173	6,691	5,934	5,107	4,688	4,476	4,314	4,392	4,481	4,744
History of science.....	208	210	223	227	269	294	317	312	303	380	424	386	414	426	467
Linguistics.....	1,743	1,672	1,720	1,670	1,697	1,770	1,688	1,689	1,518	1,404	1,375	1,237	1,293	1,335	1,418
Political science/ public administration.....	17,089	16,772	18,132	19,529	21,657	24,044	22,413	20,955	19,984	18,526	18,317	17,401	17,635	18,785	19,504
Sociology.....	5,361	4,796	4,833	5,233	5,944	6,552	6,673	6,601	6,446	5,978	5,796	5,445	5,590	5,549	5,602
Other social sciences.....	7,956	8,105	8,294	8,476	9,936	11,442	12,513	12,854	12,841	12,645	12,810	11,606	11,872	12,025	12,983
Asian/Pacific Islander S&E .....	10,333	12,954	15,669	17,109	20,060	26,853	29,361	29,926	30,371	31,615	32,717	30,250	32,035	35,041	38,940
Engineering.....	3,406	4,805	5,850	6,020	7,111	8,996	9,018	8,440	8,133	8,012	8,161	7,274	8,007	9,384	10,908
Aerospace.....	64	84	109	143	196	224	177	159	153	140	153	206	138	186	207
Chemical .....	311	277	349	244	399	461	458	482	512	469	486	501	494	566	556
Civil .....	443	436	582	597	837	1,167	1,322	1,254	1,050	1,104	931	744	771	855	1,024
Electrical.....	1,171	1,966	2,453	2,703	3,021	3,746	3,712	3,548	3,489	3,443	3,491	3,119	3,454	4,079	4,600
Industrial.....	218	326	442	455	596	883	855	750	739	643	784	628	686	878	1,057
Materials .....	152	219	241	276	260	336	311	272	295	272	240	246	244	298	316



**S&E graduate enrollment, by field, citizenship, and race/ethnicity: Selected years, 1983–2003**

Field, citizenship, and race/ethnicity	1983	1985	1987	1989	1991	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003
Mechanical .....	425	794	883	824	985	1,307	1,225	1,073	947	973	1,008	804	945	912	1,027
Other .....	622	703	791	778	817	872	958	902	948	968	1,068	1,026	1,275	1,610	2,121
Science.....	6,927	8,149	9,819	11,089	12,949	17,857	20,343	21,486	22,238	23,603	24,556	22,976	24,028	25,657	28,032
Natural sciences .....	5,030	6,159	7,383	8,442	9,920	13,532	15,402	16,389	16,879	18,220	19,161	17,843	18,634	19,746	21,432
Agricultural sciences.....	144	139	172	228	227	282	282	291	309	315	310	250	262	286	326
Biological sciences.....	1,249	1,440	1,642	1,972	2,333	3,433	4,298	4,458	4,479	4,439	4,476	4,246	4,710	4,855	5,210
Earth, atmospheric, and ocean sciences.....	240	194	179	207	267	462	419	409	417	424	400	351	341	355	375
Atmospheric sciences.....	10	25	37	45	28	55	69	52	56	55	41	41	26	31	67
Earth sciences.....	119	110	68	95	136	217	151	145	166	153	144	132	139	149	126
Oceanography.....	87	27	44	31	37	66	83	80	60	62	67	64	51	64	48
Other geosciences.....	24	32	30	36	66	124	116	132	135	154	148	114	125	111	134
Mathematics/computer sciences ...	1,666	2,491	3,235	3,430	3,729	4,577	5,164	5,489	5,677	6,393	7,146	6,280	6,412	7,137	7,402
Computer sciences.....	1,102	1,868	2,466	2,727	2,863	3,557	4,043	4,266	4,626	5,219	6,144	5,332	5,427	5,953	5,956
Mathematics/statistics.....	564	623	769	703	866	1,020	1,121	1,223	1,051	1,174	1,002	948	985	1,184	1,446
Medical/other life sciences .....	946	958	1,108	1,430	1,935	2,805	3,459	3,997	4,359	4,889	5,147	5,192	5,451	5,689	6,490
Medical sciences.....	454	451	555	655	965	1,458	1,729	1,957	2,074	2,400	2,490	2,437	2,495	2,506	2,949
Other life sciences.....	492	507	553	775	970	1,347	1,730	2,040	2,285	2,489	2,657	2,755	2,956	3,183	3,541
Physical sciences .....	785	937	1,047	1,175	1,429	1,973	1,780	1,745	1,638	1,760	1,682	1,524	1,458	1,424	1,629
Astronomy.....	7	6	14	36	30	24	30	38	39	32	31	33	36	44	53
Chemistry.....	564	660	715	680	820	1,186	1,122	1,144	1,106	1,179	1,133	1,079	983	950	1,103
Physics.....	207	265	304	452	557	732	611	542	467	528	490	393	422	405	441
Other physical sciences.....	7	6	14	7	22	31	17	21	26	21	28	19	17	25	32
Social/behavioral sciences.....	1,897	1,990	2,436	2,647	3,029	4,325	4,941	5,097	5,359	5,383	5,395	5,133	5,394	5,911	6,600
Psychology .....	531	559	727	817	1,040	1,470	1,598	1,757	1,909	2,019	2,038	2,063	2,176	2,186	2,384
Social sciences.....	1,366	1,431	1,709	1,830	1,989	2,855	3,343	3,340	3,450	3,364	3,357	3,070	3,218	3,725	4,216
Anthropology .....	67	53	98	109	117	172	208	242	236	241	256	260	253	252	281
Economics.....	339	314	414	427	424	639	646	589	601	665	650	506	524	623	728
History of science.....	1	3	10	15	7	12	14	18	21	22	20	20	21	28	29
Linguistics.....	51	45	109	83	91	139	179	181	212	187	148	106	154	183	215
Political science/ public administration.....	547	676	651	710	810	1,025	1,227	1,155	1,264	1,180	1,163	1,206	1,225	1,489	1,622
Sociology.....	168	155	191	212	220	343	434	451	420	414	406	367	374	387	456
Other social sciences.....	193	185	236	274	320	525	635	704	696	655	714	605	667	763	885
Black															
S&E .....	12,775	12,405	12,409	14,034	16,406	20,433	22,148	22,972	23,560	24,261	25,200	25,928	27,075	28,729	31,207
Engineering.....	1,378	1,387	1,416	1,616	2,025	2,561	2,857	2,899	2,879	2,821	2,965	2,977	2,915	3,074	3,212
Aerospace.....	15	24	25	27	44	56	51	47	35	34	52	57	45	51	59
Chemical .....	88	71	87	79	119	160	175	191	172	185	147	168	167	160	173
Civil .....	170	182	160	244	279	393	471	491	443	410	450	448	431	453	427
Electrical.....	365	455	422	564	669	864	821	778	874	874	886	830	812	846	812
Industrial.....	308	234	276	264	394	451	541	535	489	465	541	557	591	616	685
Materials .....	38	33	24	37	57	75	88	104	112	75	92	94	107	112	111
Mechanical .....	135	161	187	200	246	336	403	417	428	412	375	396	354	358	382
Other .....	259	227	235	201	217	226	307	336	326	366	422	427	408	478	563

**S&E graduate enrollment, by field, citizenship, and race/ethnicity: Selected years, 1983–2003**

Field, citizenship, and race/ethnicity	1983	1985	1987	1989	1991	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003
Science.....	11,397	11,018	10,993	12,418	14,381	17,872	19,291	20,073	20,681	21,440	22,235	22,951	24,160	25,655	27,995
Natural sciences.....	4,784	4,966	5,009	5,663	6,633	8,233	8,998	9,376	9,724	10,178	10,650	10,849	11,695	12,594	14,109
Agricultural sciences.....	132	138	133	160	157	268	308	304	288	344	310	292	327	375	462
Biological sciences.....	1,158	1,181	1,053	1,203	1,296	1,701	1,871	1,974	2,105	2,141	2,218	2,241	2,351	2,480	2,762
Earth, atmospheric, and ocean sciences.....	114	127	93	95	140	223	215	219	203	202	213	220	227	266	270
Atmospheric sciences.....	9	7	2	7	6	13	18	15	12	8	7	18	19	25	32
Earth sciences.....	61	70	49	43	54	65	67	70	56	59	62	56	57	64	75
Oceanography.....	21	18	14	21	24	30	34	33	26	25	28	28	31	36	35
Other geosciences.....	23	32	28	24	56	115	96	101	109	110	116	118	120	141	128
Mathematics/computer sciences ...	971	1,031	1,210	1,311	1,617	1,877	1,844	1,987	1,957	1,968	2,079	2,084	2,299	2,524	2,603
Computer sciences.....	568	622	769	848	1,093	1,167	1,155	1,276	1,300	1,355	1,485	1,512	1,709	1,898	1,945
Mathematics/statistics.....	403	409	441	463	524	710	689	711	657	613	594	572	590	626	658
Medical/other life sciences.....	1,834	1,954	1,984	2,261	2,723	3,320	3,863	3,906	4,219	4,610	4,927	5,094	5,616	6,056	7,073
Medical sciences.....	430	509	558	568	818	1,034	1,179	1,182	1,239	1,602	1,728	1,780	1,829	1,964	2,423
Other life sciences.....	1,404	1,445	1,426	1,693	1,905	2,286	2,684	2,724	2,980	3,008	3,199	3,314	3,787	4,092	4,650
Physical sciences.....	575	535	536	633	700	844	897	986	952	913	903	918	875	893	939
Astronomy.....	7	6	6	6	11	12	11	14	11	9	9	9	12	10	9
Chemistry.....	439	381	374	440	477	594	624	679	667	635	633	650	631	636	663
Physics.....	107	121	136	173	189	211	248	280	245	242	234	235	211	220	236
Other physical sciences.....	22	27	20	14	23	27	14	13	29	27	27	24	21	27	31
Social/behavioral sciences.....	6,613	6,052	5,984	6,755	7,748	9,639	10,293	10,697	10,957	11,262	11,585	12,102	12,465	13,061	13,886
Psychology.....	1,880	1,790	1,794	2,061	2,455	3,284	3,359	3,452	3,644	3,813	3,749	4,214	4,347	4,491	4,670
Social sciences.....	4,733	4,262	4,190	4,694	5,293	6,355	6,934	7,245	7,313	7,449	7,836	7,888	8,118	8,570	9,216
Anthropology.....	82	95	101	116	132	176	215	251	254	266	291	270	274	248	275
Economics.....	419	392	379	359	365	482	468	433	389	387	375	397	390	405	439
History of science.....	3	2	5	3	5	4	8	10	8	12	14	14	16	24	24
Linguistics.....	72	119	142	151	145	63	51	43	45	46	49	44	47	44	49
Political science/ public administration.....	2,660	2,143	2,133	2,500	2,831	3,258	3,552	3,627	3,699	3,795	4,097	4,073	4,264	4,632	4,847
Sociology.....	620	580	557	598	752	985	1,096	1,137	1,161	1,213	1,159	1,098	1,132	1,132	1,201
Other social sciences.....	877	931	873	967	1,063	1,387	1,544	1,744	1,757	1,730	1,851	1,992	1,995	2,085	2,381
Hispanic															
S&E.....	10,233	10,138	10,533	11,205	13,053	16,050	17,237	17,742	18,154	18,765	20,322	21,327	22,329	24,288	26,699
Engineering.....	1,441	1,481	1,730	1,707	2,124	2,696	2,808	2,936	2,812	2,900	2,924	3,018	3,183	3,461	3,976
Aerospace.....	28	33	37	49	54	70	65	62	71	76	80	80	71	92	119
Chemical.....	89	107	117	111	159	181	202	200	142	179	182	182	180	206	249
Civil.....	268	251	263	275	383	550	593	712	694	723	701	776	747	778	845
Electrical.....	394	443	521	558	661	842	785	793	810	812	769	717	825	941	1,093
Industrial.....	224	254	286	242	257	337	386	421	396	364	426	439	469	477	561
Materials.....	54	37	49	53	56	76	102	89	86	84	75	84	80	79	97
Mechanical.....	125	181	282	214	338	382	422	383	360	389	388	366	407	450	537
Other.....	259	175	175	205	216	258	253	276	253	273	303	374	404	438	475
Science.....	8,792	8,657	8,803	9,498	10,929	13,354	14,429	14,806	15,342	15,865	17,398	18,309	19,146	20,827	22,723
Natural sciences.....	3,957	4,367	4,598	5,003	5,540	6,853	7,399	7,637	7,899	8,132	9,016	9,269	9,787	10,585	12,064

**S&E graduate enrollment, by field, citizenship, and race/ethnicity: Selected years, 1983–2003**

Field, citizenship, and race/ethnicity	1983	1985	1987	1989	1991	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003
Agricultural sciences.....	229	322	222	299	279	309	292	376	411	391	422	440	425	406	496
Biological sciences .....	903	933	1,030	1,196	1,369	1,647	1,822	1,849	1,987	2,053	2,185	2,183	2,338	2,590	2,849
Earth, atmospheric, and ocean sciences.....	224	238	227	208	250	370	365	374	399	370	400	355	397	413	484
Atmospheric sciences.....	10	11	10	8	24	15	10	11	12	13	7	12	15	16	21
Earth sciences.....	86	105	99	109	116	160	152	141	161	137	154	136	155	163	187
Oceanography .....	116	98	90	68	59	102	99	106	116	108	132	113	137	131	158
Other geosciences.....	12	24	28	23	51	93	104	116	110	112	107	94	90	103	118
Mathematics/computer sciences ...	615	750	817	847	980	1,110	1,064	1,125	1,150	1,208	1,312	1,323	1,376	1,546	1,703
Computer sciences.....	285	488	551	542	631	695	664	700	723	754	865	863	894	1,004	1,099
Mathematics/statistics.....	330	262	266	305	349	415	400	425	427	454	447	460	482	542	604
Medical/other life sciences .....	1,423	1,525	1,711	1,772	2,013	2,670	3,125	3,171	3,170	3,278	3,802	4,124	4,355	4,649	5,435
Medical sciences.....	463	450	539	617	769	1,051	1,125	1,110	1,055	1,147	1,493	1,533	1,734	1,671	1,876
Other life sciences.....	960	1,075	1,172	1,155	1,244	1,619	2,000	2,061	2,115	2,131	2,309	2,591	2,621	2,978	3,559
Physical sciences .....	563	599	591	681	649	747	731	742	782	832	895	844	896	981	1,097
Astronomy .....	7	7	8	13	11	13	16	13	11	12	13	17	17	17	25
Chemistry.....	403	438	419	464	398	472	485	504	523	562	618	602	629	668	750
Physics.....	150	151	159	195	233	252	219	216	237	226	229	202	239	274	300
Other physical sciences.....	3	3	5	9	7	10	11	9	11	32	35	23	11	22	22
Social/behavioral sciences.....	4,835	4,290	4,205	4,495	5,389	6,501	7,030	7,169	7,443	7,733	8,382	9,040	9,359	10,242	10,659
Psychology .....	1,814	1,611	1,665	1,751	2,365	2,562	2,799	2,937	3,075	3,228	3,567	4,145	4,309	4,655	4,682
Social sciences.....	3,021	2,679	2,540	2,744	3,024	3,939	4,231	4,232	4,368	4,505	4,815	4,895	5,050	5,587	5,977
Anthropology .....	132	151	152	162	207	248	345	336	338	344	327	368	383	409	435
Economics.....	341	315	292	305	336	391	419	370	330	318	283	277	346	362	411
History of science.....	0	2	3	3	4	3	4	8	10	12	22	17	18	55	38
Linguistics.....	109	68	93	128	132	165	138	131	157	150	135	142	126	140	136
Political science/ public administration.....	1,753	1,445	1,254	1,390	1,453	1,902	1,927	1,895	1,926	1,989	2,166	2,303	2,223	2,587	2,746
Sociology.....	275	231	249	276	353	485	531	546	625	643	674	634	636	686	709
Other social sciences.....	411	467	497	480	539	745	867	946	982	1,049	1,208	1,154	1,318	1,348	1,502
American Indian/Alaska Native S&E .....	1,091	871	943	1,068	1,365	1,605	1,856	1,906	1,969	2,036	1,994	2,021	2,136	2,241	2,392
Engineering.....	180	122	123	122	184	209	230	234	239	236	242	208	227	244	304
Aerospace Engineering.....	1	2	5	5	5	8	8	5	3	7	8	8	8	11	15
Chemical .....	11	8	26	10	22	14	21	31	18	21	16	20	13	21	19
Civil .....	23	16	9	22	34	43	42	48	58	43	56	39	43	58	65
Electrical.....	48	30	18	37	38	43	51	50	46	33	47	37	45	39	63
Industrial.....	16	11	24	15	39	36	24	22	23	34	39	41	43	34	52
Materials .....	27	6	2	5	3	4	8	8	11	33	10	5	8	11	8
Mechanical .....	19	25	23	13	21	30	44	35	35	25	33	27	32	32	42
Other .....	35	24	16	15	22	31	32	35	45	40	33	31	35	38	40
Science.....	911	749	820	946	1,181	1,396	1,626	1,672	1,730	1,800	1,752	1,813	1,909	1,997	2,088
Natural sciences .....	457	381	420	462	559	716	859	836	884	965	932	905	992	1,064	1,104
Agricultural sciences.....	34	22	29	26	31	37	62	48	62	71	69	56	58	76	77
Biological sciences .....	118	88	90	84	129	155	203	200	197	191	186	189	205	211	236

**S&E graduate enrollment, by field, citizenship, and race/ethnicity: Selected years, 1983–2003**

Field, citizenship, and race/ethnicity	1983	1985	1987	1989	1991	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003
Earth, atmospheric, and ocean sciences.....	27	23	18	26	29	45	52	65	82	84	63	61	70	81	63
Atmospheric sciences.....	1	0	0	0	0	2	4	3	2	2	2	3	4	4	5
Earth sciences.....	18	17	16	19	20	27	27	31	38	36	26	27	32	36	26
Oceanography.....	3	2	1	0	3	3	8	12	17	16	12	10	12	11	8
Other geosciences.....	5	4	1	7	6	13	13	19	25	30	23	21	22	30	24
Mathematics/computer sciences ...	53	79	76	74	63	102	126	95	103	126	104	105	125	107	129
Computer sciences.....	22	57	28	40	43	70	56	54	60	92	74	80	87	83	104
Mathematics/statistics.....	31	22	48	34	20	32	70	41	43	34	30	25	38	24	25
Medical/other life sciences .....	180	134	161	208	245	296	340	368	370	429	441	419	453	506	520
Medical sciences.....	51	39	37	61	65	65	82	74	98	110	125	113	124	139	169
Other life sciences.....	129	95	124	147	180	231	258	294	272	319	316	306	329	367	351
Physical sciences.....	45	35	46	44	62	81	76	60	70	64	69	75	81	83	79
Astronomy.....	1	1	1	0	2	3	3	2	1	2	2	1	0	2	3
Chemistry.....	32	25	29	25	43	54	43	45	50	46	53	61	62	58	51
Physics.....	12	9	16	19	15	22	30	13	18	14	13	12	19	22	24
Other physical sciences.....	0	0	0	0	2	2	0	0	1	2	1	1	0	1	1
Social/behavioral sciences.....	454	368	400	484	622	680	767	836	846	835	820	908	917	933	984
Psychology.....	135	135	152	180	252	289	330	359	341	311	300	360	334	320	322
Social sciences.....	319	233	248	304	370	391	437	477	505	524	520	548	583	613	662
Anthropology.....	38	21	36	53	68	79	103	106	103	119	105	109	102	89	99
Economics.....	33	17	19	70	57	23	26	21	19	21	20	24	25	32	38
History of science.....	0	0	0	0	0	0	1	0	1	1	2	2	2	2	4
Linguistics.....	12	8	13	10	7	3	9	4	7	9	15	13	13	12	16
Political science/ public administration.....	114	108	98	91	114	139	140	154	155	172	177	175	192	217	240
Sociology.....	63	34	38	37	55	62	58	71	86	76	75	75	82	82	83
Other social sciences.....	59	45	44	43	69	85	100	121	134	126	126	150	167	179	182
Other/unknown race/ethnicity															
S&E.....	23,492	28,381	23,685	19,417	18,376	19,913	21,715	21,385	22,666	22,433	22,244	24,316	24,885	27,244	30,461
Engineering.....	8,618	9,233	7,657	6,397	5,999	5,700	4,873	4,570	4,486	4,182	3,833	4,151	4,180	4,640	5,717
Aerospace.....	277	244	337	192	397	310	82	85	63	72	87	92	109	147	214
Chemical.....	293	401	220	130	100	146	198	223	215	230	233	228	147	183	201
Civil.....	1,212	1,303	1,015	599	637	731	697	775	637	610	575	540	588	702	762
Electrical.....	3,590	3,405	2,946	2,429	2,400	1,738	1,586	1,561	1,721	1,568	1,427	1,630	1,522	1,553	1,830
Industrial.....	492	698	685	685	629	1,040	1,055	757	578	599	522	580	563	645	843
Materials.....	72	187	112	90	118	171	118	93	198	127	86	85	107	100	106
Mechanical.....	821	1,050	1,496	1,566	1,050	1,115	752	657	602	590	465	499	513	598	803
Other.....	1,861	1,945	846	706	668	449	385	419	472	386	438	497	631	712	958
Science.....	14,874	19,148	16,028	13,020	12,377	14,213	16,842	16,815	18,180	18,251	18,411	20,165	20,705	22,604	24,744
Natural sciences.....	8,436	12,006	10,382	8,190	7,213	8,613	9,844	9,504	10,870	10,764	10,751	11,642	12,194	13,517	14,863
Agricultural sciences.....	403	413	218	249	144	210	390	281	354	300	280	422	503	456	518
Biological sciences.....	1,491	1,578	1,583	1,233	1,051	1,420	1,803	1,780	2,095	2,212	2,386	2,407	2,408	2,585	3,070
Earth, atmospheric, and ocean sciences.....	754	1,211	738	393	364	537	473	477	530	581	480	450	451	558	705

**S&E graduate enrollment, by field, citizenship, and race/ethnicity: Selected years, 1983–2003**

Field, citizenship, and race/ethnicity	1983	1985	1987	1989	1991	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003
Atmospheric sciences.....	78	4	7	9	11	16	14	13	62	31	30	28	28	31	44
Earth sciences.....	528	1,049	450	253	192	254	254	248	256	282	231	223	203	282	351
Oceanography.....	12	84	151	58	106	125	53	75	54	86	54	55	71	65	86
Other geosciences.....	136	74	130	73	55	142	152	141	158	182	165	144	149	180	224
Mathematics/computer sciences ...	3,178	4,628	3,509	3,130	3,002	3,128	2,733	2,655	2,949	2,929	2,976	3,466	3,654	4,143	4,228
Computer sciences.....	2,360	3,513	2,304	2,135	1,900	2,011	1,972	2,004	2,303	2,237	2,378	2,833	2,968	3,303	3,232
Mathematics/statistics.....	818	1,115	1,205	995	1,102	1,117	761	651	646	692	598	633	686	840	996
Medical/other life sciences.....	1,396	2,565	2,540	2,191	1,907	2,478	3,425	3,446	3,941	3,692	3,656	3,871	3,901	4,525	4,967
Medical sciences.....	573	784	926	955	611	673	1,035	792	1,059	1,019	1,047	1,210	1,110	1,209	1,505
Other life sciences.....	823	1,781	1,614	1,236	1,296	1,805	2,390	2,654	2,882	2,673	2,609	2,661	2,791	3,316	3,462
Physical sciences.....	1,214	1,611	1,794	994	745	840	1,020	865	1,001	1,050	973	1,026	1,277	1,250	1,375
Astronomy.....	27	25	22	17	14	31	43	21	17	45	27	34	41	44	47
Chemistry.....	808	1,052	1,228	614	357	463	585	484	604	551	500	463	515	554	688
Physics.....	372	505	516	346	353	335	387	351	373	402	334	401	615	549	547
Other physical sciences.....	7	29	28	17	21	11	5	9	7	52	112	128	106	103	93
Social/behavioral sciences.....	6,438	7,142	5,646	4,830	5,164	5,600	6,998	7,311	7,310	7,487	7,660	8,523	8,511	9,087	9,881
Psychology.....	2,396	2,377	1,950	1,861	2,253	2,409	3,322	3,317	3,425	3,378	3,567	3,620	3,202	3,183	3,378
Social sciences.....	4,042	4,765	3,696	2,969	2,911	3,191	3,676	3,994	3,885	4,109	4,093	4,903	5,309	5,904	6,503
Anthropology.....	285	217	338	294	267	305	313	281	286	319	391	479	520	483	556
Economics.....	783	1,030	715	494	575	496	374	429	391	473	314	488	556	627	584
History of science.....	0	0	10	16	1	1	11	11	33	14	16	24	30	60	54
Linguistics.....	96	71	102	67	94	120	132	106	147	116	115	172	149	179	231
Political science/ public administration.....	1,913	2,302	1,444	1,428	1,234	1,177	1,661	1,923	1,629	1,614	1,533	1,814	2,043	2,570	3,019
Sociology.....	180	248	399	233	246	382	417	324	369	372	339	446	414	439	434
Other social sciences.....	785	897	688	437	494	710	768	920	1,030	1,201	1,385	1,480	1,597	1,546	1,625
Temporary resident															
S&E.....	73,247	79,940	92,147	101,975	113,187	110,319	102,885	102,984	103,881	107,067	115,454	128,357	140,780	152,885	154,368
Engineering.....	27,497	28,831	33,389	36,700	41,354	39,295	35,484	35,056	36,506	37,789	41,503	47,401	52,522	58,306	59,821
Aerospace.....	799	809	871	1,093	1,228	1,201	1,186	1,273	1,318	1,417	1,532	1,513	1,646	1,686	1,687
Chemical.....	2,519	2,430	2,498	2,801	3,201	3,185	2,969	2,887	2,864	2,885	3,014	3,330	3,495	3,713	3,764
Civil.....	5,230	5,387	5,587	5,835	6,544	6,284	5,659	5,265	5,103	4,962	5,425	6,145	6,593	7,160	7,399
Electrical.....	7,620	8,443	10,117	11,148	12,814	12,451	11,276	11,452	12,755	13,925	15,305	18,296	20,566	23,369	23,647
Industrial.....	1,710	1,947	2,619	2,941	3,806	3,477	3,352	3,326	3,341	3,352	3,730	4,545	5,333	5,715	5,418
Materials.....	1,248	1,369	1,693	1,948	2,176	2,173	1,927	1,920	1,967	2,010	2,043	2,112	2,336	2,510	2,593
Mechanical.....	4,598	4,787	5,511	5,815	6,674	6,278	5,458	5,483	5,694	5,650	6,196	7,138	7,669	8,535	8,802
Other.....	3,773	3,659	4,493	5,119	4,911	4,246	3,657	3,450	3,464	3,588	4,258	4,322	4,884	5,618	6,511
Science.....	45,750	51,109	58,758	65,275	71,833	71,024	67,401	67,928	67,375	69,278	73,951	80,956	88,258	94,579	94,547
Natural sciences.....	31,664	36,297	42,661	48,327	54,123	53,953	50,610	50,820	50,643	52,160	55,987	62,370	68,719	73,660	73,144
Agricultural sciences.....	2,860	2,750	3,004	3,039	3,300	3,222	3,201	3,018	2,789	2,654	2,538	2,411	2,513	2,613	2,578
Biological sciences.....	5,883	6,748	8,549	10,654	12,364	12,775	12,068	11,372	11,064	11,336	11,189	11,761	12,434	13,826	14,770
Earth, atmospheric, and ocean sciences.....	1,846	1,865	2,190	2,575	2,897	3,008	2,947	2,766	2,515	2,499	2,520	2,692	2,782	2,768	2,763
Atmospheric sciences.....	191	209	239	249	310	297	266	283	291	255	274	304	285	306	268
Earth sciences.....	1,010	1,025	1,213	1,404	1,534	1,671	1,543	1,457	1,293	1,244	1,224	1,302	1,355	1,379	1,433

**S&E graduate enrollment, by field, citizenship, and race/ethnicity: Selected years, 1983–2003**

Field, citizenship, and race/ethnicity	1983	1985	1987	1989	1991	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003
Oceanography .....	402	345	404	563	610	590	621	557	507	533	516	526	514	466	489
Other geosciences .....	243	286	334	359	443	450	517	469	424	467	506	560	628	617	573
Mathematics/computer sciences.....	10,406	12,842	14,906	16,377	18,258	18,043	16,604	17,608	18,461	19,843	23,082	28,319	32,538	34,090	31,464
Computer sciences .....	5,453	7,497	8,777	9,694	11,624	11,909	10,795	11,847	12,917	14,422	17,155	22,262	26,054	27,066	24,143
Mathematics/statistics.....	4,953	5,345	6,129	6,683	6,634	6,134	5,809	5,761	5,544	5,421	5,927	6,057	6,484	7,024	7,321
Medical/other life sciences.....	3,044	3,150	3,384	3,909	4,579	4,653	4,381	4,878	4,919	5,090	5,526	5,532	6,249	7,273	7,497
Medical sciences .....	2,092	2,274	2,487	2,863	3,397	3,397	3,137	3,512	3,455	3,597	3,833	3,725	4,228	5,068	5,176
Other life sciences .....	952	876	897	1,046	1,182	1,256	1,244	1,366	1,464	1,493	1,693	1,807	2,021	2,205	2,321
Physical sciences.....	7,625	8,942	10,628	11,773	12,725	12,252	11,409	11,178	10,895	10,738	11,132	11,655	12,203	13,090	14,072
Astronomy .....	108	154	182	164	217	217	232	216	185	213	239	271	283	303	333
Chemistry .....	3,810	4,371	5,299	6,107	6,898	6,675	6,414	6,275	6,112	6,025	6,085	6,222	6,569	7,253	7,839
Physics .....	3,686	4,394	5,115	5,469	5,570	5,284	4,680	4,630	4,539	4,430	4,729	5,084	5,257	5,442	5,798
Other physical sciences .....	21	23	32	33	40	76	83	57	59	70	79	78	94	92	102
Social/behavioral sciences .....	14,086	14,812	16,097	16,948	17,710	17,071	16,791	17,108	16,732	17,118	17,964	18,586	19,539	20,919	21,403
Psychology .....	1,433	1,492	1,539	1,631	1,988	1,881	2,087	1,973	2,008	2,186	2,239	2,263	2,521	2,857	3,180
Social sciences .....	12,653	13,320	14,558	15,317	15,722	15,190	14,704	15,135	14,724	14,932	15,725	16,323	17,018	18,062	18,223
Anthropology .....	481	541	662	763	824	800	694	690	702	739	823	829	769	847	849
Economics .....	5,022	5,464	5,708	6,233	6,482	6,425	6,387	6,421	6,303	6,144	6,458	6,821	7,336	7,666	7,659
History of science .....	41	55	43	40	51	55	46	50	67	67	59	69	70	68	61
Linguistics .....	939	1,072	1,103	1,177	1,259	1,061	997	1,002	982	1,023	962	960	962	982	963
Political science/public administration .....	3,341	3,175	3,717	3,546	3,608	3,531	3,378	3,543	3,426	3,552	3,919	4,159	4,223	4,654	4,877
Sociology.....	1,482	1,576	1,701	1,804	1,722	1,551	1,296	1,218	1,254	1,219	1,258	1,332	1,392	1,390	1,415
Other social sciences.....	1,347	1,437	1,624	1,754	1,776	1,767	1,906	2,211	1,990	2,188	2,246	2,153	2,266	2,455	2,399

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

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Appendix table 2-16  
**First-time full-time S&E graduate students, by field and citizenship: 2000–03**

Field	All S&E graduate enrollment				U.S. citizen/permanent resident				Temporary resident			
	2000	2001	2002	2003	2000	2001	2002	2003	2000	2001	2002	2003
All S&E fields .....	94,340	98,112	104,179	107,842	61,036	62,421	70,373	76,716	33,304	35,691	33,806	31,126
Engineering .....	22,191	23,306	24,596	24,441	8,618	8,689	10,766	12,319	13,573	14,617	13,830	12,122
Science .....	72,149	74,806	79,583	83,401	52,418	53,732	59,607	64,397	19,731	21,074	19,976	19,004
Agricultural sciences .....	2,335	2,338	2,320	2,424	1,916	1,845	1,856	1,974	419	493	464	450
Biological sciences .....	10,955	11,608	12,133	12,698	8,355	8,772	9,269	9,763	2,600	2,836	2,864	2,935
Computer sciences .....	8,431	9,077	9,037	8,148	2,414	2,621	3,534	3,916	6,017	6,456	5,503	4,232
Earth, atmospheric and ocean sciences...	2,649	2,794	3,085	3,104	2,082	2,210	2,550	2,580	567	584	535	524
Mathematics/statistics .....	3,419	3,686	3,918	4,185	1,849	2,030	2,311	2,537	1,570	1,656	1,607	1,648
Medical/other life sciences .....	16,008	15,701	17,357	18,498	14,720	14,189	15,721	16,946	1,288	1,512	1,636	1,552
Physical sciences .....	5,829	6,011	6,280	6,841	3,323	3,325	3,775	4,100	2,506	2,686	2,505	2,741
Psychology .....	7,545	7,691	8,420	8,922	7,060	7,167	7,902	8,351	485	524	518	571
Social sciences.....	14,978	15,900	17,033	18,581	10,699	11,573	12,689	14,230	4,279	4,327	4,344	4,351

NOTE: Data on first-time full-time enrollment by race/ethnicity and citizenship not collected before 1999.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

*Science and Engineering Indicators 2006*

Appendix table 2-17  
**Foreign graduate student enrollment in U.S. universities, by selected place of origin:  
 Selected years, 1987–2004**

Place of origin	Students
1987	
All locations .....	156,366
Taiwan .....	20,875
China .....	20,388
India .....	15,547
South Korea .....	14,939
Canada .....	5,915
Japan .....	4,260
Malaysia .....	4,149
Thailand .....	3,620
Indonesia .....	2,586
Mexico .....	1,882
Other locations .....	62,206
1993	
All locations .....	201,038
China .....	36,370
India .....	27,533
Taiwan .....	24,623
South Korea .....	15,785
Canada .....	8,455
Japan .....	7,755
Thailand .....	5,621
Indonesia .....	3,399
Mexico .....	2,855
Malaysia .....	2,078
Other locations .....	66,564
1999	
All locations .....	225,383
China .....	44,127
India .....	30,533
South Korea .....	20,085
Taiwan .....	14,891
Canada .....	10,133
Japan .....	8,897
Thailand .....	6,872
Mexico .....	4,026
Indonesia .....	2,708
Malaysia .....	1,984
Other locations .....	81,127
2004	
All locations .....	279,076
India .....	63,013
China .....	50,796
South Korea .....	24,757
Taiwan .....	15,015
Canada .....	12,129
Japan .....	8,681
Turkey .....	6,912
Thailand .....	5,708
Mexico .....	4,225
Germany .....	3,915
Other locations .....	83,925

NOTES: Data for temporary residents only. Student counts other than total foreign student enrollment imputed from data reported by institutions. Large discrepancy between academic-level values reported by country and those provided by U.S. institutions for foreign students because of differential response rates to nationality question and academic-level question.

SOURCES: Institute of International Education, Annual Census of Foreign Students, special tabulations (2001); and *Open Doors 2004: Report on International Educational Exchange* (2004).



## Full-time S&amp;E graduate students, by source and mechanism of primary support: 1983–2003

Source	All mechanisms		Research assistantship		Fellowship		Traineeship		Teaching assistantship		Other		Self-support <sup>a</sup>	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
<b>All sources</b>														
1983 .....	252,017	100.0	54,904	21.8	21,342	8.5	13,512	5.4	60,071	23.8	20,955	8.3	81,233	32.2
1984 .....	253,922	100.0	57,735	22.7	21,624	8.5	13,465	5.3	61,256	24.1	20,692	8.1	79,150	31.2
1985 .....	257,287	100.0	60,995	23.7	22,540	8.8	13,665	5.3	61,822	24.0	20,635	8.0	77,630	30.2
1986 .....	266,168	100.0	66,010	24.8	22,954	8.6	13,526	5.1	62,552	23.5	22,246	8.4	78,880	29.6
1987 .....	271,056	100.0	70,214	25.9	21,953	8.1	14,096	5.2	62,847	23.2	22,166	8.2	79,780	29.4
1988 .....	275,127	100.0	74,588	27.1	22,353	8.1	14,397	5.2	63,053	22.9	21,576	7.8	79,160	28.8
1989 .....	282,648	100.0	79,045	28.0	23,450	8.3	14,524	5.1	64,296	22.7	21,082	7.5	80,251	28.4
1990 .....	292,782	100.0	80,746	27.6	25,254	8.6	15,198	5.2	64,950	22.2	22,250	7.6	84,384	28.8
1991 .....	307,010	100.0	85,175	27.7	26,695	8.7	15,403	5.0	65,214	21.2	22,940	7.5	91,583	29.8
1992 .....	322,555	100.0	88,030	27.3	28,627	8.9	15,361	4.8	65,702	20.4	23,536	7.3	101,299	31.4
1993 .....	329,644	100.0	90,154	27.3	29,132	8.8	15,445	4.7	67,290	20.4	21,347	6.5	106,276	32.2
1994 .....	332,088	100.0	92,008	27.7	28,892	8.7	15,681	4.7	66,844	20.1	21,628	6.5	107,035	32.2
1995 .....	329,283	100.0	89,946	27.3	28,887	8.8	15,943	4.8	65,976	20.0	21,844	6.6	106,687	32.4
1996 .....	328,536	100.0	87,694	26.7	28,862	8.8	15,481	4.7	65,756	20.0	21,268	6.5	109,475	33.3
1997 .....	327,289	100.0	88,001	26.9	28,956	8.8	14,488	4.4	65,425	20.0	21,678	6.6	108,741	33.2
1998 .....	327,389	100.0	88,097	26.9	29,106	8.9	14,946	4.6	65,173	19.9	21,843	6.7	108,224	33.1
1999 .....	334,423	100.0	91,279	27.3	30,112	9.0	14,707	4.4	66,294	19.8	22,615	6.8	109,416	32.7
2000 .....	341,283	100.0	94,323	27.6	31,330	9.2	14,171	4.2	66,423	19.5	22,604	6.6	112,432	32.9
2001 .....	354,522	100.0	99,923	28.2	32,270	9.1	14,086	4.0	68,267	19.3	23,340	6.6	116,636	32.9
2002 .....	378,988	100.0	108,198	28.5	34,851	9.2	14,925	3.9	70,723	18.7	23,646	6.2	126,645	33.4
2003 .....	398,010	100.0	114,337	28.7	34,778	8.7	15,095	3.8	73,065	18.4	25,250	6.3	135,485	34.0
<b>Federal</b>														
1983 .....	47,752	100.0	29,152	61.0	4,108	8.6	9,112	19.1	498	1.0	4,882	10.2	NA	NA
1984 .....	47,784	100.0	29,463	61.7	4,116	8.6	8,970	18.8	400	0.8	4,835	10.1	NA	NA
1985 .....	49,051	100.0	30,433	62.0	4,416	9.0	8,954	18.3	549	1.1	4,699	9.6	NA	NA
1986 .....	51,361	100.0	32,739	63.7	4,596	8.9	8,688	16.9	495	1.0	4,843	9.4	NA	NA
1987 .....	53,538	100.0	34,996	65.4	4,445	8.3	8,922	16.7	444	0.8	4,731	8.8	NA	NA
1988 .....	55,489	100.0	36,752	66.2	4,566	8.2	8,664	15.6	504	0.9	5,003	9.0	NA	NA
1989 .....	57,433	100.0	38,555	67.1	5,166	9.0	8,682	15.1	490	0.9	4,540	7.9	NA	NA
1990 .....	59,258	100.0	38,504	65.0	6,314	10.7	9,228	15.6	609	1.0	4,603	7.8	NA	NA
1991 .....	63,000	100.0	40,790	64.7	7,445	11.8	9,616	15.3	476	0.8	4,673	7.4	NA	NA
1992 .....	65,607	100.0	42,586	64.9	7,757	11.8	10,040	15.3	643	1.0	4,581	7.0	NA	NA
1993 .....	67,673	100.0	44,502	65.8	7,510	11.1	10,174	15.0	846	1.3	4,641	6.9	NA	NA
1994 .....	68,550	100.0	45,621	66.6	6,939	10.1	10,407	15.2	780	1.1	4,803	7.0	NA	NA
1995 .....	67,294	100.0	44,597	66.3	6,914	10.3	10,234	15.2	739	1.1	4,810	7.1	NA	NA
1996 .....	65,240	100.0	43,370	66.5	7,044	10.8	9,869	15.1	843	1.3	4,114	6.3	NA	NA
1997 .....	64,522	100.0	43,328	67.2	7,074	11.0	9,291	14.4	908	1.4	3,921	6.1	NA	NA
1998 .....	63,759	100.0	41,826	65.6	7,033	11.0	9,658	15.1	1,120	1.8	4,122	6.5	NA	NA
1999 .....	65,796	100.0	43,061	65.4	7,345	11.2	9,725	14.8	997	1.5	4,668	7.1	NA	NA
2000 .....	67,588	100.0	44,620	66.0	7,475	11.1	9,544	14.1	1,371	2.0	4,578	6.8	NA	NA
2001 .....	68,873	100.0	46,205	67.1	7,406	10.8	9,497	13.8	1,077	1.6	4,688	6.8	NA	NA
2002 .....	75,573	100.0	51,629	68.3	7,899	10.5	9,996	13.2	1,227	1.6	4,822	6.4	NA	NA
2003 .....	81,967	100.0	57,351	70.0	7,630	9.3	10,098	12.3	1,540	1.9	5,348	6.5	NA	NA

## Full-time S&amp;E graduate students, by source and mechanism of primary support: 1983–2003

Source	All mechanisms		Research assistantship		Fellowship		Traineeship		Teaching assistantship		Other		Self-support <sup>a</sup>	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Nonfederal														
1983 .....	123,032	100.0	25,752	20.9	17,234	14.0	4,400	3.6	59,573	48.4	16,073	13.1	NA	NA
1984 .....	126,988	100.0	28,272	22.3	17,508	13.8	4,495	3.5	60,856	47.9	15,857	12.5	NA	NA
1985 .....	130,606	100.0	30,562	23.4	18,124	13.9	4,711	3.6	61,273	46.9	15,936	12.2	NA	NA
1986 .....	135,927	100.0	33,271	24.5	18,358	13.5	4,838	3.6	62,057	45.7	17,403	12.8	NA	NA
1987 .....	137,738	100.0	35,218	25.6	17,508	12.7	5,174	3.8	62,403	45.3	17,435	12.7	NA	NA
1988 .....	140,478	100.0	37,836	26.9	17,787	12.7	5,733	4.1	62,549	44.5	16,573	11.8	NA	NA
1989 .....	144,964	100.0	40,490	27.9	18,284	12.6	5,842	4.0	63,806	44.0	16,542	11.4	NA	NA
1990 .....	149,140	100.0	42,242	28.3	18,940	12.7	5,970	4.0	64,341	43.1	17,647	11.8	NA	NA
1991 .....	152,427	100.0	44,385	29.1	19,250	12.6	5,787	3.8	64,738	42.5	18,267	12.0	NA	NA
1992 .....	155,649	100.0	45,444	29.2	20,870	13.4	5,321	3.4	65,059	41.8	18,955	12.2	NA	NA
1993 .....	155,695	100.0	45,652	29.3	21,622	13.9	5,271	3.4	66,444	42.7	16,706	10.7	NA	NA
1994 .....	156,503	100.0	46,387	29.6	21,953	14.0	5,274	3.4	66,064	42.2	16,825	10.8	NA	NA
1995 .....	155,302	100.0	45,349	29.2	21,973	14.1	5,709	3.7	65,237	42.0	17,034	11.0	NA	NA
1996 .....	153,821	100.0	44,324	28.8	21,818	14.2	5,612	3.6	64,913	42.2	17,154	11.2	NA	NA
1997 .....	154,026	100.0	44,673	29.0	21,882	14.2	5,197	3.4	64,517	41.9	17,757	11.5	NA	NA
1998 .....	155,406	100.0	46,271	29.8	22,073	14.2	5,288	3.4	64,053	41.2	17,721	11.4	NA	NA
1999 .....	159,211	100.0	48,218	30.3	22,767	14.3	4,982	3.1	65,297	41.0	17,947	11.3	NA	NA
2000 .....	161,263	100.0	49,703	30.8	23,855	14.8	4,627	2.9	65,052	40.3	18,026	11.2	NA	NA
2001 .....	169,013	100.0	53,718	31.8	24,864	14.7	4,589	2.7	67,190	39.8	18,652	11.0	NA	NA
2002 .....	176,770	100.0	56,569	32.0	26,952	15.2	4,929	2.8	69,496	39.3	18,824	10.6	NA	NA
2003 .....	180,558	100.0	56,986	31.6	27,148	15.0	4,997	2.8	71,525	39.6	19,902	11.0	NA	NA

NA = not available

<sup>a</sup>Includes any loans (including federal) and support from personal or family financial contributions.

NOTES: S&amp;E includes health fields (i.e., medical sciences and other life sciences). These fields are reported separately in National Science Foundation, Division of Science Resources Statistics (NSF/SRS), Graduate Students and Postdoctorates in Science and Engineering (annual series).

SOURCE: NSF/SRS, Survey of Graduate Students and Postdoctorates in Science and Engineering, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

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Appendix table 2-19  
**Full-time S&E graduate students, by field and mechanism of primary support: 2003**

Field	All mechanisms		Research assistantship		Fellowship		Traineeship		Teaching assistantship		Other		Self-support <sup>a</sup>	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
S&E .....	398,010	100.0	114,337	28.7	34,778	8.7	15,095	3.8	73,065	18.4	25,250	6.3	135,485	34.0
Engineering .....	90,379	100.0	37,438	41.4	7,291	8.1	1,056	1.2	12,561	13.9	5,412	6.0	26,621	29.5
Aerospace .....	3,243	100.0	1,564	48.2	274	8.4	36	1.1	411	12.7	229	7.1	729	22.5
Chemical .....	6,414	100.0	3,603	56.2	837	13.0	73	1.1	851	13.3	207	3.2	843	13.1
Civil .....	13,710	100.0	5,033	36.7	1,115	8.1	196	1.4	2,011	14.7	799	5.8	4,556	33.2
Electrical .....	28,952	100.0	10,809	37.3	1,536	5.3	128	0.4	4,227	14.6	1,678	5.8	10,574	36.5
Industrial .....	7,085	100.0	1,841	26.0	461	6.5	42	0.6	959	13.5	738	10.4	3,044	43.0
Materials .....	4,386	100.0	2,847	64.9	470	10.7	33	0.8	419	9.6	104	2.4	513	11.7
Mechanical .....	13,375	100.0	6,059	45.3	993	7.4	117	0.9	2,316	17.3	698	5.2	3,192	23.9
Other .....	13,214	100.0	5,682	43.0	1,605	12.1	431	3.3	1,367	10.3	959	7.3	3,170	24.0
Science .....	307,631	100.0	76,899	25.0	27,487	8.9	14,039	4.6	60,504	19.7	19,838	6.4	108,864	35.4
Natural sciences .....	210,580	100.0	62,950	29.9	16,210	7.7	11,584	5.5	41,486	19.7	13,153	6.2	65,197	31.0
Agricultural sciences .....	10,003	100.0	5,806	58.0	568	5.7	52	0.5	1,186	11.9	426	4.3	1,965	19.6
Biological sciences .....	54,346	100.0	22,697	41.8	6,504	12.0	5,620	10.3	9,134	16.8	2,568	4.7	7,823	14.4
Earth, atmospheric, and ocean sciences .....	11,511	100.0	4,599	40.0	1,175	10.2	115	1.0	2,810	24.4	546	4.7	2,266	19.7
Atmospheric sciences .....	1,019	100.0	643	63.1	51	5.0	3	0.3	141	13.8	90	8.8	91	8.9
Earth sciences .....	5,574	100.0	1,994	35.8	610	10.9	34	0.6	1,946	34.9	202	3.6	788	14.1
Oceanography .....	2,259	100.0	1,207	53.4	269	11.9	30	1.3	267	11.8	52	2.3	434	19.2
Other geosciences .....	2,659	100.0	755	28.4	245	9.2	48	1.8	456	17.1	202	7.6	953	35.8
Mathematics/computer sciences .....	45,477	100.0	9,315	20.5	2,773	6.1	455	1.0	12,954	28.5	2,834	6.2	17,146	37.7
Computer sciences .....	30,850	100.0	7,505	24.3	1,391	4.5	332	1.1	5,024	16.3	2,259	7.3	14,339	46.5
Mathematics/statistics .....	14,627	100.0	1,810	12.4	1,382	9.4	123	0.8	7,930	54.2	575	3.9	2,807	19.2
Medical/other life sciences .....	58,802	100.0	7,039	12.0	2,660	4.5	4,978	8.5	3,640	6.2	6,252	10.6	34,233	58.2
Medical sciences .....	21,613	100.0	4,384	20.3	1,558	7.2	1,915	8.9	1,525	7.1	1,736	8.0	10,495	48.6
Other life sciences .....	37,189	100.0	2,655	7.1	1,102	3.0	3,063	8.2	2,115	5.7	4,516	12.1	23,738	63.8
Physical sciences .....	30,441	100.0	13,494	44.3	2,530	8.3	364	1.2	11,762	38.6	527	1.7	1,764	5.8
Astronomy .....	1,023	100.0	546	53.4	181	17.7	14	1.4	225	22.0	25	2.4	32	3.1
Chemistry .....	17,694	100.0	7,485	42.3	1,434	8.1	247	1.4	7,373	41.7	263	1.5	892	5.0
Physics .....	11,430	100.0	5,383	47.1	896	7.8	103	0.9	4,135	36.2	222	1.9	691	6.0
Other physical sciences .....	294	100.0	80	27.2	19	6.5	0	0.0	29	9.9	17	5.8	149	50.7
Social/behavioral sciences .....	97,051	100.0	13,949	14.4	11,277	11.6	2,455	2.5	19,018	19.6	6,685	6.9	43,667	45.0
Psychology .....	35,777	100.0	5,589	15.6	2,378	6.6	1,167	3.3	6,070	17.0	2,954	8.3	17,619	49.2
Social sciences .....	61,274	100.0	8,360	13.6	8,899	14.5	1,288	2.1	12,948	21.1	3,731	6.1	26,048	42.5
Anthropology .....	5,945	100.0	517	8.7	1,407	23.7	57	1.0	1,581	26.6	363	6.1	2,020	34.0
Economics .....	12,052	100.0	2,316	19.2	1,757	14.6	186	1.5	3,329	27.6	713	5.9	3,751	31.1
History of science .....	432	100.0	21	4.9	134	31.0	13	3.0	119	27.5	23	5.3	122	28.2
Linguistics .....	2,389	100.0	232	9.7	417	17.5	25	1.0	667	27.9	150	6.3	898	37.6
Political science/public administration .....	19,969	100.0	1,963	9.8	3,134	15.7	626	3.1	2,831	14.2	1,201	6.0	10,214	51.1
Sociology .....	7,242	100.0	1,074	14.8	1,088	15.0	174	2.4	2,415	33.3	396	5.5	2,095	28.9
Other social sciences .....	13,245	100.0	2,237	16.9	962	7.3	207	1.6	2,006	15.1	885	6.7	6,948	52.5

<sup>a</sup>Includes any loans (including federal) and support from personal or family financial contributions.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Appendix table 2-20

**Full-time S&E graduate students primarily supported by federal government, by field and mechanism of primary support: 2003**

(Percent)

Field	All mechanisms	Research assistantship	Fellowship	Traineeship	Teaching assistantship	Other
S&E .....	20.6	50.2	21.9	66.9	2.1	3.3
Engineering .....	23.8	47.9	22.5	40.8	1.9	4.1
Aerospace .....	36.9	62.2	24.1	16.7	1.5	15.2
Chemical .....	32.0	48.1	28.8	64.4	2.4	1.4
Civil .....	15.9	35.4	19.0	16.3	1.5	2.4
Electrical .....	21.4	51.7	18.2	18.8	0.7	2.3
Industrial .....	14.0	36.4	26.0	59.5	1.3	4.3
Materials .....	38.4	53.5	26.2	30.3	2.9	2.8
Mechanical .....	25.5	48.2	28.4	35.9	1.6	3.2
Other .....	28.9	48.1	19.9	56.8	6.1	10.5
Science .....	18.1	47.5	21.2	68.8	2.4	3.2
Natural sciences .....	23.8	53.3	27.3	76.1	3.0	4.2
Agricultural sciences .....	25.0	38.6	20.2	19.2	4.0	3.8
Biological sciences .....	37.2	57.3	28.7	73.8	4.5	7.3
Earth, atmospheric, and ocean sciences .....	28.7	57.7	27.6	56.5	3.9	5.4
Atmospheric sciences .....	59.1	75.6	19.6	66.7	14.9	45.9
Earth sciences .....	25.8	58.7	27.0	44.1	3.1	2.7
Oceanography .....	36.1	57.5	27.5	63.3	5.2	3.1
Other geosciences .....	17.0	40.4	30.6	60.4	3.3	2.3
Mathematics/computer sciences .....	15.5	57.6	28.7	26.8	1.1	3.1
Computer sciences .....	17.4	58.6	28.2	19.9	0.9	2.8
Mathematics/statistics .....	11.5	53.3	29.2	45.5	1.2	4.8
Medical/other life sciences .....	16.3	42.7	23.8	84.1	5.2	3.9
Medical sciences .....	22.8	51.6	28.0	80.4	5.6	4.9
Other life sciences .....	12.5	27.9	17.7	86.4	5.0	3.4
Physical sciences .....	34.7	69.7	28.4	73.1	0.9	2.6
Astronomy .....	43.3	69.8	26.5	78.6	0.0	5.3
Chemistry .....	33.4	69.2	28.2	89.5	0.9	2.7
Physics .....	36.7	71.0	29.7	33.0	1.1	2.8
Other physical sciences .....	8.8	31.3	0.0	0.0	3.4	0.0
Social/behavioral sciences .....	7.5	26.8	13.6	35.4	1.6	1.6
Psychology .....	10.0	35.7	26.5	53.6	1.6	1.1
Social sciences .....	6.0	20.9	10.2	18.9	1.5	1.9
Anthropology .....	7.0	19.9	15.9	36.8	1.6	1.8
Economics .....	7.3	26.9	7.6	8.6	1.1	1.6
History of science .....	4.6	9.5	10.4	7.7	0.0	2.1
Linguistics .....	6.2	25.0	11.0	32.0	2.1	2.0
Political science/public administration .....	3.6	9.5	7.3	5.1	2.1	1.8
Sociology .....	7.0	23.1	10.2	53.4	0.9	1.5
Other social sciences .....	7.4	23.5	15.6	34.8	1.9	2.4

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Appendix table 2-21

**Full-time S&E graduate students primarily supported by federal government, by agency: 1983–2003**

Year	All federal		National Institutes of Health		Other Department of Health and Human Services		National Science Foundation		Department of Defense		Department of Agriculture		National Aeronautics and Space Administration		Department of Energy		Other agencies	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1983.....	47,752	100.0	10,810	22.6	4,179	8.8	9,524	19.9	6,969	14.6	NA	NA	NA	NA	NA	NA	16,270	34.1
1984.....	47,784	100.0	10,983	23.0	4,124	8.6	9,848	20.6	7,125	14.9	NA	NA	NA	NA	NA	NA	15,704	32.9
1985.....	49,051	100.0	11,112	22.7	4,740	9.7	10,180	20.8	7,326	14.9	2,171	4.4	NA	NA	NA	NA	13,522	27.6
1986.....	51,361	100.0	11,877	23.1	4,500	8.8	10,826	21.1	7,940	15.5	2,328	4.5	NA	NA	NA	NA	13,890	27.0
1987.....	53,538	100.0	12,944	24.2	4,247	7.9	11,247	21.0	8,795	16.4	2,684	5.0	NA	NA	NA	NA	13,621	25.4
1988.....	55,489	100.0	13,715	24.7	4,186	7.5	11,634	21.0	9,546	17.2	2,591	4.7	NA	NA	NA	NA	13,817	24.9
1989.....	57,433	100.0	14,357	25.0	4,335	7.5	11,900	20.7	9,140	15.9	2,728	4.7	NA	NA	NA	NA	14,973	26.1
1990.....	59,258	100.0	14,996	25.3	4,512	7.6	12,025	20.3	8,868	15.0	2,722	4.6	NA	NA	NA	NA	16,135	27.2
1991.....	63,000	100.0	16,018	25.4	4,461	7.1	12,666	20.1	9,128	14.5	3,075	4.9	NA	NA	NA	NA	17,652	28.0
1992.....	65,607	100.0	17,091	26.1	4,321	6.6	13,366	20.4	9,247	14.1	3,216	4.9	NA	NA	NA	NA	18,366	28.0
1993.....	67,673	100.0	18,135	26.8	3,888	5.7	13,530	20.0	9,750	14.4	3,324	4.9	NA	NA	NA	NA	19,046	28.1
1994.....	68,550	100.0	18,292	26.7	4,374	6.4	13,990	20.4	9,449	13.8	3,422	5.0	NA	NA	NA	NA	19,023	27.8
1995.....	67,294	100.0	18,109	26.9	4,666	6.9	13,661	20.3	9,339	13.9	3,254	4.8	NA	NA	NA	NA	18,265	27.1
1996.....	65,240	100.0	17,929	27.5	4,432	6.8	13,412	20.6	8,802	13.5	3,004	4.6	2,309	3.5	NA	NA	15,352	23.5
1997.....	64,522	100.0	18,087	28.0	4,443	6.9	13,362	20.7	9,021	14.0	2,646	4.1	2,586	4.0	NA	NA	14,377	22.3
1998.....	63,759	100.0	18,215	28.6	4,489	7.0	13,459	21.1	8,259	13.0	2,485	3.9	2,646	4.2	NA	NA	14,206	22.3
1999.....	65,796	100.0	19,019	28.9	4,423	6.7	13,835	21.0	8,026	12.2	2,634	4.0	2,579	3.9	2,749	4.2	12,531	19.0
2000.....	67,588	100.0	19,472	28.8	4,018	5.9	14,599	21.6	8,141	12.0	2,630	3.9	2,780	4.1	2,995	4.4	12,953	19.2
2001.....	68,873	100.0	19,876	28.9	4,461	6.5	15,429	22.4	7,960	11.6	2,735	4.0	2,819	4.1	3,116	4.5	12,477	18.1
2002.....	75,573	100.0	22,101	29.2	4,873	6.4	17,134	22.7	7,977	10.6	3,100	4.1	3,079	4.1	3,545	4.7	13,764	18.2
2003.....	81,967	100.0	24,283	29.6	5,016	6.1	19,315	23.6	9,222	11.3	3,502	4.3	3,224	3.9	4,011	4.9	13,394	16.3

NA = not available

NOTES: Detail may not add to total because of rounding. Data not reported until first year given here.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Science and Engineering Indicators 2006

Appendix table 2-22

**Primary mechanisms of support for S&E doctorate recipients, by citizenship, sex, and race/ethnicity: 2003**

Citizenship, sex, and race/ethnicity	All mechanisms		Research assistantships		Fellowships		Traineeships		Teaching assistantships		Personal <sup>a</sup>		Other <sup>b</sup>		Unknown	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All doctorate recipients .....	26,891	100.0	8,394	31.2	5,771	21.5	544	2.0	3,895	14.5	4,208	15.6	1,339	5.0	2,740	10.2
Non-U.S. citizen .....	9,871	100.0	4,541	46.0	1,647	16.7	57	0.6	1,585	16.1	698	7.1	722	7.3	621	6.3
Temporary resident .....	8,714	100.0	4,096	47.0	1,426	16.4	38	0.4	1,393	16.0	536	6.2	671	7.7	554	6.4
Permanent resident .....	1,157	100.0	445	38.5	221	19.1	19	1.6	192	16.6	162	14.0	51	4.4	67	5.8
U.S. citizen <sup>c</sup> .....	15,737	100.0	3,832	24.4	4,107	26.1	485	3.1	2,292	14.6	3,492	22.2	616	3.9	913	5.8
Male .....	8,605	100.0	2,480	28.8	2,165	25.2	205	2.4	1,339	15.6	1,563	18.2	381	4.4	472	5.5
Female .....	7,131	100.0	1,352	19.0	1,941	27.2	280	3.9	953	13.4	1,929	27.1	235	3.3	441	6.2
White .....	12,510	100.0	3,197	25.6	3,008	24.0	389	3.1	1,942	15.5	2,857	22.8	505	4.0	612	4.9
Asian .....	1,057	100.0	293	27.7	364	34.4	43	4.1	128	12.1	147	13.9	35	3.3	47	4.4
Underrepresented minority .....	1,726	100.0	253	14.7	659	38.2	43	2.5	172	10.0	401	23.2	66	3.8	132	7.6
Other/unknown race/ethnicity .....	444	100.0	89	20.0	76	17.1	10	2.3	50	11.3	87	19.6	10	2.3	122	27.5
Unknown citizenship .....	1,283	100.0	21	1.6	17	1.3	2	0.2	18	1.4	18	1.4	1	0.1	1,206	94.0

<sup>a</sup>Personal savings, other personal earnings in graduate school, other family earnings or savings, and loans.

<sup>b</sup>Employer reimbursement or assistance, foreign support, and other sources.

<sup>c</sup>Includes naturalized citizens.

NOTES: S&E includes health fields (i.e., medical and other life sciences). U.S. citizen total includes unknown sex. Underrepresented minority includes blacks, Hispanics, American Indians/Alaska Natives, Native Hawaiians/other Pacific Islanders, and multiple race/ethnicity. Fellowships include scholarships and dissertation grants. Traineeships include internship and residency.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, special tabulations.

*Science and Engineering Indicators 2006*

Appendix table 2-23  
**Amount of undergraduate and graduate debt of S&E doctorate recipients, by field: 2003**  
 (Percent)

Field	Doctorates	Debt								
		None	≤\$5,000	\$5,001– \$10,000	\$10,001– \$15,000	\$15,001– \$20,000	\$20,001– \$25,000	\$25,001– \$30,000	\$30,001– \$35,000	≥\$35,001
<b>Undergraduate debt</b>										
All fields .....	36,438	74.1	5.3	4.9	4.6	3.8	2.6	1.8	1.3	1.6
S&E.....	24,341	72.8	5.5	5.1	4.9	4.1	2.7	1.9	1.3	1.7
Agricultural sciences.....	814	73.2	7.0	5.0	5.3	3.1	2.1	1.6	1.6	1.1
Biological sciences.....	5,261	67.6	5.7	6.2	6.0	5.6	3.4	2.1	1.5	2.0
Computer sciences.....	767	83.1	4.0	3.4	3.9	2.0	1.7	0.5	0.7	0.8
Earth, atmospheric, and ocean sciences.....	724	71.1	5.5	6.9	6.2	3.9	2.6	2.2	0.7	0.8
Engineering.....	4,828	80.7	4.7	3.4	2.8	2.7	2.2	1.3	0.9	1.4
Medical/other health sciences.....	1,476	77.2	5.6	3.6	3.5	2.4	1.9	2.3	1.5	2.0
Mathematics.....	911	76.8	5.7	5.1	3.8	4.2	1.8	1.0	0.4	1.2
Physical sciences.....	3,058	69.6	5.9	5.2	6.1	5.5	2.8	1.8	1.4	1.8
Psychology.....	2,775	67.8	5.4	6.4	5.8	4.8	3.8	2.5	2.0	1.6
Social sciences.....	3,727	71.8	5.7	5.5	5.1	3.7	2.7	2.4	1.3	1.9
Non-S&E.....	12,097	76.8	4.8	4.4	4.2	3.2	2.2	1.7	1.3	1.6
<b>Graduate debt</b>										
All fields .....	36,399	63.2	4.8	4.5	3.3	3.0	2.5	2.1	2.2	14.5
S&E.....	24,314	66.2	4.7	4.4	3.1	2.7	2.3	1.8	2.0	12.9
Agricultural sciences.....	814	60.0	5.9	4.4	5.3	2.5	2.5	2.0	2.5	15.1
Biological sciences.....	5,256	71.1	4.9	4.5	2.9	2.7	1.7	1.7	1.6	9.0
Computer sciences.....	767	76.9	3.8	3.9	1.8	1.7	1.6	1.0	1.0	8.2
Earth, atmospheric, and ocean sciences.....	722	70.2	6.0	4.0	4.0	3.1	3.2	1.5	0.8	7.2
Engineering.....	4,824	75.7	4.3	3.8	2.5	2.1	1.5	1.3	1.3	7.7
Medical/other health sciences.....	1,475	61.0	5.6	3.7	3.3	2.9	2.9	2.4	2.7	15.5
Mathematics.....	905	75.6	6.0	3.7	2.7	2.2	1.2	1.6	0.8	6.4
Physical sciences.....	3,054	73.2	4.7	4.9	3.0	2.5	1.9	0.9	1.6	7.3
Psychology.....	2,775	42.7	3.2	4.5	3.0	3.5	3.8	3.0	3.6	32.7
Social sciences.....	3,722	56.7	4.8	5.1	3.9	3.4	3.3	2.4	3.1	17.2
Non-S&E.....	12,085	57.2	5.1	4.6	3.8	3.6	3.0	2.7	2.4	17.6

NOTE: Total of 4,272 doctorate recipients did not report undergraduate debt; 4,311 did not report graduate debt.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, special tabulations.

## Earned associate's degrees, by field and sex: Selected years, 1983–2002

Field and sex	1983	1985	1987	1989	1991	1993	1995	1997	2000	2001	2002
<b>Both sexes</b>											
All fields .....	461,888	459,087	440,816	440,375	486,297	519,098	544,094	546,031	543,876	552,046	553,735
S&E .....	23,796	26,486	23,130	19,733	19,352	23,420	24,228	25,771	33,651	38,063	42,200
Engineering .....	3,273	3,923	4,589	2,735	2,513	2,526	2,285	1,888	1,730	1,791	1,647
Aerospace .....	52	18	20	6	14	8	2	1	1	0	0
Chemical .....	34	21	37	34	24	43	16	7	13	18	28
Civil .....	50	114	84	99	102	102	80	110	58	53	45
Electrical .....	287	1,077	1,770	527	377	400	257	179	239	224	70
Industrial .....	15	50	53	43	30	94	103	81	67	132	80
Materials .....	30	11	32	27	28	19	8	5	11	14	10
Mechanical .....	88	80	100	128	142	96	104	58	77	67	65
Other .....	2,717	2,552	2,493	1,871	1,796	1,764	1,715	1,447	1,264	1,283	1,349
Science .....	20,523	22,563	18,541	16,998	16,839	20,894	21,943	23,883	31,921	36,272	40,553
Natural sciences .....	15,720	18,001	13,647	12,558	12,752	15,062	15,866	17,202	24,454	28,717	32,443
Agricultural sciences .....	2,358	2,023	1,569	1,656	1,724	1,896	1,910	1,865	1,943	2,083	1,983
Biological sciences .....	990	1,233	995	999	1,142	1,499	1,901	2,181	1,468	1,519	1,519
Earth, atmospheric, and ocean sciences .....	250	63	40	28	28	168	186	191	174	181	58
Atmospheric sciences .....	126	1	0	0	0	89	107	95	92	103	0
Earth sciences .....	119	60	40	27	28	22	28	51	28	35	28
Oceanography .....	5	2	0	1	0	57	51	45	54	43	30
Mathematics/computer sciences .....	10,707	13,680	9,953	8,846	8,640	10,275	10,410	11,425	19,598	23,798	27,599
Computer sciences .....	9,918	12,890	9,286	8,192	7,970	9,532	9,627	10,632	18,928	23,106	26,916
Mathematics/statistics .....	789	790	667	654	670	743	783	793	670	692	683
Physical sciences .....	1,415	1,002	1,090	1,029	1,218	1,224	1,459	1,540	1,271	1,136	1,284
Astronomy .....	4	1	0	0	0	0	0	1	1	1	2
Chemistry .....	188	153	111	108	108	244	293	314	301	183	201
Physics .....	91	68	69	64	69	85	98	92	106	118	125
Other physical sciences .....	1,132	780	910	857	1,041	895	1,068	1,133	863	834	956
Social/behavioral sciences .....	4,803	4,562	4,894	4,440	4,087	5,832	6,077	6,681	7,467	7,555	8,110
Psychology .....	973	983	1,016	1,113	997	1,235	1,600	1,606	1,445	1,538	1,691
Social sciences .....	3,830	3,579	3,878	3,327	3,090	4,597	4,477	5,075	6,022	6,017	6,419
Anthropology .....	44	36	41	37	29	53	66	77	51	77	82
Area/ethnic studies .....	21	32	14	15	19	33	63	87	244	297	305
Economics .....	106	85	137	170	149	192	142	188	210	209	220
Linguistics .....	0	3	2	0	0	0	0	0	0	0	0
Political science/public administration .....	1,368	1,229	1,530	804	844	1,232	1,132	1,344	1,023	911	923
Sociology .....	288	356	226	257	238	276	364	504	365	370	415
Other social sciences .....	2,003	1,838	1,928	2,044	1,811	2,811	2,710	2,875	4,129	4,153	4,474
Non-S&E .....	438,092	432,601	417,686	420,642	466,945	495,678	519,866	520,260	510,225	513,983	511,535
Engineering technologies .....	51,317	53,667	49,815	48,342	45,106	40,946	39,190	35,221	35,544	35,413	31,557
<b>Male</b>											
All fields .....	208,830	204,325	192,227	187,125	200,043	213,263	219,704	212,698	216,156	220,011	215,129
S&E .....	13,145	14,695	13,152	10,607	10,360	12,103	12,461	12,636	17,186	20,115	23,419
Engineering .....	2,915	3,501	4,092	2,408	2,233	2,196	1,978	1,617	1,492	1,494	1,376
Aerospace .....	51	14	18	6	14	8	2	1	1	0	0



## Earned associate's degrees, by field and sex: Selected years, 1983–2002

Field and sex	1983	1985	1987	1989	1991	1993	1995	1997	2000	2001	2002
Chemical.....	24	16	17	20	15	18	13	4	10	16	26
Civil .....	47	88	71	85	85	83	57	82	38	34	28
Electrical.....	261	1,011	1,613	468	351	368	238	160	215	200	58
Industrial.....	11	43	49	40	26	81	87	75	52	115	74
Materials.....	28	11	27	26	25	17	6	4	10	11	9
Mechanical .....	86	75	91	119	130	87	98	54	69	60	56
Other .....	2,407	2,243	2,206	1,644	1,587	1,534	1,477	1,237	1,097	1,058	1,125
Science.....	10,230	11,194	9,060	8,199	8,127	9,907	10,483	11,019	15,694	18,621	22,043
Natural sciences .....	8,354	9,588	7,410	6,528	6,716	7,809	8,412	9,008	13,503	16,496	19,765
Agricultural sciences.....	1,382	1,201	1,002	965	1,119	1,280	1,300	1,196	1,159	1,302	1,225
Biological sciences .....	480	554	422	423	457	613	757	789	494	497	484
Earth, atmospheric, and ocean sciences.....	196	47	26	20	23	130	148	126	116	123	37
Atmospheric sciences.....	115	1	0	0	0	77	91	74	71	77	0
Earth sciences .....	79	44	26	19	23	17	21	30	12	25	17
Oceanography .....	2	2	0	1	0	36	36	22	33	21	20
Mathematics/computer sciences.....	5,395	7,128	5,297	4,563	4,438	5,123	5,434	6,164	11,134	13,990	17,345
Computer sciences.....	4,910	6,639	4,878	4,148	4,032	4,695	4,996	5,720	10,727	13,541	16,902
Mathematics/statistics.....	485	489	419	415	406	428	438	444	407	449	443
Physical sciences.....	901	658	663	557	679	663	773	733	600	584	674
Astronomy .....	4	1	0	0	0	0	0	1	1	1	1
Chemistry.....	131	93	64	65	77	130	139	155	126	99	108
Physics.....	77	64	62	53	55	63	87	74	76	93	89
Other physical sciences .....	689	500	537	439	547	470	547	503	397	391	476
Social and behavioral sciences.....	1,876	1,606	1,650	1,671	1,411	2,098	2,071	2,011	2,191	2,125	2,278
Psychology .....	338	312	294	283	257	282	446	376	326	355	367
Social sciences .....	1,538	1,294	1,356	1,388	1,154	1,816	1,625	1,635	1,865	1,770	1,911
Anthropology .....	22	9	12	8	9	17	28	26	21	30	28
Area/ethnic studies.....	9	8	6	8	6	10	17	31	53	43	61
Economics.....	70	69	79	99	85	120	83	104	116	114	90
Linguistics.....	0	2	1	0	0	0	0	0	0	0	0
Political science/public administration .....	432	330	396	312	290	516	365	335	250	204	225
Sociology.....	93	129	69	82	76	78	100	151	89	104	111
Other social sciences.....	912	747	793	879	688	1,075	1,032	988	1,336	1,275	1,396
Non-S&E .....	195,685	189,630	179,075	176,518	189,683	201,160	207,243	200,062	198,970	199,896	191,710
Engineering technologies .....	45,521	47,946	44,158	42,766	39,777	36,129	34,196	29,990	30,079	29,747	26,537
Female											
All fields .....	253,058	254,762	248,589	253,250	286,254	305,835	324,390	333,333	327,720	332,035	338,606
S&E.....	10,651	11,791	9,978	9,126	8,992	11,317	11,767	13,135	16,465	17,948	18,781
Engineering.....	358	422	497	327	280	330	307	271	238	297	271
Aerospace.....	1	4	2	0	0	0	0	0	0	0	0
Chemical .....	10	5	20	14	9	25	3	3	3	2	2
Civil .....	3	26	13	14	17	19	23	28	20	19	17
Electrical.....	26	66	157	59	26	32	19	19	24	24	12
Industrial.....	4	7	4	3	4	13	16	6	15	17	6

**Earned associate's degrees, by field and sex: Selected years, 1983–2002**

Field and sex	1983	1985	1987	1989	1991	1993	1995	1997	2000	2001	2002
Materials .....	2	0	5	1	3	2	2	1	1	3	1
Mechanical .....	2	5	9	9	12	9	6	4	8	7	9
Other .....	310	309	287	227	209	230	238	210	167	225	224
Science .....	10,293	11,369	9,481	8,799	8,712	10,987	11,460	12,864	16,227	17,651	18,510
Natural sciences .....	7,366	8,413	6,237	6,030	6,036	7,253	7,454	8,194	10,951	12,221	12,678
Agricultural sciences.....	976	822	567	691	605	616	610	669	784	781	758
Biological sciences .....	510	679	573	576	685	886	1,144	1,392	974	1,022	1,035
Earth, atmospheric, and ocean sciences .....	54	16	14	8	5	38	38	65	58	58	21
Atmospheric sciences.....	11	0	0	0	0	12	16	21	21	26	0
Earth sciences.....	40	16	14	8	5	5	7	21	16	10	11
Oceanography .....	3	0	0	0	0	21	15	23	21	22	10
Mathematics/computer sciences .....	5,312	6,552	4,656	4,283	4,202	5,152	4,976	5,261	8,464	9,808	10,254
Computer sciences.....	5,008	6,251	4,408	4,044	3,938	4,837	4,631	4,912	8,201	9,565	10,014
Mathematics/statistics.....	304	301	248	239	264	315	345	349	263	243	240
Physical sciences .....	514	344	427	472	539	561	686	807	671	552	610
Astronomy .....	0	0	0	0	0	0	0	0	0	0	1
Chemistry.....	57	60	47	43	31	114	154	159	175	84	93
Physics.....	14	4	7	11	14	22	11	18	30	25	36
Other physical sciences.....	443	280	373	418	494	425	521	630	466	443	480
Social/behavioral sciences .....	2,927	2,956	3,244	2,769	2,676	3,734	4,006	4,670	5,276	5,430	5,832
Psychology .....	635	671	722	830	740	953	1,154	1,230	1,119	1,183	1,324
Social sciences.....	2,292	2,285	2,522	1,939	1,936	2,781	2,852	3,440	4,157	4,247	4,508
Anthropology .....	22	27	29	29	20	36	38	51	30	47	54
Area/ethnic studies.....	12	24	8	7	13	23	46	56	191	254	244
Economics.....	36	16	58	71	64	72	59	84	94	95	130
Linguistics.....	0	1	1	0	0	0	0	0	0	0	0
Political science/public administration .....	936	899	1,134	492	554	716	767	1,009	773	707	698
Sociology.....	195	227	157	175	162	198	264	353	276	266	304
Other social sciences.....	1,091	1,091	1,135	1,165	1,123	1,736	1,678	1,887	2,793	2,878	3,078
Non-S&E .....	242,407	242,971	238,611	244,124	277,262	294,518	312,623	320,198	311,255	314,087	319,825
Engineering technologies .....	5,796	5,721	5,657	5,576	5,329	4,817	4,994	5,231	5,465	5,666	5,020

NOTE: Engineering technologies more focused on applied skills than on fundamental science and mathematics.

SOURCES: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, Division of Science Resources Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Science and Engineering Indicators 2006

## Earned associate's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
All races/ethnicities and citizenships											
All fields .....	459,087	440,816	440,375	486,297	519,098	544,094	546,031	549,191	543,876	552,046	553,735
S&E .....	25,957	22,168	19,482	19,157	23,145	24,228	25,771	28,646	33,651	38,063	42,200
Engineering .....	3,923	4,588	2,732	2,510	2,525	2,285	1,888	2,107	1,730	1,791	1,647
Aerospace .....	NA	NA	NA	NA	NA	2	1	0	1	0	0
Chemical .....	NA	NA	NA	NA	NA	16	7	8	13	18	28
Civil .....	NA	NA	NA	NA	NA	80	110	130	58	53	45
Electrical .....	NA	NA	NA	NA	NA	257	179	382	239	224	70
Industrial .....	NA	NA	NA	NA	NA	103	81	77	67	132	80
Materials .....	NA	NA	NA	NA	NA	8	5	13	11	14	10
Mechanical .....	NA	NA	NA	NA	NA	104	58	82	77	67	65
Other .....	NA	NA	NA	NA	NA	1,715	1,447	1,415	1,264	1,283	1,349
Science .....	22,034	17,579	16,747	16,644	20,619	21,943	23,883	26,539	31,921	36,272	40,553
Natural sciences .....	18,370	13,903	12,798	13,070	15,373	15,866	17,202	19,623	24,454	28,717	32,443
Agricultural sciences .....	2,393	1,824	1,893	2,039	2,227	1,910	1,865	2,007	1,943	2,083	1,983
Biological sciences .....	1,233	995	999	1,142	1,471	1,901	2,181	2,176	1,468	1,519	1,519
Earth, atmospheric, and ocean sciences .....	NA	NA	NA	NA	NA	186	191	180	174	181	58
Atmospheric sciences .....	NA	NA	NA	NA	NA	107	95	105	92	103	0
Earth sciences .....	NA	NA	NA	NA	NA	28	51	38	28	35	28
Oceanography .....	NA	NA	NA	NA	NA	51	45	37	54	43	30
Mathematics/computer sciences .....	13,679	9,953	8,846	8,640	10,255	10,410	11,425	13,742	19,598	23,798	27,599
Computer sciences .....	12,890	9,286	8,192	7,970	9,512	9,627	10,632	12,899	18,928	23,106	26,916
Mathematics/statistics .....	789	667	654	670	743	783	793	843	670	692	683
Physical sciences .....	1,065	1,131	1,060	1,249	1,392	1,459	1,540	1,518	1,271	1,136	1,284
Astronomy .....	NA	NA	NA	NA	NA	0	1	0	1	1	2
Chemistry .....	NA	NA	NA	NA	NA	293	314	299	301	183	201
Physics .....	NA	NA	NA	NA	NA	98	92	111	106	118	125
Other physical sciences .....	NA	NA	NA	NA	NA	1,068	1,133	1,108	863	834	956
Social/behavioral sciences .....	3,664	3,676	3,949	3,574	5,246	6,077	6,681	6,916	7,467	7,555	8,110
Psychology .....	983	1,016	1,113	997	1,237	1,600	1,606	1,760	1,445	1,538	1,691
Social sciences .....	2,681	2,660	2,836	2,577	4,011	4,477	5,075	5,156	6,022	6,017	6,419
Anthropology .....	NA	NA	NA	NA	NA	66	77	132	51	77	82
Area/ethnic studies .....	32	14	15	19	33	63	87	104	244	297	305
Economics .....	NA	NA	NA	NA	NA	142	188	219	210	209	220
Linguistics .....	NA	NA	NA	NA	NA	0	0	0	0	0	0
Political science/public administration .....	NA	NA	NA	NA	NA	1,132	1,344	1,217	1,023	911	923
Sociology .....	NA	NA	NA	NA	NA	364	504	573	365	370	415
Other social sciences .....	NA	NA	NA	NA	NA	2,710	2,875	2,911	4,129	4,153	4,474
Non-S&E .....	433,130	418,648	420,893	467,140	495,953	519,866	520,260	520,545	510,225	513,983	511,535
Engineering technologies .....	51,579	47,434	46,180	42,595	38,473	39,190	35,221	35,163	35,544	35,413	31,557
U.S. citizen/permanent resident											
All fields .....	452,661	436,331	434,406	479,320	510,074	534,183	535,432	537,146	533,982	540,911	541,689
S&E .....	25,341	21,759	19,018	18,786	22,481	23,524	25,012	27,693	32,827	36,980	40,825
Engineering .....	3,767	4,468	2,649	2,442	2,447	2,208	1,821	1,974	1,662	1,695	1,590
Aerospace .....	NA	NA	NA	NA	NA	2	1	0	1	0	0

## Earned associate's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Chemical.....	NA	NA	NA	NA	NA	16	7	8	11	17	26
Civil .....	NA	NA	NA	NA	NA	78	105	119	54	53	43
Electrical.....	NA	NA	NA	NA	NA	251	173	339	236	187	69
Industrial.....	NA	NA	NA	NA	NA	103	80	76	66	130	78
Materials.....	NA	NA	NA	NA	NA	8	5	13	11	14	10
Mechanical .....	NA	NA	NA	NA	NA	102	57	80	76	67	64
Other .....	NA	NA	NA	NA	NA	1,648	1,393	1,339	1,207	1,227	1,300
Science.....	21,574	17,291	16,369	16,344	20,034	21,316	23,191	25,719	31,165	35,285	39,235
Natural sciences .....	17,983	13,645	12,496	12,826	14,923	15,393	16,705	19,031	23,849	27,911	31,296
Agricultural sciences.....	2,359	1,812	1,870	2,018	2,194	1,892	1,846	1,956	1,920	2,037	1,931
Biological sciences .....	1,213	960	964	1,120	1,433	1,824	2,103	2,094	1,441	1,484	1,489
Earth, atmospheric, and ocean sciences.....	NA	NA	NA	NA	NA	184	189	180	173	177	57
Atmospheric sciences.....	NA	NA	NA	NA	NA	105	95	105	92	103	0
Earth sciences .....	NA	NA	NA	NA	NA	28	49	38	27	31	27
Oceanography .....	NA	NA	NA	NA	NA	51	45	37	54	43	30
Mathematics/computer sciences.....	13,366	9,776	8,641	8,469	9,971	10,111	11,119	13,358	19,099	23,110	26,579
Computer sciences.....	12,616	9,121	8,005	7,815	9,275	9,367	10,370	12,564	18,462	22,460	25,932
Mathematics.....	750	655	636	654	696	744	749	794	637	650	647
Physical sciences.....	1,045	1,097	1,021	1,219	1,325	1,382	1,448	1,443	1,216	1,103	1,240
Astronomy .....	NA	NA	NA	NA	NA	0	1	0	1	1	2
Chemistry.....	NA	NA	NA	NA	NA	247	253	260	269	174	196
Physics.....	NA	NA	NA	NA	NA	89	82	103	98	115	120
Other physical sciences .....	NA	NA	NA	NA	NA	1,046	1,112	1,080	848	813	922
Social/behavioral sciences .....	3,591	3,646	3,873	3,518	5,111	5,923	6,486	6,688	7,316	7,374	7,939
Psychology .....	969	1,008	1,086	989	1,220	1,581	1,567	1,702	1,423	1,513	1,655
Social sciences .....	2,622	2,638	2,787	2,529	3,891	4,342	4,919	4,986	5,893	5,861	6,284
Anthropology .....	NA	NA	NA	NA	NA	58	66	126	48	75	81
Area/ethnic studies.....	32	14	15	19	31	49	82	94	228	276	290
Economics.....	NA	NA	NA	NA	NA	120	150	183	192	182	200
Political science/public administration .....	NA	NA	NA	NA	NA	1,115	1,317	1,189	1,011	897	912
Sociology.....	NA	NA	NA	NA	NA	353	494	562	361	360	409
Other social sciences.....	NA	NA	NA	NA	NA	2,647	2,810	2,832	4,053	4,071	4,392
Non-S&E .....	427,320	414,572	415,388	460,534	487,593	510,659	510,420	509,453	501,155	503,931	500,864
Engineering technologies .....	50,899	46,859	45,647	42,069	38,093	38,764	34,761	34,435	35,215	34,742	31,136
White											
All fields .....	355,422	345,546	330,557	376,869	392,637	408,126	400,307	396,735	380,777	378,041	372,372
S&E.....	18,133	16,169	13,898	13,842	15,631	16,392	16,835	18,415	20,982	23,970	26,204
Engineering.....	2,260	3,235	1,986	1,867	1,886	1,658	1,363	1,438	1,126	1,202	1,171
Aerospace.....	NA	NA	NA	NA	NA	0	1	0	1	0	0
Chemical .....	NA	NA	NA	NA	NA	14	5	7	11	17	22
Civil .....	NA	NA	NA	NA	NA	53	77	95	31	40	24
Electrical.....	NA	NA	NA	NA	NA	186	143	229	122	100	49
Industrial .....	NA	NA	NA	NA	NA	85	67	57	58	92	59
Materials .....	NA	NA	NA	NA	NA	8	5	13	8	12	8
Mechanical .....	NA	NA	NA	NA	NA	55	44	64	52	46	40

## Earned associate's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Other .....	NA	NA	NA	NA	NA	1,257	1,021	973	843	895	969
Science .....	15,873	12,934	11,912	11,975	13,745	14,734	15,472	16,977	19,856	22,768	25,033
Natural sciences .....	13,803	10,438	9,275	9,628	10,504	10,960	11,693	13,153	15,797	18,508	20,495
Agricultural sciences.....	2,138	1,571	1,705	1,847	2,017	1,633	1,680	1,768	1,718	1,824	1,715
Biological sciences .....	676	590	685	759	977	1,197	1,310	1,304	930	979	1,013
Earth, atmospheric, and ocean sciences .....	NA	NA	NA	NA	NA	156	160	155	150	156	54
Atmospheric sciences.....	NA	NA	NA	NA	NA	82	83	89	74	85	0
Earth sciences.....	NA	NA	NA	NA	NA	23	40	33	24	29	25
Oceanography .....	NA	NA	NA	NA	NA	51	37	33	52	42	29
Mathematics/computer sciences .....	10,255	7,360	6,044	6,054	6,515	6,950	7,544	8,974	12,200	14,796	16,827
Computer sciences.....	9,730	6,879	5,583	5,577	6,006	6,471	7,052	8,473	11,821	14,438	16,446
Mathematics .....	525	481	461	477	509	479	492	501	379	358	381
Physical sciences .....	734	917	841	968	995	1,024	999	952	799	753	886
Astronomy .....	NA	NA	NA	NA	NA	0	0	0	0	1	2
Chemistry.....	NA	NA	NA	NA	NA	153	153	172	144	98	133
Physics.....	NA	NA	NA	NA	NA	62	45	62	65	72	77
Other physical sciences.....	NA	NA	NA	NA	NA	809	801	718	590	582	674
Social/behavioral sciences.....	2,070	2,496	2,637	2,347	3,241	3,774	3,779	3,824	4,059	4,260	4,538
Psychology .....	680	781	845	738	894	1,146	1,087	1,068	952	1,005	1,111
Social sciences.....	1,390	1,715	1,792	1,609	2,347	2,628	2,692	2,756	3,107	3,255	3,427
Anthropology .....	NA	NA	NA	NA	NA	45	44	89	31	51	62
Area/ethnic studies.....	3	3	3	7	5	14	10	19	59	208	211
Economics.....	NA	NA	NA	NA	NA	78	67	92	81	92	87
Political science/public administration .....	NA	NA	NA	NA	NA	544	593	513	367	352	337
Sociology.....	NA	NA	NA	NA	NA	223	287	313	202	187	209
Other social sciences.....	NA	NA	NA	NA	NA	1,724	1,691	1,730	2,367	2,365	2,521
Non-S&E .....	337,289	329,377	316,659	363,027	377,006	391,734	383,472	378,320	359,795	354,071	346,168
Engineering technologies .....	40,934	37,383	33,584	33,792	28,442	29,646	26,522	26,208	25,643	24,999	21,971
Asian/Pacific Islander											
All fields .....	10,165	11,329	11,761	15,069	16,280	20,976	23,882	23,909	25,654	25,780	28,032
S&E.....	828	1,051	834	842	1,108	1,392	1,700	1,884	2,384	2,502	2,877
Engineering.....	184	369	194	146	136	152	148	166	160	130	97
Aerospace.....	NA	NA	NA	NA	NA	1	0	0	0	0	0
Chemical .....	NA	NA	NA	NA	NA	2	1	1	0	0	2
Civil .....	NA	NA	NA	NA	NA	3	4	6	3	4	5
Electrical.....	NA	NA	NA	NA	NA	6	8	29	38	17	2
Industrial .....	NA	NA	NA	NA	NA	0	4	1	0	2	0
Materials .....	NA	NA	NA	NA	NA	0	0	0	0	0	0
Mechanical .....	NA	NA	NA	NA	NA	2	1	1	2	0	0
Other .....	NA	NA	NA	NA	NA	138	130	128	117	107	88
Science.....	644	682	640	696	972	1,240	1,552	1,718	2,224	2,372	2,780
Natural sciences.....	597	576	521	608	756	935	1,196	1,349	1,745	1,941	2,303
Agricultural sciences.....	4	10	6	8	6	10	4	8	19	9	9
Biological sciences .....	31	59	52	126	146	190	264	248	109	94	91
Earth, atmospheric, and ocean sciences .....	NA	NA	NA	NA	NA	5	4	3	1	0	0

## Earned associate's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Atmospheric sciences.....	NA	NA	NA	NA	NA	4	3	0	0	0	0
Earth sciences.....	NA	NA	NA	NA	NA	1	0	2	1	0	0
Oceanography.....	NA	NA	NA	NA	NA	0	1	1	0	0	0
Mathematics/computer sciences.....	511	464	401	388	528	606	748	920	1,471	1,757	2,117
Computer sciences.....	448	395	336	323	459	513	661	820	1,381	1,651	2,026
Mathematics/statistics.....	63	69	65	65	69	93	87	100	90	106	91
Physical sciences.....	51	43	62	86	76	124	176	170	145	81	86
Chemistry.....	NA	NA	NA	NA	NA	38	51	38	51	29	15
Physics.....	NA	NA	NA	NA	NA	15	16	18	15	9	18
Other physical sciences.....	NA	NA	NA	NA	NA	71	109	114	79	43	53
Social/behavioral sciences.....	47	106	119	88	216	305	356	369	479	431	477
Psychology.....	8	19	14	24	33	57	63	53	51	53	50
Social sciences.....	39	87	105	64	183	248	293	316	428	378	427
Anthropology.....	NA	NA	NA	NA	NA	3	1	8	1	4	0
Area/ethnic studies.....	0	0	1	1	7	2	0	4	3	6	2
Economics.....	NA	NA	NA	NA	NA	13	35	35	41	32	36
Political science/public administration.....	NA	NA	NA	NA	NA	64	65	73	89	71	68
Sociology.....	NA	NA	NA	NA	NA	11	28	34	24	12	12
Other social sciences.....	NA	NA	NA	NA	NA	155	164	162	270	253	309
Non-S&E.....	9,337	10,278	10,927	14,227	15,172	19,584	22,182	22,025	23,270	23,278	25,155
Engineering technologies.....	1,570	1,989	1,663	1,496	1,358	1,458	1,586	1,521	1,752	1,725	1,711
Black											
All fields.....	35,861	33,858	32,185	37,854	41,260	45,923	51,588	52,957	55,154	57,851	58,454
S&E.....	1,653	1,766	1,460	1,631	1,963	2,307	2,577	2,856	3,856	4,351	4,859
Engineering.....	148	249	120	126	201	148	131	109	123	104	118
Aerospace.....	NA	NA	NA	NA	NA	1	0	0	0	0	0
Civil.....	NA	NA	NA	NA	NA	5	12	4	5	3	3
Electrical.....	NA	NA	NA	NA	NA	38	19	22	21	17	17
Industrial.....	NA	NA	NA	NA	NA	7	5	4	1	3	3
Materials.....	NA	NA	NA	NA	NA	0	0	0	0	0	1
Mechanical.....	NA	NA	NA	NA	NA	0	0	0	0	0	1
Other.....	NA	NA	NA	NA	NA	97	95	79	96	81	93
Science.....	1,505	1,517	1,340	1,505	1,762	2,159	2,446	2,747	3,733	4,247	4,741
Natural sciences.....	1,098	1,159	953	1,070	1,182	1,364	1,475	1,854	2,734	3,304	3,746
Agricultural sciences.....	19	27	17	14	15	23	11	9	18	3	14
Biological sciences.....	93	100	63	57	93	147	140	155	137	127	121
Earth, atmospheric, and ocean sciences.....	NA	NA	NA	NA	NA	10	9	14	13	9	1
Atmospheric sciences.....	NA	NA	NA	NA	NA	10	9	13	13	9	0
Earth sciences.....	NA	NA	NA	NA	NA	0	0	1	0	0	0
Oceanography.....	NA	NA	NA	NA	NA	0	0	0	0	0	1
Mathematics/computer sciences.....	938	961	828	921	1,004	1,091	1,219	1,564	2,481	3,085	3,533
Computer sciences.....	914	923	803	894	978	1,046	1,182	1,531	2,445	3,035	3,506
Mathematics/statistics.....	24	38	25	27	26	45	37	33	36	50	27
Physical sciences.....	48	71	45	78	70	93	96	112	85	80	77
Chemistry.....	NA	NA	NA	NA	NA	22	17	9	17	12	9

## Earned associate's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Physics.....	NA	NA	NA	NA	NA	5	7	7	2	1	1
Other physical sciences.....	NA	NA	NA	NA	NA	66	72	96	66	67	67
Social/behavioral sciences.....	407	358	387	435	580	795	971	893	999	943	995
Psychology.....	65	73	83	103	109	126	125	111	135	142	140
Social sciences.....	342	285	304	332	471	669	846	782	864	801	855
Anthropology.....	NA	NA	NA	NA	NA	3	4	3	3	1	1
Area/ethnic studies.....	1	3	5	6	10	9	19	9	16	7	13
Economics.....	NA	NA	NA	NA	NA	5	11	11	7	5	9
Political science/public administration.....	NA	NA	NA	NA	NA	264	347	330	275	254	248
Sociology.....	NA	NA	NA	NA	NA	50	63	75	55	66	73
Other social sciences.....	NA	NA	NA	NA	NA	338	402	354	508	468	511
Non-S&E.....	34,208	32,092	30,725	36,223	39,297	43,616	49,011	50,101	51,298	53,500	53,595
Engineering technologies.....	3,395	3,100	2,829	3,030	2,698	3,015	2,982	3,156	3,321	3,372	2,795
Hispanic											
All fields.....	22,783	22,804	23,475	29,019	33,015	38,499	42,784	45,452	50,488	54,333	55,900
S&E.....	1,380	1,635	1,453	1,463	2,152	2,498	2,773	3,103	3,868	4,131	4,531
Engineering.....	126	369	176	153	153	161	112	196	178	186	129
Chemical.....	NA	NA	NA	NA	NA	0	0	0	0	0	2
Civil.....	NA	NA	NA	NA	NA	7	6	12	5	2	6
Electrical.....	NA	NA	NA	NA	NA	8	2	56	48	48	0
Industrial.....	NA	NA	NA	NA	NA	6	1	13	7	33	11
Materials.....	NA	NA	NA	NA	NA	0	0	0	0	0	1
Mechanical.....	NA	NA	NA	NA	NA	44	12	13	21	19	23
Other.....	NA	NA	NA	NA	NA	96	91	102	97	84	86
Science.....	1,254	1,266	1,277	1,310	1,999	2,337	2,661	2,907	3,690	3,945	4,402
Natural sciences.....	924	901	845	909	1,386	1,558	1,636	1,915	2,497	2,696	3,045
Agricultural sciences.....	53	91	114	57	88	136	75	85	77	109	86
Biological sciences.....	135	153	88	130	160	208	276	289	183	220	188
Earth, atmospheric, and ocean sciences.....	NA	NA	NA	NA	NA	10	8	3	1	1	1
Atmospheric sciences.....	NA	NA	NA	NA	NA	9	0	0	0	0	0
Earth sciences.....	NA	NA	NA	NA	NA	1	7	2	1	1	1
Oceanography.....	NA	NA	NA	NA	NA	0	1	1	0	0	0
Mathematics/computer sciences.....	676	620	609	677	1,086	1,134	1,175	1,419	2,130	2,253	2,672
Computer sciences.....	638	581	562	622	1,019	1,035	1,065	1,299	2,033	2,154	2,567
Mathematics.....	38	39	47	55	67	99	110	120	97	99	105
Physical sciences.....	60	37	34	45	52	70	102	119	106	113	98
Astronomy.....	NA	NA	NA	NA	NA	0	1	0	1	0	0
Chemistry.....	NA	NA	NA	NA	NA	20	23	26	42	27	24
Physics.....	NA	NA	NA	NA	NA	5	11	10	11	22	16
Other physical sciences.....	NA	NA	NA	NA	NA	45	67	83	52	64	58
Social/behavioral sciences.....	330	365	432	401	613	779	1,025	992	1,193	1,249	1,357
Psychology.....	43	64	123	88	141	193	209	180	192	218	259
Social sciences.....	287	301	309	313	472	586	816	812	1,001	1,031	1,098
Anthropology.....	NA	NA	NA	NA	NA	4	12	19	8	10	13
Area/ethnic studies.....	1	2	0	0	2	8	23	23	17	7	15

## Earned associate's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Economics.....	NA	NA	NA	NA	NA	20	26	33	50	43	55
Political science/public administration .....	NA	NA	NA	NA	NA	214	277	248	249	195	219
Sociology.....	NA	NA	NA	NA	NA	54	90	107	63	78	92
Other social sciences.....	NA	NA	NA	NA	NA	286	388	382	614	698	704
Non-S&E.....	21,403	21,169	22,022	27,556	30,863	36,001	40,011	42,349	46,620	50,202	51,369
Engineering technologies .....	2,084	2,359	2,232	2,411	2,398	2,777	2,728	2,621	3,283	3,369	3,069
American Indian/Alaska Native											
All fields .....	2,953	3,049	3,102	3,772	4,213	5,352	5,520	6,161	5,697	5,758	5,965
S&E.....	163	195	182	257	315	419	455	500	525	501	577
Engineering.....	11	27	12	21	8	22	25	22	17	16	15
Civil.....	NA	NA	NA	NA	NA	1	3	1	2	1	1
Electrical.....	NA	NA	NA	NA	NA	1	1	2	0	0	0
Industrial .....	NA	NA	NA	NA	NA	1	1	0	0	0	0
Mechanical.....	NA	NA	NA	NA	NA	0	0	0	0	1	0
Other .....	NA	NA	NA	NA	NA	19	20	19	15	14	14
Science.....	152	168	170	236	307	397	430	478	508	485	562
Natural sciences.....	101	98	111	157	189	241	243	295	312	317	331
Agricultural sciences.....	29	28	23	37	41	54	54	64	67	48	49
Biological sciences .....	8	17	19	22	25	40	46	37	37	32	41
Earth, atmospheric, and ocean sciences .....	NA	NA	NA	NA	NA	1	1	3	0	0	0
Atmospheric sciences.....	NA	NA	NA	NA	NA	0	0	3	0	0	0
Earth sciences.....	NA	NA	NA	NA	NA	1	1	0	0	0	0
Mathematics/computer sciences .....	56	49	67	91	116	124	122	161	195	220	224
Computer sciences.....	52	45	58	78	101	111	120	148	188	208	217
Mathematics .....	4	4	9	13	15	13	2	13	7	12	7
Physical sciences .....	8	4	2	7	7	22	20	30	13	17	17
Chemistry.....	NA	NA	NA	NA	NA	4	1	7	1	4	4
Physics.....	NA	NA	NA	NA	NA	0	1	3	0	2	0
Other physical sciences.....	NA	NA	NA	NA	NA	18	18	20	12	11	13
Social/behavioral sciences.....	51	70	59	79	118	156	187	183	196	168	231
Psychology .....	11	16	13	16	18	35	38	37	38	34	32
Social sciences.....	40	54	46	63	100	121	149	146	158	134	199
Anthropology .....	NA	NA	NA	NA	NA	2	1	3	1	2	0
Area/ethnic studies.....	5	6	6	4	7	16	29	36	26	22	21
Economics.....	NA	NA	NA	NA	NA	1	1	1	2	1	3
Political science/public administration .....	NA	NA	NA	NA	NA	13	17	6	16	4	8
Sociology .....	NA	NA	NA	NA	NA	7	9	8	1	4	4
Other social sciences.....	NA	NA	NA	NA	NA	82	92	92	112	101	163
Non-S&E.....	2,790	2,854	2,920	3,515	3,898	4,933	5,065	5,661	5,172	5,257	5,388
Engineering technologies .....	267	219	257	232	210	286	236	286	273	253	239
Other/unknown race/ethnicity											
All fields .....	25,477	19,745	33,326	16,737	22,669	15,307	11,351	11,932	16,212	19,148	20,966
S&E.....	3,184	943	1,191	751	1,312	516	672	935	1,212	1,525	1,777
Engineering.....	1,038	219	161	129	63	67	42	43	58	57	60
Chemical .....	NA	NA	NA	NA	NA	0	1	0	0	0	0



## Earned associate's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Civil .....	NA	NA	NA	NA	NA	9	3	1	8	3	4
Electrical.....	NA	NA	NA	NA	NA	12	0	1	7	5	1
Industrial.....	NA	NA	NA	NA	NA	4	2	1	0	0	5
Materials .....	NA	NA	NA	NA	NA	0	0	0	3	2	0
Mechanical .....	NA	NA	NA	NA	NA	1	0	2	1	1	0
Other .....	NA	NA	NA	NA	NA	41	36	38	39	46	50
Science.....	2,146	724	1,030	622	1,249	449	630	892	1,154	1,468	1,717
Natural sciences .....	1,460	473	791	454	906	335	462	465	764	1,145	1,376
Agricultural sciences.....	116	85	5	55	27	36	22	22	21	44	58
Biological sciences .....	270	41	57	26	32	42	67	61	45	32	35
Earth, atmospheric, and ocean sciences .....	NA	NA	NA	NA	NA	2	7	2	8	11	1
Atmospheric sciences.....	NA	NA	NA	NA	NA	0	0	0	5	9	0
Earth sciences.....	NA	NA	NA	NA	NA	2	1	0	1	1	1
Oceanography .....	NA	NA	NA	NA	NA	0	6	2	2	1	0
Mathematics/computer sciences .....	930	322	692	338	722	206	311	320	622	999	1,206
Computer sciences.....	834	298	663	321	712	191	290	293	594	974	1,170
Mathematics .....	96	24	29	17	10	15	21	27	28	25	36
Physical sciences .....	144	25	37	35	125	49	55	60	68	59	76
Chemistry.....	NA	NA	NA	NA	NA	10	8	8	14	4	11
Physics.....	NA	NA	NA	NA	NA	2	2	3	5	9	8
Other physical sciences.....	NA	NA	NA	NA	NA	37	45	49	49	46	57
Social/behavioral sciences.....	686	251	239	168	343	114	168	427	390	323	341
Psychology .....	162	55	8	20	25	24	45	253	55	61	63
Social sciences.....	524	196	231	148	318	90	123	174	335	262	278
Anthropology .....	NA	NA	NA	NA	NA	1	4	4	4	7	5
Area/ethnic studies.....	22	0	0	1	0	0	1	3	107	26	28
Economics.....	NA	NA	NA	NA	NA	3	10	11	11	9	10
Political science/public administration .....	NA	NA	NA	NA	NA	16	18	19	15	21	32
Sociology.....	NA	NA	NA	NA	NA	8	17	25	16	13	19
Other social sciences.....	NA	NA	NA	NA	NA	62	73	112	182	186	184
Non-S&E.....	22,293	18,802	32,135	15,986	21,357	14,791	10,679	10,997	15,000	17,623	19,189
Engineering technologies .....	2,649	1,809	5,082	1,108	2,987	1,582	707	643	943	1,024	1,351
Temporary resident											
All fields .....	6,426	4,485	5,969	6,977	9,024	9,911	10,599	12,045	9,894	11,135	12,046
S&E.....	616	408	461	368	637	704	759	953	824	1,083	1,375
Engineering.....	156	120	83	68	78	77	67	133	68	96	57
Chemical .....	NA	NA	NA	NA	NA	0	0	0	2	1	2
Civil .....	NA	NA	NA	NA	NA	2	5	11	4	0	2
Electrical.....	NA	NA	NA	NA	NA	6	6	43	3	37	1
Industrial.....	NA	NA	NA	NA	NA	0	1	1	1	2	2
Mechanical .....	NA	NA	NA	NA	NA	2	1	2	1	0	1
Other .....	NA	NA	NA	NA	NA	67	54	76	57	56	49
Science.....	460	288	378	300	559	627	692	820	756	987	1,318
Natural sciences .....	387	258	302	244	422	473	497	592	605	806	1,147
Agricultural sciences.....	34	12	23	21	33	18	19	51	23	46	52

**Earned associate's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002**

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Biological sciences .....	20	35	35	22	38	77	78	82	27	35	30
Earth, atmospheric, and ocean sciences.....	NA	NA	NA	NA	NA	2	2	0	1	4	1
Atmospheric sciences.....	NA	NA	NA	NA	NA	2	0	0	0	0	0
Earth sciences.....	NA	NA	NA	NA	NA	0	2	0	1	4	1
Mathematics/computer sciences.....	313	177	205	171	284	299	306	384	499	688	1,020
Computer sciences.....	274	165	187	155	237	260	262	335	466	646	984
Mathematics.....	39	12	18	16	47	39	44	49	33	42	36
Physical sciences.....	20	34	39	30	67	77	92	75	55	33	44
Chemistry.....	NA	NA	NA	NA	NA	46	61	39	32	9	5
Physics.....	NA	NA	NA	NA	NA	9	10	8	8	3	5
Other physical sciences.....	NA	NA	NA	NA	NA	22	21	28	15	21	34
Social/behavioral sciences.....	73	30	76	56	137	154	195	228	151	181	171
Psychology.....	14	8	27	8	17	19	39	58	22	25	36
Social sciences.....	59	22	49	48	120	135	156	170	129	156	135
Anthropology.....	NA	NA	NA	NA	NA	8	11	6	3	2	1
Area/ethnic studies.....	0	0	0	0	2	14	5	10	16	21	15
Economics.....	NA	NA	NA	NA	NA	22	38	36	18	27	20
Political science/public administration.....	NA	NA	NA	NA	NA	17	27	28	12	14	11
Sociology.....	NA	NA	NA	NA	NA	11	10	11	4	10	6
Other social sciences.....	NA	NA	NA	NA	NA	63	65	79	76	82	82
Non-S&E.....	5,810	4,077	5,508	6,609	8,387	9,207	9,840	11,092	9,070	10,052	10,671
Engineering technologies.....	680	575	533	526	380	426	460	728	329	671	421

NA = not available

NOTES: Race/ethnicity data collected on broad fields of study only until 1994. Field taxonomies for data through 1994 do not exactly match field taxonomies used in tables by sex, or race/ethnicity data after 1994. Primary difference between taxonomies: history included in social sciences before 1995 but included in non-S&E from 1995 on. Racial/ethnic breakouts are for U.S. citizens and permanent residents only. Temporary resident includes all races/ethnicities. Data not available for 1983 or 1999.

SOURCES: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, Division of Science Resources Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

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## Earned bachelor's degrees, by field and sex: Selected years, 1983–2002

Field and sex	1983	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
<b>Both sexes</b>												
All fields .....	980,679	990,877	1,003,532	1,030,171	1,107,997	1,179,278	1,174,436	1,186,589	1,199,579	1,253,121	1,257,648	1,305,730
S&E.....	317,571	332,273	331,526	322,821	337,675	366,035	378,148	388,482	390,618	398,622	400,206	415,611
Engineering.....	72,670	77,572	74,425	66,947	62,187	62,705	63,371	62,352	60,914	59,536	59,258	60,639
Aerospace.....	2,127	2,854	2,989	2,944	2,869	2,735	1,771	1,290	1,247	1,267	1,498	1,747
Chemical.....	8,550	8,941	6,114	4,187	3,728	4,899	6,391	6,977	6,721	6,219	6,088	5,946
Civil.....	10,747	9,730	8,746	8,015	8,083	9,788	11,329	12,010	11,522	9,596	8,949	8,891
Electrical.....	19,205	23,668	26,791	24,318	21,520	19,598	17,579	16,434	16,322	17,672	18,371	18,977
Industrial.....	3,824	4,009	4,313	4,121	3,820	3,584	3,519	3,997	3,988	3,937	3,818	3,976
Materials.....	1,392	1,276	1,152	1,114	1,166	1,216	1,046	1,063	1,007	972	930	933
Mechanical.....	16,031	17,200	15,723	15,217	14,263	14,708	15,141	13,806	13,363	13,109	13,160	13,377
Other.....	10,794	8,894	8,597	7,031	6,738	6,177	6,595	6,775	6,744	6,764	6,444	6,792
Science.....	244,901	254,701	257,101	255,874	275,488	303,330	314,777	326,130	329,704	339,086	340,948	354,972
Natural sciences.....	116,250	129,668	125,166	109,137	105,383	116,745	129,465	140,346	144,441	150,898	152,326	158,536
Agricultural sciences.....	14,528	11,907	9,524	8,582	8,432	11,632	14,580	17,361	17,967	18,244	17,467	17,360
Biological sciences.....	40,883	39,405	39,047	36,949	40,351	47,989	56,890	65,139	67,112	64,904	62,089	61,768
Earth, atmospheric, and ocean sciences.....	7,298	7,576	4,689	3,181	2,728	3,503	4,478	4,466	4,321	4,047	3,968	3,984
Atmospheric sciences.....	396	414	345	330	360	369	444	431	443	490	456	525
Earth sciences.....	6,774	7,001	4,189	2,707	2,214	2,901	3,820	3,830	3,665	3,359	3,334	3,234
Oceanography.....	128	161	155	144	154	233	214	205	213	198	178	225
Mathematics/computer sciences.....	37,344	54,510	56,442	46,277	40,194	39,433	38,620	38,116	39,768	49,123	54,639	61,408
Computer sciences.....	24,682	39,121	39,927	30,963	25,410	24,580	24,769	25,393	27,674	37,388	43,184	49,135
Mathematics/statistics.....	12,662	15,389	16,515	15,314	14,784	14,853	13,851	12,723	12,094	11,735	11,455	12,273
Physical sciences.....	16,197	16,270	15,464	14,148	13,678	14,188	14,897	15,264	15,273	14,580	14,163	14,016
Astronomy.....	96	119	130	164	151	167	169	140	168	160	240	276
Chemistry.....	11,039	10,701	9,830	8,822	8,461	9,109	10,016	10,926	10,873	10,390	9,822	9,448
Physics.....	3,800	4,111	4,324	4,347	4,245	4,080	3,836	3,393	3,455	3,362	3,457	3,651
Other physical sciences.....	1,262	1,339	1,180	815	821	832	876	805	777	668	644	641
Social/behavioral sciences.....	128,651	125,033	131,935	146,737	170,105	186,585	185,312	185,784	185,263	188,188	188,622	196,436
Psychology.....	40,825	40,237	43,195	48,954	58,893	67,251	72,601	74,734	74,457	74,654	74,168	77,323
Social sciences.....	87,826	84,796	88,740	97,783	111,212	119,334	112,711	111,050	110,806	113,534	114,454	119,113
Anthropology.....	2,873	2,684	2,802	3,135	4,212	5,203	5,806	6,759	6,894	7,057	6,898	7,198
Area/ethnic studies.....	2,993	2,872	3,313	3,950	4,625	5,073	5,176	5,257	5,441	5,617	5,561	5,844
Economics.....	22,410	23,073	24,402	25,301	25,302	22,973	19,083	17,701	18,244	19,400	20,377	21,827
History of science.....	0	0	0	0	0	9	29	31	39	92	101	103
Linguistics.....	474	490	477	447	572	553	564	577	680	727	757	861
Political science/public administration.....	31,871	32,378	33,876	38,246	44,257	47,936	41,978	37,807	36,654	36,439	36,651	38,573
Sociology.....	14,347	12,165	12,359	14,393	17,632	21,007	22,974	24,750	24,884	25,685	25,363	25,318
Other social sciences.....	12,858	11,134	11,511	12,311	14,612	16,580	17,101	18,168	17,970	18,517	18,746	19,389
Non-S&E.....	663,108	658,604	672,006	707,350	770,322	813,243	796,288	798,107	808,961	854,499	857,442	890,119
Engineering technologies.....	18,602	20,476	20,577	20,098	18,294	17,022	16,607	14,631	14,825	15,238	15,127	15,406
<b>Male</b>												
All fields.....	483,395	486,660	485,003	487,566	508,952	537,536	531,146	525,282	525,714	536,158	536,023	553,957
S&E.....	194,380	203,402	199,981	189,338	189,328	200,315	202,217	201,471	200,221	197,669	197,623	204,408
Engineering.....	63,018	66,326	63,021	56,759	52,522	52,724	52,421	50,882	49,575	47,320	47,344	47,952

## Earned bachelor's degrees, by field and sex: Selected years, 1983–2002

Field and sex	1983	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Aerospace.....	1,955	2,613	2,741	2,643	2,545	2,419	1,541	1,088	1,050	1,029	1,194	1,435
Chemical.....	6,761	6,848	4,574	3,017	2,564	3,335	4,367	4,701	4,525	4,016	4,033	3,823
Civil.....	9,263	8,388	7,550	6,841	6,803	8,009	9,031	9,441	8,946	7,263	6,908	6,667
Electrical.....	17,283	20,936	23,227	21,130	18,757	17,339	15,409	14,416	14,310	15,322	15,829	16,257
Industrial.....	2,824	2,842	2,929	2,860	2,723	2,547	2,493	2,918	2,968	2,630	2,594	2,635
Materials.....	1,104	990	854	853	912	956	799	804	772	704	667	648
Mechanical.....	14,546	15,399	13,996	13,537	12,673	13,076	13,441	12,171	11,727	11,325	11,421	11,594
Other.....	9,282	8,310	7,150	5,878	5,545	5,043	5,340	5,343	5,277	5,031	4,698	4,893
Science.....	131,362	137,076	136,960	132,579	136,806	147,591	149,796	150,589	150,646	150,349	150,279	156,456
Natural sciences.....	70,970	78,306	75,460	65,691	61,906	67,799	73,540	77,597	78,906	80,791	81,821	85,257
Agricultural sciences.....	9,206	7,737	6,129	5,557	5,292	7,294	8,943	10,094	10,224	9,780	8,976	8,726
Biological sciences.....	21,926	20,435	20,039	18,295	19,715	23,145	26,972	29,873	30,011	26,946	25,005	24,073
Earth, atmospheric, and ocean sciences.....	5,450	5,715	3,629	2,380	1,946	2,453	2,954	2,924	2,722	2,430	2,346	2,282
Atmospheric sciences.....	330	346	284	278	303	305	362	348	339	376	324	374
Earth sciences.....	5,007	5,244	3,218	1,995	1,530	1,978	2,456	2,445	2,262	1,950	1,934	1,788
Oceanography.....	113	125	127	107	113	170	136	131	121	104	88	120
Mathematics/computer sciences.....	22,802	32,985	34,871	29,682	25,700	25,483	25,066	25,324	26,670	33,045	37,242	42,142
Computer sciences.....	15,690	24,690	26,038	21,418	17,896	17,629	17,706	18,490	20,235	26,914	31,284	35,631
Mathematics.....	7,112	8,295	8,833	8,264	7,804	7,854	7,360	6,834	6,435	6,131	5,958	6,511
Physical sciences.....	11,586	11,434	10,792	9,777	9,253	9,424	9,605	9,382	9,279	8,590	8,252	8,034
Astronomy.....	72	89	107	127	112	120	117	94	110	106	145	160
Chemistry.....	7,303	6,807	6,156	5,391	5,046	5,365	5,783	6,043	5,900	5,483	5,047	4,719
Physics.....	3,317	3,550	3,629	3,705	3,575	3,403	3,161	2,741	2,789	2,638	2,701	2,825
Other physical sciences.....	894	988	900	554	520	536	544	504	480	363	359	330
Social/behavioral sciences.....	60,392	58,770	61,500	66,888	74,900	79,792	76,256	72,992	71,740	69,558	68,458	71,199
Psychology.....	13,228	12,815	13,399	14,291	16,155	18,029	19,638	19,491	19,057	17,540	16,701	17,397
Social sciences.....	47,164	45,955	48,101	52,597	58,745	61,763	56,618	53,501	52,683	52,018	51,757	53,802
Anthropology.....	1,016	1,021	1,003	1,155	1,486	1,863	2,117	2,446	2,414	2,315	2,192	2,272
Area/ethnic studies.....	1,104	1,101	1,251	1,613	1,858	1,967	2,082	2,001	2,000	2,045	1,904	2,036
Economics.....	15,163	15,400	16,335	17,224	17,725	16,161	13,235	12,253	12,453	13,016	13,453	14,438
History of science.....	0	0	0	0	0	4	14	14	21	40	45	40
Linguistics.....	117	140	140	134	179	159	153	184	197	229	245	249
Political science/public administration.....	18,679	18,799	19,365	21,622	24,648	26,701	23,010	19,953	19,334	18,092	18,014	18,830
Sociology.....	4,363	3,767	3,897	4,488	5,427	6,638	7,435	7,846	7,762	7,657	7,440	7,307
Other social sciences.....	6,722	5,727	6,110	6,361	7,422	8,270	8,572	8,804	8,502	8,624	8,464	8,630
Non-S&E.....	289,015	283,258	285,022	298,228	319,624	337,221	328,929	323,811	325,493	338,489	338,400	349,549
Engineering technologies.....	16,473	18,224	18,429	17,999	16,329	15,114	14,704	12,925	12,993	13,291	13,072	13,267
Female												
All fields.....	497,284	504,217	518,529	542,605	599,045	641,742	643,290	661,307	673,865	716,963	721,625	751,773
S&E.....	123,191	128,871	131,545	133,483	148,347	165,720	175,931	187,011	190,397	200,953	202,583	211,203
Engineering.....	9,652	11,246	11,404	10,188	9,665	9,981	10,950	11,470	11,339	12,216	11,914	12,687
Aerospace.....	172	241	248	301	324	316	230	202	197	238	304	312
Chemical.....	1,789	2,093	1,540	1,170	1,164	1,564	2,024	2,276	2,196	2,203	2,055	2,123
Civil.....	1,484	1,342	1,196	1,174	1,280	1,779	2,298	2,569	2,576	2,333	2,041	2,224
Electrical.....	1,922	2,732	3,564	3,188	2,763	2,259	2,170	2,018	2,012	2,350	2,542	2,720

## Earned bachelor's degrees, by field and sex: Selected years, 1983–2002

Field and sex	1983	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Industrial.....	1,000	1,167	1,384	1,261	1,097	1,037	1,026	1,079	1,020	1,307	1,224	1,341
Materials.....	288	286	298	261	254	260	247	259	235	268	263	285
Mechanical.....	1,485	1,801	1,727	1,680	1,590	1,632	1,700	1,635	1,636	1,784	1,739	1,783
Other.....	1,512	1,584	1,447	1,153	1,193	1,134	1,255	1,432	1,467	1,733	1,746	1,899
Science.....	113,539	117,625	120,141	123,295	138,682	155,739	164,981	175,541	179,058	188,737	190,669	198,516
Natural sciences.....	45,280	51,362	49,706	43,446	43,477	48,946	55,925	62,749	65,535	70,107	70,505	73,279
Agricultural sciences.....	5,322	4,170	3,395	3,025	3,140	4,338	5,637	7,267	7,743	8,464	8,491	8,634
Biological sciences.....	18,957	18,970	19,008	18,654	20,636	24,844	29,918	35,266	37,101	37,958	37,084	37,695
Earth, atmospheric, and ocean sciences.....	1,848	1,861	1,060	801	782	1,050	1,524	1,542	1,599	1,617	1,622	1,702
Atmospheric sciences.....	66	68	61	52	57	64	82	83	104	114	132	151
Earth sciences.....	1,767	1,757	971	712	684	923	1,364	1,385	1,403	1,409	1,400	1,446
Oceanography.....	15	36	28	37	41	63	78	74	92	94	90	105
Mathematics/computer sciences.....	14,542	21,525	21,571	16,595	14,494	13,950	13,554	12,792	13,098	16,078	17,397	19,266
Computer sciences.....	8,992	14,431	13,889	9,545	7,514	6,951	7,063	6,903	7,439	10,474	11,900	13,504
Mathematics/statistics.....	5,550	7,094	7,682	7,050	6,980	6,999	6,491	5,889	5,659	5,604	5,497	5,762
Physical sciences.....	4,611	4,836	4,672	4,371	4,425	4,764	5,292	5,882	5,994	5,990	5,911	5,982
Astronomy.....	24	30	23	37	39	47	52	46	58	54	95	116
Chemistry.....	3,736	3,894	3,674	3,431	3,415	3,744	4,233	4,883	4,973	4,907	4,775	4,729
Physics.....	483	561	695	642	670	677	675	652	666	724	756	826
Other physical sciences.....	368	351	280	261	301	296	332	301	297	305	285	311
Social/behavioral sciences.....	68,259	66,263	70,435	79,849	95,205	106,793	109,056	112,792	113,523	118,630	120,164	125,237
Psychology.....	27,597	27,422	29,796	34,663	42,738	49,222	52,963	55,243	55,400	57,114	57,467	59,926
Social sciences.....	40,662	38,841	40,639	45,186	52,467	57,571	56,093	57,549	58,123	61,516	62,697	65,311
Anthropology.....	1,857	1,663	1,799	1,980	2,726	3,340	3,689	4,313	4,480	4,742	4,706	4,926
Area/ethnic studies.....	1,889	1,771	2,062	2,337	2,767	3,106	3,094	3,256	3,441	3,572	3,657	3,808
Economics.....	7,247	7,673	8,067	8,077	7,577	6,812	5,848	5,448	5,791	6,384	6,924	7,389
History of science.....	0	0	0	0	0	5	15	17	18	52	56	63
Linguistics.....	357	350	337	313	393	394	411	393	483	498	512	612
Political science/public administration.....	13,192	13,579	14,511	16,624	19,609	21,235	18,968	17,854	17,320	18,347	18,637	19,743
Sociology.....	9,984	8,398	8,462	9,905	12,205	14,369	15,539	16,904	17,122	18,028	17,923	18,011
Other social sciences.....	6,136	5,407	5,401	5,950	7,190	8,310	8,529	9,364	9,468	9,893	10,282	10,759
Non-S&E.....	374,093	375,346	386,984	409,122	450,698	476,022	467,359	474,296	483,468	516,010	519,042	540,570
Engineering technologies.....	2,129	2,252	2,148	2,099	1,965	1,908	1,903	1,706	1,832	1,947	2,055	2,139

NOTE: Engineering technologies more focused on applied skills than on fundamental science and mathematics.

SOURCES: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, Division of Science Resources Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

## Earned bachelor's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
All races/ethnicities and citizenships											
All fields .....	990,877	1,003,532	1,030,171	1,107,997	1,179,278	1,174,436	1,186,589	1,199,579	1,253,121	1,257,648	1,305,730
S&E .....	342,970	343,070	337,431	356,785	388,435	378,148	388,482	390,618	398,622	400,206	415,611
Engineering .....	77,571	74,423	66,947	62,186	62,670	63,371	62,352	60,914	59,536	59,258	60,639
Aerospace .....	NA	NA	NA	NA	NA	1,771	1,290	1,247	1,267	1,498	1,747
Chemical .....	NA	NA	NA	NA	NA	6,391	6,977	6,721	6,219	6,088	5,946
Civil .....	NA	NA	NA	NA	NA	11,329	12,010	11,522	9,596	8,949	8,891
Electrical .....	NA	NA	NA	NA	NA	17,579	16,434	16,322	17,672	18,371	18,977
Industrial .....	NA	NA	NA	NA	NA	15,141	13,806	13,363	13,109	13,160	13,377
Materials .....	NA	NA	NA	NA	NA	1,046	1,063	1,007	972	930	933
Mechanical .....	NA	NA	NA	NA	NA	3,519	3,997	3,988	3,937	3,818	3,976
Other .....	NA	NA	NA	NA	NA	6,595	6,775	6,744	6,764	6,444	6,792
Science .....	265,399	268,647	270,484	294,599	325,765	314,777	326,130	329,704	339,086	340,948	354,972
Natural sciences .....	130,058	125,371	109,350	105,595	116,742	129,465	140,346	144,441	150,898	152,326	158,536
Agricultural sciences .....	12,418	9,727	8,795	8,643	11,827	14,580	17,361	17,967	18,244	17,467	17,360
Biological sciences .....	39,405	39,047	36,949	40,351	47,877	56,890	65,139	67,112	64,904	62,089	61,768
Earth, atmospheric, and ocean sciences .....	NA	NA	NA	NA	NA	4,478	4,466	4,321	4,047	3,968	3,984
Atmospheric sciences .....	NA	NA	NA	NA	NA	444	431	443	490	456	525
Earth sciences .....	NA	NA	NA	NA	NA	3,820	3,830	3,665	3,359	3,334	3,234
Oceanography .....	NA	NA	NA	NA	NA	214	205	213	198	178	225
Mathematics/computer sciences .....	54,388	56,442	46,277	40,194	39,347	38,620	38,116	39,768	49,123	54,639	61,408
Computer sciences .....	39,121	39,927	30,963	25,410	24,477	24,769	25,393	27,674	37,388	43,184	49,135
Mathematics/statistics .....	15,267	16,515	15,314	14,784	14,870	13,851	12,723	12,094	11,735	11,455	12,273
Physical sciences .....	23,847	20,155	17,329	16,407	17,691	14,897	15,264	15,273	14,580	14,163	14,016
Astronomy .....	NA	NA	NA	NA	NA	169	140	168	160	240	276
Chemistry .....	NA	NA	NA	NA	NA	10,016	10,926	10,873	10,390	9,822	9,448
Physics .....	NA	NA	NA	NA	NA	3,836	3,393	3,455	3,362	3,457	3,651
Other physical sciences .....	NA	NA	NA	NA	NA	876	805	777	668	644	641
Social/behavioral sciences .....	135,341	143,276	161,134	189,004	209,023	185,312	185,784	185,263	188,188	188,622	196,436
Psychology .....	40,237	43,195	48,954	58,893	67,251	72,601	74,734	74,457	74,654	74,168	77,323
Social sciences .....	95,104	100,081	112,180	130,111	141,772	112,711	111,050	110,806	113,534	114,454	119,113
Anthropology .....	NA	NA	NA	NA	NA	5,806	6,759	6,894	7,057	6,898	7,198
Area/ethnic studies .....	2,872	3,313	3,950	4,625	5,484	5,176	5,257	5,441	5,617	5,561	5,844
Economics .....	NA	NA	NA	NA	NA	19,083	17,701	18,244	19,400	20,377	21,827
History of science .....	NA	NA	NA	NA	NA	29	31	39	92	101	103
Linguistics .....	NA	NA	NA	NA	NA	564	577	680	727	757	861
Political science/public administration .....	NA	NA	NA	NA	NA	41,978	37,807	36,654	36,439	36,651	38,573
Sociology .....	NA	NA	NA	NA	NA	22,974	24,750	24,884	25,685	25,363	25,318
Other social sciences .....	NA	NA	NA	NA	NA	17,101	18,168	17,970	18,517	18,746	19,389
Non-S&E .....	647,907	660,462	692,740	751,212	790,843	796,288	798,107	808,961	854,499	857,442	890,119
Engineering technologies .....	20,533	20,577	20,098	18,294	16,987	16,607	14,631	14,825	15,238	15,127	15,406
U.S. citizen/permanent resident											
All fields .....	961,619	974,940	1,003,714	1,078,340	1,146,907	1,137,424	1,147,815	1,160,692	1,214,326	1,218,169	1,264,606
S&E .....	328,899	329,393	325,108	344,061	374,633	363,463	373,745	375,909	383,438	384,492	399,288
Engineering .....	71,381	68,534	61,875	57,604	58,165	58,561	57,555	56,271	55,003	54,839	56,372

## Earned bachelor's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Aerospace.....	NA	NA	NA	NA	NA	1,655	1,161	1,110	1,146	1,350	1,625
Chemical.....	NA	NA	NA	NA	NA	5,867	6,406	6,214	5,774	5,664	5,499
Civil.....	NA	NA	NA	NA	NA	10,892	11,536	11,012	9,137	8,537	8,520
Electrical.....	NA	NA	NA	NA	NA	15,462	14,564	14,485	15,836	16,529	17,108
Industrial.....	NA	NA	NA	NA	NA	3,095	3,517	3,502	3,456	3,343	3,534
Materials.....	NA	NA	NA	NA	NA	1,016	1,035	974	935	888	904
Mechanical.....	NA	NA	NA	NA	NA	14,360	12,898	12,566	12,320	12,416	12,694
Other.....	NA	NA	NA	NA	NA	6,214	6,438	6,408	6,399	6,112	6,488
Science.....	257,518	260,859	263,233	286,457	316,468	304,902	316,190	319,638	328,435	329,653	342,916
Natural sciences.....	125,047	120,352	104,928	101,039	111,656	124,311	135,412	139,460	145,321	146,216	151,871
Agricultural sciences.....	11,981	9,438	8,529	8,373	11,478	14,322	17,108	17,674	17,986	17,219	17,098
Biological sciences.....	38,490	38,185	36,076	39,288	46,660	55,607	63,677	65,689	63,528	60,652	60,311
Earth, atmospheric, and ocean sciences.....	NA	NA	NA	NA	NA	4,405	4,388	4,239	4,001	3,919	3,925
Atmospheric sciences.....	NA	NA	NA	NA	NA	440	420	439	482	454	519
Earth sciences.....	NA	NA	NA	NA	NA	3,761	3,770	3,590	3,326	3,288	3,185
Oceanography.....	NA	NA	NA	NA	NA	204	198	210	193	177	221
Mathematics/computer sciences.....	51,509	53,209	43,599	37,579	36,591	35,730	35,568	37,178	45,758	50,821	57,066
Computer sciences.....	37,005	37,349	28,828	23,373	22,273	22,472	23,378	25,537	34,502	39,792	45,247
Mathematics/statistics.....	14,504	15,860	14,771	14,206	14,318	13,258	12,190	11,641	11,256	11,029	11,819
Physical sciences.....	23,067	19,520	16,724	15,799	16,927	14,247	14,671	14,680	14,048	13,605	13,471
Astronomy.....	NA	NA	NA	NA	NA	159	132	157	156	227	260
Chemistry.....	NA	NA	NA	NA	NA	9,620	10,530	10,488	10,046	9,487	9,105
Physics.....	NA	NA	NA	NA	NA	3,613	3,217	3,277	3,202	3,275	3,484
Other physical sciences.....	NA	NA	NA	NA	NA	855	792	758	644	616	622
Social/behavioral sciences.....	132,471	140,507	158,305	185,418	204,812	180,591	180,778	180,178	183,114	183,437	191,045
Psychology.....	39,694	42,701	48,443	58,202	66,421	71,659	73,685	73,287	73,390	72,885	75,956
Social sciences.....	92,777	97,806	109,862	127,216	138,391	108,932	107,093	106,891	109,724	110,552	115,089
Anthropology.....	NA	NA	NA	NA	NA	5,691	6,586	6,792	6,941	6,778	7,084
Area/ethnic studies.....	2,800	3,246	3,824	4,491	5,348	4,951	5,059	5,264	5,439	5,394	5,684
Economics.....	NA	NA	NA	NA	NA	17,393	15,877	16,461	17,709	18,553	19,923
History of science.....	NA	NA	NA	NA	NA	28	31	38	91	98	101
Linguistics.....	NA	NA	NA	NA	NA	484	491	580	644	680	780
Political science/public administration.....	NA	NA	NA	NA	NA	40,890	36,755	35,475	35,285	35,504	37,411
Sociology.....	NA	NA	NA	NA	NA	22,642	24,451	24,575	25,386	25,105	25,023
Other social sciences.....	NA	NA	NA	NA	NA	16,853	17,843	17,706	18,229	18,440	19,083
Non-S&E.....	632,720	645,547	678,606	734,279	772,274	773,961	774,070	784,783	830,888	833,677	865,318
Engineering technologies.....	19,256	19,591	19,439	17,582	16,546	16,057	14,074	14,234	14,797	14,609	14,947
White											
All fields.....	826,356	819,477	840,326	892,363	931,603	892,785	877,759	878,018	895,129	888,412	912,956
S&E.....	281,394	272,090	266,862	278,190	297,171	275,819	274,800	272,561	270,416	267,848	276,379
Engineering.....	60,992	56,491	50,081	45,162	44,853	43,766	41,666	40,574	39,067	38,767	39,723
Aerospace.....	NA	NA	NA	NA	NA	1,301	869	877	899	1,058	1,279
Chemical.....	NA	NA	NA	NA	NA	4,417	4,631	4,405	4,062	4,061	3,976
Civil.....	NA	NA	NA	NA	NA	8,646	8,940	8,481	7,003	6,615	6,624
Electrical.....	NA	NA	NA	NA	NA	10,079	9,293	9,174	9,715	9,891	9,975

## Earned bachelor's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Industrial .....	NA	NA	NA	NA	NA	2,220	2,271	2,333	2,385	2,330	2,428
Materials .....	NA	NA	NA	NA	NA	851	813	760	741	708	712
Mechanical .....	NA	NA	NA	NA	NA	11,332	9,919	9,656	9,467	9,541	9,876
Other .....	NA	NA	NA	NA	NA	4,920	4,930	4,888	4,795	4,563	4,853
Science.....	220,402	215,599	216,781	233,028	252,318	232,053	233,134	231,987	231,349	229,081	236,656
Natural sciences.....	107,076	98,344	84,578	80,111	87,401	94,609	100,831	102,066	103,333	102,187	105,430
Agricultural sciences.....	11,233	8,696	7,938	7,704	10,556	12,873	15,246	15,616	15,655	14,950	14,729
Biological sciences .....	31,818	30,549	28,404	30,264	35,080	40,697	45,387	45,912	43,907	41,325	41,288
Earth, atmospheric, and ocean sciences .....	NA	NA	NA	NA	NA	4,012	3,986	3,803	3,561	3,436	3,450
Atmospheric sciences.....	NA	NA	NA	NA	NA	401	390	416	437	395	467
Earth sciences.....	NA	NA	NA	NA	NA	3,430	3,429	3,207	2,959	2,888	2,806
Oceanography.....	NA	NA	NA	NA	NA	181	167	180	165	153	177
Mathematics/computer sciences .....	43,484	42,446	33,998	28,998	27,824	26,087	25,278	25,972	30,114	32,664	36,262
Computer sciences.....	31,321	29,181	21,711	17,349	16,155	15,601	15,846	17,069	21,719	24,491	27,506
Mathematics/statistics .....	12,163	13,265	12,287	11,649	11,669	10,486	9,432	8,903	8,395	8,173	8,756
Physical sciences .....	20,541	16,653	14,238	13,145	13,941	10,940	10,934	10,763	10,096	9,812	9,701
Astronomy.....	NA	NA	NA	NA	NA	132	112	127	131	185	204
Chemistry.....	NA	NA	NA	NA	NA	7,112	7,537	7,370	6,900	6,505	6,268
Physics.....	NA	NA	NA	NA	NA	3,004	2,623	2,652	2,543	2,625	2,742
Other physical sciences.....	NA	NA	NA	NA	NA	692	662	614	522	497	487
Social/behavioral sciences.....	113,326	117,255	132,203	152,917	164,917	137,444	132,303	129,921	128,016	126,894	131,226
Psychology .....	33,959	35,761	40,506	48,134	53,763	55,914	55,346	54,225	52,397	51,562	53,324
Social sciences.....	79,367	81,494	91,697	104,783	111,154	81,530	76,957	75,696	75,619	75,332	77,902
Anthropology.....	NA	NA	NA	NA	NA	4,696	5,225	5,383	5,378	5,222	5,380
Area/ethnic studies.....	2,242	2,554	2,998	3,414	3,759	3,156	3,026	2,987	2,943	2,938	3,076
Economics.....	NA	NA	NA	NA	NA	12,869	11,437	11,599	12,102	12,419	13,374
History of science.....	NA	NA	NA	NA	NA	26	24	33	58	57	60
Linguistics.....	NA	NA	NA	NA	NA	339	359	397	450	499	585
Political science/public administration .....	NA	NA	NA	NA	NA	30,907	26,770	25,624	24,976	24,963	26,162
Sociology .....	NA	NA	NA	NA	NA	16,170	16,661	16,450	16,561	16,105	15,838
Other social sciences.....	NA	NA	NA	NA	NA	13,367	13,455	13,223	13,151	13,129	13,427
Non-S&E.....	544,962	547,387	573,464	614,173	634,432	616,966	602,959	605,457	624,713	620,564	636,577
Engineering technologies.....	16,673	16,541	16,156	14,279	13,245	12,675	10,988	11,044	10,871	10,698	10,885
Asian/Pacific Islander											
All fields.....	25,562	31,921	37,573	41,725	50,587	59,295	67,358	69,988	75,265	75,496	79,149
S&E.....	13,323	16,934	19,138	20,552	24,504	28,604	32,568	34,004	35,553	36,398	37,452
Engineering.....	4,482	5,590	6,075	6,220	6,407	6,785	7,085	7,002	6,854	7,025	7,121
Aerospace.....	NA	NA	NA	NA	NA	159	118	96	98	103	128
Chemical .....	NA	NA	NA	NA	NA	652	874	897	788	702	636
Civil.....	NA	NA	NA	NA	NA	942	1,017	909	646	521	482
Electrical.....	NA	NA	NA	NA	NA	2,769	2,663	2,757	3,143	3,522	3,774
Industrial .....	NA	NA	NA	NA	NA	287	437	369	332	319	356
Materials .....	NA	NA	NA	NA	NA	93	84	119	91	88	85
Mechanical.....	NA	NA	NA	NA	NA	1,249	1,135	1,128	1,002	998	892
Other .....	NA	NA	NA	NA	NA	634	757	727	754	772	768



## Earned bachelor's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Science.....	8,841	11,344	13,063	14,332	18,097	21,819	25,483	27,002	28,699	29,373	30,331
Natural sciences.....	5,809	7,130	7,260	7,595	9,524	12,009	14,212	15,038	16,331	16,564	17,129
Agricultural sciences.....	165	182	144	128	163	282	396	439	454	399	411
Biological sciences.....	1,952	2,565	2,907	3,559	5,103	7,045	8,541	8,869	8,025	7,493	7,209
Earth, atmospheric, and ocean sciences.....	NA	NA	NA	NA	NA	102	95	92	98	86	85
Atmospheric sciences.....	NA	NA	NA	NA	NA	12	7	5	14	14	8
Earth sciences.....	NA	NA	NA	NA	NA	77	77	76	77	64	65
Oceanography.....	NA	NA	NA	NA	NA	13	11	11	7	8	12
Mathematics/computer sciences.....	2,929	3,489	3,287	2,925	3,160	3,335	3,655	4,054	6,292	7,242	8,207
Computer sciences.....	2,044	2,455	2,268	2,010	2,245	2,371	2,803	3,220	5,401	6,326	7,207
Mathematics/statistics.....	885	1,034	1,019	915	915	964	852	834	891	916	1,000
Physical sciences.....	763	894	922	983	1,098	1,245	1,525	1,584	1,462	1,344	1,217
Astronomy.....	NA	NA	NA	NA	NA	13	7	12	9	12	24
Chemistry.....	NA	NA	NA	NA	NA	986	1,280	1,337	1,208	1,126	978
Physics.....	NA	NA	NA	NA	NA	214	204	208	218	184	184
Other physical sciences.....	NA	NA	NA	NA	NA	32	34	27	27	22	31
Social/behavioral sciences.....	3,032	4,214	5,803	6,737	8,573	9,810	11,271	11,964	12,368	12,809	13,202
Psychology.....	845	1,154	1,575	1,885	2,538	3,331	4,067	4,267	4,188	4,150	4,241
Social sciences.....	2,187	3,060	4,228	4,852	6,035	6,479	7,204	7,697	8,180	8,659	8,961
Anthropology.....	NA	NA	NA	NA	NA	259	363	404	340	332	377
Area/ethnic studies.....	137	207	327	345	450	510	574	676	737	714	686
Economics.....	NA	NA	NA	NA	NA	1,995	2,154	2,430	2,774	3,082	3,235
History of science.....	NA	NA	NA	NA	NA	2	4	3	12	15	20
Linguistics.....	NA	NA	NA	NA	NA	51	62	85	72	69	73
Political science/public administration.....	NA	NA	NA	NA	NA	2,088	2,100	2,141	2,077	2,228	2,325
Sociology.....	NA	NA	NA	NA	NA	989	1,228	1,212	1,324	1,300	1,325
Other social sciences.....	NA	NA	NA	NA	NA	585	719	746	844	919	920
Non-S&E.....	12,239	14,987	18,435	21,173	26,083	30,691	34,790	35,984	39,712	39,098	41,697
Engineering technologies.....	542	807	839	768	768	730	474	476	738	672	710
Black											
All fields.....	57,563	55,103	56,837	65,009	76,667	85,287	92,067	95,878	104,212	106,648	111,032
S&E.....	17,040	17,230	17,385	19,987	24,421	26,911	29,825	30,751	32,924	33,290	34,796
Engineering.....	2,039	2,315	2,067	2,229	2,577	2,845	3,077	3,019	3,063	2,884	2,982
Aerospace.....	NA	NA	NA	NA	NA	64	50	35	40	39	43
Chemical.....	NA	NA	NA	NA	NA	305	373	385	383	373	346
Civil.....	NA	NA	NA	NA	NA	326	403	401	403	329	317
Electrical.....	NA	NA	NA	NA	NA	1,048	1,067	1,047	1,049	1,082	1,103
Industrial.....	NA	NA	NA	NA	NA	236	245	262	256	237	256
Materials.....	NA	NA	NA	NA	NA	22	20	32	24	27	32
Mechanical.....	NA	NA	NA	NA	NA	604	642	548	594	515	561
Other.....	NA	NA	NA	NA	NA	240	277	309	314	282	324
Science.....	15,001	14,915	15,318	17,758	21,844	24,066	26,748	27,732	29,861	30,406	31,814
Natural sciences.....	6,009	6,524	6,005	5,834	6,972	7,994	9,049	9,721	10,732	11,272	11,965
Agricultural sciences.....	219	157	143	162	219	253	367	409	450	428	454
Biological sciences.....	2,047	1,890	1,916	2,111	2,739	3,232	4,124	4,553	4,739	4,693	4,634

## Earned bachelor's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Earth, atmospheric, and ocean sciences .....	NA	NA	NA	NA	NA	64	57	70	51	56	62
Atmospheric sciences.....	NA	NA	NA	NA	NA	11	8	7	10	2	10
Earth sciences.....	NA	NA	NA	NA	NA	49	41	60	40	52	42
Oceanography .....	NA	NA	NA	NA	NA	4	8	3	1	2	10
Mathematics/computer sciences .....	2,913	3,654	3,249	2,808	3,178	3,475	3,448	3,632	4,402	5,099	5,797
Computer sciences.....	2,143	2,820	2,457	1,997	2,213	2,517	2,432	2,666	3,497	4,291	4,954
Mathematics/statistics .....	770	834	792	811	965	958	1,016	966	905	808	843
Physical sciences .....	830	823	697	753	836	970	1,053	1,057	1,090	996	1,018
Astronomy.....	NA	NA	NA	NA	NA	3	0	2	1	2	3
Chemistry.....	NA	NA	NA	NA	NA	738	861	824	888	827	796
Physics.....	NA	NA	NA	NA	NA	172	148	179	152	133	182
Other physical sciences.....	NA	NA	NA	NA	NA	57	44	52	49	34	37
Social/behavioral sciences.....	8,992	8,391	9,313	11,924	14,872	16,072	17,699	18,011	19,129	19,134	19,849
Psychology .....	2,667	2,451	2,743	3,688	4,618	5,741	6,647	6,852	7,572	7,562	7,747
Social sciences.....	6,325	5,940	6,570	8,236	10,254	10,331	11,052	11,159	11,557	11,572	12,102
Anthropology .....	NA	NA	NA	NA	NA	145	220	234	268	242	253
Area/ethnic studies.....	219	194	233	354	516	607	653	692	738	691	784
Economics.....	NA	NA	NA	NA	NA	1,156	925	979	1,044	1,089	1,221
History of science.....	NA	NA	NA	NA	NA	0	2	0	6	6	4
Linguistics.....	NA	NA	NA	NA	NA	17	8	21	14	24	25
Political science/public administration .....	NA	NA	NA	NA	NA	3,859	3,761	3,638	3,602	3,554	3,737
Sociology .....	NA	NA	NA	NA	NA	3,208	3,851	3,944	4,097	4,200	4,168
Other social sciences.....	NA	NA	NA	NA	NA	1,339	1,632	1,651	1,788	1,766	1,910
Non-S&E.....	40,523	37,873	39,452	45,022	52,246	58,376	62,242	65,127	71,288	73,358	76,236
Engineering technologies .....	1,277	1,269	1,208	1,227	1,132	1,321	1,424	1,370	1,431	1,389	1,430
Hispanic											
All fields .....	36,391	38,196	41,361	49,027	57,845	66,691	74,938	78,125	88,324	89,972	95,104
S&E.....	12,031	12,419	13,327	15,351	18,442	21,359	24,445	25,712	27,984	28,321	29,871
Engineering.....	2,187	2,554	2,561	2,566	2,961	3,651	4,125	4,125	4,075	4,016	4,136
Aerospace.....	NA	NA	NA	NA	NA	93	93	78	67	92	97
Chemical .....	NA	NA	NA	NA	NA	345	379	393	380	341	353
Civil .....	NA	NA	NA	NA	NA	693	874	920	762	742	761
Electrical.....	NA	NA	NA	NA	NA	1,101	1,123	1,070	1,283	1,302	1,411
Industrial .....	NA	NA	NA	NA	NA	302	451	450	391	356	372
Materials .....	NA	NA	NA	NA	NA	26	89	42	38	34	33
Mechanical .....	NA	NA	NA	NA	NA	827	832	866	846	880	819
Other .....	NA	NA	NA	NA	NA	264	284	306	308	269	290
Science.....	9,844	9,865	10,766	12,785	15,481	17,708	20,320	21,587	23,909	24,305	25,735
Natural sciences.....	4,359	4,660	4,417	4,705	5,034	6,120	7,094	7,905	8,844	9,160	9,415
Agricultural sciences.....	250	233	196	213	217	383	559	631	634	607	662
Biological sciences .....	2,069	2,146	2,090	2,264	2,652	3,101	3,795	4,283	4,446	4,547	4,367
Earth, atmospheric, and ocean sciences .....	NA	NA	NA	NA	NA	84	113	118	127	157	136
Atmospheric sciences.....	NA	NA	NA	NA	NA	5	8	8	9	15	10
Earth sciences.....	NA	NA	NA	NA	NA	74	100	98	105	130	109
Oceanography .....	NA	NA	NA	NA	NA	5	5	12	13	12	17

## Earned bachelor's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Mathematics/computer sciences .....	1,380	1,696	1,568	1,695	1,566	1,836	1,887	2,077	2,754	2,979	3,386
Computer sciences.....	1,045	1,375	1,195	1,215	1,096	1,314	1,327	1,473	2,155	2,354	2,714
Mathematics/statistics .....	335	321	373	480	470	522	560	604	599	625	672
Physical sciences .....	660	585	563	533	599	716	740	796	883	870	864
Astronomy.....	NA	NA	NA	NA	NA	6	4	11	7	16	10
Chemistry.....	NA	NA	NA	NA	NA	553	593	640	719	669	666
Physics.....	NA	NA	NA	NA	NA	105	119	117	125	151	157
Other physical sciences.....	NA	NA	NA	NA	NA	52	24	28	32	34	31
Social/behavioral sciences.....	5,485	5,205	6,349	8,080	10,447	11,588	13,226	13,682	15,065	15,145	16,320
Psychology .....	1,734	1,702	2,152	2,746	3,587	4,543	5,282	5,509	6,127	6,178	6,692
Social sciences.....	3,751	3,503	4,197	5,334	6,860	7,045	7,944	8,173	8,938	8,967	9,628
Anthropology .....	NA	NA	NA	NA	NA	308	445	397	462	465	494
Area/ethnic studies.....	168	144	169	259	428	476	570	678	659	648	688
Economics.....	NA	NA	NA	NA	NA	844	829	851	976	1,030	1,068
History of science.....	NA	NA	NA	NA	NA	0	1	2	3	5	7
Linguistics.....	NA	NA	NA	NA	NA	40	24	39	42	45	39
Political science/public administration .....	NA	NA	NA	NA	NA	2,866	2,912	2,828	2,975	2,925	3,135
Sociology .....	NA	NA	NA	NA	NA	1,567	1,908	2,081	2,317	2,291	2,440
Other social sciences.....	NA	NA	NA	NA	NA	944	1,255	1,297	1,504	1,558	1,757
Non-S&E.....	24,360	25,777	28,034	33,676	39,403	45,332	50,493	52,413	60,340	61,651	65,233
Engineering technologies.....	525	664	634	731	853	884	723	739	1,068	1,108	1,112
American Indian/Alaska Native											
All fields.....	4,246	3,866	3,967	4,486	5,574	6,454	7,238	7,706	8,431	8,664	8,668
S&E.....	1,384	1,290	1,238	1,344	1,819	1,995	2,298	2,392	2,611	2,796	2,642
Engineering.....	209	210	177	158	176	221	263	254	328	256	308
Aerospace.....	NA	NA	NA	NA	NA	3	3	10	7	8	17
Chemical .....	NA	NA	NA	NA	NA	31	29	31	42	31	33
Civil.....	NA	NA	NA	NA	NA	58	71	62	84	65	67
Electrical.....	NA	NA	NA	NA	NA	43	50	53	81	56	70
Industrial .....	NA	NA	NA	NA	NA	4	19	15	23	17	21
Materials .....	NA	NA	NA	NA	NA	2	6	3	5	4	6
Mechanical .....	NA	NA	NA	NA	NA	55	45	47	53	51	61
Other .....	NA	NA	NA	NA	NA	25	40	33	33	24	33
Science.....	1,175	1,080	1,061	1,186	1,643	1,774	2,035	2,138	2,283	2,540	2,334
Natural sciences.....	511	423	408	421	504	675	743	833	918	1,076	963
Agricultural sciences.....	54	43	58	53	64	124	146	151	190	215	158
Biological sciences .....	161	144	145	176	211	285	341	399	379	431	410
Earth, atmospheric, and ocean sciences .....	NA	NA	NA	NA	NA	26	31	25	43	35	26
Atmospheric sciences.....	NA	NA	NA	NA	NA	0	1	0	4	5	1
Earth sciences.....	NA	NA	NA	NA	NA	25	26	25	35	29	23
Oceanography .....	NA	NA	NA	NA	NA	1	4	0	4	1	2
Mathematics/computer sciences .....	198	164	143	123	136	168	156	177	241	322	286
Computer sciences.....	139	112	90	80	81	110	99	112	172	271	229
Mathematics/statistics .....	59	52	53	43	55	58	57	65	69	51	57

## Earned bachelor's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Physical sciences .....	98	72	62	69	93	72	69	81	65	73	83
Astronomy .....	NA	NA	NA	NA	NA	0	0	0	2	2	2
Chemistry .....	NA	NA	NA	NA	NA	57	54	64	49	47	57
Physics .....	NA	NA	NA	NA	NA	13	11	14	12	19	21
Other physical sciences .....	NA	NA	NA	NA	NA	2	4	3	2	5	3
Social/behavioral sciences .....	664	657	653	765	1,139	1,099	1,292	1,305	1,365	1,464	1,371
Psychology .....	201	180	208	235	335	407	496	515	518	561	542
Social sciences .....	463	477	445	530	804	692	796	790	847	903	829
Anthropology .....	NA	NA	NA	NA	NA	69	86	80	89	93	85
Area/ethnic studies .....	16	28	25	24	50	40	62	75	80	106	121
Economics .....	NA	NA	NA	NA	NA	73	68	69	71	68	65
History of science .....	NA	NA	NA	NA	NA	0	0	0	1	0	0
Linguistics .....	NA	NA	NA	NA	NA	6	5	10	10	2	2
Political science/public administration .....	NA	NA	NA	NA	NA	218	253	215	231	234	241
Sociology .....	NA	NA	NA	NA	NA	176	192	197	220	225	184
Other social sciences .....	NA	NA	NA	NA	NA	110	130	144	145	175	131
Non-S&E .....	2,862	2,576	2,729	3,142	3,755	4,459	4,940	5,314	5,820	5,868	6,026
Engineering technologies .....	103	78	105	75	111	115	101	105	109	128	101
Other/unknown race/ethnicity											
All fields .....	11,501	26,377	23,650	25,730	24,631	26,912	28,455	30,977	42,965	48,977	57,697
S&E .....	3,727	9,430	7,158	8,637	8,276	8,775	9,809	10,489	13,950	15,839	18,148
Engineering .....	1,472	1,374	914	1,269	1,191	1,293	1,339	1,297	1,616	1,891	2,102
Aerospace .....	NA	NA	NA	NA	NA	35	28	14	35	50	61
Chemical .....	NA	NA	NA	NA	NA	117	120	103	119	156	155
Civil .....	NA	NA	NA	NA	NA	227	231	239	239	265	269
Electrical .....	NA	NA	NA	NA	NA	422	368	384	565	676	775
Industrial .....	NA	NA	NA	NA	NA	46	94	73	69	84	101
Materials .....	NA	NA	NA	NA	NA	22	23	18	36	27	36
Mechanical .....	NA	NA	NA	NA	NA	293	325	321	358	431	485
Other .....	NA	NA	NA	NA	NA	131	150	145	195	202	220
Science .....	2,255	8,056	6,244	7,368	7,085	7,482	8,470	9,192	12,334	13,948	16,046
Natural sciences .....	1,283	3,271	2,260	2,373	2,221	2,904	3,483	3,897	5,163	5,957	6,969
Agricultural sciences .....	60	127	50	113	259	407	394	428	603	620	684
Biological sciences .....	443	891	614	914	875	1,247	1,489	1,673	2,032	2,163	2,403
Earth, atmospheric, and ocean sciences .....	NA	NA	NA	NA	NA	117	106	131	121	149	166
Atmospheric sciences .....	NA	NA	NA	NA	NA	11	6	3	8	23	23
Earth sciences .....	NA	NA	NA	NA	NA	106	97	124	110	125	140
Oceanography .....	NA	NA	NA	NA	NA	0	3	4	3	1	3
Mathematics/computer sciences .....	605	1,760	1,354	1,030	727	829	1,144	1,266	1,955	2,515	3,128
Computer sciences .....	313	1,406	1,107	722	483	559	871	997	1,558	2,059	2,637
Mathematics/statistics .....	292	354	247	308	244	270	273	269	397	456	491
Physical sciences .....	175	493	242	316	360	304	350	399	452	510	588
Astronomy .....	NA	NA	NA	NA	NA	5	9	5	6	10	17
Chemistry .....	NA	NA	NA	NA	NA	174	205	253	282	313	340

## Earned bachelor's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Physics.....	NA	NA	NA	NA	NA	105	112	107	152	163	198
Other physical sciences.....	NA	NA	NA	NA	NA	20	24	34	12	24	33
Social/behavioral sciences.....	972	4,785	3,984	4,995	4,864	4,578	4,987	5,295	7,171	7,991	9,077
Psychology.....	288	1,453	1,259	1,514	1,580	1,723	1,847	1,919	2,588	2,872	3,410
Social sciences.....	684	3,332	2,725	3,481	3,284	2,855	3,140	3,376	4,583	5,119	5,667
Anthropology.....	NA	NA	NA	NA	NA	214	247	294	404	424	495
Area/ethnic studies.....	18	119	72	95	145	162	174	156	282	297	329
Economics.....	NA	NA	NA	NA	NA	456	464	533	742	865	960
History of science.....	NA	NA	NA	NA	NA	0	0	0	11	15	10
Linguistics.....	NA	NA	NA	NA	NA	31	33	28	56	41	56
Political science/public administration.....	NA	NA	NA	NA	NA	952	959	1,029	1,424	1,600	1,811
Sociology.....	NA	NA	NA	NA	NA	532	611	691	867	984	1,068
Other social sciences.....	NA	NA	NA	NA	NA	508	652	645	797	893	938
Non-S&E.....	7,774	16,947	16,492	17,093	16,355	18,137	18,646	20,488	29,015	33,138	39,549
Engineering technologies.....	136	232	497	502	437	332	364	500	580	614	709
Temporary resident											
All fields.....	29,258	28,592	26,457	29,657	32,371	37,012	38,774	38,887	38,795	39,479	41,124
S&E.....	14,071	13,677	12,323	12,724	13,802	14,685	14,737	14,709	15,184	15,714	16,323
Engineering.....	6,190	5,889	5,072	4,582	4,505	4,810	4,797	4,643	4,533	4,419	4,267
Aerospace.....	NA	NA	NA	NA	NA	116	129	137	121	148	122
Chemical.....	NA	NA	NA	NA	NA	524	571	507	445	424	447
Civil.....	NA	NA	NA	NA	NA	437	474	510	459	412	371
Electrical.....	NA	NA	NA	NA	NA	2,117	1,870	1,837	1,836	1,842	1,869
Industrial.....	NA	NA	NA	NA	NA	424	480	486	481	475	442
Materials.....	NA	NA	NA	NA	NA	30	28	33	37	42	29
Mechanical.....	NA	NA	NA	NA	NA	781	908	797	789	744	683
Other.....	NA	NA	NA	NA	NA	381	337	336	365	332	304
Science.....	7,881	7,788	7,251	8,142	9,297	9,875	9,940	10,066	10,651	11,295	12,056
Natural sciences.....	5,011	5,019	4,422	4,556	5,086	5,154	4,934	4,981	5,577	6,110	6,665
Agricultural sciences.....	437	289	266	270	349	258	253	293	258	248	262
Biological sciences.....	915	862	873	1,063	1,217	1,283	1,462	1,423	1,376	1,437	1,457
Earth, atmospheric, and ocean sciences.....	NA	NA	NA	NA	NA	73	78	82	46	49	59
Atmospheric sciences.....	NA	NA	NA	NA	NA	4	11	4	8	2	6
Earth sciences.....	NA	NA	NA	NA	NA	59	60	75	33	46	49
Oceanography.....	NA	NA	NA	NA	NA	10	7	3	5	1	4
Mathematics/computer sciences.....	2,879	3,233	2,678	2,615	2,756	2,890	2,548	2,590	3,365	3,818	4,342
Computer sciences.....	2,116	2,578	2,135	2,037	2,204	2,297	2,015	2,137	2,886	3,392	3,888
Mathematics/statistics.....	763	655	543	578	552	593	533	453	479	426	454
Physical sciences.....	780	635	605	608	764	650	593	593	532	558	545
Astronomy.....	NA	NA	NA	NA	NA	10	8	11	4	13	16
Chemistry.....	NA	NA	NA	NA	NA	396	396	385	344	335	343
Physics.....	NA	NA	NA	NA	NA	223	176	178	160	182	167
Other physical sciences.....	NA	NA	NA	NA	NA	21	13	19	24	28	19

**Earned bachelor's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002**

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Social/behavioral sciences .....	2,870	2,769	2,829	3,586	4,211	4,721	5,006	5,085	5,074	5,185	5,391
Psychology .....	543	494	511	691	830	942	1,049	1,170	1,264	1,283	1,367
Social sciences .....	2,327	2,275	2,318	2,895	3,381	3,779	3,957	3,915	3,810	3,902	4,024
Anthropology .....	NA	NA	NA	NA	NA	115	173	102	116	120	114
Area/ethnic studies .....	72	67	126	134	136	225	198	177	178	167	160
Economics .....	NA	NA	NA	NA	NA	1,690	1,824	1,783	1,691	1,824	1,904
History of science .....	NA	NA	NA	NA	NA	1	0	1	1	3	2
Linguistics .....	NA	NA	NA	NA	NA	80	86	100	83	77	81
Political science/public administration .....	NA	NA	NA	NA	NA	1,088	1,052	1,179	1,154	1,147	1,162
Sociology .....	NA	NA	NA	NA	NA	332	299	309	299	258	295
Other social sciences .....	NA	NA	NA	NA	NA	248	325	264	288	306	306
Non-S&E .....	15,187	14,915	14,134	16,933	18,569	22,327	24,037	24,178	23,611	23,765	24,801
Engineering technologies .....	1,277	986	659	712	441	550	557	591	441	518	459

NA = not available

NOTES: Data on race/ethnicity collected on broad fields of study only until 1994. Field taxonomies for data through 1994 do not exactly match field taxonomies used in tables by sex, or race/ethnicity data after 1994. Primary difference between taxonomies: history included in social sciences before 1995 but included in non-S&E from 1995 on. Racial/ethnic breakouts are for U.S. citizens and permanent residents only. Temporary resident includes all racial/ethnic groups. Data not available for 1983 or 1999.

SOURCES: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, Division of Science Resources Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

*Science and Engineering Indicators 2006*

## Earned master's degrees, by field and sex: Selected years, 1983–2002

Field and sex	1983	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
<b>Both sexes</b>												
All fields .....	290,931	287,213	290,532	311,050	338,498	370,973	399,428	420,954	431,871	456,260	466,645	481,132
S&E .....	67,733	70,578	72,603	76,425	78,368	86,425	94,309	93,485	93,918	95,683	98,986	99,173
Engineering .....	18,886	20,972	22,070	23,743	24,013	27,664	28,630	25,874	26,138	25,736	26,523	26,266
Aerospace .....	491	605	737	855	941	1,047	821	625	584	560	611	682
Chemical .....	1,545	1,814	1,386	1,321	1,025	1,220	1,369	1,345	1,372	1,352	1,368	1,267
Civil .....	3,504	3,542	3,267	3,296	3,404	4,438	5,168	4,880	4,736	4,140	4,013	3,947
Electrical .....	4,819	5,649	6,895	7,849	7,942	8,828	8,743	7,341	7,971	8,339	8,630	8,279
Industrial .....	1,432	1,463	1,728	1,823	2,039	2,745	2,873	2,935	3,109	3,048	3,401	3,388
Materials .....	672	713	765	815	787	849	852	724	698	759	709	630
Mechanical .....	2,683	3,272	3,380	3,703	3,680	4,169	4,368	3,756	3,551	3,378	3,472	3,519
Other .....	3,740	3,914	3,912	4,081	4,195	4,368	4,436	4,268	4,117	4,160	4,319	4,554
Science .....	48,847	49,606	50,533	52,682	54,355	58,761	65,679	67,611	67,780	69,947	72,463	72,907
Natural sciences .....	22,557	23,977	25,208	26,047	25,638	27,574	29,288	30,185	30,902	32,864	34,960	35,373
Agricultural sciences .....	3,395	3,113	2,776	2,570	2,600	3,272	3,574	3,927	3,862	3,858	3,752	4,019
Biological sciences .....	5,741	5,095	4,999	4,953	4,806	4,840	5,495	6,594	6,368	6,325	6,487	6,334
Earth, atmospheric, and ocean sciences .....	1,959	2,160	2,051	1,819	1,499	1,397	1,483	1,435	1,426	1,345	1,363	1,406
Atmospheric sciences .....	183	236	216	206	172	202	203	177	199	156	140	141
Earth sciences .....	1,673	1,806	1,729	1,511	1,195	1,052	1,142	1,145	1,105	1,104	1,121	1,151
Oceanography .....	103	118	106	102	132	143	138	113	122	85	102	114
Mathematics/computer sciences .....	8,177	10,004	11,808	12,829	12,956	14,100	14,495	14,088	15,277	17,824	19,621	19,990
Computer sciences .....	5,321	7,101	8,481	9,399	9,324	10,349	10,563	10,489	11,752	14,529	16,341	16,582
Mathematics/statistics .....	2,856	2,903	3,327	3,430	3,632	3,751	3,932	3,599	3,525	3,295	3,280	3,408
Physical sciences .....	3,285	3,605	3,574	3,876	3,777	3,965	4,241	4,141	3,969	3,512	3,737	3,624
Astronomy .....	68	91	71	100	98	135	119	93	101	102	93	112
Chemistry .....	1,632	1,734	1,750	1,800	1,676	1,853	2,105	2,268	2,173	1,908	2,009	1,866
Physics .....	1,370	1,523	1,543	1,739	1,725	1,781	1,826	1,497	1,401	1,244	1,376	1,353
Other physical sciences .....	215	257	210	237	278	196	191	283	294	258	259	293
Social/behavioral sciences .....	26,290	25,629	25,325	26,635	28,717	31,187	36,391	37,426	36,878	37,083	37,503	37,534
Psychology .....	8,439	8,481	8,165	8,652	9,802	10,412	13,132	13,633	13,146	13,708	14,335	14,041
Social sciences .....	17,851	17,148	17,160	17,983	18,915	20,775	23,259	23,793	23,732	23,375	23,168	23,493
Anthropology .....	815	771	746	725	851	927	1,053	1,111	1,098	950	1,092	1,017
Area/ethnic studies .....	834	884	876	990	1,262	1,501	1,584	1,587	1,550	1,529	1,515	1,497
Economics .....	2,568	2,532	2,321	2,333	2,411	2,725	2,838	2,804	2,843	2,515	2,492	2,651
History of science .....	0	0	0	0	0	9	13	18	22	24	26	35
Linguistics .....	598	633	542	579	606	610	603	642	568	553	552	520
Political science/public administration .....	9,715	9,481	9,933	10,314	10,392	11,310	12,802	13,368	13,151	13,035	12,929	13,183
Sociology .....	1,157	1,045	970	1,169	1,293	1,564	1,790	1,752	1,774	2,036	1,901	1,957
Other social sciences .....	2,164	1,802	1,772	1,873	2,100	2,129	2,576	2,511	2,726	2,733	2,661	2,633
Non-S&E .....	223,198	216,635	217,929	234,625	260,130	284,548	305,119	327,469	337,953	360,577	367,659	381,959
<b>Male</b>												
All fields .....	145,114	143,716	141,655	149,399	156,895	169,753	179,198	181,457	185,061	191,234	193,006	198,097
S&E .....	46,734	48,247	48,759	50,845	50,441	55,454	58,518	55,223	55,335	54,213	55,593	55,701
Engineering .....	17,131	18,728	19,300	20,661	20,656	23,570	23,998	21,179	20,975	20,396	20,895	20,692
Aerospace .....	454	574	682	791	855	941	722	550	503	484	521	557

## Earned master's degrees, by field and sex: Selected years, 1983–2002

Field and sex	1983	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Chemical .....	1,369	1,529	1,143	1,092	852	996	1,063	1,013	1,028	1,008	1,016	932
Civil .....	3,122	3,128	2,792	2,851	2,864	3,607	4,123	3,781	3,582	3,065	2,952	2,884
Electrical.....	4,484	5,154	6,178	6,933	7,008	7,777	7,539	6,197	6,595	6,781	6,957	6,718
Industrial.....	1,226	1,236	1,409	1,465	1,603	2,190	2,361	2,331	2,433	2,400	2,612	2,593
Materials .....	567	600	600	634	607	682	668	550	528	558	536	459
Mechanical.....	2,517	3,044	3,133	3,377	3,320	3,769	3,918	3,337	3,090	2,923	3,024	3,051
Other .....	3,392	3,463	3,363	3,518	3,547	3,608	3,604	3,420	3,216	3,177	3,277	3,498
Science.....	29,603	29,519	29,459	30,184	29,785	31,884	34,520	34,044	34,360	33,817	34,698	35,009
Natural sciences .....	15,502	16,246	16,663	17,216	16,503	17,954	18,860	18,684	19,021	19,441	20,606	20,839
Agricultural sciences.....	2,467	2,215	1,882	1,719	1,660	2,007	2,103	2,232	2,153	2,039	1,915	2,022
Biological sciences .....	3,236	2,666	2,555	2,491	2,315	2,374	2,637	3,076	3,014	2,815	2,732	2,665
Earth, atmospheric, and ocean sciences .....	1,515	1,639	1,531	1,337	1,116	1,006	1,032	948	932	832	799	834
Atmospheric sciences.....	159	196	187	174	138	161	152	135	147	119	100	95
Earth sciences.....	1,279	1,361	1,272	1,099	887	756	789	752	708	670	649	678
Oceanography .....	77	82	72	64	91	89	91	61	77	43	50	61
Mathematics/computer sciences .....	5,684	6,951	8,011	8,833	8,709	9,773	10,130	9,620	10,393	11,458	12,724	13,020
Computer sciences.....	3,813	5,064	5,985	6,773	6,563	7,554	7,777	7,510	8,338	9,661	10,833	11,083
Mathematics .....	1,871	1,887	2,026	2,060	2,146	2,219	2,353	2,110	2,055	1,797	1,891	1,937
Physical sciences .....	2,600	2,775	2,684	2,836	2,703	2,794	2,958	2,808	2,529	2,297	2,436	2,298
Astronomy.....	56	76	55	85	79	106	88	61	71	77	57	85
Chemistry.....	1,167	1,166	1,181	1,131	993	1,110	1,220	1,341	1,175	1,085	1,184	1,014
Physics.....	1,208	1,333	1,300	1,448	1,441	1,463	1,535	1,242	1,146	1,000	1,090	1,067
Other physical sciences.....	169	200	148	172	190	115	115	164	137	135	105	132
Social/behavioral sciences.....	14,101	13,273	12,796	12,968	13,282	13,930	15,660	15,360	15,339	14,376	14,092	14,170
Psychology .....	3,254	3,064	2,838	2,814	2,994	2,928	3,735	3,715	3,606	3,415	3,477	3,369
Social sciences.....	10,847	10,209	9,958	10,154	10,288	11,002	11,925	11,645	11,733	10,961	10,615	10,801
Anthropology .....	372	325	305	290	350	393	385	399	412	363	403	375
Area/ethnic studies.....	415	467	467	503	639	740	766	742	708	650	619	618
Economics.....	1,957	1,920	1,739	1,699	1,711	1,909	1,944	1,851	1,899	1,563	1,519	1,601
History of science.....	0	0	0	0	0	5	9	11	15	18	16	18
Linguistics.....	241	224	196	211	218	218	187	224	179	146	172	160
Political science/public administration .....	6,109	5,785	5,830	5,917	5,752	6,069	6,678	6,677	6,585	6,315	6,088	6,205
Sociology.....	515	470	425	507	514	604	678	610	656	649	643	642
Other social sciences.....	1,238	1,018	996	1,027	1,104	1,064	1,278	1,131	1,279	1,257	1,155	1,182
Non-S&E .....	98,380	95,469	92,896	98,554	106,454	114,299	120,680	126,234	129,726	137,021	137,413	142,396
Female												
All fields .....	145,817	143,497	148,877	161,651	181,603	201,220	220,230	239,497	246,810	265,026	273,639	283,035
S&E.....	20,999	22,331	23,844	25,580	27,927	30,971	35,791	38,262	38,583	41,470	43,393	43,472
Engineering.....	1,755	2,244	2,770	3,082	3,357	4,094	4,632	4,695	5,163	5,340	5,628	5,574
Aerospace.....	37	31	55	64	86	106	99	75	81	76	90	125
Chemical .....	176	285	243	229	173	224	306	332	344	344	352	335
Civil .....	382	414	475	445	540	831	1,045	1,099	1,154	1,075	1,061	1,063
Electrical.....	335	495	717	916	934	1,051	1,204	1,144	1,376	1,558	1,673	1,561
Industrial.....	206	227	319	358	436	555	512	604	676	648	789	795
Materials .....	105	113	165	181	180	167	184	174	170	201	173	171



**Earned master's degrees, by field and sex: Selected years, 1983–2002**

Field and sex	1983	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Mechanical .....	166	228	247	326	360	400	450	419	461	455	448	468
Other .....	348	451	549	563	648	760	832	848	901	983	1,042	1,056
Science.....	19,244	20,087	21,074	22,498	24,570	26,877	31,159	33,567	33,420	36,130	37,765	37,898
Natural sciences .....	7,055	7,731	8,545	8,831	9,135	9,620	10,428	11,501	11,881	13,423	14,354	14,534
Agricultural sciences.....	928	898	894	851	940	1,265	1,471	1,695	1,709	1,819	1,837	1,997
Biological sciences.....	2,505	2,429	2,444	2,462	2,491	2,466	2,858	3,518	3,354	3,510	3,755	3,669
Earth, atmospheric, and ocean sciences .....	444	521	520	482	383	391	451	487	494	513	564	572
Atmospheric sciences.....	24	40	29	32	34	41	51	42	52	37	40	46
Earth sciences.....	394	445	457	412	308	296	353	393	397	434	472	473
Oceanography .....	26	36	34	38	41	54	47	52	45	42	52	53
Mathematics/computer sciences .....	2,493	3,053	3,797	3,996	4,247	4,327	4,365	4,468	4,884	6,366	6,897	6,970
Computer sciences.....	1,508	2,037	2,496	2,626	2,761	2,795	2,786	2,979	3,414	4,868	5,508	5,499
Mathematics/statistics.....	985	1,016	1,301	1,370	1,486	1,532	1,579	1,489	1,470	1,498	1,389	1,471
Physical sciences .....	685	830	890	1,040	1,074	1,171	1,283	1,333	1,440	1,215	1,301	1,326
Astronomy.....	12	15	16	15	19	29	31	32	30	25	36	27
Chemistry.....	465	568	569	669	683	743	885	927	998	823	825	852
Physics.....	162	190	243	291	284	318	291	255	255	244	286	286
Other physical sciences.....	46	57	62	65	88	81	76	119	157	123	154	161
Social/behavioral sciences.....	12,189	12,356	12,529	13,667	15,435	17,257	20,731	22,066	21,539	22,707	23,411	23,364
Psychology .....	5,185	5,417	5,327	5,838	6,808	7,484	9,397	9,918	9,540	10,293	10,858	10,672
Social sciences.....	7,004	6,939	7,202	7,829	8,627	9,773	11,334	12,148	11,999	12,414	12,553	12,692
Anthropology .....	443	446	441	435	501	534	668	712	686	587	689	642
Area/ethnic studies.....	419	417	409	487	623	761	818	845	842	879	896	879
Economics.....	611	612	582	634	700	816	894	953	944	952	973	1,050
History of science.....	0	0	0	0	0	4	4	7	7	6	10	17
Linguistics.....	357	409	346	368	388	392	416	418	389	407	380	360
Political science/public administration .....	3,606	3,696	4,103	4,397	4,640	5,241	6,124	6,691	6,566	6,720	6,841	6,978
Sociology.....	642	575	545	662	779	960	1,112	1,142	1,118	1,387	1,258	1,315
Other social sciences.....	926	784	776	846	996	1,065	1,298	1,380	1,447	1,476	1,506	1,451
Non-S&E .....	124,818	121,166	125,033	136,071	153,676	170,249	184,439	201,235	208,227	223,556	230,246	239,563

SOURCES: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, Division of Science Resources Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Science and Engineering Indicators 2006

## Earned master's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
All races/ethnicities and citizenships											
All fields .....	287,213	290,532	311,050	338,498	370,973	399,428	420,954	431,871	456,260	466,645	481,132
S&E.....	64,726	66,774	70,333	72,828	81,415	94,309	93,485	93,918	95,683	98,986	99,173
Engineering.....	20,935	22,057	23,735	24,007	27,658	28,630	25,874	26,138	25,736	26,523	26,266
Aerospace.....	NA	NA	NA	NA	NA	821	625	584	560	611	682
Chemical.....	NA	NA	NA	NA	NA	1,369	1,345	1,372	1,352	1,368	1,267
Civil.....	NA	NA	NA	NA	NA	5,168	4,880	4,736	4,140	4,013	3,947
Electrical.....	NA	NA	NA	NA	NA	8,743	7,341	7,971	8,339	8,630	8,279
Industrial.....	NA	NA	NA	NA	NA	2,873	2,935	3,109	3,048	3,401	3,388
Materials.....	NA	NA	NA	NA	NA	852	724	698	759	709	630
Mechanical.....	NA	NA	NA	NA	NA	4,368	3,756	3,551	3,378	3,472	3,519
Other.....	NA	NA	NA	NA	NA	4,436	4,268	4,117	4,160	4,319	4,554
Science.....	43,791	44,717	46,598	48,821	53,757	65,679	67,611	67,780	69,947	72,463	72,907
Natural sciences.....	24,034	25,269	26,089	25,669	27,713	29,288	30,185	30,902	32,864	34,960	35,373
Agricultural sciences.....	3,152	2,824	2,604	2,625	3,299	3,574	3,927	3,862	3,858	3,752	4,019
Biological sciences.....	5,091	4,999	4,953	4,806	4,798	5,495	6,594	6,368	6,325	6,487	6,334
Earth, atmospheric, and ocean sciences.....	NA	NA	NA	NA	NA	1,483	1,435	1,426	1,345	1,363	1,406
Atmospheric sciences.....	NA	NA	NA	NA	NA	203	177	199	156	140	141
Earth sciences.....	NA	NA	NA	NA	NA	1,142	1,145	1,105	1,104	1,121	1,151
Oceanography.....	NA	NA	NA	NA	NA	138	113	122	85	102	114
Mathematics/computer sciences.....	9,989	11,808	12,829	12,956	14,251	14,495	14,088	15,277	17,824	19,621	19,990
Computer sciences.....	7,101	8,481	9,399	9,324	10,167	10,563	10,489	11,752	14,529	16,341	16,582
Mathematics/statistics.....	2,888	3,327	3,430	3,632	4,084	3,932	3,599	3,525	3,295	3,280	3,408
Physical sciences.....	5,802	5,638	5,703	5,282	5,365	4,241	4,141	3,969	3,512	3,737	3,624
Astronomy.....	NA	NA	NA	NA	NA	119	93	101	102	93	112
Chemistry.....	NA	NA	NA	NA	NA	2,105	2,268	2,173	1,908	2,009	1,866
Physics.....	NA	NA	NA	NA	NA	1,826	1,497	1,401	1,244	1,376	1,353
Other physical sciences.....	NA	NA	NA	NA	NA	191	283	294	258	259	293
Social/behavioral sciences.....	19,757	19,448	20,509	23,152	26,044	36,391	37,426	36,878	37,083	37,503	37,534
Psychology.....	8,481	8,165	8,652	9,802	11,020	13,132	13,633	13,146	13,708	14,335	14,041
Social sciences.....	11,276	11,283	11,857	13,350	15,024	23,259	23,793	23,732	23,375	23,168	23,493
Anthropology.....	NA	NA	NA	NA	NA	1,053	1,111	1,098	950	1,092	1,017
Area/ethnic studies.....	884	876	990	1,262	1,534	1,584	1,587	1,550	1,529	1,515	1,497
Economics.....	NA	NA	NA	NA	NA	2,838	2,804	2,843	2,515	2,492	2,651
History of science.....	NA	NA	NA	NA	NA	13	18	22	24	26	35
Linguistics.....	NA	NA	NA	NA	NA	603	642	568	553	552	520
Political science/public administration.....	NA	NA	NA	NA	NA	12,802	13,368	13,151	13,035	12,929	13,183
Sociology.....	NA	NA	NA	NA	NA	1,790	1,752	1,774	2,036	1,901	1,957
Other social sciences.....	NA	NA	NA	NA	NA	2,576	2,511	2,726	2,733	2,661	2,633
Non-S&E.....	222,487	223,758	240,717	265,670	289,558	305,119	327,469	337,953	360,577	367,659	381,959
U.S. citizen/permanent resident											
All fields.....	260,261	262,268	278,927	300,887	326,864	350,672	371,477	379,666	400,689	405,455	417,821
S&E.....	52,220	53,729	55,190	55,779	61,265	72,092	72,220	71,295	70,933	71,564	71,623
Engineering.....	15,241	16,276	16,988	16,487	18,539	18,931	17,238	16,977	15,913	15,522	15,463
Aerospace.....	NA	NA	NA	NA	NA	615	441	374	339	360	395

## Earned master's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Chemical .....	NA	NA	NA	NA	NA	685	748	780	721	726	662
Civil .....	NA	NA	NA	NA	NA	3,712	3,664	3,547	3,048	2,780	2,593
Electrical.....	NA	NA	NA	NA	NA	5,375	4,265	4,452	4,231	3,959	4,036
Industrial.....	NA	NA	NA	NA	NA	1,874	1,872	2,004	1,872	1,992	1,958
Materials .....	NA	NA	NA	NA	NA	535	472	447	483	409	386
Mechanical.....	NA	NA	NA	NA	NA	2,939	2,602	2,423	2,212	2,222	2,214
Other .....	NA	NA	NA	NA	NA	3,196	3,174	2,950	3,007	3,074	3,219
Science.....	36,979	37,453	38,202	39,292	42,726	53,161	54,982	54,318	55,020	56,042	56,160
Natural sciences.....	19,462	20,234	20,167	18,935	19,651	20,986	21,994	22,086	22,589	23,230	23,721
Agricultural sciences.....	2,546	2,257	1,974	2,022	2,605	2,921	3,269	3,264	3,342	3,281	3,540
Biological sciences.....	4,617	4,490	4,317	4,057	3,949	4,610	5,671	5,468	5,575	5,614	5,529
Earth, atmospheric, and ocean sciences.....	NA	NA	NA	NA	NA	1,198	1,198	1,218	1,150	1,191	1,207
Atmospheric sciences.....	NA	NA	NA	NA	NA	151	143	152	118	116	113
Earth sciences.....	NA	NA	NA	NA	NA	938	959	972	962	987	1,001
Oceanography.....	NA	NA	NA	NA	NA	109	96	94	70	88	93
Mathematics/computer sciences.....	7,595	8,905	9,411	9,078	9,334	9,483	9,122	9,456	10,150	10,646	11,009
Computer sciences.....	5,392	6,414	6,957	6,505	6,388	6,667	6,516	6,957	7,966	8,596	8,895
Mathematics/statistics.....	2,203	2,491	2,454	2,573	2,946	2,816	2,606	2,499	2,184	2,050	2,114
Physical sciences.....	4,704	4,582	4,465	3,778	3,763	2,774	2,734	2,680	2,372	2,498	2,436
Astronomy.....	NA	NA	NA	NA	NA	94	74	82	80	65	77
Chemistry.....	NA	NA	NA	NA	NA	1,366	1,501	1,446	1,309	1,388	1,260
Physics.....	NA	NA	NA	NA	NA	1,144	938	882	761	808	829
Other physical sciences.....	NA	NA	NA	NA	NA	170	221	270	222	237	270
Social/behavioral sciences.....	17,517	17,219	18,035	20,357	23,075	32,175	32,988	32,232	32,431	32,812	32,439
Psychology.....	8,185	7,945	8,393	9,485	10,688	12,659	13,231	12,686	13,241	13,871	13,562
Social sciences.....	9,332	9,274	9,642	10,872	12,387	19,516	19,757	19,546	19,190	18,941	18,877
Anthropology.....	NA	NA	NA	NA	NA	958	1,020	1,012	864	1,004	918
Area/ethnic studies.....	765	764	836	1,074	1,355	1,401	1,397	1,340	1,300	1,287	1,269
Economics.....	NA	NA	NA	NA	NA	1,561	1,456	1,440	1,209	1,172	1,191
History of science.....	NA	NA	NA	NA	NA	13	16	16	22	21	33
Linguistics.....	NA	NA	NA	NA	NA	412	473	420	380	394	351
Political science/public administration.....	NA	NA	NA	NA	NA	11,217	11,517	11,220	11,111	10,946	11,037
Sociology.....	NA	NA	NA	NA	NA	1,614	1,580	1,622	1,845	1,744	1,766
Other social sciences.....	NA	NA	NA	NA	NA	2,340	2,298	2,476	2,459	2,373	2,312
Non-S&E.....	208,041	208,539	223,737	245,108	265,599	278,580	299,257	308,371	329,756	333,891	346,198
White											
All fields.....	223,649	216,807	230,322	247,524	265,668	277,437	288,353	291,962	297,226	293,390	296,978
S&E.....	43,982	43,360	43,945	44,513	47,975	54,610	53,769	52,328	49,850	48,792	48,410
Engineering.....	12,186	12,837	12,832	12,635	13,920	13,831	12,492	12,085	11,020	10,466	10,404
Aerospace.....	NA	NA	NA	NA	NA	451	345	297	284	277	310
Chemical.....	NA	NA	NA	NA	NA	494	541	537	501	487	435
Civil.....	NA	NA	NA	NA	NA	2,913	2,842	2,777	2,337	2,130	1,931
Electrical.....	NA	NA	NA	NA	NA	3,473	2,737	2,710	2,474	2,244	2,308
Industrial.....	NA	NA	NA	NA	NA	1,342	1,360	1,406	1,238	1,290	1,261
Materials.....	NA	NA	NA	NA	NA	447	350	356	373	295	287

## Earned master's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Mechanical.....	NA	NA	NA	NA	NA	2,237	1,967	1,815	1,630	1,558	1,584
Other.....	NA	NA	NA	NA	NA	2,474	2,350	2,187	2,183	2,185	2,288
Science.....	31,796	30,523	31,113	31,878	34,055	40,779	41,277	40,243	38,830	38,326	38,006
Natural sciences.....	16,735	16,352	16,080	15,005	15,322	15,836	16,486	16,340	15,943	15,879	16,176
Agricultural sciences.....	2,345	2,044	1,817	1,818	2,282	2,447	2,809	2,827	2,864	2,782	2,951
Biological sciences.....	4,081	3,745	3,679	3,353	3,144	3,642	4,395	4,212	4,179	4,124	4,085
Earth, atmospheric, and ocean sciences.....	NA	NA	NA	NA	NA	1,019	1,084	1,106	1,036	1,043	1,065
Atmospheric sciences.....	NA	NA	NA	NA	NA	133	128	133	111	99	98
Earth sciences.....	NA	NA	NA	NA	NA	819	873	889	861	876	890
Oceanography.....	NA	NA	NA	NA	NA	67	83	84	64	68	77
Mathematics/computer sciences.....	6,176	6,729	6,818	6,705	6,818	6,576	6,110	6,172	6,090	6,056	6,293
Computer sciences.....	1,873	2,012	2,032	2,068	2,354	2,222	2,005	1,895	1,655	1,515	1,555
Mathematics/statistics.....	4,303	4,717	4,786	4,637	4,464	4,354	4,105	4,277	4,435	4,541	4,738
Physical sciences.....	4,133	3,834	3,766	3,129	3,078	2,152	2,088	2,023	1,774	1,874	1,782
Astronomy.....	NA	NA	NA	NA	NA	77	67	73	65	47	59
Chemistry.....	NA	NA	NA	NA	NA	1,007	1,068	1,028	929	992	876
Physics.....	NA	NA	NA	NA	NA	924	755	696	585	627	613
Other physical sciences.....	NA	NA	NA	NA	NA	144	198	226	195	208	234
Social/behavioral sciences.....	15,061	14,171	15,033	16,873	18,733	24,943	24,791	23,903	22,887	22,447	21,830
Psychology.....	7,220	6,698	7,075	7,973	8,810	10,367	10,444	9,820	9,646	9,798	9,315
Social sciences.....	7,841	7,473	7,958	8,900	9,923	14,576	14,347	14,083	13,241	12,649	12,515
Anthropology.....	NA	NA	NA	NA	NA	774	862	839	686	800	705
Area/ethnic studies.....	508	494	601	782	896	947	992	958	898	794	769
Economics.....	NA	NA	NA	NA	NA	1,161	1,047	1,067	839	840	827
History of science.....	NA	NA	NA	NA	NA	11	12	16	20	18	23
Linguistics.....	NA	NA	NA	NA	NA	317	364	319	295	284	270
Political science/public administration.....	NA	NA	NA	NA	NA	8,320	8,185	7,820	7,427	7,005	7,051
Sociology.....	NA	NA	NA	NA	NA	1,165	1,130	1,165	1,254	1,178	1,183
Other social sciences.....	NA	NA	NA	NA	NA	1,881	1,755	1,899	1,822	1,730	1,687
Non-S&E.....	179,667	173,447	186,377	203,011	217,693	222,827	234,584	239,634	247,376	244,598	248,568
Asian/Pacific Islander											
All fields.....	7,805	8,129	10,174	11,070	13,169	15,906	17,912	19,936	21,412	21,946	22,610
S&E.....	3,285	3,455	4,100	4,310	4,846	5,989	6,180	6,554	6,990	7,045	6,814
Engineering.....	1,551	1,650	1,992	2,008	2,260	2,572	2,319	2,451	2,379	2,414	2,201
Aerospace.....	NA	NA	NA	NA	NA	44	42	35	26	37	29
Chemical.....	NA	NA	NA	NA	NA	100	87	123	114	120	96
Civil.....	NA	NA	NA	NA	NA	369	386	329	283	220	204
Electrical.....	NA	NA	NA	NA	NA	1,117	911	1,082	1,061	1,026	919
Industrial.....	NA	NA	NA	NA	NA	221	153	180	192	212	190
Materials.....	NA	NA	NA	NA	NA	42	62	50	54	55	43
Mechanical.....	NA	NA	NA	NA	NA	344	293	278	265	358	315
Other.....	NA	NA	NA	NA	NA	335	385	374	384	386	405
Science.....	1,734	1,805	2,108	2,302	2,586	3,417	3,861	4,103	4,611	4,631	4,613
Natural sciences.....	1,229	1,426	1,617	1,735	1,918	2,305	2,546	2,747	3,159	3,143	3,131
Agricultural sciences.....	58	47	44	50	61	97	103	83	94	97	126

## Earned master's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Biological sciences .....	179	190	223	231	305	426	575	591	595	540	537
Earth, atmospheric, and ocean sciences .....	NA	NA	NA	NA	NA	50	30	30	22	28	37
Atmospheric sciences.....	NA	NA	NA	NA	NA	6	4	11	4	5	7
Earth sciences.....	NA	NA	NA	NA	NA	37	19	15	17	17	25
Oceanography .....	NA	NA	NA	NA	NA	7	7	4	1	6	5
Mathematics/computer sciences .....	779	962	1,072	1,203	1,303	1,494	1,560	1,795	2,208	2,258	2,218
Computer sciences.....	615	779	894	1,014	1,106	1,266	1,322	1,579	2,028	2,053	2,004
Mathematics/statistics .....	164	183	178	189	197	228	238	216	180	205	214
Physical sciences .....	213	227	278	251	249	238	278	248	240	220	213
Astronomy.....	NA	NA	NA	NA	NA	8	2	4	5	5	4
Chemistry.....	NA	NA	NA	NA	NA	136	197	172	172	153	125
Physics.....	NA	NA	NA	NA	NA	91	73	60	53	56	66
Other physical sciences.....	NA	NA	NA	NA	NA	3	6	12	10	6	18
Social/behavioral sciences.....	505	379	491	567	668	1,112	1,315	1,356	1,452	1,488	1,482
Psychology.....	129	113	131	170	191	289	364	379	472	498	526
Social sciences.....	376	266	360	397	477	823	951	977	980	990	956
Anthropology .....	NA	NA	NA	NA	NA	25	25	36	39	39	34
Area/ethnic studies.....	48	32	44	56	75	75	91	83	78	101	92
Economics.....	NA	NA	NA	NA	NA	138	155	127	132	113	119
History of science.....	NA	NA	NA	NA	NA	0	0	0	0	0	2
Linguistics.....	NA	NA	NA	NA	NA	47	37	41	42	43	26
Political science/public administration .....	NA	NA	NA	NA	NA	405	478	534	516	534	512
Sociology .....	NA	NA	NA	NA	NA	74	69	72	66	70	86
Other social sciences.....	NA	NA	NA	NA	NA	59	96	84	107	90	85
Non-S&E.....	4,520	4,674	6,074	6,760	8,323	9,917	11,732	13,382	14,422	14,901	15,796
Black											
All fields .....	13,960	13,173	13,455	15,857	18,897	22,954	26,948	28,616	33,305	35,059	36,524
S&E.....	1,742	1,784	1,652	2,090	2,554	4,210	4,870	4,894	5,492	6,117	6,133
Engineering.....	330	403	355	398	564	665	674	714	658	700	738
Aerospace.....	NA	NA	NA	NA	NA	13	9	7	7	10	14
Chemical .....	NA	NA	NA	NA	NA	28	35	43	34	34	31
Civil .....	NA	NA	NA	NA	NA	105	109	127	93	102	101
Electrical.....	NA	NA	NA	NA	NA	228	168	198	183	188	189
Industrial .....	NA	NA	NA	NA	NA	80	89	111	90	119	142
Materials .....	NA	NA	NA	NA	NA	12	18	13	15	9	19
Mechanical.....	NA	NA	NA	NA	NA	91	110	96	91	89	71
Other .....	NA	NA	NA	NA	NA	108	136	119	145	149	171
Science.....	1,412	1,381	1,297	1,692	1,990	3,545	4,196	4,180	4,834	5,417	5,395
Natural sciences.....	523	581	495	644	716	897	1,041	997	1,109	1,327	1,287
Agricultural sciences.....	50	55	36	51	70	74	96	95	84	96	88
Biological sciences.....	151	167	124	137	135	163	236	190	223	313	288
Earth, atmospheric, and ocean sciences .....	NA	NA	NA	NA	NA	15	12	15	7	21	18
Atmospheric sciences.....	NA	NA	NA	NA	NA	2	2	2	0	4	2
Earth sciences.....	NA	NA	NA	NA	NA	13	10	13	6	15	15
Oceanography .....	NA	NA	NA	NA	NA	0	0	0	1	2	1

## Earned master's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Mathematics/computer sciences .....	233	280	257	383	406	513	565	566	678	767	772
Computer sciences.....	180	207	198	283	308	373	411	424	580	654	659
Mathematics/statistics .....	53	73	59	100	98	140	154	142	98	113	113
Physical sciences .....	89	79	78	73	105	132	132	131	117	130	121
Astronomy.....	NA	NA	NA	NA	NA	4	2	0	0	0	2
Chemistry.....	NA	NA	NA	NA	NA	77	84	79	65	82	74
Physics.....	NA	NA	NA	NA	NA	41	39	34	44	41	37
Other physical sciences.....	NA	NA	NA	NA	NA	10	7	18	8	7	8
Social/behavioral sciences.....	889	800	802	1,048	1,274	2,648	3,155	3,183	3,725	4,090	4,108
Psychology .....	426	376	395	454	544	802	1,059	1,020	1,346	1,598	1,631
Social sciences.....	463	424	407	594	730	1,846	2,096	2,163	2,379	2,492	2,477
Anthropology .....	NA	NA	NA	NA	NA	38	29	26	33	37	32
Area/ethnic studies.....	41	34	27	52	116	101	109	104	91	86	108
Economics.....	NA	NA	NA	NA	NA	95	96	94	71	66	76
History of science.....	NA	NA	NA	NA	NA	1	1	0	0	1	2
Linguistics.....	NA	NA	NA	NA	NA	12	12	12	4	14	5
Political science/public administration .....	NA	NA	NA	NA	NA	1,176	1,386	1,453	1,585	1,754	1,717
Sociology .....	NA	NA	NA	NA	NA	229	247	220	344	294	285
Other social sciences.....	NA	NA	NA	NA	NA	194	216	254	251	240	252
Non-S&E.....	12,218	11,389	11,803	13,767	16,343	18,744	22,078	23,722	27,813	28,942	30,391
Hispanic											
All fields .....	7,730	7,781	8,133	9,684	11,371	13,905	16,360	17,416	20,803	22,163	23,165
S&E.....	1,514	1,584	1,585	1,736	2,092	2,945	3,220	3,462	3,746	4,077	4,089
Engineering.....	346	512	468	468	581	711	765	807	852	838	855
Aerospace.....	NA	NA	NA	NA	NA	22	20	16	13	11	19
Chemical .....	NA	NA	NA	NA	NA	30	51	46	39	40	45
Civil.....	NA	NA	NA	NA	NA	151	159	158	180	168	187
Electrical.....	NA	NA	NA	NA	NA	197	187	190	211	172	180
Industrial .....	NA	NA	NA	NA	NA	95	108	150	172	192	204
Materials .....	NA	NA	NA	NA	NA	11	22	15	15	22	16
Mechanical.....	NA	NA	NA	NA	NA	100	113	117	99	93	87
Other .....	NA	NA	NA	NA	NA	105	105	115	123	140	117
Science.....	1,168	1,072	1,117	1,268	1,511	2,234	2,455	2,655	2,894	3,239	3,234
Natural sciences.....	481	493	444	494	574	674	732	761	915	1,092	1,028
Agricultural sciences.....	66	62	48	49	69	96	105	116	133	123	175
Biological sciences .....	139	126	126	136	151	167	214	192	268	310	267
Earth, atmospheric, and ocean sciences .....	NA	NA	NA	NA	NA	34	23	20	30	28	35
Atmospheric sciences.....	NA	NA	NA	NA	NA	6	3	2	2	0	1
Earth sciences.....	NA	NA	NA	NA	NA	28	18	17	26	25	31
Oceanography .....	NA	NA	NA	NA	NA	0	2	1	2	3	3
Mathematics/computer sciences .....	149	183	178	213	240	282	274	304	388	512	415
Computer sciences.....	94	123	144	128	162	210	211	219	288	440	333
Mathematics/statistics .....	55	60	34	85	78	72	63	85	100	72	82
Physical sciences .....	127	122	92	96	114	95	116	129	96	119	136
Astronomy.....	NA	NA	NA	NA	NA	2	2	0	2	1	2

## Earned master's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Chemistry.....	NA	NA	NA	NA	NA	51	72	84	56	74	72
Physics.....	NA	NA	NA	NA	NA	37	36	35	34	37	56
Other physical sciences.....	NA	NA	NA	NA	NA	5	6	10	4	7	6
Social/behavioral sciences.....	687	579	673	774	937	1,560	1,723	1,894	1,979	2,147	2,206
Psychology.....	344	271	360	391	463	622	718	787	837	937	953
Social sciences.....	343	308	313	383	474	938	1,005	1,107	1,142	1,210	1,253
Anthropology.....	NA	NA	NA	NA	NA	45	37	48	37	45	59
Area/ethnic studies.....	59	66	64	79	78	88	91	96	107	113	121
Economics.....	NA	NA	NA	NA	NA	53	71	63	67	53	57
History of science.....	NA	NA	NA	NA	NA	0	1	0	0	1	0
Linguistics.....	NA	NA	NA	NA	NA	17	24	27	18	27	19
Political science/public administration.....	NA	NA	NA	NA	NA	573	634	651	701	736	743
Sociology.....	NA	NA	NA	NA	NA	85	69	97	110	116	140
Other social sciences.....	NA	NA	NA	NA	NA	77	78	125	102	119	114
Non-S&E.....	6,216	6,197	6,548	7,948	9,279	10,960	13,140	13,954	17,057	18,086	19,076
American Indian/Alaska Native											
All fields.....	1,257	1,049	1,082	1,125	1,344	1,542	1,844	1,951	2,099	2,274	2,382
S&E.....	228	147	209	200	253	307	370	372	383	472	420
Engineering.....	47	38	33	40	50	43	53	54	64	60	57
Aerospace.....	NA	NA	NA	NA	NA	2	2	0	0	2	4
Chemical.....	NA	NA	NA	NA	NA	3	5	1	3	4	2
Civil.....	NA	NA	NA	NA	NA	10	10	14	14	10	11
Electrical.....	NA	NA	NA	NA	NA	10	8	9	14	10	13
Industrial.....	NA	NA	NA	NA	NA	5	6	7	8	15	8
Materials.....	NA	NA	NA	NA	NA	1	0	0	4	1	2
Mechanical.....	NA	NA	NA	NA	NA	7	10	13	7	7	6
Other.....	NA	NA	NA	NA	NA	5	12	10	14	11	11
Science.....	181	109	176	160	203	264	317	318	319	412	363
Natural sciences.....	93	48	86	57	68	79	98	92	108	144	118
Agricultural sciences.....	6	3	6	8	8	13	18	23	23	18	25
Biological sciences.....	18	11	17	13	26	20	25	21	26	29	34
Earth, atmospheric, and ocean sciences.....	NA	NA	NA	NA	NA	4	5	10	9	11	4
Earth sciences.....	NA	NA	NA	NA	NA	4	5	8	9	8	4
Oceanography.....	NA	NA	NA	NA	NA	0	0	2	0	3	0
Mathematics/computer sciences.....	48	25	45	23	22	27	39	24	41	77	40
Computer sciences.....	41	22	39	14	14	16	25	15	32	68	32
Mathematics/statistics.....	7	3	6	9	8	11	14	9	9	9	8
Physical sciences.....	21	9	18	13	12	15	11	14	9	9	15
Chemistry.....	NA	NA	NA	NA	NA	11	8	12	5	7	11
Physics.....	NA	NA	NA	NA	NA	4	2	2	3	2	4
Other physical sciences.....	NA	NA	NA	NA	NA	0	1	0	1	0	0
Social/behavioral sciences.....	88	61	90	103	135	185	219	226	211	268	245
Psychology.....	37	35	33	49	57	81	97	108	69	106	96
Social sciences.....	51	26	57	54	78	104	122	118	142	162	149
Anthropology.....	NA	NA	NA	NA	NA	16	10	14	14	17	12

## Earned master's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Area/ethnic studies.....	8	4	6	11	9	10	21	15	16	20	20
Economics.....	NA	NA	NA	NA	NA	5	8	5	3	7	10
History of science.....	NA	NA	NA	NA	NA	0	0	0	0	1	1
Linguistics.....	NA	NA	NA	NA	NA	0	2	2	1	1	4
Political science/public administration.....	NA	NA	NA	NA	NA	46	55	49	62	70	74
Sociology.....	NA	NA	NA	NA	NA	14	16	19	30	28	17
Other social sciences.....	NA	NA	NA	NA	NA	13	10	14	16	18	11
Non-S&E.....	1,029	756	1,004	1,016	1,276	1,268	1,153	1,432	1,146	1,129	1,101
Other/unknown race/ethnicity											
All fields.....	5,860	15,329	15,761	15,627	16,415	18,928	20,060	19,785	25,844	30,623	36,162
S&E.....	1,469	3,399	3,699	2,930	3,545	4,031	3,811	3,685	4,472	5,061	5,757
Engineering.....	781	836	1,308	938	1,164	1,109	935	866	940	1,044	1,208
Aerospace.....	NA	NA	NA	NA	NA	83	23	19	9	23	19
Chemical.....	NA	NA	NA	NA	NA	30	29	30	30	41	53
Civil.....	NA	NA	NA	NA	NA	164	158	142	141	150	159
Electrical.....	NA	NA	NA	NA	NA	350	254	263	288	319	427
Industrial.....	NA	NA	NA	NA	NA	131	156	150	172	164	153
Materials.....	NA	NA	NA	NA	NA	22	20	13	22	27	19
Mechanical.....	NA	NA	NA	NA	NA	160	109	104	120	117	151
Other.....	NA	NA	NA	NA	NA	169	186	145	158	203	227
Science.....	688	2,563	2,391	1,992	2,381	2,922	2,876	2,819	3,532	4,017	4,549
Natural sciences.....	401	1,334	1,445	1,000	1,053	1,195	1,091	1,149	1,355	1,645	1,981
Agricultural sciences.....	21	46	23	46	115	194	138	120	144	165	175
Biological sciences.....	49	251	148	187	188	192	226	262	284	298	318
Earth, atmospheric, and ocean sciences.....	NA	NA	NA	NA	NA	76	44	37	46	60	48
Atmospheric sciences.....	NA	NA	NA	NA	NA	4	6	4	1	8	5
Earth sciences.....	NA	NA	NA	NA	NA	37	34	30	43	46	36
Oceanography.....	NA	NA	NA	NA	NA	35	4	3	2	6	7
Mathematics/computer sciences.....	210	726	1,041	551	545	591	574	595	745	976	1,271
Computer sciences.....	159	566	896	429	334	448	442	443	603	840	1,129
Mathematics/statistics.....	51	160	145	122	211	143	132	152	142	136	142
Physical sciences.....	121	311	233	216	205	142	109	135	136	146	169
Astronomy.....	NA	NA	NA	NA	NA	3	1	5	8	12	10
Chemistry.....	NA	NA	NA	NA	NA	84	72	71	82	80	102
Physics.....	NA	NA	NA	NA	NA	47	33	55	42	45	53
Other physical sciences.....	NA	NA	NA	NA	NA	8	3	4	4	9	4
Social/behavioral sciences.....	287	1,229	946	992	1,328	1,727	1,785	1,670	2,177	2,372	2,568
Psychology.....	29	452	399	448	623	498	549	572	871	934	1,041
Social sciences.....	258	777	547	544	705	1,229	1,236	1,098	1,306	1,438	1,527
Anthropology.....	NA	NA	NA	NA	NA	60	57	49	55	66	76
Area/ethnic studies.....	101	134	94	94	181	180	93	84	110	173	159
Economics.....	NA	NA	NA	NA	NA	109	79	84	97	93	102
History of science.....	NA	NA	NA	NA	NA	1	2	0	2	0	5
Linguistics.....	NA	NA	NA	NA	NA	19	34	19	20	25	27
Political science/public administration.....	NA	NA	NA	NA	NA	697	779	713	820	847	940



**Earned master's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002**

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
Sociology .....	NA	NA	NA	NA	NA	47	49	49	41	58	55
Other social sciences.....	NA	NA	NA	NA	NA	116	143	100	161	176	163
Non-S&E.....	4,391	11,930	12,062	12,697	12,870	14,897	16,249	16,100	21,372	25,562	30,405
Temporary resident											
All fields.....	26,952	28,264	32,123	37,611	44,109	48,756	49,477	52,205	55,571	61,190	63,311
S&E.....	12,506	13,045	15,143	17,049	20,150	22,217	21,265	22,623	24,750	27,422	27,550
Engineering.....	5,694	5,781	6,747	7,520	9,119	9,699	8,636	9,161	9,823	11,001	10,803
Aerospace.....	NA	NA	NA	NA	NA	206	184	210	221	251	287
Chemical.....	NA	NA	NA	NA	NA	684	597	592	631	642	605
Civil.....	NA	NA	NA	NA	NA	1,456	1,216	1,189	1,092	1,233	1,354
Electrical.....	NA	NA	NA	NA	NA	3,368	3,076	3,519	4,108	4,671	4,243
Industrial.....	NA	NA	NA	NA	NA	999	1,063	1,105	1,176	1,409	1,430
Materials.....	NA	NA	NA	NA	NA	317	252	251	276	300	244
Mechanical.....	NA	NA	NA	NA	NA	1,429	1,154	1,128	1,166	1,250	1,305
Other.....	NA	NA	NA	NA	NA	1,240	1,094	1,167	1,153	1,245	1,335
Science.....	6,812	7,264	8,396	9,529	11,031	12,518	12,629	13,462	14,927	16,421	16,747
Natural sciences.....	4,572	5,035	5,922	6,734	8,062	8,302	8,191	8,816	10,275	11,730	11,652
Agricultural sciences.....	606	567	630	603	694	653	658	598	516	471	479
Biological sciences.....	474	509	636	749	849	885	923	900	750	873	805
Earth, atmospheric, and ocean sciences.....	NA	NA	NA	NA	NA	285	237	208	195	172	199
Atmospheric sciences.....	NA	NA	NA	NA	NA	52	34	47	38	24	28
Earth sciences.....	NA	NA	NA	NA	NA	204	186	133	142	134	150
Oceanography.....	NA	NA	NA	NA	NA	29	17	28	15	14	21
Mathematics/computer sciences.....	2,394	2,903	3,418	3,878	4,917	5,012	4,966	5,821	7,674	8,975	8,981
Computer sciences.....	1,709	2,067	2,442	2,819	3,779	3,896	3,973	4,795	6,563	7,745	7,687
Mathematics/statistics.....	685	836	976	1,059	1,138	1,116	993	1,026	1,111	1,230	1,294
Physical sciences.....	1,098	1,056	1,238	1,504	1,602	1,467	1,407	1,289	1,140	1,239	1,188
Astronomy.....	NA	NA	NA	NA	NA	25	19	19	22	28	35
Chemistry.....	NA	NA	NA	NA	NA	739	767	727	599	621	606
Physics.....	NA	NA	NA	NA	NA	682	559	519	483	568	524
Other physical sciences.....	NA	NA	NA	NA	NA	21	62	24	36	22	23
Social/behavioral sciences.....	2,240	2,229	2,474	2,795	2,969	4,216	4,438	4,646	4,652	4,691	5,095
Psychology.....	296	220	259	317	332	473	402	460	467	464	479
Social sciences.....	1,944	2,009	2,215	2,478	2,637	3,743	4,036	4,186	4,185	4,227	4,616
Anthropology.....	NA	NA	NA	NA	NA	95	91	86	86	88	99
Area/ethnic studies.....	119	112	154	188	179	183	190	210	229	228	228
Economics.....	NA	NA	NA	NA	NA	1,277	1,348	1,403	1,306	1,320	1,460

**Earned master's degrees, by field, race/ethnicity, and citizenship: Selected years, 1985–2002**

Field, race/ethnicity, and citizenship	1985	1987	1989	1991	1993	1995	1997	1998	2000	2001	2002
History of science .....	NA	NA	NA	NA	NA	0	2	6	2	5	2
Linguistics .....	NA	NA	NA	NA	NA	191	169	148	173	158	169
Political science/public administration .....	NA	NA	NA	NA	NA	1,585	1,851	1,931	1,924	1,983	2,146
Sociology .....	NA	NA	NA	NA	NA	176	172	152	191	157	191
Other social sciences .....	NA	NA	NA	NA	NA	236	213	250	274	288	321
Non-S&E .....	14,446	15,219	16,980	20,562	23,959	26,539	28,212	29,582	30,821	33,768	35,761

NA = not available

NOTES: Data on race/ethnicity collected on broad fields of study only until 1994. Field taxonomies for data through 1994 do not exactly match field taxonomies used in tables by sex, or race/ethnicity data after 1994. Primary difference between taxonomies: history included in social sciences before 1995 but included in non-S&E from 1995 on. Racial/ethnic breakouts are for U.S. citizens and permanent residents only. Temporary resident includes all racial/ethnic groups. Data not available for 1983 or 1999.

SOURCES: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, Division of Science Resources Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

*Science and Engineering Indicators 2006*

## Earned doctoral degrees, by field, sex, and citizenship: Selected years, 1983–2003

Field, sex, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
<b>Both sexes</b>													
All fields .....	31,716	31,239	31,356	31,281	31,296	32,370	34,327	37,531	39,800	41,748	42,540	41,090	40,808
S&E.....	18,519	18,440	18,914	19,274	19,663	20,694	22,706	25,061	26,640	27,864	28,653	27,339	27,160
Engineering.....	2,648	2,494	2,528	2,781	3,166	3,712	4,543	5,214	5,698	6,008	6,115	5,330	5,502
Aerospace.....	115	81	97	106	124	142	178	207	228	252	273	206	203
Chemical.....	329	315	317	392	504	584	712	691	737	708	767	674	728
Civil.....	336	302	358	397	391	477	538	575	624	656	655	584	594
Electrical.....	667	611	549	625	716	779	1,137	1,405	1,543	1,731	1,720	1,478	1,576
Industrial.....	73	82	66	86	92	120	162	165	236	284	246	211	205
Materials.....	248	236	234	268	303	392	380	489	535	588	582	469	497
Mechanical.....	372	366	360	379	513	657	760	875	1,030	1,025	1,022	855	953
Other.....	508	501	547	528	523	561	676	807	765	764	850	853	746
Science.....	15,871	15,946	16,386	16,493	16,497	16,982	18,163	19,847	20,942	21,856	22,538	22,009	21,658
Natural sciences.....	9,151	9,364	9,612	9,820	10,163	10,645	11,631	13,042	13,753	14,549	14,871	14,277	14,138
Agricultural sciences.....	782	855	982	1,015	1,110	976	1,086	1,073	968	1,036	982	966	853
Biological sciences.....	3,484	3,646	3,803	3,741	3,793	3,839	4,116	4,649	5,092	5,376	5,789	5,582	5,690
Earth, atmospheric, and ocean sciences.....	689	642	583	624	599	602	723	815	771	780	878	805	749
Atmospheric sciences.....	93	84	75	97	80	87	87	108	99	130	149	124	116
Earth sciences.....	420	383	354	368	385	375	455	560	479	454	489	452	393
Oceanography.....	122	122	100	109	92	111	113	112	125	115	144	130	121
Other geosciences.....	54	53	54	50	42	29	68	35	68	81	96	99	119
Mathematics/computer sciences.....	964	979	960	987	998	1,190	1,471	1,838	2,026	2,187	2,032	1,938	1,833
Computer sciences.....	31	210	232	286	310	450	612	800	880	997	909	855	826
Mathematics/statistics.....	933	769	728	701	688	740	859	1,038	1,146	1,190	1,123	1,083	1,007
Medical/other life sciences.....	511	568	657	639	729	800	974	1,041	1,197	1,329	1,421	1,407	1,620
Medical sciences.....	207	271	315	294	367	375	430	456	518	555	545	607	647
Other life sciences.....	304	297	342	345	362	425	544	585	679	774	876	800	973
Physical sciences.....	2,721	2,674	2,627	2,814	2,934	3,238	3,261	3,626	3,699	3,841	3,769	3,579	3,393
Astronomy.....	120	115	109	115	100	100	113	125	145	173	198	159	186
Chemistry.....	1,571	1,566	1,612	1,758	1,836	1,975	1,970	2,194	2,137	2,162	2,148	2,132	1,980
Physics.....	1,030	993	906	928	980	1,137	1,161	1,286	1,399	1,479	1,401	1,271	1,197
Other physical sciences.....	0	0	0	13	18	26	17	21	18	27	22	17	30
Social/behavioral sciences.....	6,720	6,582	6,774	6,673	6,334	6,337	6,532	6,805	7,189	7,307	7,667	7,732	7,520
Psychology.....	2,990	3,091	3,358	3,347	3,117	3,173	3,208	3,250	3,420	3,429	3,557	3,668	3,442
Social sciences.....	3,730	3,491	3,416	3,326	3,217	3,164	3,324	3,555	3,769	3,878	4,110	4,064	4,078
Anthropology.....	408	418	397	403	377	383	351	374	380	410	469	489	450
Area/ethnic studies.....	111	108	107	119	106	92	93	116	137	121	94	109	146
Economics.....	983	956	993	971	959	960	1,062	1,053	1,067	1,152	1,163	1,075	1,081
History of science.....	29	28	26	13	23	25	20	27	37	41	35	50	40
Linguistics.....	190	156	176	164	176	199	188	227	214	201	244	251	230
Political science/public administration.....	879	767	679	655	666	647	700	740	824	894	975	1,016	984
Sociology.....	725	632	605	551	486	449	458	493	535	555	601	572	577
Other social sciences.....	405	426	433	450	424	409	452	525	575	504	529	502	570
Non-S&E.....	13,197	12,799	12,442	12,007	11,633	11,676	11,621	12,470	13,160	13,884	13,887	13,751	13,648

Appendix table 2-30  
**Earned doctoral degrees, by field, sex, and citizenship: Selected years, 1983–2003**

Field, sex, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
<b>Male</b>													
All fields .....	23,858	22,302	21,464	20,748	20,552	20,938	21,814	23,522	24,384	25,161	24,943	23,434	22,791
S&E.....	15,107	14,467	14,412	14,222	14,332	14,907	15,968	17,352	17,976	18,594	18,552	17,234	16,748
Engineering.....	2,574	2,432	2,429	2,657	2,968	3,470	4,168	4,703	5,097	5,270	5,316	4,504	4,565
Aerospace.....	112	81	97	104	119	132	170	198	218	237	254	188	174
Chemical .....	319	306	306	369	463	524	632	605	638	597	641	550	546
Civil .....	328	298	348	384	371	459	484	529	558	575	571	495	482
Electrical.....	646	600	527	612	681	747	1,070	1,312	1,403	1,545	1,560	1,310	1,372
Industrial.....	68	77	60	80	86	107	144	146	207	231	205	169	160
Materials .....	238	228	217	238	271	347	335	412	449	489	470	376	392
Mechanical.....	366	361	354	371	487	640	731	810	955	954	928	751	860
Other .....	497	481	520	499	490	514	602	691	669	642	687	665	579
Science.....	12,533	12,035	11,983	11,565	11,364	11,437	11,800	12,649	12,879	13,324	13,236	12,730	12,183
Natural sciences.....	7,699	7,608	7,587	7,500	7,600	7,809	8,203	9,171	9,242	9,692	9,596	9,171	8,729
Agricultural sciences.....	726	775	848	882	939	805	859	860	736	804	715	682	557
Biological sciences .....	2,697	2,695	2,716	2,508	2,555	2,479	2,574	2,863	3,014	3,132	3,262	3,171	3,133
Earth, atmospheric, and ocean sciences .....	630	584	527	529	491	490	575	631	602	608	663	591	512
Atmospheric sciences.....	84	81	72	91	76	73	77	89	79	106	124	101	87
Earth sciences.....	383	345	321	315	310	299	363	436	384	362	366	338	278
Oceanography .....	116	112	91	84	69	95	87	86	89	87	105	85	75
Other geosciences.....	47	46	43	39	36	23	48	20	50	53	68	67	72
Mathematics/computer sciences .....	837	833	822	838	859	1,000	1,208	1,514	1,602	1,727	1,594	1,495	1,400
Computer sciences.....	26	183	206	250	277	385	504	679	737	808	743	692	669
Mathematics/statistics.....	811	650	616	588	582	615	704	835	865	919	851	803	731
Medical/other life sciences .....	332	339	356	302	289	325	345	369	408	477	469	499	576
Medical sciences.....	157	194	210	191	204	233	224	245	268	264	257	273	275
Other life sciences.....	175	145	146	111	85	92	121	124	140	213	212	226	301
Physical sciences .....	2,477	2,382	2,318	2,441	2,467	2,710	2,642	2,934	2,880	2,944	2,893	2,733	2,551
Astronomy .....	111	107	98	100	89	87	96	110	120	143	161	126	145
Chemistry.....	1,391	1,347	1,376	1,461	1,474	1,569	1,471	1,672	1,530	1,488	1,523	1,493	1,349
Physics.....	975	928	844	869	889	1,030	1,060	1,137	1,216	1,291	1,196	1,103	1,036
Other physical sciences.....	0	0	0	11	15	24	15	15	14	22	13	11	21
Social/behavioral sciences.....	4,834	4,427	4,396	4,065	3,764	3,628	3,597	3,478	3,637	3,632	3,640	3,559	3,454
Psychology .....	1,902	1,831	1,885	1,750	1,576	1,475	1,408	1,249	1,322	1,245	1,162	1,209	1,132
Social sciences.....	2,932	2,596	2,511	2,315	2,188	2,153	2,189	2,229	2,315	2,387	2,478	2,350	2,322
Anthropology .....	264	238	232	209	187	185	189	143	149	172	203	214	187
Area/ethnic studies.....	68	70	57	62	59	48	40	55	68	55	42	48	49
Economics.....	904	840	879	820	814	797	864	833	808	864	876	781	773
History of science.....	24	22	21	6	21	15	11	15	21	24	21	32	32
Linguistics.....	117	78	98	78	85	93	82	112	89	98	107	99	94
Political science/public administration .....	737	627	544	505	491	472	499	527	569	620	674	655	650
Sociology.....	488	400	363	323	243	274	226	247	279	258	265	228	240
Other social sciences.....	330	321	317	312	288	269	278	297	332	296	290	293	297
Non-S&E .....	8,751	7,835	7,052	6,526	6,220	6,031	5,846	6,170	6,408	6,567	6,391	6,200	6,043

## Earned doctoral degrees, by field, sex, and citizenship: Selected years, 1983–2003

Field, sex, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
Female													
All fields .....	7,858	8,937	9,892	10,533	10,744	11,432	12,513	13,873	15,121	16,417	17,241	17,479	17,947
S&E.....	3,412	3,973	4,502	5,052	5,331	5,787	6,738	7,600	8,429	9,129	9,870	9,980	10,360
Engineering.....	74	62	99	124	198	242	375	467	522	696	750	788	928
Aerospace.....	3	0	0	2	5	10	8	7	8	14	16	17	28
Chemical.....	10	9	11	23	41	60	80	83	94	109	122	123	180
Civil.....	8	4	10	13	20	18	54	41	54	76	80	89	111
Electrical.....	21	11	22	13	35	32	67	79	125	173	150	155	203
Industrial.....	5	5	6	6	6	13	18	17	27	50	40	42	44
Materials.....	10	8	17	30	32	45	45	77	78	95	106	88	105
Mechanical.....	6	5	6	8	26	17	29	57	57	64	88	96	91
Other.....	11	20	27	29	33	47	74	106	79	115	148	178	166
Science.....	3,338	3,911	4,403	4,928	5,133	5,545	6,363	7,133	7,907	8,433	9,120	9,192	9,432
Natural sciences.....	1,452	1,756	2,025	2,320	2,563	2,836	3,428	3,824	4,397	4,787	5,165	5,047	5,376
Agricultural sciences.....	56	80	134	133	171	171	227	209	228	228	260	280	290
Biological sciences.....	787	951	1,087	1,233	1,238	1,360	1,542	1,773	2,050	2,217	2,495	2,394	2,549
Earth, atmospheric, and ocean sciences.....	59	58	56	95	108	112	148	179	160	170	209	210	236
Atmospheric sciences.....	9	3	3	6	4	14	10	16	18	23	25	22	28
Earth sciences.....	37	38	33	53	75	76	92	124	89	91	119	112	115
Oceanography.....	6	10	9	25	23	16	26	26	35	28	38	45	46
Other geosciences.....	7	7	11	11	6	6	20	13	18	28	27	31	47
Mathematics/computer sciences.....	127	146	138	149	139	190	263	316	402	451	413	433	431
Computer sciences.....	5	27	26	36	33	65	108	117	138	186	150	156	155
Mathematics/statistics.....	122	119	112	113	106	125	155	199	264	265	263	277	276
Medical/other life sciences.....	179	229	301	337	440	475	629	668	777	843	936	899	1,032
Medical sciences.....	50	77	105	103	163	142	206	208	241	285	280	329	366
Other life sciences.....	129	152	196	234	277	333	423	460	536	558	656	570	666
Physical sciences.....	244	292	309	373	467	528	619	679	780	878	852	831	838
Astronomy.....	9	8	11	15	11	13	17	14	25	30	37	33	41
Chemistry.....	180	219	236	297	362	406	499	517	582	661	613	632	628
Physics.....	55	65	62	59	91	107	101	142	169	182	193	160	160
Other physical sciences.....	0	0	0	2	3	2	2	6	4	5	9	6	9
Social/behavioral sciences.....	1,886	2,155	2,378	2,608	2,570	2,709	2,935	3,309	3,510	3,646	3,955	4,145	4,056
Psychology.....	1,088	1,260	1,473	1,597	1,541	1,698	1,800	1,996	2,088	2,181	2,363	2,449	2,306
Social sciences.....	798	895	905	1,011	1,029	1,011	1,135	1,313	1,422	1,465	1,592	1,696	1,750
Anthropology.....	144	180	165	194	190	198	162	230	231	237	261	275	263
Area/ethnic studies.....	43	38	50	57	47	44	53	61	68	65	52	59	97
Economics.....	79	116	114	151	145	163	198	217	246	279	266	291	306
History of science.....	5	6	5	7	2	10	9	11	16	17	13	18	8
Linguistics.....	73	78	78	86	91	106	106	112	118	102	135	148	136
Political science/public administration.....	142	140	135	150	175	175	201	211	246	265	298	356	330
Sociology.....	237	232	242	228	243	175	232	246	255	294	334	342	337
Other social sciences.....	75	105	116	138	136	140	174	225	242	206	233	207	273
Non-S&E.....	4,446	4,964	5,390	5,481	5,413	5,645	5,775	6,273	6,692	7,288	7,371	7,499	7,587

## Earned doctoral degrees, by field, sex, and citizenship: Selected years, 1983–2003

Field, sex, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
U.S. citizens													
All fields .....	26,145	25,474	25,068	24,393	23,376	22,984	23,402	25,571	26,449	27,741	28,151	27,984	27,031
S&E.....	14,313	14,212	14,311	14,133	13,687	13,572	14,198	15,406	15,812	16,425	17,071	16,884	16,148
Engineering.....	1,475	1,294	1,170	1,164	1,279	1,558	1,864	2,086	2,228	2,386	2,739	2,485	2,140
Aerospace.....	58	30	50	40	53	64	74	103	114	140	155	103	94
Chemical .....	166	144	131	174	240	294	382	348	324	291	321	333	329
Civil .....	162	153	157	154	130	162	188	173	168	206	249	261	222
Electrical.....	383	331	275	259	270	320	440	554	630	683	753	639	465
Industrial.....	39	45	35	27	29	44	51	50	89	108	102	86	72
Materials .....	133	116	99	118	144	176	173	211	228	238	271	225	202
Mechanical .....	211	192	158	145	193	241	259	297	347	383	456	398	385
Other .....	323	283	265	247	220	257	297	350	328	337	432	440	371
Science.....	12,838	12,918	13,141	12,969	12,408	12,014	12,334	13,320	13,584	14,039	14,332	14,399	14,008
Natural sciences.....	7,160	7,413	7,520	7,507	7,434	7,264	7,686	8,218	8,262	8,577	8,724	8,544	8,517
Agricultural sciences.....	489	545	594	649	683	584	606	564	457	492	467	443	403
Biological sciences .....	2,912	3,131	3,297	3,215	3,150	2,981	3,118	3,313	3,449	3,494	3,670	3,660	3,899
Earth, atmospheric, and ocean sciences .....	558	531	472	475	435	410	518	592	463	478	537	475	430
Atmospheric sciences.....	71	59	56	72	54	51	55	56	42	64	83	61	55
Earth sciences.....	337	322	284	284	278	261	335	430	303	284	310	273	244
Oceanography .....	104	106	89	83	71	76	75	79	70	68	80	78	68
Other geosciences.....	46	44	43	36	32	22	53	27	48	62	64	63	63
Mathematics/computer sciences .....	716	715	650	592	566	588	731	850	921	1,038	960	959	836
Computer sciences.....	25	163	168	180	189	243	338	388	425	484	430	420	367
Mathematics/statistics.....	691	552	482	412	377	345	393	462	496	554	530	539	469
Medical/other life sciences .....	414	451	551	499	550	606	729	779	879	938	959	972	1,088
Medical sciences.....	141	189	239	200	236	249	278	286	310	324	308	374	387
Other life sciences.....	273	262	312	299	314	357	451	493	569	614	651	598	701
Physical sciences .....	2,071	2,040	1,956	2,077	2,050	2,095	1,984	2,120	2,093	2,137	2,131	2,035	1,861
Astronomy .....	106	97	96	101	82	72	78	84	106	120	151	111	119
Chemistry.....	1,238	1,240	1,235	1,357	1,345	1,381	1,298	1,351	1,272	1,238	1,234	1,256	1,127
Physics.....	727	703	625	609	616	627	597	671	704	764	731	657	602
Other physical sciences.....	0	0	0	10	7	15	11	14	11	15	15	11	13
Social/behavioral sciences.....	5,678	5,505	5,621	5,462	4,974	4,750	4,648	5,102	5,322	5,462	5,608	5,855	5,491
Psychology .....	2,774	2,852	3,112	3,048	2,804	2,747	2,684	2,953	3,071	3,083	3,036	3,222	2,958
Social sciences.....	2,904	2,653	2,509	2,414	2,170	2,003	1,964	2,149	2,251	2,379	2,572	2,633	2,533
Anthropology .....	359	360	345	352	322	311	278	315	311	330	356	375	348
Area/ethnic studies.....	105	99	94	109	90	81	77	92	105	96	86	91	129
Economics.....	647	600	620	584	522	488	509	451	435	492	487	463	399
History of science.....	28	25	22	12	17	23	16	18	28	31	32	40	36
Linguistics.....	133	99	117	105	107	107	88	116	91	98	126	136	107
Political science/public administration .....	720	605	515	507	473	422	439	502	563	636	730	755	711
Sociology.....	619	534	495	433	375	317	300	324	359	378	415	429	448
Other social sciences.....	293	331	301	312	264	254	257	331	359	318	340	344	355
Non-S&E.....	11,832	11,262	10,757	10,260	9,689	9,412	9,204	10,165	10,637	11,316	11,080	11,100	10,883

## Earned doctoral degrees, by field, sex, and citizenship: Selected years, 1983–2003

Field, sex, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
<b>Male</b>													
All fields .....	19,172	17,585	16,367	15,140	14,227	13,574	13,396	14,383	14,513	14,964	15,047	14,513	13,636
S&E.....	11,419	10,822	10,468	9,808	9,308	9,008	9,028	9,608	9,652	9,859	10,138	9,727	8,995
Engineering.....	1,433	1,255	1,117	1,080	1,160	1,409	1,615	1,807	1,932	2,012	2,324	2,059	1,730
Aerospace.....	57	30	50	38	50	58	70	98	108	128	143	93	77
Chemical .....	162	140	123	160	211	250	322	297	265	221	260	268	247
Civil .....	155	152	152	144	121	153	151	152	138	170	204	207	163
Electrical.....	371	324	264	249	250	306	411	510	573	604	679	577	422
Industrial .....	37	41	29	23	25	36	41	39	69	82	77	58	50
Materials .....	128	111	92	99	125	144	138	164	186	185	213	176	155
Mechanical.....	206	188	154	139	178	231	240	263	314	355	409	346	351
Other .....	317	269	253	228	200	231	242	284	279	267	339	334	265
Science.....	9,986	9,567	9,351	8,728	8,148	7,599	7,413	7,801	7,720	7,847	7,814	7,668	7,265
Natural sciences.....	6,005	5,970	5,849	5,576	5,398	5,113	5,137	5,505	5,271	5,422	5,399	5,200	4,969
Agricultural sciences.....	456	494	506	549	563	468	450	436	333	380	332	298	252
Biological sciences .....	2,250	2,322	2,353	2,142	2,118	1,904	1,928	2,023	2,000	2,006	2,031	2,011	2,115
Earth, atmospheric, and ocean sciences .....	511	481	425	396	348	328	404	444	351	366	390	338	281
Atmospheric sciences.....	67	56	55	67	51	43	52	50	32	56	72	52	42
Earth sciences.....	305	291	255	240	216	202	260	319	238	219	221	195	160
Oceanography .....	99	96	80	62	54	66	55	58	46	52	52	51	40
Other geosciences.....	40	38	35	27	27	17	37	17	35	39	45	40	39
Mathematics/computer sciences .....	625	597	550	489	472	473	566	674	714	790	734	704	615
Computer sciences.....	21	137	148	153	165	193	266	305	343	368	347	330	283
Mathematics/statistics .....	604	460	402	336	307	280	300	369	371	422	387	374	332
Medical/other life sciences .....	262	250	283	211	171	207	207	221	226	263	254	285	312
Medical sciences.....	108	128	156	120	106	143	120	135	128	120	120	142	125
Other life sciences.....	154	122	127	91	65	64	87	86	98	143	134	143	187
Physical sciences .....	1,901	1,826	1,732	1,789	1,726	1,733	1,582	1,707	1,647	1,617	1,658	1,564	1,394
Astronomy.....	98	90	89	86	73	63	67	77	86	99	126	87	92
Chemistry.....	1,109	1,070	1,056	1,122	1,084	1,085	956	1,014	920	829	882	894	762
Physics.....	694	666	587	573	563	571	549	605	633	676	639	578	529
Other physical sciences.....	0	0	0	8	6	14	10	11	8	13	11	5	11
Social/behavioral sciences.....	3,981	3,597	3,502	3,152	2,750	2,486	2,276	2,296	2,449	2,425	2,415	2,468	2,296
Psychology .....	1,767	1,700	1,747	1,578	1,395	1,259	1,146	1,105	1,200	1,092	987	1,042	960
Social sciences.....	2,214	1,897	1,755	1,574	1,355	1,227	1,130	1,191	1,249	1,333	1,428	1,426	1,336
Anthropology .....	228	200	203	180	156	141	148	119	119	134	146	164	142
Area/ethnic studies.....	67	66	46	58	49	42	30	39	47	42	37	41	45
Economics.....	590	518	540	480	427	382	375	334	312	344	363	329	273
History of science.....	23	19	18	6	16	14	8	12	15	15	20	25	29
Linguistics.....	76	51	62	41	46	44	32	49	36	45	46	52	44
Political science/public administration .....	589	480	396	369	333	283	274	327	368	427	488	471	454
Sociology .....	408	325	289	236	166	170	124	147	171	156	163	154	173
Other social sciences.....	233	238	201	204	162	151	139	164	181	170	165	190	176
Non-S&E.....	7,753	6,763	5,899	5,332	4,919	4,566	4,368	4,775	4,861	5,105	4,909	4,786	4,641

## Earned doctoral degrees, by field, sex, and citizenship: Selected years, 1983–2003

Field, sex, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
Female													
All fields .....	6,973	7,889	8,701	9,253	9,149	9,410	10,006	11,185	11,931	12,775	13,072	13,471	13,395
S&E.....	2,894	3,390	3,843	4,325	4,379	4,564	5,170	5,796	6,156	6,564	6,919	7,157	7,153
Engineering.....	42	39	53	84	119	149	249	279	296	374	414	426	410
Aerospace.....	1	0	0	2	3	6	4	5	6	12	12	10	17
Chemical .....	4	4	8	14	29	44	60	51	59	70	61	65	82
Civil .....	7	1	5	10	9	9	37	21	30	36	45	54	59
Electrical.....	12	7	11	10	20	14	29	44	57	79	74	62	43
Industrial .....	2	4	6	4	4	8	10	11	20	26	25	28	22
Materials .....	5	5	7	19	19	32	35	47	42	53	58	49	47
Mechanical.....	5	4	4	6	15	10	19	34	33	28	46	52	34
Other .....	6	14	12	19	20	26	55	66	49	70	93	106	106
Science.....	2,852	3,351	3,790	4,241	4,260	4,415	4,921	5,517	5,860	6,190	6,505	6,731	6,743
Natural sciences.....	1,155	1,443	1,671	1,931	2,036	2,151	2,549	2,712	2,990	3,153	3,318	3,344	3,548
Agricultural sciences.....	33	51	88	100	120	116	156	128	124	112	134	145	151
Biological sciences .....	662	809	944	1,073	1,032	1,077	1,190	1,290	1,449	1,487	1,637	1,649	1,784
Earth, atmospheric, and ocean sciences .....	47	50	47	79	87	82	114	148	112	112	146	137	149
Atmospheric sciences.....	4	3	1	5	3	8	3	6	10	8	11	9	13
Earth sciences .....	32	31	29	44	62	59	75	111	65	65	88	78	84
Oceanography .....	5	10	9	21	17	10	20	21	24	16	28	27	28
Other geosciences.....	6	6	8	9	5	5	16	10	13	23	19	23	24
Mathematics/computer sciences .....	91	118	100	103	94	115	165	176	206	248	225	255	221
Computer sciences.....	4	26	20	27	24	50	72	83	82	116	82	90	84
Mathematics/statistics .....	87	92	80	76	70	65	93	93	124	132	143	165	137
Medical/other life sciences .....	152	201	268	288	379	399	522	558	653	675	704	687	776
Medical sciences.....	33	61	83	80	130	106	158	151	182	204	187	232	262
Other life sciences.....	119	140	185	208	249	293	364	407	471	471	517	455	514
Physical sciences .....	170	214	224	288	324	362	402	412	446	519	472	471	467
Astronomy.....	8	7	7	15	9	9	11	7	20	21	25	24	27
Chemistry.....	129	170	179	235	261	296	342	336	352	409	351	362	365
Physics.....	33	37	38	36	53	56	48	66	71	87	92	79	73
Other physical sciences.....	0	0	0	2	1	1	1	3	3	2	4	6	2
Social/behavioral sciences.....	1,697	1,908	2,119	2,310	2,224	2,264	2,372	2,805	2,870	3,037	3,187	3,387	3,195
Psychology .....	1,007	1,152	1,365	1,470	1,409	1,488	1,538	1,847	1,869	1,991	2,044	2,180	1,998
Social sciences.....	690	756	754	840	815	776	834	958	1,001	1,046	1,143	1,207	1,197
Anthropology .....	131	160	142	172	166	170	130	196	192	196	210	211	206
Area/ethnic studies.....	38	33	48	51	41	39	47	53	58	54	49	50	84
Economics.....	57	82	80	104	95	106	134	117	123	148	124	134	126
History of science.....	5	6	4	6	1	9	8	6	13	16	12	15	7
Linguistics.....	57	48	55	64	61	63	56	67	55	53	80	84	63



**Earned doctoral degrees, by field, sex, and citizenship: Selected years, 1983–2003**

Field, sex, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
Political science/public administration .....	131	125	119	138	140	139	165	175	195	209	241	284	257
Sociology .....	211	209	206	197	209	147	176	177	188	222	252	275	275
Other social sciences.....	60	93	100	108	102	103	118	167	177	148	175	154	179
Non-S&E.....	4,079	4,499	4,858	4,928	4,770	4,846	4,836	5,389	5,775	6,211	6,153	6,314	6,242

NOTES: Total includes unknown sex not shown separately. Medical/other life sciences reported separately from S&E fields in National Science Foundation, Division of Science Resources Statistics (NSF/SRS) higher education publications. For detailed fields, see NSF/SRS, Science and Engineering Doctorate Awards, <http://www.nsf.gov/statistics/nsf05300/htmstart.htm>.

SOURCE: NSF/SRS, Survey of Earned Doctorates, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

*Science and Engineering Indicators 2006*

## Earned doctoral degrees, by field, citizenship, and race/ethnicity: Selected years, 1983–2003

Field, race/ethnicity, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
All races/ethnicities and citizenships													
All fields .....	31,281	31,297	32,370	34,327	37,534	39,800	41,750	42,540	41,090	41,357	40,808	39,964	40,710
S&E.....	19,274	19,663	20,694	22,706	25,061	26,640	27,863	28,653	27,339	27,557	27,160	26,226	26,891
Engineering.....	2,781	3,166	3,712	4,543	5,214	5,698	6,008	6,115	5,330	5,321	5,502	5,071	5,265
Aerospace.....	106	124	142	178	207	228	252	273	206	214	203	208	199
Chemical.....	392	504	584	712	691	737	708	767	674	725	728	705	643
Civil.....	397	391	477	538	575	624	656	655	584	556	594	625	672
Electrical.....	625	716	779	1,137	1,405	1,543	1,731	1,720	1,478	1,544	1,576	1,392	1,463
Industrial.....	86	92	120	162	165	236	284	246	211	176	205	230	211
Materials.....	268	303	392	380	489	535	588	582	469	451	497	396	473
Mechanical.....	379	513	657	760	875	1,030	1,025	1,022	855	864	953	827	814
Other.....	528	523	561	676	807	765	764	850	853	791	746	688	790
Science.....	16,493	16,497	16,982	18,163	19,847	20,942	21,855	22,538	22,009	22,236	21,658	21,155	21,626
Natural sciences.....	9,820	10,163	10,645	11,631	13,042	13,753	14,548	14,871	14,277	14,462	14,138	13,954	14,212
Agricultural sciences.....	1,015	1,110	976	1,086	1,073	968	1,036	982	966	943	853	893	922
Biological sciences.....	3,741	3,793	3,839	4,116	4,649	5,092	5,375	5,789	5,582	5,854	5,690	5,687	5,694
Earth, atmospheric, and ocean sciences.....	624	599	602	723	815	771	780	878	805	758	749	785	783
Atmospheric sciences.....	97	80	87	87	108	99	130	149	124	143	116	117	139
Earth sciences.....	368	385	375	455	560	479	454	489	452	386	393	428	373
Oceanography.....	109	92	111	113	112	125	115	144	130	134	121	128	133
Other geosciences.....	50	42	29	68	35	68	81	96	99	95	119	112	138
Mathematics/computer sciences.....	987	998	1,190	1,471	1,838	2,026	2,187	2,032	1,938	1,909	1,833	1,725	1,860
Computer sciences.....	286	310	450	612	800	880	997	909	855	859	826	807	866
Mathematics/statistics.....	701	688	740	859	1,038	1,146	1,190	1,123	1,083	1,050	1,007	918	994
Medical/other life sciences.....	639	729	800	974	1,041	1,197	1,329	1,421	1,407	1,591	1,620	1,655	1,633
Medical sciences.....	294	367	375	430	456	518	555	545	607	664	647	678	658
Other life sciences.....	345	362	425	544	585	679	774	876	800	927	973	977	975
Physical sciences.....	2,814	2,934	3,238	3,261	3,626	3,699	3,841	3,769	3,579	3,407	3,393	3,209	3,320
Astronomy.....	115	100	100	113	125	145	173	198	159	185	186	144	167
Chemistry.....	1,758	1,836	1,975	1,970	2,194	2,137	2,162	2,148	2,132	1,989	1,980	1,923	2,037
Physics.....	928	980	1,137	1,161	1,286	1,399	1,479	1,401	1,271	1,204	1,197	1,124	1,080
Other physical sciences.....	13	18	26	17	21	18	27	22	17	29	30	18	36
Social/behavioral sciences.....	6,673	6,334	6,337	6,532	6,805	7,189	7,307	7,667	7,732	7,774	7,520	7,201	7,414
Psychology.....	3,347	3,117	3,173	3,208	3,250	3,420	3,429	3,557	3,668	3,618	3,442	3,198	3,275
Social sciences.....	3,326	3,217	3,164	3,324	3,555	3,769	3,878	4,110	4,064	4,156	4,078	4,003	4,139
Anthropology.....	403	377	383	351	374	380	410	469	489	482	450	521	505
Area/ethnic studies.....	119	106	92	93	116	137	121	94	109	127	146	122	106
Economics.....	971	959	960	1,062	1,053	1,067	1,152	1,163	1,075	1,086	1,081	1,023	1,051
History of science.....	13	23	25	20	27	37	41	35	50	42	40	46	46
Linguistics.....	164	176	199	188	227	214	201	244	251	230	230	195	224
Political science/public administration.....	655	666	647	700	740	824	894	975	1,016	987	984	938	1,026
Sociology.....	551	486	449	458	493	535	555	601	572	637	577	565	612
Other social sciences.....	450	424	409	452	525	575	504	529	502	565	570	593	569
Non-S&E.....	12,007	11,634	11,676	11,621	12,473	13,160	13,887	13,887	13,751	13,800	13,648	13,738	13,819

## Earned doctoral degrees, by field, citizenship, and race/ethnicity: Selected years, 1983–2003

Field, race/ethnicity, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
U.S. citizen													
All fields .....	24,393	23,376	22,984	23,402	25,571	26,449	27,741	28,151	27,984	27,978	27,031	25,997	26,413
S&E.....	14,133	13,687	13,572	14,198	15,406	15,812	16,425	17,071	16,884	16,825	16,148	15,465	15,737
Engineering.....	1,164	1,279	1,558	1,864	2,086	2,228	2,386	2,739	2,485	2,221	2,140	1,892	1,898
Aerospace.....	40	53	64	74	103	114	140	155	103	117	94	81	70
Chemical .....	174	240	294	382	348	324	291	321	333	339	329	302	272
Civil .....	154	130	162	188	173	168	206	249	261	221	222	210	239
Electrical.....	259	270	320	440	554	630	683	753	639	532	465	424	403
Industrial.....	27	29	44	51	50	89	108	102	86	67	72	71	54
Materials .....	118	144	176	173	211	228	238	271	225	221	202	164	176
Mechanical.....	145	193	241	259	297	347	383	456	398	341	385	285	287
Other .....	247	220	257	297	350	328	337	432	440	383	371	355	397
Science.....	12,969	12,408	12,014	12,334	13,320	13,584	14,039	14,332	14,399	14,604	14,008	13,573	13,839
Natural sciences.....	7,507	7,434	7,264	7,686	8,218	8,262	8,577	8,724	8,544	8,742	8,517	8,311	8,534
Agricultural sciences.....	649	683	584	606	564	457	492	467	443	447	403	390	443
Biological sciences .....	3,215	3,150	2,981	3,118	3,313	3,449	3,494	3,670	3,660	3,904	3,899	3,796	3,782
Earth, atmospheric, and ocean sciences .....	475	435	410	518	592	463	478	537	475	475	430	458	474
Atmospheric sciences.....	72	54	51	55	56	42	64	83	61	76	55	61	66
Earth sciences.....	284	278	261	335	430	303	284	310	273	255	244	249	244
Oceanography .....	83	71	76	75	79	70	68	80	78	93	68	79	88
Other geosciences.....	36	32	22	53	27	48	62	64	63	51	63	69	76
Mathematics/computer sciences .....	592	566	588	731	850	921	1,038	960	959	906	836	766	854
Computer sciences.....	180	189	243	338	388	425	484	430	420	388	367	355	384
Mathematics/statistics.....	412	377	345	393	462	496	554	530	539	518	469	411	470
Medical/other life sciences .....	499	550	606	729	779	879	938	959	972	1,120	1,088	1,123	1,166
Medical sciences.....	200	236	249	278	286	310	324	308	374	411	387	380	430
Other life sciences.....	299	314	357	451	493	569	614	651	598	709	701	743	736
Physical sciences .....	2,077	2,050	2,095	1,984	2,120	2,093	2,137	2,131	2,035	1,890	1,861	1,778	1,815
Astronomy .....	101	82	72	78	84	106	120	151	111	127	119	104	125
Chemistry.....	1,357	1,345	1,381	1,298	1,351	1,272	1,238	1,234	1,256	1,119	1,127	1,136	1,169
Physics.....	609	616	627	597	671	704	764	731	657	625	602	527	500
Other physical sciences.....	10	7	15	11	14	11	15	15	11	19	13	11	21
Social/behavioral sciences.....	5,462	4,974	4,750	4,648	5,102	5,322	5,462	5,608	5,855	5,862	5,491	5,262	5,305
Psychology .....	3,048	2,804	2,747	2,684	2,953	3,071	3,083	3,036	3,222	3,156	2,958	2,723	2,776
Social sciences.....	2,414	2,170	2,003	1,964	2,149	2,251	2,379	2,572	2,633	2,706	2,533	2,539	2,529
Anthropology .....	352	322	311	278	315	311	330	356	375	387	348	406	407
Area/ethnic studies.....	109	90	81	77	92	105	96	86	91	116	129	97	89
Economics.....	584	522	488	509	451	435	492	487	463	444	399	370	347
History of science.....	12	17	23	16	18	28	31	32	40	32	36	39	35
Linguistics.....	105	107	107	88	116	91	98	126	136	105	107	91	95
Political science/public administration .....	507	473	422	439	502	563	636	730	755	763	711	704	730
Sociology.....	433	375	317	300	324	359	378	415	429	478	448	454	466
Other social sciences.....	312	264	254	257	331	359	318	340	344	381	355	378	360
Non-S&E.....	10,260	9,689	9,412	9,204	10,165	10,637	11,316	11,080	11,100	11,153	10,883	10,532	10,676

## Earned doctoral degrees, by field, citizenship, and race/ethnicity: Selected years, 1983–2003

Field, race/ethnicity, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
White													
All fields .....	21,732	20,771	20,464	20,892	22,419	23,245	23,890	23,181	23,092	22,968	21,930	20,755	20,818
S&E.....	12,772	12,321	12,147	12,724	13,526	13,986	14,166	14,106	14,009	13,862	13,150	12,431	12,510
Engineering.....	1,017	1,098	1,331	1,583	1,707	1,891	1,958	2,151	1,989	1,764	1,644	1,394	1,453
Aerospace.....	35	48	55	66	89	99	116	133	92	103	75	69	56
Chemical.....	149	199	252	328	300	282	242	269	279	268	259	214	203
Civil.....	131	115	140	163	143	147	175	206	219	181	176	170	203
Electrical.....	232	232	256	360	430	507	540	529	472	397	337	280	263
Industrial.....	25	28	39	41	42	67	85	78	74	56	48	53	43
Materials.....	104	127	151	147	179	198	189	226	177	180	158	121	143
Mechanical.....	128	160	203	218	244	303	320	361	322	262	291	212	228
Other.....	213	189	235	260	280	288	291	349	354	317	300	275	314
Science.....	11,755	11,223	10,816	11,141	11,819	12,095	12,208	11,955	12,020	12,098	11,506	11,037	11,057
Natural sciences.....	6,878	6,784	6,566	6,975	7,357	7,373	7,504	7,339	7,190	7,308	7,037	6,824	6,873
Agricultural sciences.....	601	646	541	560	527	426	456	397	385	396	361	347	388
Biological sciences.....	2,965	2,872	2,696	2,832	2,964	3,054	3,020	3,069	3,017	3,196	3,139	3,026	2,970
Earth, atmospheric, and ocean sciences ...	435	409	381	484	546	440	452	476	412	417	385	412	415
Atmospheric sciences.....	64	50	42	52	53	40	62	76	56	70	49	57	62
Earth sciences.....	261	262	247	313	397	286	270	279	233	227	218	228	217
Oceanography.....	76	68	70	68	72	68	65	67	66	83	63	68	73
Other geosciences.....	34	29	22	51	24	46	55	54	57	37	55	59	63
Mathematics/computer sciences.....	536	507	510	647	732	823	923	790	810	747	696	618	670
Computer sciences.....	161	170	215	296	330	378	416	341	336	310	300	266	291
Mathematics/statistics.....	375	337	295	351	402	445	507	449	474	437	396	352	379
Medical/other life sciences.....	448	494	536	675	691	782	806	813	816	941	899	944	935
Medical sciences.....	179	207	216	250	247	275	266	244	300	325	294	289	322
Other life sciences.....	269	287	320	425	444	507	540	569	516	616	605	655	613
Physical sciences.....	1,893	1,856	1,902	1,777	1,897	1,848	1,847	1,794	1,750	1,611	1,557	1,477	1,495
Astronomy.....	94	76	68	73	81	97	109	129	104	111	99	86	99
Chemistry.....	1,252	1,219	1,243	1,167	1,201	1,119	1,065	1,040	1,054	952	936	952	972
Physics.....	538	555	577	526	602	623	660	611	582	531	509	428	407
Other physical sciences.....	9	6	14	11	13	9	13	14	10	17	13	11	17
Social/behavioral sciences.....	4,877	4,439	4,250	4,166	4,462	4,722	4,704	4,616	4,830	4,790	4,469	4,213	4,184
Psychology.....	2,745	2,552	2,476	2,423	2,615	2,747	2,674	2,481	2,667	2,570	2,416	2,188	2,215
Social sciences.....	2,132	1,887	1,774	1,743	1,847	1,975	2,030	2,135	2,163	2,220	2,053	2,025	1,969
Anthropology.....	325	273	269	249	289	286	284	290	319	328	283	322	304
Area/ethnic studies.....	92	82	74	64	75	90	77	69	68	91	97	71	60
Economics.....	536	469	439	461	393	390	426	402	393	375	337	305	289
History of science.....	12	16	21	15	16	23	30	25	35	30	30	37	31
Linguistics.....	88	90	94	82	102	76	87	107	114	93	89	78	79
Political science/public administration....	429	397	369	394	427	492	546	630	624	620	569	562	576
Sociology.....	383	326	281	245	268	303	319	332	334	368	343	343	338
Other social sciences.....	267	234	227	233	277	315	261	280	276	315	305	307	292
Non-S&E.....	8,960	8,450	8,317	8,168	8,893	9,259	9,724	9,075	9,083	9,106	8,780	8,324	8,308

## Earned doctoral degrees, by field, citizenship, and race/ethnicity: Selected years, 1983–2003

Field, race/ethnicity, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
<b>Asian/Pacific Islander</b>													
All fields .....	492	516	541	626	787	876	1,129	1,296	1,304	1,363	1,440	1,439	1,417
S&E.....	361	388	465	500	620	718	906	1,042	1,033	1,046	1,139	1,137	1,104
Engineering.....	66	90	135	173	187	216	254	290	263	240	262	250	206
Aerospace.....	1	3	6	5	9	9	14	8	9	5	10	6	7
Chemical.....	12	22	24	40	27	26	27	17	32	43	37	49	37
Civil.....	11	5	14	14	11	10	15	13	20	18	15	14	10
Electrical.....	13	15	41	48	67	85	92	128	92	79	79	81	76
Industrial.....	0	0	2	8	3	10	10	11	2	5	12	4	4
Materials.....	7	11	15	18	21	18	33	25	27	23	24	24	15
Mechanical.....	9	21	25	25	26	34	37	50	42	39	49	32	26
Other.....	13	13	8	15	23	24	26	38	39	28	36	40	31
Science.....	295	298	330	327	433	502	652	752	770	806	877	887	898
Natural sciences.....	224	228	246	255	338	389	477	555	564	582	653	667	675
Agricultural sciences.....	15	8	17	7	9	9	10	16	21	13	7	9	7
Biological sciences.....	101	106	106	120	159	186	225	255	288	318	369	392	389
Earth, atmospheric, and ocean sciences ...	8	8	9	11	7	6	8	16	15	9	15	11	10
Atmospheric sciences.....	3	2	4	0	0	0	1	3	1	0	2	1	0
Earth sciences.....	3	4	5	9	4	4	4	5	10	5	11	4	6
Oceanography.....	1	1	0	1	1	2	2	2	3	2	0	1	2
Other geosciences.....	1	1	0	1	2	0	1	6	1	2	2	5	2
Mathematics/computer sciences.....	19	16	28	31	55	55	66	75	72	85	64	70	83
Computer sciences.....	6	2	10	18	32	27	42	42	43	41	34	50	45
Mathematics/statistics.....	13	14	18	13	23	28	24	33	29	44	30	20	38
Medical/other life sciences.....	15	14	19	11	23	17	22	42	45	55	73	59	74
Medical sciences.....	7	9	13	7	9	11	14	23	27	33	45	41	45
Other life sciences.....	8	5	6	4	14	6	8	19	18	22	28	18	29
Physical sciences.....	66	76	67	75	85	116	146	151	123	102	125	126	112
Astronomy.....	0	1	1	0	0	2	4	6	2	8	6	10	8
Chemistry.....	39	57	49	42	62	74	90	82	88	49	73	78	65
Physics.....	27	18	17	33	23	40	52	63	33	44	46	38	38
Other physical sciences.....	0	0	0	0	0	0	0	0	0	1	0	0	1
Social/behavioral sciences.....	71	70	84	72	95	113	175	197	206	224	224	220	223
Psychology.....	35	34	38	38	46	52	83	101	110	121	108	113	110
Social sciences.....	36	36	46	34	49	61	92	96	96	103	116	107	113
Anthropology.....	1	7	8	3	2	3	9	8	9	9	14	10	16
Area/ethnic studies.....	1	1	1	1	3	4	2	2	3	5	4	2	5
Economics.....	12	8	18	15	21	18	32	34	20	27	29	28	27
History of science.....	0	0	0	0	0	1	0	1	2	0	1	0	0
Linguistics.....	5	7	3	0	2	5	4	8	5	3	5	5	4
Political science/public administration....	5	7	4	6	11	12	22	23	24	24	24	28	23
Sociology.....	7	2	8	7	6	10	15	8	19	19	24	21	16
Other social sciences.....	5	4	4	2	4	8	8	12	14	16	15	13	22
Non-S&E.....	131	128	76	126	167	158	223	254	271	317	301	302	313

## Earned doctoral degrees, by field, citizenship, and race/ethnicity: Selected years, 1983–2003

Field, race/ethnicity, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
<b>Black</b>													
All fields .....	925	911	768	822	1,009	1,109	1,293	1,335	1,629	1,629	1,614	1,662	1,708
S&E.....	312	310	270	322	402	427	516	581	688	713	691	701	687
Engineering.....	19	19	12	24	43	41	53	83	85	74	82	76	69
Aerospace.....	1	1	1	1	1	3	1	3	1	4	0	2	1
Chemical.....	2	4	4	2	4	4	2	12	9	8	16	10	8
Civil.....	4	2	1	2	8	3	7	9	5	5	7	10	6
Electrical.....	2	6	0	8	16	13	20	27	26	19	20	15	19
Industrial.....	1	1	0	2	1	9	7	7	7	4	6	4	2
Materials.....	4	1	2	0	1	3	5	3	5	4	5	5	3
Mechanical.....	4	1	2	5	3	2	7	10	10	17	17	16	9
Other.....	1	3	2	4	9	4	4	12	22	13	11	14	21
Science.....	293	291	258	298	359	386	463	498	603	639	609	625	618
Natural sciences.....	90	96	106	111	133	162	205	225	267	271	274	286	283
Agricultural sciences.....	12	5	7	6	6	5	9	14	16	8	9	8	12
Biological sciences.....	37	44	45	46	51	64	90	101	109	110	124	114	100
Earth, atmospheric, and ocean sciences ...	1	2	1	3	2	2	2	4	11	7	5	5	15
Atmospheric sciences.....	1	1	1	0	0	0	0	0	1	1	0	1	1
Earth sciences.....	0	0	0	1	1	2	0	2	4	1	2	2	4
Oceanography.....	0	0	0	1	1	0	0	1	3	1	3	1	4
Other geosciences.....	0	1	0	1	0	0	2	1	3	4	0	1	6
Mathematics/computer sciences.....	6	5	12	7	14	10	13	10	26	27	30	30	31
Computer sciences.....	3	2	2	1	5	5	9	4	16	13	13	17	17
Mathematics/statistics.....	3	3	10	6	9	5	4	6	10	14	17	13	14
Medical/other life sciences.....	15	17	25	24	35	52	55	51	51	67	60	67	75
Medical sciences.....	4	7	9	9	16	18	23	16	17	29	27	26	27
Other life sciences.....	11	10	16	15	19	34	32	35	34	38	33	41	48
Physical sciences.....	19	23	16	25	25	29	36	45	54	52	46	62	50
Astronomy.....	0	0	2	0	0	2	1	2	2	1	1	1	1
Chemistry.....	11	19	11	20	19	19	27	31	46	36	36	41	35
Physics.....	8	4	3	5	6	7	8	12	6	15	9	20	12
Other physical sciences.....	0	0	0	0	0	1	0	0	0	0	0	0	2
Social/behavioral sciences.....	203	195	152	187	226	224	258	273	336	368	335	339	335
Psychology.....	110	100	88	96	125	116	143	142	168	184	169	163	162
Social sciences.....	93	95	64	91	101	108	115	131	168	184	166	176	173
Anthropology.....	7	9	7	7	6	8	5	11	12	19	10	21	21
Area/ethnic studies.....	8	2	5	6	8	7	9	9	12	11	17	11	10
Economics.....	13	9	8	8	11	15	14	14	22	14	8	13	9
History of science.....	0	0	2	0	0	1	0	3	1	1	1	0	0
Linguistics.....	4	2	2	3	3	5	1	2	3	1	4	1	0
Political science/public administration....	28	34	21	26	29	32	39	31	52	58	65	61	67
Sociology.....	22	24	10	26	20	23	25	37	40	52	40	44	46
Other social sciences.....	11	15	9	15	24	17	22	24	26	28	21	25	20
Non-S&E.....	613	601	498	500	607	682	777	754	941	916	923	961	1,021

**Earned doctoral degrees, by field, citizenship, and race/ethnicity: Selected years, 1983–2003**

Field, race/ethnicity, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
Hispanic													
All fields .....	542	561	617	582	732	833	922	1,063	1,184	1,180	1,127	1,237	1,270
S&E.....	247	263	319	323	423	463	517	603	685	531	608	544	692
Engineering.....	18	16	24	33	49	56	61	82	71	69	73	87	90
Aerospace.....	0	0	1	1	0	3	7	4	0	3	5	2	4
Chemical.....	4	2	7	5	10	10	12	6	5	13	5	16	14
Civil.....	5	6	1	4	5	7	7	10	11	8	8	7	11
Electrical.....	3	1	4	10	12	16	14	23	28	19	15	28	21
Industrial.....	0	0	1	0	3	3	4	4	2	0	2	5	2
Materials.....	1	0	2	1	5	6	5	10	7	7	8	7	9
Mechanical.....	0	3	4	3	8	3	5	13	8	10	17	10	12
Other.....	5	4	4	9	6	8	7	12	10	9	13	12	17
Science.....	229	247	295	290	374	407	456	521	614	462	535	457	602
Natural sciences.....	85	114	139	150	181	213	229	280	303	318	280	301	307
Agricultural sciences.....	2	10	12	12	7	14	10	14	10	17	15	17	16
Biological sciences.....	39	49	52	58	79	93	104	131	155	154	149	161	157
Earth, atmospheric, and ocean sciences ...	9	4	3	6	12	8	7	16	19	18	11	14	13
Atmospheric sciences.....	1	0	1	1	0	2	0	1	3	2	0	1	0
Earth sciences.....	3	3	1	4	10	5	4	10	10	8	5	4	3
Oceanography.....	4	0	1	1	1	0	1	4	5	5	0	6	7
Other geosciences.....	1	1	0	0	1	1	2	1	1	3	6	3	3
Mathematics/computer sciences.....	4	12	13	12	17	14	18	32	24	24	20	24	22
Computer sciences.....	0	5	4	4	11	5	6	15	12	11	6	13	8
Mathematics/statistics.....	4	7	9	8	6	9	12	17	12	13	14	11	14
Medical/other life sciences.....	6	13	11	10	12	19	29	29	39	33	24	29	38
Medical sciences.....	4	5	5	6	3	3	12	14	22	18	12	13	18
Other life sciences.....	2	8	6	4	9	16	17	15	17	15	12	16	20
Physical sciences.....	25	26	48	52	54	65	61	58	56	72	61	56	61
Astronomy.....	0	0	0	1	1	1	3	3	1	1	7	3	3
Chemistry.....	20	14	40	40	39	43	38	36	41	49	39	35	38
Physics.....	5	12	8	11	14	21	20	19	14	21	15	18	20
Other physical sciences.....	0	0	0	0	0	0	0	0	0	1	0	0	0
Social/behavioral sciences.....	144	133	156	140	193	194	227	241	311	144	255	156	295
Psychology.....	85	64	92	87	113	120	138	161	205	203	160	180	161
Social sciences.....	59	69	64	53	80	74	89	80	106	93	95	114	134
Anthropology.....	7	14	14	8	10	11	19	16	10	10	17	22	32
Area/ethnic studies.....	1	2	0	3	4	2	2	1	3	5	4	5	7
Economics.....	8	14	11	12	10	10	12	18	18	16	11	13	12
History of science.....	0	0	0	1	0	3	1	0	0	1	2	1	1
Linguistics.....	3	3	5	2	6	2	5	5	11	5	2	4	5
Political science/public administration....	18	13	16	7	18	19	21	14	27	25	19	33	29
Sociology.....	10	16	9	17	21	16	13	17	24	24	33	21	39
Other social sciences.....	12	7	9	3	11	11	16	9	13	7	7	15	9
Non-S&E.....	295	298	298	259	309	370	405	460	499	649	519	693	578

**Earned doctoral degrees, by field, citizenship, and race/ethnicity: Selected years, 1983–2003**

Field, race/ethnicity, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
<b>American Indian/Alaska Native</b>													
All fields .....	81	96	115	94	130	120	148	167	214	169	149	147	133
S&E.....	32	43	56	56	61	49	77	85	120	92	78	70	73
Engineering.....	0	1	7	7	6	2	9	17	12	8	7	7	10
Chemical.....	0	0	1	1	1	1	2	4	2	1	1	2	1
Civil.....	0	0	1	1	1	0	0	2	2	1	0	0	1
Electrical.....	0	1	3	0	2	0	1	5	1	0	1	0	5
Industrial.....	0	0	0	0	0	0	1	0	0	0	1	1	0
Materials.....	0	0	0	4	1	0	0	0	2	0	1	1	0
Mechanical.....	0	0	1	0	1	0	2	6	2	3	1	1	0
Other.....	0	0	1	1	0	1	3	0	3	3	2	2	3
Science.....	32	42	49	49	55	47	68	68	108	84	71	63	63
Natural sciences.....	17	23	26	30	33	25	36	32	44	42	34	28	25
Agricultural sciences.....	1	4	2	2	4	1	2	5	1	4	0	2	4
Biological sciences.....	4	13	11	7	10	7	15	7	20	17	15	12	11
Earth, atmospheric, and ocean sciences ...	2	1	0	6	3	4	0	2	6	5	0	0	2
Atmospheric sciences.....	0	0	0	1	0	0	0	0	0	0	0	0	0
Earth sciences.....	1	1	0	3	2	3	0	0	6	4	0	0	1
Oceanography.....	1	0	0	2	1	0	0	2	0	0	0	0	1
Other geosciences.....	0	0	0	0	0	1	0	0	0	1	0	0	0
Mathematics/computer sciences.....	1	0	3	2	1	2	2	2	2	3	1	4	4
Computer sciences.....	1	0	3	2	1	1	0	1	1	1	0	1	2
Mathematics/statistics.....	0	0	0	0	0	1	2	1	1	2	1	3	2
Medical/other life sciences.....	3	2	3	3	5	6	9	6	6	4	6	3	2
Medical sciences.....	0	2	1	2	3	1	1	2	0	2	2	1	1
Other life sciences.....	3	0	2	1	2	5	8	4	6	2	4	2	1
Physical sciences.....	6	3	7	10	10	5	8	10	9	9	12	7	2
Astronomy.....	1	0	0	2	0	1	0	1	1	1	1	0	0
Chemistry.....	3	2	6	5	9	2	6	6	5	7	11	5	2
Physics.....	2	1	1	3	1	2	2	2	3	1	0	2	0
Other physical sciences.....	0	0	0	0	0	0	0	1	0	0	0	0	0
Social/behavioral sciences.....	15	19	23	19	22	22	32	36	64	42	37	35	38
Psychology.....	9	10	16	11	13	15	14	18	35	22	17	15	22
Social sciences.....	6	9	7	8	9	7	18	18	29	20	20	20	16
Anthropology.....	2	3	1	1	1	3	5	3	8	5	8	6	2
Area/ethnic studies.....	2	0	1	1	0	1	1	4	3	1	2	2	2
Economics.....	0	2	0	1	1	0	2	1	1	1	2	0	1
Linguistics.....	1	1	0	0	0	1	0	1	1	0	0	0	1
Political science/public administration....	1	1	2	2	3	0	2	4	7	4	5	3	7
Sociology.....	0	1	2	1	2	0	1	4	4	6	2	7	0
Other social sciences.....	0	1	1	2	2	2	7	1	5	3	1	2	3
Non-S&E.....	49	53	59	38	69	71	71	82	94	77	71	77	60



**Earned doctoral degrees, by field, citizenship, and race/ethnicity: Selected years, 1983–2003**

Field, race/ethnicity, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
Other/unknown race/ethnicity													
All fields .....	621	521	479	386	494	266	359	1,109	561	669	771	757	1,067
S&E.....	409	362	315	273	374	169	243	654	349	429	482	444	671
Engineering.....	44	55	49	44	94	22	51	116	65	66	72	78	70
Aerospace.....	3	1	1	1	4	0	2	7	1	2	4	2	2
Chemical .....	7	13	6	6	6	1	6	13	6	6	11	11	9
Civil .....	3	2	5	4	5	1	2	9	4	8	16	9	8
Electrical.....	9	15	16	14	27	9	16	41	20	18	13	20	19
Industrial .....	1	0	2	0	1	0	1	2	1	2	3	4	3
Materials .....	2	5	6	3	4	3	6	7	7	7	6	6	6
Mechanical .....	4	8	6	8	15	5	12	16	14	10	10	14	12
Other .....	15	11	7	8	32	3	6	21	12	13	9	12	11
Science.....	365	307	266	229	280	147	192	538	284	363	410	366	601
Natural sciences .....	213	189	181	165	176	100	126	293	176	221	239	205	371
Agricultural sciences.....	18	10	5	19	11	2	5	21	10	9	11	7	16
Biological sciences .....	69	66	71	55	50	45	40	107	71	109	103	91	155
Earth, atmospheric, and ocean sciences ...	20	11	16	8	22	3	9	23	12	19	14	16	19
Atmospheric sciences.....	3	1	3	1	3	0	1	3	0	3	4	1	3
Earth sciences.....	16	8	8	5	16	3	6	14	10	10	8	11	13
Oceanography .....	1	2	5	2	3	0	0	4	1	2	2	3	1
Other geosciences.....	0	0	0	0	0	0	2	2	1	4	0	1	2
Mathematics/computer sciences .....	26	26	22	32	31	17	16	51	25	20	25	20	44
Computer sciences.....	9	10	9	17	9	9	11	27	12	12	14	8	21
Mathematics/statistics .....	17	16	13	15	22	8	5	24	13	8	11	12	23
Medical/other life sciences .....	12	10	12	6	13	3	17	18	15	20	26	21	42
Medical sciences.....	6	6	5	4	8	2	8	9	8	4	7	10	17
Other life sciences.....	6	4	7	2	5	1	9	9	7	16	19	11	25
Physical sciences .....	68	66	55	45	49	30	39	73	43	44	60	50	95
Astronomy .....	6	5	1	2	2	3	3	10	1	5	5	4	14
Chemistry.....	32	34	32	24	21	15	12	39	22	26	32	25	57
Physics.....	29	26	21	19	25	11	22	24	19	13	23	21	23
Other physical sciences.....	1	1	1	0	1	1	2	0	1	0	0	0	1
Social/behavioral sciences.....	152	118	85	64	104	47	66	245	108	142	171	161	230
Psychology .....	64	44	37	29	41	21	31	133	37	56	88	64	106
Social sciences.....	88	74	48	35	63	26	35	112	71	86	83	97	124
Anthropology .....	10	16	12	10	7	0	8	28	17	16	16	25	32
Area/ethnic studies.....	5	3	0	2	2	1	5	1	2	3	5	6	5
Economics.....	15	20	12	12	15	2	6	18	9	11	12	11	9
History of science.....	0	1	0	0	2	0	0	3	2	0	2	1	3
Linguistics.....	4	4	3	1	3	2	1	3	2	3	7	3	6
Political science/public administration....	26	21	10	4	14	8	6	28	21	32	29	17	28
Sociology .....	11	6	7	4	7	7	5	17	8	9	6	18	27
Other social sciences.....	17	3	4	2	13	6	4	14	10	12	6	16	14
Non-S&E.....	212	159	164	113	120	97	116	455	212	240	289	313	396

## Earned doctoral degrees, by field, citizenship, and race/ethnicity: Selected years, 1983–2003

Field, race/ethnicity, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
U.S. permanent resident													
All fields .....	1,274	1,324	1,578	1,626	1,857	2,259	4,317	2,931	2,308	1,950	1,838	1,649	1,631
S&E.....	934	966	1,129	1,151	1,345	1,701	3,614	2,350	1,730	1,484	1,347	1,234	1,157
Engineering.....	319	315	355	365	388	469	956	593	403	350	299	271	265
Aerospace.....	13	17	8	8	11	6	13	13	9	10	8	10	10
Chemical.....	41	52	56	62	51	53	90	88	38	43	29	34	20
Civil.....	33	40	41	59	40	59	103	78	51	40	47	37	30
Electrical.....	90	83	73	99	132	165	288	187	127	116	95	83	91
Industrial.....	18	9	13	8	18	16	41	17	13	10	15	10	16
Materials.....	28	21	38	21	29	39	114	44	35	23	23	10	24
Mechanical.....	47	58	67	66	62	87	180	82	65	55	42	57	45
Other.....	49	35	59	42	45	44	127	84	65	53	40	30	29
Science.....	615	651	774	786	957	1,232	2,658	1,757	1,327	1,134	1,048	963	892
Natural sciences.....	404	419	503	523	651	868	2,215	1,363	1,023	856	773	706	649
Agricultural sciences.....	36	43	48	45	56	49	106	83	51	55	28	31	34
Biological sciences.....	114	108	160	182	211	303	835	586	464	364	344	315	265
Earth, atmospheric, and ocean sciences.....	30	30	25	29	26	41	116	70	51	35	37	36	38
Atmospheric sciences.....	6	5	2	5	4	8	29	19	16	10	6	7	12
Earth sciences.....	13	21	17	11	18	19	64	39	22	15	15	17	12
Oceanography.....	6	1	4	9	3	8	17	7	9	4	7	11	7
Other geosciences.....	5	3	2	4	1	6	6	5	4	6	9	1	7
Mathematics/computer sciences.....	73	66	83	93	118	178	349	189	138	125	111	95	102
Computer sciences.....	27	24	32	58	63	84	132	90	72	69	56	64	56
Mathematics/statistics.....	46	42	51	35	55	94	217	99	66	56	55	31	46
Medical/other life sciences.....	31	35	40	27	60	60	105	69	77	75	69	68	59
Medical sciences.....	22	28	25	20	45	34	59	35	38	40	43	39	26
Other life sciences.....	9	7	15	7	15	26	46	34	39	35	26	29	33
Physical sciences.....	120	137	147	147	180	237	704	366	242	202	184	161	151
Astronomy.....	2	2	1	4	2	5	21	7	6	12	4	5	5
Chemistry.....	69	87	91	85	110	128	386	205	150	122	103	93	93
Physics.....	49	46	55	57	68	102	295	152	85	67	75	62	52
Other physical sciences.....	0	2	0	1	0	2	2	2	1	1	2	1	1
Social/behavioral sciences.....	211	232	271	263	306	364	443	394	304	278	275	257	243
Psychology.....	64	59	59	54	65	90	101	89	70	75	75	71	70
Social sciences.....	147	173	212	209	241	274	342	305	234	203	200	186	173
Anthropology.....	10	15	19	14	16	23	28	20	26	24	21	24	15
Area/ethnic studies.....	1	4	2	2	4	4	10	2	3	2	3	6	4
Economics.....	68	64	85	66	77	77	134	103	80	58	61	55	59
History of science.....	0	1	0	0	1	0	2	1	2	3	3	0	1
Linguistics.....	6	15	10	23	19	26	20	33	20	14	16	18	19
Political science/public administration.....	25	28	39	49	50	55	53	59	50	39	40	28	30
Sociology.....	17	17	29	26	41	36	51	46	30	37	23	22	21
Other social sciences.....	20	29	28	29	33	53	44	41	23	26	33	33	24
Non-S&E.....	340	358	449	475	512	558	703	581	578	466	491	415	474

## Earned doctoral degrees, by field, citizenship, and race/ethnicity: Selected years, 1983–2003

Field, race/ethnicity, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
Temporary resident													
All fields .....	4,540	5,253	5,668	6,686	9,381	9,973	8,830	9,193	9,057	9,663	9,827	9,723	10,585
S&E.....	3,530	4,160	4,601	5,553	7,858	8,353	7,252	7,782	7,524	7,966	8,279	8,010	8,714
Engineering.....	1,180	1,422	1,540	1,948	2,646	2,792	2,527	2,555	2,192	2,452	2,787	2,647	2,909
Aerospace.....	50	51	59	84	91	99	94	97	82	74	87	106	111
Chemical.....	161	201	217	238	283	338	318	343	282	307	335	326	337
Civil.....	197	207	237	263	355	380	337	310	253	280	299	348	386
Electrical.....	250	311	312	499	694	705	712	712	637	785	933	823	920
Industrial.....	38	48	57	91	94	125	131	118	108	94	109	134	137
Materials.....	107	127	159	155	241	251	224	244	194	181	249	196	259
Mechanical.....	174	239	303	359	496	554	439	449	354	433	494	447	447
Other.....	203	238	196	259	392	340	272	282	282	298	281	267	312
Science.....	2,350	2,738	3,061	3,605	5,212	5,561	4,725	5,227	5,332	5,514	5,492	5,363	5,805
Natural sciences.....	1,651	1,949	2,269	2,644	3,979	4,281	3,498	4,073	4,175	4,271	4,188	4,166	4,390
Agricultural sciences.....	311	355	295	362	443	449	429	392	459	415	359	401	392
Biological sciences.....	325	425	498	609	1,065	1,249	970	1,322	1,287	1,385	1,242	1,291	1,401
Earth, atmospheric, and ocean sciences.....	103	115	124	122	186	236	173	231	242	203	252	250	228
Atmospheric sciences.....	17	20	26	23	41	44	35	42	42	47	49	45	57
Earth sciences.....	57	72	75	72	110	141	97	122	142	99	125	145	107
Oceanography.....	20	17	20	19	30	39	28	47	31	28	36	28	29
Other geosciences.....	9	6	3	8	5	12	13	20	27	29	42	32	35
Mathematics/computer sciences.....	282	329	446	524	849	867	749	771	774	806	796	789	819
Computer sciences.....	73	89	144	178	340	349	365	330	330	363	360	349	379
Mathematics/statistics.....	209	240	302	346	509	518	384	441	444	443	436	440	440
Medical/other life sciences.....	87	99	98	134	172	215	246	273	286	306	320	322	326
Medical sciences.....	65	75	71	96	115	153	153	158	160	164	173	198	169
Other life sciences.....	22	24	27	38	57	62	93	115	126	142	147	124	157
Physical sciences.....	543	626	808	893	1,264	1,265	931	1,084	1,127	1,156	1,219	1,113	1,224
Astronomy.....	12	14	24	26	37	34	28	37	37	42	53	31	34
Chemistry.....	283	331	401	462	694	676	493	599	622	648	675	596	689
Physics.....	245	277	380	403	527	551	400	446	463	458	482	481	494
Other physical sciences.....	3	4	3	2	6	4	10	2	5	8	9	5	7
Social/behavioral sciences.....	699	789	792	961	1,233	1,280	1,227	1,154	1,157	1,243	1,304	1,197	1,415
Psychology.....	81	81	86	107	134	150	165	137	153	164	153	156	197
Social sciences.....	618	708	706	854	1,099	1,130	1,062	1,017	1,004	1,079	1,151	1,041	1,218
Anthropology.....	28	26	26	33	38	41	41	67	62	62	68	71	61
Area/ethnic studies.....	1	9	4	4	18	22	11	3	8	6	11	10	10
Economics.....	278	329	312	388	512	521	500	494	492	537	579	528	599
History of science.....	0	4	2	3	7	8	7	1	4	4	1	5	9
Linguistics.....	45	47	67	57	86	86	78	79	86	101	102	74	100
Political science/public administration.....	95	114	127	144	177	166	172	134	157	138	172	144	205
Sociology.....	76	73	69	105	119	133	116	114	77	95	80	69	88
Other social sciences.....	95	106	99	120	142	153	137	125	118	136	138	140	146
Non-S&E.....	1,010	1,093	1,067	1,133	1,523	1,620	1,578	1,411	1,533	1,697	1,548	1,713	1,871

**Earned doctoral degrees, by field, citizenship, and race/ethnicity: Selected years, 1983–2003**

Field, race/ethnicity, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
Unknown citizenship													
All fields .....	1,074	1,344	2,140	2,613	725	1,119	862	2,265	1,741	1,766	2,112	2,595	2,081
S&E.....	677	850	1,392	1,804	452	774	572	1,450	1,201	1,282	1,386	1,517	1,283
Engineering.....	118	150	259	366	94	209	139	228	250	298	276	261	193
Aerospace.....	3	3	11	12	2	9	5	8	12	13	14	11	8
Chemical .....	16	11	17	30	9	22	9	15	21	36	35	43	14
Civil .....	13	14	37	28	7	17	10	18	19	15	26	30	17
Electrical.....	26	52	74	99	25	43	48	68	75	111	83	62	49
Industrial.....	3	6	6	12	3	6	4	9	4	5	9	15	4
Materials .....	15	11	19	31	8	17	12	23	15	26	23	26	14
Mechanical.....	13	23	46	76	20	42	23	35	38	35	32	38	35
Other .....	29	30	49	78	20	53	28	52	66	57	54	36	52
Science.....	559	700	1,133	1,438	358	565	433	1,222	951	984	1,110	1,256	1,090
Natural sciences.....	258	361	609	778	194	342	258	711	535	593	660	771	639
Agricultural sciences.....	19	29	49	73	10	13	9	40	13	26	63	71	53
Biological sciences .....	87	110	200	207	60	91	76	211	171	201	205	285	246
Earth, atmospheric, and ocean sciences .....	16	19	43	54	11	31	13	40	37	45	30	41	43
Atmospheric sciences.....	2	1	8	4	7	5	2	5	5	10	6	4	4
Earth sciences.....	14	14	22	37	2	16	9	18	15	17	9	17	10
Oceanography .....	0	3	11	10	0	8	2	10	12	9	10	10	9
Other geosciences.....	0	1	2	3	2	2	0	7	5	9	5	10	20
Mathematics/computer sciences .....	40	37	73	123	21	60	51	112	67	72	90	75	85
Computer sciences.....	6	8	31	38	9	22	16	59	33	39	43	39	47
Mathematics/statistics.....	34	29	42	85	12	38	35	53	34	33	47	36	38
Medical/other life sciences .....	22	45	56	84	30	43	40	120	72	90	143	142	82
Medical sciences.....	7	28	30	36	10	21	19	44	35	49	44	61	33
Other life sciences.....	15	17	26	48	20	22	21	76	37	41	99	81	49
Physical sciences .....	74	121	188	237	62	104	69	188	175	159	129	157	130
Astronomy .....	0	2	3	5	2	0	4	3	5	4	10	4	3
Chemistry.....	49	73	102	125	39	61	45	110	104	100	75	98	86
Physics.....	25	41	75	104	20	42	20	72	66	54	38	54	34
Other physical sciences.....	0	5	8	3	1	1	0	3	0	1	6	1	7
Social/behavioral sciences.....	301	339	524	660	164	223	175	511	416	391	450	485	451
Psychology .....	154	173	281	363	98	109	80	295	223	223	256	248	232
Social sciences.....	147	166	243	297	66	114	95	216	193	168	194	237	219
Anthropology .....	13	14	27	26	5	5	11	26	26	9	13	20	22
Area/ethnic studies.....	8	3	5	10	2	6	4	3	7	3	3	9	3
Economics.....	41	44	75	99	13	34	26	79	40	47	42	70	46
History of science.....	1	1	0	1	1	1	1	1	4	3	0	2	1

**Earned doctoral degrees, by field, citizenship, and race/ethnicity: Selected years, 1983–2003**

Field, race/ethnicity, and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
Linguistics.....	8	7	15	20	6	11	5	6	9	10	5	12	10
Political science/public administration .....	28	51	59	68	11	40	33	52	54	47	61	62	61
Sociology.....	25	21	34	27	9	7	10	26	36	27	26	20	37
Other social sciences.....	23	25	28	46	19	10	5	23	17	22	44	42	39
Non-S&E.....	397	494	748	809	273	345	290	815	540	484	726	1,078	798

NOTES: Medical/other life sciences reported separately from S&E fields in National Science Foundation, Division of Science Resources Statistics (NSF/SRS), higher education publications. For detailed fields, see NSF/SRS, Science and Engineering Doctorate Awards, <http://www.nsf.gov/statistics/nsf05300/htmstart.htm>.

SOURCE: NSF/SRS, Survey of Earned Doctorates, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Science and Engineering Indicators 2006

**Earned doctoral degrees, by field and citizenship: 1983–2003**

Field and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
<b>All citizenships</b>													
All fields .....	31,281	31,297	32,370	34,327	37,534	39,800	41,750	42,540	41,090	41,357	40,808	39,964	40,710
S&E .....	19,274	19,663	20,694	22,706	25,061	26,640	27,863	28,653	27,339	27,557	27,160	26,226	26,891
Engineering .....	2,781	3,166	3,712	4,543	5,214	5,698	6,008	6,115	5,330	5,321	5,502	5,071	5,265
Science .....	16,493	16,497	16,982	18,163	19,847	20,942	21,855	22,538	22,009	22,236	21,658	21,155	21,626
Natural sciences .....	9,820	10,163	10,645	11,631	13,042	13,753	14,548	14,871	14,277	14,462	14,138	13,954	14,212
Agricultural sciences .....	1,015	1,110	976	1,086	1,073	968	1,036	982	966	943	853	893	922
Biological sciences .....	3,741	3,793	3,839	4,116	4,649	5,092	5,375	5,789	5,582	5,854	5,690	5,687	5,694
Computer sciences .....	286	310	450	612	800	880	997	909	855	859	826	807	866
Earth, atmospheric, and ocean sciences .....	624	599	602	723	815	771	780	878	805	758	749	785	783
Mathematics .....	701	688	740	859	1,038	1,146	1,190	1,123	1,083	1,050	1,007	918	994
Medical/other life sciences .....	639	729	800	974	1,041	1,197	1,329	1,421	1,407	1,591	1,620	1,655	1,633
Physical sciences .....	2,814	2,934	3,238	3,261	3,626	3,699	3,841	3,769	3,579	3,407	3,393	3,209	3,320
Social/behavioral sciences .....	6,673	6,334	6,337	6,532	6,805	7,189	7,307	7,667	7,732	7,774	7,520	7,201	7,414
Psychology .....	3,347	3,117	3,173	3,208	3,250	3,420	3,429	3,557	3,668	3,618	3,442	3,198	3,275
Social sciences .....	3,326	3,217	3,164	3,324	3,555	3,769	3,878	4,110	4,064	4,156	4,078	4,003	4,139
Non-S&E .....	12,007	11,634	11,676	11,621	12,473	13,160	13,887	13,887	13,751	13,800	13,648	13,738	13,819
<b>U.S. citizen</b>													
All fields .....	24,393	23,376	22,984	23,402	25,571	26,449	27,741	28,151	27,984	27,978	27,031	25,997	26,413
S&E .....	14,133	13,687	13,572	14,198	15,406	15,812	16,425	17,071	16,884	16,825	16,148	15,465	15,737
Engineering .....	1,164	1,279	1,558	1,864	2,086	2,228	2,386	2,739	2,485	2,221	2,140	1,892	1,898
Science .....	12,969	12,408	12,014	12,334	13,320	13,584	14,039	14,332	14,399	14,604	14,008	13,573	13,839
Natural sciences .....	7,507	7,434	7,264	7,686	8,218	8,262	8,577	8,724	8,544	8,742	8,517	8,311	8,534
Agricultural sciences .....	649	683	584	606	564	457	492	467	443	447	403	390	443
Biological sciences .....	3,215	3,150	2,981	3,118	3,313	3,449	3,494	3,670	3,660	3,904	3,899	3,796	3,782
Computer sciences .....	180	189	243	338	388	425	484	430	420	388	367	355	384
Earth, atmospheric, and ocean sciences .....	475	435	410	518	592	463	478	537	475	475	430	458	474
Mathematics .....	412	377	345	393	462	496	554	530	539	518	469	411	470
Medical/other life sciences .....	499	550	606	729	779	879	938	959	972	1,120	1,088	1,123	1,166
Physical sciences .....	2,077	2,050	2,095	1,984	2,120	2,093	2,137	2,131	2,035	1,890	1,861	1,778	1,815
Social/behavioral sciences .....	5,462	4,974	4,750	4,648	5,102	5,322	5,462	5,608	5,855	5,862	5,491	5,262	5,305
Psychology .....	3,048	2,804	2,747	2,684	2,953	3,071	3,083	3,036	3,222	3,156	2,958	2,723	2,776
Social sciences .....	2,414	2,170	2,003	1,964	2,149	2,251	2,379	2,572	2,633	2,706	2,533	2,539	2,529
Non-S&E .....	10,260	9,689	9,412	9,204	10,165	10,637	11,316	11,080	11,100	11,153	10,883	10,532	10,676
<b>Permanent resident</b>													
All fields .....	1,274	1,324	1,578	1,626	1,857	2,259	4,317	2,931	2,308	1,950	1,838	1,649	1,631
S&E .....	934	966	1,129	1,151	1,345	1,701	3,614	2,350	1,730	1,484	1,347	1,234	1,157
Engineering .....	319	315	355	365	388	469	956	593	403	350	299	271	265
Science .....	615	651	774	786	957	1,232	2,658	1,757	1,327	1,134	1,048	963	892
Natural sciences .....	404	419	503	523	651	868	2,215	1,363	1,023	856	773	706	649
Agricultural sciences .....	36	43	48	45	56	49	106	83	51	55	28	31	34
Biological sciences .....	114	108	160	182	211	303	835	586	464	364	344	315	265
Computer sciences .....	27	24	32	58	63	84	132	90	72	69	56	64	56
Earth, atmospheric, and ocean sciences .....	30	30	25	29	26	41	116	70	51	35	37	36	38
Mathematics .....	46	42	51	35	55	94	217	99	66	56	55	31	46

**Earned doctoral degrees, by field and citizenship: 1983–2003**

Field and citizenship	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
Medical/other life sciences .....	31	35	40	27	60	60	105	69	77	75	69	68	59
Physical sciences .....	120	137	147	147	180	237	704	366	242	202	184	161	151
Social/behavioral sciences.....	211	232	271	263	306	364	443	394	304	278	275	257	243
Psychology .....	64	59	59	54	65	90	101	89	70	75	75	71	70
Social sciences.....	147	173	212	209	241	274	342	305	234	203	200	186	173
Non-S&E.....	340	358	449	475	512	558	703	581	578	466	491	415	474
Temporary resident													
All fields .....	4,540	5,253	5,668	6,686	9,381	9,973	8,830	9,193	9,057	9,663	9,827	9,723	10,585
S&E.....	3,530	4,160	4,601	5,553	7,858	8,353	7,252	7,782	7,524	7,966	8,279	8,010	8,714
Engineering.....	1,180	1,422	1,540	1,948	2,646	2,792	2,527	2,555	2,192	2,452	2,787	2,647	2,909
Science.....	2,350	2,738	3,061	3,605	5,212	5,561	4,725	5,227	5,332	5,514	5,492	5,363	5,805
Natural sciences .....	1,651	1,949	2,269	2,644	3,979	4,281	3,498	4,073	4,175	4,271	4,188	4,166	4,390
Agricultural sciences.....	311	355	295	362	443	449	429	392	459	415	359	401	392
Biological sciences .....	325	425	498	609	1,065	1,249	970	1,322	1,287	1,385	1,242	1,291	1,401
Computer sciences.....	73	89	144	178	340	349	365	330	330	363	360	349	379
Earth, atmospheric, and ocean sciences .....	103	115	124	122	186	236	173	231	242	203	252	250	228
Mathematics.....	209	240	302	346	509	518	384	441	444	443	436	440	440
Medical/other life sciences .....	87	99	98	134	172	215	246	273	286	306	320	322	326
Physical sciences .....	543	626	808	893	1,264	1,265	931	1,084	1,127	1,156	1,219	1,113	1,224
Social/behavioral sciences.....	699	789	792	961	1,233	1,280	1,227	1,154	1,157	1,243	1,304	1,197	1,415
Psychology .....	81	81	86	107	134	150	165	137	153	164	153	156	197
Social sciences.....	618	708	706	854	1,099	1,130	1,062	1,017	1,004	1,079	1,151	1,041	1,218
Non-S&E.....	1,010	1,093	1,067	1,133	1,523	1,620	1,578	1,411	1,533	1,697	1,548	1,713	1,871
Citizenship unknown													
All fields .....	1,074	1,344	2,140	2,613	725	1,119	862	2,265	1,741	1,766	2,112	2,595	2,081
S&E.....	677	850	1,392	1,804	452	774	572	1,450	1,201	1,282	1,386	1,517	1,283
Engineering.....	118	150	259	366	94	209	139	228	250	298	276	261	193
Science.....	559	700	1,133	1,438	358	565	433	1,222	951	984	1,110	1,256	1,090
Natural sciences .....	258	361	609	778	194	342	258	711	535	593	660	771	639
Agricultural sciences.....	19	29	49	73	10	13	9	40	13	26	63	71	53
Biological sciences .....	87	110	200	207	60	91	76	211	171	201	205	285	246
Computer sciences.....	6	8	31	38	9	22	16	59	33	39	43	39	47
Earth, atmospheric, and ocean sciences .....	16	19	43	54	11	31	13	40	37	45	30	41	43
Mathematics.....	34	29	42	85	12	38	35	53	34	33	47	36	38
Medical/other life sciences .....	22	45	56	84	30	43	40	120	72	90	143	142	82
Physical sciences .....	74	121	188	237	62	104	69	188	175	159	129	157	130
Social/behavioral sciences.....	301	339	524	660	164	223	175	511	416	391	450	485	451
Psychology .....	154	173	281	363	98	109	80	295	223	223	256	248	232
Social sciences.....	147	166	243	297	66	114	95	216	193	168	194	237	219
Non-S&E.....	397	494	748	809	273	345	290	815	540	484	726	1,078	798

NOTES: Medical/other life sciences are reported separately from S&E fields in National Science Foundation, Division of Science Resources Statistics (NSF/SRS) higher education publications. For detailed fields, see NSF/SRS, Science and Engineering Doctorate Awards, <http://www.nsf.gov/statistics/nsf05300/htmstart.htm>.

SOURCE: NSF/SRS, Survey of Earned Doctorates, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Appendix table 2-33

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## Plans of foreign recipients of U.S. S&amp;E doctorates to stay in United States, by field and place of origin: 1992–2003

Field and place of origin	Foreign S&E doctorate recipients			Plans to stay (%)			Definite plans to stay (%)		
	1992–95	1996–99	2000–03	1992–95	1996–99	2000–03	1992–95	1996–99	2000–03
<b>All S&amp;E fields</b>									
All non-U.S. citizens.....	40,941	40,133	37,608	67.6	71.7	73.6	34.7	45.6	51.1
East/South Asia .....	25,456	24,471	21,215	73.3	77.7	79.9	37.1	49.3	54.8
China <sup>a</sup> .....	10,256	10,658	10,089	95.3	92.7	92.5	46.8	58.6	63.6
Taiwan .....	5,152	4,099	2,267	53.4	60.3	66.8	24.0	33.7	40.6
Japan .....	566	581	656	42.6	47.5	59.6	24.6	29.8	41.6
South Korea .....	4,392	3,455	3,461	42.1	50.9	69.6	20.2	31.3	46.3
India .....	4,214	4,781	3,238	88.0	90.1	89.2	53.2	62.5	66.6
Other .....	876	897	1,504	36.6	36.8	28.1	16.2	22.4	17.9
West Asia .....	4,070	3,131	3,355	60.8	61.6	62.2	25.9	34.8	42.3
Iran .....	770	454	309	80.5	86.1	88.0	29.5	46.5	55.3
Israel .....	371	223	174	56.9	63.7	74.1	31.8	45.7	50.0
Turkey .....	587	686	1,309	53.8	60.5	58.6	26.4	36.4	40.6
Other .....	2,342	1,768	1,563	56.7	55.5	58.9	23.6	29.9	40.4
Pacifica/Australasia .....	940	850	648	48.8	54.0	61.1	28.3	32.9	42.3
Australia .....	216	208	155	55.6	61.5	67.7	39.4	44.7	47.7
Indonesia .....	336	251	225	26.2	32.3	51.1	12.5	17.1	32.9
New Zealand .....	81	101	89	48.1	60.4	66.3	37.0	42.6	49.4
Other .....	307	290	179	69.1	65.2	65.4	35.5	34.8	45.8
Africa .....	2,067	1,599	1,400	57.0	59.6	67.5	19.5	28.4	41.4
Egypt .....	389	339	380	50.9	51.9	63.4	17.2	28.9	44.2
Nigeria .....	251	144	73	90.4	84.0	89.0	27.1	31.3	46.6
South Africa .....	151	145	146	52.3	54.5	59.6	30.5	34.5	43.2
Other .....	1,276	971	801	52.9	59.4	68.9	17.4	26.9	39.3
Europe .....	4,494	5,604	6,338	63.5	71.2	74.3	40.4	50.3	55.0
Greece .....	666	462	342	60.5	67.7	67.3	35.6	47.2	51.5
United Kingdom .....	565	492	500	77.9	76.6	78.8	54.9	57.1	57.8
Germany .....	692	749	830	61.7	62.8	65.7	39.9	45.7	51.0
Italy .....	311	328	429	52.4	53.7	60.4	29.6	38.4	45.9
France .....	352	301	352	48.9	59.8	67.9	26.7	34.6	46.3
Spain .....	212	229	253	54.7	54.6	62.8	38.7	36.2	46.6
Other .....	1,696	3,043	3,632	66.9	77.2	79.4	42.7	54.7	58.3
North/South America .....	3,777	4,061	4,312	51.6	51.8	56.9	31.3	35.3	41.2
Canada .....	1,211	1,196	1,317	60.8	67.7	69.6	43.5	49.7	53.7
Mexico .....	550	680	821	38.9	35.3	44.2	20.0	21.9	30.0
Argentina .....	244	268	286	54.5	65.3	66.8	34.8	45.5	51.7
Brazil .....	593	706	531	32.0	31.2	38.0	16.0	20.4	27.7
Chile .....	183	125	180	47.5	46.4	41.7	28.4	33.6	32.8
Colombia .....	168	167	266	51.8	49.7	59.8	23.2	32.3	42.5
Peru .....	128	132	117	65.6	68.9	71.8	39.8	43.9	44.4
Other .....	700	787	794	59.9	54.3	58.4	32.0	34.3	38.3
Country unknown .....	129	379	295	86.8	71.2	31.2	23.3	37.7	12.9
<b>Physical/earth, atmospheric, and ocean sciences</b>									
All non-U.S. citizens.....	7,529	7,144	6,489	76.9	78.7	79.6	40.7	51.8	58.3
East/South Asia .....	5,028	4,318	3,529	83.0	84.9	85.9	43.0	54.3	62.7
China <sup>a</sup> .....	2,959	2,503	2,094	95.3	93.3	92.5	47.3	58.8	66.3
Taiwan .....	662	503	245	60.7	69.2	76.7	30.1	42.3	52.2
Japan .....	80	84	101	45.0	59.5	71.3	23.8	39.3	49.5
South Korea .....	671	511	483	58.4	63.2	79.7	32.5	44.8	61.9
India .....	569	621	455	84.0	90.7	86.6	53.8	59.4	67.7
Other .....	87	96	151	50.6	51.0	35.8	21.8	27.1	25.8
West Asia .....	506	373	399	70.0	70.8	64.7	30.2	43.7	46.1
Iran .....	98	69	37	85.7	84.1	81.1	27.6	50.7	64.9
Israel .....	41	24	17	63.4	79.2	64.7	41.5	62.5	41.2
Turkey .....	71	66	132	63.4	60.6	59.1	31.0	40.9	40.2
Other .....	296	214	213	67.2	68.7	65.3	29.4	40.2	46.9
Pacifica/Australasia .....	150	140	95	61.3	60.7	73.7	32.7	35.0	49.5
Australia .....	28	27	15	67.9	59.3	66.7	39.3	40.7	66.7
Indonesia .....	32	26	27	37.5	53.8	63.0	21.9	34.6	44.4
New Zealand .....	16	16	9	43.8	68.8	66.7	43.8	43.8	44.4
Other .....	74	71	44	73.0	62.0	84.1	32.4	31.0	47.7



Appendix table 2-33

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## Plans of foreign recipients of U.S. S&amp;E doctorates to stay in United States, by field and place of origin: 1992–2003

Field and place of origin	Foreign S&E doctorate recipients			Plans to stay (%)			Definite plans to stay (%)		
	1992–95	1996–99	2000–03	1992–95	1996–99	2000–03	1992–95	1996–99	2000–03
Africa .....	225	179	166	74.2	69.3	83.1	25.3	33.5	54.2
Egypt .....	26	18	33	69.2	44.4	81.8	11.5	27.8	63.6
Nigeria .....	25	19	6	96.0	94.7	66.7	40.0	26.3	66.7
South Africa .....	24	19	19	62.5	47.4	57.9	33.3	42.1	36.8
Other .....	150	123	108	73.3	72.4	88.9	24.0	34.1	53.7
Europe .....	1,011	1,506	1,681	60.9	71.9	75.4	38.4	53.3	56.3
Greece .....	143	75	52	60.1	57.3	59.6	32.2	38.7	46.2
United Kingdom .....	133	118	116	76.7	68.6	75.9	55.6	52.5	61.2
Germany .....	182	219	224	51.1	58.9	63.8	33.5	44.7	50.0
Italy .....	59	71	101	50.8	52.1	55.4	28.8	40.8	39.6
France .....	111	74	95	42.3	50.0	68.4	28.8	31.1	47.4
Spain .....	32	29	42	59.4	51.7	59.5	40.6	34.5	40.5
Other .....	351	920	1,051	68.1	80.5	81.7	41.3	60.0	60.6
North/South America .....	582	544	555	63.4	62.1	68.1	42.6	46.0	51.5
Canada .....	211	178	198	65.9	78.7	77.8	53.1	63.5	64.6
Mexico .....	78	77	100	53.8	35.1	55.0	32.1	19.5	40.0
Argentina .....	43	62	41	69.8	77.4	80.5	51.2	53.2	56.1
Brazil .....	76	74	48	52.6	40.5	37.5	31.6	32.4	25.0
Chile .....	36	16	12	63.9	50.0	66.7	41.7	37.5	41.7
Colombia .....	22	17	47	40.9	52.9	70.2	18.2	41.2	57.4
Peru .....	13	19	14	84.6	63.2	78.6	76.9	36.8	35.7
Other .....	103	101	95	72.8	63.4	69.5	35.0	44.6	48.4
Country unknown .....	27	77	51	81.5	68.8	37.3	25.9	40.3	19.6
Biological/agricultural sciences									
All non-U.S. citizens .....	10,201	11,451	10,210	69.4	73.2	74.2	40.8	47.9	50.8
East/South Asia .....	6,018	7,029	5,908	81.0	82.4	82.9	48.8	54.6	56.7
China <sup>a</sup> .....	2,940	3,771	3,078	97.1	93.5	94.0	58.0	61.8	63.9
Taiwan .....	1,079	1,100	638	62.0	62.9	68.2	33.6	40.4	44.2
Japan .....	121	119	158	62.8	60.5	68.4	45.5	42.0	48.7
South Korea .....	818	734	705	56.2	64.7	84.0	38.4	46.6	61.4
India .....	772	1,010	838	92.5	91.4	90.9	57.4	59.5	62.3
Other .....	288	295	491	34.7	35.6	22.0	19.1	24.1	14.1
West Asia .....	846	750	755	54.1	60.9	53.6	27.3	34.5	34.6
Iran .....	141	112	49	77.3	86.6	85.7	33.3	46.4	42.9
Israel .....	50	59	32	52.0	72.9	87.5	36.0	49.2	50.0
Turkey .....	77	106	260	51.9	55.7	40.0	32.5	31.1	26.2
Other .....	578	473	414	49.0	54.5	55.8	24.4	30.7	37.7
Pacifica/Australasia .....	303	285	187	42.9	50.5	61.0	26.4	29.8	43.3
Australia .....	62	73	43	41.9	60.3	83.7	33.9	43.8	60.5
Indonesia .....	106	80	46	13.2	25.0	43.5	7.5	16.3	23.9
New Zealand .....	24	34	29	41.7	50.0	55.2	29.2	32.4	48.3
Other .....	111	98	69	72.1	64.3	60.9	39.6	29.6	43.5
Africa .....	743	559	472	46.8	53.1	60.0	16.4	23.3	34.3
Egypt .....	98	43	69	46.9	41.9	60.9	19.4	25.6	42.0
Nigeria .....	70	46	28	92.9	91.3	92.9	32.9	37.0	35.7
South Africa .....	43	47	40	58.1	48.9	52.5	30.2	29.8	37.5
Other .....	532	423	335	39.8	50.6	57.9	12.6	20.8	32.2
Europe .....	942	1,246	1,295	65.1	72.7	77.1	43.0	51.8	55.1
Greece .....	81	83	62	50.6	67.5	59.7	30.9	54.2	46.8
United Kingdom .....	150	147	144	78.0	83.7	86.8	56.7	65.3	59.7
Germany .....	152	197	183	68.4	65.5	71.6	46.1	47.2	54.6
Italy .....	44	55	57	63.6	56.4	56.1	31.8	32.7	40.4
France .....	61	69	67	50.8	65.2	70.1	29.5	34.8	40.3
Spain .....	79	79	60	62.0	59.5	71.7	40.5	36.7	50.0
Other .....	375	616	722	64.8	77.1	80.9	42.9	55.2	57.9
North/South America .....	1,325	1,473	1,535	47.8	47.5	55.3	28.5	31.9	40.1
Canada .....	386	418	461	59.3	66.5	70.1	41.5	49.0	55.7
Mexico .....	235	282	275	34.5	32.3	40.0	17.9	19.9	25.8
Argentina .....	90	80	97	42.2	53.8	68.0	26.7	43.8	49.5
Brazil .....	199	260	189	24.6	24.2	31.7	11.1	14.2	24.3
Chile .....	61	49	69	57.4	51.0	52.2	36.1	42.9	40.6

Appendix table 2-33

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## Plans of foreign recipients of U.S. S&amp;E doctorates to stay in United States, by field and place of origin: 1992–2003

Field and place of origin	Foreign S&E doctorate recipients			Plans to stay (%)			Definite plans to stay (%)		
	1992–95	1996–99	2000–03	1992–95	1996–99	2000–03	1992–95	1996–99	2000–03
Colombia .....	54	66	99	64.8	51.5	60.6	25.9	34.8	40.4
Peru .....	36	35	44	63.9	68.6	70.5	41.7	48.6	36.4
Other .....	264	283	301	54.2	50.2	54.2	29.9	26.9	36.5
Country unknown.....	23	100	50	87.0	77.0	38.0	21.7	47.0	16.0
<b>Mathematics/computer sciences</b>									
All non-U.S. citizens.....	4,204	3,895	3,643	68.7	73.4	76.4	36.9	47.8	56.7
East/South Asia.....	2,599	2,185	1,852	73.5	78.5	82.7	36.9	50.3	59.8
China <sup>a</sup> .....	1,085	859	876	93.5	92.5	90.8	41.9	58.0	67.4
Taiwan.....	484	352	194	51.0	62.5	65.5	23.6	33.2	36.1
Japan.....	39	32	43	43.6	71.9	74.4	23.1	46.9	51.2
South Korea.....	358	332	327	34.1	48.8	76.5	13.7	23.2	51.7
India.....	559	541	314	86.8	90.2	92.0	56.9	69.3	72.0
Other.....	74	69	98	33.8	40.6	39.8	17.6	26.1	30.6
West Asia.....	368	266	324	62.2	53.4	63.6	32.1	30.8	49.1
Iran.....	61	28	31	78.7	78.6	90.3	34.4	42.9	64.5
Israel.....	83	33	29	66.3	75.8	65.5	47.0	66.7	48.3
Turkey.....	60	59	117	55.0	64.4	68.4	30.0	37.3	54.7
Other.....	164	146	147	56.7	39.0	53.7	24.4	17.8	41.5
Pacifica/Australasia.....	92	78	60	70.7	74.4	68.3	45.7	50.0	55.0
Australia.....	33	23	26	69.7	82.6	53.8	45.5	60.9	50.0
Indonesia.....	18	14	8	38.9	42.9	75.0	11.1	0.0	50.0
New Zealand.....	10	18	20	60.0	77.8	80.0	60.0	66.7	55.0
Other.....	31	23	6	93.5	82.6	83.3	61.3	56.5	83.3
Africa.....	138	92	93	65.9	68.5	77.4	27.5	35.9	52.7
Egypt.....	27	30	24	66.7	66.7	79.2	18.5	40.0	58.3
Nigeria.....	12	S	S	91.7	S	S	41.7	S	S
South Africa.....	12	10	16	66.7	70.0	75.0	58.3	50.0	50.0
Other.....	87	48	51	62.1	66.7	76.5	24.1	33.3	51.0
Europe.....	691	891	959	62.4	74.9	76.6	42.7	52.7	59.4
Greece.....	108	75	54	60.2	65.3	72.2	40.7	45.3	48.1
United Kingdom.....	48	43	53	66.7	86.0	69.8	47.9	69.8	60.4
Germany.....	103	95	111	60.2	64.2	63.1	38.8	45.3	53.2
Italy.....	81	57	45	39.5	61.4	68.9	24.7	49.1	51.1
France.....	30	21	27	56.7	85.7	63.0	36.7	28.6	44.4
Spain.....	14	30	15	64.3	43.3	53.3	57.1	33.3	40.0
Other.....	307	570	654	69.7	79.6	81.5	48.5	56.0	63.0
North/South America.....	306	337	325	50.7	53.1	57.5	32.4	34.7	43.4
Canada.....	100	96	97	64.0	67.7	67.0	45.0	47.9	51.5
Mexico.....	41	58	65	39.0	36.2	38.5	22.0	20.7	27.7
Argentina.....	16	22	20	43.8	77.3	80.0	25.0	45.5	75.0
Brazil.....	59	66	57	33.9	37.9	54.4	22.0	22.7	40.4
Chile.....	14	9	13	42.9	33.3	53.8	14.3	11.1	38.5
Colombia.....	22	24	21	31.8	54.2	52.4	18.2	41.7	33.3
Peru.....	8	S	6	62.5	S	83.3	25.0	S	83.3
Other.....	46	59	46	65.2	54.2	58.7	43.5	35.6	39.1
Country unknown.....	9	42	25	66.7	69.0	32.0	11.1	45.2	8.0
<b>Social/behavioral sciences</b>									
All non-U.S. citizens.....	5,611	5,312	5,286	52.5	52.8	57.9	26.6	31.6	41.1
East/South Asia.....	2,650	2,533	2,088	49.7	52.3	57.3	23.7	29.8	39.8
China <sup>a</sup> .....	646	653	513	85.4	80.7	82.1	39.6	47.8	61.4
Taiwan.....	388	406	255	29.1	31.0	41.2	9.5	12.1	23.5
Japan.....	202	225	241	39.1	41.8	50.2	20.8	24.4	33.6
South Korea.....	846	670	572	26.1	29.3	41.1	8.9	14.2	26.0
India.....	399	434	334	76.9	78.6	81.4	49.9	51.6	59.0
Other.....	169	145	173	26.0	29.0	24.3	11.2	13.8	16.8
West Asia.....	618	444	501	51.1	45.0	57.9	21.4	26.6	39.5
Iran.....	83	30	20	77.1	80.0	85.0	24.1	43.3	30.0
Israel.....	116	65	73	56.9	52.3	69.9	26.7	36.9	53.4
Turkey.....	84	102	201	47.6	39.2	52.2	25.0	28.4	37.8
Other.....	335	247	207	43.6	41.3	56.5	17.9	21.1	37.2

Appendix table 2-33

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## Plans of foreign recipients of U.S. S&amp;E doctorates to stay in United States, by field and place of origin: 1992–2003

Field and place of origin	Foreign S&E doctorate recipients			Plans to stay (%)			Definite plans to stay (%)		
	1992–95	1996–99	2000–03	1992–95	1996–99	2000–03	1992–95	1996–99	2000–03
Pacifica/Australasia.....	210	189	149	38.1	43.4	49.0	21.0	25.9	32.2
Australia .....	58	59	51	48.3	52.5	64.7	37.9	39.0	39.2
Indonesia .....	70	51	43	17.1	13.7	27.9	5.7	2.0	14.0
New Zealand.....	26	20	18	46.2	50.0	66.7	26.9	40.0	50.0
Other .....	56	59	37	50.0	57.6	43.2	19.6	28.8	35.1
Africa .....	410	300	250	58.8	55.0	65.2	16.3	21.7	36.0
Egypt.....	33	25	28	30.3	44.0	35.7	9.1	20.0	25.0
Nigeria.....	100	40	20	86.0	60.0	85.0	16.0	17.5	55.0
South Africa .....	45	34	39	42.2	52.9	53.8	24.4	23.5	35.9
Other .....	232	201	163	54.3	55.7	70.6	15.9	22.4	35.6
Europe .....	842	894	1,157	63.4	62.8	65.7	41.4	43.3	51.3
Greece.....	86	67	48	58.1	77.6	58.3	32.6	50.7	41.7
United Kingdom .....	164	136	139	76.8	70.6	76.3	52.4	48.5	56.1
Germany.....	148	127	151	67.6	65.4	69.5	47.3	45.7	55.6
Italy .....	87	95	135	59.8	46.3	61.5	34.5	36.8	53.3
France .....	37	54	68	54.1	59.3	66.2	32.4	35.2	47.1
Spain.....	58	57	84	46.6	47.4	56.0	37.9	33.3	45.2
Other .....	262	358	532	60.7	63.4	65.0	38.5	43.6	50.8
North/South America.....	848	894	1,074	50.9	48.5	51.2	30.9	32.7	36.8
Canada .....	348	327	395	57.8	58.4	62.0	39.7	39.8	47.1
Mexico.....	97	120	166	33.0	31.7	37.3	14.4	20.8	23.5
Argentina.....	57	58	87	54.4	50.0	52.9	31.6	27.6	42.5
Brazil.....	86	103	114	44.2	32.0	37.7	24.4	24.3	28.1
Chile.....	41	34	50	29.3	50.0	26.0	14.6	32.4	22.0
Colombia .....	31	30	35	41.9	30.0	42.9	22.6	13.3	34.3
Peru.....	40	48	31	45.0	62.5	64.5	27.5	43.8	45.2
Other .....	148	174	196	58.8	50.0	54.1	31.8	34.5	32.7
Country unknown.....	32	57	61	87.5	61.4	39.3	21.9	22.8	19.7
Engineering									
All non-U.S. citizens.....	13,396	12,331	11,980	67.0	73.8	75.8	29.3	45.3	50.2
East/South Asia.....	9,161	8,406	7,838	69.6	77.6	80.3	30.1	48.0	52.8
China <sup>a</sup> .....	2,626	2,872	3,528	96.6	93.8	93.1	37.3	56.8	61.1
Taiwan .....	2,539	1,738	935	52.1	62.5	70.6	20.5	32.1	40.6
Japan .....	124	121	113	26.6	30.6	51.3	11.3	16.5	38.1
South Korea.....	1,699	1,208	1,374	38.4	50.0	68.9	13.7	28.0	40.2
India.....	1,915	2,175	1,297	90.0	91.6	90.2	50.9	65.1	69.5
Other .....	258	292	591	41.9	36.3	30.3	14.0	22.6	17.3
West Asia .....	1,732	1,298	1,376	64.5	66.7	67.5	24.2	36.1	44.9
Iran.....	387	215	172	81.4	88.4	90.1	28.9	46.0	58.1
Israel .....	81	42	23	46.9	50.0	87.0	16.0	28.6	47.8
Turkey.....	295	353	599	53.6	67.4	66.8	23.4	39.4	45.1
Other .....	969	688	582	62.6	60.6	60.8	23.2	31.8	40.7
Pacifica/Australasia.....	185	158	157	49.7	57.0	62.4	27.6	36.7	41.4
Australia .....	35	26	20	68.6	69.2	60.0	45.7	50.0	25.0
Indonesia .....	110	80	101	39.1	42.5	59.4	19.1	25.0	40.6
New Zealand.....	5	13	13	80.0	69.2	69.2	60.0	38.5	46.2
Other .....	35	39	23	60.0	74.4	73.9	31.4	51.3	56.5
Africa .....	551	469	419	60.3	64.8	69.0	21.6	35.4	45.1
Egypt.....	205	223	226	51.7	53.4	63.3	18.0	29.1	42.9
Nigeria.....	44	35	17	93.2	94.3	94.1	31.8	45.7	47.1
South Africa .....	27	35	32	44.4	62.9	68.8	25.9	42.9	59.4
Other .....	275	176	144	62.9	73.9	75.0	22.2	39.8	45.1
Europe .....	1,008	1,067	1,246	65.6	72.4	76.1	37.5	48.2	53.1
Greece.....	248	162	126	64.9	69.8	75.4	37.9	46.9	61.1
United Kingdom .....	70	48	48	90.0	83.3	79.2	60.0	56.3	45.8
Germany.....	107	111	161	63.6	61.3	59.6	32.7	45.0	42.2
Italy .....	40	50	91	52.5	58.0	62.6	27.5	32.0	42.9
France .....	113	83	95	50.4	57.8	68.4	18.6	38.6	49.5
Spain.....	29	34	52	41.4	67.6	69.2	24.1	44.1	51.9
Other .....	401	579	673	69.6	78.1	83.4	41.9	51.5	56.8

Appendix table 2-33

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**Plans of foreign recipients of U.S. S&E doctorates to stay in United States, by field and place of origin: 1992–2003**

Field and place of origin	Foreign S&E doctorate recipients			Plans to stay (%)			Definite plans to stay (%)		
	1992–95	1996–99	2000–03	1992–95	1996–99	2000–03	1992–95	1996–99	2000–03
North/South America.....	716	813	823	50.4	55.7	59.5	27.4	37.5	41.1
Canada.....	166	177	166	62.0	76.8	77.7	43.4	57.1	51.8
Mexico.....	99	143	215	43.4	44.1	51.6	20.2	28.7	36.3
Argentina.....	38	46	41	71.1	82.6	73.2	44.7	60.9	61.0
Brazil.....	173	203	123	24.9	34.0	40.7	8.7	21.2	27.6
Chile.....	31	17	36	35.5	29.4	30.6	22.6	17.6	27.8
Colombia.....	39	30	64	59.0	60.0	62.5	25.6	33.3	42.2
Peru.....	31	27	22	87.1	81.5	77.3	41.9	40.7	54.5
Other.....	139	170	156	60.4	60.0	65.4	30.2	40.0	42.3
Country unknown.....	38	103	108	94.7	73.8	20.4	26.3	32.0	5.6

S = suppressed for reasons of confidentiality

\*Includes Hong Kong.

NOTES: Data include permanent and temporary residents. Recipients who plan to stay report plan to locate in United States; those with definite plans report postdoctoral research appointment or definite employment plans in United States.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, special tabulations (2004).

*Science and Engineering Indicators 2006*

**Time from bachelor's to S&E doctoral degree, by doctoral degree field: 1983–2003**

(Years, median)

Year	Agricultural sciences	Biological sciences	Computer sciences	Earth, atmospheric, and ocean sciences	Engineering	Mathematics	Medical/ other life sciences	Physical sciences	Psychology	Social sciences
<b>Time from bachelor's to doctoral degree</b>										
1983	8.3	7.5	8.6	8.5	8.0	7.3	11.0	6.6	9.0	10.1
1984	8.3	8.0	9.0	8.9	8.0	7.9	11.0	6.7	9.3	10.3
1985	8.7	8.0	9.0	8.9	8.1	7.9	12.0	6.9	9.5	10.7
1986	9.0	8.0	9.3	9.0	8.2	7.3	12.0	6.9	9.9	10.6
1987	9.3	8.2	9.3	9.2	8.1	8.0	12.3	6.9	10.0	11.0
1988	9.6	8.2	9.5	9.5	8.1	8.1	12.9	6.8	10.1	11.1
1989	10.0	8.3	9.0	9.2	8.2	7.9	13.6	6.9	10.1	11.0
1990	10.2	8.2	8.9	9.0	8.2	8.0	13.3	7.0	10.1	11.2
1991	10.2	8.3	8.9	9.3	8.6	8.1	14.0	7.2	10.2	11.2
1992	10.2	8.6	9.3	9.7	8.8	8.9	14.4	7.4	10.2	11.2
1993	10.7	8.6	9.6	10.5	8.9	8.5	14.0	7.5	10.0	11.2
1994	10.7	8.6	9.6	10.6	9.0	8.7	14.3	7.6	9.4	11.4
1995	11.0	8.5	9.5	10.8	9.1	8.5	14.2	7.6	9.7	11.2
1996	11.4	8.6	9.9	11.0	9.0	8.2	14.7	7.5	9.4	11.0
1997	11.0	8.3	9.8	10.5	8.7	8.5	14.8	7.3	9.2	11.0
1998	11.1	8.2	10.5	10.5	8.8	8.0	15.0	7.1	9.0	10.6
1999	10.9	8.0	10.0	10.4	8.6	8.0	14.0	7.0	9.0	10.9
2000	11.0	8.1	9.8	10.0	8.6	7.6	14.3	7.2	9.0	10.7
2001	10.5	8.1	9.4	9.8	8.4	8.0	13.3	7.0	9.0	10.7
2002	10.6	8.0	9.4	9.8	8.5	7.6	14.4	7.0	9.1	10.9
2003	10.2	8.0	9.5	9.6	8.6	7.7	13.0	7.1	9.0	10.9
<b>Enrollment from bachelor's to doctoral degree</b>										
1983	5.9	6.3	6.7	6.9	5.9	6.3	6.7	5.9	6.7	7.4
1984	6.0	6.5	6.7	6.9	5.9	6.1	6.8	6.0	7.0	7.5
1985	6.2	6.5	6.4	7.0	6.0	6.4	6.9	6.0	7.1	7.6
1986	6.2	6.5	6.6	7.1	6.0	6.1	7.0	6.0	7.1	7.6
1987	6.4	6.6	6.8	7.0	6.0	6.4	7.0	5.9	7.2	7.7
1988	6.5	6.7	6.9	7.3	6.0	6.3	7.2	6.0	7.3	7.9
1989	6.6	6.6	6.7	7.0	6.1	6.3	7.3	6.0	7.4	7.9
1990	6.7	7.0	6.8	7.3	6.3	6.7	7.8	6.2	7.6	8.0
1991	6.7	6.8	6.9	7.4	6.3	6.6	7.4	6.1	7.5	7.9
1992	6.6	6.9	7.0	7.4	6.4	7.0	7.6	6.4	7.5	8.0
1993	6.9	7.0	7.2	7.6	6.5	6.9	7.9	6.4	7.3	8.2
1994	6.8	7.0	7.3	7.8	6.5	6.9	7.7	6.5	7.3	8.0
1995	6.6	7.0	7.4	7.9	6.5	6.9	7.7	6.5	7.3	8.0
1996	6.9	7.0	7.2	7.8	6.5	6.8	8.0	6.5	7.3	7.9
1997	7.0	7.0	7.6	7.6	6.6	7.0	8.0	6.5	7.3	8.0
1998	7.0	7.0	7.6	7.5	6.7	6.7	8.2	6.4	7.2	8.0
1999	6.9	6.9	7.6	7.6	6.7	6.9	7.9	6.4	7.3	8.0
2000	7.0	7.0	7.5	7.8	6.8	6.8	8.0	6.5	7.2	8.1

**Time from bachelor's to S&E doctoral degree, by doctoral degree field: 1983–2003**

(Years, median)

Year	Agricultural sciences	Biological sciences	Computer sciences	Earth, atmospheric, and ocean sciences	Engineering	Mathematics	Medical/ other life sciences	Physical sciences	Psychology	Social sciences
2001 .....	7.3	7.0	7.4	7.5	6.7	6.7	7.7	6.3	7.3	8.2
2002 .....	7.2	6.9	7.7	7.6	6.7	6.8	8.0	6.4	7.3	8.2
2003 .....	7.2	6.8	7.8	7.4	6.9	6.8	7.9	6.4	7.3	8.3

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, special tabulations.

*Science and Engineering Indicators 2006*

## Postdocs at U.S. universities, by field and citizenship status: 1983–2003

Citizenship	All S&E fields	Agricultural sciences	Biological sciences	Computer sciences	Earth, atmospheric, and ocean sciences	Engineering	Mathematics	Medical/ other life sciences	Physical sciences	Psychology	Social sciences
<b>All postdocs</b>											
1983 .....	20,712	318	8,337	80	420	1,108	170	5,042	4,458	437	342
1984 .....	21,535	384	8,683	59	493	1,203	203	5,353	4,408	423	326
1985 .....	22,387	374	9,128	70	379	1,356	226	5,455	4,539	510	350
1986 .....	23,721	421	9,692	75	420	1,405	201	5,804	4,860	521	322
1987 .....	24,881	453	10,353	103	424	1,446	229	6,066	4,968	460	379
1988 .....	26,123	476	10,653	96	496	1,690	284	6,409	5,201	498	320
1989 .....	27,932	522	11,425	84	453	1,928	225	7,026	5,366	536	367
1990 .....	29,565	536	11,909	71	594	1,950	249	7,762	5,592	464	438
1991 .....	30,865	580	12,455	120	625	2,262	206	8,008	5,722	508	379
1992 .....	32,747	640	13,158	145	692	2,369	201	8,864	5,792	525	361
1993 .....	34,322	720	13,778	164	765	2,446	224	9,657	5,669	521	378
1994 .....	36,377	729	14,379	185	824	2,606	239	10,590	5,884	551	390
1995 .....	35,926	724	14,659	213	845	2,648	262	9,766	5,851	582	376
1996 .....	37,107	699	14,890	250	861	2,677	326	10,538	5,828	594	444
1997 .....	38,481	724	15,082	322	942	2,971	308	11,217	5,968	586	361
1998 .....	40,086	695	15,761	374	902	2,853	279	12,210	6,004	617	391
1999 .....	40,800	750	16,097	334	925	3,196	351	11,820	6,157	716	454
2000 .....	43,115	822	16,734	344	1,155	3,313	385	12,891	6,270	730	471
2001 .....	43,315	835	17,029	338	1,036	3,166	353	13,121	6,218	809	410
2002 .....	45,003	945	17,644	361	1,114	3,568	393	13,099	6,610	815	454
2003 .....	46,715	1,049	18,569	374	1,184	3,854	447	13,107	6,743	978	410
<b>U.S. citizen/permanent resident</b>											
1983 .....	13,193	232	5,783	36	260	414	80	3,716	2,064	376	232
1984 .....	13,548	275	5,906	41	328	439	103	3,861	1,987	377	231
1985 .....	13,528	227	5,952	45	253	443	112	3,785	2,026	456	229
1986 .....	14,041	250	6,095	48	278	460	100	3,921	2,213	471	205
1987 .....	14,133	281	6,248	69	261	497	119	3,801	2,178	387	292
1988 .....	14,420	321	6,093	57	307	588	151	3,976	2,260	425	242
1989 .....	14,863	316	6,344	47	271	657	95	4,178	2,267	434	254
1990 .....	15,115	328	6,371	40	377	613	99	4,446	2,213	381	247
1991 .....	15,135	330	6,400	84	389	655	92	4,328	2,202	407	248
1992 .....	15,800	360	6,577	98	415	767	92	4,616	2,248	401	226
1993 .....	16,727	378	6,924	89	460	843	107	5,092	2,213	386	235
1994 .....	17,986	363	7,251	96	514	1,018	131	5,517	2,421	426	249
1995 .....	18,142	392	7,396	113	502	999	117	5,319	2,578	465	261
1996 .....	18,412	355	7,483	121	504	1,050	137	5,482	2,489	483	308
1997 .....	18,916	370	7,300	146	573	1,089	138	6,081	2,512	453	254
1998 .....	19,710	364	7,684	188	530	950	127	6,744	2,371	487	265
1999 .....	18,884	376	7,360	144	535	1,018	152	6,159	2,259	535	346
2000 .....	19,452	331	7,078	129	705	1,069	149	6,825	2,271	561	334
2001 .....	18,397	328	7,009	113	599	976	154	6,309	2,032	594	283

## Postdocs at U.S. universities, by field and citizenship status: 1983–2003

Citizenship	All S&E fields	Agricultural sciences	Biological sciences	Computer sciences	Earth, atmospheric, and ocean sciences	Engineering	Mathematics	Medical/other life sciences	Physical sciences	Psychology	Social sciences
2002 .....	19,662	395	7,803	175	651	1,125	189	6,139	2,227	612	346
2003 .....	19,740	459	7,763	163	612	1,161	215	6,177	2,261	650	279
Foreign citizen											
1983 .....	7,519	86	2,554	44	160	694	90	1,326	2,394	61	110
1984 .....	7,987	109	2,777	18	165	764	100	1,492	2,421	46	95
1985 .....	8,859	147	3,176	25	126	913	114	1,670	2,513	54	121
1986 .....	9,680	171	3,597	27	142	945	101	1,883	2,647	50	117
1987 .....	10,748	172	4,105	34	163	949	110	2,265	2,790	73	87
1988 .....	11,703	155	4,560	39	189	1,102	133	2,433	2,941	73	78
1989 .....	13,069	206	5,081	37	182	1,271	130	2,848	3,099	102	113
1990 .....	14,450	208	5,538	31	217	1,337	150	3,316	3,379	83	191
1991 .....	15,730	250	6,055	36	236	1,607	114	3,680	3,520	101	131
1992 .....	16,947	280	6,581	47	277	1,602	109	4,248	3,544	124	135
1993 .....	17,595	342	6,854	75	305	1,603	117	4,565	3,456	135	143
1994 .....	18,391	366	7,128	89	310	1,588	108	5,073	3,463	125	141
1995 .....	17,784	332	7,263	100	343	1,649	145	4,447	3,273	117	115
1996 .....	18,695	344	7,407	129	357	1,627	189	5,056	3,339	111	136
1997 .....	19,565	354	7,782	176	369	1,882	170	5,136	3,456	133	107
1998 .....	20,376	331	8,077	186	372	1,903	152	5,466	3,633	130	126
1999 .....	21,916	374	8,737	190	390	2,178	199	5,661	3,898	181	108
2000 .....	23,663	491	9,656	215	450	2,244	236	6,066	3,999	169	137
2001 .....	24,918	507	10,020	225	437	2,190	199	6,812	4,186	215	127
2002 .....	25,341	550	9,841	186	463	2,443	204	6,960	4,383	203	108
2003 .....	26,975	590	10,806	211	572	2,693	232	6,930	4,482	328	131

NOTES: Medical/other life sciences are reported separately from S&E fields in National Science Foundation, Division of Science Resources Statistics (NSF/SRS), *Graduate Students and Postdoctorates in Science and Engineering*. Foreign citizen includes temporary residents only.

SOURCE: NSF/SRS, Survey of Graduate Students and Postdoctorates in Science and Engineering, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

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Appendix table 2-36

**Trends in population ages 18–23 years, by selected country and region: 1980–2050**

Year	Western Europe	Eastern Europe	Africa	South America	United States	China	India	Japan
1980.....	16,323	30,423	52,831	28,776	26,234	109,543	78,143	9,492
1985.....	17,097	26,669	61,095	32,244	25,123	138,793	87,573	10,064
1990.....	15,823	25,087	70,600	33,702	22,591	155,323	97,347	11,091
1995.....	13,568	27,282	82,304	36,263	22,070	137,816	104,166	11,569
2000.....	12,910	28,769	96,029	40,051	23,197	115,681	111,059	9,870
2005.....	13,632	29,541	110,462	42,028	25,385	127,270	125,183	8,679
2010.....	13,565	26,356	122,244	42,120	27,004	136,786	133,723	7,663
2015.....	12,880	19,136	132,309	42,368	27,273	118,562	138,668	7,264
2020.....	12,556	16,431	143,717	43,241	26,745	108,958	139,344	7,299
2025.....	12,067	17,027	158,351	43,792	27,608	99,152	139,364	7,074
2030.....	11,704	17,343	172,939	43,777	28,328	102,615	139,636	6,863
2035.....	11,761	16,519	185,206	43,081	28,544	106,849	138,456	6,496
2040.....	11,929	15,138	194,138	42,258	28,462	102,572	134,522	6,174
2045.....	11,978	13,778	201,699	41,352	28,418	94,097	128,118	6,051
2050.....	11,915	13,190	208,702	40,240	28,765	88,585	121,324	6,096

SOURCES: Department of Economic and Social Affairs of the United Nations Secretariat, Population Division, World Population Prospects: The 2004 Revision, <http://esa.un.org/unpp/>; and World Urbanization Prospects: The 2003 Revision, <http://www.un.org/esa/population/publications/wup2003/2003WUP.htm>, accessed 8 March 2005.

## Field of first university degrees and ratio of first university degrees and S&amp;E degrees to 24-year-old population, by selected region and country/economy: 2002 or most recent year

Region/location	Field of first university degree									Ratio of degree to 24-year-old population <sup>a</sup>		
	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E	24-year-olds	First university	NS&E	Social/ behavioral sciences
All regions <sup>b</sup> .....	9,057,193	3,384,260	736,241	275,599	139,311	989,022	1,244,087	5,672,933	79,363,000	11.4	3.0	1.2
Asia <sup>b</sup> .....	3,224,593	1,496,795	340,726	38,959	57,963	423,426	635,721	1,727,798	47,948,000	6.7	2.2	0.9
Bangladesh .....	180,258	74,844	18,905	5,598	1,469	48,002	870	105,414	2,311,000	7.8	1.2	2.1
Cambodia <sup>c</sup> (2001) .....	3,105	788	94	290	113	217	74	2,317	123,000	2.5	0.5	0.2
China (2003) .....	929,598	533,582	103,409	NA	29,758	48,878	351,537	396,016	18,775,000	5.0	2.6	0.3
Hong Kong .....	26,697	9,953	1,635	2,169	0	2,149	4,000	16,744	91,000	29.3	8.6	2.4
India (1990) .....	750,000	176,036	147,036	NA	NA	NA	29,000	573,964	17,741,000	4.2	1.0	NA
Indonesia (1997) .....	144,314	97,095	10,711	NA	NA	65,740	20,644	47,219	4,103,000	3.5	0.8	1.6
Japan (2004) .....	548,897	351,299	19,727	NA	15,865	217,276 <sup>d</sup>	98,431	197,598	1,713,000	32.0	7.8	12.7
Kazakstan (1995) .....	45,536	13,252	6,779	NA	NA	952	5,521	32,284	246,000	18.5	5.0	0.4
Kyrgyzstan .....	26,261	6,600	660	1,040	201	1,895	2,804	19,661	86,000	30.5	5.5	2.2
Laos .....	1,762	1,064	51	51	139	642	181	698	93,000	1.9	0.5	0.7
Malaysia (1990) .....	10,511	4,760	1,685	NA	NA	2,198	877	5,751	410,000	2.6	0.6	0.5
Mongolia .....	16,930	5,118	477	429	492	1,381	2,339	11,812	48,000	35.3	7.8	2.9
Singapore (1995) .....	5,599	5,599	2,103	NA	NA	1,820	1,676	0	56,000	10.0	6.7	3.3
South Korea .....	239,793	113,097	12,864	13,591	5,910	15,790	64,942	126,696	778,000	30.8	12.5	2.0
Taiwan (2003) .....	176,044	72,540	4,294	15,791	4,016	6,492	41,947	103,504	402,000	43.8	16.4	1.6
Thailand (1995) .....	119,288	31,168	10,296	NA	NA	9,994	10,878	88,120	972,000	12.3	2.2	1.0
Middle East <sup>b</sup> .....	445,488	149,600	36,237	13,636	10,435	44,626	44,666	295,888	5,686,000	7.8	1.8	0.8
Bahrain .....	1,434	419	54	159	NA	96	110	1,015	13,000	11.0	2.5	0.7
Egypt <sup>e</sup> (1995) .....	85,608	13,578	6,710	NA	NA	1,437	5,431	72,030	1,173,000	7.3	1.0	0.1
Iran (2000) .....	69,211	33,625	6,016	3,301	4,785	9,542	9,981	35,586	1,305,000	5.3	1.8	0.7
Israel .....	31,962	16,154	1,256	2,524	224	8,133	4,017	15,808	106,000	30.2	7.6	7.7
Jordan (1996) .....	12,633	3,539	1,753	NA	NA	986	800	9,094	103,000	12.3	2.5	1.0
Lebanon (2001) .....	15,185	5,404	664	651	135	2,086	1,868	9,781	77,000	19.7	4.3	2.7
Morocco .....	21,667	6,701	2,308	764	NA	2,969	660	14,966	565,000	3.8	0.7	0.5
Oman (2000) .....	2,344	217	51	7	45	0	114	2,127	41,000	5.7	0.5	0.0
Palestine .....	9,915	2,737	466	755	45	730	741	7,178	55,000	18.0	3.6	1.3
Qatar .....	1,330	281	54	98	NA	53	76	1,049	8,000	16.6	2.9	0.7
Saudi Arabia (1996) .....	26,641	5,879	4,201	NA	NA	828	850	20,762	339,000	7.9	1.5	0.2
Syria (1995) .....	16,600	4,530	1,398	NA	NA	NA	3,132	12,070	322,000	5.2	1.4	NA
Tunisia (1996) .....	10,327	3,198	1,719	NA	NA	760	719	7,129	193,000	5.4	1.3	0.4
Turkey (short) .....	140,631	53,338	9,587	5,377	5,201	17,006	16,167	87,293	1,386,000	10.1	2.6	1.2
Sub-Saharan Africa <sup>b</sup> .....	174,471	42,291	7,033	4,241	5,633	14,591	10,793	132,180	4,172,000	4.2	0.7	0.3
Eritrea .....	1,120	536	77	68	116	90	185	584	69,000	1.6	0.6	0.1
Ethiopia <sup>a</sup> .....	28,688	5,980	355	1,003	1,735	690	2,197	22,708	1,088,000	2.6	0.5	0.1
Ghana (2000) .....	7,122	2,951	916	0	362	1,177	496	4,171	292,000	2.4	0.6	0.4

## Field of first university degrees and ratio of first university degrees and S&amp;E degrees to 24-year-old population, by selected region and country/economy: 2002 or most recent year

Region/location	Field of first university degree									Ratio of degree to 24-year-old population <sup>a</sup>		
	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E	24-year-olds	First university	NS&E	Social/ behavioral sciences
Kenya <sup>a</sup> (2000) .....	15,620	3,870	1,120	71	1,494	445	740	11,750	606,000	2.6	0.6	0.1
Lesotho .....	535	191	41	0	30	120	0	344	38,000	1.4	0.2	0.3
Madagascar <sup>a</sup> .....	5,947	2,079	771	190	53	836	229	3,868	268,000	2.2	0.5	0.3
Mauritius .....	1,207	716	157	0	83	188	288	491	22,000	5.5	2.4	0.9
Namibia (2001) .....	2,831	91	38	0	21	32	NA	2,740	31,000	9.1	0.2	0.1
South Africa (1998) .....	91,892	23,215	3,264	2,766	1,319	10,109	5,757	68,677	780,000	11.8	1.7	1.3
Tanzania (2000) .....	4,208	1,071	NA	87	299	88	597	3,137	587,000	0.7	0.2	0.0
Uganda (2000) .....	15,301	1,591	294	56	121	816	304	13,710	391,000	3.9	0.2	0.2
Europe <sup>b</sup> .....	2,682,448	930,192	222,487	90,098	31,022	216,918	369,667	1,752,256	9,214,000	29.1	7.7	2.4
European Union .....	1,465,021	506,067	100,596	70,909	16,161	120,122	198,279	958,954	4,770,000	30.7	8.1	2.5
Austria (short) .....	2,503	1,214	15	51	0	0	1,148	1,289	93,000	2.7	1.3	0.0
Austria (long) .....	14,323	4,837	832	497	217	1,367	1,924	9,486	93,000	15.4	3.7	1.5
Belgium (long) .....	24,591	8,831	1,527	763	442	2,418	3,681	15,760	128,000	19.2	5.0	1.9
Denmark (short) .....	22,912	3,914	607	209	183	1,325	1,590	18,998	67,000	34.2	3.9	2.0
Denmark (long) .....	142	31	0	0	0	0	31	111	67,000	0.2	0.0	0.0
Finland (short) .....	20,292	6,289	36	799	500	207	4,747	14,003	67,000	30.3	9.1	0.3
Finland (long) .....	11,533	5,218	894	498	169	1,371	2,286	6,315	67,000	17.2	5.7	2.0
France (short) .....	252,954	85,123	27,750	14,512	161	27,893	14,807	167,831	737,000	34.3	7.8	3.8
France (long) .....	56,055	26,754	0	195	145	0	26,414	29,301	737,000	7.6	3.6	0.0
Germany (short) .....	60,321	27,080	663	3,622	1,213	253	21,329	33,241	940,000	6.4	2.9	0.0
Germany (long) .....	115,704	36,320	10,580	5,524	893	7,853	11,470	79,384	940,000	12.3	3.0	0.8
Greece (2000, long) .....	18,556	4,576	2,570	NA	NA	221	1,785	13,980	160,000	11.6	2.7	0.1
Iceland (short) .....	1,573	437	77	118	11	151	80	1,136	4,000	39.3	7.2	3.8
Iceland (long) .....	115	16	16	0	0	0	0	99	4,000	2.9	0.4	0.0
Ireland (short) .....	20,954	7,550	2,193	2,022	216	1,206	1,913	13,404	66,000	31.7	9.6	1.8
Ireland (long) .....	798	0	0	0	0	0	0	798	66,000	1.2	0.0	0.0
Italy (short) .....	17,823	4,850	457	743	175	57	3,418	12,973	687,000	2.6	0.7	0.0
Italy (long) .....	153,983	57,992	9,193	3,748	1,660	16,644	26,747	95,991	687,000	22.4	6.0	2.4
Netherlands (short) .....	71,497	18,318	1,996	1,665	1,340	5,660	7,657	53,179	193,000	37.0	6.6	2.9
Netherlands (long) .....	3,648	1,042	213	71	48	0	710	2,606	193,000	1.9	0.5	0.0
Portugal .....	63,630	16,875	1,829	1,541	997	4,291	8,217	46,755	153,000	41.6	8.2	2.8
Spain (short) .....	90,879	24,201	0	4,954	3,027	0	16,220	66,678	660,000	13.8	3.7	0.0
Spain (long) .....	121,100	46,627	10,405	4,400	1,838	15,410	14,574	74,473	660,000	18.3	4.7	2.3
Sweden (short) .....	35,345	13,512	1,443	1,637	200	2,197	8,035	21,833	103,000	34.3	11.0	2.1
Sweden (long) .....	1,410	340	0	0	16	288	36	1,070	103,000	1.4	0.1	0.3
United Kingdom <sup>c</sup> (2003) .....	282,380	104,120	27,300	23,340	2,710	31,310	19,460	178,260	712,000	39.7	10.2	4.4

## Field of first university degrees and ratio of first university degrees and S&amp;E degrees to 24-year-old population, by selected region and country/economy: 2002 or most recent year

Region/location	Field of first university degree									Ratio of degree to 24-year-old population <sup>a</sup>		
	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E	24-year-olds	First university	NS&E	Social/ behavioral sciences
European Free Trade Association .....	40,529	11,603	1,215	1,891	265	3,462	4,770	28,926	133,000	30.5	6.1	2.6
Norway (short).....	17,796	4,264	39	1,071	64	2,008	1,082	13,532	55,000	32.4	4.1	3.7
Norway (long).....	4,893	1,443	92	175	76	260	840	3,450	55,000	8.9	2.2	0.5
Switzerland (short) .....	8,427	2,194	2	302	26	119	1,745	6,233	78,000	10.8	2.7	0.2
Switzerland (long).....	9,413	3,702	1,082	343	99	1,075	1,103	5,711	78,000	12.1	3.4	1.4
Central/Eastern Europe.....	1,176,898	412,522	120,676	17,298	14,596	93,334	166,618	764,376	4,311,000	27.3	7.4	2.2
Albania (long).....	4,916	790	38	63	339	132	218	4,126	55,000	8.9	1.2	0.2
Armenia (2000, long).....	10,206	1,343	NA	NA	335	NA	1,008	8,863	61,000	16.7	2.2	NA
Bulgaria .....	43,303	15,336	1,005	1,038	606	6,245	6,442	27,967	123,000	35.2	7.4	5.1
Croatia .....	10,192	3,136	538	414	277	452	1,455	7,056	61,000	16.7	4.4	0.7
Czech Republic (short).....	8,686	3,157	282	579	133	1,487	676	5,529	177,000	4.9	0.9	0.8
Czech Republic (long).....	18,359	8,414	910	2,091	978	813	3,622	9,945	177,000	10.4	4.3	0.5
Estonia .....	5,250	1,623	294	261	134	328	606	3,627	19,000	27.6	6.8	1.7
Georgia .....	23,552	6,105	925	319	458	195	4,208	17,447	75,000	31.4	7.9	0.3
Hungary (short) .....	50,505	10,693	581	692	1,864	2,797	4,759	39,812	168,000	30.1	4.7	1.7
Latvia.....	15,232	5,099	461	794	170	2,600	1,074	10,133	30,000	50.8	8.3	8.7
Lithuania.....	22,707	7,031	611	925	404	1,021	4,070	15,676	48,000	47.3	12.5	2.1
Macedonia <sup>a</sup> .....	4,239	1,204	168	133	186	112	605	3,035	33,000	12.8	3.3	0.3
Poland (short).....	162,918	46,129	2,339	4,231	3,068	24,284	12,207	116,789	630,000	25.9	3.5	3.9
Poland (long).....	98,035	37,644	5,211	2,132	2,184	11,703	16,414	60,391	630,000	15.6	4.1	1.9
Romania .....	100,042	33,429	4,068	1,985	1,909	6,392	19,075	66,613	398,000	25.1	6.8	1.6
Russia (long) (1999).....	554,814	216,017	101,320	NA	NA	32,288	82,409	338,797	2,146,000	25.9	8.6	1.5
Serbia-Montenegro <sup>a</sup> (2000).....	12,545	4,477	601	378	579	323	2,596	8,068	161,000	7.8	2.6	0.2
Slovak Republic (short).....	7,849	2,527	403	352	104	408	1,260	5,322	95,000	8.3	2.2	0.4
Slovak Republic (long).....	17,047	6,300	725	788	757	872	3,158	10,747	95,000	17.9	5.7	0.9
Slovenia .....	6,501	2,068	196	123	111	882	756	4,433	31,000	21.0	3.8	2.8
America <sup>b</sup> .....	2,371,031	717,533	119,882	115,242	32,918	279,283	170,208	1,653,498	12,024,000	19.7	3.6	2.3
North/Central America .....	1,827,226	589,999	101,426	92,591	25,113	248,473	122,396	1,237,227	6,859,000	26.6	5.0	3.6
Canada (2001) .....	128,950	59,915	11,580	6,595	2,375	29,270	10,095	69,035	430,000	30.0	7.1	6.8
Costa Rica (2001).....	22,626	4,642	310	616	271	1,509	1,936	17,984	68,000	33.3	4.6	2.2
Cuba (2000).....	16,769	3,374	1,009	219	384	408	1,354	13,395	169,000	9.9	1.8	0.2
El Salvador.....	6,819	1,082	75	196	121	18	672	5,737	137,000	5.0	0.8	0.0
Guatemala.....	3,865	882	82	0	134	254	412	2,983	214,000	1.8	0.3	0.1
Mexico .....	321,799	99,936	7,695	23,557	4,381	19,621	44,682	221,863	1,843,000	17.5	4.4	1.1
Nicaragua (1997) .....	6,282	1,965	834	NA	NA	276	855	4,317	96,000	6.5	1.8	0.3
Panama.....	14,386	2,592	73	0	87	681	1,751	11,794	51,000	28.2	3.7	1.3
United States.....	1,305,730	415,611	79,768	61,408	17,360	196,436	60,639	890,119	3,851,000	33.9	5.7	5.1

## Field of first university degrees and ratio of first university degrees and S&amp;E degrees to 24-year-old population, by selected region and country/economy: 2002 or most recent year

Region/location	Field of first university degree university degree									Ratio of degree to 24-year-old population <sup>a</sup>		
	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E	24-year-olds	First university	NS&E	Social/ behavioral sciences
South America.....	543,805	127,534	18,456	22,651	7,805	30,810	47,812	416,271	5,165,000	10.5	1.9	0.6
Argentina .....	55,278	16,334	1,816	3,135	2,029	3,702	5,652	38,944	681,000	8.1	1.9	0.5
Bolivia (2000).....	15,341	5,115	563	392	1,006	997	2,157	10,226	152,000	10.1	2.7	0.7
Brazil (2001) .....	395,988	82,876	12,077	19,124	4,770	21,595	25,310	313,112	3,311,000	12.0	1.9	0.7
Chile (1996) .....	23,010	10,531	2,358	NA	NA	4,516	3,657	12,479	239,000	9.6	2.5	1.9
Colombia (1996).....	54,188	12,678	1,642	NA	NA	NA	11,036	41,510	782,000	6.9	1.6	NA
Oceania <sup>b</sup> .....	159,162	47,849	9,876	13,423	1,340	10,178	13,032	111,313	319,000	49.9	11.8	3.2
Australia (short).....	124,867	37,537	8,417	9,912	1,058	7,570	10,580	87,330	265,000	47.1	11.3	2.9
Australia (long).....	13,010	3,595	128	1,791	62	527	1,087	9,415	265,000	4.9	1.2	0.2
New Zealand (short).....	17,794	5,431	1,249	1,550	193	2,061	378	12,363	54,000	33.0	6.2	3.8
New Zealand (long).....	3,491	1,286	82	170	27	20	987	2,205	54,000	6.5	2.3	0.0

NA = not available

NS&amp;E = natural sciences and engineering

<sup>a</sup>Number of degrees per 100 24-year-olds.<sup>b</sup>Includes only locations for which relatively recent data are available.<sup>c</sup>Engineering and agriculture degrees are long, >5 years.<sup>d</sup>Japanese social science data also include business administration.<sup>e</sup>Engineering degrees are long.<sup>f</sup>Includes former colleges and polytechnical institutions. Data for United Kingdom are rounded to nearest 10. Detail may not add to total because of rounding. Ratios based on unrounded data.

NOTES: Physical/biological sciences include physical, biological, earth, atmospheric, and ocean sciences. NS&E includes physical, biological, agricultural, and computer sciences; mathematics; and engineering. Data for first university degrees use International Standard Classification of Education (ISCED 97), level 5A. First university degree programs in most countries are <5 years. However, in some countries, especially European, some level 5A degree programs are >5 years and noted as long. When country has first university degrees that are <5 years and some >5 years, such as Germany, duration is noted as short or long. Unspecified duration means <5 years.

SOURCES: Organisation for Economic Co-operation and Development, Center for Education Research and Innovation, Education database, [http://www1.oecd.org/scripts/cde/members/EDU\\_UOEAuthenticate.asp](http://www1.oecd.org/scripts/cde/members/EDU_UOEAuthenticate.asp); United Nations Educational, Scientific, and Cultural Organization (UNESCO), Institute for Statistics, special tabulations; Iberoamerican Network of Science and Technology Indicators (RICYT), *Principales Indicadores de Ciencia y Tecnología* (1999); China—National Bureau of Statistics of China, *China Statistical Yearbook*, annual series (Beijing) various years; India—Department of Science and Technology, *Research and Development Statistics 1996–97* (1999); Japan—Government of Japan, Ministry of Education, Culture and Science, *Monbusho Survey of Education*, special tabulations (2005); Taiwan—Ministry of Education, *Educational Statistics of the Republic of China: 2004* (2004); United Kingdom—Higher Education Statistics Agency, special tabulations (2005); Russia—Center for Science Research and Statistics, unpublished tabulations (2001); Canada—Statistics Canada, special tabulations (2005); and United States—U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, Division of Science Resources Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Science and Engineering Indicators 2006

## S&amp;E first university degrees, by selected Western or Asian country and field: Selected years, 1983–2002

Country and field	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002
China												
All fields .....	NA	183,241	225,312	275,056	262,088	347,068	325,484	381,647	440,935	495,624	567,839	655,763
S&E fields.....	NA	115,287	138,724	175,584	181,770	193,088	235,313	281,245	322,769	359,478	337,352	384,529
Physical/biological sciences .....	NA	8,686	9,115	8,153	6,598	11,087	25,509	39,113	42,351	49,214	63,517	72,526
Mathematics/computer sciences.....	NA	7,764	8,974	13,079	13,847	12,520	12,520	NA	NA	NA	NA	NA
Agricultural sciences.....	NA	11,907	13,850	14,531	14,542	16,994	16,365	16,559	17,453	19,154	19,005	22,462
Social/behavioral sciences .....	NA	13,855	19,619	27,713	32,163	31,656	32,075	50,134	67,611	78,205	35,267	37,517
Engineering.....	NA	73,075	87,166	112,108	114,620	120,831	148,844	175,439	195,354	212,905	219,563	252,024
Japan												
All fields .....	369,069	373,302	382,655	376,688	428,079	445,774	493,277	524,512	532,436	538,683	545,512	547,711
S&E fields.....	245,201	247,258	252,688	247,643	284,617	295,743	330,210	348,897	350,535	353,465	359,019	357,282
Physical/biological sciences .....	8,575	9,166	9,817	9,900	10,452	10,757	12,089	13,386	13,662	13,300	14,192	19,369
Mathematics/computer sciences.....	3,148	3,532	3,572	3,395	3,765	4,221	4,884	5,103	4,906	4,941	4,965	NA
Agricultural sciences.....	10,658	10,928	11,266	10,252	12,282	13,021	14,970	13,838	14,150	15,562	14,084	16,393
Social/behavioral sciences .....	151,996	151,072	150,956	147,087	170,721	179,338	200,875	213,619	214,377	216,506	221,300	217,838
Engineering.....	70,824	72,560	77,077	77,009	87,397	88,406	97,392	102,951	103,440	103,156	104,478	103,682
South Korea												
All fields .....	77,272	118,584	149,582	166,845	175,586	208,834	184,214	196,566	209,444	214,498	234,540	239,793
S&E fields.....	36,327	45,079	53,093	58,789	73,011	78,830	84,350	91,278	94,078	96,859	111,060	113,097
Physical/biological sciences .....	5,202	8,112	7,082	8,249	9,703	11,634	11,828	12,532	13,865	13,427	13,915	12,864
Mathematics/computer sciences.....	1,589	2,888	3,149	6,274	7,547	8,502	12,351	14,151	9,847	9,299	14,510	13,591
Agricultural sciences.....	4,603	4,068	6,395	8,027	6,586	7,843	7,767	6,662	5,345	5,859	5,555	5,910
Social/behavioral sciences .....	4,297	6,472	8,867	8,098	18,483	17,808	16,955	16,624	14,195	11,766	14,764	15,790
Engineering.....	20,636	23,539	27,600	28,141	30,692	33,043	35,449	41,309	50,827	56,508	62,316	64,942
United States												
All fields .....	980,679	990,877	1,003,532	1,030,171	1,107,997	1,179,278	1,174,436	1,186,589	NA	1,253,121	1,257,648	1,305,730
S&E fields.....	317,571	332,273	331,526	322,821	337,675	366,035	378,148	388,482	NA	398,622	400,206	415,611
Physical/biological sciences .....	64,378	63,251	59,200	54,278	56,757	65,680	76,265	84,869	NA	83,531	80,220	79,768
Mathematics/computer sciences.....	37,344	54,510	56,442	46,277	40,194	39,433	38,620	38,116	NA	49,123	54,639	61,408
Agricultural sciences.....	14,528	11,907	9,524	8,582	8,432	11,632	14,580	17,361	NA	18,244	17,467	17,360
Social/behavioral sciences .....	128,651	125,033	131,935	146,737	170,105	186,585	185,312	185,784	NA	188,188	188,622	196,436
Engineering.....	72,670	77,572	74,425	66,947	62,187	62,705	63,371	62,352	NA	59,536	59,258	60,639
United Kingdom												
All fields .....	73,950	72,000	70,870	73,660	79,640	196,820	237,800	258,750	263,670	265,270	274,440	272,660
S&E fields.....	40,200	40,550	39,870	41,250	40,730	75,290	83,840	90,820	92,380	92,530	95,310	95,180
Physical/biological sciences .....	13,330	12,500	12,210	11,510	12,430	21,070	27,610	31,220	32,230	31,630	33,630	32,570
Mathematics/computer sciences.....	4,140	4,540	4,540	4,530	5,220	10,580	12,340	13,000	14,630	15,300	17,120	18,420
Agricultural sciences.....	1,480	1,450	1,370	1,340	1,210	1,650	2,300	2,800	2,860	2,340	2,910	2,970
Social/behavioral sciences .....	10,660	12,430	12,480	14,060	12,120	22,150	19,510	20,780	20,650	22,710	21,170	20,930
Engineering.....	10,590	9,630	9,270	9,820	9,740	19,840	22,080	23,020	22,010	20,550	20,490	20,280

**S&E first university degrees, by selected Western or Asian country and field: Selected years, 1983–2002**

Country and field	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002
Germany												
All first university degrees												
All fields .....	124,027	131,969	138,955	145,087	152,919	180,973	201,667	212,970	197,151	190,076	182,427	176,025
S&E fields .....	67,161	71,542	78,233	85,961	92,324	98,304	104,789	111,923	99,079	94,535	89,990	63,400
Physical/biological sciences .....	10,018	10,312	10,611	12,473	13,803	14,116	14,507	14,909	12,390	11,467	10,543	11,243
Mathematics/computer sciences.....	4,306	4,272	4,729	5,306	6,828	7,718	9,463	11,603	10,541	9,864	9,187	9,146
Agricultural sciences.....	4,374	4,390	4,644	4,894	4,953	4,823	4,839	4,855	4,992	4,935	4,878	2,106
Social/behavioral sciences .....	26,383	29,236	34,006	37,038	37,552	44,223	48,563	52,855	46,013	43,318	40,622	8,106
Engineering.....	22,080	23,332	24,243	26,250	29,188	27,424	27,416	27,701	25,143	24,952	24,760	32,799
Short degree (3–5 yr)												
All fields .....	41,893	48,003	52,753	54,631	58,855	63,337	69,216	75,641	70,126	68,139	66,151	60,321
S&E fields .....	29,799	34,074	39,080	40,880	40,922	43,618	43,565	43,807	41,092	40,351	39,609	27,080
Physical/biological sciences.....	464	549	599	689	678	777	710	649	615	539	463	663
Mathematics/computer sciences.....	645	1,009	1,336	1,603	2,186	2,488	2,812	3,177	2,881	2,960	3,038	3,622
Agricultural sciences.....	1,390	1,474	1,565	2,081	2,230	2,242	2,342	2,447	2,472	2,526	2,580	1,213
Social/behavioral sciences.....	12,622	15,061	19,031	20,095	19,034	22,254	23,500	24,815	21,322	19,654	17,985	253
Engineering.....	14,678	15,981	16,549	16,412	16,794	15,856	14,201	12,719	13,802	14,673	15,543	21,329
Long degree (6–7 yr)												
All fields .....	82,134	83,966	86,202	90,456	94,064	117,636	132,451	137,329	127,025	121,937	116,276	115,704
S&E fields .....	37,362	37,468	39,153	45,081	51,402	54,686	61,223	68,116	57,987	54,184	50,381	36,320
Physical/biological sciences.....	9,554	9,763	10,012	11,784	13,125	13,339	13,797	14,260	11,775	10,928	10,080	10,580
Mathematics/computer sciences.....	3,661	3,263	3,393	3,703	4,642	5,229	6,651	8,426	7,660	6,905	6,149	5,524
Agricultural sciences.....	2,984	2,916	3,079	2,813	2,723	2,581	2,496	2,408	2,520	2,409	2,298	893
Social/behavioral sciences.....	13,761	14,175	14,975	16,943	18,518	21,969	25,064	28,040	24,691	23,664	22,637	7,853
Engineering.....	7,402	7,351	7,694	9,838	12,394	11,567	13,215	14,982	11,341	10,279	9,217	11,470

NOTES: Physical/biological sciences include physical, biological, earth, atmospheric, and ocean sciences. Data for first university degrees use International Standard Classification of Education (ISCED 97), level 5A.

SOURCES: China—National Bureau of Statistics of China, *China Statistical Yearbook*, annual series (Beijing) various years; Japan—Government of Japan, Ministry of Education, Culture and Science, *Monbusho Survey of Education* (annual series, 2005); South Korea—Organisation for Economic Co-operation and Development, Center for Education Research and Innovation, Education database, [http://www1.oecd.org/scripts/cde/members/EDU\\_UOEAuthenticate.asp](http://www1.oecd.org/scripts/cde/members/EDU_UOEAuthenticate.asp); Taiwan—Ministry of Education, *Educational Statistics of the Republic of China* (annual series, 2004); Germany—Federal Statistical Office, *Prüfungen an Hochschulen 2003* (annual series, 2004); United Kingdom—Higher Education Statistics Agency, special tabulations (2005); and United States—U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, Division of Science Resources Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

## Field of first university degrees and ratio of first university and S&amp;E degrees to 24-year-old population, by sex, country/economy, and region: 2002 or most recent year

Sex and location	Field of first university degree							Ratio to 24-year-old population <sup>a</sup>			
	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	24-year-olds	First university	NS&E	Social/ behavioral sciences
<b>Male</b>											
<b>Asia</b>											
Bangladesh .....	119,532	43,605	13,861	4,709	1,223	30,532	778	1,162,000	10.3	1.3	2.6
Cambodia (2001) .....	2,327	598	57	245	111	162	73	61,000	3.8	0.2	0.3
Japan (2004) .....	323,025	258,331	14,369	NA	9,094	147,492 <sup>b</sup>	87,376	877,000	36.8	11.6	16.8
Kyrgyzstan .....	10,928	3,368	152	458	175	757	1,913	43,000	25.4	4.8	1.8
Laos .....	1,170	713	34	41	111	376	165	47,000	2.5	0.4	0.8
Mongolia .....	6,062	2,028	189	196	190	423	1,197	24,000	25.3	5.8	1.8
South Korea .....	126,879	73,744	6,593	7,550	3,685	8,373	47,543	400,000	31.7	13.5	2.1
Taiwan (2003) .....	86,153	53,856	2,917	10,398	1,851	2,405	36,285	206,000	41.8	19.0	1.2
<b>Middle East</b>											
Bahrain .....	384	128	10	42	NA	15	70	7,000	5.5	1.1	0.2
Iran (2000) .....	37,530	20,103	2,529	1,736	2,787	4,776	8,275	636,000	5.9	1.7	0.8
Israel .....	12,493	7,674	515	1,628	102	2,399	3,030	54,000	23.1	6.6	4.4
Lebanon (2000) .....	4,778	1,309	348	254	10	326	371	39,000	12.3	1.8	0.8
Morocco .....	11,640	3,213	1,424	597	0	1,799	465	287,000	4.1	0.7	0.6
Oman (2000) .....	1,353	146	36	0	5	0	105	21,000	6.4	0.7	0.0
Palestine .....	4,786	1,385	166	413	27	352	524	28,000	17.1	2.5	1.3
Qatar .....	365	120	10	34	NA	8	76	4,000	9.1	2.2	0.2
Turkey .....	80,759	34,134	4,786	3,169	3,357	10,290	12,532	705,000	11.5	2.5	1.5
<b>Sub-Saharan Africa</b>											
Eritrea .....	983	426	69	57	110	73	175	34,000	2.9	0.7	0.2
Ethiopia .....	21,407	4,975	321	747	1,474	588	2,058	558,000	3.8	0.4	0.1
Ghana (2000) .....	5,232	2,227	694	0	294	801	438	138,000	3.8	0.8	0.6
Kenya (2000) .....	9,151	2,821	861	57	1,023	226	654	306,000	3.0	0.5	0.1
Madagascar .....	3,095	1,097	476	151	25	513	178	134,000	2.3	0.5	0.4
Mauritius .....	584	363	69	0	33	56	205	11,000	5.3	2.5	0.5
Tanzania (2000) .....	3,015	918	NA	73	237	64	544	293,000	1.0	0.3	0.0
Uganda (2000) .....	12,931	892	240	40	92	322	198	196,000	6.6	0.2	0.2
<b>Europe</b>											
Austria .....	8,514	3,931	408	445	113	422	2,543	47,000	18.1	6.3	0.9
Belgium .....	12,021	5,428	780	614	253	841	2,940	65,000	18.5	5.7	1.3
Denmark .....	7,892	2,555	357	141	92	644	1,321	34,000	23.2	4.9	1.9
Finland .....	11,844	7,624	381	778	353	521	5,591	34,000	34.8	17.6	1.5
France .....	130,849	63,497	13,254	9,779	147	9,099	31,218	371,000	35.3	12.0	2.5
Germany (2003) .....	98,258	62,919	5,235	8,017	2,340	24,375	22,952	481,000	20.4	5.9	5.1
Hungary .....	19,336	6,380	291	581	922	1,072	3,514	85,000	22.7	4.5	1.3



## Field of first university degrees and ratio of first university and S&amp;E degrees to 24-year-old population, by sex, country/economy, and region: 2002 or most recent year

Sex and location	Field of first university degree							Ratio to 24-year-old population <sup>a</sup>			
	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	24-year-olds	First university	NS&E	Social/ behavioral sciences
Iceland .....	576	246	38	93	11	47	57	2,000	28.8	4.8	2.4
Ireland .....	9,004	4,276	882	1,328	141	400	1,525	33,000	27.3	7.3	1.2
Italy .....	74,623	36,087	4,327	2,266	1,252	6,132	22,110	351,000	21.3	7.5	1.7
Netherlands.....	33,742	13,562	1,419	1,463	799	2,558	7,323	98,000	34.4	8.9	2.6
Norway.....	8,353	3,781	69	959	96	1,173	1,484	28,000	29.8	5.5	4.2
Portugal.....	20,350	8,117	654	736	376	1,328	5,429	77,000	26.4	7.9	1.7
Spain.....	86,306	40,716	4,328	6,398	2,947	5,347	21,696	336,000	25.7	7.7	1.6
Sweden.....	14,161	8,169	519	942	103	844	5,761	53,000	26.7	11.8	1.6
Switzerland .....	9,959	4,246	686	599	88	382	2,491	40,000	24.9	7.9	1.0
United Kingdom <sup>c</sup> (2003).....	124,430	59,220	13,890	16,860	990	11,160	16,310	367,000	33.9	8.2	3.0
Central/Eastern Europe											
Albania .....	1,387	357	7	18	164	21	153	29,000	4.8	0.6	0.1
Armenia (2000) .....	4,662	1,047	NA	NA	246	NA	801	31,000	15.0	NA	NA
Bulgaria.....	18,041	7,425	415	483	345	2,499	3,948	63,000	28.6	6.9	4.0
Croatia .....	4,125	1,645	164	276	141	164	1,020	31,000	13.3	3.8	0.5
Czech Republic.....	12,829	7,284	557	2,317	617	850	2,943	90,000	14.3	3.9	0.9
Estonia .....	1,806	732	122	167	66	93	368	10,000	18.1	4.9	0.9
Georgia .....	10,870	3,594	192	141	315	45	2,975	38,000	28.6	8.3	0.1
Latvia .....	4,596	2,027	144	514	89	612	769	15,000	30.6	6.1	4.1
Lithuania.....	8,266	3,665	258	520	191	268	2,631	24,000	34.4	12.0	1.1
Macedonia .....	1,630	625	49	44	110	38	423	17,000	9.6	2.8	0.2
Poland.....	97,352	41,806	2,207	3,993	2,374	11,399	21,833	317,000	30.7	7.6	3.6
Romania.....	44,979	18,030	1,049	921	1,105	1,836	13,119	203,000	22.2	7.0	0.9
Slovak Republic.....	11,673	5,477	464	945	555	486	3,027	48,000	24.3	7.3	1.0
Slovenia .....	2,406	1,002	82	101	54	280	537	16,000	15.0	3.9	1.8
North America											
Canada.....	51,215	28,205	4,695	4,670	1,030	10,040	7,770	219,000	23.4	5.7	4.6
Costa Rica (2000).....	1,749	702	58	149	127	107	261	34,000	5.1	0.9	0.3
Cuba (2000) .....	5,702	1,802	208	155	267	136	1,036	88,000	6.5	1.4	0.2
El Salvador .....	3,160	714	26	121	95	13	461	69,000	4.6	0.7	0.0
Guatemala.....	2,105	511	24	0	122	40	325	108,000	1.9	0.3	0.0
Mexico .....	152,217	60,660	3,443	13,543	3,237	6,727	33,710	867,000	17.6	4.3	0.8
Panama.....	4,614	1,367	36	0	60	207	1,100	26,000	17.7	4.4	0.8
United States.....	553,957	204,408	34,389	42,142	8,726	71,199	47,952	1,960,000	28.3	4.2	3.6
South America											
Argentina .....	25,326	8,836	617	1,869	1,170	1,127	4,293	343,000	7.4	1.4	0.3
Brazil (2001).....	148,991	41,515	5,082	12,589	3,247	6,409	17,402	1,653,000	9.0	1.4	0.4

## Field of first university degrees and ratio of first university and S&amp;E degrees to 24-year-old population, by sex, country/economy, and region: 2002 or most recent year

Sex and location	Field of first university degree							Ratio to 24-year-old population <sup>a</sup>			
	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	24-year-olds	First university	NS&E	Social/ behavioral sciences
Oceania											
Australia	59,433	24,637	3,763	8,588	642	2,611	9,033	134,000	44.4	9.5	1.9
New Zealand	8,114	3,508	577	1,174	154	681	922	27,000	30.1	5.6	2.5
Female											
Asia											
Bangladesh	60,726	23,741	5,044	889	246	17,470	92	1,149,000	5.3	0.4	1.5
Cambodia (2001)	778	140	37	45	2	55	1	62,000	1.3	0.1	0.1
Japan (2004)	225,872	92,968	5,358	NA	6,771	69,784 <sup>b</sup>	11,055	836,000	27.0	2.0	8.3
Kyrgyzstan	15,333	3,145	508	582	26	1,138	891	43,000	35.7	3.3	2.6
Laos	592	337	17	10	28	266	16	46,000	1.3	0.1	0.6
Mongolia	10,868	2,923	288	233	302	958	1,142	24,000	45.3	6.0	4.0
South Korea	117,973	39,353	6,271	6,041	2,225	7,417	17,399	378,000	31.2	6.3	2.0
Taiwan (2003)	89,891	18,684	1,377	5,393	2,165	4,087	5,662	196,000	45.9	3.6	2.1
Middle East											
Bahrain	1,050	282	44	117	NA	81	40	6,000	17.5	1.4	1.4
Iran (2000)	31,681	13,522	3,487	1,565	1,998	4,766	1,706	669,000	4.7	0.8	0.7
Israel	19,469	8,480	741	896	122	5,734	987	52,000	37.4	3.3	11.0
Lebanon (2000)	6,616	1,650	326	164	18	1,036	106	38,000	17.4	1.1	2.7
Morocco	10,027	2,416	884	167	0	1,170	195	278,000	3.6	0.4	0.4
Oman (2000)	991	71	15	7	40	0	9	20,000	5.0	0.1	0.0
Palestine	5,129	1,255	300	342	18	378	217	27,000	19.0	1.9	1.4
Qatar	965	153	44	64	NA	45	0	4,000	24.1	1.1	1.1
Turkey	59,872	19,204	4,801	2,208	1,844	6,716	3,635	681,000	8.8	1.2	1.0
Sub-Saharan Africa											
Eritrea	137	52	8	11	6	17	10	35,000	0.4	0.1	0.0
Ethiopia	7,281	792	34	256	261	102	139	530,000	1.4	0.0	0.0
Ghana (2000)	1,890	724	222	0	68	376	58	154,000	1.2	0.2	0.2
Kenya (2000)	5,470	1,049	259	14	471	219	86	300,000	1.8	0.1	0.1
Madagascar	2,852	736	295	39	28	323	51	134,000	2.1	0.3	0.2
Mauritius	623	353	88	0	50	132	83	11,000	5.7	1.6	1.2
Tanzania (2000)	1,079	153	NA	14	62	24	53	294,000	0.4	NA	0.0
Uganda (2000)	2,370	699	54	16	29	494	106	195,000	1.2	0.1	0.3
Europe											
Austria	8,312	2,120	439	103	104	945	529	46,000	18.1	2.1	2.1
Belgium	12,570	3,403	747	149	189	1,577	741	63,000	20.0	2.4	2.5
Denmark	15,162	1,390	250	68	91	681	300	33,000	45.9	1.7	2.1
Finland	19,981	3,883	549	519	316	1,057	1,442	33,000	60.5	6.0	3.2

## Field of first university degrees and ratio of first university and S&amp;E degrees to 24-year-old population, by sex, country/economy, and region: 2002 or most recent year

Sex and location	Field of first university degree							Ratio to 24-year-old population <sup>a</sup>			
	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	24-year-olds	First university	NS&E	Social/ behavioral sciences
France.....	178,160	48,380	14,496	4,928	159	18,794	10,003	366,000	48.7	6.7	5.1
Germany (2003).....	96,845	35,941	5,703	3,019	2,874	20,443	3,902	459,000	21.1	2.1	4.5
Hungary.....	31,169	4,313	290	111	942	1,725	1,245	83,000	37.6	1.8	2.1
Iceland.....	1,112	207	55	25	0	104	23	2,000	55.6	3.9	5.2
Ireland.....	12,748	3,274	1,311	694	75	806	388	33,000	38.6	5.1	2.4
Italy.....	97,183	26,755	5,323	2,225	583	10,569	8,055	336,000	28.9	4.0	3.1
Netherlands.....	41,403	5,798	790	273	589	3,102	1,044	95,000	43.6	1.9	3.3
Norway.....	14,336	1,926	62	287	44	1,095	438	27,000	53.1	1.9	4.1
Portugal.....	43,280	8,352	1,175	805	621	2,963	2,788	76,000	56.9	5.2	3.9
Spain.....	125,673	30,112	6,077	2,956	1,918	10,063	9,098	324,000	38.8	4.7	3.1
Sweden.....	22,594	5,683	924	695	113	1,641	2,310	50,000	45.2	6.5	3.3
Switzerland.....	7,887	1,650	398	46	37	812	357	38,000	20.8	2.0	2.1
United Kingdom <sup>c</sup> (2003).....	157,950	44,900	13,410	6,480	1,720	20,140	3,150	345,000	45.8	4.8	5.8
Central/Eastern Europe											
Albania.....	3,529	427	31	45	175	111	65	26,000	13.6	0.4	0.4
Armenia (2000).....	5,544	296	0	0	89	0	207	30,000	18.5	0.7	0.0
Bulgaria.....	25,262	7,646	590	555	261	3,746	2,494	60,000	42.1	5.1	6.2
Croatia.....	6,067	1,371	374	138	136	288	435	30,000	20.2	2.7	1.0
Czech Republic.....	14,216	4,287	635	353	494	1,450	1,355	87,000	16.3	2.3	1.7
Estonia.....	3,444	807	172	94	68	235	238	9,000	38.3	4.6	2.6
Georgia.....	12,682	2,437	733	178	143	150	1,233	37,000	34.3	5.3	0.4
Latvia.....	10,636	2,971	317	280	81	1,988	305	15,000	70.9	4.1	13.3
Lithuania.....	14,441	3,163	353	405	213	753	1,439	24,000	60.2	7.5	3.1
Macedonia.....	2,609	540	119	89	76	74	182	16,000	16.3	1.9	0.5
Poland.....	163,601	41,967	5,343	2,370	2,878	24,588	6,788	313,000	52.3	3.9	7.9
Romania.....	55,063	15,399	3,019	1,064	804	4,556	5,956	195,000	28.2	4.6	2.3
Slovak Republic.....	13,223	3,350	664	195	306	794	1,391	47,000	28.1	4.4	1.7
Slovenia.....	4,095	1,014	114	22	57	602	219	15,000	27.3	2.2	4.0
North America											
Canada.....	77,490	31,635	6,860	1,875	1,340	19,220	2,340	211,000	36.7	4.4	9.1
Costa Rica (2000).....	2,644	372	46	65	40	157	64	34,000	7.8	0.3	0.5
Cuba (2000).....	11,067	958	187	64	117	272	318	81,000	13.7	0.6	0.3
El Salvador.....	3,659	366	49	75	26	5	211	68,000	5.4	0.4	0.0
Guatemala.....	1,760	371	58	0	12	214	87	106,000	1.7	0.1	0.2
Mexico.....	169,582	39,276	4,252	10,014	1,144	12,894	10,972	976,000	17.4	1.6	1.3
Panama.....	9,772	1,189	37	0	27	474	651	25,000	39.1	2.8	1.9
United States.....	751,773	211,203	45,379	19,266	8,634	125,237	12,687	1,891,000	39.8	3.1	6.6

## Field of first university degrees and ratio of first university and S&amp;E degrees to 24-year-old population, by sex, country/economy, and region: 2002 or most recent year

Sex and location	Field of first university degree							Ratio to 24-year-old population <sup>a</sup>			
	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	24-year-olds	First university	NS&E	Social/ behavioral sciences
South America											
Argentina .....	29,952	7,258	1,199	1,266	859	2,575	1,359	338,000	8.9	0.8	0.8
Brazil (2001).....	246,997	38,147	6,995	6,535	1,523	15,186	7,908	1,658,000	14.9	0.9	0.9
Oceania											
Australia.....	78,444	16,495	4,782	3,115	478	5,486	2,634	131,000	59.9	5.7	4.2
New Zealand.....	13,171	3,209	754	546	66	1,400	443	27,000	48.8	4.4	5.2

NA = not available

NS&amp;E = natural sciences and engineering

<sup>a</sup>Number of degrees per 100 24-year-olds.<sup>b</sup>Japanese social science data include business administration.<sup>c</sup>Includes former colleges and polytechnical institutions. Data for United Kingdom are rounded to nearest 10. Detail may not add to total because of rounding. Ratios are based on unrounded data.

NOTES: Physical/biological sciences include physical, biological, earth, atmospheric, and ocean sciences. NS&amp;E includes natural, agricultural, and computer sciences; mathematics; and engineering. Data for first university degrees use International Standard Classification of Education (ISCED 97), level 5A. Long (&gt;5 years) and short (&lt;5 years) first university degrees are combined.

SOURCES: Organisation for Economic Co-operation and Development, Center for Education Research and Innovation, Education database, [http://www1.oecd.org/scripts/cde/members/EDU\\_UOEAuthenticate.asp](http://www1.oecd.org/scripts/cde/members/EDU_UOEAuthenticate.asp); United Nations Educational, Scientific, and Cultural Organization (UNESCO), Institute for Statistics, special tabulations; Japan—Government of Japan, Ministry of Education, Culture and Science, *Monbusho Survey of Education*, special tabulations (2005); Taiwan—Ministry of Education, *Educational Statistics of the Republic of China: 2004* (2004); Germany—Federal Statistical Office, *Prüfungen an Hochschulen 2003* (2004); United Kingdom—Higher Education Statistics Agency, special tabulations (2005); Russia—Center for Science Research and Statistics, special tabulations (2001); and United States—U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, Division of Science Resources Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Science and Engineering Indicators 2006

## Earned S&amp;E doctoral degree, by selected region, country/economy, and field: 2002 or most recent year

Location	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E
All regions .....	239,759	125,011	50,644	6,921	8,609	22,934	35,913	114,748
Asia <sup>a</sup> .....	49,592	25,866	9,097	385	3,027	1,742	11,615	23,726
China (2001) .....	12,465	8,153	2,655	NA	536	621	4,341	4,312
India .....	11,974	5,527	3,955	NA	838	NA	734	6,447
Japan <sup>b</sup> (2003) .....	16,314	7,581	1,651	NA	1,258	751	3,921	8,733
Kyrgyzstan .....	390	213	44	0	14	91	64	177
South Korea .....	6,690	3,225	590	258	288	190	1,899	3,465
Taiwan (2003) .....	1,759	1,167	202	127	93	89	656	592
Middle East <sup>a</sup> .....	6,855	2,791	1,226	179	273	608	505	4,064
Iran (2000) .....	1,609	305	104	33	33	59	76	1,304
Israel .....	863	599	337	54	44	109	55	264
Morocco .....	1,911	680	481	7	0	162	30	1,231
Turkey .....	2,472	1,207	304	85	196	278	344	1,265
Sub-Saharan Africa <sup>a</sup> .....	2,277	804	320	0	159	184	141	1,473
Madagascar .....	213	125	67	0	17	41	0	88
Ghana (2000) .....	733	211	71	NA	29	29	82	522
Kenya (2000) .....	1,331	468	182	NA	113	114	59	863
Europe <sup>a</sup> .....	125,794	59,959	24,952	3,970	3,416	10,898	16,733	65,835
European Union .....	76,514	40,776	18,834	3,571	1,873	7,288	9,220	35,738
Austria .....	2,125	1,049	398	100	46	160	345	1,076
Belgium .....	1,413	888	422	126	59	118	163	525
Denmark .....	732	311	177	0	0	63	71	421
Finland .....	1,797	922	246	76	36	204	360	875
France .....	10,404	6,890	4,160	828	23	922	957	3,514
Germany (2003) .....	23,043	10,796	5,251	998	501	2,013	2,033	12,247
Greece (2000) .....	932	367	128	44	36	66	93	565
Ireland .....	520	351	215	29	10	25	72	169
Italy .....	3,977	1,958	818	0	342	60	738	2,019
Netherlands .....	2,556	1,481	489	0	222	326	444	1,075
Portugal .....	3,723	1,692	426	75	72	597	522	2,031
Spain .....	6,905	3,162	1,686	383	141	477	475	3,743
Sweden .....	3,517	2,099	638	162	85	287	927	1,418
United Kingdom <sup>c</sup> (2003) .....	14,870	8,810	3,780	750	300	1,970	2,020	6,060
European Free Trade Association .....	3,540	1,446	678	148	97	176	347	2,094
Norway .....	740	162	2	0	59	76	25	578
Switzerland .....	2,800	1,284	676	148	38	100	322	1,516
Central/Eastern Europe .....	45,740	17,737	5,440	251	1,446	3,434	7,166	28,003
Bulgaria .....	401	169	79	0	28	11	51	232
Croatia .....	314	174	65	7	10	36	56	140
Czech Republic .....	1,327	860	274	169	86	103	228	467
Estonia .....	226	63	29	1	6	10	17	163
Georgia .....	602	290	96	0	15	115	64	312
Hungary .....	983	363	134	31	44	70	84	620

## Earned S&amp;E doctoral degree, by selected region, country/economy, and field: 2002 or most recent year

Location	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E
Lithuania .....	252	105	30	2	1	31	41	147
Romania.....	21,841	4,544	945	0	486	580	2,533	17,297
Russia (2000).....	18,274	10,409	3,567	NA	676	2,415	3,751	7,865
Serbia and Montenegro (2000) .....	419	173	35	9	33	6	90	246
Slovak Republic.....	734	373	117	19	44	30	163	361
Slovenia .....	367	214	69	13	17	27	88	153
America <sup>a</sup> .....	50,821	33,117	13,951	2,189	1,555	9,004	6,418	17,704
North/Central America .....	46,816	30,656	12,818	2,099	1,178	8,667	5,894	16,160
Canada (2001).....	3,545	2,475	985	140	135	735	480	1,070
Costa Rica (2000).....	760	204	14	61	32	96	1	556
Mexico .....	1,801	1,086	389	38	89	422	148	715
United States (2003).....	40,710	26,891	11,430	1,860	922	7,414	5,265	13,819
South America .....	4,005	2,461	1,133	90	377	337	524	1,544
Argentina .....	344	235	160	5	1	38	31	109
Brazil (1999).....	3,604	2,176	924	85	376	299	492	1,428
Chile (1996).....	57	50	49	NA	NA	NA	1	7
Oceania .....	4,420	2,474	1,098	198	179	498	501	1,946
Australia .....	3,910	2,154	938	174	158	427	457	1,756
New Zealand .....	510	320	160	24	21	71	44	190

NA = not available

<sup>a</sup>Includes only locations for which relatively recent data are available.<sup>b</sup>Includes thesis doctorates, called *ronbun hakase*, earned by employees in industry.<sup>c</sup>Data are rounded to the nearest 10. Detail may not add to total because of rounding.

NOTES: Physical/biological sciences include physical, biological, earth, atmospheric, and ocean sciences. Data for doctoral degrees use the International Standard Classification of Education (ISCED 97), level 6. S&amp;E data do not include health fields.

SOURCES: Organisation for Economic Co-operation and Development, Center for Education Research and Innovation, Education database, [www1.oecd.org/scripts/cde/members/edu\\_uoeauthenticate.asp](http://www1.oecd.org/scripts/cde/members/edu_uoeauthenticate.asp); United Nations Educational, Scientific, and Cultural Organization (UNESCO), Institute for Statistics, special tabulations; Iberoamerican Network of Science and Technology Indicators (RICYT), *Principales Indicadores de Ciencia y Tecnología* (1999); China—National Research Center for Science and Technology for Development, special tabulations (2002); India—Department of Science and Technology; Japan—Government of Japan, Ministry of Education, Culture and Science, *Monbusho Survey of Education, special tabulations* (2005), and Division of Higher Education, special tabulations (2005); Taiwan—Ministry of Education, *Educational Statistics of the Republic of China: 2004* (2004); Germany—Federal Statistical Office, *Prüfungen an Hochschulen 2003* (2004); United Kingdom—Higher Education Statistics Agency, special tabulations (2005); Russia—Center for Science Research and Statistics, unpublished tabulations (2001); Chile—RICYT; Brazil—Ministry of Education and Culture, *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*, unpublished tabulations (2001); Canada—Statistics Canada, special tabulations (2005), and United States—National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

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## Earned S&amp;E doctoral degrees, by selected region, country/economy, sex, and field: 2002 or most recent year

Sex and location	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E
<b>Male</b>								
Asia.....	18,025	9,890	2,002	320	1,173	1,089	5,306	8,135
Japan (2004) <sup>a</sup> .....	11,384	6,051	1,311	NA	845	878	3,017	5,333
Kyrgyzstan.....	151	126	81	9	6	4	26	25
South Korea.....	5,141	2,701	457	201	249	147	1,647	2,440
Taiwan (2003).....	1,349	1,012	153	110	73	60	616	337
Middle East.....	4,683	2,827	894	194	188	410	420	1,856
Iran.....	1,151	368	84	26	31	45	72	783
Israel.....	454	344	178	41	26	58	41	110
Morocco.....	1,439	1,275	419	72	0	108	65	164
Turkey.....	1,639	840	213	55	131	199	242	799
Sub-Saharan Africa.....	1,804	523	219	0	114	67	123	1,281
Ghana.....	740	194	68	0	28	24	74	546
Kenya.....	1,064	329	151	0	86	43	49	735
Europe.....	58,506	30,434	14,187	3,449	2,600	7,040	11,851	28,072
European Union.....	42,286	20,648	11,023	2,661	1,033	3,680	6,905	21,638
Austria.....	1,326	736	261	82	33	81	279	590
Belgium.....	907	602	264	97	37	72	132	305
Denmark.....	431	218	123	0	0	41	54	213
Finland.....	972	609	138	64	24	99	284	363
France.....	5,959	4,242	2,378	648	10	505	701	1,717
Germany.....	14,319	7,829	3,536	777	331	1,339	1,846	6,490
Ireland.....	311	220	122	23	7	7	61	91
Italy.....	1,912	1,068	414	0	152	29	473	844
Netherlands.....	1,572	972	294	0	147	167	364	600
Spain.....	3,769	1,808	855	265	82	251	355	1,961
Sweden.....	2,088	1,438	378	135	50	179	696	650
United Kingdom <sup>b</sup> .....	8,720	5,550	2,260	570	160	910	1,660	3,170
European Free Trade Association.....	2,320	1,059	488	127	57	86	301	1,261
Norway.....	468	96	2	0	33	40	21	372
Switzerland.....	1,852	963	486	127	24	46	280	889
Central/Eastern Europe.....	13,900	8,727	2,676	661	1,510	3,274	4,645	5,173
Bulgaria.....	218	133	29	8	11	6	42	85
Croatia.....	180	139	28	7	7	19	43	41
Czech Republic.....	872	610	182	149	57	50	172	262
Estonia.....	72	42	14	1	1	2	9	30
Georgia.....	270	169	27	0	9	54	52	101
Hungary.....	543	248	97	23	35	36	57	295
Russia.....	11,309	7,156	2,241	460	1,364	3,091	4,153	4,153
Slovak Republic.....	436	230	58	13	26	16	117	206
America.....	25,689	18,660	7,457	1,590	792	3,924	4,845	7,029
Canada (2001).....	1,925	1,500	635	95	90	295	385	425
Costa Rica.....	476	177	8	44	26	47	0	299

## Earned S&amp;E doctoral degrees, by selected region, country/economy, sex, and field: 2002 or most recent year

Sex and location	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E
Mexico .....	1,100	726	249	32	70	261	114	374
United States.....	22,188	16,257	6,565	1,419	606	3,321	4,346	5,931
Oceania .....	2,459	1,532	644	151	120	226	391	927
Australia.....	2,189	1,344	542	134	106	204	358	845
New Zealand .....	270	188	102	17	14	22	33	82
Female								0
Asia .....	5,980	2,054	509	84	345	464	652	3,926
Japan <sup>a</sup> (2004).....	3,776	1,245	247	NA	284	376	338	2,531
Kyrgyzstan .....	245	130	80	10	2	16	22	115
South Korea.....	1,549	524	133	57	39	43	252	1,025
Taiwan (2003) .....	410	155	49	17	20	29	40	255
Middle East .....	2,514	1,238	540	67	85	188	164	1,276
Iran .....	595	74	20	7	2	14	4	521
Israel .....	409	255	159	13	18	51	14	154
Morocco.....	677	542	270	17	0	44	44	135
Turkey.....	833	367	91	30	65	79	102	466
Sub-Saharan Africa.....	513	190	34	0	28	76	18	323
Ghana .....	64	20	3	0	1	5	8	44
Kenya.....	449	170	31	0	27	71	10	279
Europe.....	39,632	15,914	9,086	1,080	1,895	3,900	5,628	23,718
European Union .....	29,573	11,319	7,257	791	722	2,955	1,700	18,254
Austria .....	799	313	137	18	13	79	66	486
Belgium .....	506	286	158	29	22	46	31	220
Denmark.....	301	93	54	0	0	22	17	208
Finland.....	825	313	108	12	12	105	76	512
France.....	4,445	2,648	1,782	180	13	417	256	1,797
Germany.....	8,724	2,967	1,715	221	170	674	187	5,757
Ireland.....	209	131	93	6	3	18	11	78
Italy.....	2,065	890	404	0	190	31	265	1,175
Netherlands.....	984	509	195	0	75	159	80	475
Spain .....	3,136	1,354	831	118	59	226	120	1,782
Sweden.....	1,429	661	260	27	35	108	231	768
United Kingdom <sup>b</sup> .....	6,150	3,260	1,520	180	130	1,070	360	2,890
European Free Trade Association .....	1,220	387	190	21	40	90	46	833
Norway .....	272	66	0	0	26	36	4	206
Switzerland .....	948	321	190	21	14	54	42	627
Central/Eastern Europe.....	8,839	4,208	1,639	268	1,133	855	3,882	4,631
Bulgaria .....	158	93	22	9	13	2	16	65
Croatia .....	158	128	34	7	6	24	16	30
Czech Republic .....	455	250	92	20	29	53	56	205
Estonia.....	77	17	5	2	1	2	0	60
Georgia .....	288	209	64	0	6	66	9	79
Hungary .....	440	115	37	8	9	34	27	325



## Earned S&amp;E doctoral degrees, by selected region, country/economy, sex, and field: 2002 or most recent year

Sex and location	All fields	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering	Non-S&E
Russia.....	6,965	3,253	1,326	216	1,051	660	3,712	3,712
Slovak Republic.....	298	143	59	6	18	14	46	155
America.....	20,852	11,854	5,310	461	373	4,701	986	8,998
Canada (2001).....	1,390	835	330	0	35	415	55	555
Costa Rica.....	359	102	6	17	6	49	1	257
Mexico.....	701	360	140	6	19	161	34	341
United States.....	18,402	10,557	4,834	438	313	4,076	896	7,845
Oceania.....	1,961	942	454	47	59	272	110	1,019
Australia.....	1,721	810	396	40	52	223	99	911
New Zealand.....	240	132	58	7	7	49	11	108

NA = not available

\*Male/female breakouts for number who have completed doctoral degree course work in S&amp;E field; number very close to conferred degrees.

\*Data rounded to nearest 10.

NOTES: Physical/biological sciences include physical, biological, earth, atmospheric, and ocean sciences. Data for doctoral degrees use the International Standard Classification of Education (ISCED 97), level 6. S&amp;E data do not include health fields.

SOURCES: Organisation for Economic Co-operation and Development, Center for Education Research and Innovation, Education database, [www1.oecd.org/scripts/cde/members/edu\\_uoeauthenticate.asp](http://www1.oecd.org/scripts/cde/members/edu_uoeauthenticate.asp); United Nations Educational, Scientific, and Cultural Organization (UNESCO), Institute for Statistics database, <http://www.unesco.org/statistics>. Japan—Government of Japan, Ministry of Education, Culture and Science, *Monbusho Survey of Education* (2005); Taiwan—Ministry of Education, *Educational Statistics of the Republic of China: 2004* (2004); Germany—Federal Statistical Office, *Prüfungen an Hochschulen 2003* (2004); United Kingdom—Higher Education Statistics Agency, special tabulations (2005); Russia—Center for Science Research and Statistics, unpublished tabulations (2001); Mexico—National Association of Universities and Institutions of Higher Education, *Anuario Estadístico 2001: Población Escolar de Posgrado* (2002); Canada—Statistics Canada, special tabulations (2005); and United States—National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates; and Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

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Appendix table 2-42  
**S&E doctoral degrees, by selected Western industrialized country and field: 1983–2003**

Country and field	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
France .....	NA	NA	NA	5,963	7,198	9,295	9,801	11,073	10,173	NA	NA	NA	NA
All S&E .....	NA	NA	NA	4,888	5,384	6,820	7,027	8,962	7,054	NA	NA	NA	NA
Physical/biological sciences .....	NA	NA	NA	2,615	2,883	3,631	3,572	4,394	2,966	NA	NA	NA	NA
Mathematics/computer sciences .....	NA	NA	NA	722	831	1,065	1,129	869	769	NA	NA	NA	NA
Agricultural sciences .....	NA	NA	NA	37	38	52	84	207	179	NA	NA	NA	NA
Social/behavioral sciences .....	NA	NA	NA	672	539	797	815	1,629	1,390	NA	NA	NA	NA
Engineering .....	NA	NA	NA	842	1,093	1,275	1,427	1,863	1,750	NA	NA	NA	NA
Germany .....	13,637	14,951	16,064	17,901	22,462	22,000	22,387	24,174	24,545	24,671	24,796	23,838	23,043
All S&E .....	4,978	5,738	6,576	7,568	10,465	10,200	10,889	11,728	11,984	11,895	11,803	11,017	10,796
Physical/biological sciences .....	2,404	2,986	3,440	4,095	5,326	5,700	5,868	6,418	6,271	6,123	5,974	5,521	5,251
Mathematics/computer sciences .....	274	274	294	383	418	500	663	785	980	968	956	898	998
Agricultural sciences .....	361	414	468	518	709	500	507	521	522	497	472	448	501
Social/behavioral sciences .....	966	968	1,068	1,200	1,483	1,400	1,741	1,775	1,982	2,082	2,181	1,915	2,013
Engineering .....	973	1,096	1,306	1,372	2,529	2,100	2,110	2,229	2,229	2,225	2,220	2,235	2,033
United Kingdom .....	6,530	6,210	6,840	7,850	8,390	8,720	7,560	10,210	11,340	14,120	14,210	14,210	14,870
All S&E .....	4,760	4,610	5,020	5,820	6,300	6,100	5,130	6,770	7,390	8,620	8,520	8,520	8,810
Physical/biological sciences .....	2,430	2,410	2,580	2,940	3,150	3,030	2,580	3,420	3,670	4,370	4,380	4,380	3,780
Mathematics/computer sciences .....	290	280	320	420	540	530	450	590	680	770	760	760	750
Agricultural sciences .....	180	160	190	240	250	280	270	320	330	340	340	340	300
Social/behavioral sciences .....	660	690	730	880	910	740	500	680	910	1,140	1,180	1,180	1,970
Engineering .....	1,200	1,070	1,190	1,350	1,450	1,520	1,330	1,760	1,810	2,010	1,860	1,860	2,020
United States .....	31,281	31,296	32,370	34,327	37,531	39,800	41,748	42,540	41,090	41,357	40,808	39,964	40,710
All S&E .....	19,274	19,663	20,694	22,706	25,061	26,640	27,864	28,653	27,339	27,557	27,160	26,226	26,891
Physical/biological sciences .....	7,818	8,055	8,479	9,074	10,131	10,759	11,326	11,857	11,373	11,610	11,452	11,336	11,430
Mathematics/computer sciences .....	987	998	1,190	1,471	1,838	2,026	2,187	2,032	1,938	1,909	1,833	1,725	1,860
Agricultural sciences .....	1,015	1,110	976	1,086	1,073	968	1,036	982	966	943	853	893	922
Social/behavioral sciences .....	6,673	6,334	6,337	6,532	6,805	7,189	7,307	7,667	7,732	7,774	7,520	7,201	7,414
Engineering .....	2,781	3,166	3,712	4,543	5,214	5,698	6,008	6,115	5,330	5,321	5,502	5,071	5,265

NA = not available

NOTES: Physical/biological sciences include physical, biological, earth, atmospheric, and ocean sciences. Data for doctoral degrees use the International Standard Classification of Education (ISCED 97), level 6. S&E data do not include health fields. French doctoral degrees not available in same data series before 1989 or after 1999. German doctoral degrees include those of former East Germany from 1990 and thereafter. Data for United Kingdom rounded to nearest 10.

SOURCES: France—National Ministry of Education and Research, *Rapport sur les Études Doctorales* (annual series); Germany—Federal Statistical Office, *Prüfungen an Hochschulen* (annual series); United Kingdom—Higher Education Statistics Agency, special tabulations (2005); United States—National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

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Appendix table 2-43

## S&amp;E doctoral degrees, by selected Asian country/economy and field: Selected years, 1983–2003

Country/economy and field	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003
China.....	19	234	622	1,904	2,556	2,114	4,364	6,793	10,160	11,383	12,465	NA	NA
All S&E.....	NA	125	218	1,024	1,198	1,895	3,417	5,328	6,778	7,304	8,153	NA	NA
Physical/biological sciences.....	NA	33	52	141	252	528	1,191	1,678	2,135	2,306	2,655	NA	NA
Mathematics/computer sciences.....	NA	23	31	78	95	103	187	334	417	NA	NA	NA	NA
Agricultural sciences.....	NA	1	8	56	37	92	182	328	444	462	536	NA	NA
Social/behavioral sciences.....	NA	0	0	23	47	102	198	325	513	514	621	NA	NA
Engineering.....	NA	68	127	726	767	1,069	1,659	2,643	3,269	4,484	4,341	NA	NA
India.....	6,597	7,438	7,603	8,284	8,383	9,070	9,070	10,408	10,951	11,296	11,544	11,974	13,733
All S&E.....	3,886	4,007	4,123	4,209	4,294	4,320	4,000	4,764	5,317	5,395	5,394	5,527	6,318
Physical/biological sciences.....	2,800	2,922	2,937	3,044	2,950	3,386	2,950	3,498	3,836	3,885	3,727	3,955	4,497
Mathematics/computer sciences.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Agricultural sciences.....	575	576	583	579	715	611	715	968	785	787	889	838	1,042
Social/behavioral sciences.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering.....	511	509	603	586	629	323	335	298	696	723	778	734	779
Japan.....	7,233	7,978	9,157	10,036	10,758	11,576	12,645	13,921	15,470	15,357	16,078	16,183	16,314
All S&E.....	2,676	3,088	3,248	3,561	3,874	4,438	5,205	6,157	7,082	7,089	7,401	7,461	7,581
Physical/biological sciences.....	774	860	837	876	863	1,009	1,182	1,315	1,542	1,579	1,586	1,602	1,651
Mathematics/computer sciences.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Agricultural sciences.....	515	697	715	734	791	824	956	1,043	1,100	1,147	1,241	1,248	1,258
Social/behavioral sciences.....	97	127	149	177	191	243	276	388	506	563	610	656	751
Engineering.....	1,290	1,404	1,547	1,774	2,029	2,362	2,791	3,411	3,934	3,800	3,964	3,955	3,921
South Korea.....	845	1,400	1,906	2,458	2,984	3,583	4,462	4,999	5,586	6,143	NA	6,690	NA
All S&E.....	281	548	759	984	1,135	1,421	1,920	2,189	2,607	2,865	NA	3,225	NA
Physical/biological sciences.....	83	212	277	192	225	244	358	427	438	614	NA	590	NA
Mathematics/computer sciences.....	0	0	0	105	99	124	169	187	188	247	NA	258	NA
Agricultural sciences.....	60	89	110	175	156	172	223	178	230	242	NA	288	NA
Social/behavioral sciences.....	41	50	102	97	189	222	232	240	168	108	NA	190	NA
Engineering.....	97	197	270	415	466	659	938	1,157	1,583	1,654	NA	1,899	NA
Taiwan.....	86	115	225	314	410	701	848	1,187	1,337	1,400	1,463	NA	1,759
All S&E.....	58	109	197	257	370	513	650	839	892	931	970	NA	1,167
Physical/biological sciences.....	8	20	35	42	62	97	115	163	150	147	144	NA	202
Mathematics/computer sciences.....	4	4	14	18	32	45	55	88	119	113	107	NA	127
Agricultural sciences.....	17	10	28	36	36	48	63	79	76	83	90	NA	93
Social/behavioral sciences.....	15	16	22	41	31	36	44	76	65	87	108	NA	89
Engineering.....	14	59	98	120	209	287	373	433	482	502	521	NA	656

NA = not available

NOTES: Physical/biological sciences include physical, biological, earth, atmospheric, and ocean sciences. Data for doctoral degrees use the International Standard Classification of Education (ISCED 97), level 6. S&E data do not include health fields. Japanese data include thesis doctorates, called *ronbun hakase*, earned by employees in industry. In Japanese higher education data, mathematics is included in natural sciences; computer sciences are included in engineering.

SOURCES: China—National Research Center for Science and Technology for Development and *Educational Yearbook, 2002*; India—Department of Science and Technology; Japan—Government of Japan, Ministry of Education, Culture and Science, *Monbusho Survey of Education* (annual series); and Division of Higher Education, special tabulations (2005); South Korea—Organisation for Economic Co-operation and Development, Center for Education Research and Innovation, Education database, [http://www1.oecd.org/scripts/cde/members/EDU\\_UOEAAuthenticate.asp](http://www1.oecd.org/scripts/cde/members/EDU_UOEAAuthenticate.asp); and Taiwan—Ministry of Education, *Educational Statistics of the Republic of China* (annual series).

Appendix table 2-44

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**Foreign S&E student enrollment in U.K. universities, by enrollment level, place of origin, and field: 1994 and 2004**

Enrollment level and place of origin	All S&E fields	Physical/ biological/ agricultural sciences	Mathematics/ computer sciences	Social/ behavioral sciences	Engineering
<b>1994</b>					
All undergraduates .....	393,040	131,370	69,730	79,260	112,690
All foreign.....	34,530	7,770	4,270	6,550	15,940
Greece .....	3,830	720	610	570	1,920
Malaysia .....	3,760	170	490	400	2,700
Irish Republic .....	3,110	1,300	340	220	1,260
Germany .....	2,660	1,010	210	640	800
France.....	2,640	880	270	470	1,010
Hong Kong .....	2,200	220	410	470	1,110
Singapore.....	1,990	140	200	260	1,390
United States.....	1,220	520	50	560	90
Canada .....	160	90	20	40	20
China .....	150	10	20	10	110
Other.....	12,820	2,730	1,660	2,910	5,530
Foreign (%).....	8.8	5.9	6.1	8.3	14.1
All graduates .....	99,980	35,270	15,170	22,890	26,650
All foreign.....	28,850	8,100	3,490	8,010	9,260
Greece .....	2,410	580	460	500	870
Malaysia .....	1,570	320	200	220	820
Irish Republic .....	1,040	490	110	170	280
Germany .....	1,290	390	200	340	360
France.....	950	290	80	190	400
Hong Kong .....	1,030	90	190	400	360
Singapore.....	570	80	150	90	250
United States.....	1,090	240	70	670	110
Canada .....	600	140	40	320	110
China .....	1,330	410	140	120	660
Other.....	16,970	5,070	1,870	4,990	5,040
Foreign (%).....	28.9	23.0	23.0	35.0	34.7
<b>2004</b>					
All undergraduates .....	526,990	136,940	137,120	156,890	96,030
All foreign.....	52,180	7,520	13,500	13,680	17,470
China .....	7,640	720	3,070	2,090	1,760
Greece .....	4,610	530	1,010	1,100	1,960
Malaysia .....	3,590	140	720	280	2,440
France.....	2,960	460	560	460	1,490
Hong Kong .....	2,820	480	900	610	830
Irish Republic .....	2,490	790	320	550	820
Germany .....	2,130	390	360	990	390
United States.....	1,650	400	140	1,020	100
India.....	1,340	110	420	180	630
Spain .....	1,270	270	340	230	430
Other.....	21,690	3,240	5,650	6,170	6,620
Foreign (%).....	9.9	5.5	9.8	8.7	18.2
All graduates .....	154,020	39,080	31,300	44,870	38,770
All foreign.....	63,420	12,030	13,580	17,320	20,490
China .....	9,010	900	2,780	1,950	3,380
Greece .....	6,700	1,040	1,490	1,510	2,660
India.....	5,780	860	1,950	460	2,510
United States.....	2,820	540	270	1,750	250
Malaysia .....	2,240	300	480	190	1,280

Appendix table 2-44

(Page 2 of 2)

**Foreign S&E student enrollment in U.K. universities, by enrollment level, place of origin, and field: 1994 and 2004**

Enrollment level and place of origin	All S&E fields	Physical/ biological/ agricultural sciences	Mathematics/ computer sciences	Social/ behavioral sciences	Engineering
France.....	2,090	630	300	350	800
Germany .....	2,090	480	350	800	470
Irish Republic .....	1,630	510	220	500	410
Pakistan .....	1,520	150	630	190	550
Italy.....	1,510	460	150	580	320
Other.....	28,030	6,170	4,970	9,050	7,850
Foreign (%).....	41.2	30.8	43.4	38.6	52.9

NOTES: Data rounded to nearest 10. Detail may not add to total because of rounding. Percentages are based on unrounded data.

SOURCE: Higher Education Statistics Agency, special tabulations (2005).

Appendix table 2-45

**Foreign S&E doctoral student enrollment in French universities, by field and place of origin: 2003**

Place of origin	All fields	All S&E fields	Economics/ business	Social sciences/ humanities	Physical/ life sciences	Engineering	Non-S&E
All doctoral students .....	162,157	112,325	28,611	35,774	16,122	31,818	49,832
France .....	118,767	82,428	20,143	27,349	13,193	21,743	36,339
Foreign .....	43,390	29,897	8,468	8,425	2,929	10,075	13,493
Africa .....	20,933	15,451	4,878	3,642	1,147	5,784	5,482
America.....	3,636	2,472	407	1,088	346	631	1,164
Asia.....	9,227	6,113	1,792	1,516	757	2,048	3,114
European Union.....	4,971	2,949	491	1,307	392	759	2,022
Other Europe .....	4,561	2,873	886	863	279	845	1,688
Oceania.....	46	29	10	7	5	7	17
Other.....	16	10	4	2	3	1	6
Foreign (%).....	26.8	26.6	29.6	23.6	18.2	31.7	27.1

NOTES: Graduate enrollment includes four advanced, two predoctoral, and two doctoral degree programs. Some broad fields, such as economics/business and social sciences/humanities, include some non-S&E disciplines.

SOURCE: French National Ministry of Education and Research, special tabulations (2005).

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Appendix table 2-46

## Foreign S&amp;E student enrollment in Japanese universities, by enrollment level, place of origin, and field: 2004

Enrollment level and place of origin	All fields	All S&E fields	Physical/ biological sciences	Agricultural sciences	Social/ behavioral sciences	Engineering <sup>a</sup>	Other
All undergraduates.....	2,505,923	1,118,832	87,398	69,672	961,762	439,107	1,387,091
Foreign.....	57,964	34,051	595	540	32,916	5,863	23,913
China.....	41,172	29,192	324	318	25,470	3,080	11,980
South Korea.....	11,929	7,018	185	122	5,403	1,308	4,911
Malaysia.....	1,239	1,042	15	15	98	914	197
Vietnam.....	539	421	6	10	242	163	118
Indonesia.....	298	233	3	14	152	64	65
Thailand.....	288	226	3	12	179	32	62
Mongolia.....	213	224	1	9	197	17	-11
Sri Lanka.....	171	148	1	4	101	42	23
United Kingdom.....	137	78	1	0	73	4	59
United States.....	233	76	7	0	65	4	157
Foreign (%).....	2.3	3.0	0.7	0.8	3.4	1.3	1.7
All graduates.....	236,158	140,822	20,298	12,691	29,014	78,819	95,336
Master's.....	162,712	109,062	13,954	8,337	21,536	65,235	53,650
Doctoral.....	73,446	31,760	6,344	4,354	7,478	13,584	41,686
Foreign.....	26,486	16,784	916	2,164	7,383	6,321	9,702
China.....	14,481	8,981	336	833	4,979	2,833	5,500
South Korea.....	3,996	2,095	110	220	803	962	1,901
Indonesia.....	796	655	66	157	104	328	141
Thailand.....	841	604	24	152	128	300	237
Bangladesh.....	713	505	63	134	79	229	208
Vietnam.....	604	480	14	94	175	197	124
Malaysia.....	362	288	15	25	74	174	74
Philippines.....	321	241	34	60	74	73	80
Myanmar.....	228	170	10	46	51	63	58
Sri Lanka.....	204	159	13	37	37	72	45
Nepal.....	205	147	12	28	31	76	58
Foreign (%).....	11.2	11.9	4.5	17.1	25.4	8.0	10.2

<sup>a</sup>Includes computer sciences.

NOTES: Data are for students of non-Japanese citizenship, including permanent residents. Undergraduates include 4-year colleges and universities.

SOURCE: Government of Japan, Ministry of Education, Culture, and Science, Division of Higher Education, special tabulations (2005).

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Appendix table 2-47  
**S&E student enrollment in Canadian universities, by enrollment level, top place of origin, and field: 2001**

Enrollment level and place of origin	All S&E fields	Physical/ biological sciences	Mathematics/ computer sciences	Agricultural sciences	Social/ behavioral sciences	Engineering/ applied sciences
Undergraduate.....						
All S&E .....	292,940	65,110	38,630	9,900	119,860	59,440
Foreign .....	16,150	2,335	4,540	240	4,760	4,275
Hong Kong .....	2,175	155	1,360	15	290	355
China .....	2,025	475	180	100	1,030	240
Taiwan .....	775	35	200	10	70	460
United Kingdom.....	985	140	115	25	420	285
United States.....	340	25	245	0	20	50
India.....	440	45	220	0	80	95
France.....	630	85	195	10	205	135
Sri Lanka.....	440	45	145	5	65	180
South Korea .....	325	55	60	15	175	20
Iran .....	320	25	70	0	55	170
Other.....	7,695	1,250	1,750	60	2,350	2,285
Foreign (%).....	5.5	3.6	11.8	2.4	4.0	7.2
Graduate.....						
All S&E .....	53,710	13,200	5,720	3,455	16,855	14,480
Foreign .....	11,490	2,295	1,785	575	2,545	4,290
China .....	2,245	285	675	50	225	1,010
France.....	1,115	370	45	85	280	335
United States.....	745	240	80	40	260	125
Morocco.....	460	65	90	25	55	225
India.....	355	55	35	15	60	190
Iran .....	340	55	35	15	20	215
Mexico .....	315	50	20	30	85	130
Tunisia .....	300	25	80	10	75	110
Romania.....	280	65	70	0	45	100
Algeria .....	265	30	50	15	25	145
Other.....	5,070	1,055	605	290	1,415	1,705
Foreign (%).....	21.4	17.4	31.2	16.6	15.1	29.6

NOTE: Data are rounded to nearest 5.

SOURCE: Statistics Canada, Center for Education Statistics, special tabulations (2005).



Appendix table 2-48

## Doctoral degrees earned by foreign students, by selected industrialized country and field: 2003 or most recent year

Country and field	All	Foreign	
		Number	Percent
Germany.....	23,043	2,308	10.0
S&E.....	10,626	1,518	14.3
Physical/biological sciences.....	5,251	825	15.7
Mathematics/computer sciences.....	998	133	13.3
Agricultural sciences.....	501	167	33.3
Social/behavioral sciences.....	2,013	159	7.9
Engineering.....	1,863	234	12.6
Non-S&E.....	12,417	790	6.4
Japan <sup>a</sup> .....	11,352	1,475	13.0
S&E.....	5,825	745	12.8
Physical/biological sciences.....	1,415	59	4.2
Mathematics/computer sciences.....	NA	NA	NA
Agricultural sciences.....	900	206	22.9
Social/behavioral sciences.....	525	81	15.4
Engineering.....	2,985	399	13.4
Non-S&E.....	5,527	730	13.2
United Kingdom <sup>b</sup> (2004).....	15,260	5,610	36.8
S&E.....	9,150	3,540	38.7
Physical/biological sciences.....	3,960	1,130	28.5
Mathematics/computer sciences.....	880	430	48.3
Agricultural sciences.....	320	150	46.2
Social/behavioral sciences.....	1,950	700	35.7
Engineering.....	2,040	1,150	56.2
Non-S&E.....	6,110	2,060	33.8
United States.....	40,710	12,216	30.0
S&E.....	26,891	9,871	36.7
Physical/biological sciences.....	11,430	3,692	32.3
Mathematics/computer sciences.....	1,860	921	49.5
Agricultural sciences.....	922	426	46.2
Social/behavioral sciences.....	7,414	1,658	22.4
Engineering.....	5,265	3,174	60.3
Non-S&E.....	13,819	2,345	17.0

NA = not available

<sup>a</sup>University-based doctorates only, excluding *ronbun hakase* doctorates awarded for research within industry. Includes mathematics in natural sciences and computer sciences in engineering.<sup>b</sup>Data rounded to nearest 10. Detail may not add to total because of rounding. Percentages based on unrounded data.

NOTES: Physical/biological sciences include physical, biological, earth, atmospheric, and ocean sciences. Data for doctoral degrees use the International Standard Classification of Education (ISCED 97), level 6. S&amp;E data do not include health fields. For each country, data are for doctoral degree recipients with foreign citizenship, including permanent and temporary residents.

SOURCES: Germany—Federal Statistical Office, *Prüfungen an Hochschulen* 2003 (2004); Japan—Government of Japan, Ministry of Education, Culture, and Science, Division of Higher Education, special tabulations (2005); United Kingdom—Higher Education Statistics Agency, special tabulations (2005), and United States—National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Appendix table 3-1  
**Science and technology employment, by occupation: Selected years, 1950–2000**  
 (Thousands)

Occupation	1950	1960	1970	1980	1990	2000
All workers, age 18+ years .....	56,985	64,145	76,443	96,442	115,085	128,435
All science and technology employees.....	205	1,046	1,894	2,587	4,133	5,455
S&E.....	182	865	1,497	2,080	3,333	4,755
Life scientists.....	7	31	55	102	139	226
Physical scientists.....	24	99	141	162	232	382
Engineers.....	140	688	1,052	1,309	1,817	1,919
Mathematicians/information technologists .....	4	18	157	317	784	1,881
Social scientists .....	7	29	92	190	360	347
Technicians and programmers.....	22	181	397	507	800	700

SOURCE: B.L. Lowell, Estimates of the Growth of the Science and Technology Workforce, Commission on Professionals in Science and Technology (forthcoming).

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Appendix table 3-2

**Average annual growth rate of degree production and occupational employment, by S&E field:  
1980–2000**

(Percent)

Field	Degree				Employment in occupation
	All	Bachelor's	Master's	Doctoral	
All S&E .....	1.5	1.4	2.0	1.9	4.2
Engineering .....	0.8	0.1	2.4	3.9	1.9
Life sciences .....	1.2	1.3	3.4	1.8	4.0
Mathematics/computer sciences .....	4.2	3.9	5.2	3.5	9.3
Physical sciences .....	-1.0	-1.6	-0.3	1.4	4.4
Social sciences .....	1.6	1.7	1.6	0.9	3.1

SOURCES: U.S. Census Bureau, Public-Use Microdata Sample (PUMS), special tabulations (1980–2000); and National Science Foundation, Division of Science Resources Statistics, data on degree production.

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Appendix table 3-3  
**Workforce in S&E occupations: 1983–2004**

Year	Employees	Share of workforce (%)
1983.....	2,925,000	2.6
1984.....	3,010,000	2.7
1985.....	3,128,000	2.7
1986.....	3,328,000	2.8
1987.....	3,355,000	2.8
1988.....	3,499,000	2.9
1989.....	3,593,000	2.9
1990.....	3,750,000	3.0
1991.....	3,924,000	3.1
1992.....	3,768,000	3.0
1993.....	3,963,000	3.1
1994.....	4,379,000	3.3
1995.....	4,384,000	3.3
1996.....	4,557,000	3.4
1997.....	4,775,000	3.5
1998.....	5,074,000	3.7
1999.....	5,294,000	3.8
2000.....	5,544,000	3.9
2001.....	5,581,000	3.9
2002.....	5,412,000	3.8
2003.....	5,888,000	4.0
2004.....	5,789,000	3.9

SOURCE: U.S. Census Bureau, Current Population Survey, Monthly Outgoing Rotation files, 1983–2004, special tabulations.

Appendix table 3-4

**Bureau of Labor Statistics projections of employment in S&E occupations: 2002 and 2012**

(Thousands)

Occupation	2002	2012	Employment growth	Job openings
All occupations .....	144,014	165,319	21,305	56,305
S&E .....	4,873	6,119	1,246	2,078
Computer and mathematical science occupations .....	2,504	3,480	976	1,266
Engineers .....	1,478	1,587	109	431
Life scientists .....	214	253	39	91
Physical scientists .....	251	287	36	100
Social scientists and related occupations.....	426	512	86	190
Selected other occupations				
Life, physical, and social science technicians.....	346	397	51	130
Postsecondary teachers.....	1,581	2,184	603	960
Science managers.....	541	669	128	230

NOTE: Numbers used by Bureau of Labor Statistics (BLS) for 2002 are starting values for their projection models and may differ from other BLS estimates for 2002.

SOURCE: U.S. Department of Labor, BLS, Office of Occupational Statistics and Employment Projections.

*Science and Engineering Indicators 2006*

**Median annual salaries of U.S. individuals in S&E and S&E-related occupations, by highest degree, occupation, and years since degree: 2003**

(Dollars)

Degree and occupation	Employed individuals	Years since highest degree							
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35+
<b>All degree levels<sup>a</sup></b>									
S&E occupations.....	69,500	52,000	65,000	72,000	78,000	80,000	76,800	80,000	82,000
Scientists .....	65,000	50,000	64,000	70,000	75,000	75,000	72,000	75,000	80,000
Computer and mathematical scientists.....	70,000	59,000	70,000	73,000	80,000	80,000	72,100	76,000	80,000
Computer and information scientists.....	70,000	60,000	70,000	74,000	80,000	80,000	72,000	78,600	80,000
Mathematical scientists .....	73,000	60,000	59,900	75,000	85,000	82,000	100,000	90,000	75,000
Postsecondary teachers .....	51,200	43,400	45,000	52,000	58,000	61,600	62,100	50,000	78,000
Life and related scientists.....	52,000	38,000	50,000	60,000	60,300	65,000	67,000	72,000	80,000
Agricultural and food scientists .....	48,000	42,000	39,000	56,000	54,000	62,000	54,000	50,000	50,000
Biological scientists.....	50,000	36,000	52,000	60,000	64,000	71,600	63,600	62,000	80,000
Environmental life scientists.....	48,000	32,000	42,000	53,000	53,000	46,100	66,200	63,000	61,000
Postsecondary teachers .....	60,000	42,000	51,500	65,000	70,000	70,000	80,000	100,000	98,000
Physical and related scientists.....	60,000	42,300	55,000	66,000	71,000	67,000	77,000	66,000	78,000
Chemists, except biochemists .....	60,000	45,000	58,200	65,000	75,000	70,000	70,000	66,000	70,000
Earth scientists, geologists, and oceanographers.....	63,500	41,600	57,300	70,200	67,000	65,000	87,000	70,000	90,000
Physicists and astronomers.....	80,000	45,000	65,000	86,000	90,000	95,000	127,000	100,000	100,000
Other .....	48,000	41,000	45,000	52,000	70,000	45,700	68,000	55,000	74,000
Postsecondary teachers .....	54,500	38,000	50,000	57,000	63,000	71,000	70,000	75,000	78,000
Social and related scientists.....	57,000	43,000	51,000	61,000	70,000	65,000	75,000	80,000	80,000
Economists .....	88,500	70,000	100,000	89,000	90,000	61,800	90,000	90,000	100,000
Political scientists.....	43,000	40,100	43,000	75,000	95,000	9,500	80,000	S	S
Psychologists.....	54,000	41,200	50,000	60,000	64,400	63,500	63,000	65,000	69,200
Sociologists and anthropologists .....	50,000	36,000	45,000	50,000	61,000	80,000	75,000	78,200	S
Other .....	55,800	41,000	51,000	63,000	80,000	72,000	84,000	95,000	85,000
Postsecondary teachers .....	56,000	44,200	48,000	57,400	65,000	68,500	72,000	73,400	85,000
Engineers .....	74,000	59,500	70,000	77,000	80,000	85,000	83,600	85,000	85,000
Aerospace and related.....	82,400	64,000	80,000	88,000	80,000	91,000	95,000	100,000	100,000
Chemical.....	78,000	61,000	70,000	90,000	80,000	94,000	97,700	110,000	100,000
Civil and architectural.....	68,000	49,500	62,000	70,000	70,000	80,000	80,000	82,000	80,000
Electrical and related.....	80,000	65,000	78,000	82,000	88,000	89,000	85,600	89,500	90,000
Industrial.....	65,000	55,000	62,000	67,000	70,000	89,000	63,000	74,000	85,000
Mechanical .....	72,000	60,000	67,000	77,000	80,000	82,000	85,000	80,000	80,000
Other.....	72,000	55,000	69,000	71,000	80,000	80,000	82,000	79,400	83,000
Postsecondary teachers .....	72,000	57,500	65,000	76,000	80,000	90,000	88,000	90,000	69,000
S&E-related occupations .....	57,000	45,000	55,000	60,000	65,000	67,000	65,000	63,000	72,800
Health-related occupations.....	60,000	47,000	58,000	60,000	70,000	69,000	68,000	72,000	80,000
S&E managers.....	92,000	78,000	83,000	96,000	95,000	92,000	100,000	108,000	100,000
S&E precollege teachers.....	42,000	38,000	41,000	41,500	46,000	45,000	50,000	50,000	40,000
S&E technicians and technologists .....	57,000	41,600	58,000	60,000	60,000	60,000	62,000	60,000	71,400
Other.....	60,000	42,200	52,000	60,000	69,000	85,000	76,500	68,000	70,000

**Median annual salaries of U.S. individuals in S&E and S&E-related occupations, by highest degree, occupation, and years since degree: 2003**

(Dollars)

Degree and occupation	Employed individuals	Years since highest degree							
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35+
<b>Bachelor's</b>									
S&E occupations .....	65,000	48,000	62,000	69,100	75,000	77,300	72,000	75,000	80,000
Scientists .....	62,000	45,000	60,000	66,500	75,000	70,000	67,000	70,000	72,400
Computer and mathematical scientists.....	68,000	52,000	65,000	70,000	79,000	76,800	70,000	75,000	79,100
Computer and information scientists.....	68,700	52,000	65,000	70,000	78,100	77,400	70,000	76,000	80,000
Mathematical scientists .....	60,000	47,100	42,000	55,000	87,000	71,900	100,000	75,000	S
Postsecondary teachers.....	38,000	38,000	35,000	S	S	41,000	42,000	S	S
Life and related scientists .....	42,000	30,000	40,000	48,000	46,000	52,000	56,000	53,000	50,000
Agricultural and food scientists .....	45,500	38,000	36,800	50,000	48,000	42,000	55,000	35,000	50,000
Biological scientists .....	40,000	29,000	44,000	48,000	46,000	58,000	51,000	49,500	70,000
Environmental life scientists.....	50,000	31,500	40,000	53,000	50,000	51,000	66,200	63,000	S
Postsecondary teachers .....	38,700	21,000	40,000	38,000	38,700	47,000	56,000	54,200	S
Physical and related scientists .....	47,000	38,000	45,600	52,000	65,000	55,000	58,700	55,000	60,000
Chemists, except biochemists.....	50,000	40,000	50,000	50,000	72,000	52,000	52,000	62,500	65,000
Earth scientists, geologists, and oceanographers .....	54,000	35,500	50,000	56,000	55,000	60,000	77,500	47,000	65,700
Physicists and astronomers .....	50,000	25,000	S	S	S	S	S	S	S
Other .....	40,000	40,000	40,000	52,000	65,000	44,500	68,000	S	S
Postsecondary teachers.....	25,000	19,000	S	S	S	S	S	S	S
Social and related scientists.....	45,000	36,000	46,000	58,000	69,800	52,000	73,800	49,000	78,600
Economists .....	60,000	42,000	60,000	63,500	S	S	93,000	S	S
Political scientists .....	40,100	40,100	S	S	S	S	S	S	S
Psychologists .....	30,500	30,000	S	S	S	S	S	S	S
Sociologists and anthropologists .....	32,000	30,000	S	S	S	S	S	S	S
Other .....	50,000	38,500	50,000	58,000	70,000	72,000	84,000	39,000	78,600
Postsecondary teachers.....	35,800	35,800	S	S	S	S	S	S	S
Engineers.....	70,000	53,000	65,000	71,200	76,900	83,600	80,000	80,000	84,000
Aerospace and related .....	81,000	55,000	72,000	80,000	83,000	90,000	87,000	98,000	100,000
Chemical.....	72,000	57,000	65,000	89,700	77,000	91,200	100,000	112,000	96,000
Civil and architectural .....	65,000	46,800	60,000	70,000	69,000	75,000	80,000	82,100	84,000
Electrical and related .....	75,000	60,000	74,000	75,000	85,000	87,000	80,000	84,000	87,000
Industrial.....	62,000	52,000	60,000	63,300	70,000	94,000	62,500	65,000	85,000
Mechanical .....	70,000	54,200	63,000	74,000	76,900	85,000	85,000	79,400	77,000
Other .....	70,000	48,000	62,400	68,000	75,000	80,000	80,000	74,700	82,000
Postsecondary teachers .....	38,000	31,000	S	S	S	S	S	S	S
S&E-related occupations .....	50,000	40,000	48,000	50,000	55,000	57,000	56,000	53,000	55,000
Health-related occupations .....	49,900	43,000	48,000	50,000	50,000	55,000	53,000	50,000	52,000
S&E managers .....	87,000	65,000	69,000	85,000	93,000	88,000	90,000	107,000	98,000
S&E precollege teachers .....	38,000	33,000	35,000	39,000	42,000	40,000	45,000	49,000	36,000
S&E technicians and technologists.....	55,000	38,600	55,000	60,000	60,000	60,000	60,000	59,000	67,000
Other .....	60,000	43,500	51,000	53,000	67,000	92,000	76,000	55,000	70,000

**Median annual salaries of U.S. individuals in S&E and S&E-related occupations, by highest degree, occupation, and years since degree: 2003**

(Dollars)

Degree and occupation	Employed individuals	Years since highest degree							
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35+
<b>Master's</b>									
S&E occupations .....	72,100	60,000	75,000	78,000	83,000	80,000	80,000	80,000	80,000
Scientists .....	69,000	56,000	73,000	74,000	79,000	75,000	75,000	67,800	71,600
Computer and mathematical scientists.....	77,000	66,000	80,000	80,000	85,000	85,000	80,000	80,000	84,000
Computer and information scientists.....	80,000	68,000	82,800	82,000	88,000	86,500	81,000	80,000	97,000
Mathematical scientists .....	72,000	60,000	72,000	82,000	76,500	80,000	70,000	108,000	S
Postsecondary teachers .....	45,000	40,000	40,000	43,000	54,100	55,000	66,000	40,000	43,000
Life and related scientists .....	50,000	41,000	51,500	55,000	54,000	54,500	51,000	50,000	70,000
Agricultural and food scientists .....	47,000	43,000	39,000	56,000	54,000	59,500	37,000	S	S
Biological scientists .....	54,000	42,000	56,000	58,000	60,000	70,000	80,600	48,000	70,000
Environmental life scientists.....	42,100	38,000	42,000	S	48,000	24,000	S	S	S
Postsecondary teachers .....	46,800	40,000	51,500	53,000	55,000	44,000	50,000	59,800	39,300
Physical and related scientists .....	65,500	46,000	60,000	66,300	85,000	84,000	84,000	65,000	84,900
Chemists, except biochemists.....	66,000	57,000	65,000	66,000	90,000	85,000	89,000	66,000	S
Earth scientists, geologists, and oceanographers .....	75,000	46,000	60,000	75,000	91,000	82,000	84,000	99,000	S
Physicists and astronomers .....	65,000	32,000	54,000	S	S	95,000	S	S	S
Other .....	65,000	51,000	73,000	66,300	70,000	S	60,000	S	S
Postsecondary teachers .....	45,000	30,600	S	45,000	S	S	52,000	42,600	S
Social and related scientists.....	53,000	41,200	50,000	57,000	70,000	60,000	68,000	80,000	71,000
Economists .....	89,000	70,000	150,000	89,000	98,000	266,000	83,400	60,000	S
Political scientists .....	40,000	43,000	S	S	S	S	S	S	S
Psychologists .....	48,000	40,000	47,900	50,600	60,000	55,000	60,000	60,000	58,000
Sociologists and anthropologists .....	50,000	40,000	S	S	43,500	S	S	S	S
Other .....	65,000	48,500	58,000	75,000	100,000	70,000	85,000	140,000	S
Postsecondary teachers .....	43,800	24,000	37,500	44,000	45,000	52,000	65,000	55,000	50,000
Engineers.....	80,000	68,000	78,000	85,000	89,000	86,000	90,000	90,000	88,000
Aerospace and related .....	82,400	69,500	88,000	94,000	70,000	98,000	95,000	104,000	120,000
Chemical.....	82,000	70,000	75,000	89,400	86,500	105,000	89,000	91,500	S
Civil and architectural .....	72,000	55,000	66,500	80,000	85,000	82,000	80,000	77,000	75,000
Electrical and related .....	86,000	75,000	82,000	95,000	100,000	89,000	94,000	105,000	96,000
Industrial.....	72,000	62,000	78,000	76,000	82,000	80,000	73,000	74,000	S
Mechanical .....	78,000	70,000	78,000	82,000	87,000	66,000	86,000	89,500	90,000
Other .....	80,000	65,000	75,000	80,000	90,000	83,500	90,000	87,000	93,400
Postsecondary teachers .....	65,000	50,000	S	S	54,000	S	S	S	S
S&E-related occupations .....	56,000	50,000	60,000	63,000	60,000	62,000	65,000	60,000	65,000
Health-related occupations.....	56,500	53,000	61,000	61,900	63,700	55,000	65,000	50,000	55,000
S&E managers .....	95,000	86,100	89,600	98,500	93,500	105,000	120,000	100,000	186,000
S&E precollege teachers .....	48,000	40,000	48,000	49,000	50,000	52,800	56,000	55,000	51,000
S&E technicians and technologists .....	63,000	57,000	65,000	72,000	63,000	65,000	70,000	61,500	S
Other.....	62,000	41,000	56,500	71,100	69,000	80,000	106,000	120,000	62,000



**Median annual salaries of U.S. individuals in S&E and S&E-related occupations, by highest degree, occupation, and years since degree: 2003**

(Dollars)

Degree and occupation	Employed individuals	Years since highest degree							
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35+
<b>Doctoral</b>									
S&E occupations .....	75,000	53,000	70,000	78,000	82,000	87,000	91,000	95,000	100,000
Scientists .....	71,400	50,000	65,600	73,500	80,000	84,500	88,000	90,000	98,000
Computer and mathematical scientists.....	79,000	65,000	80,000	80,000	80,000	90,000	90,000	80,000	104,000
Computer and information scientists.....	87,000	75,000	90,000	96,000	90,000	100,000	96,000	93,800	145,000
Mathematical scientists .....	88,000	72,000	88,500	90,000	105,000	95,000	108,300	105,000	158,000
Postsecondary teachers .....	62,000	49,000	60,000	60,000	64,500	83,000	81,000	70,000	100,300
Life and related scientists .....	67,900	42,700	60,000	73,000	80,000	84,200	90,000	96,000	98,000
Agricultural and food scientists .....	72,000	50,000	68,000	70,000	83,500	90,000	90,000	74,000	93,000
Biological scientists .....	67,000	40,000	65,700	80,000	84,000	95,000	103,000	108,000	93,400
Environmental life scientists.....	63,000	22,600	64,000	57,000	83,000	S	S	S	S
Postsecondary teachers .....	67,000	51,500	55,000	67,000	75,000	78,400	82,000	90,000	100,000
Physical and related scientists .....	79,000	55,600	73,000	81,500	85,000	90,000	96,000	95,000	95,000
Chemists, except biochemists.....	85,000	70,000	84,000	93,000	96,000	100,000	100,000	96,000	90,200
Earth scientists, geologists, and oceanographers .....	80,000	60,000	74,000	75,000	82,000	100,000	110,000	111,000	100,000
Physicists and astronomers .....	90,000	51,300	83,000	90,000	100,000	104,000	107,000	121,700	120,000
Other .....	80,000	63,000	80,000	74,000	90,000	100,000	120,000	S	S
Postsecondary teachers.....	63,500	49,000	54,000	62,500	64,000	73,000	78,000	85,000	90,000
Social and related scientists.....	67,300	51,400	60,000	68,000	75,000	80,000	84,000	87,100	100,000
Economists .....	105,000	84,000	103,000	103,000	128,000	130,000	130,000	125,000	S
Political scientists .....	75,000	72,000	75,000	S	S	S	S	S	S
Psychologists .....	70,100	55,000	67,000	72,000	80,000	85,000	87,300	89,000	97,000
Sociologists and anthropologists .....	64,000	62,400	62,000	72,000	68,000	85,000	90,000	S	S
Other .....	70,000	60,000	68,000	70,000	77,300	82,000	120,000	97,000	S
Postsecondary teachers.....	61,000	48,000	53,000	61,000	66,300	71,000	75,000	85,000	97,000
Engineers.....	90,000	73,200	85,000	95,000	100,000	100,000	105,000	112,000	106,500
Aerospace and related .....	95,500	85,000	88,000	100,000	98,000	100,000	110,000	119,500	136,500
Chemical .....	90,000	78,000	86,500	100,300	100,000	112,500	100,000	114,000	100,000
Civil and architectural .....	78,000	60,000	78,000	88,000	90,000	75,000	104,000	101,500	S
Electrical and related .....	102,000	85,000	102,000	110,000	126,400	112,000	106,000	120,000	110,000
Industrial.....	72,800	45,000	100,000	80,000	75,000	S	S	S	S
Mechanical .....	90,000	75,000	86,400	95,000	103,000	100,000	110,000	120,000	117,900
Other .....	85,000	75,000	83,000	95,000	89,600	100,000	110,000	124,000	90,000
Postsecondary teachers.....	81,000	64,000	68,000	81,000	87,000	100,000	95,200	100,000	100,000
S&E-related occupations .....	85,000	50,000	70,000	90,000	113,000	90,000	110,000	120,000	140,000
Health-related occupations.....	72,500	50,000	77,000	80,000	98,800	120,000	125,000	120,000	140,000
S&E managers .....	120,000	82,000	105,000	117,000	120,000	130,000	130,000	130,000	150,000
S&E precollege teachers .....	52,000	60,000	55,000	50,000	48,000	42,000	54,000	59,000	S
S&E technicians and technologists .....	62,300	36,000	75,000	70,000	50,000	64,000	59,000	85,000	100,000
Other.....	90,000	87,400	S	S	S	S	S	S	S

S = suppressed for reasons of confidentiality and/or data reliability

\*Includes professional degrees.

NOTES: Includes only full-time employed with salary &gt; 0. Very large or very small values may reflect very small sample sizes and should be interpreted with caution.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT), preliminary estimates (2003), <http://sestat.nsf.gov>.

**Employed individuals with S&E or S&E-related highest degrees whose jobs are closely or somewhat related to field of highest degree, by degree level and years since degree: 2003**

(Percent)

Degree and field	Employed individuals	Years since highest degree							
		1-5	6-10	11-15	16-20	21-25	26-30	31-35	36+
<b>All degree levels<sup>a</sup></b>									
S&E fields.....	76.4	79.3	78.9	77.7	77.5	77.0	71.5	69.2	67.7
Science.....	72.5	76.3	75.0	74.4	73.7	72.6	67.1	64.0	62.8
Computer and mathematical sciences.....	86.9	88.5	89.1	89.5	87.7	90.4	78.9	78.0	65.5
Computer and information sciences.....	90.4	88.5	91.4	91.0	91.9	94.3	81.2	79.8	100.0
Mathematics and statistics.....	80.0	88.9	81.3	85.4	77.0	85.0	77.9	77.5	64.1
Biological, agricultural, and environmental life sciences.....	73.8	79.2	75.8	76.2	72.0	74.1	67.9	65.9	65.8
Agricultural and food sciences.....	75.5	81.2	72.5	67.4	78.6	77.0	75.3	73.9	68.9
Biological sciences.....	73.5	78.2	76.7	78.8	71.1	73.3	66.0	64.0	66.5
Environmental life sciences.....	72.7	83.9	72.5	70.7	67.0	73.8	67.1	64.0	43.0
Physical and related sciences.....	77.7	84.7	84.8	81.7	77.5	76.3	70.1	61.9	78.3
Chemistry, except biochemistry.....	79.8	86.2	86.7	82.4	84.4	80.1	75.3	63.7	70.3
Earth, atmospheric, and ocean sciences.....	74.2	87.2	85.3	81.2	73.7	66.7	60.2	50.4	82.3
Physics and astronomy.....	80.2	82.3	84.5	82.3	72.3	86.2	78.9	67.2	88.9
Other.....	67.1	70.1	75.9	72.6	51.0	68.4	45.0	47.1	84.7
Social and related sciences.....	65.4	68.8	66.7	65.5	64.6	66.2	63.4	60.5	55.7
Economics.....	69.3	74.0	64.2	69.3	60.2	76.3	77.4	69.1	61.2
Political and related sciences.....	53.7	55.3	51.1	52.4	63.7	53.9	54.5	52.9	37.9
Psychology.....	71.0	72.9	77.4	71.0	69.0	66.7	64.7	67.1	68.0
Sociology and anthropology.....	65.1	66.4	64.6	77.1	66.4	66.4	57.0	60.2	54.8
Other.....	60.8	72.1	60.0	52.4	56.8	65.3	65.9	46.6	53.0
Engineering.....	88.3	92.2	91.4	86.9	87.4	89.6	88.6	85.0	77.1
Aerospace, aeronautical, and astronautical.....	85.4	87.7	82.5	74.0	96.6	86.5	87.3	92.7	83.0
Chemical.....	86.2	85.4	90.4	81.9	78.6	91.8	94.8	82.7	79.1
Civil and architectural.....	91.7	94.9	93.4	91.8	90.0	88.1	93.6	96.0	83.6
Electrical and computer.....	89.8	93.3	94.2	87.5	88.1	91.5	84.9	85.0	84.5
Industrial.....	83.0	90.0	93.3	70.1	83.4	83.5	90.1	82.1	65.1
Mechanical.....	88.3	93.1	88.6	91.4	91.8	92.4	88.5	75.2	77.0
Other.....	84.6	91.0	88.0	86.6	80.3	85.7	84.3	90.9	62.9
S&E-related fields.....	90.4	94.5	91.4	90.3	89.5	91.2	86.2	85.1	86.6
Health.....	92.5	95.1	92.4	93.8	91.6	93.1	88.4	88.8	90.5
Science and mathematics teacher education.....	80.6	93.7	88.5	86.4	78.5	78.1	71.5	70.1	67.0
Technology and technical fields.....	84.8	90.1	88.9	76.7	85.0	87.7	86.9	84.2	72.7
Other.....	85.0	89.5	86.1	80.9	81.2	85.6	84.3	83.8	98.4
<b>Bachelor's</b>									
S&E fields.....	71.9	73.7	74.1	72.4	73.9	74.5	67.7	65.5	63.4
Science.....	67.1	70.3	69.2	67.7	68.6	69.0	62.4	59.6	57.4
Computer and mathematical sciences.....	84.6	85.3	86.3	87.1	85.7	91.7	77.5	75.9	63.8
Computer and information sciences.....	88.5	85.3	89.0	89.1	90.7	94.2	81.2	82.7	S
Mathematics and statistics.....	77.0	85.2	77.2	82.0	73.3	87.5	76.0	74.9	62.3

**Employed individuals with S&E or S&E-related highest degrees whose jobs are closely or somewhat related to field of highest degree, by degree level and years since degree: 2003**

(Percent)

Degree and field	Employed individuals	Years since highest degree							
		1-5	6-10	11-15	16-20	21-25	26-30	31-35	36+
Biological, agricultural, and environmental life sciences .....	68.4	74.4	71.1	68.2	65.9	70.6	63.4	59.5	58.3
Agricultural and food sciences .....	72.1	76.4	69.4	56.8	76.9	74.3	73.9	72.8	64.9
Biological sciences .....	67.0	73.0	71.0	71.7	63.1	67.3	60.2	55.3	57.1
Environmental life sciences.....	71.1	80.7	74.7	63.4	65.3	79.5	63.4	55.3	42.5
Physical and related sciences .....	72.0	79.8	81.3	74.0	71.2	72.8	62.8	52.5	74.7
Chemistry, except biochemistry.....	76.6	82.9	81.7	77.6	84.6	81.3	74.2	57.2	62.7
Earth, atmospheric, and ocean sciences.....	65.2	82.5	83.7	69.4	60.4	54.3	47.9	44.6	97.5
Physics and astronomy .....	72.3	73.8	82.7	73.9	60.2	87.9	68.3	40.1	87.6
Other .....	65.0	56.4	74.4	S	44.7	66.8	S	S	82.4
Social and related sciences.....	59.4	62.2	60.2	58.7	57.3	61.6	58.7	57.5	50.9
Economics .....	66.9	72.2	58.5	66.8	58.9	76.9	75.9	66.8	56.1
Political and related sciences .....	49.5	49.4	50.5	46.0	60.0	49.5	52.4	48.0	31.2
Psychology .....	61.3	63.2	67.1	58.0	54.2	57.9	57.2	64.1	63.8
Sociology and anthropology .....	62.7	63.5	62.6	75.8	61.7	65.0	54.6	58.6	51.5
Other .....	54.3	66.2	53.4	46.1	48.0	55.1	60.1	45.0	50.6
Engineering.....	86.9	90.6	90.3	84.9	87.0	89.2	88.5	84.1	74.5
Aerospace, aeronautical, and astronautical.....	83.9	80.4	78.4	74.4	95.9	85.1	100.0	90.3	79.6
Chemical.....	85.3	83.2	91.1	75.2	78.6	90.7	95.7	87.2	76.2
Civil and architectural .....	91.7	92.8	92.4	90.4	91.3	90.1	95.2	96.7	83.8
Electrical and computer .....	87.9	92.4	92.5	85.4	86.6	91.4	81.1	82.7	83.1
Industrial.....	78.9	85.7	91.8	63.3	82.5	81.3	88.1	79.1	61.7
Mechanical .....	88.1	92.8	88.6	92.5	92.4	91.7	88.6	75.6	75.1
Other .....	80.9	88.8	87.3	80.4	76.5	83.9	85.5	88.5	56.4
S&E-related fields .....	86.4	90.3	87.7	86.3	86.3	87.7	82.0	82.7	82.5
Health .....	88.6	91.6	88.4	90.8	88.6	89.4	83.0	85.1	83.9
Science and mathematics teacher education.....	77.0	84.1	84.7	82.6	69.7	74.8	72.2	73.5	75.8
Technology and technical fields.....	84.0	87.2	86.6	75.8	85.7	88.2	87.6	82.6	73.3
Other.....	81.9	76.4	85.2	76.2	80.4	82.0	80.9	88.6	97.5
Master's									
S&E fields.....	86.7	91.3	89.8	90.0	86.6	81.7	79.6	75.3	81.1
Science.....	84.7	90.0	88.2	88.9	85.8	78.4	76.7	71.0	75.9
Computer and mathematical sciences.....	92.4	94.8	95.4	94.5	95.4	86.2	81.2	82.5	66.2
Computer and information sciences.....	94.3	95.0	96.1	94.7	96.0	94.1	81.1	76.7	S
Mathematics and statistics .....	86.9	93.6	92.0	93.5	93.3	77.3	81.2	87.7	64.8
Biological, agricultural, and environmental life sciences .....	83.2	87.8	82.0	87.1	83.4	78.1	78.2	77.8	87.8
Agricultural and food sciences .....	87.2	94.2	70.9	91.2	89.9	96.3	75.7	S	S
Biological sciences .....	84.0	84.6	89.7	84.6	84.6	82.9	78.9	75.8	87.7
Environmental life sciences.....	75.2	95.4	64.3	95.2	68.2	S	77.9	S	S
Physical and related sciences .....	85.1	90.5	93.6	91.1	88.6	80.8	79.5	69.5	78.3
Chemistry, except biochemistry.....	81.2	92.7	98.1	88.0	76.4	66.1	61.9	65.2	91.7

**Employed individuals with S&E or S&E-related highest degrees whose jobs are closely or somewhat related to field of highest degree, by degree level and years since degree: 2003**

(Percent)

Degree and field	Employed individuals	Years since highest degree							
		1-5	6-10	11-15	16-20	21-25	26-30	31-35	36+
Earth, atmospheric, and ocean sciences.....	87.5	92.3	88.2	93.0	95.5	90.9	84.6	47.9	S
Physics and astronomy.....	88.6	88.1	90.1	90.1	87.6	79.8	89.9	90.3	92.1
Other.....	75.8	83.1	S	S	S	S	S	S	S
Social and related sciences.....	80.8	87.8	84.3	84.5	80.6	75.2	74.3	64.6	72.7
Economics.....	76.3	79.2	85.3	86.9	57.1	64.1	78.2	72.0	81.1
Political and related sciences.....	69.2	80.4	46.4	78.6	74.7	71.5	59.4	75.3	62.5
Psychology.....	85.5	92.1	96.0	87.8	83.9	76.6	74.2	64.5	69.2
Sociology and anthropology.....	78.2	81.1	73.4	87.3	89.8	71.7	70.0	72.4	S
Other.....	79.0	85.0	78.4	74.4	82.8	82.6	84.1	45.6	S
Engineering.....	91.7	94.7	94.1	92.8	88.4	90.8	88.6	86.1	89.8
Aerospace, aeronautical, and astronautical.....	88.8	96.4	95.2	69.4	100.0	100.0	62.8	100.0	100.0
Chemical.....	88.7	96.6	91.4	97.8	75.1	94.3	94.2	53.7	100.0
Civil and architectural.....	91.6	99.4	96.7	97.4	82.7	80.2	89.8	93.2	85.4
Electrical and computer.....	94.1	94.0	98.2	93.2	92.2	92.4	97.2	89.7	87.5
Industrial.....	95.5	95.0	96.3	100.0	86.2	100.0	95.8	100.0	100.0
Mechanical.....	88.5	93.2	88.3	85.7	88.6	95.6	86.8	69.7	97.2
Other.....	90.0	92.8	88.2	95.3	87.3	89.4	81.8	98.0	87.2
S&E-related fields.....	91.3	96.7	93.5	91.4	88.1	93.8	83.4	68.4	71.9
Health.....	93.0	96.5	94.1	92.5	89.5	96.0	86.3	66.2	100.0
Science and mathematics teacher education.....	84.3	96.8	91.4	89.7	87.5	81.4	68.8	61.6	38.1
Technology and technical fields.....	90.0	96.2	98.2	81.3	79.8	96.7	78.2	100.0	66.9
Other.....	91.7	98.9	88.2	93.8	84.1	94.5	93.0	72.8	100.0
Doctoral									
S&E fields.....	91.8	95.5	92.2	92.5	90.7	91.1	89.5	87.8	89.4
Science.....	91.9	95.6	92.3	93.1	90.6	91.1	89.6	86.8	90.1
Computer and mathematical sciences.....	93.1	97.9	90.1	94.7	93.2	94.7	90.3	83.8	89.4
Computer and information sciences.....	97.3	98.8	95.8	96.2	97.3	100.0	S	S	S
Mathematics and statistics.....	90.9	97.3	84.9	93.3	90.7	93.0	90.2	82.4	89.4
Biological, agricultural, and environmental life sciences.....	92.6	96.5	92.7	94.5	89.5	92.2	89.9	88.6	87.6
Agricultural and food sciences.....	88.8	97.8	89.4	91.3	75.7	93.0	92.8	87.3	81.3
Biological sciences.....	93.0	96.4	92.7	95.0	91.6	92.0	89.3	89.0	88.5
Environmental life sciences.....	93.7	95.5	100.0	91.5	93.9	93.3	92.5	80.0	S
Physical and related sciences.....	87.5	92.6	88.5	88.1	89.7	84.9	85.4	79.4	88.8
Chemistry, except biochemistry.....	88.2	92.4	91.1	88.7	88.4	84.8	87.2	81.9	87.4
Earth, atmospheric, and ocean sciences.....	90.5	96.9	88.1	86.0	91.7	85.0	90.6	97.7	90.6
Physics and astronomy.....	86.8	90.3	85.1	88.5	90.1	87.1	80.2	84.0	88.9
Other.....	71.1	100.0	93.2	84.6	100.0	55.2	S	S	S
Social and related sciences.....	94.1	95.7	95.7	94.8	91.8	93.2	91.9	94.0	95.0
Economics.....	95.4	92.8	96.6	95.2	96.0	97.2	93.0	97.1	100.0
Political and related sciences.....	90.5	91.8	92.3	90.6	85.4	93.0	87.4	91.1	87.2

**Employed individuals with S&E or S&E-related highest degrees whose jobs are closely or somewhat related to field of highest degree, by degree level and years since degree: 2003**

(Percent)

Degree and field	Employed individuals	Years since highest degree							
		1-5	6-10	11-15	16-20	21-25	26-30	31-35	36+
Psychology .....	95.3	96.8	97.5	97.3	91.2	94.5	93.2	95.6	96.7
Sociology and anthropology .....	92.0	97.2	93.0	89.9	90.2	85.5	95.3	89.8	88.4
Other .....	93.1	96.1	93.6	91.1	99.1	93.4	83.2	89.7	95.0
Engineering .....	91.7	94.8	91.8	90.3	91.7	91.4	89.2	92.2	86.4
Aerospace, aeronautical, and astronautical.....	92.4	97.5	96.1	81.0	92.4	100.0	82.7	92.7	87.5
Chemical.....	87.9	86.2	84.2	82.2	86.3	98.5	89.3	96.4	85.5
Civil and architectural .....	92.5	93.8	94.3	89.5	100.0	96.2	88.4	100.0	60.2
Electrical and computer .....	93.9	96.6	94.5	93.4	94.7	86.3	92.8	91.1	97.3
Industrial.....	96.0	98.1	96.2	100.0	98.5	S	S	83.4	S
Mechanical .....	92.4	96.2	89.9	93.5	92.4	86.8	91.7	95.9	86.9
Other .....	89.9	94.5	90.1	89.7	87.8	91.1	84.9	88.3	85.6
S&E-related fields .....	94.4	94.2	96.6	93.3	94.0	91.1	96.2	94.0	100.0
Health .....	93.1	92.3	96.3	92.1	95.1	86.4	94.2	92.3	100.0
Science and mathematics teacher education.....	99.0	100.0	100.0	S	S	S	S	S	S
Technology and technical fields.....	93.4	S	90.3	S	S	S	S	S	S
Other.....	98.4	S	S	S	S	S	S	S	S

S = suppressed for reasons of confidentiality and/or data reliability

\*Includes professional degrees.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT), preliminary estimates (2003), <http://sestat.nsf.gov>.

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**Employed individuals with S&E or S&E-related highest degrees whose jobs are closely related to field of highest degree, by degree level and years since degree: 2003**

(Percent)

Degree and field	Employed individuals	Years since highest degree							
		1-5	6-10	11-15	16-20	21-25	26-30	31-35	36+
<b>All degree levels<sup>a</sup></b>									
S&E fields.....	46.5	52.0	50.9	46.7	49.0	45.7	38.1	36.7	35.4
Science.....	43.2	49.2	47.3	44.5	46.5	41.1	33.8	31.6	29.9
Computer and mathematical sciences.....	60.0	65.2	65.8	62.7	61.4	60.6	42.1	38.7	34.1
Computer and information sciences.....	67.9	65.7	70.8	67.4	69.1	70.3	61.8	52.8	S
Mathematics and statistics.....	44.1	63.0	48.6	49.8	41.4	47.2	33.5	35.1	32.3
Biological, agricultural, and environmental life sciences.....	48.4	56.2	50.4	52.2	45.5	47.6	40.8	39.8	38.3
Agricultural and food sciences.....	49.6	55.4	42.2	46.6	54.9	48.5	53.5	53.7	30.7
Biological sciences.....	48.7	58.0	52.6	52.6	45.0	47.1	36.7	36.9	41.4
Environmental life sciences.....	43.8	44.7	41.7	58.1	32.3	48.4	44.6	33.0	37.1
Physical and related sciences.....	47.8	59.5	54.1	52.2	48.3	43.0	39.7	31.8	45.9
Chemistry, except biochemistry.....	51.3	61.2	60.9	53.4	58.4	53.7	40.9	28.8	41.0
Earth, atmospheric, and ocean sciences.....	47.2	60.3	55.9	59.4	46.0	34.3	35.1	40.8	41.9
Physics and astronomy.....	44.0	58.7	43.2	44.8	31.4	39.6	46.7	30.8	60.4
Other.....	38.1	45.4	45.7	34.5	24.3	32.4	28.4	40.9	S
Social and related sciences.....	33.4	38.3	36.8	32.5	37.1	32.2	27.7	26.7	20.0
Economics.....	30.7	39.0	33.5	23.5	26.0	36.5	32.0	24.7	24.1
Political and related sciences.....	22.0	26.9	20.5	20.5	32.7	23.5	13.6	20.1	6.7
Psychology.....	42.8	45.2	45.9	45.8	47.4	38.4	36.2	34.2	29.2
Sociology and anthropology.....	29.9	32.3	35.5	32.2	35.4	22.3	23.4	26.8	22.5
Other.....	31.3	38.1	37.9	27.7	34.3	32.1	24.5	23.0	14.1
Engineering.....	56.9	63.6	62.2	52.7	55.5	59.0	54.5	52.2	46.1
Aerospace, aeronautical, and astronautical.....	56.9	63.0	57.8	38.8	55.8	63.6	65.8	48.9	71.5
Chemical.....	46.0	49.9	43.3	46.0	47.5	41.8	42.7	62.4	36.1
Civil and architectural.....	68.2	74.7	76.1	71.0	60.4	61.5	63.9	69.0	66.2
Electrical and computer.....	60.7	68.1	68.0	52.2	57.8	67.4	59.1	54.7	44.7
Industrial.....	43.4	56.3	38.5	31.0	48.9	48.9	54.2	20.0	28.3
Mechanical.....	52.1	56.2	51.2	56.7	59.7	55.4	45.6	40.5	41.4
Other.....	53.4	61.4	63.6	46.4	44.1	58.1	54.0	51.7	37.6
S&E-related fields.....	78.1	84.5	80.4	76.7	76.7	78.1	72.3	71.7	73.4
Health.....	83.2	86.4	83.7	82.6	81.7	83.3	80.0	80.5	83.1
Science and mathematics teacher education.....	64.8	84.6	79.9	72.9	63.3	62.8	49.8	51.7	35.8
Technology and technical fields.....	52.8	68.3	58.4	50.7	52.5	52.5	40.3	47.5	30.6
Other.....	65.5	67.1	68.9	61.6	66.4	62.3	59.3	66.2	84.2
<b>Bachelor's</b>									
S&E fields.....	40.2	43.8	43.9	39.7	44.6	40.7	32.7	31.7	30.4
Science.....	35.7	40.5	39.2	35.8	41.2	34.6	27.3	26.1	23.7
Computer and mathematical sciences.....	56.2	58.9	61.8	60.7	59.2	58.3	40.0	32.2	30.0
Computer and information sciences.....	65.6	59.8	67.7	67.1	68.5	69.2	65.4	41.7	S
Mathematics and statistics.....	38.0	54.5	42.3	44.2	36.1	40.5	29.7	30.8	28.0

**Employed individuals with S&E or S&E-related highest degrees whose jobs are closely related to field of highest degree, by degree level and years since degree: 2003**

(Percent)

Degree and field	Employed individuals	Years since highest degree							
		1-5	6-10	11-15	16-20	21-25	26-30	31-35	36+
Biological, agricultural, and environmental life sciences .....	42.3	50.9	44.0	41.9	38.6	44.0	35.3	34.1	33.1
Agricultural and food sciences .....	46.1	54.8	34.3	34.9	49.9	46.9	53.2	52.1	25.4
Biological sciences .....	41.5	51.9	45.7	42.3	36.7	41.7	29.0	28.9	36.4
Environmental life sciences.....	40.9	40.3	41.8	49.0	31.4	49.2	40.5	25.0	37.2
Physical and related sciences .....	41.2	50.6	46.6	47.4	44.1	37.8	31.8	25.9	38.3
Chemistry, except biochemistry.....	47.0	52.4	52.9	50.3	60.6	55.1	37.2	21.4	35.2
Earth, atmospheric, and ocean sciences.....	38.2	49.5	51.6	54.6	36.2	27.3	20.7	39.1	34.2
Physics and astronomy .....	32.1	50.6	30.9	34.9	17.8	24.8	41.9	15.8	52.5
Other .....	35.2	37.0	42.2	S	S	27.9	S	S	S
Social and related sciences.....	24.8	28.5	27.6	22.6	29.1	23.4	20.4	22.0	14.5
Economics .....	27.0	34.6	31.2	20.2	23.8	34.6	25.9	20.4	17.0
Political and related sciences.....	17.7	21.5	16.7	14.4	30.0	19.3	11.4	16.9	S
Psychology .....	27.2	29.2	28.3	28.1	29.7	22.5	25.3	25.4	20.6
Sociology and anthropology .....	26.1	28.0	30.7	28.0	32.6	18.1	20.4	25.2	20.6
Other .....	25.3	32.1	35.5	20.8	32.3	21.8	13.7	19.8	S
Engineering.....	54.1	60.0	59.6	50.2	53.0	57.0	53.9	49.2	43.0
Aerospace, aeronautical, and astronautical.....	52.0	47.0	53.7	34.6	49.5	61.0	73.8	33.8	72.3
Chemical.....	44.4	46.3	43.3	45.4	46.7	39.1	44.0	64.5	28.6
Civil and architectural .....	66.6	73.8	75.7	70.4	58.9	58.7	60.9	67.0	66.2
Electrical and computer .....	56.7	64.8	63.9	48.0	53.4	67.7	55.2	50.8	41.0
Industrial.....	39.0	49.3	33.6	26.6	47.9	43.7	54.4	S	29.6
Mechanical .....	51.1	54.4	48.5	55.8	60.4	55.4	45.5	41.0	40.0
Other .....	49.2	57.3	63.7	43.5	36.8	52.4	61.4	45.5	30.7
S&E-related fields .....	69.9	77.4	73.7	69.1	68.5	70.2	64.0	63.8	60.0
Health .....	75.7	79.9	77.3	76.0	73.4	76.5	72.3	71.3	69.6
Science and mathematics teacher education.....	57.0	81.1	73.0	67.6	56.8	56.4	47.0	52.6	35.6
Technology and technical fields.....	51.4	64.2	57.4	46.5	54.1	54.2	39.3	48.4	28.8
Other.....	61.7	49.9	65.7	59.7	64.3	52.9	57.7	70.7	88.3
Master's									
S&E fields.....	60.9	69.3	66.6	61.4	59.1	58.3	49.5	45.6	48.6
Science.....	59.5	69.4	65.5	62.3	57.3	55.4	47.2	39.7	41.2
Computer and mathematical sciences.....	68.9	76.8	74.5	67.5	69.9	64.5	44.9	54.9	45.1
Computer and information sciences.....	73.5	77.6	77.3	69.1	72.2	72.4	54.7	63.0	S
Mathematics and statistics .....	56.1	71.9	61.6	61.7	61.1	55.7	38.7	47.7	42.7
Biological, agricultural, and environmental life sciences .....	57.3	64.4	56.5	67.0	55.3	52.1	54.6	46.6	38.1
Agricultural and food sciences .....	59.9	49.9	49.5	75.1	84.5	60.1	46.0	S	S
Biological sciences .....	58.3	69.3	64.5	60.5	53.3	53.4	56.1	44.2	31.4
Environmental life sciences.....	49.5	58.1	35.6	90.6	28.6	S	56.9	S	S
Physical and related sciences .....	57.1	75.2	70.8	56.1	51.1	52.3	54.9	32.9	50.4
Chemistry, except biochemistry.....	60.4	85.6	80.7	60.6	45.6	57.8	46.1	33.2	49.5
Earth, atmospheric, and ocean sciences.....	57.1	71.5	60.4	59.5	57.1	42.2	63.9	40.0	S

**Employed individuals with S&E or S&E-related highest degrees whose jobs are closely related to field of highest degree, by degree level and years since degree: 2003**

(Percent)

Degree and field	Employed individuals	Years since highest degree							
		1-5	6-10	11-15	16-20	21-25	26-30	31-35	36+
Physics and astronomy .....	53.8	68.0	60.2	49.4	35.5	63.2	55.1	32.8	66.6
Other .....	47.4	70.9	S	S	S	S	S	S	S
Social and related sciences .....	55.4	65.7	61.3	58.4	52.1	53.5	44.2	34.0	37.4
Economics .....	38.5	55.4	34.3	32.4	24.4	35.8	38.9	30.6	52.7
Political and related sciences .....	35.9	46.7	32.3	44.2	37.8	39.9	17.1	S	S
Psychology .....	66.2	77.5	76.1	66.2	65.4	60.0	50.3	38.9	44.9
Sociology and anthropology .....	51.9	51.0	66.2	67.4	38.0	61.1	37.1	31.1	S
Other .....	45.6	49.1	38.3	52.1	33.9	48.3	56.5	S	S
Engineering .....	64.5	69.3	69.2	59.1	63.2	66.5	56.5	60.2	61.0
Aerospace, aeronautical, and astronautical .....	72.0	85.3	71.5	52.3	77.7	100.0	52.4	95.1	S
Chemical .....	48.3	61.0	36.4	51.9	49.9	42.7	40.4	47.5	90.1
Civil and architectural .....	73.2	77.0	79.3	73.0	64.9	70.1	71.2	75.2	68.8
Electrical and computer .....	70.3	72.0	78.3	63.0	70.4	68.1	71.9	64.4	56.1
Industrial .....	55.1	64.5	44.9	47.3	52.3	88.5	53.1	S	S
Mechanical .....	55.0	59.1	58.2	59.8	57.0	54.0	45.6	34.6	55.3
Other .....	59.7	65.2	64.8	46.5	55.7	78.5	44.8	66.1	65.9
S&E-related fields .....	78.1	84.7	84.0	74.1	76.2	77.2	68.0	51.3	57.4
Health .....	81.5	85.7	86.4	75.0	81.5	79.1	75.1	52.3	74.7
Science and mathematics teacher education .....	73.2	85.5	85.2	77.0	68.6	69.6	54.5	49.4	36.6
Technology and technical fields .....	60.5	78.2	60.5	73.7	40.4	42.3	52.9	S	46.2
Other .....	72.6	75.2	78.7	66.6	74.4	85.7	60.8	55.1	76.5
<b>Doctoral</b>									
S&E fields .....	68.6	75.9	70.3	69.0	67.8	65.0	63.6	60.2	66.4
Science .....	69.9	77.4	72.6	71.1	68.4	65.2	65.1	60.1	68.7
Computer and mathematical sciences .....	71.4	85.8	67.0	62.2	74.7	75.6	62.7	50.5	71.5
Computer and information sciences .....	71.6	84.5	68.9	54.3	77.0	85.8	S	S	S
Mathematics and statistics .....	71.3	86.6	65.2	69.5	73.4	72.3	62.4	53.3	71.5
Biological, agricultural, and environmental life sciences .....	71.1	76.4	74.1	75.1	67.4	65.2	66.3	62.7	69.7
Agricultural and food sciences .....	66.6	83.3	71.1	70.9	51.1	59.1	72.1	66.9	47.6
Biological sciences .....	71.5	76.0	74.0	75.7	70.0	65.6	65.1	62.1	72.6
Environmental life sciences .....	73.9	73.6	84.3	75.5	69.1	72.9	72.0	64.6	S
Physical and related sciences .....	58.8	69.0	63.5	57.6	60.8	51.9	51.0	46.4	64.8
Chemistry, except biochemistry .....	57.9	72.4	67.1	55.1	58.7	47.2	49.9	46.9	56.3
Earth, atmospheric, and ocean sciences .....	72.7	83.3	70.4	72.1	75.6	63.3	71.1	54.8	81.2
Physics and astronomy .....	55.8	63.1	55.5	54.1	56.6	55.8	43.7	50.8	67.0
Other .....	46.0	17.9	86.5	74.7	52.6	33.2	S	S	S
Social and related sciences .....	76.7	80.6	80.1	80.2	73.2	71.8	73.8	75.0	73.0
Economics .....	78.3	79.0	77.5	81.6	76.3	78.7	80.9	74.5	73.3
Political and related sciences .....	67.0	72.9	70.6	62.3	70.9	63.7	54.2	67.0	71.2
Psychology .....	80.5	83.8	86.0	86.5	73.9	77.0	76.3	79.2	72.8
Sociology and anthropology .....	72.9	84.4	72.0	74.6	67.4	57.3	78.0	68.4	75.1
Other .....	71.2	72.3	75.2	66.8	76.3	65.5	65.0	77.8	74.6



**Employed individuals with S&E or S&E-related highest degrees whose jobs are closely related to field of highest degree, by degree level and years since degree: 2003**

(Percent)

Degree and field	Employed individuals	Years since highest degree							
		1-5	6-10	11-15	16-20	21-25	26-30	31-35	36+
Engineering.....	62.6	69.3	61.7	60.1	64.5	63.5	55.8	60.4	56.0
Aerospace, aeronautical, and astronautical.....	69.6	79.3	69.1	61.0	79.0	S	51.2	51.0	81.4
Chemical.....	52.6	57.9	51.0	38.2	50.1	65.7	40.0	70.9	53.2
Civil and architectural.....	70.8	73.1	68.0	72.6	83.9	81.5	67.2	66.4	39.8
Electrical and computer.....	65.9	73.1	63.1	65.1	69.2	59.0	67.6	59.3	60.4
Industrial.....	67.6	70.0	68.8	70.2	59.2	S	S	61.5	S
Mechanical.....	61.5	68.0	60.8	62.3	55.0	66.5	50.5	66.0	50.4
Other.....	60.0	66.2	60.2	58.6	65.2	60.7	51.2	53.5	53.2
S&E-related fields.....	84.2	86.5	85.3	81.8	84.8	79.0	80.2	77.8	98.6
Health.....	81.0	83.6	83.6	78.6	83.9	67.7	74.6	77.7	98.6
Science and mathematics teacher education.....	97.0	95.6	100.0	S	S	S	S	S	S
Technology and technical fields.....	75.3	S	79.3	S	S	S	S	S	S
Other.....	94.8	S	S	S	S	S	S	S	S

S = suppressed for reasons of confidentiality and/or data reliability

\*Includes professional degrees.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT), preliminary estimates (2003), <http://sestat.nsf.gov>.

Science and Engineering Indicators 2006

Appendix table 3-8  
**Unemployment rate, by occupation: 1983–2004**  
 (Percent)

Year	All workers	All S&E occupations	S&E technicians	Computer programmers
1983.....	9.9	3.0	6.1	3.1
1984.....	7.4	2.1	3.6	1.4
1985.....	7.0	1.8	3.8	2.0
1986.....	6.9	2.2	3.8	2.4
1987.....	6.2	2.2	3.4	3.1
1988.....	5.5	1.8	2.9	3.0
1989.....	5.2	1.5	3.3	1.5
1990.....	5.7	1.9	4.3	3.1
1991.....	7.2	2.6	4.6	3.5
1992.....	7.9	3.2	5.5	2.9
1993.....	7.2	3.5	5.7	2.8
1994.....	6.2	3.0	4.4	2.5
1995.....	5.6	2.3	3.8	1.5
1996.....	5.4	1.8	3.8	1.2
1997.....	4.9	1.5	2.0	1.9
1998.....	4.4	1.6	2.9	1.6
1999.....	4.1	1.4	2.4	2.6
2000.....	3.9	1.6	3.0	1.7
2001.....	4.8	2.4	3.2	5.1
2002.....	5.8	3.9	5.4	6.5
2003.....	6.0	4.6	6.1	4.9
2004.....	5.5	3.0	3.0	6.7

SOURCE: National Bureau of Economic Research, Merged Outgoing Rotation Group Files from U.S. Department of Labor, Bureau of Labor Statistics, Current Population Survey.

## Employed individuals with S&amp;E or S&amp;E-related highest degree, by highest degree, field of highest degree, and employment sector: 2003

Degree and field	Employed individuals	Business/industry				Education			Government		
		All business/industry	Profit	Self-employed	Nonprofit	All education	4-year college/university	Other	All government	Federal	State/local
<b>All degree levels<sup>a</sup></b>											
S&E fields.....	9,587,000	6,831,900	5,661,700	565,000	605,300	1,498,300	811,100	687,100	1,256,800	511,300	745,500
Science.....	7,253,800	4,886,500	3,856,400	468,500	561,500	1,371,700	717,100	654,600	995,600	374,700	620,900
Computer and mathematical sciences.....	1,439,200	1,114,300	1,012,600	52,000	49,700	210,100	100,800	109,300	114,800	57,400	57,400
Computer and information sciences.....	962,600	798,700	735,300	29,700	33,700	84,800	49,400	35,400	79,100	38,100	41,000
Mathematics and statistics.....	476,600	315,600	277,300	22,300	16,000	125,300	51,300	74,000	35,700	19,300	16,400
Biological, agricultural, and environmental life sciences.....	1,489,200	916,700	702,700	97,500	116,500	354,300	248,200	106,100	218,200	94,200	123,900
Agricultural and food sciences.....	251,300	177,000	137,200	30,700	9,100	39,900	24,900	15,000	34,400	20,400	14,100
Biological sciences.....	1,087,300	650,300	491,000	58,300	101,000	297,600	212,600	85,000	139,400	57,100	82,300
Environmental life sciences.....	150,600	89,400	74,500	8,400	6,400	16,900	10,800	6,100	44,300	16,800	27,600
Physical and related sciences.....	692,900	458,200	399,700	35,100	23,500	152,300	100,300	52,000	82,400	41,200	41,200
Chemistry, except biochemistry.....	325,600	230,900	203,600	13,500	13,800	67,100	43,100	24,000	27,600	12,600	15,000
Earth, atmospheric, and ocean sciences.....	169,000	104,000	85,900	14,100	4,100	30,900	17,400	13,500	34,100	14,600	19,500
Physics and astronomy.....	152,300	95,300	85,700	5,400	4,200	45,200	33,600	11,600	11,800	10,600	1,200
Other.....	46,000	27,900	24,600	2,000	1,400	9,200	6,300	2,900	8,900	3,400	5,500
Social and related sciences.....	3,632,500	2,397,300	1,741,500	284,000	371,800	655,000	267,800	387,200	580,300	181,800	398,400
Economics.....	555,100	470,600	397,300	51,500	21,800	42,800	29,400	13,300	41,800	21,600	20,200
Political and related sciences.....	660,500	459,100	361,500	44,200	53,400	75,800	41,700	34,100	125,500	53,600	71,900
Psychology.....	1,335,300	814,400	518,800	120,600	175,000	313,900	102,400	211,500	207,000	45,700	161,300
Sociology and anthropology.....	684,100	409,700	286,100	37,500	86,100	126,700	56,300	70,400	147,700	36,000	111,700
Other.....	397,600	243,500	177,800	30,200	35,500	95,800	37,900	57,900	58,300	25,000	33,300
Engineering.....	2,333,200	1,945,400	1,805,200	96,500	43,700	126,500	94,000	32,500	261,300	136,600	124,600
Aerospace, aeronautical, and astronautical.....	85,300	70,000	63,300	4,100	2,600	4,400	4,000	500	10,900	9,600	1,200
Chemical.....	160,400	134,800	128,700	3,700	2,400	11,800	9,600	2,200	13,800	8,800	5,000
Civil and architectural.....	384,700	282,800	257,000	20,300	5,500	14,600	9,400	5,200	87,300	19,300	68,000
Electrical and computer.....	747,700	654,900	616,100	25,300	13,500	36,900	29,400	7,500	55,800	41,000	14,800
Industrial.....	132,300	114,200	106,200	3,600	4,400	6,300	3,400	2,900	11,800	6,500	5,300
Mechanical.....	492,500	427,100	397,900	19,800	9,400	23,200	15,900	7,300	42,200	29,200	13,000
Other.....	330,200	261,600	235,900	19,600	6,000	29,200	22,300	6,900	39,500	22,200	17,300
S&E-related fields.....	4,376,900	3,088,700	2,072,300	386,800	629,500	904,500	467,900	436,600	383,700	134,700	249,000
Health.....	3,367,000	2,430,400	1,537,900	295,400	597,100	633,800	432,400	201,400	302,800	109,900	192,900
Science and mathematics teacher education.....	339,200	94,500	64,300	19,200	11,100	228,600	15,300	213,300	16,100	5,900	10,200
Technology and technical fields.....	334,400	288,200	256,300	21,100	10,800	18,700	7,800	10,900	27,500	12,500	15,000
Other.....	336,300	275,600	213,900	51,100	10,600	23,400	12,300	11,100	37,300	6,400	31,000
<b>Bachelor's</b>											
S&E fields.....	6,947,000	5,245,500	4,401,600	402,900	441,000	774,600	325,500	449,100	926,900	342,600	584,300
Science.....	5,271,100	3,816,000	3,075,700	331,700	408,600	719,200	292,900	426,400	735,900	246,600	489,300
Computer and mathematical sciences.....	1,012,100	808,300	732,500	36,800	39,000	118,800	39,600	79,200	84,900	39,300	45,600
Computer and information sciences.....	667,500	560,800	514,600	20,400	25,800	48,800	24,800	24,000	58,000	25,300	32,700
Mathematics and statistics.....	344,500	247,600	218,000	16,400	13,200	70,000	14,800	55,200	26,900	14,000	13,000

## Employed individuals with S&amp;E or S&amp;E-related highest degree, by highest degree, field of highest degree, and employment sector: 2003

Degree and field	Business/industry					Education			Government		
	Employed individuals	All	Profit	Self-employed	Nonprofit	All education	4-year	Other	All government	Federal	State/
		business/industry					college/university				local
Biological, agricultural, and environmental life sciences .....	1,080,100	735,200	569,000	77,800	88,500	184,800	107,900	76,900	160,100	60,600	99,400
Agricultural and food sciences .....	198,500	148,700	115,800	26,000	6,800	21,300	9,300	12,000	28,500	16,300	12,200
Biological sciences .....	766,200	515,000	391,600	45,600	77,800	153,300	92,400	61,000	97,900	34,700	63,200
Environmental life sciences .....	115,300	71,500	61,500	6,200	3,800	10,200	6,200	3,900	33,600	9,600	24,000
Physical and related sciences .....	421,600	305,900	268,200	22,600	15,200	63,100	33,800	29,300	52,600	21,900	30,700
Chemistry, except biochemistry .....	208,000	157,800	136,700	10,100	11,000	30,800	16,900	14,000	19,300	7,800	11,500
Earth, atmospheric, and ocean sciences .....	103,700	72,600	62,500	8,400	1,700	10,500	3,800	6,600	20,700	7,300	13,400
Physics and astronomy .....	73,300	52,800	49,400	2,100	1,200	15,000	8,400	6,700	5,500	4,900	S
Other .....	36,600	22,700	19,600	1,900	S	6,700	4,700	2,000	7,100	1,900	5,200
Social and related sciences .....	2,757,300	1,966,500	1,506,000	194,500	266,000	352,500	111,500	241,000	438,300	124,800	313,500
Economics .....	459,400	411,100	352,500	43,400	15,200	17,500	9,900	7,600	30,800	13,200	17,600
Political and related sciences .....	542,700	402,100	319,400	38,600	44,100	48,200	20,300	28,000	92,300	32,700	59,500
Psychology .....	848,700	569,800	410,400	54,300	105,000	141,800	40,300	101,500	137,100	28,500	108,600
Sociology and anthropology .....	604,500	380,300	267,600	33,800	78,900	89,900	27,300	62,500	134,300	31,600	102,700
Other .....	302,000	203,200	156,100	24,400	22,700	55,000	13,700	41,400	43,800	18,700	25,100
Engineering .....	1,675,800	1,429,400	1,325,900	71,200	32,400	55,400	32,700	22,800	191,000	96,000	95,000
Aerospace, aeronautical, and astronautical .....	63,800	54,400	49,900	2,700	1,900	1,700	1,500	S	7,700	6,600	S
Chemical .....	116,900	100,200	95,900	2,700	1,500	6,700	5,300	1,300	10,100	7,500	2,600
Civil and architectural .....	288,100	213,800	194,100	15,900	3,700	6,100	2,700	3,400	68,300	15,400	52,900
Electrical and computer .....	517,700	460,200	435,100	15,900	9,200	14,900	8,900	6,000	42,500	29,700	12,800
Industrial .....	99,500	89,900	82,500	3,500	3,900	2,400	700	1,700	7,200	3,100	4,100
Mechanical .....	393,400	346,400	320,300	17,900	8,100	12,700	6,500	6,200	34,300	22,900	11,400
Other .....	196,500	164,600	148,100	12,600	3,900	10,900	7,000	3,900	21,000	10,800	10,200
S&E-related fields .....	2,322,800	1,705,000	1,163,000	139,000	402,900	396,800	190,900	205,900	220,900	68,300	152,700
Health .....	1,621,700	1,186,800	738,700	68,000	380,100	265,100	176,300	88,800	169,700	49,500	120,300
Science and mathematics teacher education .....	184,800	71,300	49,800	13,100	8,400	103,700	S	100,800	9,800	4,600	5,200
Technology and technical fields .....	281,600	245,500	215,500	19,600	10,400	14,600	6,200	8,400	21,500	8,800	12,700
Other .....	234,700	201,400	159,000	38,200	4,100	13,400	5,500	7,900	19,900	5,400	14,500
Master's											
S&E fields .....	1,918,400	1,261,400	1,019,900	113,900	127,700	394,900	181,900	212,900	262,200	122,200	139,900
Science .....	1,383,900	823,800	610,700	93,500	119,600	358,400	153,700	204,700	201,700	89,300	112,400
Computer and mathematical sciences .....	375,000	285,900	262,300	13,900	9,700	62,000	33,100	28,900	27,200	16,000	11,100
Computer and information sciences .....	277,000	227,900	211,400	8,900	7,600	28,600	17,400	11,200	20,500	12,300	8,200
Mathematics and statistics .....	98,000	58,000	50,900	5,000	2,000	33,400	15,700	17,800	6,600	3,700	2,900
Biological, agricultural, and environmental life sciences .....	208,700	109,000	79,900	11,700	17,400	62,700	39,200	23,500	37,100	17,100	20,000
Agricultural and food sciences .....	31,400	18,600	14,200	2,700	1,700	9,500	7,000	2,500	3,400	2,400	900
Biological sciences .....	147,800	74,100	53,700	7,000	13,500	48,900	30,000	19,000	24,700	8,800	15,900
Environmental life sciences .....	29,500	16,300	12,100	S	2,200	4,300	2,300	2,000	9,000	5,800	3,100
Physical and related sciences .....	129,700	79,300	67,700	7,900	3,600	33,900	15,800	18,100	16,500	9,200	7,400
Chemistry, except biochemistry .....	46,100	29,900	28,000	900	1,100	12,600	5,200	7,400	3,500	1,600	1,900
Earth, atmospheric, and ocean sciences .....	47,200	26,200	19,400	5,100	1,700	10,700	4,400	6,300	10,300	5,100	5,300

## Employed individuals with S&amp;E or S&amp;E-related highest degree, by highest degree, field of highest degree, and employment sector: 2003

Degree and field	Employed individuals	Business/industry				Education			Government		
		All business/industry	Profit	Self-employed	Nonprofit	All education	4-year college/university	Other	All government	Federal	State/local
Physics and astronomy .....	31,200	20,400	17,600	2,000	800	9,500	5,900	3,600	1,300	1,300	S
Other .....	5,200	2,800	2,800	S	S	1,000	S	800	1,300	S	S
Social and related sciences.....	670,400	349,600	200,700	60,000	88,900	199,800	65,700	134,200	121,000	47,100	73,900
Economics .....	71,900	52,300	39,500	7,100	5,700	12,100	6,700	5,400	7,500	5,500	2,100
Political and related sciences.....	96,700	52,200	39,400	4,500	8,300	13,600	8,500	5,100	30,800	20,000	10,900
Psychology .....	372,800	187,000	87,500	41,000	58,500	127,600	25,700	101,800	58,200	12,800	45,400
Sociology and anthropology .....	52,300	23,100	16,300	2,200	4,600	17,900	11,300	6,600	11,300	3,200	8,100
Other .....	76,800	35,000	17,900	5,300	11,800	28,600	13,400	15,100	13,200	5,600	7,500
Engineering.....	534,500	437,600	409,200	20,400	8,100	36,500	28,200	8,200	60,400	32,900	27,500
Aerospace, aeronautical, and astronautical.....	15,500	11,900	10,500	S	S	1,100	900	S	2,500	2,400	S
Chemical.....	27,000	22,700	22,100	S	S	1,800	1,200	S	2,400	600	1,800
Civil and architectural .....	85,900	63,400	57,700	4,100	1,600	4,500	2,800	1,700	17,900	3,200	14,700
Electrical and computer .....	194,200	170,600	159,400	7,800	3,400	12,100	11,000	1,100	11,500	9,600	1,900
Industrial.....	29,200	22,700	22,200	S	S	2,100	900	1,200	4,400	3,300	1,100
Mechanical .....	83,700	70,300	68,100	1,300	900	6,300	5,400	900	7,200	5,500	1,600
Other .....	99,100	76,100	69,300	5,700	1,100	8,500	6,000	2,500	14,600	8,200	6,400
S&E-related fields .....	914,200	508,300	318,400	62,700	127,100	300,400	81,100	219,300	105,600	33,800	71,800
Health .....	623,800	376,300	215,800	42,800	117,700	170,500	67,700	102,800	76,900	27,900	49,000
Science and mathematics teacher education.....	146,600	22,400	13,600	6,100	2,700	118,100	7,100	110,900	6,200	S	4,900
Technology and technical fields.....	49,300	40,400	38,600	S	S	3,600	1,100	2,500	5,300	3,600	1,700
Other.....	94,500	69,100	50,400	12,400	6,400	8,200	5,100	3,000	17,200	1,000	16,200
Doctoral											
S&E fields.....	689,500	303,000	230,300	39,200	33,400	323,300	299,700	23,600	63,200	45,400	17,800
Science.....	567,700	225,300	160,900	34,300	30,100	289,000	266,800	22,200	53,400	37,600	15,700
Computer and mathematical sciences.....	51,200	19,200	17,000	1,200	1,100	29,300	28,100	1,200	2,600	2,100	500
Computer and information sciences.....	17,100	9,200	8,700	300	300	7,400	7,200	200	500	400	S
Mathematics and statistics .....	34,000	10,000	8,300	900	800	21,900	20,900	1,000	2,100	1,700	500
Biological, agricultural, and environmental life sciences .....	190,600	64,600	49,400	5,100	10,100	105,800	100,100	5,700	20,200	16,500	3,700
Agricultural and food sciences .....	19,400	8,300	7,100	600	600	9,100	8,600	500	2,100	1,600	400
Biological sciences .....	165,500	54,700	41,300	4,300	9,100	94,300	89,300	5,000	16,400	13,600	2,800
Environmental life sciences.....	5,700	1,600	1,000	200	300	2,400	2,300	200	1,700	1,300	500
Physical and related sciences .....	140,600	72,300	63,200	4,500	4,600	55,000	50,500	4,500	13,200	10,100	3,100
Chemistry, except biochemistry.....	71,100	43,100	38,800	2,500	1,700	23,300	20,700	2,600	4,700	3,200	1,600
Earth, atmospheric, and ocean sciences.....	17,900	5,100	4,000	600	500	9,700	9,100	600	3,100	2,300	800
Physics and astronomy .....	47,800	22,200	18,700	1,300	2,200	20,600	19,300	1,300	5,000	4,300	600
Other .....	3,800	2,000	1,800	100	S	1,400	1,400	S	400	300	S
Social and related sciences.....	185,400	69,200	31,300	23,500	14,400	98,900	88,100	10,800	17,300	8,900	8,400
Economics .....	23,800	7,200	5,300	1,100	900	13,200	12,800	300	3,400	2,900	500
Political and related sciences.....	20,500	4,800	2,600	1,100	1,100	13,900	12,900	1,000	1,900	900	900
Psychology .....	96,500	47,000	18,100	19,900	9,100	40,800	33,900	6,800	8,700	3,300	5,400
Sociology and anthropology .....	26,700	5,700	2,300	900	2,600	18,900	17,700	1,200	2,100	1,200	900

**Employed individuals with S&E or S&E-related highest degree, by highest degree, field of highest degree, and employment sector: 2003**

Degree and field	Employed individuals	Business/industry				Education			Government		
		All business/industry	Profit	Self-employed	Nonprofit	All education	4-year college/university	Other	All government	Federal	State/local
Other .....	18,000	4,500	3,100	600	800	12,200	10,800	1,400	1,300	600	700
Engineering .....	121,800	77,600	69,400	4,900	3,300	34,300	32,800	1,400	9,900	7,800	2,100
Aerospace, aeronautical, and astronautical.....	6,000	3,600	2,900	500	200	1,600	1,600	S	700	700	S
Chemical.....	16,400	12,000	10,800	600	600	3,100	2,900	300	1,300	700	600
Civil and architectural .....	10,800	5,600	5,200	300	200	4,000	3,900	S	1,100	700	500
Electrical and computer .....	35,500	23,900	21,500	1,500	900	9,700	9,400	300	1,800	1,700	200
Industrial.....	3,700	1,700	1,600	S	S	1,800	1,800	S	200	200	S
Mechanical .....	15,200	10,300	9,300	600	400	4,100	4,000	100	800	800	S
Other .....	34,200	20,500	18,100	1,300	1,000	9,800	9,300	500	3,900	3,100	800
S&E-related fields .....	58,100	24,000	17,400	2,400	4,100	29,000	26,900	2,100	5,100	2,000	3,100
Health .....	41,700	16,500	10,600	2,000	4,000	20,500	19,700	800	4,600	1,900	2,700
Science and mathematics teacher education.....	6,800	S	S	S	S	6,500	5,300	1,200	S	S	S
Technology and technical fields.....	2,800	2,100	2,100	S	S	S	S	S	S	S	S
Other.....	6,800	5,100	S	S	S	1,400	1,400	S	S	S	S

S = suppressed for reasons of confidentiality and/or data reliability

\*Includes professional degrees.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT), preliminary estimates (2003), <http://sestat.nsf.gov>.

Science and Engineering Indicators 2006

Appendix table 3-10

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**Individuals in S&E and S&E-related occupations, by highest degree, occupation, sex, race/ethnicity, and employment status: 2003**

Degree, occupation, sex, and race/ethnicity	All individuals	All employed	Employed			Not in labor force		
			Full time	Part time	Unemployed, seeking job	All not in labor force	Retired	Not seeking job
<b>All degree levels<sup>a</sup></b>								
S&E occupations.....	5,702,700	4,927,500	4,555,400	372,100	167,400	607,700	381,400	226,400
Male.....	4,115,400	3,597,100	3,424,300	172,800	120,100	398,200	333,500	64,700
Female.....	1,587,300	1,330,500	1,131,100	199,400	47,300	209,500	47,900	161,600
Asian.....	801,700	697,100	656,400	40,700	42,300	62,300	17,400	44,900
American Indian/Alaska Native.....	18,900	17,300	16,500	800	S	1,300	700	600
Black, non-Hispanic.....	237,600	215,800	207,300	8,500	9,100	12,600	7,700	5,000
Hispanic.....	239,900	214,300	205,200	9,000	5,300	20,300	8,600	11,800
White, non-Hispanic.....	4,317,600	3,706,100	3,399,200	306,900	107,900	503,700	344,400	159,200
Other.....	87,000	77,000	70,900	6,100	2,500	7,500	2,600	4,900
Scientists.....	3,834,900	3,372,700	3,064,500	308,200	106,900	355,300	172,400	182,900
Male.....	2,457,600	2,214,500	2,090,700	123,900	68,600	174,400	129,000	45,400
Female.....	1,377,400	1,158,200	973,800	184,300	38,300	180,900	43,400	137,500
Asian.....	580,300	502,300	469,300	33,000	29,400	48,600	8,500	40,100
American Indian/Alaska Native.....	13,900	12,500	11,800	700	S	1,200	700	500
Black, non-Hispanic.....	180,400	163,000	154,900	8,100	7,100	10,200	5,600	4,600
Hispanic.....	148,800	134,500	127,000	7,600	2,900	11,400	3,400	8,000
White, non-Hispanic.....	2,852,600	2,509,100	2,255,700	253,400	65,300	278,100	152,700	125,400
Other.....	59,000	51,200	45,800	5,400	1,900	5,900	1,500	4,300
Computer and mathematical scientists.....	2,238,500	2,008,500	1,880,700	127,800	78,400	151,600	62,300	89,300
Male.....	1,563,000	1,438,700	1,384,300	54,400	53,400	70,900	46,600	24,300
Female.....	675,500	569,800	496,400	73,400	25,000	80,700	15,700	65,000
Asian.....	408,200	357,400	340,500	16,900	24,900	25,900	3,300	22,600
American Indian/Alaska Native.....	4,100	3,600	3,300	S	S	S	S	S
Black, non-Hispanic.....	115,200	105,900	103,000	3,000	4,500	4,700	1,600	3,200
Hispanic.....	82,700	76,500	74,000	2,600	2,500	3,600	1,600	2,000
White, non-Hispanic.....	1,591,700	1,431,600	1,329,700	101,900	45,000	115,200	55,200	60,000
Other.....	36,600	33,400	30,300	3,100	1,300	1,900	600	1,300
Life and related scientists.....	652,400	554,500	506,800	47,700	11,900	86,000	43,700	42,300
Male.....	359,400	314,200	297,100	17,100	6,100	39,200	29,000	10,200
Female.....	293,000	240,400	209,800	30,600	5,900	46,800	14,700	32,100
Asian.....	89,800	78,500	73,900	4,600	2,200	9,100	2,100	7,000
American Indian/Alaska Native.....	4,600	3,900	3,800	100	S	700	S	S
Black, non-Hispanic.....	23,700	20,400	19,300	1,100	900	2,400	1,700	700
Hispanic.....	26,900	23,100	22,200	900	200	3,600	1,000	2,600
White, non-Hispanic.....	498,000	422,500	381,900	40,700	8,400	67,100	37,800	29,300
Other.....	9,500	6,200	5,800	S	S	3,100	S	2,500
Physical and related scientists.....	375,700	315,100	290,900	24,200	8,800	51,900	36,300	15,600
Male.....	267,400	225,100	211,400	13,800	5,500	36,800	32,900	3,800
Female.....	108,300	89,900	79,500	10,400	3,200	15,100	3,300	11,800
Asian.....	46,900	38,600	35,000	3,600	1,800	6,500	1,700	4,700
American Indian/Alaska Native.....	1,500	1,500	1,500	S	S	S	S	S
Black, non-Hispanic.....	9,900	8,800	7,900	900	500	600	200	400
Hispanic.....	13,600	12,600	12,200	400	S	1,000	300	700
White, non-Hispanic.....	298,600	248,900	230,500	18,400	6,200	43,500	33,900	9,600
Other.....	5,200	4,600	3,800	900	S	S	S	S
Social and related scientists.....	568,300	494,600	386,100	108,500	7,900	65,900	30,200	35,700
Male.....	267,700	236,500	197,900	38,600	3,600	27,600	20,600	7,000
Female.....	300,600	258,100	188,200	69,900	4,200	38,300	9,600	28,700
Asian.....	35,400	27,700	19,900	7,800	600	7,100	1,300	5,800
American Indian/Alaska Native.....	3,700	3,500	3,200	300	S	200	200	S
Black, non-Hispanic.....	31,500	27,900	24,800	3,200	1,200	2,400	2,100	300
Hispanic.....	25,700	22,300	18,600	3,700	S	3,200	500	2,800
White, non-Hispanic.....	464,300	406,100	313,600	92,400	5,800	52,400	25,900	26,500
Other.....	7,800	7,000	5,900	1,100	S	600	S	S
Engineers.....	1,867,800	1,554,900	1,490,900	63,900	60,500	252,400	208,900	43,400
Male.....	1,657,800	1,382,500	1,333,600	48,900	51,500	223,800	204,400	19,400

Appendix table 3-10

**Individuals in S&E and S&E-related occupations, by highest degree, occupation, sex, race/ethnicity, and employment status: 2003**

Degree, occupation, sex, and race/ethnicity	All individuals	All employed	Employed			Not in labor force		
			Full time	Part time	Unemployed, seeking job	All not in labor force	Retired	Not seeking job
Female .....	209,900	172,300	157,300	15,000	9,000	28,600	4,500	24,100
Asian.....	221,400	194,800	187,100	7,800	12,900	13,700	8,900	4,800
American Indian/Alaska Native .....	5,000	4,800	4,700	S	S	S	S	S
Black, non-Hispanic .....	57,200	52,800	52,400	400	2,000	2,400	2,100	400
Hispanic.....	91,100	79,700	78,300	1,500	2,500	8,900	5,200	3,700
White, non-Hispanic .....	1,465,100	1,197,000	1,143,500	53,500	42,600	225,500	191,700	33,900
Other.....	28,000	25,800	25,100	700	500	1,600	1,100	500
S&E-related occupations .....	6,115,000	5,220,600	4,494,600	726,000	107,700	786,800	416,400	370,400
Male.....	2,680,600	2,333,700	2,215,500	118,200	55,300	291,700	239,900	51,800
Female .....	3,434,400	2,886,900	2,279,100	607,800	52,400	495,200	176,500	318,600
Asian.....	551,600	482,100	432,800	49,400	15,500	54,100	18,600	35,400
American Indian/Alaska Native .....	23,600	20,800	18,200	2,600	S	2,400	S	S
Black, non-Hispanic.....	323,100	287,400	273,200	14,200	6,900	28,700	16,400	12,300
Hispanic.....	301,500	266,700	242,200	24,500	6,300	28,600	13,700	14,800
White, non-Hispanic .....	4,808,300	4,071,300	3,447,100	624,200	77,900	659,100	357,700	301,400
Other.....	107,000	92,200	81,100	11,100	800	14,000	9,100	4,900
<b>Bachelor's</b>								
S&E occupations .....	3,256,200	2,799,200	2,633,200	166,000	104,400	352,600	217,300	135,300
Male.....	2,423,800	2,103,200	2,028,700	74,500	80,500	240,000	199,700	40,400
Female.....	832,500	696,000	604,500	91,500	23,900	112,600	17,600	95,000
Asian.....	328,300	278,900	264,800	14,100	20,100	29,400	5,900	23,500
American Indian/Alaska Native .....	12,000	11,000	10,900	S	S	S	S	S
Black, non-Hispanic .....	151,800	139,400	135,700	3,700	5,000	7,400	4,500	2,900
Hispanic.....	155,000	138,900	134,300	4,600	3,800	12,300	6,000	6,300
White, non-Hispanic .....	2,550,500	2,178,700	2,039,000	139,700	73,700	298,100	199,600	98,500
Other.....	58,600	52,300	48,400	3,900	1,500	4,800	1,000	3,800
Scientists .....	2,025,300	1,789,700	1,658,300	131,400	60,900	174,700	65,900	108,800
Male .....	1,324,700	1,201,100	1,151,800	49,300	43,800	79,800	51,400	28,400
Female.....	700,600	588,600	506,500	82,100	17,100	94,900	14,500	80,400
Asian.....	231,500	194,500	183,200	11,300	13,300	23,600	1,700	21,900
American Indian/Alaska Native .....	7,600	6,800	6,800	S	S	S	S	S
Black, non-Hispanic .....	109,800	99,900	96,400	3,500	3,500	6,400	3,700	2,700
Hispanic.....	90,400	82,300	78,900	3,400	1,900	6,300	2,100	4,200
White, non-Hispanic .....	1,549,100	1,374,000	1,264,000	110,000	41,000	134,000	57,600	76,500
Other .....	36,900	32,100	28,900	3,200	1,000	3,800	S	3,300
<b>Computer and mathematical</b>								
scientists .....	1,473,300	1,331,400	1,251,900	79,500	49,000	92,900	33,000	59,900
Male .....	1,021,700	945,800	915,800	30,000	36,400	39,400	23,700	15,700
Female.....	451,600	385,500	336,100	49,500	12,600	53,500	9,300	44,100
Asian .....	186,300	162,000	155,600	6,400	11,300	12,900	1,000	11,900
American Indian/Alaska Native.....	2,900	2,400	2,400	S	S	S	S	S
Black, non-Hispanic .....	82,800	76,600	75,000	1,600	2,900	3,300	1,300	2,000
Hispanic.....	62,700	57,900	56,400	1,500	1,800	3,000	S	1,700
White, non-Hispanic.....	1,113,400	1,009,000	940,900	68,100	32,200	72,300	29,000	43,300
Other .....	25,200	23,400	21,600	1,900	700	1,200	S	700
Life and related scientists .....	239,800	195,500	179,300	16,200	5,900	38,500	13,000	25,400
Male .....	122,000	102,000	97,100	4,800	3,500	16,500	9,300	7,200
Female.....	117,800	93,500	82,100	11,300	2,300	22,000	3,700	18,300
Asian .....	20,600	15,900	14,300	S	S	3,800	S	3,700
American Indian/Alaska Native.....	3,300	2,900	2,900	S	S	S	S	S
Black, non-Hispanic .....	9,000	7,800	7,500	S	S	1,100	S	S
Hispanic.....	10,500	8,700	8,100	500	S	1,800	S	1,200
White, non-Hispanic.....	190,800	157,100	143,600	13,500	4,500	29,200	11,200	18,000
Other .....	5,600	3,100	2,900	S	S	S	S	S
Physical and related scientists .....	168,400	139,400	130,100	9,300	3,600	25,400	15,200	10,200
Male .....	108,900	90,000	85,200	4,800	2,000	17,000	14,800	2,100
Female.....	59,500	49,400	44,900	4,500	1,600	8,400	S	8,100
Asian .....	15,800	11,000	9,100	1,800	1,100	3,700	S	3,100



Appendix table 3-10

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**Individuals in S&E and S&E-related occupations, by highest degree, occupation, sex, race/ethnicity, and employment status: 2003**

Degree, occupation, sex, and race/ethnicity	All individuals	All employed	Employed			Not in labor force		
			Full time	Part time	Unemployed, seeking job	All not in labor force	Retired	Not seeking job
American Indian/Alaska Native...	900	900	900	S	S	S	S	S
Black, non-Hispanic.....	6,000	5,500	4,700	800	S	400	S	S
Hispanic.....	8,600	7,800	7,700	100	S	800	S	700
White, non-Hispanic.....	133,800	111,100	105,200	6,000	2,400	20,200	14,200	6,000
Other.....	3,300	3,100	2,400	600	S	S	S	S
Social and related scientists.....	143,800	123,500	97,000	26,500	2,400	17,900	4,600	13,300
Male.....	72,100	63,300	53,600	9,700	S	6,900	3,500	3,400
Female.....	71,700	60,100	43,300	16,800	S	11,000	S	9,900
Asian.....	8,800	5,600	4,100	S	S	3,200	S	3,200
American Indian/Alaska Native...	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	11,900	10,000	9,200	900	S	S	S	S
Hispanic.....	8,600	7,900	6,700	1,200	S	600	S	600
White, non-Hispanic.....	111,000	96,800	74,400	22,500	S	12,300	3,200	9,100
Other.....	2,800	S	S	S	S	S	S	S
Engineers.....	1,230,900	1,009,500	975,000	34,600	43,400	178,000	151,500	26,500
Male.....	1,099,100	902,100	876,900	25,200	36,700	160,200	148,300	11,900
Female.....	131,900	107,400	98,000	9,400	6,700	17,700	3,100	14,600
Asian.....	96,900	84,400	81,600	2,800	6,800	5,700	4,200	1,600
American Indian/Alaska Native.....	4,300	4,100	4,100	S	S	S	S	S
Black, non-Hispanic.....	42,000	39,500	39,300	100	1,500	1,000	800	S
Hispanic.....	64,600	56,600	55,400	1,200	2,000	6,000	3,900	2,200
White, non-Hispanic.....	1,001,500	804,700	775,000	29,700	32,700	164,100	142,100	22,000
Other.....	21,600	20,200	19,500	700	S	1,000	S	S
S&E-related occupations.....	3,489,300	2,938,500	2,466,200	472,300	56,900	493,900	215,200	278,700
Male.....	1,256,700	1,101,100	1,055,700	45,300	26,200	129,500	92,800	36,600
Female.....	2,232,600	1,837,400	1,410,500	427,000	30,700	364,400	122,400	242,000
Asian.....	289,400	246,100	217,800	28,300	7,500	35,900	9,300	26,600
American Indian/Alaska Native.....	16,500	14,000	12,200	1,800	S	2,200	S	S
Black, non-Hispanic.....	206,000	184,600	175,200	9,400	3,900	17,400	8,600	8,800
Hispanic.....	178,400	157,900	143,800	14,100	3,700	16,800	6,500	10,400
White, non-Hispanic.....	2,725,100	2,272,200	1,859,800	412,400	40,900	412,000	185,100	226,900
Other.....	73,900	63,700	57,400	6,400	S	9,600	5,300	4,300
<b>Master's</b>								
S&E occupations.....	1,683,000	1,453,300	1,314,400	138,900	49,700	180,100	105,800	74,300
Male.....	1,152,000	1,016,200	956,100	60,200	30,700	105,100	84,900	20,200
Female.....	531,000	437,000	358,400	78,700	19,000	75,000	20,900	54,100
Asian.....	332,000	288,300	268,000	20,300	18,500	25,100	6,900	18,200
American Indian/Alaska Native.....	3,200	2,900	2,500	S	S	S	S	S
Black, non-Hispanic.....	60,500	53,100	49,900	3,200	3,200	4,300	2,300	1,900
Hispanic.....	60,200	52,900	50,200	2,700	1,300	6,000	2,100	4,000
White, non-Hispanic.....	1,203,100	1,035,400	924,200	111,300	25,700	141,900	92,900	49,000
Other.....	24,100	20,600	19,600	1,000	1,000	2,500	1,500	1,000
Scientists.....	1,155,900	1,003,700	888,100	115,600	36,000	116,200	57,500	58,800
Male.....	692,200	622,100	580,200	42,000	18,600	51,500	37,900	13,600
Female.....	463,700	381,500	307,900	73,700	17,400	64,800	19,600	45,200
Asian.....	240,200	207,500	191,600	16,000	13,900	18,700	3,400	15,300
American Indian/Alaska Native.....	2,900	2,700	2,400	S	S	S	S	S
Black, non-Hispanic.....	47,400	41,800	38,800	3,000	2,700	2,800	1,100	1,700
Hispanic.....	36,700	32,600	30,000	2,500	800	3,300	800	2,400
White, non-Hispanic.....	810,700	703,700	610,900	92,800	17,600	89,400	51,200	38,200
Other.....	18,100	15,400	14,400	1,000	900	1,800	S	S
<b>Computer and mathematical</b>								
scientists.....	655,400	578,200	538,400	39,800	27,300	49,900	21,700	28,200
Male.....	453,200	413,900	396,200	17,700	15,300	23,900	15,900	8,000
Female.....	202,200	164,300	142,100	22,100	11,900	26,000	5,800	20,200
Asian.....	195,200	170,200	160,900	9,300	12,900	12,100	1,900	10,300
American Indian/Alaska Native...	1,000	1,000	700	S	S	S	S	S
Black, non-Hispanic.....	27,600	24,600	23,500	1,100	1,600	1,400	S	1,100

Appendix table 3-10

**Individuals in S&E and S&E-related occupations, by highest degree, occupation, sex, race/ethnicity, and employment status: 2003**

Degree, occupation, sex, and race/ethnicity	All individuals	All employed	Employed			Not in labor force		
			Full time	Part time	Unemployed, seeking job	All not in labor force	Retired	Not seeking job
Hispanic.....	17,900	16,700	15,900	800	S	500	S	300
White, non-Hispanic.....	403,500	356,900	328,800	28,100	11,500	35,100	19,200	15,900
Other.....	10,200	8,800	8,600	S	S	S	S	S
Life and related scientists.....	155,200	128,700	112,700	16,000	2,100	24,300	13,200	11,100
Male.....	71,600	62,300	58,900	3,400	S	8,700	6,700	2,000
Female.....	83,500	66,400	53,800	12,600	1,600	15,600	6,500	9,100
Asian.....	18,000	14,400	13,500	900	S	3,300	600	2,700
American Indian/Alaska Native.....	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	6,100	5,100	4,800	300	S	1,000	S	S
Hispanic.....	6,300	5,200	5,000	S	S	1,100	S	800
White, non-Hispanic.....	122,000	102,200	87,800	14,400	1,700	18,100	11,100	7,000
Other.....	2,500	1,700	1,500	S	S	S	S	S
Physical and related scientists.....	97,900	82,900	73,700	9,100	2,700	12,300	9,200	3,100
Male.....	65,200	55,900	51,400	4,500	1,500	7,800	6,900	900
Female.....	32,800	27,000	22,400	4,600	1,200	4,500	2,300	2,300
Asian.....	11,200	10,100	8,800	1,200	S	900	S	700
American Indian/Alaska Native.....	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	2,400	1,900	1,900	S	S	S	S	S
Hispanic.....	2,900	2,900	2,700	200	S	S	S	S
White, non-Hispanic.....	79,600	66,500	59,100	7,400	1,900	11,200	9,000	2,300
Other.....	1,700	1,400	1,200	S	S	S	S	S
Social and related scientists.....	247,400	213,900	163,200	50,700	3,900	29,700	13,400	16,300
Male.....	102,200	90,000	73,600	16,400	1,200	11,000	8,300	2,700
Female.....	145,200	123,800	89,600	34,300	2,600	18,700	5,100	13,600
Asian.....	15,800	12,900	8,400	4,500	S	2,400	S	1,600
American Indian/Alaska Native.....	1,500	1,500	1,500	S	S	S	S	S
Black, non-Hispanic.....	11,300	10,200	8,600	1,700	S	400	S	S
Hispanic.....	9,500	7,800	6,500	1,300	S	1,700	S	1,400
White, non-Hispanic.....	205,600	178,100	135,300	42,800	2,600	24,900	11,900	13,000
Other.....	3,700	3,400	3,000	S	S	S	S	S
Engineers.....	527,200	449,600	426,400	23,200	13,700	63,800	48,300	15,500
Male.....	459,900	394,100	375,900	18,200	12,100	53,600	47,100	6,600
Female.....	67,300	55,500	50,500	5,000	1,600	10,200	1,300	9,000
Asian.....	91,800	80,800	76,500	4,300	4,600	6,500	3,600	2,900
American Indian/Alaska Native.....	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	13,200	11,300	11,100	S	500	1,400	1,200	200
Hispanic.....	23,600	20,400	20,200	200	500	2,700	1,200	1,500
White, non-Hispanic.....	392,400	331,700	313,200	18,500	8,100	52,600	41,800	10,800
Other.....	6,000	5,200	5,200	S	S	600	S	S
S&E-related occupations.....	1,406,200	1,196,200	1,053,700	142,500	38,000	172,000	107,900	64,000
Male.....	571,600	479,000	455,400	23,600	22,200	70,500	65,000	5,500
Female.....	834,600	717,200	598,300	118,900	15,800	101,500	43,000	58,500
Asian.....	99,700	86,600	78,900	7,800	4,600	8,400	3,500	4,900
American Indian/Alaska Native.....	3,700	3,500	3,200	S	S	S	S	S
Black, non-Hispanic.....	73,500	64,600	62,500	2,000	1,300	7,600	5,500	2,100
Hispanic.....	51,000	43,700	39,400	4,300	S	6,500	3,300	3,200
White, non-Hispanic.....	1,161,700	983,100	858,000	125,100	31,200	147,400	94,100	53,300
Other.....	16,700	14,800	11,700	3,000	S	1,800	S	S
Doctoral								
S&E occupations.....	663,600	581,800	525,800	55,900	12,800	69,100	55,100	13,900
Male.....	478,200	419,600	388,700	30,900	8,400	50,200	46,300	3,900
Female.....	185,500	162,200	137,100	25,000	4,400	18,900	8,800	10,100
Asian.....	127,300	116,100	111,200	4,900	3,600	7,500	4,600	2,900
American Indian/Alaska Native.....	3,800	3,400	3,000	400	S	300	200	100
Black, non-Hispanic.....	21,000	19,200	18,000	1,200	1,000	800	600	200
Hispanic.....	18,800	17,200	15,600	1,600	200	1,500	600	900
White, non-Hispanic.....	491,000	424,300	376,600	47,600	8,000	58,800	49,000	9,800
Other.....	1,800	1,600	1,400	200	S	200	S	S

Appendix table 3-10

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**Individuals in S&E and S&E-related occupations, by highest degree, occupation, sex, race/ethnicity, and employment status: 2003**

Degree, occupation, sex, and race/ethnicity	All individuals	All employed	Employed			Not in labor force		
			Full time	Part time	Unemployed, seeking job	All not in labor force	Retired	Not seeking job
Scientists .....	556,500	488,400	438,200	50,200	9,500	58,600	46,100	12,500
Male .....	381,000	334,800	309,100	25,700	5,800	40,400	37,400	3,000
Female .....	175,500	153,500	129,000	24,500	3,700	18,200	8,700	9,500
Asian .....	94,800	86,700	82,300	4,400	2,100	6,000	3,400	2,600
American Indian/Alaska Native .....	3,400	3,000	2,600	400	S	300	200	100
Black, non-Hispanic .....	19,000	17,300	16,200	1,100	1,000	800	600	200
Hispanic .....	16,000	14,500	13,000	1,500	100	1,300	400	900
White, non-Hispanic .....	421,800	365,500	322,800	42,700	6,300	50,000	41,200	8,800
Other .....	1,600	1,400	1,200	S	S	200	S	S
Computer and mathematical scientists .....	96,100	86,400	80,500	5,900	1,600	8,000	6,800	1,200
Male .....	77,700	69,700	65,300	4,400	1,300	6,800	6,200	600
Female .....	18,400	16,800	15,300	1,500	400	1,200	600	600
Asian .....	25,100	23,700	22,700	1,000	600	800	400	400
American Indian/Alaska Native .....	300	300	200	S	S	S	S	S
Black, non-Hispanic .....	4,500	4,500	4,200	300	S	S	S	S
Hispanic .....	2,000	1,900	1,700	200	S	100	100	S
White, non-Hispanic .....	64,000	56,000	51,700	4,400	1,000	7,000	6,200	800
Other .....	100	100	100	S	S	S	S	S
Life and related scientists .....	196,000	171,600	160,900	10,700	3,800	20,500	16,300	4,300
Male .....	125,000	110,500	105,000	5,400	1,900	12,700	11,800	900
Female .....	71,000	61,200	55,900	5,300	2,000	7,800	4,400	3,400
Asian .....	40,000	37,200	36,000	1,200	900	1,800	1,500	400
American Indian/Alaska Native .....	900	900	800	S	S	100	S	S
Black, non-Hispanic .....	5,700	4,600	4,400	200	800	300	200	S
Hispanic .....	6,000	5,600	5,500	200	S	300	100	200
White, non-Hispanic .....	142,800	122,900	113,700	9,100	2,000	17,900	14,400	3,500
Other .....	500	400	400	S	S	S	S	S
Physical and related scientists .....	107,100	90,500	84,800	5,700	2,500	14,100	11,900	2,300
Male .....	91,300	77,300	72,800	4,500	2,100	12,000	11,100	800
Female .....	15,800	13,300	12,000	1,300	400	2,200	700	1,500
Asian .....	19,700	17,400	16,800	500	500	1,900	1,000	900
American Indian/Alaska Native .....	500	500	400	S	S	S	S	S
Black, non-Hispanic .....	1,500	1,400	1,400	100	100	100	S	S
Hispanic .....	2,000	1,900	1,800	100	S	100	100	S
White, non-Hispanic .....	83,200	69,200	64,200	5,000	1,900	12,100	10,700	1,300
Other .....	200	200	200	S	S	S	S	S
Social and related scientists .....	157,300	139,800	111,900	27,900	1,600	16,000	11,200	4,800
Male .....	87,000	77,400	66,000	11,400	600	9,000	8,200	800
Female .....	70,300	62,300	45,900	16,500	1,000	7,000	3,000	4,000
Asian .....	10,000	8,400	6,800	1,600	S	1,500	500	900
American Indian/Alaska Native .....	1,600	1,400	1,200	300	S	200	200	S
Black, non-Hispanic .....	7,200	6,800	6,200	600	100	300	300	S
Hispanic .....	5,900	5,100	4,000	1,100	S	800	100	700
White, non-Hispanic .....	131,700	117,400	93,200	24,200	1,400	13,000	9,900	3,100
Other .....	800	600	500	S	S	S	S	S
Engineers .....	107,200	93,400	87,700	5,700	3,300	10,500	9,000	1,400
Male .....	97,100	84,800	79,600	5,200	2,500	9,800	9,000	900
Female .....	10,000	8,600	8,100	500	700	600	S	600
Asian .....	32,500	29,400	28,900	600	1,500	1,500	1,100	400
American Indian/Alaska Native .....	400	400	400	S	S	S	S	S
Black, non-Hispanic .....	2,000	1,900	1,800	100	S	S	S	S
Hispanic .....	2,800	2,600	2,600	S	S	200	S	S
White, non-Hispanic .....	69,200	58,700	53,800	5,000	1,700	8,800	7,800	1,000
Other .....	300	300	200	S	S	S	S	S
S&E-related occupations .....	96,100	81,700	76,000	5,700	2,500	11,900	9,000	2,900
Male .....	63,000	51,900	49,000	2,900	1,900	9,100	7,900	1,300
Female .....	33,100	29,800	27,000	2,800	600	2,700	1,100	1,600
Asian .....	13,900	12,200	11,600	600	800	800	500	S

Appendix table 3-10

**Individuals in S&E and S&E-related occupations, by highest degree, occupation, sex, race/ethnicity, and employment status: 2003**

Degree, occupation, sex, and race/ethnicity	All individuals	All employed	Employed		Unemployed, seeking job	Not in labor force		
			Full time	Part time		All not in labor force	Retired	Not seeking job
American Indian/Alaska Native .....	300	300	300	S	S	S	S	S
Black, non-Hispanic .....	4,000	3,300	3,100	200	S	500	S	S
Hispanic .....	3,800	3,200	2,600	600	S	400	S	300
White, non-Hispanic .....	72,600	62,100	57,900	4,200	1,300	9,100	6,900	2,200
Other .....	1,500	600	600	S	S	S	S	S

S = suppressed for reasons of confidentiality and/or data reliability

<sup>a</sup>Includes professional degrees.

NOTE: For unemployed individuals and those not in labor force, occupation is for previous reported job.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT), preliminary estimates (2003), <http://sestat.nsf.gov>.

Appendix table 3-11

(Page 1 of 6)

**Median annual salaries of U.S. individuals in S&E and S&E-related occupations, by highest degree, occupation, sex, race/ethnicity, and years since degree: 2003**

(Dollars)

Degree, occupation, sex, and race/ethnicity	Employed individuals	Years since highest degree							
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35+
<b>All degree levels<sup>a</sup></b>									
S&E occupations.....	69,500	52,000	65,000	72,000	78,000	80,000	76,800	80,000	82,000
Male.....	72,000	55,000	69,800	75,000	80,000	82,000	80,000	80,000	85,000
Female.....	58,000	45,500	58,000	64,000	70,000	66,000	62,000	63,000	60,000
Asian.....	71,000	58,000	75,000	80,000	81,000	80,000	78,500	82,900	75,000
American Indian/Alaska Native.....	60,000	55,000	56,000	64,000	54,000	75,000	82,900	82,000	90,000
Black, non-Hispanic.....	60,000	55,000	58,000	60,000	67,000	71,600	64,300	75,000	55,000
Hispanic.....	60,000	50,000	62,300	60,000	70,000	73,900	70,000	65,000	70,000
White, non-Hispanic.....	70,000	51,000	65,000	72,000	78,800	80,000	78,000	80,000	85,000
Other.....	61,000	42,500	61,000	70,000	81,000	62,000	78,000	89,000	67,300
Scientists.....	65,000	50,000	64,000	70,000	75,000	75,000	72,000	75,000	80,000
Male.....	70,000	53,000	69,000	75,000	80,000	78,000	75,000	78,000	86,000
Female.....	56,000	44,500	55,000	62,000	70,000	65,000	62,000	66,000	60,000
Asian.....	70,000	55,000	72,000	80,000	80,000	70,000	75,000	81,100	72,000
American Indian/Alaska Native.....	56,000	50,000	56,000	60,000	45,000	60,000	60,000	82,000	S
Black, non-Hispanic.....	58,000	53,000	55,000	59,000	65,000	63,900	65,000	64,000	65,000
Hispanic.....	55,000	46,000	60,000	55,000	70,000	66,000	60,000	45,000	70,000
White, non-Hispanic.....	66,000	48,000	62,000	70,000	76,000	75,000	72,000	75,000	83,000
Other.....	55,000	40,000	58,000	55,000	85,000	51,000	74,000	48,000	S
Computer and mathematical scientists.....	70,000	59,000	70,000	73,000	80,000	80,000	72,100	76,000	80,000
Male.....	74,000	60,000	72,000	75,000	83,000	80,500	77,000	80,000	85,000
Female.....	62,000	53,500	61,000	64,000	72,300	70,000	60,000	72,000	58,500
Asian.....	75,000	62,000	75,000	81,000	85,000	75,000	80,000	81,100	72,400
American Indian/Alaska Native.....	56,000	50,000	56,000	S	S	S	S	S	S
Black, non-Hispanic.....	60,000	56,000	60,000	64,000	63,000	70,000	64,300	64,000	S
Hispanic.....	60,000	54,000	65,000	60,000	78,000	65,000	60,000	45,000	69,000
White, non-Hispanic.....	70,500	58,000	70,000	72,000	80,000	80,000	72,000	78,000	80,400
Other.....	60,000	56,000	58,000	57,000	85,000	50,000	78,000	S	S
Life and related scientists.....	52,000	38,000	50,000	60,000	60,300	65,000	67,000	72,000	80,000
Male.....	55,000	39,900	50,000	61,500	60,300	69,500	69,000	73,000	92,000
Female.....	48,600	36,000	50,000	58,000	62,000	60,000	61,000	61,200	58,000
Asian.....	50,000	37,000	60,000	70,200	65,000	70,000	61,000	93,400	100,000
American Indian/Alaska Native.....	45,000	47,100	16,800	50,000	40,000	58,100	S	S	S
Black, non-Hispanic.....	53,000	50,000	54,000	47,000	75,000	56,000	53,700	121,000	40,000
Hispanic.....	50,000	36,000	49,000	55,000	62,000	73,000	86,000	75,000	70,000
White, non-Hispanic.....	53,000	38,000	50,000	60,000	60,300	65,000	68,000	68,000	90,000
Other.....	40,000	36,000	50,000	40,000	120,000	S	S	S	S
Physical and related scientists.....	60,000	42,300	55,000	66,000	71,000	67,000	77,000	66,000	78,000
Male.....	65,000	44,000	60,000	70,000	72,000	74,000	80,000	66,000	82,000
Female.....	47,500	42,000	48,000	55,500	70,000	51,900	70,000	60,000	65,700
Asian.....	60,000	40,000	65,500	77,000	65,000	56,800	60,000	65,000	65,700
American Indian/Alaska Native.....	60,000	36,000	45,000	S	S	S	S	S	S
Black, non-Hispanic.....	53,500	52,000	55,400	41,500	48,000	60,000	53,500	S	S
Hispanic.....	47,000	35,000	40,000	48,000	70,000	50,000	75,000	31,000	55,000
White, non-Hispanic.....	60,600	44,000	53,100	66,300	74,300	70,400	80,000	67,000	83,000
Other.....	40,000	38,000	72,000	S	S	S	S	S	S
Social and related scientists.....	57,000	43,000	51,000	61,000	70,000	65,000	75,000	80,000	80,000
Male.....	63,000	43,000	57,000	66,000	80,000	67,800	81,000	90,000	99,500
Female.....	50,000	43,000	50,000	60,000	60,000	61,800	70,000	50,000	70,000
Asian.....	61,000	54,000	67,000	66,000	60,000	70,000	75,000	175,000	S
American Indian/Alaska Native.....	60,000	137,500	60,000	60,000	54,000	60,000	S	S	S
Black, non-Hispanic.....	53,000	47,000	47,000	57,000	75,000	40,000	70,000	70,000	S
Hispanic.....	48,000	40,000	55,000	50,000	55,000	70,000	42,000	96,000	S
White, non-Hispanic.....	57,000	42,500	51,000	64,000	72,000	67,000	78,000	80,000	85,000
Other.....	43,000	40,000	48,000	S	S	S	S	S	S

Appendix table 3-11

**Median annual salaries of U.S. individuals in S&E and S&E-related occupations, by highest degree, occupation, sex, race/ethnicity, and years since degree: 2003**

(Dollars)

Degree, occupation, sex, and race/ethnicity	Employed individuals	Years since highest degree							
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35+
Engineers.....	74,000	59,500	70,000	77,000	80,000	85,000	83,600	85,000	85,000
Male.....	75,000	60,000	70,000	77,000	80,000	85,000	84,000	85,000	85,000
Female.....	65,000	54,700	67,000	77,000	72,000	76,000	75,000	24,300	59,000
Asian.....	75,000	60,000	80,000	78,300	86,000	80,000	80,400	84,000	86,300
American Indian/Alaska Native.....	75,000	56,000	70,000	96,000	72,000	S	S	S	S
Black, non-Hispanic.....	65,000	60,000	62,100	65,000	72,000	75,000	63,000	82,100	55,000
Hispanic.....	66,700	58,000	65,000	72,000	74,000	82,000	74,000	80,000	75,000
White, non-Hispanic.....	75,000	58,900	68,800	78,000	80,000	85,000	84,500	85,000	85,000
Other.....	73,000	53,500	84,200	82,400	72,000	70,000	90,000	89,000	75,000
S&E-related occupations.....	57,000	45,000	55,000	60,000	65,000	67,000	65,000	63,000	72,800
Male.....	70,000	45,000	60,000	80,000	80,000	86,000	82,000	80,000	90,000
Female.....	50,000	45,000	50,000	50,200	54,000	55,000	55,000	49,900	53,000
Asian.....	60,000	49,000	70,000	65,000	65,000	60,000	63,000	61,000	72,800
American Indian/Alaska Native.....	48,000	48,000	35,000	65,000	108,000	44,500	S	S	S
Black, non-Hispanic.....	50,000	46,000	48,000	50,000	53,000	55,000	57,200	55,000	50,000
Hispanic.....	50,000	36,500	50,000	58,000	57,000	62,000	62,000	75,000	72,000
White, non-Hispanic.....	58,000	45,000	54,000	60,000	69,000	72,000	65,000	65,000	73,000
Other.....	57,000	46,000	50,000	60,000	45,000	50,000	75,000	75,000	110,000
Bachelor's									
S&E occupations.....	65,000	48,000	62,000	69,100	75,000	77,300	72,000	75,000	80,000
Male.....	69,500	50,000	65,000	70,000	78,000	80,000	75,000	77,800	80,600
Female.....	55,000	43,000	55,000	60,000	69,900	65,200	60,000	56,000	60,000
Asian.....	67,000	50,000	70,000	75,000	80,000	73,000	75,000	79,000	72,000
American Indian/Alaska Native.....	57,000	47,100	56,000	65,000	45,000	76,000	S	S	S
Black, non-Hispanic.....	57,500	50,000	55,000	58,500	65,000	70,000	64,000	60,000	65,000
Hispanic.....	58,000	45,000	59,000	58,000	70,000	72,000	65,000	59,000	75,000
White, non-Hispanic.....	67,000	48,000	61,600	70,000	75,000	80,000	73,400	75,000	80,000
Other.....	58,000	40,000	58,500	59,000	72,000	51,000	60,000	89,000	75,000
Scientists.....	62,000	45,000	60,000	66,500	75,000	70,000	67,000	70,000	72,400
Male.....	66,200	48,000	63,400	70,000	78,000	74,400	70,000	70,000	76,200
Female.....	52,000	40,000	53,000	58,100	69,000	63,000	58,000	56,000	60,000
Asian.....	65,000	46,000	69,000	78,000	80,000	70,000	68,000	72,000	68,000
American Indian/Alaska Native.....	47,100	45,000	56,000	S	S	S	S	S	S
Black, non-Hispanic.....	55,000	46,000	52,000	57,600	65,000	62,900	64,000	50,000	S
Hispanic.....	51,000	40,000	59,000	52,300	67,000	60,000	60,000	45,000	57,500
White, non-Hispanic.....	63,000	45,000	60,000	67,000	75,000	73,000	68,000	70,000	78,600
Other.....	50,000	40,000	58,000	50,000	90,000	50,000	53,900	S	S
Computer and mathematical scientists....	68,000	52,000	65,000	70,000	79,000	76,800	70,000	75,000	79,100
Male.....	70,000	53,000	67,000	72,200	81,000	79,000	74,000	78,400	80,600
Female.....	60,000	48,300	58,000	60,000	71,000	70,000	60,000	71,200	57,000
Asian.....	70,000	50,000	69,000	79,900	82,600	70,000	70,000	90,000	70,000
American Indian/Alaska Native.....	56,000	S	56,000	S	S	S	S	S	S
Black, non-Hispanic.....	58,800	55,000	55,000	59,000	65,000	71,000	64,300	55,000	S
Hispanic.....	58,000	48,000	64,000	55,000	78,000	60,000	60,000	45,000	69,000
White, non-Hispanic.....	70,000	53,000	65,000	70,000	80,000	78,000	70,000	76,000	80,000
Other.....	56,900	48,000	58,000	50,000	90,000	50,000	46,400	S	S
Life and related scientists.....	42,000	30,000	40,000	48,000	46,000	52,000	56,000	53,000	50,000
Male.....	45,000	31,500	40,000	48,000	46,000	55,000	55,000	53,400	50,000
Female.....	40,000	28,900	42,000	48,000	45,000	52,000	56,000	48,000	54,000
Asian.....	34,800	30,000	48,000	S	34,800	58,000	60,000	S	S
American Indian/Alaska Native.....	45,000	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	47,000	40,000	S	50,000	S	47,000	S	S	S
Hispanic.....	40,000	32,000	48,600	42,000	S	S	S	S	S
White, non-Hispanic.....	43,800	30,000	40,000	48,000	46,000	51,000	56,000	53,000	52,800
Other.....	36,000	23,500	50,000	S	S	S	S	S	S

Appendix table 3-11

(Page 3 of 6)

**Median annual salaries of U.S. individuals in S&E and S&E-related occupations, by highest degree, occupation, sex, race/ethnicity, and years since degree: 2003**

(Dollars)

Degree, occupation, sex, and race/ethnicity	Employed individuals	Years since highest degree							
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35+
Physical and related scientists .....	47,000	38,000	45,600	52,000	65,000	55,000	58,700	55,000	60,000
Male .....	50,000	35,000	50,000	53,000	65,000	58,000	55,000	52,000	60,000
Female.....	44,500	38,700	42,000	45,000	66,700	44,500	65,000	S	54,000
Asian.....	45,000	40,000	S	S	64,600	30,000	S	S	54,000
American Indian/Alaska Native .....	47,000	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	50,000	35,000	50,000	S	S	S	43,000	S	S
Hispanic.....	40,000	28,000	38,600	42,000	S	S	S	S	S
White, non-Hispanic .....	49,000	40,000	45,100	52,000	66,700	58,000	63,000	60,000	67,000
Other .....	38,000	38,000	S	S	S	S	S	S	S
Social and related scientists.....	45,000	36,000	46,000	58,000	69,800	52,000	73,800	49,000	78,600
Male .....	50,000	35,800	44,000	58,000	75,000	52,000	84,000	90,000	85,000
Female.....	43,000	36,000	48,000	63,500	65,000	61,800	41,000	35,000	S
Asian.....	60,000	40,400	S	S	S	S	S	S	S
American Indian/Alaska Native .....	S	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	40,000	36,000	S	S	S	S	S	S	S
Hispanic.....	45,000	30,000	50,000	50,000	S	S	S	S	S
White, non-Hispanic .....	47,000	36,000	44,000	58,000	70,000	52,000	84,000	39,000	85,000
Other .....	S	S	S	S	S	S	S	S	S
Engineers.....	70,000	53,000	65,000	71,200	76,900	83,600	80,000	80,000	84,000
Male .....	70,500	53,000	65,000	72,000	78,000	85,000	80,000	80,000	84,000
Female.....	60,200	52,000	60,200	69,300	70,000	76,000	75,000	50,300	S
Asian.....	69,000	55,000	80,000	67,500	80,000	80,000	75,000	80,000	79,000
American Indian/Alaska Native .....	75,000	59,200	70,000	96,000	72,000	S	S	S	S
Black, non-Hispanic .....	64,000	55,000	57,000	60,000	70,000	75,000	63,000	82,100	S
Hispanic.....	64,000	51,900	58,200	68,000	72,000	80,500	74,000	76,000	75,000
White, non-Hispanic .....	70,000	52,000	64,000	72,000	78,000	85,000	80,000	80,000	85,000
Other .....	72,000	45,000	90,000	90,000	72,000	69,000	60,000	89,000	S
S&E-related occupations .....	50,000	40,000	48,000	50,000	55,000	57,000	56,000	53,000	55,000
Male.....	57,500	40,000	50,000	60,000	64,000	70,000	66,000	65,000	70,000
Female.....	47,000	40,200	46,000	47,000	50,000	52,000	51,000	48,000	50,000
Asian.....	52,000	42,000	60,000	50,000	50,000	52,000	55,000	52,000	52,000
American Indian/Alaska Native .....	46,000	45,000	35,000	46,500	S	44,500	S	S	S
Black, non-Hispanic .....	46,000	41,000	41,000	46,000	48,000	54,000	50,000	49,000	44,000
Hispanic.....	42,000	35,000	44,000	42,100	48,000	52,000	54,000	30,700	43,800
White, non-Hispanic .....	50,000	40,000	47,000	52,000	60,000	60,000	56,200	53,000	56,700
Other.....	50,000	45,000	42,000	60,000	45,000	49,300	75,000	38,000	S
Master's									
S&E occupations .....	72,100	60,000	75,000	78,000	83,000	80,000	80,000	80,000	80,000
Male.....	78,000	65,000	80,000	82,000	86,000	85,000	82,000	82,700	87,300
Female.....	60,000	50,000	61,000	66,300	68,000	65,000	70,000	59,800	50,000
Asian.....	75,000	64,800	80,000	82,000	90,000	82,000	80,000	82,000	91,000
American Indian/Alaska Native .....	60,000	130,000	S	S	S	S	S	S	S
Black, non-Hispanic .....	65,000	60,000	72,600	66,000	63,000	75,000	75,700	102,000	S
Hispanic.....	65,000	55,000	72,000	65,000	70,000	86,000	60,000	70,000	S
White, non-Hispanic .....	72,000	60,000	72,100	75,000	82,000	80,000	80,600	80,000	80,000
Other.....	73,000	57,000	76,000	82,400	85,000	90,000	80,000	S	65,000
Scientists .....	69,000	56,000	73,000	74,000	79,000	75,000	75,000	67,800	71,600
Male .....	75,000	62,000	80,000	80,000	85,000	82,000	77,000	68,000	84,900
Female.....	57,000	50,000	57,900	65,000	65,000	65,000	70,000	66,000	54,000
Asian.....	75,000	65,000	80,000	82,000	90,000	70,000	79,900	80,000	80,000
American Indian/Alaska Native .....	60,000	130,000	S	S	S	S	S	S	S
Black, non-Hispanic .....	63,000	58,000	65,000	64,000	63,000	65,000	77,600	S	S
Hispanic.....	55,500	55,000	60,000	54,400	65,000	83,000	60,000	62,000	S
White, non-Hispanic .....	68,000	51,000	71,000	70,000	75,000	76,000	75,000	66,000	79,000
Other.....	70,000	56,000	76,000	75,000	85,000	58,000	75,000	S	S

Appendix table 3-11

**Median annual salaries of U.S. individuals in S&E and S&E-related occupations, by highest degree, occupation, sex, race/ethnicity, and years since degree: 2003**

(Dollars)

Degree, occupation, sex, and race/ethnicity	Employed individuals	Years since highest degree							
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35+
Computer and mathematical scientists....	77,000	66,000	80,000	80,000	85,000	85,000	80,000	80,000	84,000
Male .....	80,000	70,000	85,000	86,200	88,000	87,300	80,000	80,000	87,300
Female.....	66,500	60,000	69,000	72,000	75,000	72,500	75,000	80,000	70,000
Asian .....	77,000	67,000	80,000	85,000	90,000	82,000	93,000	80,000	S
American Indian/Alaska Native .....	80,000	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	70,000	65,000	75,000	76,000	63,000	62,400	78,000	S	S
Hispanic.....	65,000	55,000	73,000	65,000	S	80,000	S	S	S
White, non-Hispanic .....	78,000	66,000	80,000	80,000	84,000	87,000	80,000	80,000	84,000
Other .....	80,000	65,000	84,000	106,000	85,000	S	S	S	S
Life and related scientists .....	50,000	41,000	51,500	55,000	54,000	54,500	51,000	50,000	70,000
Male .....	52,000	40,000	60,000	59,000	54,000	52,000	51,000	48,000	70,000
Female.....	46,000	41,000	47,000	50,000	55,000	56,800	55,000	68,000	39,300
Asian .....	50,000	36,000	65,000	42,000	72,000	S	S	S	S
American Indian/Alaska Native .....	S	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	54,000	62,000	54,000	44,900	S	S	S	S	S
Hispanic.....	56,000	35,000	S	53,000	S	S	S	S	S
White, non-Hispanic .....	49,700	40,000	50,000	58,200	54,000	55,000	64,500	50,000	40,000
Other .....	39,000	36,000	S	S	S	S	S	S	S
Physical and related scientists .....	65,500	46,000	60,000	66,300	85,000	84,000	84,000	65,000	84,900
Male .....	70,000	48,500	60,000	75,000	85,000	85,000	85,000	65,000	84,900
Female.....	59,000	45,000	62,000	64,000	80,000	65,000	70,000	S	S
Asian .....	55,000	20,400	65,500	66,000	S	56,800	S	S	S
American Indian/Alaska Native .....	S	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	65,000	74,000	S	S	S	S	S	S	S
Hispanic.....	50,000	45,700	S	54,400	S	S	S	S	S
White, non-Hispanic .....	69,000	49,000	60,000	66,300	85,000	85,000	89,000	55,000	80,000
Other .....	70,000	56,000	S	S	S	S	S	S	S
Social and related scientists.....	53,000	41,200	50,000	57,000	70,000	60,000	68,000	80,000	71,000
Male .....	60,000	44,600	58,000	61,000	87,700	60,000	70,000	95,000	99,500
Female.....	48,500	41,000	44,000	52,000	57,000	56,000	66,000	66,000	50,000
Asian .....	57,000	54,000	65,000	S	S	S	S	S	S
American Indian/Alaska Native .....	60,000	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	58,000	58,000	50,000	S	S	65,000	S	S	S
Hispanic.....	43,700	43,000	44,400	S	S	S	S	S	S
White, non-Hispanic .....	51,600	40,000	48,000	56,500	70,000	60,000	70,000	75,000	71,000
Other .....	58,000	75,000	38,000	S	S	S	S	S	S
Engineers.....	80,000	68,000	78,000	85,000	89,000	86,000	90,000	90,000	88,000
Male .....	80,000	70,000	78,000	85,000	89,000	87,000	90,000	90,000	90,000
Female.....	70,000	60,000	75,000	82,400	82,100	70,000	78,500	S	S
Asian.....	76,000	62,000	80,000	80,000	91,000	90,000	89,000	86,400	100,000
American Indian/Alaska Native .....	S	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	77,000	70,000	77,400	91,000	82,100	93,000	S	S	S
Hispanic.....	75,000	67,000	73,200	98,000	93,000	87,000	70,000	S	S
White, non-Hispanic .....	80,000	70,000	75,000	85,000	89,000	85,000	90,000	90,000	90,000
Other .....	80,000	60,000	84,000	82,400	S	S	S	S	100,000
S&E-related occupations .....	56,000	50,000	60,000	63,000	60,000	62,000	65,000	60,000	65,000
Male.....	60,000	50,000	60,000	77,000	63,000	73,000	74,500	66,000	75,000
Female.....	53,000	49,300	58,000	55,700	58,300	54,000	60,000	50,000	53,000
Asian.....	64,000	58,000	65,000	77,000	70,000	55,000	70,000	52,000	S
American Indian/Alaska Native .....	50,000	64,000	S	S	S	S	S	S	S
Black, non-Hispanic .....	53,000	50,000	54,000	55,300	53,000	55,000	67,200	55,000	S
Hispanic.....	48,000	40,000	65,000	55,000	54,800	60,000	40,000	S	S
White, non-Hispanic .....	57,000	50,000	59,000	61,900	60,000	65,000	65,000	60,000	68,000
Other.....	59,000	47,000	50,000	S	65,000	61,000	S	S	S



Appendix table 3-11

(Page 5 of 6)

**Median annual salaries of U.S. individuals in S&E and S&E-related occupations, by highest degree, occupation, sex, race/ethnicity, and years since degree: 2003**

(Dollars)

Degree, occupation, sex, and race/ethnicity	Employed individuals	Years since highest degree							
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35+
<b>Doctoral</b>									
S&E occupations .....	75,000	53,000	70,000	78,000	82,000	87,000	91,000	95,000	100,000
Male .....	80,000	58,000	75,000	82,000	85,000	90,000	95,000	96,000	100,000
Female .....	61,000	50,000	60,000	70,000	74,000	76,000	80,000	82,000	90,000
Asian .....	76,000	58,000	76,300	85,000	80,000	97,000	100,000	94,000	100,900
American Indian/Alaska Native .....	72,000	49,000	65,000	66,800	80,000	72,600	81,000	90,000	S
Black, non-Hispanic .....	60,000	50,000	65,000	60,000	72,000	75,000	78,100	93,500	66,600
Hispanic .....	65,000	48,000	62,000	74,000	78,000	75,000	89,000	91,000	97,500
White, non-Hispanic .....	75,000	53,000	70,000	75,600	83,700	86,000	91,000	95,000	100,000
Other .....	55,000	62,500	53,000	S	S	65,000	S	S	S
Scientists .....	71,400	50,000	65,600	73,500	80,000	84,500	88,000	90,000	98,000
Male .....	76,000	52,500	70,000	77,000	82,000	87,000	90,000	90,500	99,600
Female .....	60,000	48,700	60,000	68,400	73,000	75,000	80,000	80,000	90,000
Asian .....	71,000	50,000	72,000	82,000	75,500	88,000	90,000	92,000	100,000
American Indian/Alaska Native .....	72,000	55,000	63,700	66,800	80,000	72,600	81,000	82,000	S
Black, non-Hispanic .....	58,000	48,000	64,000	60,000	72,000	72,000	75,000	82,000	66,600
Hispanic .....	61,100	45,500	60,200	74,000	78,000	70,000	87,000	92,000	97,500
White, non-Hispanic .....	72,200	51,000	65,000	72,000	80,000	85,000	89,000	90,000	99,000
Other .....	53,000	62,600	53,000	S	S	S	S	S	S
Computer and mathematical scientists....	79,000	65,000	80,000	80,000	80,000	90,000	90,000	80,000	104,000
Male .....	81,000	71,000	82,000	80,000	82,000	90,000	93,000	80,000	105,000
Female .....	63,000	49,000	71,000	74,500	70,000	83,000	72,700	89,000	S
Asian .....	80,000	75,000	85,000	85,000	76,000	108,800	100,000	68,500	S
American Indian/Alaska Native .....	89,000	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	40,000	40,000	75,000	50,000	72,000	S	S	68,000	S
Hispanic .....	67,000	45,500	67,000	89,000	76,000	65,200	89,000	S	S
White, non-Hispanic .....	80,000	63,000	78,200	79,000	85,000	88,000	90,000	81,000	104,400
Other .....	50,000	S	S	S	S	S	S	S	S
Life and related scientists .....	67,900	42,700	60,000	73,000	80,000	84,200	90,000	96,000	98,000
Male .....	72,000	42,500	65,000	74,000	82,600	88,100	91,000	98,700	100,000
Female .....	60,000	43,000	60,000	71,000	77,000	73,000	85,000	84,000	89,600
Asian .....	60,000	42,000	58,600	75,500	75,000	90,000	100,000	93,400	120,000
American Indian/Alaska Native .....	75,000	59,000	72,000	72,400	S	75,000	S	S	S
Black, non-Hispanic .....	60,000	55,000	59,900	50,000	74,000	72,000	76,000	110,000	8,000
Hispanic .....	55,000	40,000	60,000	70,000	69,000	88,000	S	140,000	S
White, non-Hispanic .....	70,000	44,000	60,000	72,000	84,000	84,200	90,000	96,000	95,000
Other .....	53,000	42,000	53,000	S	S	S	S	S	S
Physical and related scientists .....	79,000	55,600	73,000	81,500	85,000	90,000	96,000	95,000	95,000
Male .....	80,000	56,000	75,000	82,500	86,000	92,000	100,000	95,000	95,000
Female .....	66,000	55,000	63,000	70,000	79,000	75,000	70,000	76,500	92,100
Asian .....	76,000	54,000	80,000	84,000	87,000	80,000	90,000	100,000	80,000
American Indian/Alaska Native .....	64,000	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	70,000	74,500	67,000	60,000	86,000	72,000	S	S	S
Hispanic .....	72,500	58,000	68,300	83,000	82,000	70,000	80,000	S	S
White, non-Hispanic .....	80,000	56,000	72,000	80,000	84,400	93,000	97,800	94,600	95,000
Other .....	76,000	S	S	S	S	S	S	S	S
Social and related scientists .....	67,300	51,400	60,000	68,000	75,000	80,000	84,000	87,100	100,000
Male .....	72,000	52,500	60,000	70,000	78,000	80,000	85,000	88,000	100,000
Female .....	61,000	50,000	59,000	64,300	70,000	74,000	80,000	78,200	100,000
Asian .....	68,000	61,400	64,000	84,200	76,000	82,500	76,500	86,000	S
American Indian/Alaska Native .....	60,000	47,000	55,000	63,100	75,000	60,000	S	S	S
Black, non-Hispanic .....	60,000	50,000	63,300	60,100	72,000	70,000	70,000	93,500	S
Hispanic .....	60,500	48,100	55,400	65,000	81,400	70,000	87,000	89,000	S
White, non-Hispanic .....	68,000	51,000	60,000	67,800	74,800	80,000	85,000	86,100	100,000
Other .....	48,000	65,000	35,000	S	S	S	S	S	S

Appendix table 3-11

(Page 6 of 6)

**Median annual salaries of U.S. individuals in S&E and S&E-related occupations, by highest degree, occupation, sex, race/ethnicity, and years since degree: 2003**

(Dollars)

Degree, occupation, sex, and race/ethnicity	Employed individuals	Years since highest degree							
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35+
Engineers.....	90,000	73,200	85,000	95,000	100,000	100,000	105,000	112,000	106,500
Male.....	90,000	75,000	85,500	95,000	100,000	100,000	105,000	112,300	106,500
Female.....	80,000	65,000	80,000	96,000	90,000	104,000	103,400	S	S
Asian.....	90,000	74,000	88,000	95,000	90,000	103,000	103,000	110,000	110,000
American Indian/Alaska Native.....	50,000	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	81,000	79,000	72,000	81,300	70,000	98,000	100,000	S	S
Hispanic.....	80,000	70,000	91,000	80,000	80,000	130,000	94,500	S	S
White, non-Hispanic.....	91,000	75,000	85,000	98,000	102,000	102,000	105,000	112,800	106,500
Other.....	68,000	S	S	S	S	S	S	S	S
S&E-related occupations.....	85,000	50,000	70,000	90,000	113,000	90,000	110,000	120,000	140,000
Male.....	100,000	70,000	85,600	106,000	127,000	90,000	112,000	130,000	150,000
Female.....	55,000	50,000	55,000	55,000	73,000	78,000	85,000	100,000	S
Asian.....	86,000	40,000	96,000	90,000	80,000	142,000	100,000	171,000	S
American Indian/Alaska Native.....	72,000	67,000	S	S	S	S	S	S	S
Black, non-Hispanic.....	71,000	52,500	45,000	160,000	73,800	71,000	111,200	S	S
Hispanic.....	85,000	180,000	75,000	62,000	150,000	19,000	137,000	S	S
White, non-Hispanic.....	85,000	50,000	63,000	87,000	113,000	90,000	110,000	120,000	126,000
Other.....	280,000	S	S	S	S	S	S	S	S

S = suppressed for reasons of confidentiality and/or data reliability

\*Includes professional degrees.

NOTES: Includes only full-time employed with salary &gt; 0. Very large or very small values may reflect very small sample sizes and should be interpreted with caution.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT), preliminary estimates (2003), <http://sestat.nsf.gov>.

Appendix table 3-12

**Median annual salaries of individuals employed in S&E occupations, by occupation and highest degree: 2003**

(Dollars)

Occupation	Employed individuals	Highest degree			
		Bachelor's	Master's	Doctoral	Professional
All S&E occupations .....	70,000	65,000	73,000	75,000	90,000
Scientists .....	65,000	62,000	69,000	71,000	90,000
Computer and mathematical scientists .....	70,000	68,000	77,000	79,000	79,000
Computer and information scientists .....	70,000	69,000	80,000	87,000	75,000
Mathematical scientists .....	73,000	60,000	72,000	88,000	110,000
Postsecondary teachers .....	51,000	38,000	45,000	62,000	S
Life and related scientists .....	52,000	42,000	50,000	68,000	108,000
Agricultural and food scientists .....	48,000	46,000	47,000	72,000	S
Biological scientists .....	50,000	41,000	54,000	67,000	100,000
Environmental life scientists .....	48,000	50,000	42,000	63,000	S
Postsecondary teachers .....	60,000	40,000	47,000	67,000	115,000
Physical and related scientists .....	60,000	47,000	66,000	79,000	67,000
Chemists, except biochemists .....	60,000	50,000	66,000	85,000	S
Earth scientists, geologists, and oceanographers .....	64,000	54,000	75,000	80,000	S
Physicists and astronomers .....	83,000	50,000	70,000	90,000	S
Other .....	49,000	40,000	65,000	80,000	S
Postsecondary teachers .....	55,000	25,000	45,000	64,000	S
Social and related scientists .....	57,000	45,000	53,000	67,000	70,000
Economists .....	89,000	60,000	89,000	105,000	S
Political scientists .....	43,000	40,000	40,000	75,000	S
Psychologists .....	54,000	31,000	48,000	70,000	70,000
Sociologists and anthropologists .....	50,000	32,000	50,000	64,000	S
Other .....	56,000	50,000	65,000	70,000	40,000
Postsecondary teachers .....	56,000	36,000	44,000	61,000	58,000
Engineers .....	74,000	70,000	80,000	90,000	88,000
Aerospace and related engineers .....	82,000	81,000	82,000	96,000	S
Chemical engineers .....	78,000	72,000	82,000	90,000	S
Civil and architectural engineers .....	68,000	65,000	72,000	78,000	S
Electrical and related engineers .....	80,000	75,000	86,000	102,000	S
Industrial engineers .....	65,000	62,000	72,000	73,000	S
Mechanical engineers .....	72,000	70,000	78,000	90,000	S
Other .....	72,000	70,000	80,000	85,000	S
Postsecondary teachers .....	72,000	38,000	65,000	81,000	S

S = suppressed for reasons of confidentiality and/or data reliability

NOTE: Only full-time employed with salary &gt; 0.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT), preliminary estimates (2003), <http://sestat.nsf.gov>.

## Individuals in labor force with S&amp;E or S&amp;E-related highest degrees, by highest degree, degree field, sex, race/ethnicity, and age: 2003

Degree, field, sex, and race/ethnicity	All ages	Age (years)									
		<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
<b>All degree levels<sup>a</sup></b>											
S&E fields .....	10,001,500	304,000	1,191,600	1,441,100	1,365,900	1,446,200	1,340,600	1,251,700	892,700	475,700	292,100
Male .....	6,408,700	131,200	627,800	892,900	866,700	956,200	864,300	841,400	641,400	355,300	231,600
Female .....	3,592,800	172,800	563,800	548,300	499,200	490,000	476,400	410,300	251,300	120,400	60,500
Asian .....	1,147,500	45,800	175,100	214,400	187,100	173,900	122,900	98,800	68,300	41,800	19,500
American Indian/Alaska Native .....	43,200	700	3,700	5,500	6,800	9,600	8,000	3,800	2,400	1,800	1,000
Black, non-Hispanic .....	564,900	18,100	78,000	94,600	76,400	80,900	77,200	72,700	42,200	16,200	8,600
Hispanic .....	538,400	21,400	75,600	100,100	95,100	89,400	62,300	42,700	25,300	15,500	11,000
White, non-Hispanic .....	7,536,600	209,000	831,100	997,200	969,300	1,071,700	1,053,200	1,020,000	739,400	395,900	249,900
Other .....	171,000	9,100	28,100	29,400	31,100	20,700	17,000	13,700	15,100	4,500	2,100
Science .....	7,562,400	263,000	951,800	1,107,700	998,400	1,019,700	1,000,400	1,005,400	683,100	331,800	201,100
Male .....	4,255,700	100,700	438,100	610,500	555,600	591,300	554,300	610,800	438,100	214,800	141,600
Female .....	3,306,700	162,300	513,800	497,200	442,700	428,400	446,100	394,600	245,000	117,000	59,500
Asian .....	736,100	35,400	120,300	137,800	112,600	110,600	77,700	64,900	42,300	24,100	10,400
American Indian/Alaska Native .....	37,600	600	3,400	4,900	5,900	8,000	7,500	3,400	2,300	1,400	300
Black, non-Hispanic .....	485,900	16,200	66,800	79,000	64,400	64,400	68,600	66,400	37,800	14,100	8,200
Hispanic .....	403,800	19,600	60,700	75,500	69,000	60,900	46,900	32,200	20,400	11,000	7,500
White, non-Hispanic .....	5,768,600	183,400	677,700	787,500	726,400	759,000	786,600	827,400	569,400	277,900	173,400
Other .....	130,400	7,800	23,000	23,000	20,200	16,800	13,200	11,100	10,900	3,200	1,300
Computer and mathematical sciences .....	1,514,200	39,700	178,100	241,000	261,500	287,900	180,900	156,000	99,300	49,200	20,500
Male .....	1,017,400	25,700	121,600	163,000	166,200	195,500	119,500	108,600	68,800	32,700	15,900
Female .....	496,800	14,000	56,500	78,000	95,300	92,300	61,400	47,400	30,500	16,600	4,700
Asian .....	269,800	10,300	50,800	68,900	48,500	42,300	23,700	14,400	6,900	3,000	1,000
American Indian/Alaska Native .....	8,600	S	S	S	S	2,400	S	S	S	S	S
Black, non-Hispanic .....	98,900	1,500	13,500	18,100	16,800	17,100	13,000	8,000	8,300	1,600	900
Hispanic .....	66,800	1,900	10,300	12,200	12,700	13,500	6,600	2,800	3,400	2,300	1,000
White, non-Hispanic .....	1,044,800	24,900	98,200	138,000	175,700	206,900	132,300	129,300	80,200	41,900	17,400
Other .....	25,200	1,000	3,200	3,000	7,500	5,600	2,500	1,500	S	S	S
Biological, agricultural, and environmental life sciences .....	1,539,300	47,200	239,100	213,900	166,600	203,400	238,200	206,000	127,300	60,800	36,900
Male .....	871,500	16,000	98,700	108,500	97,200	115,600	134,100	140,400	88,800	42,500	29,600
Female .....	667,900	31,200	140,400	105,400	69,400	87,700	104,100	65,600	38,400	18,300	7,400
Asian .....	155,000	7,600	27,200	23,300	19,500	22,100	19,600	17,200	7,900	7,400	3,100
American Indian/Alaska Native .....	7,900	S	700	600	1,800	1,100	1,000	900	1,200	S	S
Black, non-Hispanic .....	65,100	2,500	12,900	12,700	6,100	8,500	11,300	5,400	3,000	1,600	1,100
Hispanic .....	83,500	2,600	14,300	14,000	17,000	12,200	10,100	8,600	2,300	1,200	1,200
White, non-Hispanic .....	1,205,800	33,000	177,300	161,600	119,400	157,100	194,400	171,300	111,300	48,900	31,400
Other .....	22,100	S	6,800	1,700	2,900	2,300	1,700	2,700	1,400	S	S
Physical and related sciences .....	719,500	13,700	63,600	84,100	79,900	113,700	103,800	98,200	77,600	47,600	37,300
Male .....	531,400	6,500	37,900	61,400	55,800	77,900	75,400	80,600	67,600	36,600	31,700
Female .....	188,200	7,200	25,700	22,700	24,100	35,900	28,300	17,600	10,100	11,000	5,600

## Individuals in labor force with S&amp;E or S&amp;E-related highest degrees, by highest degree, degree field, sex, race/ethnicity, and age: 2003

Degree, field, sex, and race/ethnicity	All ages	Age (years)									
		<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Asian .....	105,200	1,100	9,300	14,700	13,900	16,000	15,800	12,400	12,100	7,200	2,600
American Indian/Alaska Native .....	2,400	S	100	S	400	1,200	S	S	S	S	S
Black, non-Hispanic .....	21,900	600	1,900	3,700	2,800	3,200	4,400	2,500	1,200	1,100	500
Hispanic .....	32,100	300	2,100	5,800	4,500	5,000	5,300	1,800	2,500	2,000	2,700
White, non-Hispanic .....	551,700	11,000	48,300	58,900	58,000	87,600	77,400	80,800	61,300	36,900	31,500
Other .....	6,300	500	2,000	800	200	800	800	500	S	S	S
Social and related sciences .....	3,789,300	162,500	471,000	568,700	490,300	414,700	477,500	545,200	378,900	174,200	106,300
Male .....	1,835,500	52,500	179,900	277,700	236,400	202,200	225,200	281,200	212,900	103,000	64,500
Female .....	1,953,900	110,000	291,100	291,000	254,000	212,500	252,300	264,000	165,900	71,100	41,800
Asian .....	206,100	16,300	33,000	31,000	30,600	30,300	18,600	20,900	15,300	6,500	3,700
American Indian/Alaska Native .....	18,700	S	500	3,400	3,400	3,300	3,600	2,300	900	800	200
Black, non-Hispanic .....	300,000	11,600	38,600	44,500	38,800	35,500	39,900	50,500	25,200	9,800	5,700
Hispanic .....	221,400	14,800	33,900	43,500	34,800	30,200	24,900	19,100	12,200	5,400	2,600
White, non-Hispanic .....	2,966,300	114,500	353,900	429,000	373,200	307,300	382,500	446,000	316,600	150,300	93,000
Other .....	76,900	4,900	11,100	17,500	9,500	8,100	8,200	6,400	8,800	1,400	1,000
Engineering .....	2,439,200	40,900	239,800	333,400	367,500	426,500	340,200	246,300	209,600	143,900	91,100
Male .....	2,153,000	30,500	189,700	282,300	311,100	365,000	309,900	230,600	203,300	140,500	90,000
Female .....	286,200	10,400	50,100	51,100	56,400	61,600	30,200	15,700	6,300	3,400	1,000
Asian .....	411,400	10,400	54,800	76,600	74,500	63,200	45,100	33,900	26,000	17,700	9,100
American Indian/Alaska Native .....	5,600	S	300	600	900	1,600	600	S	S	300	S
Black, non-Hispanic .....	79,000	1,800	11,100	15,500	12,100	16,500	8,700	6,300	4,400	2,100	S
Hispanic .....	134,600	1,800	14,900	24,600	26,100	28,500	15,400	10,500	4,800	4,500	3,400
White, non-Hispanic .....	1,768,000	25,600	153,500	209,700	243,000	312,700	266,600	192,500	170,000	117,900	76,500
Other .....	40,500	1,300	5,100	6,400	11,000	3,900	3,800	2,600	4,200	1,300	800
S&E-related fields .....	4,460,800	33,700	343,100	610,400	603,200	709,600	732,800	665,700	403,800	215,100	143,400
Male .....	1,952,300	3,300	105,600	258,300	242,900	300,700	291,500	306,500	220,500	121,700	101,500
Female .....	2,508,500	30,400	237,500	352,100	360,400	408,900	441,300	359,200	183,400	93,400	42,000
Asian .....	430,400	S	37,400	73,400	61,700	73,600	61,100	50,800	36,200	21,500	12,800
American Indian/Alaska Native .....	16,900	S	S	1,400	2,900	1,900	2,800	3,300	1,600	S	S
Black, non-Hispanic .....	243,800	2,000	21,500	28,400	37,000	44,400	45,400	27,500	20,700	10,500	6,500
Hispanic .....	252,600	1,100	21,500	31,300	41,800	53,600	41,000	31,300	16,600	7,000	7,500
White, non-Hispanic .....	3,444,100	26,700	249,700	459,700	453,700	526,100	572,900	543,000	326,000	173,900	112,500
Other .....	73,100	S	11,800	16,200	6,200	10,100	9,700	9,700	2,800	1,600	3,600
Bachelor's											
S&E fields .....	7,263,500	291,200	1,017,400	1,093,700	995,300	1,041,400	947,700	865,800	567,900	275,000	168,200
Male .....	4,606,500	123,900	534,000	690,500	632,800	682,800	610,000	581,200	407,200	206,400	137,900
Female .....	2,657,000	167,300	483,400	403,300	362,500	358,600	337,800	284,500	160,700	68,600	30,300
Asian .....	650,000	41,500	116,200	115,200	92,400	89,600	68,600	58,500	36,700	21,400	10,100
American Indian/Alaska Native .....	33,500	700	3,500	4,500	5,500	8,600	6,400	2,000	1,500	800	S
Black, non-Hispanic .....	453,300	17,700	68,300	79,800	58,700	64,700	60,900	55,100	34,300	10,000	3,600
Hispanic .....	427,700	20,500	69,000	83,000	74,500	69,100	47,500	29,600	17,300	10,200	7,100
White, non-Hispanic .....	5,561,400	202,000	735,600	785,400	737,600	792,600	752,500	711,700	467,600	230,300	146,200
Other .....	137,600	8,800	24,800	25,700	26,700	16,900	11,800	8,900	10,500	2,400	1,100

## Individuals in labor force with S&amp;E or S&amp;E-related highest degrees, by highest degree, degree field, sex, race/ethnicity, and age: 2003

Degree, field, sex, and race/ethnicity	All ages	Age (years)									
		<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Science.....	5,509,900	254,500	833,000	849,400	734,300	732,900	702,400	692,500	429,600	176,800	104,600
Male .....	3,053,200	96,200	387,700	482,000	412,900	417,700	382,800	416,800	272,000	110,200	74,800
Female .....	2,456,700	158,300	445,300	367,300	321,400	315,300	319,500	275,700	157,600	66,500	29,800
Asian.....	422,700	33,000	87,100	75,000	52,000	55,200	42,400	38,300	23,200	12,200	4,300
American Indian/Alaska Native.....	29,000	600	3,200	4,000	4,600	7,200	5,900	1,700	1,400	S	S
Black, non-Hispanic.....	390,300	15,900	59,200	66,400	50,100	50,500	54,400	50,400	31,000	9,000	3,300
Hispanic.....	322,600	19,000	55,800	64,300	54,600	46,800	35,500	22,300	13,400	6,600	4,400
White, non-Hispanic.....	4,239,800	178,400	606,300	619,400	556,000	559,700	555,200	573,200	352,600	147,000	92,000
Other.....	105,500	7,600	21,300	20,300	17,000	13,600	9,100	6,600	8,000	1,500	S
Computer and mathematical sciences.....	1,060,800	37,400	143,300	175,200	184,600	206,900	119,200	99,500	52,800	29,700	12,200
Male .....	703,500	24,300	98,800	122,000	117,800	136,700	78,200	66,900	33,300	16,500	9,100
Female .....	357,300	13,100	44,500	53,200	66,800	70,200	41,000	32,700	19,500	13,300	3,100
Asian.....	126,800	9,200	30,600	32,500	16,200	18,900	10,200	5,300	2,300	S	S
American Indian/Alaska Native.....	7,200	S	S	S	S	2,400	S	S	S	S	S
Black, non-Hispanic.....	78,600	1,500	10,400	16,400	13,200	14,000	9,100	5,600	7,000	S	S
Hispanic.....	55,300	1,800	9,800	9,900	10,000	10,600	5,600	2,400	2,200	S	S
White, non-Hispanic.....	773,900	24,000	87,200	112,800	139,300	157,000	90,100	86,300	41,200	25,600	10,400
Other.....	19,000	900	3,100	2,800	5,900	4,000	2,100	S	S	S	S
Biological, agricultural, and environmental life sciences.....	1,118,900	45,400	215,700	157,700	110,400	140,300	172,600	146,500	77,400	31,000	21,800
Male .....	618,000	14,700	90,100	84,500	67,100	75,500	96,400	99,100	54,200	19,300	17,200
Female .....	500,900	30,800	125,600	73,200	43,300	64,900	76,300	47,300	23,100	11,700	4,600
Asian.....	85,600	6,700	22,700	11,900	6,300	10,400	9,500	10,700	4,000	1,800	1,600
American Indian/Alaska Native.....	5,200	S	700	S	1,300	S	S	S	S	S	S
Black, non-Hispanic.....	51,000	2,500	12,200	11,300	2,700	5,400	9,700	3,700	2,400	S	S
Hispanic.....	67,900	2,600	13,700	11,300	14,100	8,900	7,800	7,600	S	S	S
White, non-Hispanic.....	891,300	32,200	160,400	121,400	83,700	112,800	144,100	122,200	67,900	27,100	19,500
Other.....	17,800	S	6,100	1,300	2,200	1,900	S	S	S	S	S
Physical and related sciences.....	439,100	13,300	52,700	53,800	46,800	67,200	64,900	59,800	43,200	19,700	17,700
Male .....	309,300	6,400	32,500	39,300	31,300	44,200	44,000	47,200	36,700	12,800	14,900
Female .....	129,900	6,900	20,300	14,500	15,500	23,000	20,900	12,500	6,500	6,900	2,900
Asian.....	49,600	1,100	7,000	6,600	5,400	4,200	9,100	6,200	5,100	4,400	S
American Indian/Alaska Native.....	1,700	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	16,400	600	1,700	2,800	2,200	2,400	3,300	2,000	S	S	S
Hispanic.....	25,000	300	1,800	4,700	3,300	3,800	4,400	1,600	2,200	S	S
White, non-Hispanic.....	342,000	10,700	40,500	39,000	35,600	55,300	47,500	49,800	34,900	13,300	15,600
Other.....	4,400	500	1,700	600	S	S	600	S	S	S	S
Social and related sciences.....	2,891,100	158,400	421,200	462,700	392,600	318,500	345,700	386,800	256,300	96,300	52,800
Male .....	1,422,400	50,900	166,200	236,200	196,800	161,300	164,200	203,600	147,800	61,700	33,600
Female .....	1,468,700	107,500	255,000	226,500	195,800	157,200	181,400	183,200	108,500	34,600	19,200
Asian.....	160,800	15,900	26,900	24,000	24,100	21,800	13,500	16,100	11,800	4,600	2,100
American Indian/Alaska Native.....	14,800	S	300	2,700	3,000	S	3,100	S	S	S	S

## Individuals in labor force with S&amp;E or S&amp;E-related highest degrees, by highest degree, degree field, sex, race/ethnicity, and age: 2003

Degree, field, sex, and race/ethnicity	All ages	Age (years)									
		<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Black, non-Hispanic .....	244,300	11,400	34,900	36,000	32,000	28,700	32,200	39,200	20,900	7,000	2,000
Hispanic .....	174,400	14,200	30,600	38,300	27,200	23,500	17,600	10,600	8,000	2,400	S
White, non-Hispanic .....	2,232,600	111,500	318,200	346,300	297,400	234,600	273,500	315,000	208,600	81,100	46,400
Other .....	64,300	4,900	10,400	15,500	8,900	7,100	5,700	4,400	6,500	S	S
Engineering .....	1,753,600	36,700	184,400	244,400	261,000	308,400	245,400	173,200	138,300	98,200	63,600
Male .....	1,553,300	27,700	146,300	208,400	219,800	265,100	227,100	164,400	135,200	96,100	63,100
Female .....	200,300	9,000	38,100	35,900	41,100	43,300	18,200	8,800	3,100	2,100	S
Asian .....	227,300	8,500	29,000	40,200	40,300	34,300	26,300	20,200	13,500	9,200	5,700
American Indian/Alaska Native .....	4,500	S	300	600	S	1,400	S	S	S	S	S
Black, non-Hispanic .....	62,900	1,800	9,100	13,400	8,600	14,200	6,500	4,700	3,300	1,000	S
Hispanic .....	105,100	1,500	13,200	18,800	19,900	22,200	12,000	7,300	3,900	3,600	2,700
White, non-Hispanic .....	1,321,600	23,600	129,300	166,000	181,600	232,900	197,300	138,500	115,000	83,200	54,200
Other .....	32,100	1,200	3,600	5,400	9,600	3,300	2,700	2,200	2,500	S	S
S&E-related fields .....	2,370,400	29,300	203,800	332,200	336,700	390,100	408,200	342,100	185,800	92,400	49,800
Male .....	845,900	3,000	54,600	136,100	114,900	135,600	123,600	133,300	82,400	36,100	26,400
Female .....	1,524,500	26,300	149,200	196,000	221,900	254,500	284,500	208,800	103,500	56,300	23,400
Asian .....	209,300	S	13,000	39,300	25,800	36,200	32,700	29,900	15,300	10,700	4,600
American Indian/Alaska Native .....	10,600	S	S	S	1,700	S	1,200	S	S	S	S
Black, non-Hispanic .....	147,500	1,700	15,000	15,500	23,700	29,600	30,500	14,300	10,300	5,300	S
Hispanic .....	137,400	S	13,400	17,900	23,100	29,500	24,700	15,000	6,700	3,300	2,700
White, non-Hispanic .....	1,817,500	22,700	152,200	247,000	260,600	287,200	311,100	274,800	150,900	71,800	39,300
Other .....	48,100	S	9,000	11,400	1,700	6,300	7,900	6,400	1,400	S	1,800
Master's											
S&E fields .....	1,997,200	12,800	160,200	272,000	269,600	290,600	283,100	278,900	229,900	123,500	76,500
Male .....	1,259,900	7,300	86,600	155,400	165,900	190,900	175,500	180,700	161,100	84,000	52,600
Female .....	737,300	5,500	73,700	116,600	103,700	99,700	107,600	98,200	68,900	39,500	24,000
Asian .....	354,900	4,300	56,500	76,800	66,600	55,600	32,100	25,700	21,300	11,100	4,900
American Indian/Alaska Native .....	5,300	S	200	700	800	S	S	1,100	S	S	S
Black, non-Hispanic .....	86,700	300	7,400	12,000	13,100	12,900	13,100	14,300	5,000	4,800	3,800
Hispanic .....	87,600	900	6,100	14,000	16,000	16,400	11,100	10,600	6,500	3,200	2,900
White, non-Hispanic .....	1,431,900	7,000	86,800	164,800	169,200	201,700	221,200	222,500	192,300	102,700	63,600
Other .....	30,900	S	3,200	3,600	4,000	3,400	4,600	4,700	4,500	1,700	S
Science .....	1,438,800	8,500	107,800	197,300	182,800	196,100	204,900	220,500	172,200	90,700	57,900
Male .....	776,500	4,500	45,300	93,500	91,500	112,200	108,400	128,200	106,100	52,400	34,400
Female .....	662,400	4,100	62,400	103,800	91,300	84,000	96,600	92,300	66,100	38,300	23,500
Asian .....	214,800	2,400	32,000	46,800	40,700	36,300	19,500	16,300	12,500	5,600	2,800
American Indian/Alaska Native .....	4,500	S	100	700	800	S	S	1,100	S	S	S
Black, non-Hispanic .....	73,500	300	5,400	10,200	10,100	11,100	11,200	13,100	4,400	3,900	3,700
Hispanic .....	61,000	600	4,400	8,800	10,300	10,500	8,200	7,800	5,700	2,500	2,200
White, non-Hispanic .....	1,062,200	5,100	64,200	128,200	118,300	135,000	161,400	177,800	146,600	77,200	48,600
Other .....	22,800	S	1,700	2,600	2,700	2,800	3,500	4,400	2,800	1,400	S

## Individuals in labor force with S&amp;E or S&amp;E-related highest degrees, by highest degree, degree field, sex, race/ethnicity, and age: 2003

Degree, field, sex, and race/ethnicity	All ages	Age (years)									
		<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Computer and mathematical sciences	400,100	2,300	31,800	59,300	69,100	71,700	54,900	50,500	40,800	14,000	5,800
Male .....	270,200	1,400	21,800	36,000	42,100	50,600	35,700	36,600	30,500	11,100	4,400
Female .....	129,900	900	10,000	23,300	26,900	21,100	19,200	13,900	10,300	2,900	1,400
Asian .....	130,600	S	19,800	34,200	29,900	20,400	11,900	8,000	4,000	1,100	S
American Indian/Alaska Native .....	S	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	17,100	S	1,100	1,600	3,100	3,000	3,700	2,400	1,100	800	S
Hispanic .....	10,000	S	500	2,200	2,400	2,700	700	S	1,100	S	S
White, non-Hispanic .....	235,100	800	10,300	21,100	31,800	44,000	37,400	38,400	34,200	11,700	5,200
Other .....	6,100	S	S	S	1,600	1,600	S	1,500	S	S	S
Biological, agricultural, and environmental											
life sciences .....	214,200	1,800	18,900	31,700	24,400	30,400	30,500	31,100	27,300	12,200	5,800
Male .....	112,900	1,300	6,600	11,300	11,500	17,900	14,600	20,000	17,000	8,800	4,000
Female .....	101,300	S	12,400	20,400	12,900	12,600	16,000	11,200	10,400	3,400	1,700
Asian .....	26,100	S	4,100	3,900	3,500	3,900	2,700	2,800	1,800	2,100	S
American Indian/Alaska Native .....	1,000	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	7,500	S	500	600	1,300	2,000	S	S	S	S	S
Hispanic .....	7,500	S	400	1,600	700	1,700	800	S	S	S	S
White, non-Hispanic .....	168,800	800	13,300	25,200	18,200	22,500	25,700	26,000	23,800	9,100	4,200
Other .....	3,200	S	S	S	S	S	S	S	S	S	S
Physical and related sciences .....	135,000	400	9,000	15,800	12,800	23,700	17,800	20,000	15,900	10,500	9,200
Male .....	98,200	S	4,200	10,800	8,000	15,700	13,400	17,000	14,200	7,900	7,000
Female .....	36,700	300	4,800	5,100	4,800	8,000	4,400	2,900	1,700	2,600	2,200
Asian .....	25,600	S	2,100	3,800	2,800	5,800	1,900	2,600	4,000	1,400	1,200
American Indian/Alaska Native .....	100	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	3,300	S	200	600	S	S	700	S	S	S	S
Hispanic .....	4,200	S	300	800	800	700	S	S	S	S	S
White, non-Hispanic .....	100,200	300	6,200	10,500	8,800	16,400	14,500	16,600	11,500	8,700	6,800
Other .....	1,600	S	200	S	S	S	S	S	S	S	S
Social and related sciences .....	689,500	4,200	48,000	90,400	76,600	70,300	101,800	118,800	88,200	54,000	37,200
Male .....	295,100	1,600	12,800	35,400	29,800	28,000	44,700	54,600	44,500	24,600	19,000
Female .....	394,500	2,500	35,200	55,000	46,800	42,400	57,100	64,200	43,700	29,400	18,200
Asian .....	32,600	S	6,000	4,900	4,500	6,100	3,000	3,000	2,700	S	S
American Indian/Alaska Native .....	2,200	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	45,600	S	3,600	7,400	5,400	5,600	6,200	9,200	2,900	2,100	3,000
Hispanic .....	39,300	S	3,200	4,200	6,500	5,500	6,100	7,200	3,400	2,400	S
White, non-Hispanic .....	558,100	3,000	34,300	71,400	59,500	52,000	83,900	96,800	77,000	47,700	32,500
Other .....	11,800	S	700	2,000	S	S	2,500	2,000	2,300	700	S
Engineering .....	558,400	4,200	52,500	74,600	86,800	94,500	78,100	58,400	57,700	32,800	18,600
Male .....	483,500	2,800	41,200	61,800	74,400	78,800	67,100	52,400	54,900	31,700	18,200
Female .....	74,900	1,400	11,200	12,800	12,400	15,700	11,000	5,900	2,800	1,200	S
Asian .....	140,100	1,900	24,600	30,000	26,000	19,300	12,600	9,400	8,800	5,500	2,100
American Indian/Alaska Native .....	S	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	13,200	S	2,000	1,700	3,000	1,900	1,800	1,200	600	S	S



**Individuals in labor force with S&E or S&E-related highest degrees, by highest degree, degree field, sex, race/ethnicity, and age: 2003**

Degree, field, sex, and race/ethnicity	All ages	Age (years)									
		<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Hispanic .....	26,600	300	1,700	5,300	5,700	5,900	2,900	2,800	800	600	700
White, non-Hispanic .....	369,600	1,900	22,700	36,700	50,900	66,800	59,800	44,700	45,700	25,500	15,000
Other .....	8,100	S	1,500	1,000	1,300	S	1,100	S	S	S	S
S&E-related fields .....	938,400	4,100	77,200	128,500	117,600	129,800	146,000	158,800	98,400	51,500	26,600
Male .....	308,900	S	19,900	39,400	40,600	44,700	40,100	47,900	38,000	23,300	14,800
Female .....	629,500	3,800	57,300	89,100	77,000	85,100	105,900	110,800	60,400	28,100	11,800
Asian.....	61,700	S	6,700	8,300	9,300	9,100	12,500	7,000	5,800	1,900	1,000
American Indian/Alaska Native .....	2,700	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	53,200	S	3,700	6,900	6,500	5,800	7,200	9,500	7,600	3,600	2,000
Hispanic .....	36,000	S	4,700	5,300	6,600	5,600	4,800	6,000	2,200	S	S
White, non-Hispanic .....	774,500	3,700	60,000	106,600	92,300	107,500	120,400	133,100	82,400	45,100	23,400
Other.....	10,400	S	S	S	2,600	1,500	S	2,100	S	S	S
<b>Doctoral</b>											
S&E fields .....	707,600	S	13,600	72,400	98,100	109,000	105,500	100,500	90,800	73,500	44,200
Male .....	524,700	S	7,200	46,700	67,100	78,900	76,400	76,200	70,500	62,600	39,100
Female .....	182,900	S	6,300	25,700	31,000	30,200	29,100	24,300	20,200	10,900	5,100
Asian.....	136,800	S	2,200	22,200	27,100	28,400	20,900	13,800	9,300	8,400	4,500
American Indian/Alaska Native .....	3,800	S	S	300	400	400	600	600	600	500	400
Black, non-Hispanic .....	23,500	S	2,200	2,600	4,100	3,000	3,300	3,400	2,600	1,300	1,000
Hispanic .....	20,800	S	500	2,400	4,400	4,000	3,100	2,100	1,400	2,200	800
White, non-Hispanic .....	520,800	S	8,600	44,800	61,900	73,000	77,100	80,400	76,700	60,800	37,500
Other.....	2,000	S	S	100	300	200	600	200	S	S	S
Science.....	581,600	S	10,900	58,200	78,400	85,500	88,800	86,000	77,600	60,700	35,400
Male .....	409,300	S	5,100	34,800	50,300	57,900	60,800	62,400	57,800	49,900	30,300
Female .....	172,200	S	5,900	23,400	28,100	27,600	28,000	23,500	19,900	10,800	5,100
Asian.....	93,500	S	1,100	15,800	18,900	18,900	14,600	9,400	6,200	5,400	3,200
American Indian/Alaska Native .....	3,400	S	S	200	400	400	600	600	600	400	300
Black, non-Hispanic .....	20,600	S	2,200	2,300	3,600	2,500	2,900	2,900	2,200	1,200	1,000
Hispanic .....	17,900	S	500	1,900	3,800	3,600	2,600	1,700	1,300	1,900	700
White, non-Hispanic .....	444,300	S	7,100	37,900	51,500	60,000	67,500	71,200	67,400	51,500	30,100
Other .....	1,700	S	S	100	300	200	600	100	S	S	S
Computer and mathematical sciences .....	52,300	S	3,000	6,500	7,700	8,600	6,800	6,000	5,800	5,400	2,500
Male .....	42,800	S	900	4,900	6,200	7,500	5,600	5,200	5,000	5,100	2,300
Female .....	9,500	S	2,100	1,600	1,500	1,100	1,200	800	700	300	200
Asian .....	12,200	S	400	2,100	2,400	3,100	1,500	1,100	700	500	400
American Indian/Alaska Native .....	200	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	3,200	S	S	100	500	100	200	100	200	100	100
Hispanic .....	1,500	S	S	100	300	200	200	100	100	S	S
White, non-Hispanic .....	35,100	S	600	4,100	4,600	5,200	4,800	4,600	4,800	4,400	1,900
Other .....	S	S	S	S	S	S	S	S	S	S	S

**Individuals in labor force with S&E or S&E-related highest degrees, by highest degree, degree field, sex, race/ethnicity, and age: 2003**

Degree, field, sex, and race/ethnicity	All ages	Age (years)									
		<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
<b>Biological, agricultural, and environmental</b>											
life sciences.....	196,400	S	4,400	22,400	30,900	30,900	33,500	27,500	21,300	16,400	9,100
Male .....	134,300	S	2,100	12,400	18,200	20,800	22,200	20,600	16,500	13,300	8,100
Female .....	62,100	S	2,400	9,900	12,700	10,100	11,300	6,800	4,800	3,000	1,000
Asian .....	40,300	S	400	7,300	9,200	7,700	6,300	3,700	1,600	2,800	1,200
American Indian/Alaska Native.....	1,000	S	S	S	100	200	200	300	S	S	S
Black, non-Hispanic.....	6,100	S	S	800	1,700	1,000	900	500	500	300	200
Hispanic .....	6,800	S	S	600	2,200	1,600	1,000	500	300	200	100
White, non-Hispanic.....	141,100	S	3,700	13,500	17,600	20,300	24,700	22,400	18,800	12,600	7,500
Other .....	1,000	S	S	S	100	S	S	S	S	S	S
<b>Physical and related sciences</b> .....	144,500	S	1,900	14,500	20,000	22,800	21,000	18,000	18,500	17,300	10,400
Male .....	123,100	S	1,300	11,300	16,300	18,000	18,100	15,800	16,600	16,000	9,900
Female .....	21,300	S	600	3,200	3,800	4,900	3,000	2,100	1,900	1,300	600
Asian .....	29,000	S	300	4,300	5,400	5,900	4,700	3,100	3,000	1,300	1,000
American Indian/Alaska Native.....	600	S	S	S	S	100	S	S	S	S	S
Black, non-Hispanic.....	2,200	S	S	400	300	400	400	200	300	100	100
Hispanic .....	2,900	S	S	300	500	500	400	100	200	800	100
White, non-Hispanic.....	109,400	S	1,500	9,500	13,700	15,900	15,400	14,500	14,900	14,900	9,200
Other .....	300	S	S	S	100	S	S	S	S	S	S
<b>Social and related sciences</b> .....	188,500	S	1,600	14,800	19,700	23,200	27,600	34,500	32,100	21,700	13,300
Male .....	109,100	S	800	6,100	9,600	11,600	14,900	20,800	19,700	15,500	10,100
Female .....	79,400	S	800	8,700	10,100	11,600	12,600	13,800	12,400	6,200	3,300
Asian .....	12,000	S	100	2,000	1,900	2,200	2,100	1,400	900	800	700
American Indian/Alaska Native.....	1,700	S	S	200	100	100	300	200	400	200	200
Black, non-Hispanic.....	9,100	S	100	900	1,100	1,000	1,500	2,100	1,200	600	500
Hispanic .....	6,700	S	S	800	800	1,200	1,000	1,000	700	600	300
White, non-Hispanic.....	158,700	S	1,300	10,800	15,700	18,600	22,700	29,700	28,800	19,500	11,600
Other .....	200	S	S	S	S	S	S	S	S	S	S
<b>Engineering</b> .....	126,100	S	2,600	14,200	19,700	23,500	16,600	14,500	13,100	12,800	8,800
Male .....	115,400	S	2,200	11,900	16,800	21,000	15,600	13,700	12,700	12,700	8,800
Female .....	10,700	S	500	2,300	2,900	2,500	1,000	800	400	100	S
Asian.....	43,200	S	1,000	6,400	8,200	9,500	6,300	4,400	3,200	3,000	1,200
American Indian/Alaska Native.....	400	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	2,900	S	S	400	500	500	300	500	500	100	S
Hispanic .....	2,900	S	S	500	500	400	500	400	100	300	S
White, non-Hispanic.....	76,400	S	1,500	6,800	10,400	13,000	9,500	9,200	9,300	9,200	7,400
Other .....	300	S	S	S	S	S	S	S	S	S	S
<b>S&amp;E-related fields</b> .....	58,700	S	2,200	4,000	5,700	9,400	10,300	12,200	6,000	4,900	3,800
Male .....	31,300	S	400	2,500	2,400	4,700	5,900	6,300	2,700	3,400	3,000
Female .....	27,400	S	1,800	1,500	3,400	4,700	4,400	5,900	3,300	1,500	800
Asian.....	10,300	S	S	400	2,000	3,200	1,700	1,000	500	300	500
American Indian/Alaska Native.....	200	S	S	S	S	S	S	S	S	S	S

**Individuals in labor force with S&E or S&E-related highest degrees, by highest degree, degree field, sex, race/ethnicity, and age: 2003**

Degree, field, sex, and race/ethnicity	All ages	Age (years)									
		<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Black, non-Hispanic .....	2,900	S	S	200	200	300	1,300	400	500	100	S
Hispanic .....	3,200	S	S	600	400	400	100	1,000	200	S	S
White, non-Hispanic .....	41,900	S	1,400	2,800	3,100	5,500	7,200	9,600	4,700	4,500	2,900
Other .....	S	S	S	S	S	S	S	S	S	S	S

S = suppressed for reasons of confidentiality and/or data reliability

\*Includes professional degrees.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT), preliminary estimates (2003), <http://sestat.nsf.gov>.

*Science and Engineering Indicators 2006*

Appendix table 3-14  
**Older S&E degree holders working full time, by age and degree level: 2003**  
 (Percent)

Age (years)	Bachelor's	Master's	Doctoral
55.....	77.6	85.4	84.9
56.....	70.0	80.6	84.1
57.....	71.9	74.4	84.4
58.....	67.4	75.5	81.3
59.....	64.0	65.2	78.9
60.....	62.7	65.0	75.7
61.....	50.4	64.1	69.2
62.....	46.3	44.8	67.3
63.....	43.0	36.4	62.9
64.....	43.2	37.5	58.9
65.....	30.5	30.5	53.2
66.....	28.5	21.3	43.2
67.....	24.1	28.4	31.5
68.....	14.7	24.8	33.8
69.....	16.3	16.5	21.1

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT), preliminary estimates (2003), <http://sestat.nsf.gov>.

Appendix table 3-15  
**Tertiary-educated population more than 15 years old, by country: 2000**  
 (Thousands)

Country	Population
United States .....	52,722
China .....	20,453
India .....	14,962
Russia .....	13,642
Japan .....	12,537
Philippines .....	5,698
Germany .....	5,537
Brazil .....	4,520
South Korea .....	4,442
United Kingdom .....	4,181
Thailand .....	3,185
Mexico .....	2,993
France .....	2,969
Other .....	45,982

SOURCE: R.J. Barro and J. Lee, *International Data on Educational Attainment: Updates and Implication*, Center for International Development (2000).

*Science and Engineering Indicators 2006*

## Individuals in labor force in S&amp;E and S&amp;E-related occupations, by highest degree, occupation, sex, race/ethnicity, and age: 2003

Degree, occupation, sex, and race/ethnicity	All ages	Age (years)									
		<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
All degree levels <sup>a</sup>											
S&E occupations.....	5,095,000	97,900	573,200	784,700	770,600	845,100	701,800	571,200	398,900	216,600	134,900
Male.....	3,717,200	60,400	370,300	563,400	553,500	616,900	515,400	432,300	314,700	176,300	113,900
Female.....	1,377,800	37,300	202,900	221,300	217,100	228,300	186,500	139,000	84,300	40,200	20,900
Asian.....	739,400	21,100	120,100	165,000	133,000	116,400	70,600	49,300	32,000	20,500	11,300
American Indian/Alaska Native.....	17,600	S	900	2,500	3,100	4,700	S	S	S	600	S
Black, non-Hispanic.....	225,000	3,200	27,200	40,100	37,000	38,600	32,600	25,400	11,400	6,200	3,100
Hispanic.....	219,600	5,200	28,900	43,900	43,500	37,200	25,400	14,200	10,700	6,700	4,000
White, non-Hispanic.....	3,814,000	65,100	384,100	518,100	539,100	637,300	562,800	475,200	337,500	179,900	114,900
Other.....	79,500	3,200	12,000	15,200	14,900	10,900	8,000	5,800	6,100	2,500	1,000
Scientists.....	3,479,600	69,600	399,700	563,500	538,900	563,400	478,700	385,900	266,400	135,300	78,200
Male.....	2,283,200	39,500	235,300	374,600	354,200	371,900	309,500	257,400	185,700	96,800	58,200
Female.....	1,196,400	30,000	164,400	188,900	184,700	191,600	169,200	128,500	80,800	38,400	19,900
Asian.....	531,700	14,100	90,100	131,300	97,200	85,400	49,400	29,100	17,700	11,100	6,300
American Indian/Alaska Native.....	12,700	S	700	2,000	1,800	3,500	1,900	1,200	1,000	300	300
Black, non-Hispanic.....	170,200	2,400	19,200	32,100	30,800	27,600	25,400	17,100	8,500	4,700	2,300
Hispanic.....	137,400	4,200	17,100	29,700	28,900	22,500	14,500	8,100	7,000	3,100	2,300
White, non-Hispanic.....	2,574,500	46,300	264,200	356,500	371,500	417,200	381,400	326,700	230,100	113,900	66,600
Other.....	53,200	2,500	8,400	12,000	8,700	7,200	6,100	3,800	2,200	2,000	300
Computer and mathematical scientists.....	2,086,900	29,600	227,100	384,800	378,500	374,200	278,700	204,000	134,000	55,200	20,700
Male.....	1,492,100	21,700	158,700	285,000	268,200	260,400	193,600	144,000	100,400	43,700	16,200
Female.....	594,800	7,900	68,400	99,800	110,300	113,800	85,100	59,900	33,600	11,500	4,500
Asian.....	382,300	8,000	69,400	106,500	74,400	59,500	30,500	18,200	9,000	4,600	2,300
American Indian/Alaska Native.....	3,800	S	S	S	600	1,000	S	400	S	S	S
Black, non-Hispanic.....	110,400	800	10,800	23,500	22,400	20,000	16,600	9,500	4,500	1,500	700
Hispanic.....	79,100	1,500	8,900	18,200	19,300	14,100	8,100	4,400	3,200	1,100	400
White, non-Hispanic.....	1,476,600	18,000	134,000	228,100	254,600	274,500	218,300	168,900	115,700	47,200	17,200
Other.....	34,600	1,200	4,000	7,600	7,200	4,900	4,900	2,700	1,300	S	S
Life and related scientists.....	566,500	15,500	73,300	70,900	67,400	82,600	86,700	74,300	48,900	26,200	20,600
Male.....	320,200	4,900	35,400	37,200	36,400	48,200	48,700	45,500	29,600	18,400	16,000
Female.....	246,200	10,600	37,900	33,700	31,000	34,300	38,000	28,800	19,300	7,900	4,700
Asian.....	80,600	2,500	10,600	13,700	12,500	15,200	11,400	6,300	4,200	2,800	1,500
American Indian/Alaska Native.....	3,900	S	S	S	200	1,900	500	300	300	S	S
Black, non-Hispanic.....	21,300	400	3,100	3,900	2,900	2,000	4,400	1,200	1,700	1,300	400
Hispanic.....	23,300	700	2,800	5,200	4,300	3,600	2,700	800	1,400	600	1,100
White, non-Hispanic.....	430,900	11,600	54,400	46,600	47,200	58,300	67,200	65,400	41,300	21,500	17,400
Other.....	6,400	S	1,900	1,400	300	1,500	S	S	S	S	S
Physical and related scientists.....	323,800	9,700	38,500	43,200	37,800	52,600	45,100	40,300	25,500	18,500	12,600
Male.....	230,700	5,100	17,000	26,400	26,400	37,600	35,700	33,500	21,500	15,400	12,100
Female.....	93,100	4,600	21,500	16,800	11,400	15,000	9,400	6,800	3,900	3,100	500
Asian.....	40,400	1,200	5,000	6,700	5,600	7,000	5,200	2,700	3,400	2,400	1,200

## Individuals in labor force in S&amp;E and S&amp;E-related occupations, by highest degree, occupation, sex, race/ethnicity, and age: 2003

Degree, occupation, sex, and race/ethnicity	All ages	Age (years)									
		<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
American Indian/Alaska Native .....	1,500	S	100	300	S	500	S	S	S	S	S
Black, non-Hispanic.....	9,300	300	600	1,100	1,500	1,500	1,300	1,200	1,000	200	S
Hispanic .....	12,600	400	2,000	2,400	2,000	1,400	1,600	1,100	1,100	500	200
White, non-Hispanic.....	255,100	7,400	28,800	32,100	28,300	41,700	36,600	35,000	19,500	15,000	10,600
Other .....	4,900	S	2,000	600	200	500	S	S	S	S	S
Social and related scientists.....	502,400	14,700	60,800	64,500	55,300	54,100	68,200	67,300	58,000	35,300	24,300
Male.....	240,100	7,900	24,100	26,000	23,300	25,600	31,500	34,300	34,100	19,300	14,000
Female.....	262,300	6,900	36,700	38,500	32,000	28,400	36,600	33,000	23,900	16,000	10,300
Asian.....	28,300	2,400	5,100	4,400	4,700	3,700	2,400	1,900	1,000	1,400	1,300
American Indian/Alaska Native .....	3,500	S	S	600	900	S	900	400	200	200	S
Black, non-Hispanic.....	29,100	900	4,700	3,600	3,900	4,000	3,100	5,300	1,300	1,800	600
Hispanic .....	22,400	1,600	3,400	3,900	3,200	3,400	2,100	1,900	1,400	1,000	600
White, non-Hispanic.....	411,900	9,300	46,900	49,600	41,500	42,700	59,300	57,300	53,600	30,200	21,400
Other .....	7,200	S	500	2,400	1,000	300	400	600	500	S	S
Engineers .....	1,615,400	28,300	173,500	221,200	231,700	281,700	223,100	185,300	132,500	81,300	56,700
Male.....	1,434,000	20,900	135,000	188,800	199,300	245,000	205,900	174,900	129,000	79,500	55,700
Female.....	181,400	7,300	38,500	32,400	32,400	36,700	17,300	10,500	3,500	1,800	1,000
Asian.....	207,700	7,000	30,000	33,700	35,800	31,000	21,200	20,200	14,300	9,400	5,000
American Indian/Alaska Native .....	4,900	S	200	500	1,300	1,200	S	S	S	300	S
Black, non-Hispanic .....	54,800	800	8,000	8,000	6,200	11,000	7,200	8,300	2,900	1,500	800
Hispanic.....	82,200	1,000	11,800	14,200	14,600	14,700	10,900	6,100	3,700	3,600	1,700
White, non-Hispanic .....	1,239,500	18,800	119,900	161,600	167,600	220,100	181,400	148,500	107,400	66,000	48,300
Other.....	26,300	700	3,600	3,200	6,200	3,700	1,900	2,000	3,900	500	700
S&E-related occupations .....	5,328,200	61,800	470,200	755,000	716,500	809,700	849,900	773,900	503,200	244,000	143,900
Male.....	2,389,000	12,500	160,500	318,900	297,600	360,500	357,100	370,200	276,400	137,500	97,700
Female.....	2,939,300	49,300	309,700	436,000	418,900	449,100	492,900	403,700	226,800	106,500	46,200
Asian.....	497,600	6,800	49,200	76,700	77,200	83,400	67,600	58,900	40,200	25,300	12,400
American Indian/Alaska Native .....	21,200	S	800	3,400	2,000	2,800	4,200	4,000	2,700	S	S
Black, non-Hispanic.....	294,300	3,200	26,000	42,100	43,600	43,800	48,900	37,100	28,300	14,800	6,700
Hispanic.....	272,900	2,400	30,500	36,100	41,900	54,900	39,700	30,500	21,200	6,400	9,200
White, non-Hispanic .....	4,149,200	46,600	347,900	577,900	541,600	615,000	675,800	633,300	404,500	195,300	111,300
Other.....	93,000	2,600	15,900	18,900	10,300	9,700	13,700	10,200	6,300	1,700	3,800
Bachelor's											
S&E occupations .....	2,903,600	90,200	409,900	480,100	449,200	484,800	384,200	297,500	175,000	84,800	47,900
Male.....	2,183,700	55,900	271,800	370,300	338,300	364,500	289,300	234,500	146,400	71,200	41,500
Female.....	719,800	34,300	138,000	109,700	110,800	120,200	95,000	63,000	28,600	S	S
Asian.....	299,000	17,800	64,200	69,100	44,000	40,600	24,100	18,300	10,000	7,100	3,600
American Indian/Alaska Native .....	11,200	S	700	1,600	S	4,100	S	S	S	S	S
Black, non-Hispanic .....	144,400	3,000	20,700	27,100	22,200	25,300	19,600	17,600	5,400	S	S
Hispanic.....	142,800	4,800	22,300	29,400	29,100	20,700	16,000	8,600	6,700	3,900	S
White, non-Hispanic .....	2,252,400	61,400	292,500	341,500	341,300	387,300	318,700	249,500	148,300	70,300	41,500
Other.....	53,800	3,000	9,400	11,500	10,200	6,800	4,600	3,000	4,100	S	S

## Individuals in labor force in S&amp;E and S&amp;E-related occupations, by highest degree, occupation, sex, race/ethnicity, and age: 2003

Degree, occupation, sex, and race/ethnicity	All ages	Age (years)									
		<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Scientists .....	1,850,600	64,700	281,200	331,400	299,000	305,200	235,500	178,800	98,700	39,600	16,600
Male .....	1,244,900	36,700	169,700	241,300	208,000	206,200	152,000	121,600	71,600	27,200	10,600
Female .....	605,700	28,000	111,400	90,100	91,000	98,900	83,600	57,200	27,100	12,400	6,000
Asian .....	207,900	12,000	49,800	55,500	29,800	27,200	14,800	8,000	5,100	3,800	1,800
American Indian/Alaska Native .....	7,000	S	500	1,200	1,000	3,100	600	S	S	S	S
Black, non-Hispanic .....	103,400	2,200	14,600	20,800	18,500	16,500	13,800	11,000	3,300	1,700	S
Hispanic .....	84,200	4,000	12,800	19,800	18,700	10,900	8,400	4,400	3,800	1,200	S
White, non-Hispanic .....	1,415,000	44,000	196,400	225,200	226,000	243,600	194,700	153,800	85,500	32,200	13,600
Other .....	33,200	2,400	7,000	9,000	4,900	3,900	3,200	1,400	800	S	S
Computer and mathematical scientists.....	1,380,400	27,600	172,200	271,900	252,300	246,000	180,600	126,800	68,800	25,700	8,700
Male.....	982,300	20,400	121,800	207,600	180,500	168,000	121,900	86,200	51,500	18,800	5,600
Female.....	398,200	7,200	50,400	64,200	71,800	78,000	58,700	40,600	17,300	6,800	3,100
Asian.....	173,400	6,800	39,800	51,300	28,800	22,700	11,400	7,200	3,600	800	1,100
American Indian/Alaska Native .....	2,600	S	S	S	S	1,000	S	S	S	S	S
Black, non-Hispanic.....	79,500	800	8,000	18,600	16,000	13,800	11,300	7,600	2,000	S	S
Hispanic .....	59,700	1,400	7,600	14,300	14,800	9,300	6,300	3,000	2,100	700	S
White, non-Hispanic .....	1,041,200	17,300	113,000	180,600	187,700	196,000	148,700	107,800	60,200	22,700	7,000
Other.....	24,100	1,100	3,700	6,100	4,700	3,200	2,700	1,200	S	S	S
Life and related scientists .....	201,300	14,300	51,100	22,600	18,600	26,100	26,700	23,800	11,300	3,400	3,500
Male.....	105,500	4,100	22,800	13,400	9,900	14,900	14,400	15,000	6,500	2,700	1,900
Female.....	95,800	10,200	28,200	9,300	8,600	11,200	12,300	8,900	4,700	S	1,700
Asian.....	16,800	S	6,500	2,100	S	2,600	1,600	S	S	S	S
American Indian/Alaska Native .....	2,900	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	7,900	400	2,800	S	S	S	1,700	S	S	S	S
Hispanic .....	8,800	700	1,800	2,800	1,500	S	S	S	S	S	S
White, non-Hispanic .....	161,600	11,000	38,200	15,900	15,800	20,600	22,300	22,600	9,600	2,300	3,300
Other.....	3,300	S	1,300	S	S	S	S	S	S	S	S
Physical and related scientists .....	143,000	9,300	28,200	18,600	14,100	22,600	18,200	15,500	9,800	4,700	1,900
Male.....	92,000	5,000	12,400	10,200	10,000	17,100	12,900	12,500	7,700	2,500	1,800
Female.....	51,100	4,400	15,900	8,400	4,100	5,600	5,400	3,100	2,100	2,100	S
Asian.....	12,000	1,200	2,900	1,200	S	1,800	1,600	S	1,200	1,300	S
American Indian/Alaska Native .....	900	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	5,600	200	400	S	800	1,000	900	900	S	S	S
Hispanic .....	7,800	300	1,500	1,500	1,500	S	S	S	S	S	S
White, non-Hispanic .....	113,500	7,300	21,500	14,800	11,300	18,600	14,700	13,700	7,100	3,200	1,200
Other.....	3,100	S	1,800	S	S	S	S	S	S	S	S
Social and related scientists.....	125,900	13,500	29,700	18,300	14,000	10,400	10,000	12,700	8,800	5,900	2,500
Male.....	65,200	7,300	12,800	10,100	7,600	6,200	2,800	8,000	5,900	3,200	S
Female.....	60,700	6,200	16,900	8,200	6,400	4,200	7,200	4,700	2,900	2,700	S
Asian.....	5,600	2,100	S	S	S	S	S	S	S	S	S
American Indian/Alaska Native .....	S	S	S	S	S	S	S	S	S	S	S



## Individuals in labor force in S&amp;E and S&amp;E-related occupations, by highest degree, occupation, sex, race/ethnicity, and age: 2003

Degree, occupation, sex, and race/ethnicity	All ages	Age (years)									
		<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Black, non-Hispanic.....	10,400	900	3,400	S	S	S	S	2,300	S	S	S
Hispanic.....	7,900	1,500	1,900	S	900	S	S	S	S	S	S
White, non-Hispanic.....	98,700	8,400	23,700	13,800	11,200	8,300	9,000	9,700	8,500	4,000	2,100
Other.....	2,700	S	S	S	S	S	S	S	S	S	S
Engineers.....	1,053,000	25,500	128,700	148,700	150,200	179,600	148,700	118,700	76,300	45,200	31,300
Male.....	938,800	19,200	102,100	129,000	130,300	158,300	137,300	112,900	74,800	44,000	30,900
Female.....	114,100	6,300	26,600	19,600	19,800	21,300	11,400	5,800	1,500	S	S
Asian.....	91,100	5,800	14,400	13,600	14,200	13,400	9,300	10,300	4,900	3,300	1,800
American Indian/Alaska Native.....	4,200	S	200	400	S	1,000	S	S	S	S	S
Black, non-Hispanic.....	41,000	800	6,100	6,300	3,700	8,800	5,800	6,600	2,100	S	S
Hispanic.....	58,600	800	9,500	9,600	10,400	9,800	7,600	4,200	2,900	2,700	1,000
White, non-Hispanic.....	837,400	17,400	96,100	116,300	115,300	143,700	124,000	95,700	62,800	38,100	27,900
Other.....	20,600	600	2,400	2,500	5,300	2,900	1,400	1,600	3,300	S	S
S&E-related occupations.....	2,995,400	55,900	322,900	449,000	420,100	457,700	486,500	395,800	239,900	113,200	54,500
Male.....	1,127,300	11,100	106,100	184,600	145,400	168,600	160,900	164,100	108,000	50,700	27,700
Female.....	1,868,200	44,800	216,800	264,400	274,700	289,100	325,600	231,700	131,900	62,500	26,800
Asian.....	253,600	6,100	25,000	36,600	35,900	43,400	38,500	32,500	19,600	11,300	4,600
American Indian/Alaska Native.....	14,300	S	700	3,200	1,300	2,100	3,100	2,300	S	S	S
Black, non-Hispanic.....	188,500	3,200	18,000	29,300	29,900	30,700	33,300	19,400	15,200	7,800	1,900
Hispanic.....	161,600	2,200	20,700	23,300	24,400	33,000	24,200	17,500	8,800	3,200	4,400
White, non-Hispanic.....	2,313,100	41,800	245,700	342,800	321,200	341,700	377,000	319,300	191,700	89,900	42,000
Other.....	64,300	2,400	12,800	13,900	7,400	6,800	10,400	4,800	3,200	S	1,500
Master's											
S&E occupations.....	1,502,900	7,700	144,600	228,800	225,500	248,700	214,600	180,400	141,300	69,900	41,600
Male.....	1,046,900	4,600	87,700	145,500	152,900	175,200	154,300	131,600	105,800	55,400	33,800
Female.....	456,000	3,000	56,900	83,300	72,500	73,500	60,300	48,800	35,300	S	S
Asian.....	306,800	3,300	51,600	73,800	62,800	47,200	26,600	19,500	12,200	6,400	3,600
American Indian/Alaska Native.....	S	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	56,200	S	4,300	9,900	10,100	10,500	9,000	5,300	3,800	S	S
Hispanic.....	54,200	S	6,200	11,000	9,600	12,400	5,800	3,300	2,500	1,300	S
White, non-Hispanic.....	1,061,100	3,700	79,800	130,200	138,500	175,400	169,900	149,500	120,800	58,400	34,700
Other.....	21,600	S	2,600	3,400	4,000	S	S	S	S	S	S
Scientists.....	1,039,600	4,900	102,200	168,700	159,300	165,900	152,300	124,200	95,200	43,700	23,300
Male.....	640,700	2,800	56,700	96,000	96,800	105,000	97,100	79,300	61,300	29,700	16,000
Female.....	398,900	2,000	45,500	72,700	62,400	60,900	55,200	44,900	33,800	14,100	7,300
Asian.....	221,500	2,100	37,000	58,500	47,200	36,200	19,200	12,300	5,400	2,400	1,300
American Indian/Alaska Native.....	2,700	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	44,500	200	2,400	8,400	7,900	8,600	7,900	3,900	3,300	1,500	S
Hispanic.....	33,400	S	3,900	7,000	5,900	7,800	2,900	1,800	1,900	700	1,300
White, non-Hispanic.....	721,300	2,300	57,400	91,600	94,500	111,000	119,600	103,700	83,200	37,800	20,200
Other.....	16,300	S	1,400	2,700	3,300	2,300	1,800	2,200	1,100	1,300	S

## Individuals in labor force in S&amp;E and S&amp;E-related occupations, by highest degree, occupation, sex, race/ethnicity, and age: 2003

Degree, occupation, sex, and race/ethnicity	All ages	Age (years)									
		<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Computer and mathematical scientists.....	605,500	2,100	51,900	102,300	110,900	110,500	81,300	64,200	52,900	21,500	7,900
Male.....	429,300	1,400	36,000	69,100	76,000	78,200	58,800	47,300	38,100	17,400	6,900
Female.....	176,200	700	15,800	33,100	34,900	32,300	22,500	16,900	14,800	4,100	1,000
Asian.....	183,000	1,200	29,200	50,800	40,700	30,200	15,300	8,800	4,000	2,200	700
American Indian/Alaska Native.....	1,000	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	26,200	S	800	4,700	5,400	5,800	4,700	1,800	2,100	600	S
Hispanic.....	17,400	S	1,300	3,700	4,000	4,600	1,500	900	900	S	S
White, non-Hispanic.....	368,400	700	20,200	41,600	58,100	68,300	58,500	51,000	44,900	18,200	7,000
Other.....	9,500	S	S	1,400	2,400	1,700	1,200	1,400	S	S	S
Life and related scientists.....	130,800	1,200	12,400	19,500	15,500	17,600	22,300	20,200	13,100	5,900	3,000
Male.....	62,900	800	6,700	7,900	7,500	9,200	9,700	11,200	5,200	2,600	2,000
Female.....	68,000	S	5,600	11,600	8,000	8,500	12,600	9,000	7,900	3,400	1,000
Asian.....	14,700	S	1,300	3,200	2,000	1,900	2,600	2,000	700	S	S
American Indian/Alaska Native.....	S	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	5,100	S	S	1,200	S	S	1,000	S	S	S	S
Hispanic.....	5,200	S	700	800	S	1,200	S	S	S	S	S
White, non-Hispanic.....	103,900	600	9,600	13,800	12,300	13,400	18,000	17,600	11,600	5,500	1,500
Other.....	1,800	S	S	S	S	S	S	S	S	S	S
Physical and related scientists.....	85,600	300	8,400	13,800	9,600	14,600	13,400	11,800	5,200	5,000	3,400
Male.....	57,300	S	3,300	8,000	5,300	8,000	11,100	9,300	4,500	4,600	3,200
Female.....	28,300	200	5,100	5,800	4,300	6,600	2,300	2,600	800	S	S
Asian.....	10,400	S	1,900	2,600	1,300	2,100	900	S	S	S	S
American Indian/Alaska Native.....	S	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	2,300	S	200	300	S	S	S	S	S	S	S
Hispanic.....	2,900	S	500	700	S	S	600	S	S	S	S
White, non-Hispanic.....	68,400	100	5,600	9,900	7,400	11,500	11,600	10,800	4,000	4,400	3,000
Other.....	1,600	S	S	S	S	S	S	S	S	S	S
Social and related scientists.....	217,700	1,200	29,600	33,200	23,200	23,100	35,400	27,900	23,800	11,200	9,100
Male.....	91,300	S	10,700	10,900	8,000	9,600	17,500	11,500	13,500	5,100	4,000
Female.....	126,500	700	18,900	22,200	15,300	13,500	17,900	16,400	10,300	6,100	5,100
Asian.....	13,400	S	4,500	1,900	3,100	2,000	S	S	S	S	S
American Indian/Alaska Native.....	1,500	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	11,000	S	1,200	2,200	1,200	1,800	2,000	1,700	S	S	S
Hispanic.....	7,800	S	1,500	1,800	1,300	1,600	S	S	600	S	S
White, non-Hispanic.....	180,600	800	21,900	26,200	16,700	17,900	31,600	24,400	22,600	9,800	8,600
Other.....	3,400	S	S	S	S	S	S	S	S	S	S
Engineers.....	463,300	2,800	42,400	60,100	66,200	82,800	62,300	56,200	46,100	26,200	18,300
Male.....	406,200	1,800	31,000	49,500	56,100	70,200	57,200	52,300	44,500	25,700	17,800
Female.....	57,100	1,000	11,400	10,600	10,100	12,600	5,100	3,900	1,500	S	S
Asian.....	85,300	1,200	14,600	15,300	15,600	11,000	7,400	7,200	6,800	4,000	2,300
American Indian/Alaska Native.....	S	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	11,700	S	1,900	1,500	2,200	1,900	1,100	1,400	500	S	S
Hispanic.....	20,800	200	2,300	4,000	3,700	4,600	2,900	1,500	600	600	S

## Individuals in labor force in S&amp;E and S&amp;E-related occupations, by highest degree, occupation, sex, race/ethnicity, and age: 2003

Degree, occupation, sex, and race/ethnicity	All ages	Age (years)									
		<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
White, non-Hispanic .....	339,800	1,400	22,400	38,600	44,000	64,400	50,300	45,800	37,600	20,600	14,500
Other .....	5,300	S	1,200	700	700	S	S	S	S	S	S
S&E-related occupations .....	1,234,200	5,600	90,400	161,500	146,700	173,300	195,300	223,300	147,500	61,400	29,100
Male.....	501,200	1,300	27,100	57,900	62,200	76,400	75,600	88,600	69,100	26,800	16,300
Female.....	733,100	4,300	63,300	103,600	84,500	97,000	119,700	134,700	78,400	34,600	12,900
Asian.....	91,300	S	8,600	15,100	14,500	15,500	13,400	11,900	7,100	3,300	1,200
American Indian/Alaska Native .....	3,500	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	65,900	S	5,300	7,700	6,700	4,300	9,100	14,600	10,700	5,600	1,900
Hispanic.....	44,400	200	6,500	5,300	6,800	7,700	6,400	5,400	5,000	S	S
White, non-Hispanic .....	1,014,200	4,600	67,800	131,600	117,100	144,600	164,100	185,600	121,900	52,000	25,000
Other.....	14,900	S	S	1,900	1,200	S	2,100	4,300	1,800	S	S
Doctoral											
S&E occupations .....	594,600	S	13,600	66,000	86,900	95,600	86,600	79,900	72,100	56,200	37,900
Male.....	427,900	S	7,000	42,800	57,400	68,700	61,300	58,200	54,600	45,600	32,400
Female.....	166,600	S	6,600	23,100	29,500	26,800	25,400	21,700	17,500	10,700	S
Asian.....	119,800	S	2,200	19,900	25,000	25,200	18,200	10,400	8,400	6,600	3,900
American Indian/Alaska Native .....	3,400	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	20,200	S	S	2,500	3,800	2,600	3,000	2,400	2,000	1,100	S
Hispanic.....	17,400	S	S	2,300	3,600	3,300	2,700	2,100	1,300	1,100	S
White, non-Hispanic .....	432,200	S	8,600	41,000	53,800	63,800	62,100	64,300	59,600	46,900	32,000
Other.....	1,700	S	S	S	S	S	S	S	S	S	S
Scientists.....	497,900	S	11,300	53,600	71,800	77,300	74,500	69,600	62,200	46,800	30,800
Male.....	340,600	S	5,100	32,600	44,800	52,600	50,000	48,600	45,200	36,400	25,400
Female.....	157,200	S	6,200	20,900	27,000	24,700	24,600	21,000	17,000	10,500	5,400
Asian.....	88,800	S	1,300	15,000	19,000	18,700	13,800	7,800	5,800	4,500	2,900
American Indian/Alaska Native .....	3,000	S	S	200	300	300	400	700	400	300	300
Black, non-Hispanic .....	18,200	S	2,200	2,200	3,500	2,200	2,700	2,000	1,700	1,000	800
Hispanic.....	14,700	S	400	1,700	3,200	2,900	2,300	1,700	1,100	800	600
White, non-Hispanic .....	371,800	S	7,300	34,400	45,600	52,800	55,200	57,500	52,800	40,000	26,100
Other .....	1,400	S	S	100	200	400	S	100	S	S	S
Computer and mathematical scientists.....	88,100	S	3,100	10,000	13,700	15,700	12,000	11,800	10,100	7,800	3,900
Male.....	70,900	S	1,000	7,600	10,600	13,100	9,600	9,400	8,700	7,500	3,500
Female.....	17,100	S	2,200	2,400	3,100	2,600	2,400	2,400	1,400	300	400
Asian.....	24,200	S	400	4,100	4,800	6,200	3,400	2,200	1,200	1,500	500
American Indian/Alaska Native .....	300	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	4,500	S	S	300	800	400	500	100	300	100	100
Hispanic.....	1,900	S	S	100	500	200	300	500	100	S	200
White, non-Hispanic .....	57,000	S	800	5,500	7,600	8,800	7,700	9,000	8,400	6,200	3,000
Other.....	100	S	S	S	S	S	S	S	S	S	S

## Individuals in labor force in S&amp;E and S&amp;E-related occupations, by highest degree, occupation, sex, race/ethnicity, and age: 2003

Degree, occupation, sex, and race/ethnicity	All ages	Age (years)									
		<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Life and related scientists .....	175,500	S	4,900	20,500	28,100	29,000	28,900	23,200	18,500	13,700	8,700
Male.....	112,400	S	2,100	11,900	15,500	18,800	18,300	15,100	13,300	10,200	7,100
Female.....	63,100	S	2,800	8,600	12,600	10,200	10,600	8,100	5,200	3,500	1,600
Asian.....	38,200	S	700	6,400	9,100	8,200	6,100	3,000	2,200	1,700	900
American Indian/Alaska Native .....	900	S	S	S	100	100	100	200	200	S	S
Black, non-Hispanic.....	5,400	S	100	800	1,400	700	1,000	500	500	200	200
Hispanic.....	5,700	S	300	600	1,600	1,300	800	400	300	200	S
White, non-Hispanic .....	124,900	S	3,700	12,500	15,800	18,400	20,900	19,000	15,500	11,500	7,500
Other.....	400	S	S	S	100	S	S	S	S	S	S
Physical and related scientists .....	93,000	S	1,900	10,800	14,000	15,300	13,400	11,400	10,100	8,700	7,300
Male.....	79,400	S	1,400	8,200	11,100	12,400	11,700	10,300	9,100	8,100	7,100
Female.....	13,600	S	600	2,600	3,000	2,900	1,700	1,100	1,000	600	200
Asian.....	17,800	S	200	2,900	3,800	3,000	2,600	1,900	1,800	900	800
American Indian/Alaska Native .....	500	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic.....	1,500	S	S	300	200	300	200	200	100	100	S
Hispanic.....	1,900	S	S	200	400	400	300	100	100	300	S
White, non-Hispanic .....	71,200	S	1,700	7,400	9,600	11,500	10,200	9,200	8,100	7,300	6,300
Other.....	200	S	S	S	S	S	S	S	S	S	S
Social and related scientists.....	141,300	S	1,300	12,300	16,000	17,300	20,200	23,300	23,400	16,600	10,900
Male.....	78,000	S	700	4,900	7,600	8,300	10,300	13,900	14,000	10,500	7,800
Female.....	63,300	S	700	7,400	8,400	9,000	9,900	9,400	9,300	6,000	3,200
Asian.....	8,500	S	S	1,600	1,400	1,400	1,700	700	700	400	700
American Indian/Alaska Native .....	1,400	S	S	100	100	S	200	400	200	200	S
Black, non-Hispanic.....	6,900	S	S	800	1,000	800	1,000	1,200	800	600	500
Hispanic.....	5,100	S	S	700	700	900	900	700	600	300	300
White, non-Hispanic .....	118,700	S	1,200	9,000	12,700	14,100	16,400	20,300	20,800	15,000	9,300
Other.....	600	S	S	S	S	S	S	S	S	S	S
Engineers.....	96,700	S	2,300	12,400	15,100	18,300	12,100	10,300	9,900	9,400	7,100
Male.....	87,300	S	1,900	10,200	12,600	16,100	11,300	9,600	9,400	9,200	7,000
Female.....	9,400	S	400	2,200	2,500	2,100	800	700	500	200	S
Asian.....	31,000	S	900	4,900	6,000	6,500	4,400	2,600	2,600	2,100	1,000
American Indian/Alaska Native .....	400	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	2,000	S	S	300	300	400	300	400	300	100	S
Hispanic.....	2,700	S	S	600	400	400	400	400	200	300	S
White, non-Hispanic .....	60,400	S	1,300	6,600	8,200	11,000	6,900	6,800	6,800	6,900	5,900
Other.....	300	S	S	S	S	S	S	S	S	S	S
S&E-related occupations .....	84,200	S	1,800	7,200	8,900	12,200	12,000	14,700	13,400	8,400	5,300
Male.....	53,900	S	400	3,000	6,500	7,200	8,400	7,800	9,700	6,700	4,100
Female.....	30,400	S	1,400	4,200	2,500	5,000	3,600	6,900	3,700	1,700	1,200
Asian.....	13,000	S	500	1,400	2,400	3,200	1,900	1,500	700	700	700
American Indian/Alaska Native .....	300	S	S	S	S	S	S	S	S	S	S
Black, non-Hispanic .....	3,500	S	S	100	300	400	1,100	400	900	200	S

**Individuals in labor force in S&E and S&E-related occupations, by highest degree, occupation, sex, race/ethnicity, and age: 2003**

Degree, occupation, sex, and race/ethnicity	All ages	Age (years)									
		<25	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65+
Hispanic.....	3,400	S	S	600	300	300	300	1,100	400	100	S
White, non-Hispanic .....	63,500	S	1,300	5,100	5,900	8,200	8,300	11,700	11,300	7,400	4,000
Other.....	600	S	S	S	S	S	S	S	S	S	S

S = suppressed for reasons of confidentiality and/or data reliability

<sup>a</sup>Includes professional degrees.SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT), preliminary estimates (2003), <http://sestat.nsf.gov>.*Science and Engineering Indicators 2006*

Appendix table 3-17

**High-skilled-worker visas in Japan, entries: Selected years, 1992–2003**

Source region	1992	1996	1999	2003
All regions .....	137,961	195,003	240,936	268,048
Asia.....	47,107	86,469	112,690	134,307
North America .....	53,410	61,942	66,215	61,690
Europe.....	30,912	37,132	47,848	52,540
Other.....	6,532	9,460	14,183	19,511

SOURCES: S. Fuess, Jr., *Highly Skilled Workers and Japan: Is There International Mobility?* University of Nebraska (Lincoln) and Institute for the Study of Labor (Bonn) (2001); and *Japanese Statistical Handbook* (2004).

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Appendix table 3-18

(Page 1 of 2)

**Foreign-born U.S. residents with S&E and S&E-related highest degree, by degree level and place of birth: 2003**

Degree level/place of birth	Residents	Highest degree from outside United States (%)
<b>All degree levels</b>		
India .....	448,700	56.9
China .....	294,800	28.1
Philippines .....	280,300	75.5
Former Soviet Union .....	146,600	71.0
Canada .....	142,400	42.5
United Kingdom .....	116,500	56.0
South Korea .....	110,200	31.1
Taiwan .....	108,500	21.8
Germany .....	104,900	22.3
Vietnam .....	93,700	8.5
Mexico .....	87,800	48.6
Iran .....	82,800	20.5
Japan .....	59,400	30.7
Cuba .....	55,700	37.9
Pakistan .....	46,300	59.7
Poland .....	40,500	64.4
Colombia .....	32,200	49.3
Peru .....	30,100	59.1
Jamaica .....	29,500	9.8
France .....	29,100	39.5
Nigeria .....	28,600	22.8
Egypt .....	26,700	58.8
Italy .....	23,600	30.5
Romania .....	21,400	60.4
Ireland .....	20,900	45.7
Other foreign born .....	649,500	35.9
<b>Bachelor's</b>		
Philippines .....	232,500	78.7
India .....	195,200	77.7
China .....	100,700	40.1
Canada .....	95,900	42.1
Former Soviet Union .....	73,000	66.2
Vietnam .....	71,800	8.7
South Korea .....	69,300	37.4
United Kingdom .....	68,700	56.3
Germany .....	63,900	19.9
Mexico .....	61,600	44.1
Taiwan .....	42,200	39.5
Iran .....	40,800	18.6
Japan .....	40,800	33.5
Cuba .....	31,900	34.7
Peru .....	22,300	66.1
Pakistan .....	21,900	57.7
Jamaica .....	20,100	9.6
Colombia .....	19,700	51.1
Nigeria .....	16,500	17.4
France .....	16,200	27.8
Poland .....	15,000	51.4
Dominican Republic .....	14,100	38.5
Egypt .....	13,700	77.6
Venezuela .....	13,600	25.7
Italy .....	12,500	17.4
Other foreign born .....	372,000	37.2
<b>Master's</b>		
India .....	172,700	37.5
China .....	115,500	14.9
Taiwan .....	45,600	9.4
Former Soviet Union .....	43,200	78.1
Iran .....	24,500	7.8

Appendix table 3-18

(Page 2 of 2)

**Foreign-born U.S. residents with S&E and S&E-related highest degree, by degree level and place of birth: 2003**

Degree level/place of birth	Residents	Highest degree from outside United States (%)
Germany .....	22,400	18.5
United Kingdom.....	21,100	43.4
Philippines.....	20,000	25.6
South Korea.....	19,800	15.4
Poland.....	18,200	75.6
Canada.....	17,800	29.4
Mexico.....	12,900	54.8
Pakistan.....	11,100	50.2
Japan.....	10,100	18.0
Cuba.....	10,000	25.3
Vietnam.....	8,700	5.2
Ireland.....	8,300	24.1
Jamaica.....	7,800	12.2
France.....	7,500	58.1
Colombia.....	6,900	39.1
Romania.....	6,800	78.9
Nigeria.....	6,200	S
Bangladesh.....	6,000	29.0
Thailand.....	5,700	S
Egypt.....	5,600	32.2
Other foreign born.....	138,300	25.0
<b>Doctoral</b>		
China.....	62,500	23.9
India.....	41,300	34.0
United Kingdom.....	19,300	73.8
Former Soviet Union.....	17,900	80.2
Canada.....	12,900	49.5
Taiwan.....	12,400	S
Germany.....	10,800	46.2
South Korea.....	8,800	12.1
Iran.....	6,500	26.0
Japan.....	5,400	42.2
Egypt.....	3,900	23.9
Poland.....	3,900	64.1
Romania.....	3,900	58.8
France.....	3,800	58.5
Philippines.....	3,800	54.8
Italy.....	3,300	61.3
Cameroon.....	3,300	26.3
Pakistan.....	3,000	29.6
Mexico.....	2,900	46.7
Brazil.....	2,800	62.9
Turkey.....	2,800	S
Nigeria.....	2,700	57.6
Greece.....	2,400	16.3
Former Yugoslavia.....	2,400	43.6
Other foreign born.....	57,300	34.9

S = suppressed for reasons of confidentiality and/or data reliability

NOTE: Data do not include individuals with only foreign degrees who were not in the United States in 2000.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT), preliminary estimates (2003), <http://sestat.nsf.gov>.



Appendix table 4-1

**Gross domestic product and implicit price deflators: 1953–2005**

Year	Calendar year			Fiscal year		
	GDP (\$ billions)		GDP price deflator <sup>a</sup>	GDP (\$ billions)		GDP price deflator <sup>a</sup>
	Current	Constant 2000		Current	Constant 2000	
1953.....	379.4	2,079.5	0.182	372.9	2,044.0	0.182
1954.....	380.4	2,065.4	0.184	377.3	2,044.6	0.185
1955.....	414.8	2,212.8	0.187	394.6	2,119.9	0.186
1956.....	437.5	2,255.8	0.194	427.2	2,236.2	0.191
1957.....	461.1	2,301.1	0.200	450.3	2,271.6	0.198
1958.....	467.2	2,279.2	0.205	460.5	2,254.8	0.204
1959.....	506.6	2,441.3	0.208	491.5	2,369.5	0.207
1960.....	526.4	2,501.8	0.210	517.9	2,467.0	0.210
1961.....	544.7	2,560.0	0.213	530.8	2,492.8	0.213
1962.....	585.6	2,715.2	0.216	567.6	2,636.0	0.215
1963.....	617.7	2,834.0	0.218	598.7	2,746.0	0.218
1964.....	663.6	2,998.6	0.221	640.4	2,902.6	0.221
1965.....	719.1	3,191.1	0.225	687.1	3,061.6	0.224
1966.....	787.8	3,399.1	0.232	752.9	3,284.6	0.229
1967.....	832.6	3,484.6	0.239	811.8	3,430.8	0.237
1968.....	910.0	3,652.7	0.249	866.6	3,536.9	0.245
1969.....	984.6	3,765.4	0.261	948.6	3,702.4	0.256
1970.....	1,038.5	3,771.9	0.275	1,012.2	3,746.0	0.270
1971.....	1,127.1	3,898.6	0.289	1,079.9	3,806.4	0.284
1972.....	1,238.3	4,105.0	0.302	1,178.3	3,966.0	0.297
1973.....	1,382.7	4,341.5	0.318	1,307.6	4,215.4	0.310
1974.....	1,500.0	4,319.6	0.347	1,439.3	4,327.6	0.333
1975.....	1,638.3	4,311.2	0.380	1,560.7	4,250.5	0.367
1976.....	1,825.3	4,540.9	0.402	1,736.5	4,411.1	0.394
1977.....	2,030.9	4,750.5	0.428	1,974.3	4,665.6	0.423
1978.....	2,294.7	5,015.0	0.458	2,217.0	4,908.7	0.452
1979.....	2,563.3	5,173.4	0.495	2,500.7	5,124.0	0.488
1980.....	2,789.5	5,161.7	0.540	2,726.7	5,136.7	0.531
1981.....	3,128.4	5,291.7	0.591	3,054.7	5,241.4	0.583
1982.....	3,255.0	5,189.3	0.627	3,227.6	5,183.3	0.623
1983.....	3,536.7	5,423.8	0.652	3,440.7	5,291.9	0.650
1984.....	3,933.2	5,813.6	0.677	3,840.2	5,696.1	0.674
1985.....	4,220.3	6,053.7	0.697	4,141.5	5,949.8	0.696
1986.....	4,462.8	6,263.6	0.712	4,412.4	6,194.9	0.712
1987.....	4,739.5	6,475.1	0.732	4,647.1	6,358.4	0.731
1988.....	5,103.8	6,742.7	0.757	5,008.6	6,644.0	0.754
1989.....	5,484.4	6,981.4	0.786	5,400.5	6,896.0	0.783
1990.....	5,803.1	7,112.5	0.816	5,735.4	7,061.3	0.812
1991.....	5,995.9	7,100.5	0.844	5,935.1	7,042.8	0.843
1992.....	6,337.7	7,336.6	0.864	6,239.9	7,223.0	0.864
1993.....	6,657.4	7,532.7	0.884	6,575.5	7,445.3	0.883
1994.....	7,072.2	7,835.5	0.903	6,961.3	7,714.8	0.902
1995.....	7,397.7	8,031.7	0.921	7,325.8	7,948.2	0.922
1996.....	7,816.9	8,328.9	0.939	7,694.1	8,194.5	0.939
1997.....	8,304.3	8,703.5	0.954	8,182.4	8,564.8	0.955
1998.....	8,747.0	9,066.9	0.965	8,627.9	8,918.5	0.967
1999.....	9,268.4	9,470.3	0.979	9,125.3	9,311.0	0.980
2000.....	9,817.0	9,817.0	1.000	9,709.8	9,709.8	1.000
2001.....	10,128.0	9,890.7	1.024	10,057.9	9,831.4	1.023
2002.....	10,487.0	10,074.8	1.041	10,389.2	9,964.0	1.043
2003.....	11,004.0	10,381.3	1.060	10,840.7	10,214.4	1.061
2004.....	11,731.2	10,842.2	1.082	11,552.8	10,679.9	1.082
2005.....	12,391.9	11,232.7	1.103	12,227.4	11,076.1	1.104

GDP = gross domestic product

<sup>a</sup>2000 = 1.

NOTE: Projected data for 2003–05.

SOURCES: FY GDP and deflators and all 2003–05 data: Office of Management and Budget, *Budget of the United States, Fiscal Year 2006* (2005); calendar years 1953–2002: U.S. Department of Commerce, Bureau of Economic Analysis (various years), <http://www.bea.gov>.

Appendix table 4-2

**Purchasing power parity and purchasing power parity/market exchange rate ratios, by selected country: 1981–2004**

(Foreign currency/U.S. dollar)

Year	PPP										Market exchange rate/PPP				
	Canada	China	France	Germany <sup>a</sup>	Italy	Japan	South Korea	Russian Federation	Taiwan	United Kingdom	China	Germany <sup>a</sup>	Japan	South Korea	Taiwan
1981.....	1.17	—	0.83	1.07	0.41	220.26	416.43	—	—	0.49	—	1.08	1.00	1.64	—
1982.....	1.20	—	0.87	1.06	0.46	212.05	420.44	—	—	0.49	—	1.17	1.17	1.74	—
1983.....	1.21	—	0.92	1.05	0.51	208.81	428.63	—	—	0.50	—	1.24	1.14	1.81	—
1984.....	1.21	—	0.95	1.03	0.54	207.68	436.30	—	—	0.50	—	1.41	1.14	1.85	—
1985.....	1.21	—	0.97	1.02	0.57	206.15	442.81	—	—	0.52	—	1.47	1.16	1.96	—
1986.....	1.22	—	0.99	1.03	0.61	205.02	455.40	—	—	0.52	—	1.07	0.82	1.94	—
1987.....	1.24	—	1.00	1.02	0.63	200.08	468.06	—	—	0.54	—	0.90	0.72	1.76	—
1988.....	1.25	—	0.99	1.00	0.65	194.92	486.74	—	—	0.55	—	0.89	0.66	1.50	—
1989.....	1.26	—	0.99	0.99	0.66	192.13	495.88	—	—	0.57	—	0.97	0.72	1.35	—
1990.....	1.25	1.25	0.98	0.98	0.69	189.43	528.53	—	19.06	0.59	3.83	0.84	0.76	1.34	1.41
1991.....	1.25	1.29	0.97	0.98	0.72	188.41	566.16	—	19.30	0.61	4.14	0.86	0.72	1.30	1.39
1992.....	1.23	1.35	0.97	1.01	0.73	187.17	595.64	0.02	19.19	0.62	4.08	0.79	0.68	1.31	1.31
1993.....	1.22	1.51	0.97	1.02	0.74	183.93	623.38	0.17	19.45	0.62	3.82	0.83	0.60	1.29	1.36
1994.....	1.21	1.77	0.96	1.03	0.75	180.30	657.28	0.68	19.45	0.62	4.86	0.81	0.57	1.22	1.36
1995.....	1.22	1.93	0.96	1.02	0.77	175.79	690.04	1.63	19.20	0.62	4.32	0.72	0.54	1.12	1.38
1996.....	1.21	2.01	0.95	1.01	0.79	171.19	711.81	2.32	19.57	0.63	4.13	0.76	0.64	1.13	1.40
1997.....	1.21	2.00	0.93	1.01	0.81	168.87	732.44	2.59	19.89	0.62	4.15	0.88	0.72	1.30	1.44
1998.....	1.19	1.91	0.93	1.01	0.80	166.86	766.56	2.97	20.52	0.63	4.32	0.89	0.78	1.83	1.63
1999.....	1.19	1.85	0.93	1.00	0.81	162.04	754.89	5.07	19.81	0.64	4.47	0.94	0.70	1.57	1.63
2000.....	1.21	1.83	0.93	0.99	0.82	155.48	744.23	6.93	19.14	0.64	4.52	1.09	0.69	1.52	1.63
2001.....	1.20	1.81	0.91	0.99	0.83	149.55	752.64	7.99	18.80	0.63	4.58	1.13	0.81	1.72	1.80
2002.....	1.19	1.79	0.91	0.98	0.85	145.54	762.14	9.09	18.40	0.63	4.63	1.08	0.86	1.64	1.88
2003.....	1.21	1.81	0.91	0.98	0.86	139.59	766.76	10.09	17.90	0.64	4.57	0.91	0.83	1.55	1.92
2004.....	1.20	—	0.91	0.97	0.86	134.82	768.93	—	—	0.64	—	—	—	—	—

— = data not used

PPP = purchasing power parity

<sup>a</sup>Data for 1981–90 for West Germany.SOURCES: Organisation for Economic Co-operation and Development, *Main Science and Technology Indicators* (2004); and CIA World Factbook (for Taiwan, 2003 exchange rate).

Science and Engineering Indicators 2006

**U.S. R&D expenditures, by performing sector and source of funds: 1953–2004**

(Millions of current dollars)

Year	Performing sector:		Industry				Industry FFRDCs	U&C <sup>a</sup>					U&C FFRDCs	Other nonprofit institutions				Nonprofit FFRDCs <sup>b</sup>
	Total	Federal	Total	Federal <sup>c</sup>	Industry <sup>d</sup>	Federal <sup>e</sup>	Total	Federal	Nonfederal <sup>e</sup>	Industry	U&C	Nonprofit	Federal <sup>f</sup>	Total	Federal <sup>c</sup>	Industry	Nonprofit	Federal <sup>g</sup>
1953.....	5,160	1,015	3,630	1,430	2,200	NA	273	149	40	21	37	27	131	112	58	26	28	NA
1954.....	5,617	963	4,070	1,750	2,320	NA	301	165	45	24	40	29	161	123	61	31	31	NA
1955.....	6,281	973	4,517	2,057	2,460	123	342	191	50	27	42	32	187	131	64	35	32	9
1956.....	8,500	1,130	6,272	2,995	3,277	333	391	221	57	32	46	36	217	146	71	37	38	11
1957.....	9,908	1,297	7,324	3,928	3,396	407	433	242	64	37	51	40	267	167	79	37	51	14
1958.....	10,915	1,507	8,066	4,436	3,630	323	491	280	72	39	56	45	316	195	95	38	62	18
1959.....	12,490	1,681	9,200	5,217	3,983	418	586	356	81	40	61	50	349	234	125	42	67	22
1960.....	13,711	1,801	10,032	5,604	4,428	477	705	453	90	40	67	55	385	264	148	48	68	48
1961.....	14,564	1,987	10,353	5,685	4,668	555	834	557	101	40	75	62	440	304	169	49	86	92
1962.....	15,636	2,188	11,037	6,008	5,029	426	993	687	112	41	84	70	500	363	200	54	109	130
1963.....	17,519	2,558	12,216	6,856	5,360	414	1,178	839	125	41	96	78	580	408	234	55	119	165
1964.....	19,103	2,965	13,049	7,257	5,792	463	1,375	995	138	41	114	88	629	417	250	55	112	205
1965.....	20,252	3,156	13,812	7,367	6,445	373	1,595	1,167	150	42	136	101	630	472	286	62	124	215
1966.....	22,072	3,308	15,193	7,977	7,216	355	1,818	1,335	160	45	165	114	652	537	329	70	138	210
1967.....	23,346	3,444	15,966	7,946	8,020	419	2,035	1,491	168	52	200	126	696	561	342	74	145	225
1968.....	24,666	3,497	17,014	8,145	8,869	415	2,187	1,586	185	58	221	139	722	596	364	81	151	235
1969.....	25,996	3,790	17,844	7,987	9,857	464	2,280	1,624	208	61	233	155	731	642	388	93	161	245
1970.....	26,271	4,154	17,594	7,306	10,288	473	2,418	1,686	237	66	259	171	727	677	410	95	172	230
1971.....	26,952	4,409	17,829	7,175	10,654	491	2,565	1,760	262	72	290	182	735	709	427	98	184	215
1972.....	28,740	4,676	19,004	7,469	11,535	548	2,757	1,890	282	79	312	195	785	771	472	101	198	200
1973.....	30,952	4,837	20,704	7,600	13,104	545	2,953	2,009	302	90	343	211	841	882	566	105	211	190
1974.....	33,359	5,132	22,239	7,572	14,667	648	3,216	2,160	320	104	393	239	926	988	639	114	235	210
1975.....	35,671	5,561	23,460	7,878	15,582	727	3,570	2,400	348	118	432	272	1,067	1,062	675	124	262	225
1976.....	39,435	5,890	26,107	8,671	17,436	890	3,899	2,619	369	131	480	300	1,266	1,139	711	135	292	245
1977.....	43,338	6,211	28,863	9,523	19,340	962	4,346	2,893	394	155	569	337	1,467	1,213	740	147	326	275
1978.....	48,719	6,962	32,222	10,107	22,115	1,082	4,996	3,329	443	182	679	364	1,772	1,353	830	160	363	333
1979.....	55,379	7,471	37,062	11,354	25,708	1,164	5,715	3,848	482	215	785	386	2,013	1,564	985	174	405	390
1980.....	63,213	7,831	43,228	12,752	30,476	1,277	6,455	4,335	519	264	920	419	2,306	1,641	1,000	189	452	475
1981.....	72,269	8,605	50,425	14,997	35,428	1,385	7,085	4,670	581	314	1,058	463	2,484	1,747	1,038	206	504	538
1982.....	80,783	9,501	57,166	17,061	40,105	1,484	7,603	4,879	621	363	1,207	534	2,544	1,961	1,175	224	561	525
1983.....	89,971	10,830	63,683	19,095	44,588	1,585	8,251	5,210	658	432	1,357	595	2,840	2,182	1,313	244	626	600
1984.....	102,251	11,916	73,061	21,657	51,404	1,739	9,154	5,748	721	518	1,514	654	3,243	2,513	1,550	265	698	625
1985.....	114,685	13,093	82,376	25,333	57,043	1,863	10,308	6,388	834	630	1,743	713	3,616	2,767	1,700	289	778	663
1986.....	120,259	13,504	85,932	26,000	59,932	1,891	11,540	7,028	969	745	2,019	780	3,973	2,882	1,700	314	867	538
1987.....	126,344	13,588	90,160	28,757	61,403	1,995	12,807	7,768	1,065	831	2,262	882	4,287	3,005	1,696	342	967	501
1988.....	133,880	14,342	94,893	28,221	66,672	2,122	14,220	8,592	1,165	933	2,527	1,003	4,581	3,213	1,762	372	1,078	510
1989.....	141,889	15,231	99,860	26,359	73,501	2,195	15,632	9,315	1,274	1,061	2,852	1,131	4,756	3,669	2,062	405	1,202	547
1990.....	151,990	15,671	107,404	25,802	81,602	2,323	16,936	9,936	1,399	1,166	3,187	1,249	4,894	4,126	2,346	440	1,340	636
1991.....	160,872	15,249	114,675	24,095	90,580	2,277	18,203	10,664	1,483	1,242	3,457	1,358	5,120	4,652	2,679	479	1,494	696
1992.....	165,347	15,853	116,757	22,369	94,388	2,353	19,385	11,525	1,525	1,320	3,568	1,448	5,259	4,993	2,806	521	1,666	748
1993.....	165,724	16,531	115,435	20,844	94,591	1,965	20,489	12,303	1,557	1,391	3,708	1,530	5,289	5,267	2,843	567	1,857	749

**U.S. R&D expenditures, by performing sector and source of funds: 1953–2004**

(Millions of current dollars)

Year	Performing sector:		Industry				Industry FFRDCs		U&C <sup>a</sup>					U&C FFRDCs		Other nonprofit institutions				Nonprofit FFRDCs <sup>b</sup>
	Total	Federal	Total	Federal <sup>c</sup>	Industry <sup>d</sup>	Federal <sup>e</sup>	Total	Federal	Total	Federal	Nonfederal <sup>f</sup>	Industry	U&C	Nonprofit	Federal <sup>g</sup>	Total	Federal <sup>h</sup>	Industry	Nonprofit	Federal <sup>i</sup>
1994.....	169,198	16,355	117,392	20,261	97,131	2,202	21,598	12,991	1,622	1,456	3,937	1,594	5,294	5,599	2,911	617	2,071	758		
1995.....	183,616	16,904	129,830	21,178	108,652	2,273	22,608	13,586	1,750	1,547	4,109	1,616	5,367	5,827	2,847	671	2,308	808		
1996.....	197,336	16,585	142,371	21,356	121,015	2,297	23,708	14,077	1,860	1,671	4,434	1,666	5,395	6,209	2,906	730	2,574	772		
1997.....	212,140	16,819	155,409	21,798	133,611	2,130	24,873	14,522	1,921	1,807	4,837	1,786	5,463	6,626	3,014	809	2,804	821		
1998.....	227,651	17,362	168,409	22,086	146,323	2,078	26,166	15,164	1,971	1,949	5,161	1,921	5,559	7,234	3,281	888	3,065	843		
1999.....	244,970	17,851	182,180	20,586	161,594	1,949	28,160	16,252	2,098	2,082	5,617	2,111	5,652	8,185	3,761	984	3,441	993		
2000.....	267,207	17,917	200,007	17,163	182,844	1,955	30,683	17,710	2,247	2,175	6,227	2,326	5,742	9,437	4,447	1,118	3,872	1,465		
2001.....	277,326	20,426	202,017	16,899	185,118	2,020	33,712	19,767	2,397	2,188	6,820	2,540	6,225	10,734	5,289	1,132	4,313	2,192		
2002.....	275,797	21,499	193,868	16,401	177,467	2,263	37,185	22,370	2,560	2,158	7,350	2,746	7,102	11,561	5,731	1,084	4,746	2,319		
2003.....	291,864	23,326	204,004	20,699	183,305	2,486	40,173	24,580	2,717	2,142	7,820	2,913	7,275	12,031	5,807	1,121	5,103	2,570		
2004.....	312,068	24,742	219,226	23,535	195,691	2,584	42,431	26,115	2,890	2,135	8,205	3,087	7,500	12,750	6,072	1,199	5,478	2,834		

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Data for 1998 on not directly comparable with data for 1997 and earlier. For FY 1998, \$479 million in passthrough funds reported. For FY 2004, \$1,207 million in passthrough funds estimated.

<sup>b</sup>Beginning in 2001, data for nonprofit FFRDCs reported by FFRDCs. In prior years, data collected from federal agencies supporting them.

<sup>c</sup>Expenditures of industry FFRDCs for 1953–54 not separated from total federal support to industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–54.

<sup>d</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

<sup>e</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D, e.g., nonfederal government support to nonprofits is included in nonprofit support for their own R&D.

<sup>f</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).

**U.S. inflation-adjusted R&D expenditures, by performing sector and source of funds: 1953–2004**

(Millions of constant 2000 dollars)

Year	Performing sector:		Industry					Industry FFRDCs		U&C <sup>a</sup>				U&C FFRDCs		Other nonprofit institutions			Nonprofit FFRDCs <sup>b</sup>
	Total	Federal	Total	Federal <sup>c</sup>	Industry <sup>d</sup>	Federal <sup>e</sup>	Total	Federal	Nonfederal <sup>f</sup>	Industry	U&C	Nonprofit	Federal <sup>g</sup>	Total	Federal <sup>h</sup>	Industry	Nonprofit	Federal <sup>i</sup>	
1953.....	28,282	5,563	19,896	7,838	12,058	NA	1,494	817	217	112	200	148	718	611	315	143	153	NA	
1954.....	30,495	5,226	22,098	9,502	12,597	NA	1,634	893	242	128	214	157	871	665	328	168	168	NA	
1955.....	33,508	5,189	24,096	10,973	13,123	656	1,824	1,019	267	144	224	171	998	699	341	187	171	45	
1956.....	43,827	5,829	32,339	15,443	16,897	1,717	2,016	1,140	291	162	237	186	1,119	750	364	191	196	57	
1957.....	49,447	6,474	36,550	19,603	16,948	2,031	2,161	1,205	319	182	255	200	1,330	831	392	185	255	70	
1958.....	53,248	7,350	39,349	21,641	17,709	1,576	2,395	1,366	351	190	271	217	1,539	951	463	185	302	88	
1959.....	60,187	8,101	44,335	25,141	19,194	2,014	2,824	1,713	388	190	294	239	1,682	1,125	600	202	323	106	
1960.....	65,164	8,558	47,679	26,634	21,045	2,267	3,348	2,151	428	190	318	261	1,830	1,255	703	228	323	228	
1961.....	68,450	9,340	48,657	26,719	21,939	2,608	3,917	2,615	472	188	350	291	2,068	1,429	794	230	404	430	
1962.....	72,499	10,143	51,174	27,857	23,318	1,975	4,602	3,183	519	188	389	322	2,318	1,683	927	250	505	603	
1963.....	80,377	11,738	56,047	31,455	24,592	1,899	5,405	3,847	573	186	440	358	2,659	1,872	1,074	252	546	757	
1964.....	86,320	13,399	58,964	32,792	26,172	2,092	6,211	4,496	621	183	513	398	2,842	1,884	1,130	249	506	926	
1965.....	89,872	14,006	61,293	32,692	28,601	1,655	7,076	5,179	663	184	604	446	2,793	2,095	1,269	275	550	954	
1966.....	95,232	14,272	65,553	34,418	31,135	1,532	7,844	5,760	690	194	710	490	2,811	2,315	1,417	302	595	906	
1967.....	97,709	14,416	66,821	33,256	33,565	1,754	8,517	6,238	703	216	835	525	2,913	2,348	1,431	310	607	942	
1968.....	99,009	14,037	68,293	32,694	35,600	1,666	8,779	6,366	741	231	885	556	2,898	2,392	1,461	325	606	943	
1969.....	99,415	14,495	68,241	30,545	37,696	1,774	8,719	6,209	795	231	891	593	2,796	2,453	1,482	356	616	937	
1970.....	95,419	15,087	63,903	26,536	37,367	1,718	8,781	6,122	861	238	939	621	2,639	2,457	1,487	345	625	835	
1971.....	93,225	15,250	61,670	24,818	36,852	1,698	8,872	6,086	906	249	1,001	630	2,541	2,451	1,475	339	636	744	
1972.....	95,275	15,500	62,999	24,760	38,239	1,817	9,140	6,265	935	262	1,033	645	2,602	2,554	1,563	335	656	663	
1973.....	97,184	15,186	65,008	23,863	41,145	1,711	9,272	6,306	947	281	1,077	661	2,641	2,769	1,777	330	663	597	
1974.....	96,065	14,780	64,042	21,805	42,237	1,866	9,260	6,220	922	299	1,130	688	2,667	2,845	1,839	329	677	605	
1975.....	93,870	14,635	61,735	20,731	41,004	1,913	9,393	6,316	916	311	1,135	716	2,808	2,793	1,776	327	690	592	
1976.....	98,104	14,653	64,948	21,571	43,377	2,214	9,699	6,515	918	326	1,194	745	3,148	2,833	1,769	336	727	610	
1977.....	101,372	14,529	67,514	22,275	45,238	2,250	10,166	6,766	922	361	1,330	787	3,432	2,838	1,732	344	763	643	
1978.....	106,474	15,216	70,420	22,089	48,332	2,365	10,918	7,274	968	397	1,484	794	3,872	2,958	1,814	350	794	727	
1979.....	111,769	15,079	74,801	22,915	51,885	2,349	11,533	7,766	972	433	1,584	778	4,062	3,157	1,988	351	818	787	
1980.....	116,969	14,490	79,989	23,596	56,393	2,363	11,944	8,021	959	488	1,701	775	4,267	3,037	1,850	351	836	879	
1981.....	122,243	14,555	85,294	25,367	59,927	2,343	11,984	7,898	983	531	1,789	783	4,202	2,955	1,755	349	852	909	
1982.....	128,789	15,147	91,137	27,200	63,938	2,366	12,120	7,778	990	579	1,923	851	4,055	3,126	1,873	358	895	837	
1983.....	137,978	16,608	97,663	29,284	68,379	2,431	12,654	7,990	1,009	663	2,080	912	4,356	3,347	2,013	374	960	920	
1984.....	151,135	17,612	107,990	32,011	75,979	2,570	13,530	8,495	1,066	765	2,238	966	4,794	3,715	2,291	392	1,032	924	
1985.....	164,506	18,781	118,162	36,338	81,824	2,672	14,785	9,163	1,196	904	2,500	1,023	5,187	3,969	2,439	414	1,116	950	
1986.....	168,786	18,954	120,607	36,491	84,115	2,654	16,197	9,863	1,360	1,046	2,833	1,095	5,576	4,044	2,386	441	1,218	754	
1987.....	172,611	18,565	123,176	39,288	83,889	2,726	17,497	10,613	1,454	1,135	3,090	1,204	5,857	4,105	2,317	467	1,321	685	
1988.....	176,871	18,948	125,364	37,283	88,081	2,803	18,786	11,351	1,539	1,233	3,338	1,325	6,052	4,244	2,328	491	1,424	673	
1989.....	180,618	19,388	127,117	33,554	93,564	2,794	19,899	11,857	1,622	1,350	3,630	1,440	6,054	4,670	2,625	515	1,530	696	
1990.....	186,284	19,207	131,638	31,624	100,015	2,847	20,757	12,178	1,715	1,428	3,905	1,531	5,998	5,057	2,875	540	1,643	780	
1991.....	190,509	18,059	135,801	28,534	107,267	2,696	21,556	12,628	1,756	1,470	4,094	1,608	6,064	5,509	3,172	567	1,769	824	
1992.....	191,408	18,352	135,159	25,895	109,265	2,724	22,440	13,341	1,765	1,527	4,130	1,676	6,088	5,780	3,248	603	1,928	865	

**U.S. inflation-adjusted R&D expenditures, by performing sector and source of funds: 1953–2004**

(Millions of current dollars)

Year	Performing sector:		Industry				Industry FFRDCs		U&C <sup>a</sup>					U&C FFRDCs		Other nonprofit institutions				Nonprofit FFRDCs <sup>g</sup>
	Total	Federal	Total	Federal <sup>c</sup>	Industry <sup>d</sup>	Federal <sup>e</sup>	Total	Federal	Nonfederal <sup>f</sup>	Industry	U&C	Nonprofit	Federal <sup>f</sup>	Total	Federal <sup>e</sup>	Industry	Nonprofit	Federal <sup>e</sup>		
1993.....	187,513	18,704	130,612	23,585	107,028	2,223	23,182	13,921	1,761	1,574	4,196	1,731	5,984	5,960	3,217	642	2,101	848		
1994.....	187,460	18,120	130,062	22,448	107,614	2,440	23,929	14,393	1,797	1,613	4,362	1,765	5,865	6,203	3,225	683	2,294	840		
1995.....	199,352	18,352	140,957	22,993	117,964	2,468	24,545	14,750	1,900	1,680	4,461	1,754	5,827	6,326	3,091	729	2,506	877		
1996.....	210,262	17,671	151,696	22,755	128,941	2,447	25,260	14,999	1,982	1,780	4,724	1,775	5,748	6,616	3,096	778	2,742	822		
1997.....	222,338	17,628	162,880	22,846	140,034	2,232	26,068	15,220	2,014	1,894	5,069	1,872	5,725	6,945	3,159	848	2,938	860		
1998.....	235,977	17,997	174,568	22,894	151,674	2,154	27,123	15,719	2,043	2,020	5,350	1,991	5,763	7,499	3,401	921	3,177	874		
1999.....	250,306	18,240	186,149	21,035	165,114	1,991	28,774	16,606	2,143	2,127	5,740	2,157	5,775	8,364	3,843	1,006	3,515	1,014		
2000.....	267,207	17,917	200,007	17,163	182,844	1,955	30,683	17,710	2,247	2,175	6,227	2,326	5,742	9,437	4,447	1,118	3,872	1,465		
2001.....	270,828	19,948	197,284	16,503	180,781	1,973	32,922	19,304	2,341	2,137	6,660	2,480	6,080	10,482	5,165	1,106	4,212	2,140		
2002.....	264,956	20,654	186,248	15,756	170,492	2,174	35,723	21,491	2,460	2,073	7,061	2,638	6,823	11,107	5,506	1,041	4,560	2,228		
2003.....	275,348	22,006	192,460	19,528	172,932	2,345	37,900	23,189	2,563	2,021	7,378	2,749	6,863	11,350	5,478	1,057	4,815	2,425		
2004.....	288,419	22,867	202,613	21,752	180,861	2,388	39,216	24,136	2,671	1,973	7,583	2,853	6,932	11,783	5,612	1,108	5,063	2,620		

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Data for 1998 on not directly comparable with data for 1997 and earlier. For FY 1998, \$479 million in passthrough funds reported. For FY 2004, \$1,207 million in passthrough funds estimated.

<sup>b</sup>Beginning in 2001, data for nonprofit FFRDCs reported by FFRDCs. In prior years, data collected from federal agencies supporting them.

<sup>c</sup>Expenditures of industry FFRDCs for 1953–54 not separated from total federal support to industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–54.

<sup>d</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

<sup>e</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D, e.g., nonfederal government support to nonprofits is included in nonprofit support for their own R&D.

<sup>f</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).

**U.S. R&D expenditures, by source of funds and performing sector: 1953–2004**

(Millions of current dollars)

Year	Funding sector:																		
	Performing sector:	Total	Federal							Industry				U&C	Nonprofit		Nonfederal <sup>a</sup>		
	Total	Total	Federal	Industry <sup>b</sup>	FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>b</sup>	Nonprofit FFRDCs <sup>b,e</sup>	Total	Industry <sup>f</sup>	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Total	Nonprofit	U&C <sup>c</sup>	U&C <sup>c</sup>	
1953.....	5,160	2,783	1,015	1,430	NA	149	131	58	NA	2,247	2,200	21	26	37	55	28	27	40	
1954.....	5,617	3,098	963	1,750	NA	165	161	61	NA	2,375	2,320	24	31	40	60	31	29	45	
1955.....	6,281	3,603	973	2,057	123	191	187	64	9	2,522	2,460	27	35	42	64	32	32	50	
1956.....	8,500	4,978	1,131	2,995	333	221	217	71	11	3,346	3,277	32	37	46	74	38	36	57	
1957.....	9,908	6,233	1,297	3,928	407	242	267	79	14	3,470	3,396	37	37	51	91	51	40	64	
1958.....	10,915	6,974	1,507	4,436	323	280	316	95	18	3,707	3,630	39	38	56	107	62	45	72	
1959.....	12,490	8,167	1,681	5,217	418	356	349	125	22	4,065	3,983	40	42	61	117	67	50	81	
1960.....	13,711	8,915	1,801	5,604	477	453	385	148	48	4,516	4,428	40	48	67	123	68	55	90	
1961.....	14,564	9,484	1,987	5,685	555	557	440	169	92	4,757	4,668	40	49	75	148	86	62	101	
1962.....	15,636	10,138	2,188	6,008	426	687	500	200	130	5,124	5,029	41	54	84	179	109	70	112	
1963.....	17,519	11,646	2,559	6,856	414	839	580	234	165	5,456	5,360	41	55	96	197	119	78	125	
1964.....	19,103	12,764	2,965	7,257	463	995	629	250	205	5,888	5,792	41	55	114	200	112	88	138	
1965.....	20,252	13,194	3,156	7,367	373	1,167	630	286	215	6,549	6,445	42	62	136	225	124	101	150	
1966.....	22,072	14,165	3,308	7,977	355	1,335	652	329	210	7,331	7,216	45	70	165	252	138	114	160	
1967.....	23,346	14,563	3,444	7,946	419	1,491	696	342	225	8,146	8,020	52	74	200	271	145	126	168	
1968.....	24,666	14,964	3,497	8,145	415	1,586	722	364	235	9,008	8,869	58	81	221	290	151	139	185	
1969.....	25,996	15,228	3,790	7,987	464	1,624	731	388	245	10,011	9,857	61	93	233	316	161	155	208	
1970.....	26,271	14,984	4,154	7,306	473	1,686	727	410	230	10,449	10,288	66	95	259	343	172	171	237	
1971.....	26,952	15,210	4,409	7,175	491	1,760	735	427	215	10,824	10,654	72	98	290	366	184	182	262	
1972.....	28,740	16,039	4,676	7,469	548	1,890	785	472	200	11,715	11,535	79	101	312	393	198	195	282	
1973.....	30,952	16,587	4,837	7,600	545	2,009	841	566	190	13,299	13,104	90	105	343	422	211	211	302	
1974.....	33,359	17,287	5,132	7,572	648	2,160	926	639	210	14,885	14,667	104	114	393	474	235	239	320	
1975.....	35,671	18,533	5,561	7,878	727	2,400	1,067	675	225	15,824	15,582	118	124	432	534	262	272	348	
1976.....	39,435	20,292	5,890	8,671	890	2,619	1,266	711	245	17,702	17,436	131	135	480	592	292	300	369	
1977.....	43,338	22,071	6,211	9,523	962	2,893	1,467	740	275	19,642	19,340	155	147	569	663	326	337	394	
1978.....	48,719	24,414	6,962	10,107	1,082	3,329	1,772	830	333	22,457	22,115	182	160	679	727	363	364	443	
1979.....	55,379	27,225	7,471	11,354	1,164	3,848	2,013	985	390	26,097	25,708	215	174	785	791	405	386	482	
1980.....	63,213	29,975	7,831	12,752	1,277	4,335	2,306	1,000	475	30,929	30,476	264	190	920	871	452	419	519	
1981.....	72,269	33,715	8,605	14,997	1,385	4,670	2,484	1,038	538	35,948	35,428	314	206	1,058	967	504	463	581	
1982.....	80,783	37,168	9,501	17,061	1,484	4,879	2,544	1,175	525	40,692	40,105	363	224	1,207	1,095	562	534	621	
1983.....	89,971	41,472	10,830	19,095	1,585	5,210	2,840	1,313	600	45,264	44,588	432	244	1,357	1,221	626	595	658	
1984.....	102,251	46,477	11,916	21,657	1,739	5,748	3,243	1,550	625	52,187	51,404	518	266	1,514	1,351	698	654	721	
1985.....	114,685	52,655	13,093	25,333	1,863	6,388	3,616	1,700	663	57,962	57,043	630	289	1,743	1,491	778	713	834	
1986.....	120,259	54,633	13,504	26,000	1,891	7,028	3,973	1,700	538	60,991	59,932	745	314	2,019	1,648	868	780	969	
1987.....	126,344	58,593	13,588	28,757	1,995	7,768	4,287	1,696	501	62,576	61,403	831	342	2,262	1,849	967	882	1,065	
1988.....	133,880	60,130	14,342	28,221	2,122	8,592	4,581	1,762	510	67,977	66,672	933	372	2,527	2,081	1,078	1,003	1,165	
1989.....	141,889	60,464	15,231	26,359	2,195	9,315	4,756	2,062	547	74,966	73,501	1,061	405	2,852	2,333	1,202	1,131	1,274	
1990.....	151,990	61,607	15,671	25,802	2,323	9,936	4,894	2,346	636	83,208	81,602	1,166	440	3,187	2,589	1,340	1,249	1,399	
1991.....	160,872	60,780	15,249	24,095	2,277	10,664	5,120	2,679	696	92,301	90,580	1,242	479	3,457	2,852	1,494	1,358	1,483	
1992.....	165,347	60,912	15,853	22,369	2,353	11,525	5,259	2,806	748	96,229	94,388	1,320	521	3,568	3,113	1,666	1,448	1,525	
1993.....	165,724	60,524	16,531	20,844	1,965	12,303	5,289	2,843	749	96,549	94,591	1,391	567	3,708	3,387	1,857	1,530	1,557	

**U.S. R&D expenditures, by source of funds and performing sector: 1953–2004**

(Millions of current dollars)

Year	Funding sector:	Federal										Industry				U&C		Nonprofit		Nonfederal <sup>a</sup>	
	Performing sector:	Total	Total	Federal	Industry <sup>b</sup>	FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>e</sup>	Nonprofit FFRDCs <sup>h,e</sup>	Total	Industry <sup>f</sup>	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Total	Nonprofit	U&C <sup>c</sup>	U&C <sup>c</sup>		
1994.....		169,198	60,772	16,355	20,261	2,202	12,991	5,294	2,911	758	99,203	97,131	1,456	617	3,937	3,664	2,071	1,594	1,622		
1995.....		183,616	62,963	16,904	21,178	2,273	13,586	5,367	2,847	808	110,870	108,652	1,547	671	4,109	3,924	2,308	1,616	1,750		
1996.....		197,336	63,387	16,585	21,356	2,297	14,077	5,395	2,906	772	123,416	121,015	1,671	730	4,434	4,239	2,574	1,666	1,860		
1997.....		212,141	64,566	16,819	21,798	2,130	14,522	5,463	3,014	821	136,227	133,611	1,807	809	4,837	4,590	2,804	1,786	1,921		
1998.....		227,651	66,373	17,362	22,086	2,078	15,164	5,559	3,281	843	149,160	146,323	1,949	888	5,161	4,986	3,065	1,921	1,971		
1999.....		244,970	67,043	17,851	20,586	1,949	16,252	5,652	3,761	993	164,660	161,594	2,082	984	5,617	5,552	3,441	2,111	2,098		
2000.....		267,207	66,400	17,917	17,163	1,955	17,710	5,742	4,447	1,465	186,136	182,844	2,175	1,118	6,227	6,198	3,872	2,326	2,247		
2001.....		277,326	72,819	20,426	16,899	2,021	19,767	6,225	5,289	2,192	188,439	185,118	2,188	1,132	6,820	6,853	4,313	2,540	2,397		
2002.....		275,797	77,685	21,499	16,401	2,263	22,370	7,102	5,731	2,319	180,709	177,467	2,158	1,084	7,350	7,493	4,746	2,746	2,560		
2003.....		291,864	86,742	23,326	20,699	2,486	24,580	7,275	5,807	2,570	186,568	183,305	2,142	1,121	7,820	8,017	5,103	2,914	2,717		
2004.....		312,068	93,384	24,742	23,535	2,584	26,115	7,500	6,072	2,834	199,025	195,691	2,135	1,199	8,205	8,565	5,478	3,087	2,890		

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D, e.g., nonfederal government support to nonprofits is included in nonprofit support for their own R&D.

<sup>b</sup>Expenditures of industry FFRDCs for 1953–54 not separated from total federal support to industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–63.

<sup>c</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Data for 1998 on not directly comparable with data for 1997 and earlier. For FY 1998, \$479 million in passthrough funds reported. For FY 2004, \$1,207 million in passthrough funds estimated.

<sup>d</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

<sup>e</sup>Beginning in 2001, data for nonprofit FFRDCs reported by FFRDCs. In prior years, data collected from federal agencies supporting them.

<sup>f</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).



**U.S. inflation-adjusted R&D expenditures, by source of funds and performing sector: 1953–2004**

(Millions of constant 2000 dollars)

Year	Funding sector:																		
	Performing sector:	Total	Federal							Industry				U&C	Nonprofit		Nonfederal <sup>a</sup>		
	Total	Total	Federal	Industry <sup>b</sup>	Industry FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>b</sup>	Nonprofit FFRDCs <sup>b,e</sup>	Total	Industry <sup>f</sup>	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Total	Nonprofit	U&C <sup>c</sup>	U&C <sup>c</sup>	
1953.....	28,282	15,251	5,563	7,838	NA	817	718	315	NA	12,313	12,058	112	143	200	301	2,153	148	217	
1954.....	30,495	16,821	5,226	9,502	NA	893	871	328	NA	12,892	12,597	128	168	214	326	168	157	242	
1955.....	33,508	19,222	5,189	10,973	656	1,019	998	341	45	13,454	13,123	144	187	224	341	171	171	267	
1956.....	43,827	25,667	5,829	15,443	1,717	1,140	1,119	364	57	17,250	16,897	162	191	237	382	196	186	291	
1957.....	49,447	31,104	6,474	19,603	2,031	1,205	1,330	392	70	17,314	16,948	182	185	255	454	255	200	319	
1958.....	53,248	34,023	7,350	21,641	1,576	1,366	1,539	463	88	18,084	17,709	190	185	271	520	302	217	351	
1959.....	60,187	39,357	8,101	25,141	2,014	1,713	1,682	600	106	19,587	19,194	190	202	294	561	323	239	388	
1960.....	65,164	42,371	8,558	26,634	2,267	2,151	1,830	703	228	21,463	21,045	190	228	318	585	323	261	428	
1961.....	68,450	44,575	9,340	26,719	2,608	2,615	2,068	794	430	22,357	21,939	188	230	350	696	404	291	472	
1962.....	72,499	47,007	10,143	27,857	1,975	3,183	2,318	927	603	23,756	23,318	188	250	389	828	505	322	519	
1963.....	80,377	53,429	11,738	31,455	1,899	3,847	2,659	1,074	757	25,030	24,592	186	252	440	904	546	358	573	
1964.....	86,320	57,678	13,399	32,792	2,092	4,496	2,842	1,130	926	26,604	26,172	183	249	513	904	506	398	621	
1965.....	89,872	58,549	14,006	32,692	1,655	5,179	2,793	1,269	954	29,060	28,601	184	275	604	996	550	446	663	
1966.....	95,232	61,116	14,272	34,418	1,532	5,760	2,811	1,417	906	31,631	31,135	194	302	710	1,085	595	490	690	
1967.....	97,709	60,949	14,416	33,256	1,754	6,238	2,913	1,431	942	34,091	33,565	216	310	835	1,132	607	525	703	
1968.....	99,009	60,066	14,037	32,694	1,666	6,366	2,898	1,461	943	36,156	35,600	231	325	885	1,162	606	556	741	
1969.....	99,415	58,237	14,495	30,545	1,774	6,209	2,796	1,482	937	38,283	37,696	231	356	891	1,208	616	593	795	
1970.....	95,419	54,424	15,087	26,536	1,718	6,122	2,639	1,487	835	37,950	37,367	238	345	939	1,246	625	621	861	
1971.....	93,225	52,612	15,250	24,818	1,698	6,086	2,541	1,475	744	37,440	36,852	249	339	1,001	1,266	636	630	906	
1972.....	95,275	53,170	15,500	24,760	1,817	6,265	2,602	1,563	663	38,836	38,239	262	335	1,033	1,301	656	645	935	
1973.....	97,184	52,081	15,186	23,863	1,711	6,306	2,641	1,777	597	41,756	41,145	281	330	1,077	1,323	663	661	947	
1974.....	96,065	49,782	14,780	21,805	1,866	6,220	2,667	1,839	605	42,866	42,237	299	329	1,130	1,366	677	688	922	
1975.....	93,870	48,771	14,635	20,731	1,913	6,316	2,808	1,776	592	41,642	41,004	311	327	1,135	1,406	690	716	916	
1976.....	98,104	50,481	14,653	21,571	2,214	6,515	3,148	1,769	610	44,039	43,377	326	336	1,194	1,472	727	745	918	
1977.....	101,372	51,627	14,529	22,275	2,250	6,766	3,432	1,732	643	45,944	45,238	361	344	1,330	1,550	763	787	922	
1978.....	106,474	53,355	15,216	22,089	2,365	7,274	3,872	1,814	727	49,078	48,332	397	350	1,484	1,589	794	794	968	
1979.....	111,769	54,947	15,079	22,915	2,349	7,766	4,062	1,988	787	52,670	51,885	433	351	1,584	1,596	818	778	972	
1980.....	116,969	55,466	14,490	23,596	2,363	8,021	4,267	1,850	879	57,231	56,393	488	351	1,701	1,611	836	775	959	
1981.....	122,243	57,030	14,555	25,367	2,343	7,898	4,202	1,755	909	60,806	59,927	531	349	1,789	1,635	852	783	983	
1982.....	128,789	59,256	15,147	27,200	2,366	7,778	4,055	1,873	837	64,874	63,938	579	358	1,923	1,746	895	851	990	
1983.....	137,978	63,601	16,608	29,284	2,431	7,990	4,356	2,013	920	69,416	68,379	663	374	2,080	1,872	960	912	1,009	
1984.....	151,135	68,697	17,612	32,011	2,570	8,495	4,794	2,291	924	77,137	75,979	765	392	2,238	1,997	1,032	966	1,066	
1985.....	164,506	75,530	18,781	36,338	2,672	9,163	5,187	2,439	950	83,142	81,824	904	414	2,500	2,139	1,116	1,023	1,196	
1986.....	168,786	76,678	18,954	36,491	2,654	9,863	5,576	2,386	754	85,602	84,115	1,046	441	2,833	2,312	1,218	1,095	1,360	
1987.....	172,611	80,050	18,565	39,288	2,726	10,613	5,857	2,317	685	85,491	83,889	1,135	467	3,090	2,526	1,321	1,204	1,454	
1988.....	176,871	79,438	18,948	37,283	2,803	11,351	6,052	2,328	673	89,805	88,081	1,233	491	3,338	2,750	1,424	1,325	1,539	
1989.....	180,618	76,967	19,388	33,554	2,794	11,857	6,054	2,625	696	95,429	93,564	1,350	515	3,630	2,970	1,530	1,440	1,622	
1990.....	186,284	75,508	19,207	31,624	2,847	12,178	5,998	2,875	780	101,983	100,015	1,428	540	3,905	3,173	1,643	1,531	1,715	
1991.....	190,509	71,977	18,059	28,534	2,696	12,628	6,064	3,172	824	109,305	107,267	1,470	567	4,094	3,378	1,769	1,608	1,756	
1992.....	191,408	70,513	18,352	25,895	2,724	13,341	6,088	3,248	865	111,395	109,265	1,527	603	4,130	3,604	1,928	1,676	1,765	
1993.....	187,513	68,481	18,704	23,585	2,223	13,921	5,984	3,217	848	109,243	107,028	1,574	642	4,196	3,833	2,101	1,731	1,761	

**U.S. inflation-adjusted R&D expenditures, by source of funds and performing sector: 1953–2004**

(Millions of constant 2000 dollars)

Year	Funding sector:	Performing sector:																	
	Total	Total	Federal	Industry <sup>b</sup>	Industry FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>b</sup>	Nonprofit FFRDCs <sup>b,e</sup>	Industry	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Nonfederal <sup>a</sup>	
1994.....	187,460	67,331	18,120	22,448	2,440	14,393	5,865	3,225	840	109,910	107,614	1,613	683	4,362	4,059	2,294	1,765	1,797	
1995.....	199,352	68,359	18,352	22,993	2,468	14,750	5,827	3,091	877	120,372	117,964	1,680	729	4,461	4,261	2,506	1,754	1,900	
1996.....	210,262	67,539	17,671	22,755	2,447	14,999	5,748	3,096	822	131,500	128,941	1,780	778	4,724	4,517	2,742	1,775	1,982	
1997.....	222,338	67,670	17,628	22,846	2,232	15,220	5,725	3,159	860	142,776	140,034	1,894	848	5,069	4,810	2,938	1,872	2,014	
1998.....	235,977	68,801	17,997	22,894	2,154	15,719	5,763	3,401	874	154,615	151,674	2,020	921	5,350	5,168	3,177	1,991	2,043	
1999.....	250,306	68,504	18,240	21,035	1,991	16,606	5,775	3,843	1,014	168,247	165,114	2,127	1,006	5,740	5,673	3,515	2,157	2,143	
2000.....	267,207	66,400	17,917	17,163	1,955	17,710	5,742	4,447	1,465	186,136	182,844	2,175	1,118	6,227	6,198	3,872	2,326	2,247	
2001.....	270,828	71,112	19,948	16,503	1,973	19,304	6,080	5,165	2,140	184,023	180,781	2,137	1,106	6,660	6,692	4,212	2,480	2,341	
2002.....	264,956	74,632	20,654	15,756	2,174	21,491	6,823	5,506	2,228	173,606	170,492	2,073	1,041	7,061	7,198	4,560	2,638	2,460	
2003.....	275,348	81,834	22,006	19,528	2,345	23,189	6,863	5,478	2,425	176,010	172,932	2,021	1,057	7,378	7,563	4,815	2,749	2,563	
2004.....	288,419	86,307	22,867	21,752	2,388	24,136	6,932	5,612	2,620	183,943	180,861	1,973	1,108	7,583	7,916	5,063	2,853	2,671	

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D, e.g., nonfederal government support to nonprofits is included in nonprofit support for their own R&D.

<sup>b</sup>Expenditures of industry FFRDCs for 1953–54 not separated from total federal support to industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–63.

<sup>c</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Data for 1998 on not directly comparable with data for 1997 and earlier. For FY 1998, \$479 million in passthrough funds reported. For FY 2004, \$1,207 million in passthrough funds estimated.

<sup>d</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

<sup>e</sup>Beginning in 2001, data for nonprofit FFRDCs reported by FFRDCs. In prior years, data collected from federal agencies supporting them.

<sup>f</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).

**U.S. basic research expenditures, by performing sector and source of funds: 1953–2004**

(Millions of current dollars)

Year	Performing sector:	Total	Federal	Industry			Industry FFRDCs	U&C <sup>a</sup>					U&C FFRDCs	Other nonprofit institutions				Nonprofit FFRDCs	
	Funding sector:			Total	Federal	Total	Federal <sup>b</sup>	Industry <sup>c</sup>	Federal <sup>b</sup>	Total	Federal	Nonfederal <sup>d</sup>	Industry	U&C	Nonprofit	Federal <sup>e</sup>	Total	Federal <sup>b</sup>	Industry
1953.....		460	102	151	19	132	NA	123	82	7	13	6	16	36	48	27	9	12	NA
1954.....		509	96	166	23	143	NA	148	97	10	15	8	18	44	55	31	11	13	NA
1955.....		579	98	189	27	162	NA	180	117	14	17	12	21	50	63	36	13	14	NA
1956.....		718	114	253	37	216	NA	220	143	19	20	15	24	58	74	42	15	17	NA
1957.....		814	124	271	41	230	NA	261	167	25	23	20	27	72	87	49	15	23	NA
1958.....		944	149	295	43	252	NA	312	202	31	24	24	31	85	103	59	16	28	NA
1959.....		1,087	165	320	72	248	NA	388	263	38	24	28	36	95	120	72	18	30	NA
1960.....		1,286	184	376	79	297	NA	485	341	45	25	33	41	106	136	85	21	30	NA
1961.....		1,512	230	395	81	314	NA	598	432	54	25	40	48	126	164	105	22	37	NA
1962.....		1,824	252	488	143	345	NA	737	546	64	25	48	55	148	200	130	24	46	NA
1963.....		2,115	285	522	147	375	NA	909	689	75	25	58	63	175	225	150	25	50	NA
1964.....		2,396	339	507	123	384	42	1,071	824	84	25	70	68	200	238	166	25	47	NA
1965.....		2,664	375	563	157	406	29	1,221	944	94	27	86	70	218	260	179	29	52	NA
1966.....		2,930	410	593	142	451	31	1,380	1,066	104	29	106	75	239	278	188	32	58	NA
1967.....		3,168	434	595	168	427	34	1,554	1,188	114	34	136	83	263	289	194	34	61	NA
1968.....		3,376	482	607	145	462	35	1,681	1,265	131	38	156	91	276	296	196	37	63	NA
1969.....		3,491	545	581	123	458	37	1,754	1,288	153	40	171	103	272	302	192	43	67	NA
1970.....		3,594	562	566	122	444	36	1,855	1,323	179	43	196	115	265	311	195	44	72	NA
1971.....		3,720	581	557	101	456	33	1,968	1,385	194	50	214	127	252	329	207	45	77	NA
1972.....		3,850	603	554	91	463	39	2,038	1,437	195	55	216	134	270	347	216	47	84	NA
1973.....		4,099	652	595	96	499	36	2,103	1,489	196	59	223	137	343	371	232	49	90	NA
1974.....		4,511	715	650	114	536	49	2,282	1,609	204	66	250	153	415	401	245	54	102	NA
1975.....		4,875	760	677	104	573	53	2,480	1,768	212	72	264	164	476	430	255	59	116	NA
1976.....		5,373	850	750	116	634	69	2,675	1,924	218	75	283	175	556	474	278	65	131	NA
1977.....		6,008	943	836	135	701	75	2,967	2,114	232	89	334	198	667	521	301	72	148	NA
1978.....		6,959	1,044	941	156	785	94	3,376	2,399	260	107	398	213	906	598	351	79	168	NA
1979.....		7,836	1,112	1,054	161	893	104	3,828	2,719	286	128	466	229	1,050	689	413	87	190	NA
1980.....		8,790	1,212	1,205	170	1,035	120	4,315	3,061	307	156	544	248	1,167	771	461	95	215	NA
1981.....		9,830	1,343	1,477	164	1,313	137	4,737	3,331	338	183	615	269	1,284	853	505	105	243	NA
1982.....		10,824	1,522	1,776	253	1,523	128	5,091	3,475	368	215	716	317	1,366	941	551	115	275	NA
1983.....		12,059	1,733	2,106	346	1,760	117	5,518	3,689	396	260	816	358	1,536	1,050	613	127	311	NA
1984.....		13,484	1,877	2,472	340	2,132	136	6,145	4,087	436	313	915	395	1,709	1,147	656	139	351	NA
1985.....		14,857	1,947	2,731	358	2,373	131	7,024	4,606	514	389	1,075	440	1,793	1,231	681	153	397	NA
1986.....		17,247	2,026	3,930	434	3,496	117	7,943	5,122	606	466	1,262	488	1,915	1,317	700	168	449	NA
1987.....		18,498	2,047	4,181	598	3,583	142	8,644	5,527	659	514	1,399	545	2,086	1,399	707	185	507	NA
1988.....		19,786	2,116	4,163	656	3,507	337	9,343	5,937	705	565	1,529	607	2,272	1,531	756	203	573	24
1989.....		21,889	2,309	4,818	986	3,832	398	10,218	6,422	766	637	1,714	680	2,371	1,730	860	223	647	46
1990.....		23,028	2,319	4,629	869	3,760	499	11,125	6,888	847	705	1,929	756	2,470	1,922	947	245	730	65
1991.....		27,139	2,378	7,376	1,251	6,125	461	12,061	7,423	912	764	2,127	836	2,657	2,129	1,036	269	825	77

**U.S. basic research expenditures, by performing sector and source of funds: 1953–2004**

(Millions of current dollars)

Year	Performing sector:	Total	Federal	Industry			Industry FFRDCs	U&C <sup>a</sup>					U&C FFRDCs	Other nonprofit institutions				Nonprofit FFRDCs	
	Funding sector:			Total	Federal <sup>b</sup>	Industry <sup>c</sup>	Federal <sup>b</sup>	Total	Federal	Nonfederal <sup>d</sup>	Industry	U&C	Nonprofit	Federal <sup>e</sup>	Total	Federal <sup>b</sup>	Industry	Nonprofit	Federal <sup>b</sup>
1992.....		27,604	2,419	6,528	712	5,816	474	12,910	8,058	941	814	2,202	893	2,867	2,340	1,114	295	931	67
1993.....		28,741	2,621	6,427	466	5,961	492	13,645	8,638	952	851	2,268	936	2,953	2,532	1,157	324	1,051	72
1994.....		29,648	2,547	6,514	436	6,078	503	14,398	9,138	991	889	2,406	974	2,934	2,678	1,137	356	1,186	75
1995.....		29,607	2,689	5,569	190	5,379	530	15,144	9,633	1,069	945	2,510	987	2,702	2,899	1,170	390	1,338	75
1996.....		32,796	2,680	7,498	650	6,848	708	16,039	10,091	1,149	1,032	2,739	1,028	2,606	3,187	1,248	428	1,510	79
1997.....		36,910	2,746	9,795	1,029	8,766	625	17,643	10,915	1,248	1,175	3,144	1,161	2,671	3,322	1,317	449	1,557	108
1998.....		35,268	3,003	5,853	1,002	4,851	568	19,315	11,886	1,331	1,316	3,485	1,297	2,660	3,656	1,461	493	1,702	213
1999.....		38,830	3,347	6,669	1,132	5,537	533	20,929	12,790	1,434	1,423	3,840	1,443	2,765	4,191	1,734	546	1,910	397
2000.....		42,567	3,765	7,053	938	6,115	534	22,856	13,904	1,550	1,500	4,296	1,605	2,874	4,870	2,099	621	2,150	616
2001.....		47,553	4,260	8,053	754	7,299	552	25,181	15,507	1,663	1,518	4,731	1,762	3,104	5,488	2,464	629	2,395	915
2002.....		51,033	4,511	7,547	888	6,659	619	27,853	17,616	1,769	1,492	5,078	1,898	3,714	5,812	2,575	602	2,635	979
2003.....		55,104	4,700	8,585	1,628	6,957	679	30,047	19,379	1,859	1,466	5,351	1,993	3,799	6,222	2,766	622	2,834	1,071
2004.....		58,356	4,887	9,278	1,851	7,427	706	31,735	20,589	1,974	1,458	5,605	2,109	3,917	6,651	2,944	666	3,042	1,181

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Character-of-work estimation procedure for university and college R&D also revised for 1998 on; hence, data not directly comparable with data for 1997 and earlier.

<sup>b</sup>Expenditures of industry FFRDCs for 1953–63 not separated from total federal support to industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–87.

<sup>c</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

<sup>d</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D, e.g., nonfederal government support to nonprofits is included in nonprofit support for their own R&D.

<sup>e</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).

**U.S. inflation-adjusted basic research expenditures, by performing sector and source of funds: 1953–2004**

(Millions of constant 2000 dollars)

Year	Performing sector:	Total	Federal	Industry			Industry FFRDCs	U&C <sup>a</sup>						U&C FFRDCs	Other nonprofit institutions				Nonprofit FFRDCs
	Funding sector:			Total	Federal <sup>b</sup>	Industry <sup>c</sup>	Federal <sup>b</sup>	Total	Federal	Nonfederal <sup>d</sup>	Industry	U&C	Nonprofit	Federal <sup>e</sup>	Total	Federal <sup>b</sup>	Industry	Nonprofit	Federal <sup>b</sup>
1953.....		2,519	556	828	104	723	NA	674	447	36	71	33	88	197	263	148	49	66	NA
1954.....		2,761	521	901	125	776	NA	801	524	52	81	46	98	239	299	168	60	71	NA
1955.....		3,089	520	1,008	144	864	NA	958	621	74	91	62	109	267	336	192	69	75	NA
1956.....		3,702	585	1,304	191	1,114	NA	1,134	735	98	101	80	121	299	379	214	77	88	NA
1957.....		4,060	619	1,352	205	1,148	NA	1,300	831	124	112	98	135	357	432	242	75	115	NA
1958.....		4,603	727	1,439	210	1,229	NA	1,522	985	152	117	117	151	415	500	285	78	137	NA
1959.....		5,238	793	1,542	347	1,195	NA	1,870	1,265	181	116	137	171	455	578	347	87	145	NA
1960.....		6,112	872	1,787	375	1,412	NA	2,303	1,618	214	116	159	195	504	646	404	100	143	NA
1961.....		7,104	1,079	1,856	381	1,476	NA	2,808	2,028	252	117	187	223	590	771	493	103	174	NA
1962.....		8,457	1,168	2,263	663	1,600	NA	3,415	2,529	295	116	222	253	684	927	603	111	213	NA
1963.....		9,704	1,305	2,395	674	1,720	NA	4,168	3,161	344	112	264	287	803	1,032	688	115	229	NA
1964.....		10,827	1,532	2,291	556	1,735	190	4,837	3,721	381	113	315	307	901	1,075	750	113	212	NA
1965.....		11,822	1,662	2,498	697	1,802	129	5,416	4,187	419	118	382	311	965	1,152	792	129	231	NA
1966.....		12,642	1,769	2,559	613	1,946	134	5,954	4,599	447	125	459	324	1,029	1,197	809	138	250	NA
1967.....		13,257	1,814	2,490	703	1,787	142	6,502	4,970	477	140	568	347	1,101	1,207	810	142	255	NA
1968.....		13,551	1,935	2,436	582	1,854	140	6,745	5,078	525	151	627	365	1,106	1,188	787	149	253	NA
1969.....		13,350	2,085	2,222	470	1,752	141	6,706	4,924	585	151	655	392	1,040	1,155	734	164	256	NA
1970.....		13,053	2,041	2,056	443	1,613	131	6,737	4,803	651	156	711	416	961	1,128	706	160	262	NA
1971.....		12,868	2,010	1,927	349	1,577	114	6,807	4,789	670	171	740	438	872	1,138	716	156	266	NA
1972.....		12,763	1,997	1,837	302	1,535	129	6,754	4,764	648	182	716	444	895	1,150	716	156	278	NA
1973.....		12,872	2,047	1,868	301	1,567	113	6,603	4,674	617	184	701	429	1,077	1,163	727	154	283	NA
1974.....		12,989	2,058	1,872	328	1,544	141	6,570	4,633	587	190	720	439	1,194	1,154	706	155	294	NA
1975.....		12,828	1,999	1,782	274	1,508	139	6,525	4,653	559	188	694	432	1,251	1,131	671	156	304	NA
1976.....		13,367	2,115	1,866	289	1,577	172	6,654	4,786	542	187	705	434	1,383	1,178	690	162	325	NA
1977.....		14,054	2,205	1,955	316	1,640	175	6,939	4,945	542	208	782	462	1,560	1,219	705	168	346	NA
1978.....		15,208	2,282	2,057	341	1,716	205	7,378	5,243	568	233	870	464	1,979	1,306	768	172	366	NA
1979.....		15,816	2,245	2,127	325	1,802	210	7,725	5,488	577	257	941	462	2,118	1,391	833	175	383	NA
1980.....		16,265	2,243	2,230	315	1,915	222	7,984	5,663	568	288	1,006	459	2,158	1,427	853	176	397	NA
1981.....		16,628	2,271	2,498	277	2,221	232	8,012	5,634	572	309	1,041	456	2,172	1,442	854	177	411	NA
1982.....		17,256	2,426	2,831	403	2,428	204	8,116	5,539	587	344	1,142	505	2,178	1,500	879	184	438	NA
1983.....		18,493	2,657	3,230	531	2,699	179	8,462	5,657	607	398	1,252	549	2,355	1,610	939	194	476	NA
1984.....		19,931	2,774	3,654	503	3,151	201	9,082	6,040	644	462	1,352	584	2,526	1,695	970	206	519	NA
1985.....		21,311	2,793	3,917	514	3,404	188	10,075	6,606	738	558	1,543	631	2,572	1,766	977	219	569	NA
1986.....		24,206	2,843	5,516	609	4,907	164	11,147	7,188	850	654	1,771	684	2,688	1,848	982	236	630	NA
1987.....		25,272	2,797	5,712	817	4,895	194	11,809	7,550	900	702	1,912	745	2,850	1,911	966	252	692	NA
1988.....		26,140	2,796	5,500	867	4,633	445	12,343	7,843	932	746	2,021	802	3,001	2,023	999	268	756	31
1989.....		27,864	2,939	6,133	1,255	4,878	507	13,006	8,174	974	811	2,181	865	3,018	2,202	1,095	283	823	59
1990.....		28,223	2,842	5,673	1,065	4,608	612	13,635	8,442	1,038	865	2,364	927	3,027	2,356	1,161	300	895	79
1991.....		32,139	2,816	8,735	1,481	7,253	546	14,283	8,790	1,080	905	2,519	990	3,146	2,521	1,227	318	977	91
1992.....		31,955	2,800	7,557	824	6,733	549	14,944	9,328	1,090	943	2,550	1,034	3,319	2,709	1,290	341	1,078	78

**U.S. inflation-adjusted basic research expenditures, by performing sector and source of funds: 1953–2004**

(Millions of constant 2000 dollars)

Year	Performing sector:	Total	Federal	Industry			Industry FFRDCs	U&C <sup>a</sup>					U&C FFRDCs	Other nonprofit institutions			Nonprofit FFRDCs		
	Funding sector:	Total	Federal	Total	Federal <sup>b</sup>	Industry <sup>c</sup>	Federal <sup>b</sup>	Total	Federal	Nonfederal <sup>d</sup>	Industry	U&C	Nonprofit	Federal <sup>e</sup>	Total	Federal <sup>b</sup>	Industry	Nonprofit	Federal <sup>b</sup>
1993.....		32,520	2,965	7,272	527	6,745	557	15,438	9,773	1,077	963	2,566	1,059	3,341	2,865	1,309	366	1,189	82
1994.....		32,848	2,822	7,217	483	6,734	557	15,951	10,124	1,098	985	2,666	1,079	3,251	2,967	1,259	394	1,314	83
1995.....		32,145	2,920	6,046	206	5,840	575	16,441	10,458	1,161	1,026	2,725	1,072	2,933	3,147	1,270	424	1,453	82
1996.....		34,944	2,855	7,989	693	7,297	754	17,089	10,751	1,224	1,100	2,918	1,096	2,776	3,396	1,330	457	1,609	84
1997.....		38,685	2,878	10,266	1,078	9,187	655	18,491	11,440	1,308	1,232	3,295	1,217	2,800	3,482	1,380	471	1,631	113
1998.....		36,557	3,112	6,067	1,039	5,028	589	20,022	12,321	1,380	1,364	3,612	1,344	2,757	3,790	1,514	511	1,764	221
1999.....		39,676	3,420	6,815	1,157	5,658	544	21,385	13,069	1,465	1,454	3,923	1,475	2,825	4,282	1,772	558	1,952	405
2000.....		42,567	3,765	7,053	938	6,115	534	22,856	13,904	1,550	1,500	4,296	1,605	2,874	4,870	2,099	621	2,150	616
2001.....		46,439	4,161	7,864	736	7,128	539	24,591	15,144	1,624	1,482	4,620	1,721	3,031	5,359	2,406	614	2,339	894
2002.....		49,027	4,333	7,250	853	6,397	594	26,758	16,924	1,700	1,433	4,879	1,823	3,568	5,583	2,474	578	2,532	941
2003.....		51,985	4,434	8,099	1,536	6,563	641	28,347	18,282	1,754	1,383	5,048	1,881	3,584	5,870	2,609	587	2,673	1,010
2004.....		53,934	4,517	8,575	1,711	6,864	653	29,330	19,029	1,825	1,348	5,180	1,949	3,620	6,147	2,721	615	2,811	1,092

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Character-of-work estimation procedure for university and college R&D also revised for 1998 on; hence, data not directly comparable with data for 1997 and earlier.

<sup>b</sup>Expenditures of industry FFRDCs for 1953–63 not separated from total federal support to industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–87.

<sup>c</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

<sup>d</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D, e.g., nonfederal government support to nonprofits is included in nonprofit support for their own R&D.

<sup>e</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).

**U.S. basic research expenditures, by source of funds and performing sector: 1953–2004**

(Millions of current dollars)

Year	Funding sector:	Total	Federal							Industry				U&C	Nonprofit		Nonfederal <sup>a</sup>		
	Performing sector:		Total	Federal	Industry <sup>b</sup>	Industry FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>b</sup>	Nonprofit FFRDCs <sup>b</sup>	Total	Industry <sup>e</sup>	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Total	Nonprofit	U&C <sup>c</sup>	U&C <sup>c</sup>
1953.....		460	265	102	19	NA	82	36	27	NA	154	132	13	9	6	28	12	16	7
1954.....		509	291	96	23	NA	97	44	31	NA	169	143	15	11	8	31	13	18	10
1955.....		579	327	98	27	NA	117	50	36	NA	192	162	17	13	12	35	14	21	14
1956.....		718	393	114	37	NA	143	58	42	NA	251	216	20	15	15	41	17	24	19
1957.....		814	452	124	41	NA	167	72	49	NA	268	230	23	15	20	50	23	27	25
1958.....		944	538	149	43	NA	202	85	59	NA	292	252	24	16	24	59	28	31	31
1959.....		1,087	666	165	72	NA	263	95	72	NA	290	248	24	18	28	66	30	36	38
1960.....		1,286	794	184	79	NA	341	106	85	NA	343	297	25	21	33	71	30	41	45
1961.....		1,512	973	230	81	NA	432	126	105	NA	361	314	25	22	40	85	37	48	54
1962.....		1,824	1,218	252	143	NA	546	148	130	NA	394	345	25	24	48	101	46	55	64
1963.....		2,115	1,446	285	147	NA	689	175	150	NA	425	375	25	25	58	113	50	63	75
1964.....		2,396	1,693	339	123	42	824	200	166	NA	434	384	25	25	70	115	47	68	84
1965.....		2,664	1,900	375	157	29	944	218	179	NA	462	406	27	29	86	122	52	70	94
1966.....		2,930	2,075	410	142	31	1,066	239	188	NA	512	451	29	32	106	133	58	75	104
1967.....		3,168	2,280	434	168	34	1,188	263	194	NA	495	427	34	34	136	144	61	83	114
1968.....		3,376	2,399	482	145	35	1,265	276	196	NA	537	462	38	37	156	154	63	91	131
1969.....		3,491	2,457	545	123	37	1,288	272	192	NA	541	458	40	43	171	170	67	103	153
1970.....		3,594	2,501	562	122	36	1,323	265	195	NA	531	444	43	44	196	187	72	115	179
1971.....		3,720	2,559	581	101	33	1,385	252	207	NA	551	456	50	45	214	204	77	127	194
1972.....		3,850	2,656	603	91	39	1,437	270	216	NA	565	463	55	47	216	218	84	134	195
1973.....		4,099	2,847	652	96	36	1,489	343	232	NA	607	499	59	49	223	227	90	137	196
1974.....		4,511	3,146	715	114	49	1,609	415	245	NA	656	536	66	54	250	254	102	153	204
1975.....		4,875	3,415	760	104	53	1,768	476	255	NA	704	573	72	59	264	280	116	164	212
1976.....		5,373	3,793	850	116	69	1,924	556	278	NA	774	634	75	65	283	305	131	175	218
1977.....		6,008	4,235	943	135	75	2,114	667	301	NA	862	701	89	72	334	346	148	198	232
1978.....		6,959	4,950	1,044	156	94	2,399	906	351	NA	970	785	107	79	398	380	168	213	260
1979.....		7,836	5,558	1,112	161	104	2,719	1,050	413	NA	1,107	893	128	87	466	419	190	229	286
1980.....		8,790	6,191	1,212	170	120	3,061	1,167	461	NA	1,286	1,035	156	95	544	463	215	248	307
1981.....		9,830	6,764	1,343	164	137	3,331	1,284	505	NA	1,600	1,313	183	105	615	512	243	269	338
1982.....		10,824	7,295	1,522	253	128	3,475	1,366	551	NA	1,854	1,523	215	115	716	591	275	317	368
1983.....		12,059	8,032	1,733	346	117	3,689	1,536	613	NA	2,146	1,760	260	127	816	668	311	358	396
1984.....		13,484	8,804	1,877	340	136	4,087	1,709	656	NA	2,584	2,132	313	139	915	746	351	395	436
1985.....		14,857	9,516	1,947	358	131	4,606	1,793	681	NA	2,915	2,373	389	153	1,075	837	397	440	514
1986.....		17,247	10,313	2,026	434	117	5,122	1,915	700	NA	4,130	3,496	466	168	1,262	936	449	488	606
1987.....		18,498	11,107	2,047	598	142	5,527	2,086	707	NA	4,282	3,583	514	185	1,399	1,052	507	545	659
1988.....		19,786	12,097	2,116	656	337	5,937	2,272	756	24	4,274	3,507	565	203	1,529	1,180	573	607	705
1989.....		21,889	13,392	2,309	986	398	6,422	2,371	860	46	4,692	3,832	637	223	1,714	1,326	647	680	766
1990.....		23,028	14,056	2,319	869	499	6,888	2,470	947	65	4,710	3,760	705	245	1,929	1,486	730	756	847
1991.....		27,139	15,283	2,378	1,251	461	7,423	2,657	1,036	77	7,157	6,125	764	269	2,127	1,660	825	836	912
1992.....		27,604	15,710	2,419	712	474	8,058	2,867	1,114	67	6,925	5,816	814	295	2,202	1,824	931	893	941

**U.S. basic research expenditures, by source of funds and performing sector: 1953–2004**

(Millions of current dollars)

Year	Funding sector:	Performing sector:																	
	Total	Total	Federal	Industry <sup>b</sup>	Federal					Industry				U&C	Nonprofit		Nonfederal <sup>a</sup>		
	Total	Total	Federal	Industry <sup>b</sup>	Industry FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>b</sup>	Nonprofit FFRDCs <sup>b</sup>	Total	Industry <sup>e</sup>	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Total	Nonprofit	U&C <sup>c</sup>	U&C <sup>c</sup>	
1993.....	28,741	16,398	2,621	466	492	8,638	2,953	1,157	72	7,136	5,961	851	324	2,268	1,987	1,051	936	952	
1994.....	29,648	16,769	2,547	436	503	9,138	2,934	1,137	75	7,323	6,078	889	356	2,406	2,160	1,186	974	991	
1995.....	29,607	16,989	2,689	190	530	9,633	2,702	1,170	75	6,714	5,379	945	390	2,510	2,326	1,338	987	1,069	
1996.....	32,796	18,061	2,680	650	708	10,091	2,606	1,248	79	8,308	6,848	1,032	428	2,739	2,539	1,510	1,028	1,149	
1997.....	36,910	19,411	2,746	1,029	625	10,915	2,671	1,317	108	10,390	8,766	1,175	449	3,144	2,718	1,557	1,161	1,248	
1998.....	35,268	20,793	3,003	1,002	568	11,886	2,660	1,461	213	6,660	4,851	1,316	493	3,485	2,999	1,702	1,297	1,331	
1999.....	38,830	22,697	3,347	1,132	533	12,790	2,765	1,734	397	7,506	5,537	1,423	546	3,840	3,354	1,910	1,443	1,434	
2000.....	42,567	24,730	3,765	938	534	13,904	2,874	2,099	616	8,236	6,115	1,500	621	4,296	3,755	2,150	1,605	1,550	
2001.....	47,553	27,557	4,260	754	552	15,507	3,104	2,464	915	9,445	7,299	1,518	629	4,731	4,157	2,395	1,762	1,663	
2002.....	51,033	30,900	4,511	888	619	17,616	3,714	2,575	979	8,753	6,659	1,492	602	5,078	4,533	2,635	1,898	1,769	
2003.....	55,104	34,022	4,700	1,628	679	19,379	3,799	2,766	1,071	9,045	6,957	1,466	622	5,351	4,827	2,834	1,993	1,859	
2004.....	58,356	36,075	4,887	1,851	706	20,589	3,917	2,944	1,181	9,551	7,427	1,458	666	5,605	5,150	3,042	2,109	1,974	

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D, e.g., nonfederal government support to nonprofits is included in nonprofit support for their own R&D.

<sup>b</sup>Expenditures of industry FFRDCs for 1953–63 not separated from total federal support to industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–87.

<sup>c</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Character-of-work estimation procedure for university and college R&D also revised for 1998 on; hence, data not directly comparable with data for 1997 and earlier.

<sup>d</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

<sup>e</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).



**U.S. inflation-adjusted basic research expenditures, by source of funds and performing sector: 1953–2004**

(Millions of constant 2000 dollars)

Year	Funding sector:	Total	Federal							Industry				U&C	Nonprofit		Nonfederal <sup>a</sup>		
	Performing sector:		Total	Federal	Industry <sup>b</sup>	Industry FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>e</sup>	Nonprofit FFRDCs <sup>b</sup>	Total	Industry <sup>e</sup>	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Total	Nonprofit	U&C <sup>c</sup>	U&C <sup>c</sup>
1953.....		2,519	1,452	556	104	NA	447	197	148	NA	844	723	71	49	33	153	66	88	36
1954.....		2,761	1,577	521	125	NA	524	239	168	NA	918	776	81	60	46	168	71	98	52
1955.....		3,089	1,744	520	144	NA	621	267	192	NA	1,024	864	91	69	62	184	75	109	74
1956.....		3,702	2,024	585	191	NA	735	299	214	NA	1,292	1,114	101	77	80	209	88	121	98
1957.....		4,060	2,253	619	205	NA	831	357	242	NA	1,335	1,148	112	75	98	250	115	135	124
1958.....		4,603	2,622	727	210	NA	985	415	285	NA	1,425	1,229	117	78	117	288	137	151	152
1959.....		5,238	3,207	793	347	NA	1,265	455	347	NA	1,398	1,195	116	87	137	316	145	171	181
1960.....		6,112	3,774	872	375	NA	1,618	504	404	NA	1,628	1,412	116	100	159	337	143	195	214
1961.....		7,104	4,571	1,079	381	NA	2,028	590	493	NA	1,697	1,476	117	103	187	397	174	223	252
1962.....		8,457	5,647	1,168	663	NA	2,529	684	603	NA	1,827	1,600	116	111	222	466	213	253	295
1963.....		9,704	6,632	1,305	674	NA	3,161	803	688	NA	1,948	1,720	112	115	264	516	229	287	344
1964.....		10,827	7,650	1,532	556	190	3,721	901	750	NA	1,961	1,735	113	113	315	520	212	307	381
1965.....		11,822	8,431	1,662	697	129	4,187	965	792	NA	2,048	1,802	118	129	382	541	231	311	419
1966.....		12,642	8,953	1,769	613	134	4,599	1,029	809	NA	2,209	1,946	125	138	459	574	250	324	447
1967.....		13,257	9,540	1,814	703	142	4,970	1,101	810	NA	2,070	1,787	140	142	568	603	255	347	477
1968.....		13,551	9,627	1,935	582	140	5,078	1,106	787	NA	2,153	1,854	151	149	627	618	253	365	525
1969.....		13,350	9,395	2,085	470	141	4,924	1,040	734	NA	2,067	1,752	151	164	655	648	256	392	585
1970.....		13,053	9,085	2,041	443	131	4,803	961	706	NA	1,929	1,613	156	160	711	677	262	416	651
1971.....		12,868	8,850	2,010	349	114	4,789	872	716	NA	1,904	1,577	171	156	740	704	266	438	670
1972.....		12,763	8,803	1,997	302	129	4,764	895	716	NA	1,873	1,535	182	156	716	723	278	444	648
1973.....		12,872	8,939	2,047	301	113	4,674	1,077	727	NA	1,904	1,567	184	154	701	711	283	429	617
1974.....		12,989	9,060	2,058	328	141	4,633	1,194	706	NA	1,889	1,544	190	155	720	733	294	439	587
1975.....		12,828	8,987	1,999	274	139	4,653	1,251	671	NA	1,852	1,508	188	156	694	736	304	432	559
1976.....		13,367	9,435	2,115	289	172	4,786	1,383	690	NA	1,926	1,577	187	162	705	760	325	434	542
1977.....		14,054	9,906	2,205	316	175	4,945	1,560	705	NA	2,016	1,640	208	168	782	808	346	462	542
1978.....		15,208	10,819	2,282	341	205	5,243	1,979	768	NA	2,121	1,716	233	172	870	831	366	464	568
1979.....		15,816	11,218	2,245	325	210	5,488	2,118	833	NA	2,235	1,802	257	175	941	845	383	462	577
1980.....		16,265	11,455	2,243	315	222	5,663	2,158	853	NA	2,380	1,915	288	176	1,006	856	397	459	568
1981.....		16,628	11,441	2,271	277	232	5,634	2,172	854	NA	2,707	2,221	309	177	1,041	867	411	456	572
1982.....		17,256	11,629	2,426	403	204	5,539	2,178	879	NA	2,955	2,428	344	184	1,142	943	438	505	587
1983.....		18,493	12,318	2,657	531	179	5,657	2,355	939	NA	3,292	2,699	398	194	1,252	1,025	476	549	607
1984.....		19,931	13,013	2,774	503	201	6,040	2,526	970	NA	3,819	3,151	462	206	1,352	1,103	519	584	644
1985.....		21,311	13,650	2,793	514	188	6,606	2,572	977	NA	4,181	3,404	558	219	1,543	1,200	569	631	738
1986.....		24,206	14,475	2,843	609	164	7,188	2,688	982	NA	5,796	4,907	654	236	1,771	1,314	630	684	850
1987.....		25,272	15,174	2,797	817	194	7,550	2,850	966	NA	5,849	4,895	702	252	1,912	1,437	692	745	900
1988.....		26,140	15,982	2,796	867	445	7,843	3,001	999	31	5,647	4,633	746	268	2,021	1,558	756	802	932
1989.....		27,864	17,047	2,939	1,255	507	8,174	3,018	1,095	59	5,973	4,878	811	283	2,181	1,688	823	865	974
1990.....		28,223	17,227	2,842	1,065	612	8,442	3,027	1,161	79	5,773	4,608	865	300	2,364	1,822	895	927	1,038
1991.....		32,139	18,098	2,816	1,481	546	8,790	3,146	1,227	91	8,476	7,253	905	318	2,519	1,966	977	990	1,080
1992.....		31,955	18,187	2,800	824	549	9,328	3,319	1,290	78	8,017	6,733	943	341	2,550	2,112	1,078	1,034	1,090

**U.S. inflation-adjusted basic research expenditures, by source of funds and performing sector: 1953–2004**

(Millions of constant 2000 dollars)

Year	Funding sector:																	
	Performing sector:	Total	Federal							Industry				U&C	Nonprofit			Nonfederal <sup>a</sup>
	Total	Total	Federal	Industry <sup>b</sup>	Industry FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>b</sup>	Nonprofit FFRDCs <sup>b</sup>	Total	Industry <sup>e</sup>	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Total	Nonprofit	U&C <sup>c</sup>	U&C <sup>c</sup>
1993.....	32,520	18,554	2,965	527	557	9,773	3,341	1,309	82	8,074	6,745	963	366	2,566	2,248	1,189	1,059	1,077
1994.....	32,848	18,578	2,822	483	557	10,124	3,251	1,259	83	8,113	6,734	985	394	2,666	2,393	1,314	1,079	1,098
1995.....	32,145	18,445	2,920	206	575	10,458	2,933	1,270	82	7,290	5,840	1,026	424	2,725	2,525	1,453	1,072	1,161
1996.....	34,944	19,244	2,855	693	754	10,751	2,776	1,330	84	8,853	7,297	1,100	457	2,918	2,705	1,609	1,096	1,224
1997.....	38,685	20,344	2,878	1,078	655	11,440	2,800	1,380	113	10,890	9,187	1,232	471	3,295	2,849	1,631	1,217	1,308
1998.....	36,557	21,553	3,112	1,039	589	12,321	2,757	1,514	221	6,904	5,028	1,364	511	3,612	3,109	1,764	1,344	1,380
1999.....	39,676	23,191	3,420	1,157	544	13,069	2,825	1,772	405	7,670	5,658	1,454	558	3,923	3,427	1,952	1,475	1,465
2000.....	42,567	24,730	3,765	938	534	13,904	2,874	2,099	616	8,236	6,115	1,500	621	4,296	3,755	2,150	1,605	1,550
2001.....	46,439	26,912	4,161	736	539	15,144	3,031	2,406	894	9,224	7,128	1,482	614	4,620	4,059	2,339	1,721	1,624
2002.....	49,027	29,686	4,333	853	594	16,924	3,568	2,474	941	8,408	6,397	1,433	578	4,879	4,355	2,532	1,823	1,700
2003.....	51,985	32,097	4,434	1,536	641	18,282	3,584	2,609	1,010	8,533	6,563	1,383	587	5,048	4,554	2,673	1,881	1,754
2004.....	53,934	33,342	4,517	1,711	653	19,029	3,620	2,721	1,092	8,827	6,864	1,348	615	5,180	4,760	2,811	1,949	1,825

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D. For example, nonfederal government support to nonprofits is included in nonprofits' support for their own R&D.

<sup>b</sup>Expenditures of industry FFRDCs for 1953–63 not separated from total federal support to the industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–87.

<sup>c</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Character-of-work estimation procedure for university and college R&D also revised for 1998 on; hence, data not directly comparable with data for 1997 and earlier.

<sup>d</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

<sup>e</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).

**U.S. applied research expenditures, by performing sector and source of funds: 1953–2004**

(Millions of current dollars)

Year	Performing sector:	Total	Federal	Industry			Industry FFRDCs	U&C <sup>a</sup>						U&C FFRDCs	Other nonprofit institutions				Nonprofit FFRDCs
	Funding sector:	Total	Federal	Total	Federal <sup>b</sup>	Industry <sup>c</sup>	Federal <sup>b</sup>	Total	Federal	Nonfederal <sup>d</sup>	Industry	U&C	Nonprofit	Federal <sup>e</sup>	Total	Federal <sup>b</sup>	Industry	Nonprofit	Federal <sup>b</sup>
1953.....		1,289	347	726	288	438	NA	134	59	30	7	28	10	48	35	14	11	10	NA
1954.....		1,378	330	814	322	492	NA	137	60	32	8	28	10	58	40	16	13	11	NA
1955.....		1,514	333	928	368	560	NA	142	63	32	9	27	11	68	43	18	14	11	NA
1956.....		1,928	387	1,268	474	794	NA	146	65	33	10	27	11	79	49	21	14	14	NA
1957.....		2,414	446	1,670	678	992	NA	147	63	34	12	27	11	94	58	24	14	20	NA
1958.....		2,758	516	1,911	774	1,137	NA	152	66	35	12	27	12	111	69	30	14	25	NA
1959.....		2,940	577	1,991	813	1,178	NA	167	78	37	13	28	12	121	85	43	15	27	NA
1960.....		3,065	615	2,029	833	1,196	NA	186	93	39	13	29	12	129	108	63	17	28	NA
1961.....		3,123	668	1,977	812	1,165	NA	199	104	40	13	30	13	145	135	83	17	35	NA
1962.....		3,698	709	2,449	1,011	1,438	NA	216	119	41	14	30	13	163	162	98	19	45	NA
1963.....		3,865	809	2,457	1,007	1,450	NA	230	128	42	14	32	14	186	183	115	19	49	NA
1964.....		4,201	947	2,538	978	1,560	62	256	142	45	14	37	18	203	196	130	19	47	NA
1965.....		4,374	994	2,612	992	1,620	46	304	176	46	13	42	27	206	213	140	21	52	NA
1966.....		4,653	1,012	2,790	986	1,804	53	351	208	47	14	48	34	213	234	153	24	57	NA
1967.....		4,848	1,069	2,832	983	1,849	83	389	238	46	16	54	36	225	251	166	25	60	NA
1968.....		5,137	1,112	3,037	956	2,081	87	405	250	46	16	55	39	221	276	186	28	62	NA
1969.....		5,454	1,229	3,192	920	2,272	95	417	257	48	16	54	43	213	308	210	32	66	NA
1970.....		5,752	1,334	3,330	952	2,378	97	451	280	51	18	56	47	213	328	225	33	70	NA
1971.....		5,833	1,355	3,348	907	2,441	67	499	306	61	19	67	47	216	349	241	34	74	NA
1972.....		6,147	1,434	3,407	845	2,562	107	619	391	74	21	82	52	224	357	243	35	79	NA
1973.....		6,655	1,527	3,715	883	2,832	110	725	450	88	26	100	62	203	376	257	36	83	NA
1974.....		7,344	1,652	4,168	905	3,263	120	794	477	96	32	118	72	191	420	290	39	91	NA
1975.....		8,091	1,912	4,431	991	3,440	139	934	550	113	39	141	92	219	456	315	42	100	NA
1976.....		8,976	2,068	4,945	1,033	3,912	167	1,042	596	127	45	166	109	263	492	338	45	109	NA
1977.....		9,662	2,081	5,424	1,113	4,311	212	1,126	626	134	51	194	121	297	523	355	48	120	NA
1978.....		10,704	2,242	6,065	1,195	4,870	235	1,247	676	151	61	232	128	324	592	409	52	132	NA
1979.....		12,097	2,415	6,975	1,305	5,670	250	1,418	793	161	71	263	129	360	680	480	55	144	NA
1980.....		13,745	2,546	8,175	1,625	6,550	275	1,622	912	174	88	308	140	421	706	489	60	158	NA
1981.....		16,391	2,731	10,401	2,042	8,359	298	1,781	953	199	108	363	159	422	758	521	64	173	NA
1982.....		18,280	2,802	11,956	2,593	9,363	367	1,915	1,007	207	121	402	178	433	808	550	69	189	NA
1983.....		20,373	2,991	13,513	3,227	10,286	414	2,116	1,122	215	141	443	194	473	866	585	74	207	NA
1984.....		22,505	2,961	15,218	3,677	11,541	547	2,332	1,226	234	168	491	212	548	899	594	79	226	NA
1985.....		25,410	3,135	17,625	4,717	12,908	630	2,527	1,296	262	198	547	224	579	913	581	85	247	NA
1986.....		27,259	3,204	19,131	4,049	15,082	629	2,780	1,393	298	229	620	240	554	961	600	91	270	NA
1987.....		27,915	3,366	19,190	4,037	15,153	623	3,219	1,643	333	260	707	276	532	986	593	98	295	NA
1988.....		29,528	3,362	20,377	3,846	16,531	371	3,779	1,957	377	302	818	325	547	1,026	599	105	322	66
1989.....		32,277	3,566	22,317	4,324	17,993	374	4,188	2,120	417	347	933	370	603	1,159	695	112	352	70
1990.....		34,896	3,652	24,399	5,967	18,432	386	4,405	2,139	453	377	1,031	404	689	1,284	780	120	384	81
1991.....		38,629	4,093	27,013	5,588	21,425	433	4,608	2,230	468	392	1,091	428	927	1,468	921	129	419	86
1992.....		37,933	4,337	25,660	4,476	21,184	507	4,880	2,413	479	414	1,120	454	940	1,528	933	138	456	81

**U.S. applied research expenditures, by performing sector and source of funds: 1953–2004**

(Millions of current dollars)

Year	Performing sector:	Total	Federal	Industry			Industry FFRDCs	U&C <sup>a</sup>						U&C FFRDCs	Other nonprofit institutions				Nonprofit FFRDCs
	Funding sector:	Total	Federal	Total	Federal <sup>b</sup>	Industry <sup>c</sup>	Federal <sup>b</sup>	Total	Federal	Nonfederal <sup>d</sup>	Industry	U&C	Nonprofit	Federal <sup>e</sup>	Total	Federal <sup>b</sup>	Industry	Nonprofit	Federal <sup>b</sup>
1993.....		37,279	4,838	24,251	4,295	19,956	435	5,146	2,539	496	443	1,181	487	962	1,544	900	148	497	103
1994.....		36,614	4,985	22,988	3,616	19,372	503	5,386	2,641	517	464	1,256	508	982	1,659	960	158	541	111
1995.....		40,931	4,952	26,919	3,164	23,755	535	5,654	2,775	558	494	1,311	516	1,050	1,692	934	170	589	129
1996.....		43,165	4,872	29,010	3,640	25,370	231	5,879	2,860	583	524	1,390	522	1,270	1,781	960	182	640	122
1997.....		46,553	4,997	32,430	2,648	29,782	213	5,522	2,551	552	518	1,388	512	1,337	1,926	1,011	205	711	128
1998.....		46,361	5,146	32,208	2,632	29,576	230	5,221	2,291	525	519	1,374	512	1,372	2,062	1,060	225	777	123
1999.....		52,083	5,530	36,638	2,817	33,821	274	5,839	2,749	544	540	1,458	548	1,251	2,421	1,300	249	872	130
2000.....		56,844	6,105	39,170	2,676	36,494	275	6,652	3,354	571	553	1,583	591	1,329	3,096	1,831	283	981	217
2001.....		64,605	7,052	44,012	3,603	40,409	935	7,260	3,757	602	550	1,713	638	1,485	3,530	2,150	287	1,093	332
2002.....		50,787	7,487	28,533	2,452	26,081	1,048	7,980	4,227	649	547	1,863	696	1,685	3,744	2,267	275	1,203	309
2003.....		62,084	7,939	38,076	5,182	32,894	1,200	8,686	4,648	704	555	2,025	754	1,721	4,095	2,518	284	1,293	367
2004.....		66,364	8,407	41,009	5,892	35,117	1,268	9,223	4,983	751	555	2,132	802	1,806	4,287	2,595	304	1,388	365

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Character-of-work estimation procedure for university and college R&D also revised for 1998 on; hence, data not directly comparable with data for 1997 and earlier.

<sup>b</sup>Expenditures of industry FFRDCs for 1953–63 not separated from total federal support to industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–87.

<sup>c</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

<sup>d</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D, e.g., nonfederal government support to nonprofits is included in nonprofit support for their own R&D.

<sup>e</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).

**U.S. inflation-adjusted applied research expenditures, by performing sector and source of funds: 1953–2004**

(Millions of constant 2000 dollars)

Year	Performing sector:	Total	Federal	Industry			Industry FFRDCs	U&C <sup>a</sup>						U&C FFRDCs	Other nonprofit institutions				Nonprofit FFRDCs
	Funding sector:			Total	Federal	Total	Federal <sup>b</sup>	Industry <sup>c</sup>	Federal <sup>b</sup>	Total	Federal	Nonfederal <sup>d</sup>	Industry	U&C	Nonprofit	Federal <sup>e</sup>	Total	Federal <sup>b</sup>	Industry
1953.....		7,065	1,902	3,979	1,579	2,401	NA	732	323	165	36	153	55	260	192	77	60	55	NA
1954.....		7,482	1,789	4,420	1,748	2,671	NA	741	323	171	41	152	54	315	217	87	71	60	NA
1955.....		8,074	1,776	4,951	1,963	2,987	NA	755	336	172	45	145	56	363	229	96	75	59	NA
1956.....		9,938	1,993	6,538	2,444	4,094	NA	753	335	171	52	139	57	405	250	106	72	72	NA
1957.....		12,044	2,223	8,334	3,384	4,951	NA	731	314	169	57	135	55	469	287	117	70	100	NA
1958.....		13,455	2,517	9,323	3,776	5,547	NA	739	320	172	59	133	56	539	337	146	68	122	NA
1959.....		14,165	2,778	9,595	3,918	5,677	NA	805	373	178	60	135	58	581	407	205	72	130	NA
1960.....		14,567	2,921	9,643	3,959	5,684	NA	882	442	184	62	137	57	611	511	297	81	133	NA
1961.....		14,678	3,139	9,292	3,816	5,475	NA	933	486	188	61	139	59	681	632	388	80	164	NA
1962.....		17,144	3,285	11,355	4,688	6,667	NA	1,002	549	188	63	141	60	753	749	452	88	209	NA
1963.....		17,730	3,712	11,273	4,620	6,653	NA	1,053	585	193	64	148	62	853	840	528	87	225	NA
1964.....		18,983	4,277	11,468	4,419	7,049	280	1,155	642	204	61	169	79	917	886	587	86	212	NA
1965.....		19,408	4,409	11,591	4,402	7,189	204	1,347	779	206	58	187	118	912	945	621	93	231	NA
1966.....		20,074	4,366	12,038	4,254	7,784	229	1,514	897	203	60	209	145	919	1,007	658	104	246	NA
1967.....		20,290	4,472	11,852	4,114	7,738	347	1,626	994	191	65	225	151	942	1,050	695	105	251	NA
1968.....		20,620	4,462	12,190	3,837	8,353	349	1,626	1,001	185	64	221	155	885	1,108	747	112	249	NA
1969.....		20,859	4,701	12,207	3,518	8,689	363	1,595	981	184	61	206	163	815	1,178	803	122	252	NA
1970.....		20,893	4,845	12,095	3,458	8,637	352	1,636	1,015	186	64	203	169	774	1,191	817	120	254	NA
1971.....		20,176	4,687	11,581	3,137	8,443	232	1,726	1,058	209	64	232	163	745	1,205	832	118	256	NA
1972.....		20,377	4,754	11,294	2,801	8,493	355	2,050	1,295	246	68	271	171	743	1,182	804	116	262	NA
1973.....		20,897	4,796	11,665	2,773	8,892	345	2,275	1,411	275	82	314	193	636	1,181	807	113	261	NA
1974.....		21,149	4,758	12,003	2,606	9,397	346	2,285	1,372	277	91	339	206	549	1,209	835	111	262	NA
1975.....		21,292	5,031	11,660	2,608	9,052	366	2,458	1,446	298	101	370	242	576	1,201	829	109	263	NA
1976.....		22,331	5,146	12,302	2,570	9,732	415	2,592	1,481	317	111	412	271	653	1,223	840	111	272	NA
1977.....		22,601	4,867	12,687	2,603	10,084	496	2,633	1,463	315	119	454	282	695	1,223	830	112	281	NA
1978.....		23,394	4,899	13,255	2,612	10,643	514	2,725	1,477	330	132	507	279	708	1,294	893	113	287	NA
1979.....		24,415	4,874	14,077	2,634	11,444	505	2,861	1,600	326	144	531	260	726	1,371	969	112	291	NA
1980.....		25,434	4,711	15,127	3,007	12,120	509	3,002	1,688	321	163	570	260	779	1,307	904	110	292	NA
1981.....		27,726	4,620	17,593	3,454	14,139	504	3,012	1,611	337	182	613	269	714	1,282	882	108	292	NA
1982.....		29,142	4,466	19,061	4,134	14,927	585	3,052	1,605	331	193	641	283	690	1,288	877	109	301	NA
1983.....		31,243	4,587	20,723	4,949	15,774	635	3,245	1,721	330	217	680	298	726	1,327	897	113	317	NA
1984.....		33,264	4,376	22,493	5,435	17,059	809	3,446	1,812	346	248	726	313	811	1,329	878	117	334	NA
1985.....		36,449	4,497	25,282	6,766	18,516	904	3,625	1,860	375	284	785	321	831	1,310	834	122	355	NA
1986.....		38,258	4,497	26,851	5,683	21,168	883	3,901	1,955	418	321	871	337	777	1,349	842	128	379	NA
1987.....		38,137	4,598	26,217	5,515	20,702	851	4,398	2,244	455	355	966	377	726	1,347	810	133	403	NA
1988.....		39,009	4,442	26,920	5,081	21,839	490	4,993	2,586	498	399	1,081	429	722	1,355	791	138	426	87
1989.....		41,087	4,540	28,409	5,504	22,904	476	5,331	2,699	531	442	1,188	471	767	1,475	884	143	448	89
1990.....		42,769	4,476	29,904	7,313	22,591	473	5,399	2,622	555	462	1,264	495	844	1,573	955	147	470	100
1991.....		45,746	4,848	31,989	6,617	25,372	513	5,457	2,641	554	464	1,292	507	1,097	1,739	1,091	153	496	102
1992.....		43,912	5,020	29,704	5,181	24,523	587	5,649	2,793	554	479	1,296	526	1,089	1,769	1,081	160	528	94
1993.....		42,181	5,474	27,439	4,860	22,580	492	5,822	2,873	561	501	1,336	551	1,089	1,748	1,018	167	562	116

**U.S. inflation-adjusted applied research expenditures, by performing sector and source of funds: 1953–2004**

(Millions of constant 2000 dollars)

Year	Performing sector:	Total	Federal	Industry			Industry FFRDCs	U&C <sup>a</sup>						U&C FFRDCs	Other nonprofit institutions				Nonprofit FFRDCs
	Funding sector:			Total	Federal <sup>b</sup>	Industry <sup>c</sup>	Federal <sup>b</sup>	Total	Federal	Nonfederal <sup>d</sup>	Industry	U&C	Nonprofit	Federal <sup>e</sup>	Total	Federal <sup>b</sup>	Industry	Nonprofit	Federal <sup>b</sup>
1994.....		40,565	5,523	25,469	4,006	21,463	557	5,967	2,926	573	514	1,391	563	1,087	1,838	1,063	176	599	123
1995.....		44,439	5,377	29,226	3,435	25,791	581	6,139	3,013	606	536	1,423	560	1,140	1,837	1,014	184	639	140
1996.....		45,992	5,191	30,910	3,878	27,032	246	6,264	3,047	622	558	1,481	557	1,353	1,898	1,022	193	682	130
1997.....		48,791	5,237	33,989	2,775	31,214	223	5,787	2,673	579	543	1,455	537	1,402	2,019	1,059	215	745	135
1998.....		48,057	5,334	33,386	2,728	30,658	238	5,412	2,375	544	538	1,425	530	1,422	2,137	1,099	233	805	128
1999.....		53,218	5,650	37,436	2,878	34,558	280	5,967	2,809	556	552	1,490	560	1,278	2,474	1,328	255	891	132
2000.....		56,844	6,105	39,170	2,676	36,494	275	6,652	3,354	571	553	1,583	591	1,329	3,096	1,831	283	981	217
2001.....		63,091	6,887	42,981	3,519	39,462	913	7,089	3,669	588	537	1,673	623	1,450	3,447	2,100	280	1,067	324
2002.....		48,791	7,193	27,411	2,356	25,056	1,006	7,667	4,060	623	525	1,790	669	1,619	3,597	2,178	264	1,156	297
2003.....		58,570	7,490	35,921	4,889	31,033	1,132	8,194	4,385	664	523	1,911	712	1,624	3,863	2,375	268	1,220	346
2004.....		61,335	7,770	37,901	5,446	32,455	1,172	8,524	4,606	694	513	1,970	741	1,669	3,962	2,398	281	1,283	337

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Character-of-work estimation procedure for university and college R&D also revised for 1998 on; hence, data not directly comparable with data for 1997 and earlier.

<sup>b</sup>Expenditures of industry FFRDCs for 1953–63 not separated from total federal support to industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–87.

<sup>c</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

<sup>d</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D, e.g., nonfederal government support to nonprofits is included in nonprofit support for their own R&D.

<sup>e</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).

**U.S. applied research expenditures, by source of funds and performing sector: 1953–2004**

(Millions of current dollars)

Year	Funding sector:	Federal									Industry				U&C	Nonprofit		Nonfederal <sup>a</sup>	
	Performing sector:	Total	Total	Federal	Industry <sup>b</sup>	Industry FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>e</sup>	Nonprofit FFRDCs <sup>b</sup>	Total	Industry <sup>e</sup>	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Total	Nonprofit	U&C <sup>c</sup>	U&C <sup>c</sup>
1953.....		1,289	756	347	288	NA	59	48	14	NA	456	438	7	11	28	20	10	10	30
1954.....		1,378	785	330	322	NA	60	58	16	NA	513	492	8	13	28	21	11	10	32
1955.....		1,514	850	333	368	NA	63	68	18	NA	583	560	9	14	27	22	11	11	32
1956.....		1,928	1,025	387	474	NA	65	79	21	NA	818	794	10	14	27	25	14	11	33
1957.....		2,414	1,304	446	678	NA	63	94	24	NA	1,018	992	12	14	27	31	20	11	34
1958.....		2,758	1,496	516	774	NA	66	111	30	NA	1,163	1,137	12	14	27	37	25	12	35
1959.....		2,940	1,630	577	813	NA	78	121	43	NA	1,206	1,178	13	15	28	39	27	12	37
1960.....		3,065	1,732	615	833	NA	93	129	63	NA	1,226	1,196	13	17	29	40	28	12	39
1961.....		3,123	1,811	668	812	NA	104	145	83	NA	1,195	1,165	13	17	30	48	35	13	40
1962.....		3,698	2,098	709	1,011	NA	119	163	98	NA	1,471	1,438	14	19	30	58	45	13	41
1963.....		3,865	2,245	809	1,007	NA	128	186	115	NA	1,483	1,450	14	19	32	63	49	14	42
1964.....		4,201	2,462	947	978	62	142	203	130	NA	1,593	1,560	14	19	37	65	47	18	45
1965.....		4,374	2,553	994	992	46	176	206	140	NA	1,654	1,620	13	21	42	79	52	27	46
1966.....		4,653	2,625	1,012	986	53	208	213	153	NA	1,842	1,804	14	24	48	91	57	34	47
1967.....		4,848	2,763	1,069	983	83	238	225	166	NA	1,890	1,849	16	25	54	96	60	36	46
1968.....		5,137	2,811	1,112	956	87	250	221	186	NA	2,125	2,081	16	28	55	101	62	39	46
1969.....		5,454	2,924	1,229	920	95	257	213	210	NA	2,320	2,272	16	32	54	109	66	43	48
1970.....		5,752	3,100	1,334	952	97	280	213	225	NA	2,429	2,378	18	33	56	117	70	47	51
1971.....		5,833	3,091	1,355	907	67	306	216	241	NA	2,494	2,441	19	34	67	121	74	47	61
1972.....		6,147	3,243	1,434	845	107	391	224	243	NA	2,618	2,562	21	35	82	131	79	52	74
1973.....		6,655	3,429	1,527	883	110	450	203	257	NA	2,894	2,832	26	36	100	145	83	62	88
1974.....		7,344	3,634	1,652	905	120	477	191	290	NA	3,333	3,263	32	39	118	163	91	72	96
1975.....		8,091	4,125	1,912	991	139	550	219	315	NA	3,520	3,440	39	42	141	192	100	92	113
1976.....		8,976	4,464	2,068	1,033	167	596	263	338	NA	4,001	3,912	45	45	166	218	109	109	127
1977.....		9,662	4,683	2,081	1,113	212	626	297	355	NA	4,410	4,311	51	48	194	241	120	121	134
1978.....		10,704	5,080	2,242	1,195	235	676	324	409	NA	4,982	4,870	61	52	232	259	132	128	151
1979.....		12,097	5,602	2,415	1,305	250	793	360	480	NA	5,797	5,670	71	55	263	273	144	129	161
1980.....		13,745	6,268	2,546	1,625	275	912	421	489	NA	6,698	6,550	88	60	308	298	158	140	174
1981.....		16,391	6,967	2,731	2,042	298	953	422	521	NA	8,531	8,359	108	64	363	332	173	159	199
1982.....		18,280	7,751	2,802	2,593	367	1,007	433	550	NA	9,553	9,363	121	69	402	367	189	178	207
1983.....		20,373	8,813	2,991	3,227	414	1,122	473	585	NA	10,501	10,286	141	74	443	401	207	194	215
1984.....		22,505	9,553	2,961	3,677	547	1,226	548	594	NA	11,788	11,541	168	79	491	438	226	212	234
1985.....		25,410	10,939	3,135	4,717	630	1,296	579	581	NA	13,191	12,908	198	85	547	471	247	224	262
1986.....		27,259	10,428	3,204	4,049	629	1,393	554	600	NA	15,402	15,082	229	91	620	510	270	240	298
1987.....		27,915	10,793	3,366	4,037	623	1,643	532	593	NA	15,511	15,153	260	98	707	571	295	276	333
1988.....		29,528	10,748	3,362	3,846	371	1,957	547	599	66	16,938	16,531	302	105	818	647	322	325	377
1989.....		32,277	11,752	3,566	4,324	374	2,120	603	695	70	18,452	17,993	347	112	933	722	352	370	417
1990.....		34,896	13,694	3,652	5,967	386	2,139	689	780	81	18,930	18,432	377	120	1,031	788	384	404	453
1991.....		38,629	14,278	4,093	5,588	433	2,230	927	921	86	21,946	21,425	392	129	1,091	847	419	428	468
1992.....		37,933	13,688	4,337	4,476	507	2,413	940	933	81	21,736	21,184	414	138	1,120	911	456	454	479
1993.....		37,279	14,072	4,838	4,295	435	2,539	962	900	103	20,547	19,956	443	148	1,181	984	497	487	496

**U.S. applied research expenditures, by source of funds and performing sector: 1953–2004**

(Millions of current dollars)

Year	Funding sector:	Total	Federal							Industry				U&C	Nonprofit		Nonfederal <sup>a</sup>		
	Performing sector:	Total	Total	Federal	Industry <sup>b</sup>	Industry FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>b</sup>	Nonprofit FFRDCs <sup>b</sup>	Total	Industry <sup>e</sup>	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Total	Nonprofit	U&C <sup>c</sup>	U&C <sup>c</sup>
1994.....		36,614	13,797	4,985	3,616	503	2,641	982	960	111	19,995	19,372	464	158	1,256	1,049	541	508	517
1995.....		40,931	13,540	4,952	3,164	535	2,775	1,050	934	129	24,418	23,755	494	170	1,311	1,104	589	516	558
1996.....		43,165	13,954	4,872	3,640	231	2,860	1,270	960	122	26,076	25,370	524	182	1,390	1,162	640	522	583
1997.....		46,553	12,885	4,997	2,648	213	2,551	1,337	1,011	128	30,505	29,782	518	205	1,388	1,223	711	512	552
1998.....		46,361	12,853	5,146	2,632	230	2,291	1,372	1,060	123	30,320	29,576	519	225	1,374	1,288	777	512	525
1999.....		52,083	14,050	5,530	2,817	274	2,749	1,251	1,300	130	34,611	33,821	540	249	1,458	1,420	872	548	544
2000.....		56,844	15,787	6,105	2,676	275	3,354	1,329	1,831	217	37,330	36,494	553	283	1,583	1,573	981	591	571
2001.....		64,605	19,314	7,052	3,603	935	3,757	1,485	2,150	332	41,246	40,409	550	287	1,713	1,731	1,093	638	602
2002.....		50,787	19,474	7,487	2,452	1,048	4,227	1,685	2,267	309	26,902	26,081	547	275	1,863	1,899	1,203	696	649
2003.....		62,084	23,575	7,939	5,182	1,200	4,648	1,721	2,518	367	33,733	32,894	555	284	2,025	2,048	1,293	754	704
2004.....		66,364	25,315	8,407	5,892	1,268	4,983	1,806	2,595	365	35,975	35,117	555	304	2,132	2,190	1,388	802	751

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D, e.g., nonfederal government support to nonprofits is included in nonprofit support for their own R&D.

<sup>b</sup>Expenditures of industry FFRDCs for 1953–63 not separated from total federal support to industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–87.

<sup>c</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Character-of-work estimation procedure for university and college R&D also revised for 1998 on; hence, data not directly comparable with data for 1997 and earlier.

<sup>d</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

<sup>e</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).



**U.S. inflation-adjusted applied research expenditures, by source of funds and performing sector: 1953–2004**

(Millions of constant 2000 dollars)

Year	Funding sector:	Total	Federal							Industry				U&C	Nonprofit		Nonfederal <sup>a</sup>		
	Performing sector:		Total	Federal	Industry <sup>b</sup>	Industry FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>e</sup>	Nonprofit FFRDCs <sup>b</sup>	Total	Industry <sup>e</sup>	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Total	Nonprofit	U&C <sup>c</sup>	U&C <sup>c</sup>
1953.....		7,065	4,141	1,902	1,579	NA	323	260	77	NA	2,497	2,401	36	60	153	110	55	55	165
1954.....		7,482	4,262	1,789	1,748	NA	323	315	87	NA	2,783	2,671	41	71	152	114	60	54	171
1955.....		8,074	4,534	1,776	1,963	NA	336	363	96	NA	3,107	2,987	45	75	145	115	59	56	172
1956.....		9,938	5,282	1,993	2,444	NA	335	405	106	NA	4,218	4,094	52	72	139	129	72	57	171
1957.....		12,044	6,508	2,223	3,384	NA	314	469	117	NA	5,078	4,951	57	70	135	155	100	55	169
1958.....		13,455	7,298	2,517	3,776	NA	320	539	146	NA	5,674	5,547	59	68	133	178	122	56	172
1959.....		14,165	7,855	2,778	3,918	NA	373	581	205	NA	5,809	5,677	60	72	135	188	130	58	178
1960.....		14,567	8,229	2,921	3,959	NA	442	611	297	NA	5,827	5,684	62	81	137	190	133	57	184
1961.....		14,678	8,511	3,139	3,816	NA	486	681	388	NA	5,616	5,475	61	80	139	223	164	59	188
1962.....		17,144	9,728	3,285	4,688	NA	549	753	452	NA	6,818	6,667	63	88	141	269	209	60	188
1963.....		17,730	10,298	3,712	4,620	NA	585	853	528	NA	6,804	6,653	64	87	148	287	225	62	193
1964.....		18,983	11,123	4,277	4,419	280	642	917	587	NA	7,196	7,049	61	86	169	291	212	79	204
1965.....		19,408	11,327	4,409	4,402	204	779	912	621	NA	7,340	7,189	58	93	187	348	231	118	206
1966.....		20,074	11,324	4,366	4,254	229	897	919	658	NA	7,948	7,784	60	104	209	390	246	145	203
1967.....		20,290	11,564	4,472	4,114	347	994	942	695	NA	7,908	7,738	65	105	225	402	251	151	191
1968.....		20,620	11,281	4,462	3,837	349	1,001	885	747	NA	8,530	8,353	64	112	221	403	249	155	185
1969.....		20,859	11,181	4,701	3,518	363	981	815	803	NA	8,872	8,689	61	122	206	415	252	163	184
1970.....		20,893	11,261	4,845	3,458	352	1,015	774	817	NA	8,820	8,637	64	120	203	423	254	169	186
1971.....		20,176	10,692	4,687	3,137	232	1,058	745	832	NA	8,625	8,443	64	118	232	419	256	163	209
1972.....		20,377	10,750	4,754	2,801	355	1,295	743	804	NA	8,677	8,493	68	116	271	433	262	171	246
1973.....		20,897	10,768	4,796	2,773	345	1,411	636	807	NA	9,087	8,892	82	113	314	454	261	193	275
1974.....		21,149	10,466	4,758	2,606	346	1,372	549	835	NA	9,599	9,397	91	111	339	468	262	206	277
1975.....		21,292	10,856	5,031	2,608	366	1,446	576	829	NA	9,263	9,052	101	109	370	505	263	242	298
1976.....		22,331	11,105	5,146	2,570	415	1,481	653	840	NA	9,954	9,732	111	111	412	544	272	271	317
1977.....		22,601	10,955	4,867	2,603	496	1,463	695	830	NA	10,316	10,084	119	112	454	563	281	282	315
1978.....		23,394	11,103	4,899	2,612	514	1,477	708	893	NA	10,888	10,643	132	113	507	566	287	279	330
1979.....		24,415	11,307	4,874	2,634	505	1,600	726	969	NA	11,699	11,444	144	112	531	551	291	260	326
1980.....		25,434	11,598	4,711	3,007	509	1,688	779	904	NA	12,394	12,120	163	110	570	552	292	260	321
1981.....		27,726	11,785	4,620	3,454	504	1,611	714	882	NA	14,430	14,139	182	108	613	561	292	269	337
1982.....		29,142	12,357	4,466	4,134	585	1,605	690	877	NA	15,229	14,927	193	109	641	585	301	283	331
1983.....		31,243	13,515	4,587	4,949	635	1,721	726	897	NA	16,104	15,774	217	113	680	615	317	298	330
1984.....		33,264	14,121	4,376	5,435	809	1,812	811	878	NA	17,424	17,059	248	117	726	648	334	313	346
1985.....		36,449	15,691	4,497	6,766	904	1,860	831	834	NA	18,921	18,516	284	122	785	676	355	321	375
1986.....		38,258	14,636	4,497	5,683	883	1,955	777	842	NA	21,617	21,168	321	128	871	716	379	337	418
1987.....		38,137	14,745	4,598	5,515	851	2,244	726	810	NA	21,190	20,702	355	133	966	780	403	377	455
1988.....		39,009	14,199	4,442	5,081	490	2,586	722	791	87	22,377	21,839	399	138	1,081	855	426	429	498
1989.....		41,087	14,960	4,540	5,504	476	2,699	767	884	89	23,489	22,904	442	143	1,188	919	448	471	531
1990.....		42,769	16,784	4,476	7,313	473	2,622	844	955	100	23,201	22,591	462	147	1,264	966	470	495	555
1991.....		45,746	16,909	4,848	6,617	513	2,641	1,097	1,091	102	25,989	25,372	464	153	1,292	1,003	496	507	554
1992.....		43,912	15,846	5,020	5,181	587	2,793	1,089	1,081	94	25,162	24,523	479	160	1,296	1,054	528	526	554
1993.....		42,181	15,922	5,474	4,860	492	2,873	1,089	1,018	116	23,248	22,580	501	167	1,336	1,113	562	551	561

**U.S. inflation-adjusted applied research expenditures, by source of funds and performing sector: 1953–2004**

(Millions of constant 2000 dollars)

Year	Funding sector:	Total	Federal							Industry				U&C	Nonprofit		Nonfederal <sup>e</sup>		
	Performing sector:		Total	Total	Federal	Industry <sup>b</sup>	Industry FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>b</sup>	Nonprofit FFRDCs <sup>b</sup>	Total	Industry <sup>e</sup>	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Total	Nonprofit	U&C <sup>c</sup>
1994.....		40,565	15,286	5,523	4,006	557	2,926	1,087	1,063	123	22,153	21,463	514	176	1,391	1,162	599	563	573
1995.....		44,439	14,700	5,377	3,435	581	3,013	1,140	1,014	140	26,511	25,791	536	184	1,423	1,199	639	560	606
1996.....		45,992	14,868	5,191	3,878	246	3,047	1,353	1,022	130	27,784	27,032	558	193	1,481	1,239	682	557	622
1997.....		48,791	13,504	5,237	2,775	223	2,673	1,402	1,059	135	31,972	31,214	543	215	1,455	1,281	745	537	579
1998.....		48,057	13,323	5,334	2,728	238	2,375	1,422	1,099	128	31,429	30,658	538	233	1,425	1,335	805	530	544
1999.....		53,218	14,356	5,650	2,878	280	2,809	1,278	1,328	132	35,365	34,558	552	255	1,490	1,451	891	560	556
2000.....		56,844	15,787	6,105	2,676	275	3,354	1,329	1,831	217	37,330	36,494	553	283	1,583	1,573	981	591	571
2001.....		63,091	18,861	6,887	3,519	913	3,669	1,450	2,100	324	40,279	39,462	537	280	1,673	1,690	1,067	623	588
2002.....		48,791	18,709	7,193	2,356	1,006	4,060	1,619	2,178	297	25,845	25,056	525	264	1,790	1,824	1,156	669	623
2003.....		58,570	22,240	7,490	4,889	1,132	4,385	1,624	2,375	346	31,824	31,033	523	268	1,911	1,932	1,220	712	664
2004.....		61,335	23,397	7,770	5,446	1,172	4,606	1,669	2,398	337	33,249	32,455	513	281	1,970	2,024	1,283	741	694

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D, e.g., nonfederal government support to nonprofits is included in nonprofit support for their own R&D.

<sup>b</sup>Expenditures of industry FFRDCs for 1953–63 not separated from total federal support to industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–87.

<sup>c</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Character-of-work estimation procedure for university and college R&D also revised for 1998 on; hence, data not directly comparable with data for 1997 and earlier.

<sup>d</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

<sup>e</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).

**U.S. development expenditures, by performing sector and source of funds: 1953–2004**

(Millions of current dollars)

Year	Performing sector:		Industry				U&C <sup>a</sup>						Other nonprofit institutions				Nonprofit FFRDCs	
	Total	Federal	Total	Federal <sup>b</sup>	Industry <sup>c</sup>	Federal <sup>b</sup>	Total	Federal	Nonfederal <sup>d</sup>	Industry	U&C	Nonprofit	Federal <sup>e</sup>	Total	Federal <sup>b</sup>	Industry	Nonprofit	Federal <sup>b</sup>
1953.....	3,412	567	2,753	1,123	1,630	NA	16	9	3	1	3	1	48	29	17	6	6	NA
1954.....	3,734	537	3,090	1,405	1,685	NA	17	9	3	1	3	1	59	32	18	7	7	NA
1955.....	4,189	543	3,523	1,785	1,738	NA	21	12	4	2	3	1	69	34	19	8	7	NA
1956.....	5,855	631	5,084	2,817	2,267	NA	25	14	4	2	4	2	81	35	20	8	7	NA
1957.....	6,681	728	5,790	3,616	2,174	NA	26	12	5	3	4	2	101	37	21	8	8	NA
1958.....	7,214	842	6,183	3,942	2,241	NA	28	13	6	3	4	2	120	42	25	8	9	NA
1959.....	8,463	940	7,307	4,750	2,557	NA	31	16	6	3	5	2	134	51	32	9	10	NA
1960.....	9,360	1,003	8,104	5,169	2,935	NA	35	19	6	3	5	2	151	69	49	10	10	NA
1961.....	9,930	1,090	8,536	5,347	3,189	NA	38	22	7	2	5	2	170	97	73	10	14	NA
1962.....	10,115	1,227	8,526	5,280	3,246	NA	40	23	8	2	6	2	190	132	103	11	18	NA
1963.....	11,540	1,465	9,651	6,116	3,535	NA	40	22	8	2	6	2	219	165	134	11	20	NA
1964.....	12,506	1,680	10,004	6,156	3,848	359	49	30	8	2	7	3	227	188	159	11	18	NA
1965.....	13,215	1,789	10,637	6,218	4,419	298	71	48	9	2	8	4	207	215	183	12	20	NA
1966.....	14,490	1,886	11,810	6,849	4,961	271	87	61	9	2	10	5	200	236	199	14	23	NA
1967.....	15,332	1,943	12,539	6,795	5,744	302	93	66	9	3	10	7	208	247	208	15	24	NA
1968.....	16,154	1,904	13,370	7,044	6,326	293	102	72	8	4	9	9	226	259	217	16	26	NA
1969.....	17,051	2,016	14,071	6,944	7,127	332	110	80	7	5	8	10	246	277	231	18	28	NA
1970.....	16,925	2,258	13,698	6,232	7,466	340	112	84	6	5	7	10	249	268	220	18	30	NA
1971.....	17,399	2,473	13,924	6,167	7,757	391	98	69	8	4	9	9	267	246	194	19	33	NA
1972.....	18,743	2,639	15,043	6,533	8,510	402	101	63	12	4	14	9	291	267	213	19	35	NA
1973.....	20,197	2,657	16,394	6,621	9,773	399	126	71	18	5	20	13	296	326	268	20	38	NA
1974.....	21,504	2,765	17,421	6,553	10,868	479	141	75	20	7	25	15	321	377	314	22	42	NA
1975.....	22,706	2,890	18,352	6,783	11,569	535	156	83	22	8	27	16	373	400	330	23	47	NA
1976.....	25,085	2,972	20,412	7,522	12,890	654	182	100	24	12	31	16	447	418	341	25	52	NA
1977.....	27,667	3,188	22,603	8,275	14,328	675	254	153	28	15	40	19	503	444	359	27	58	NA
1978.....	31,056	3,676	25,216	8,756	16,460	753	373	254	32	15	49	24	542	496	403	30	64	NA
1979.....	35,445	3,944	29,033	9,888	19,145	810	469	336	34	16	56	28	603	586	483	32	71	NA
1980.....	40,678	4,072	33,848	10,957	22,891	882	518	362	38	19	68	31	719	639	525	35	79	NA
1981.....	46,047	4,530	38,547	12,791	25,756	950	568	386	44	24	80	35	778	674	549	37	88	NA
1982.....	51,679	5,178	43,434	14,215	29,219	989	597	397	46	27	88	39	745	737	599	40	98	NA
1983.....	57,540	6,106	48,064	15,522	32,542	1,054	617	399	47	31	97	43	832	867	715	44	109	NA
1984.....	66,261	7,078	55,371	17,640	37,731	1,056	677	435	51	37	108	47	986	1,093	925	47	120	NA
1985.....	74,417	8,011	62,020	20,258	41,762	1,102	756	486	57	43	120	49	1,244	1,285	1,100	51	134	NA
1986.....	75,754	8,275	62,871	21,517	41,354	1,145	818	513	65	50	136	53	1,504	1,141	938	55	149	NA
1987.....	79,804	8,176	66,789	24,122	42,667	1,230	945	599	73	57	155	61	1,670	996	771	60	165	NA
1988.....	84,566	8,864	70,353	23,719	46,634	1,414	1,098	698	83	66	180	71	1,762	655	407	65	183	420
1989.....	87,723	9,355	72,725	21,049	51,676	1,423	1,227	773	92	76	205	81	1,782	780	507	70	203	430
1990.....	94,067	9,700	78,376	18,966	59,410	1,438	1,407	909	99	83	226	89	1,735	920	619	75	226	490
1991.....	95,104	8,778	80,286	17,256	63,030	1,383	1,533	1,011	103	86	239	94	1,537	1,054	722	82	251	533
1992.....	99,810	9,098	84,569	17,181	67,388	1,372	1,595	1,054	105	91	246	100	1,452	1,125	758	88	279	599
1993.....	99,704	9,071	84,757	16,083	68,674	1,038	1,698	1,126	109	97	259	107	1,374	1,191	787	95	309	574

**U.S. development expenditures, by performing sector and source of funds: 1953–2004**

(Millions of current dollars)

Year	Performing sector:	Total	Federal	Industry			Industry FFRDCs	U&C <sup>a</sup>						U&C FFRDCs				Other nonprofit institutions				Nonprofit FFRDCs
	Funding sector:	Total	Federal	Total	Federal <sup>b</sup>	Industry <sup>c</sup>	Federal <sup>b</sup>	Total	Federal	Nonfederal <sup>d</sup>	Industry	U&C	Nonprofit	Federal <sup>e</sup>	Total	Federal <sup>b</sup>	Industry	Nonprofit	Federal <sup>b</sup>			
1994.....		102,936	8,823	87,890	16,209	71,681	1,196	1,815	1,212	114	102	276	112	1,378	1,261	815	103	343	573			
1995.....		113,077	9,262	97,342	17,824	79,518	1,208	1,810	1,178	123	108	288	113	1,616	1,236	744	111	381	603			
1996.....		121,375	9,033	105,863	17,066	88,797	1,358	1,790	1,127	128	115	305	115	1,520	1,241	698	120	423	571			
1997.....		128,677	9,077	113,184	18,121	95,063	1,292	1,708	1,056	121	114	305	112	1,454	1,378	687	155	536	585			
1998.....		146,023	9,214	130,348	18,452	111,896	1,280	1,630	987	115	114	302	112	1,527	1,516	760	170	586	507			
1999.....		154,055	8,974	138,873	16,637	122,236	1,142	1,391	713	120	119	320	120	1,636	1,572	726	188	658	467			
2000.....		167,792	8,047	153,784	13,549	140,235	1,146	1,176	452	125	121	347	130	1,539	1,468	513	214	741	632			
2001.....		165,168	9,114	149,952	12,542	137,410	534	1,271	502	132	121	376	140	1,637	1,716	675	217	825	945			
2002.....		173,977	9,501	157,788	13,061	144,727	597	1,351	527	142	120	409	153	1,703	2,005	890	207	908	1,031			
2003.....		174,677	10,686	157,343	13,889	143,454	607	1,440	553	154	122	445	166	1,754	1,714	523	214	976	1,133			
2004.....		187,349	11,447	168,939	15,792	153,147	610	1,474	543	165	122	468	176	1,778	1,812	534	229	1,048	1,288			

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Character-of-work estimation procedure for university and college R&D also revised for 1998 on; hence, data not directly comparable with data for 1997 and earlier.

<sup>b</sup>Expenditures of industry FFRDCs for 1953–63 not separated from total federal support to industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–87.

<sup>c</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

<sup>d</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D, e.g., nonfederal government support to nonprofits is included in nonprofit support for their own R&D.

<sup>e</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).

**U.S. inflation-adjusted development expenditures, by performing sector and source of funds: 1953–2004**

(Millions of constant 2000 dollars)

Year	Performing sector:	Total	Federal	Industry			Industry FFRDCs	U&C <sup>a</sup>						U&C FFRDCs	Other nonprofit institutions				Nonprofit FFRDCs
	Funding sector:			Total	Federal	Total	Federal <sup>b</sup>	Industry <sup>c</sup>	Federal <sup>b</sup>	Total	Federal	Nonfederal <sup>d</sup>	Industry	U&C	Nonprofit	Federal <sup>e</sup>	Total	Federal <sup>b</sup>	Industry
1953.....		18,699	3,105	15,089	6,155	8,934	NA	88	47	16	5	14	5	260	156	90	33	33	NA
1954.....		20,274	2,916	16,777	7,629	9,149	NA	92	46	19	5	17	5	318	171	95	38	38	NA
1955.....		22,347	2,894	18,794	9,522	9,272	NA	112	61	20	8	17	5	368	179	99	43	37	NA
1956.....		30,186	3,251	26,214	14,525	11,689	NA	129	70	23	10	19	8	415	178	101	41	36	NA
1957.....		33,341	3,631	28,895	18,045	10,849	NA	130	60	26	12	21	10	504	182	102	40	40	NA
1958.....		35,191	4,105	30,163	19,231	10,933	NA	134	61	28	15	21	10	585	202	120	39	44	NA
1959.....		40,783	4,530	35,212	22,890	12,322	NA	149	75	29	14	22	10	646	246	154	43	48	NA
1960.....		44,485	4,765	38,516	24,566	13,949	NA	164	90	30	12	22	10	715	326	231	48	48	NA
1961.....		46,667	5,120	40,118	25,130	14,988	NA	176	101	32	9	24	9	797	456	343	47	66	NA
1962.....		46,897	5,689	39,532	24,481	15,050	NA	185	104	36	9	27	9	881	610	475	51	83	NA
1963.....		52,943	6,721	44,279	28,060	16,219	NA	184	101	36	9	28	9	1,002	757	615	50	92	NA
1964.....		56,511	7,591	45,205	27,817	17,388	1,622	219	133	36	9	30	11	1,023	850	718	50	81	NA
1965.....		58,643	7,937	47,203	27,593	19,610	1,322	313	213	38	9	35	18	916	952	810	53	89	NA
1966.....		62,517	8,137	50,956	29,551	21,405	1,169	375	263	40	9	42	22	863	1,016	856	60	99	NA
1967.....		64,165	8,132	52,478	28,438	24,040	1,264	389	274	36	10	42	27	871	1,032	868	63	100	NA
1968.....		64,839	7,643	53,667	28,274	25,392	1,176	407	287	31	16	37	36	907	1,040	871	64	104	NA
1969.....		65,207	7,709	53,812	26,556	27,256	1,270	419	304	27	19	30	38	941	1,057	881	69	107	NA
1970.....		61,472	8,201	49,752	22,635	27,117	1,235	407	303	23	18	26	36	904	973	799	65	109	NA
1971.....		60,181	8,553	48,163	21,331	26,831	1,352	339	239	27	14	30	29	924	851	671	66	114	NA
1972.....		62,134	8,749	49,868	21,657	28,211	1,333	335	207	41	12	45	30	965	885	706	63	116	NA
1973.....		63,415	8,343	51,475	20,789	30,686	1,253	394	221	55	16	63	39	928	1,022	840	63	119	NA
1974.....		61,927	7,964	50,168	18,871	31,297	1,379	405	215	58	19	71	43	924	1,087	903	62	122	NA
1975.....		59,750	7,605	48,293	17,850	30,444	1,408	411	217	58	21	72	42	980	1,053	868	62	123	NA
1976.....		62,406	7,393	50,780	18,713	32,067	1,627	453	248	60	29	77	40	1,112	1,041	848	63	130	NA
1977.....		64,717	7,457	52,871	19,356	33,515	1,579	594	358	65	34	94	43	1,177	1,039	840	64	135	NA
1978.....		67,872	8,034	55,109	19,136	35,973	1,646	815	555	70	32	107	51	1,184	1,085	880	65	140	NA
1979.....		71,538	7,959	58,596	19,957	38,640	1,635	948	679	69	31	113	56	1,218	1,182	974	65	144	NA
1980.....		75,270	7,536	62,632	20,275	42,358	1,632	958	670	71	36	125	57	1,330	1,182	971	64	147	NA
1981.....		77,889	7,663	65,202	21,636	43,566	1,607	960	653	74	40	135	59	1,316	1,140	928	63	149	NA
1982.....		82,390	8,255	69,245	22,662	46,583	1,577	952	634	73	42	141	62	1,187	1,175	955	64	156	NA
1983.....		88,242	9,363	73,710	23,804	49,906	1,616	947	612	72	48	149	65	1,275	1,330	1,097	67	166	NA
1984.....		97,940	10,462	81,843	26,073	55,770	1,561	1,001	643	76	54	159	69	1,457	1,615	1,367	70	178	NA
1985.....		106,746	11,491	88,963	29,059	59,904	1,581	1,085	697	82	62	172	71	1,784	1,843	1,578	73	192	NA
1986.....		106,321	11,614	88,240	30,199	58,041	1,607	1,148	720	92	71	191	74	2,111	1,602	1,316	78	209	NA
1987.....		109,029	11,169	91,247	32,955	58,292	1,680	1,291	818	100	78	212	83	2,281	1,360	1,053	82	225	NA
1988.....		111,722	11,710	92,944	31,335	61,609	1,868	1,450	922	109	88	237	94	2,328	866	538	85	242	555
1989.....		111,667	11,909	92,576	26,794	65,781	1,811	1,562	984	117	97	261	103	2,268	993	645	89	259	548
1990.....		115,292	11,889	96,061	23,245	72,815	1,762	1,724	1,115	122	102	277	109	2,127	1,128	759	92	277	601
1991.....		112,624	10,395	95,077	20,435	74,642	1,638	1,816	1,197	122	102	284	111	1,820	1,249	855	97	297	631
1992.....		115,541	10,531	97,898	19,889	78,009	1,588	1,847	1,220	122	105	285	115	1,681	1,302	878	102	322	694
1993.....		112,813	10,264	95,901	18,198	77,703	1,174	1,922	1,274	123	110	293	121	1,554	1,348	890	108	350	650

**U.S. inflation-adjusted development expenditures, by performing sector and source of funds: 1953–2004**

(Millions of constant 2000 dollars)

Year	Performing sector:		Industry					Industry FFRDCs		U&C <sup>a</sup>				U&C FFRDCs		Other nonprofit institutions				Nonprofit FFRDCs
	Total	Federal	Total	Federal <sup>b</sup>	Industry <sup>c</sup>	Federal <sup>b</sup>	Total	Federal	Nonfederal <sup>d</sup>	Industry	U&C	Nonprofit	Federal <sup>e</sup>	Total	Federal <sup>b</sup>	Industry	Nonprofit	Federal <sup>b</sup>		
1994.....	114,046	9,776	97,376	17,958	79,418	1,325	2,010	1,343	126	113	305	124	1,527	1,397	903	114	381	634		
1995.....	122,768	10,056	105,684	19,352	86,333	1,312	1,965	1,279	133	118	312	123	1,754	1,342	807	121	414	655		
1996.....	129,325	9,625	112,797	18,184	94,613	1,447	1,907	1,201	136	123	325	122	1,619	1,322	743	128	451	608		
1997.....	134,862	9,513	118,625	18,992	99,633	1,354	1,790	1,106	127	119	319	118	1,524	1,444	720	162	562	613		
1998.....	151,363	9,551	135,115	19,127	115,988	1,327	1,690	1,023	119	118	313	116	1,583	1,572	788	176	608	526		
1999.....	157,411	9,170	141,898	16,999	124,899	1,167	1,422	728	122	121	327	123	1,672	1,606	742	192	673	477		
2000.....	167,792	8,047	153,784	13,549	140,235	1,146	1,176	452	125	121	347	130	1,539	1,468	513	214	741	632		
2001.....	161,298	8,900	146,439	12,248	134,190	521	1,241	490	129	118	367	137	1,598	1,676	659	212	806	923		
2002.....	167,138	9,128	151,586	12,548	139,038	573	1,298	507	137	115	393	147	1,636	1,926	855	199	872	990		
2003.....	164,792	10,082	148,439	13,103	135,336	572	1,358	522	146	115	419	156	1,655	1,617	494	202	921	1,069		
2004.....	173,151	10,580	156,137	14,595	141,542	564	1,362	502	152	113	433	163	1,643	1,674	494	212	969	1,191		

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Character-of-work estimation procedure for university and college R&D also revised for 1998 on; hence, data not directly comparable with data for 1997 and earlier.

<sup>b</sup>Expenditures of industry FFRDCs for 1953–63 not separated from total federal support to industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–87.

<sup>c</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

<sup>d</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D, e.g., nonfederal government support to nonprofits is included in nonprofit support for their own R&D.

<sup>e</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).

**U.S. development expenditures, by source of funds and performing sector: 1953–2004**

(Millions of current dollars)

Year	Funding sector:	Total	Federal							Industry				U&C	Nonprofit		Nonfederal <sup>a</sup>		
	Performing sector:		Total	Federal	Industry <sup>b</sup>	Industry FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>b</sup>	Nonprofit FFRDCs <sup>b</sup>	Total	Industry <sup>e</sup>	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Total	Nonprofit	U&C <sup>c</sup>	U&C <sup>c</sup>
1953.....		3,412	1,762	567	1,123	NA	9	48	17	NA	1,637	1,630	1	6	3	7	6	1	3
1954.....		3,734	2,027	537	1,405	NA	9	59	18	NA	1,693	1,685	1	7	3	8	7	1	3
1955.....		4,189	2,427	543	1,785	NA	12	69	19	NA	1,748	1,738	2	8	3	8	7	1	4
1956.....		5,855	3,561	631	2,817	NA	14	81	20	NA	2,277	2,267	2	8	4	9	7	2	4
1957.....		6,681	4,477	728	3,616	NA	12	101	21	NA	2,185	2,174	3	8	4	10	8	2	5
1958.....		7,214	4,941	842	3,942	NA	13	120	25	NA	2,252	2,241	3	8	4	11	9	2	6
1959.....		8,463	5,872	940	4,750	NA	16	134	32	NA	2,569	2,557	3	9	5	12	10	2	6
1960.....		9,360	6,390	1,003	5,169	NA	19	151	49	NA	2,948	2,935	3	10	5	12	10	2	6
1961.....		9,930	6,701	1,090	5,347	NA	22	170	73	NA	3,201	3,189	2	10	5	16	14	2	7
1962.....		10,115	6,822	1,227	5,280	NA	23	190	103	NA	3,259	3,246	2	11	6	20	18	2	8
1963.....		11,540	7,956	1,465	6,116	NA	22	219	134	NA	3,548	3,535	2	11	6	22	20	2	8
1964.....		12,506	8,610	1,680	6,156	359	30	227	159	NA	3,861	3,848	2	11	7	21	18	3	8
1965.....		13,215	8,742	1,789	6,218	298	48	207	183	NA	4,433	4,419	2	12	8	24	20	4	9
1966.....		14,490	9,466	1,886	6,849	271	61	200	199	NA	4,977	4,961	2	14	10	28	23	5	9
1967.....		15,332	9,521	1,943	6,795	302	66	208	208	NA	5,762	5,744	3	15	10	31	24	7	9
1968.....		16,154	9,756	1,904	7,044	293	72	226	217	NA	6,346	6,326	4	16	9	35	26	9	8
1969.....		17,051	9,848	2,016	6,944	332	80	246	231	NA	7,150	7,127	5	18	8	38	28	10	7
1970.....		16,925	9,382	2,258	6,232	340	84	249	220	NA	7,489	7,466	5	18	7	40	30	10	6
1971.....		17,399	9,561	2,473	6,167	391	69	267	194	NA	7,780	7,757	4	19	9	42	33	9	8
1972.....		18,743	10,141	2,639	6,533	402	63	291	213	NA	8,533	8,510	4	19	14	44	35	9	12
1973.....		20,197	10,311	2,657	6,621	399	71	296	268	NA	9,798	9,773	5	20	20	51	38	13	18
1974.....		21,504	10,506	2,765	6,553	479	75	321	314	NA	10,896	10,868	7	22	25	57	42	15	20
1975.....		22,706	10,993	2,890	6,783	535	83	373	330	NA	11,600	11,569	8	23	27	63	47	16	22
1976.....		25,085	12,035	2,972	7,522	654	100	447	341	NA	12,927	12,890	12	25	31	68	52	16	24
1977.....		27,667	13,153	3,188	8,275	675	153	503	359	NA	14,370	14,328	15	27	40	76	58	19	28
1978.....		31,056	14,383	3,676	8,756	753	254	542	403	NA	16,504	16,460	15	30	49	88	64	24	32
1979.....		35,445	16,064	3,944	9,888	810	336	603	483	NA	19,193	19,145	16	32	56	99	71	28	34
1980.....		40,678	17,517	4,072	10,957	882	362	719	525	NA	22,945	22,891	19	35	68	110	79	31	38
1981.....		46,047	19,984	4,530	12,791	950	386	778	549	NA	25,817	25,756	24	37	80	123	88	35	44
1982.....		51,679	22,123	5,178	14,215	989	397	745	599	NA	29,286	29,219	27	40	88	137	98	39	46
1983.....		57,540	24,627	6,106	15,522	1,054	399	832	715	NA	32,617	32,542	31	44	97	151	109	43	47
1984.....		66,261	28,120	7,078	17,640	1,056	435	986	925	NA	37,815	37,731	37	47	108	167	120	47	51
1985.....		74,417	32,200	8,011	20,258	1,102	486	1,244	1,100	NA	41,857	41,762	43	51	120	183	134	49	57
1986.....		75,754	33,891	8,275	21,517	1,145	513	1,504	938	NA	41,460	41,354	50	55	136	201	149	53	65
1987.....		79,804	36,567	8,176	24,122	1,230	599	1,670	771	NA	42,784	42,667	57	60	155	226	165	61	73
1988.....		84,566	37,285	8,864	23,719	1,414	698	1,762	407	420	46,765	46,634	66	65	180	255	183	71	83
1989.....		87,723	35,320	9,355	21,049	1,423	773	1,782	507	430	51,822	51,676	76	70	205	285	203	81	92
1990.....		94,067	33,858	9,700	18,966	1,438	909	1,735	619	490	59,568	59,410	83	75	226	315	226	89	99
1991.....		95,104	31,219	8,778	17,256	1,383	1,011	1,537	722	533	63,197	63,030	86	82	239	345	251	94	103
1992.....		99,810	31,514	9,098	17,181	1,372	1,054	1,452	758	599	67,567	67,388	91	88	246	378	279	100	105
1993.....		99,704	30,053	9,071	16,083	1,038	1,126	1,374	787	574	68,866	68,674	97	95	259	416	309	107	109

**U.S. development expenditures, by source of funds and performing sector: 1953–2004**

(Millions of current dollars)

Year	Funding sector:																		
	Performing sector:	Total	Federal							Industry				U&C	Nonprofit		Nonfederal <sup>a</sup>		
	Total	Total	Federal	Industry <sup>b</sup>	Industry FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>b</sup>	Nonprofit FFRDCs <sup>b</sup>	Total	Industry <sup>e</sup>	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Total	Nonprofit	U&C <sup>c</sup>	U&C <sup>c</sup>	
1994.....	102,936	30,206	8,823	16,209	1,196	1,212	1,378	815	573	71,886	71,681	102	103	276	455	343	112	114	
1995.....	113,077	32,435	9,262	17,824	1,208	1,178	1,616	744	603	79,738	79,518	108	111	288	495	381	113	123	
1996.....	121,375	31,372	9,033	17,066	1,358	1,127	1,520	698	571	89,032	88,797	115	120	305	538	423	115	128	
1997.....	128,677	32,270	9,077	18,121	1,292	1,056	1,454	687	585	95,332	95,063	114	155	305	649	536	112	121	
1998.....	146,023	32,728	9,214	18,452	1,280	987	1,527	760	507	112,179	111,896	114	170	302	699	586	112	115	
1999.....	154,055	30,294	8,974	16,637	1,142	713	1,636	726	467	122,543	122,236	119	188	320	778	658	120	120	
2000.....	167,792	25,878	8,047	13,549	1,146	452	1,539	513	632	140,570	140,235	121	214	347	871	741	130	125	
2001.....	165,168	25,947	9,114	12,542	534	502	1,637	675	945	137,747	137,410	121	217	376	965	825	140	132	
2002.....	173,977	27,310	9,501	13,061	597	527	1,703	890	1,031	145,054	144,727	120	207	409	1,061	908	153	142	
2003.....	174,677	29,146	10,686	13,889	607	553	1,754	523	1,133	143,790	143,454	122	214	445	1,142	976	166	154	
2004.....	187,349	31,993	11,447	15,792	610	543	1,778	534	1,288	153,498	153,147	122	229	468	1,224	1,048	176	165	

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D, e.g., nonfederal government support to nonprofits is included in nonprofit support for their own R&D.

<sup>b</sup>Expenditures of industry FFRDCs for 1953–63 not separated from total federal support to industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–87.

<sup>c</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Character-of-work estimation procedure for university and college R&D also revised for 1998 on; hence, data not directly comparable with data for 1997 and earlier.

<sup>d</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

<sup>e</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).

Science and Engineering Indicators 2006.



**U.S. inflation-adjusted development expenditures, by source of funds and performing sector: 1953–2004**

(Millions of constant 2000 dollars)

Year	Funding sector:	Total	Federal							Industry				U&C	Nonprofit		Nonfederal <sup>a</sup>		
	Performing sector:		Total	Federal	Industry <sup>b</sup>	Industry FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>e</sup>	Nonprofit FFRDCs <sup>b</sup>	Total	Industry <sup>e</sup>	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Total	Nonprofit	U&C <sup>c</sup>	U&C <sup>c</sup>
1953.....		18,699	9,658	3,105	6,155	NA	47	260	90	NA	8,972	8,934	5	33	14	38	33	5	16
1954.....		20,274	11,003	2,916	7,629	NA	46	318	95	NA	9,192	9,149	5	38	17	43	38	5	19
1955.....		22,347	12,944	2,894	9,522	NA	61	368	99	NA	9,322	9,272	8	43	17	43	37	5	20
1956.....		30,186	18,361	3,251	14,525	NA	70	415	101	NA	11,740	11,689	10	41	19	44	36	8	23
1957.....		33,341	22,342	3,631	18,045	NA	60	504	102	NA	10,902	10,849	12	40	21	50	40	10	26
1958.....		35,191	24,102	4,105	19,231	NA	61	585	120	NA	10,986	10,933	15	39	21	54	44	10	28
1959.....		40,783	28,295	4,530	22,890	NA	75	646	154	NA	12,380	12,322	14	43	22	58	48	10	29
1960.....		44,485	30,367	4,765	24,566	NA	90	715	231	NA	14,008	13,949	12	48	22	57	48	10	30
1961.....		46,667	31,491	5,120	25,130	NA	101	797	343	NA	15,044	14,988	9	47	24	75	66	9	32
1962.....		46,897	31,631	5,689	24,481	NA	104	881	475	NA	15,111	15,050	9	51	27	93	83	9	36
1963.....		52,943	36,500	6,721	28,060	NA	101	1,002	615	NA	16,278	16,219	9	50	28	101	92	9	36
1964.....		56,511	38,906	7,591	27,817	1,622	133	1,023	718	NA	17,447	17,388	9	50	30	93	81	11	36
1965.....		58,643	38,792	7,937	27,593	1,322	213	916	810	NA	19,672	19,610	9	53	35	107	89	18	38
1966.....		62,517	40,841	8,137	29,551	1,169	263	863	856	NA	21,474	21,405	9	60	42	121	99	22	40
1967.....		64,165	39,847	8,132	28,438	1,264	274	871	868	NA	24,113	24,040	10	63	42	128	100	27	36
1968.....		64,839	39,158	7,643	28,274	1,176	287	907	871	NA	25,473	25,392	16	64	37	140	104	36	31
1969.....		65,207	37,661	7,709	26,556	1,270	304	941	881	NA	27,344	27,256	19	69	30	145	107	38	27
1970.....		61,472	34,077	8,201	22,635	1,235	303	904	799	NA	27,201	27,117	18	65	26	145	109	36	23
1971.....		60,181	33,070	8,553	21,331	1,352	239	924	671	NA	26,911	26,831	14	66	30	144	114	29	27
1972.....		62,134	33,617	8,749	21,657	1,333	207	965	706	NA	28,285	28,211	12	63	45	146	116	30	41
1973.....		63,415	32,374	8,343	20,789	1,253	221	928	840	NA	30,764	30,686	16	63	63	159	119	39	55
1974.....		61,927	30,256	7,964	18,871	1,379	215	924	903	NA	31,378	31,297	19	62	71	165	122	43	58
1975.....		59,750	28,928	7,605	17,850	1,408	217	980	868	NA	30,527	30,444	21	62	72	165	123	42	58
1976.....		62,406	29,941	7,393	18,713	1,627	248	1,112	848	NA	32,159	32,067	29	63	77	169	130	40	60
1977.....		64,717	30,767	7,457	19,356	1,579	358	1,177	840	NA	33,613	33,515	34	64	94	179	135	43	65
1978.....		67,872	31,434	8,034	19,136	1,646	555	1,184	880	NA	36,069	35,973	32	65	107	192	140	51	70
1979.....		71,538	32,421	7,959	19,957	1,635	679	1,218	974	NA	38,735	38,640	31	65	113	200	144	56	69
1980.....		75,270	32,413	7,536	20,275	1,632	670	1,330	971	NA	42,457	42,358	36	64	125	204	147	57	71
1981.....		77,889	33,803	7,663	21,636	1,607	653	1,316	928	NA	43,670	43,566	40	63	135	208	149	59	74
1982.....		82,390	35,270	8,255	22,662	1,577	634	1,187	955	NA	46,689	46,583	42	64	141	218	156	62	73
1983.....		88,242	37,768	9,363	23,804	1,616	612	1,275	1,097	NA	50,020	49,906	48	67	149	232	166	65	72
1984.....		97,940	41,564	10,462	26,073	1,561	643	1,457	1,367	NA	55,894	55,770	54	70	159	247	178	69	76
1985.....		106,746	46,189	11,491	29,059	1,581	697	1,784	1,578	NA	60,040	59,904	62	73	172	262	192	71	82
1986.....		106,321	47,567	11,614	30,199	1,607	720	2,111	1,316	NA	58,189	58,041	71	78	191	282	209	74	92
1987.....		109,029	49,957	11,169	32,955	1,680	818	2,281	1,053	NA	58,451	58,292	78	82	212	308	225	83	100
1988.....		111,722	49,257	11,710	31,335	1,868	922	2,328	538	555	61,782	61,609	88	85	237	336	242	94	109
1989.....		111,667	44,960	11,909	26,794	1,811	984	2,268	645	548	65,967	65,781	97	89	261	362	259	103	117
1990.....		115,292	41,498	11,889	23,245	1,762	1,115	2,127	759	601	73,009	72,815	102	92	277	386	277	109	122
1991.....		112,624	36,971	10,395	20,435	1,638	1,197	1,820	855	631	74,840	74,642	102	97	284	408	297	111	122
1992.....		115,541	36,481	10,531	19,889	1,588	1,220	1,681	878	694	78,216	78,009	105	102	285	438	322	115	122
1993.....		112,813	34,005	10,264	18,198	1,174	1,274	1,554	890	650	77,921	77,703	110	108	293	471	350	121	123

**U.S. inflation-adjusted development expenditures, by source of funds and performing sector: 1953–2004**

(Millions of constant 2000 dollars)

Year	Funding sector:	Total	Federal								Industry			U&C	Nonprofit		Nonfederal <sup>a</sup>		
	Performing sector:		Total	Federal	Industry <sup>b</sup>	Industry FFRDCs <sup>b</sup>	U&C <sup>c</sup>	U&C FFRDCs <sup>d</sup>	Non-profit <sup>b</sup>	Nonprofit FFRDCs <sup>b</sup>	Total	Industry <sup>e</sup>	U&C <sup>c</sup>	Nonprofit	U&C <sup>c</sup>	Total	Nonprofit	U&C <sup>c</sup>	U&C <sup>c</sup>
1994.....		114,046	33,466	9,776	17,958	1,325	1,343	1,527	903	634	79,644	79,418	113	114	305	504	381	124	126
1995.....		122,768	35,214	10,056	19,352	1,312	1,279	1,754	807	655	86,571	86,333	118	121	312	537	414	123	133
1996.....		129,325	33,427	9,625	18,184	1,447	1,201	1,619	743	608	94,864	94,613	123	128	325	573	451	122	136
1997.....		134,862	33,822	9,513	18,992	1,354	1,106	1,524	720	613	99,914	99,633	119	162	319	680	562	118	127
1998.....		151,363	33,924	9,551	19,127	1,327	1,023	1,583	788	526	116,282	115,988	118	176	313	724	608	116	119
1999.....		157,411	30,954	9,170	16,999	1,167	728	1,672	742	477	125,212	124,899	121	192	327	795	673	123	122
2000.....		167,792	25,878	8,047	13,549	1,146	452	1,539	513	632	140,570	140,235	121	214	347	871	741	130	125
2001.....		161,298	25,339	8,900	12,248	521	490	1,598	659	923	134,520	134,190	118	212	367	943	806	137	129
2002.....		167,138	26,237	9,128	12,548	573	507	1,636	855	990	139,353	139,038	115	199	393	1,019	872	147	137
2003.....		164,792	27,496	10,082	13,103	572	522	1,655	494	1,069	135,653	135,336	115	202	419	1,077	921	156	146
2004.....		173,151	29,569	10,580	14,595	564	502	1,643	494	1,191	141,866	141,542	113	212	433	1,131	969	163	152

NA = not available

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>Because of limitations in survey information, data on nonfederal government funding to other performers not available and consequently included in other sectors' support for their own R&D, e.g., nonfederal government support to nonprofits is included in nonprofit support for their own R&D.

<sup>b</sup>Expenditures of industry FFRDCs for 1953–63 not separated from total federal support to industrial sector. Thus, value for federal support to industry includes support to FFRDCs for those years. Likewise for expenditures of nonprofit FFRDCs, included in federal support for nonprofit institutions in 1953–87.

<sup>c</sup>Adjustments made to university R&D for 1998 on to eliminate double counting of funds passed through from one academic institution to another. Character-of-work estimation procedure for university and college R&D also revised for 1998 on; hence, data not directly comparable with data for 1997 and earlier.

<sup>d</sup>Includes all R&D expenditures of FFRDCs administered by academic institutions.

<sup>e</sup>Industry sources of industry R&D expenditures include all nonfederal sources of industry R&D expenditures.

NOTES: All data refer to calendar years. For some performers, these levels are approximations based on FY data. For federal government expenditures starting in 1977, calendar-year approximation is 75% of amount reported in same FY plus 25% of amount reported in subsequent FY. Academic expenditures in all years and federal government expenditures before 1977 are each 50% because those FYs (for most academic institutions and federal government before 1977) began on July 1 instead of October 1. Technical notes explaining methodological issues of measurement will be provided in National Science Foundation (NSF), *National Patterns of R&D Resources, Methodology Report: 2003* (forthcoming). Data based on annual reports by performers except for nonprofit sector. Preliminary data for 2003 and 2004. For trend comparisons, use only historical data reported here. Table incorporates latest revisions to prior-year data. Do not use data published earlier.

SOURCE: NSF, Division of Science Resources Statistics, *National Patterns of R&D Resources* (annual series).

**Total (federal plus company and other) funds for industrial R&D performance in United States, by industry and size of company: 1999–2003**

(Millions of dollars)

Industry and size of company	NAICS code	Funds				
		1999 <sup>a</sup>	2000	2001 <sup>b</sup>	2002	2003
All industries.....	21–23, 31–33, 42, 44–81	184,129	201,962	202,017	193,868	204,004
Manufacturing industries.....	31–33	118,339	126,501	124,217	112,089	123,384
Food.....	311	1,132	D	1,819	D	D
Beverage and tobacco products.....	312	D	417	152	170	173
Textiles, apparel, and leather.....	313–16	334	D	D	D	D
Wood products.....	321	70	105	182	D	D
Paper, printing, and support activities.....	322, 323	D	D	D	D	D
Petroleum and coal products.....	324	615	D	D	D	D
Chemicals.....	325	20,246	20,918	17,892	20,641	23,001
Basic chemicals.....	3251	2,746	2,080	1,876	1,782	2,061
Resin, synthetic rubber, fibers, and filament.....	3252	D	2,852	D	2,426	2,406
Pharmaceuticals and medicines.....	3254	D	D	10,137	D	D
Other chemicals.....	Other 325	D	D	D	D	D
Plastics and rubber products.....	326	1,785	D	D	D	1,764
Nonmetallic mineral products.....	327	D	846	990	D	474
Primary metals.....	331	470	624	485	473	530
Fabricated metal products.....	332	1,655	1,672	1,599	1,355	1,374
Machinery.....	333	6,057	6,580	6,404	6,429	6,304
Computer and electronic products.....	334	37,350	47,520	50,591	38,881	39,001
Computers and peripheral equipment.....	3341	D	5,162	D	3,040	2,587
Communications equipment.....	3342	7,421	14,039	19,019	9,739	9,198
Semiconductor and other electronic components.....	3344	10,701	12,894	14,358	11,919	12,635
Navigational, measuring, electromedical, and control instruments.....	3345	14,337	15,116	12,947	13,729	14,014
Other computer and electronic products.....	Other 334	D	310	D	453	566
Electrical equipment, appliances, and components.....	335	D	D	4,980	2,039	2,073
Transportation equipment.....	336	33,965	30,085	25,965	26,145	34,273
Motor vehicles, trailers, and parts.....	3361–63	D	D	D	D	D
Aerospace products and parts.....	3364	14,425	10,319	7,868	9,654	15,731
Other transportation equipment.....	Other 336	D	D	D	D	D
Furniture and related products.....	337	248	284	301	258	D
Miscellaneous manufacturing.....	339	3,851	4,206	6,606	7,457	7,455
Medical equipment and supplies.....	3391	D	D	D	D	6,386
Other miscellaneous manufacturing.....	Other 339	D	D	D	D	1,069
Nonmanufacturing industries.....	21–23, 42, 44–81	65,790	75,461	77,799	81,779	80,620
Mining, extraction, and support activities.....	21	D	823	D	D	D
Utilities.....	22	142	D	133	D	D
Construction.....	23	691	D	320	164	333
Wholesale trade.....	42	NA	NA	NA	D	25,092
Professional and commercial equipment and supplies, including computers.....	4214	NA	NA	NA	D	D
Electrical goods.....	4216	NA	NA	NA	D	D
Drugs and druggists' sundries.....	4222	NA	NA	NA	D	D
Other wholesale trade.....	Other 42	NA	NA	NA	1,521	2,099
Retail trade.....	44, 45	NA	NA	NA	932	1,488

**Total (federal plus company and other) funds for industrial R&D performance in United States, by industry and size of company: 1999–2003**

(Millions of dollars)

Industry and size of company	NAICS code	Funds				
		1999 <sup>a</sup>	2000	2001 <sup>b</sup>	2002	2003
Transportation and warehousing.....	48, 49	460	D	1,848	D	272
Information.....	51	15,389	16,830	D	17,870	D
Publishing.....	511	11,302	13,004	13,760	13,541	D
Newspaper, periodical, book, and database.....	5111	371	365	649	614	665
Software.....	5112	10,931	12,639	13,111	12,927	D
Broadcasting and telecommunications.....	513	D	1,407 (S)	D	D	1,663
Telecommunications.....	5133	D	D	D	D	1,625
Other broadcasting and telecommunications.....	Other 513	NA	NA	NA	NA	38
Other information.....	Other 51	D	2,420	D	D	D
Finance, insurance, and real estate.....	52, 53	D	4,025	D	1,903	1,455
Professional, scientific, and technical services.....	54	18,994	22,577	27,704	30,358	28,721
Architectural, engineering, and related services.....	5413	3,580	3,381	3,386	4,159	5,159
Computer systems design and related services.....	5415	D	5,169	9,154	11,983	9,786
Scientific R&D services.....	5417	10,470	12,892	14,244	13,034	12,460
Other professional, scientific, and technical services.....	Other 54	D	1,135	920	1,182	1,316
Management of companies and enterprises.....	55	D	49	381	148	67
Health care services.....	621–23	642	536	1,149	D	717
Other nonmanufacturing.....	56, 61, 624, 71, 72, 81	D	731	1,259	D	1,679
Company size (employees)						
All companies.....		184,129	201,962	202,017	193,868	204,004
5–24.....	na	7,004	6,862	4,828	4,261	5,578
25–49.....	na	4,750	5,008	3,750	3,845	6,449
50–99.....	na	7,225	7,259	8,202	6,164	4,829
100–249.....	na	7,213	9,020	12,916	13,227	9,559
250–499.....	na	7,892	7,479	8,702	8,055	9,536
500–999.....	na	7,032	9,074	10,564	9,925	10,383
1,000–4,999.....	na	24,840	30,636	26,748	28,625	30,484
5,000–9,999.....	na	16,339	16,768	17,438	17,942	15,434
10,000–24,999.....	na	26,377	28,611	27,065	26,458	27,571
25,000 or more.....	na	75,457	81,244	81,804	75,365	84,180

D = data withheld to avoid disclosing operations of individual companies; S = imputation of &gt;50%; NA = not available; na = not applicable

NAICS = North American Industry Classification System

<sup>a</sup>Some statistics for 1999 were revised since originally published.<sup>b</sup>Beginning with 2001, statistics for total and federally funded industrial R&D exclude data for federally funded research and development centers.

NOTES: R&D is industrial R&D performed within company facilities funded from all sources. Funds are company's own; funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments; and funds from federal government. Excluded are R&D not performed within the company (e.g., R&D contracted out to other organizations) and R&D not performed within the 50 United States or District of Columbia (e.g., R&D performed outside the United States by foreign subsidiaries or other foreign organizations). For more technical information, see <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Industrial Research and Development.

**Company and other nonfederal funds for industrial R&D performance in United States, by industry and size of company: 1999–2003**

(Millions of dollars)

Industry and size of company	NAICS code	1999 <sup>a</sup>	2000	2001	2002	2003
All industries.....	21–23, 31–33, 42, 44–81	161,594	182,844	185,118	177,467	183,305
Manufacturing industries.....	31–33	101,283	113,173	112,733	101,344	108,079
Food.....	311	1,132	1,145	1,818	2,034	1,987
Beverage and tobacco products.....	312	D	417	152	170	173
Textiles, apparel, and leather.....	313–16	334	266	255	248	309
Wood products.....	321	70	105	181	132	138
Paper, printing, and support activities.....	322, 323	2,474	2,700	2,664	2,620	2,909
Petroleum and coal products.....	324	D	1,172	1,057	1,233	1,308
Chemicals.....	325	20,051	20,768	17,713	20,395	22,693
Basic chemicals.....	3251	2,648	2,050	1,835	1,710	1,991
Resin, synthetic rubber, fibers, and filament.....	3252	2,216	2,842	2,745	2,413	2,390
Pharmaceuticals and medicines.....	3254	12,236	12,793	10,137	14,186	15,949
Other chemicals.....	Other 325	2,951	3,084	2,996	2,087	2,364
Plastics and rubber products.....	326	1,785	1,675	2,245	1,508	1,729
Nonmetallic mineral products.....	327	595	845	978	420	470
Primary metals.....	331	457	598	479	461	518
Fabricated metal products.....	332	1,608	1,631	1,545	1,251	1,329
Machinery.....	333	5,658	6,539	6,337	6,366	6,224
Computer and electronic products.....	334	31,357	40,971	44,744	33,411	32,495
Computers and peripheral equipment.....	3341	4,126	5,162	3,165	3,015	2,561
Communications equipment.....	3342	7,215	13,606	18,721	9,524	8,932
Semiconductor and other electronic components.....	3344	10,624	12,787	14,210	11,871	12,607
Navigational, measuring, electromedical, and control instruments.....	3345	8,632	10,114	7,565	8,549	7,834
Other computer and electronic products.....	Other 334	760	307	1,083	452	560
Electrical equipment, appliances, and components.....	335	3,820	3,390	4,680	1,978	2,002
Transportation equipment.....	336	23,928	22,917	21,004	21,452	26,111
Motor vehicles, trailers, and parts.....	3361–63	17,987	18,306	16,089	15,199	16,874
Aerospace products and parts.....	3364	5,309	3,895	4,083	5,349	8,203
Other transportation equipment.....	Other 336	632	716	832 (S)	905	1,034
Furniture and related products.....	337	248	284	301	251	275
Miscellaneous manufacturing.....	339	3,825	4,195	6,581	7,414	7,408
Medical equipment and supplies.....	3391	3,251	3,741	5,903	6,179	6,370
Other miscellaneous manufacturing.....	Other 339	574	453	678	1,235	1,038
Nonmanufacturing industries.....	21–23, 42, 44–81	60,311	69,671	72,384	76,123	75,226
Mining, extraction, and support activities.....	21	2,352	822	846	715	750
Utilities.....	22	126	136	114	117	128
Construction.....	23	690	222	320	164	254
Wholesale trade.....	42	NA	NA	NA	24,037	24,970
Professional and commercial equipment and supplies, including computers.....	4214	NA	NA	NA	11,771	9,679
Electrical goods.....	4216	NA	NA	NA	3,935	3,701
Drugs and druggists' sundries.....	4222	NA	NA	NA	6,811	9,494
Other wholesale trade.....	Other 42	NA	NA	NA	1,520	2,097
Retail trade.....	44, 45	NA	NA	NA	932	1,462

**Company and other nonfederal funds for industrial R&D performance in United States, by industry and size of company: 1999–2003**

(Millions of dollars)

Industry and size of company	NAICS code	1999 <sup>a</sup>	2000	2001	2002	2003
Transportation and warehousing.....	48, 49	460	277	1,776	339	272
Information.....	51	14,892	16,290	17,259	17,764	19,811
Publishing.....	511	11,253	12,926	13,716	13,488	15,760
Newspaper, periodical, book, and database.....	5111	371	365	649	614	665
Software.....	5112	10,882	12,561	13,067	12,874	15,095
Broadcasting and telecommunications.....	513	1,393	1,025	1,270	1,637	1,663
Telecommunications.....	5133	D	D	1,101	1,608	1,625
Other broadcasting and telecommunications.....	Other 513	NA	NA	NA	NA	38
Other information.....	Other 51	2,246	2,339	2,273	2,639	2,388
Finance, insurance, and real estate.....	52, 53	1,570	4,024	2,424	1,903	1,455
Professional, scientific, and technical services.....	54	14,379	17,949	22,640	24,946	23,755
Architectural, engineering, and related services.....	5413	2,402	2,232	2,365	2,822	3,261
Computer systems design and related services.....	5415	3,989	4,943	8,656	10,394	8,638
Scientific R&D services.....	5417	7,413	9,715	10,893	10,735	10,574
Other professional, scientific, and technical services.....	Other 54	575	1,059	726	996	1,283
Management of companies and enterprises.....	55	72	49	381	148	67 (S)
Health care services.....	621–23	631	477	1,120	4,163	681
Other nonmanufacturing.....	56, 61, 624, 71, 72, 81	640	713	1,221	894	1,619
Company size (employees)						
All companies.....		161,594	182,844	185,118	177,467	183,305
5–24.....	na	6,393	5,940	4,175	3,471	4,824
25–49.....	na	4,382	4,786	3,548	3,586	5,540
50–99.....	na	6,623	6,745	7,654	5,701	4,271
100–249.....	na	6,540	8,351	12,012	12,622	8,924
250–499.....	na	7,407	6,819	8,143	7,370	8,869
500–999.....	na	6,441	8,580	9,936	9,394	9,624
1,000–4,999.....	na	23,944	29,860	26,140	27,640	29,396
5,000–9,999.....	na	14,145	15,143	15,787	16,369	14,333
10,000–24,999.....	na	25,980	27,934	26,161	25,232	25,576
25,000 or more.....	na	59,740	68,686	71,561	66,083	71,949

D = data withheld to avoid disclosing operations of individual companies; S = imputation of &gt;50%; NA = not available; na = not applicable

NAICS = North American Industry Classification System

<sup>a</sup>Some statistics for 1999 were revised since originally published.

NOTES: R&D is industrial R&D performed within company facilities funded from all sources except the federal government. Funds are predominantly the company's own, but also include funds from outside organizations, such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Excluded are R&D not performed within the company (e.g., R&D contracted out to other organizations) and R&D not performed within the 50 United States or District of Columbia (e.g., R&D performed outside the United States by foreign subsidiaries or other foreign organizations). For more technical information, see <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Industrial Research and Development.

**Federal funds for industrial R&D performance in United States, by industry and size of company: 1999–2003**

(Millions of dollars)

Industry and size of company	NAICS code	1999 <sup>a</sup>	2000	2001 <sup>b</sup>	2002	2003
All industries.....	21–23, 31–33, 42, 44–81	22,535	19,118	16,899	16,401	20,699
Manufacturing industries.....	31–33	17,055	13,328	11,484	10,745	15,305
Food.....	311	0	D	0	D	D
Beverage and tobacco products.....	312	0	0	0	0	0
Textiles, apparel, and leather.....	313–16	0	D	D	D	D
Wood products.....	321	0	0	0	D	D
Paper, printing, and support activities.....	322, 323	D	D	D	D	D
Petroleum and coal products.....	324	D	D	D	D	D
Chemicals.....	325	194	150	180	246	307
Basic chemicals.....	3251	98	31	42	72	70
Resin, synthetic rubber, fibers, and filament.....	3252	D	11	D	13	16
Pharmaceuticals and medicines.....	3254	D	D	0	D	D
Other chemicals.....	Other 325	D	D	D	D	D
Plastics and rubber products.....	326	0	D	D	D	35
Nonmetallic mineral products.....	327	D	1	11	D	4
Primary metals.....	331	12	26 (S)	6	12	12
Fabricated metal products.....	332	46	41	54	104	45
Machinery.....	333	399 (S)	41	67	62	80
Computer and electronic products.....	334	5,993	5,544	5,848	5,470	6,506
Computers and peripheral equipment.....	3341	D	0	D	25	27 (S)
Communications equipment.....	3342	206	432	298	215	266
Semiconductor and other electronic components.....	3344	77	107	148	48	28
Navigational, measuring, electromedical, and control instruments.....	3345	5,705	5,002	5,382	5,180	6,180
Other computer and electronic products.....	Other 334	D	3	D	1	6
Electrical equipment, appliances, and components.....	335	D	D	301 (S)	61	71
Transportation equipment.....	336	10,037	7,168	4,961	4,692	8,162
Motor vehicles, trailers, and parts.....	3361–63	D	D	D	D	D
Aerospace products and parts.....	3364	9,117	6,424	3,785	4,306	7,528
Other transportation equipment.....	Other 336	D	D	D	D	D
Furniture and related products.....	337	0	0	0	7	D
Miscellaneous manufacturing.....	339	26	12	25	44	47
Medical equipment and supplies.....	3391	D	D	D	D	17
Other miscellaneous manufacturing.....	Other 339	D	D	D	D	31
Nonmanufacturing industries.....	21–23, 42, 44–81	5,479	5,790	5,415	5,656	5,394
Mining, extraction, and support activities.....	21	D	1	D	D	D
Utilities.....	22	17	D	19	D	D
Construction.....	23	2	D	1	*	79
Wholesale trade.....	42	NA	NA	NA	D	122
Professional and commercial equipment and supplies, including computers.....	4214	NA	NA	NA	D	D
Electrical goods.....	4216	NA	NA	NA	D	D
Drugs and druggists' sundries.....	4222	NA	NA	NA	D	D
Other wholesale trade.....	Other 42	NA	NA	NA	1	2
Retail trade.....	44, 45	NA	NA	NA	0	26

**Federal funds for industrial R&D performance in United States, by industry and size of company: 1999–2003**

(Millions of dollars)

Industry and size of company	NAICS code	1999 <sup>a</sup>	2000	2001 <sup>b</sup>	2002	2003
Transportation and warehousing.....	48, 49	0	D	72	D	*
Information.....	51	497	540 (S)	D	106	D
Publishing.....	511	49	78	44	53	D
Newspaper, periodical, book, and database.....	5111	0	0	0	0	*
Software.....	5112	49	78	44	53	D
Broadcasting and telecommunications.....	513	D	382 (S)	D	D	0
Telecommunications.....	5133	D	D	D	D	0
Other broadcasting and telecommunications.....	Other 513	NA	NA	NA	NA	0
Other information.....	Other 51	D	81	D	D	D
Finance, insurance, and real estate.....	52, 53	D	0	D	0	0
Professional, scientific, and technical services.....	54	4,615	4,628	5,065	5,412	4,966
Architectural, engineering, and related services.....	5413	1,177	1,149	1,021	1,337	1,898
Computer systems design and related services.....	5415	D	226	498	1,590	1,148
Scientific R&D services.....	5417	3,057	3,177	3,352	2,299	1,886
Other professional, scientific, and technical services.....	Other 54	D	77	194	186	34
Management of companies and enterprises.....	55	D	0	0	0	0
Health care services.....	621–23	10	59	29	D	36
Other nonmanufacturing.....	56, 61, 624, 71, 72, 81	D	18	38	D	60 (S)
Company size (employees)						
All companies.....		22,535	19,118	16,899	16,401	20,699
5–24.....	na	611	922	653	789	754
25–49.....	na	368	222	201	259	910
50–99.....	na	603	514	548	463	559
100–249.....	na	674	669	903	606	636
250–499.....	na	485	660	560	686	668
500–999.....	na	591	495	627	531	759
1,000–4,999.....	na	896	775	608	985	1,088
5,000–9,999.....	na	2,194	1,625	1,651	1,574	1,101
10,000–24,999.....	na	397	678	904	1,226	1,995
25,000 or more.....	na	15,717	12,559	10,243	9,282	12,231

\* = data &lt; \$500,000; D = data withheld to avoid disclosing operations of individual companies; S = imputation of &gt;50%; NA = not available; na = not applicable

NAICS = North American Industry Classification System

<sup>a</sup>Some statistics for 1999 were revised since originally published.<sup>b</sup>Beginning with 2001, statistics for total and federally funded industrial R&D exclude data for federally funded research and development centers.NOTES: R&D is industrial R&D performed within company facilities funded by the federal government. Excluded are R&D not performed within the company (e.g., R&D contracted out to other organizations) and R&D not performed within the 50 United States or District of Columbia (e.g., R&D performed outside the United States by foreign subsidiaries or other foreign organizations). For more technical information, see <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Industrial Research and Development.



**Company and other (nonfederal) R&D fund share of net sales in R&D-performing companies, by industry and company size: 1999–2003**

(Percent)

Industry and size of company	NAICS code	1999 <sup>a</sup>	2000	2001	2002	2003
All industries.....	21–23, 31–33, 42, 44–81	2.8	3.4	3.8	3.6	3.2
Manufacturing industries.....	31–33	3.2	3.2	3.7	3.3	3.1
Food.....	311	0.4	0.4	0.5	0.6	0.6
Beverage and tobacco products.....	312	D	0.7	0.4	0.5	0.5
Textiles, apparel, and leather.....	313–16	0.7	0.8	0.8	0.8	1.0
Wood products.....	321	0.5	0.8	1.1	0.7	0.7
Paper, printing, and support activities.....	322, 323	1.4	1.6	2.1	1.3	1.1
Petroleum and coal products.....	324	D	0.3	0.3	0.4	0.3
Chemicals.....	325	5.1	5.9	4.8	5.9	5.6
Basic chemicals.....	3251	2.0	2.3	2.2	2.5	2.7
Resin, synthetic rubber, fibers, and filament.....	3252	4.2	5.6	4.5	3.9	3.6
Pharmaceuticals and medicines.....	3254	10.5	9.8	7.8	9.6	8.3
Other chemicals.....	Other 325	3.2	3.6	3.2	3.1	3.2
Plastics and rubber products.....	326	1.9	1.8	2.9	1.8	2.1
Nonmetallic mineral products.....	327	1.5	1.8	2.3	1.2	1.0
Primary metals.....	331	0.4	0.5	0.7	0.7	0.7
Fabricated metal products.....	332	1.4	1.4	1.6	1.4	1.5
Machinery.....	333	3.3	3.8	4.2	4.3	4.2
Computer and electronic products.....	334	8.8	8.0	11.0	8.0	9.3
Computers and peripheral equipment.....	3341	6.4	6.5	7.6	7.5	5.8
Communications equipment.....	3342	12.8	10.5	16.3	12.8	12.7
Semiconductor and other electronic components.....	3344	8.3	7.4	10.5	8.6	11.1
Navigational, measuring, electromedical, and control instruments.....	3345	9.1	8.0	7.3	5.4	7.2
Other computer and electronic products.....	Other 334	5.8	4.3	13.5	5.3	5.8
Electrical equipment, appliances, and components.....	335	2.3	2.1	2.9 (S)	2.7	2.2
Transportation equipment.....	336	2.9	3.1	3.4	2.8	2.7
Motor vehicles, trailers, and parts.....	3361–63	2.9	3.2	3.5	3.1	2.4
Aerospace products and parts.....	3364	3.2	2.8	3.0	2.3	3.5
Other transportation equipment.....	Other 336	1.6	1.8	2.5 (S)	2.9	2.7
Furniture and related products.....	337	0.7	0.8	0.9	0.8	0.8
Miscellaneous manufacturing.....	339	5.7	8.7	6.6	7.9	5.6
Medical equipment and supplies.....	3391	7.7	13.1	9.0	9.7	6.3
Other miscellaneous manufacturing.....	Other 339	2.3	2.3	2.0	4.1	3.2
Nonmanufacturing industries.....	21–23, 42, 44–81	3.4	3.8	4.0	4.1	3.3
Mining, extraction, and support activities.....	21	1.9	1.0	1.3	3.2	3.3
Utilities.....	22	0.1	0.1	0.0	0.1	0.1
Construction.....	23	3.1	1.9	1.4	0.6	1.2
Wholesale trade.....	42	NA	NA	NA	NA	3.6
Professional and commercial equipment and supplies, including computers.....	4214	NA	NA	NA	NA	8.0
Electrical goods.....	4216	NA	NA	NA	NA	6.6
Drugs and druggists' sundries.....	4222	NA	NA	NA	NA	11.6
Other wholesale trade.....	Other 42	NA	NA	NA	NA	0.5
Retail trade.....	44, 45	NA	NA	NA	NA	0.8

**Company and other (nonfederal) R&D fund share of net sales in R&D-performing companies, by industry and company size: 1999–2003**

(Percent)

Industry and size of company	NAICS code	1999 <sup>a</sup>	2000	2001	2002	2003
Transportation and warehousing.....	48, 49	0.5	0.3	2.4	0.5	0.4
Information.....	51	3.4	4.0	4.4	4.0	5.7
Publishing.....	511	13.4	16.3	15.0	16.4	17.9
Newspaper, periodical, book, and database.....	5111	2.0	2.0	2.7	2.8	2.8
Software.....	5112	16.7	20.4	19.3	21.4	23.4
Broadcasting and telecommunications.....	513	0.4	0.4	0.5	0.7 (S)	0.8
Telecommunications.....	5133	D	D	0.5	0.7 (S)	0.8
Other broadcasting and telecommunications.....	Other 513	NA	NA	NA	NA	4.3
Other information.....	Other 51	8.6	4.9	4.7	2.0	5.0
Finance, insurance, and real estate.....	52, 53	0.5	1.2	0.7	0.6	0.3
Professional, scientific, and technical services.....	54	11.6	14.9	13.7	11.2	10.2
Architectural, engineering, and related services.....	5413	6.8	7.1	5.2	5.3	7.8
Computer systems design and related services.....	5415	11.0	11.8	16.5	14.3	9.8
Scientific R&D services.....	5417	32.1	32.3	36.5	17.6	16.5 (S)
Other professional, scientific, and technical services.....	Other 54	1.9	6.1	1.9	2.8	3.3
Management of companies and enterprises.....	55	5.7	4.4	7.8	7.6	4.1 (S)
Health care services.....	621–23	6.4	2.8	4.1	15.1	2.2
Other nonmanufacturing.....	56, 61, 624, 71, 72, 81	0.9	1.0	1.4	1.9	4.9
Company size (employees)						
All companies.....		2.8	3.4	3.8	3.6	3.2
5–24.....	na	16.6	17.2	12.9	7.1	2.2
25–49.....	na	10.6	13.4	10.6	8.9	2.9
50–99.....	na	13.0	11.2	10.4	7.1	3.9
100–249.....	na	6.9	8.0	10.8	9.0	1.7
250–499.....	na	5.9	6.1	8.0	4.0	6.6
500–999.....	na	4.0	4.7	5.7	6.9	5.8
1,000–4,999.....	na	3.1	3.5	4.2	4.0	4.1
5,000–9,999.....	na	2.3	2.2	2.5	3.4	2.6
10,000–24,999.....	na	2.9	3.2	3.5	2.9	2.8
25,000 or more.....	na	2.8	3.0	3.1	2.9	3.2

D = data withheld to avoid disclosing operations of individual companies; S = imputation of &gt;50%; NA = not available; na = not applicable

NAICS = North American Industry Classification System

<sup>a</sup>Some statistics for 1999 were revised since originally published.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Industrial Research and Development (2003).

**R&D expenditure, by state, performing sector, and source of funds: 2003**

(Millions of current dollars)

State	Performing sector:		FFRDCs					Industry			U&C <sup>a</sup>					Other nonprofit institutions	
	Funding sector:	Rank	All R&D	Federal	Total	Federal	Nonfederal <sup>b</sup>	Total	Federal	Industry <sup>c</sup>	Total	Federal	Nonfederal	Industry	U&Cs	Nonprofit	Federal <sup>d</sup>
State total <sup>e</sup> .....	na		277,577	21,863	12,115	11,671	445	198,244	20,595	177,647	39,976	24,662	2,645	2,157	7,670	2,843	5,379
Alabama.....	27		2,543	937	0	0	0	999	461	539	558	410	7	15	105	21	49
Alaska.....	48		321	131	0	0	0	36	5	31	141	77	5	23	33	2.8	13
Arizona.....	22		3,578	291	44	44	0	2,605	574	2,031	618	342	40	40	172	25	19
Arkansas.....	43		509	53	0	0	0	270	7	263	183	82	55	10	27	9	3
California.....	1		59,664	2,834	3,404	3,297	107	47,142	4,497	42,644	5,363	3,184	283	251	1,080	564	920
Colorado.....	17		5,012	350	362	357	5	3,544	95	3,449	695	535	31	37	71	21	61
Connecticut.....	13		6,548	96	0	0	0	5,834	852	4,982	595	418	9	28	71	68	24
Delaware.....	35		1,414	9	0	0	0	1,298	12	1,285	105	73	4	3	20	5	2
District of Columbia.....	26		2,686	1,960	7	7	0	235	95	140	263	215	4	11	14	20	221
Florida.....	16		5,172	721	0	0	0	3,181	1,031	2,150	1,205	668	119	69	285	65	65
Georgia.....	20		3,923	614	0	0	0	2,108	57	2,051	1,176	638	85	74	322	56	25
Hawaii.....	45		438	87	0	0	0	133	53	80	185	149	12	7	17	0	33
Idaho.....	36		1,209	27	330	318	12	745	9	736	105	56	19	6	23	2	1.8
Illinois.....	8		11,045	223	804	769	35	8,319	190	8,129	1,614	964	94	49	400	108	86
Indiana.....	19		4,487	96	0	0	0	3,658	256	3,401	726	328	51	51	237	59	7
Iowa.....	34		1,451	87	25	25	0	833	7	826	499	284	51	36	115	13	7
Kansas.....	28		2,024	35	0	0	0	1,675	D	D	310	156	42	8	87	17	4
Kentucky.....	37		1,014	33	0	0	0	601	21	580	378	173	51	9	113	33	3
Louisiana.....	39		954	128	0	0	0	295	24	271	524	224	106	31	126	38	7
Maine.....	47		372	24	0	0	0	200	30	169	75	31	12	3	25	4	73
Maryland.....	9		10,162	3,538	296	296	0	3,998	1,745	2,253	2,031	1,504	63	99	257	108	299
Massachusetts.....	3		15,638	899	523	516	7	11,094	2,153	8,941	1,822	1,379	43	129	98	172	1,301
Michigan.....	2		16,884	243	0	0	0	15,241	213	15,028	1,388	793	94	69	347	86	11
Minnesota.....	15		5,842	141	0	0	0	5,003	236	4,767	517	298	60	25	73	62	181
Mississippi.....	32		1,519	163	0	0	0	1,021	D	D	324	208	37	10	63	7	11
Missouri.....	25		2,731	158	0	0	0	1,742	80	1,662	807	520	34	27	183	45	24
Montana.....	49		247	29	0	0	0	65	2	63	141	85	22	7	26	1	12
Nebraska.....	40		710	41	0	0	0	363	7	356	301	106	12	22	140	20	5
Nevada.....	41		579	37	0	0	0	383	31	352	155	104	8	6	33	4	5
New Hampshire.....	30		1,664	55	0	0	0	1,349	D	D	252	166	8	11	49	19	7
New Jersey.....	6		12,795	559	67	66	1	11,401	215	11,185	748	361	68	37	212	70	20
New Mexico.....	18		4,977	455	3,849	3,687	162	349	165	184	307	200	15	15	69	8	17
New York.....	5		13,031	572	453	437	16	8,556	598	7,958	3,090	2,015	161	133	524	258	359
North Carolina.....	14		6,343	413	0	0	0	4,424	108	4,315	1,395	838	117	184	207	48	112
North Dakota.....	46		382	30	0	0	0	216	2	214	134	66	4	7	51	6	2
Ohio.....	11		8,583	800	0	0	0	6,260	425	5,835	1,269	743	39	74	317	96	254
Oklahoma.....	38		968	68	0	0	0	577	33	545	295	127	41	17	94	16	28
Oregon.....	23		3,572	124	0	0	0	2,973	39	2,934	437	318	38	11	47	24	37
Pennsylvania.....	10		9,944	453	45	44	2	7,091	166	6,925	2,014	1,444	94	141	212	122	342
Rhode Island.....	29		1,757	301	0	0	0	1,203	D	D	187	134	7	3	37	7	66

**R&D expenditure, by state, performing sector, and source of funds: 2003**

(Millions of current dollars)

State	Performing sector:		All R&D	Federal	FFRDCs			Industry			U&C <sup>a</sup>					Other nonprofit institutions	
	Funding sector:	Rank			Total	Federal	Nonfederal <sup>b</sup>	Total	Federal	Industry <sup>c</sup>	Total	Federal	Nonfederal	Industry	U&Cs	Nonprofit	Federal <sup>d</sup>
South Carolina.....		31	1,616	79	94	94	0	976	36	940	435	226	22	23	152	12	31
South Dakota.....		50	149	20	0	0	0	75	2	73	50	28	10	0.7	5	6	4.2
Tennessee.....		24	2,998	140	691	664	26	1,507	206	1,302	600	383	55	22	105	36	61
Texas.....		4	14,785	830	18	17	1	11,057	638	10,419	2,766	1,552	339	174	417	284	115
Utah.....		33	1,506	116	0	0	0	996	135	861	385	264	23	9	57	32	8
Vermont.....		44	492	24	0	0	0	360	10	349	107	72	3	8	17	7	1
Virginia.....		12	7,582	2,166	381	373	8	4,152	1,846	2,306	776	483	77	57	116	44	107
Washington.....		7	11,469	412	679	615	64	9,222	103	9,119	870	642	20	52	129	27	286
West Virginia.....		42	538	125	43	43	0	219	21	198	121	74	3	2	39	3	30
Wisconsin.....		21	3,642	126	0	0	0	2,623	34	2,589	881	504	50	20	222	84	12
Wyoming.....		51	113	9	0	0	0	37	2	35	60	23	2	3	29	3	7
Other/unknown.....		na	5,762	0	0	0	0	5,762	104	5,658	0	0	0	0	0	0	0

na = not applicable; D = data withheld to avoid disclosing operations of individual companies

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

<sup>a</sup>State-level university R&D data not adjusted to eliminate double counting of funds passed through from one academic institution to another. At national level, funds passed through to educational subrecipients account for 2.8% of total R&D expenditures reported by universities and colleges in FY 2003.

<sup>b</sup>Includes state and local governments (\$31.1 million), industry (\$140.9 million), FFRDC institutional funds (\$140.2 million), and other sources (\$133.4 million).

<sup>c</sup>Includes all nonfederal sources of industry R&D expenditures.

<sup>d</sup>Other sources of support for nonprofit institutions unavailable by state. For 2003, total nonprofit performance is estimated at \$11.8 billion. Industry provided an estimated \$1.1 billion to nonprofit sector, and nonprofit institutions provided estimated \$5.1 billion.

\*State totals differ from U.S. totals reported elsewhere because some R&D expenditures not allocated to 1 of 50 states or District of Columbia. In addition, nonfederal sources of nonprofit R&D expenditures not allocated by state.

NOTES: Industry R&D data by state refer to calendar years; other R&D data by state refer to fiscal years but may serve as approximations to calendar-year data. Other/unknown category reflects reported data not assigned to 1 of 50 states or District of Columbia. For industry, other/unknown totals include survey data not assigned to individual states plus amounts reported for individual states but suppressed here to protect confidentiality of surveyed companies.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Industrial Research and Development; Survey of Research and Development Expenditures at Universities and Colleges; Survey of Federal Funds for Research and Development; and U.S. Department of Commerce, Bureau of Economic Analysis, [www.bea.gov/bea/newsrel/gspnewsrelease.htm](http://www.bea.gov/bea/newsrel/gspnewsrelease.htm).

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Appendix table 4-24

**Total R&D and gross state product, by state: 2003**

State rank	R&D (current \$ millions)	GSP (current \$ millions)	R&D/GSP (%)	Rank in R&D/GSP	U.S. R&D (%)	Cumulative percent
1 California.....	59,664	1,438,134	4.15	7	21.5	21.5
2 Michigan.....	16,884	359,440	4.70	4	6.1	27.6
3 Massachusetts.....	15,638	297,113	5.26	2	5.6	33.2
4 Texas.....	14,785	821,943	1.80	30	5.3	38.5
5 New York.....	13,031	838,035	1.55	32	4.7	43.2
6 New Jersey.....	12,795	394,040	3.25	11	4.6	47.8
7 Washington.....	11,469	245,143	4.68	5	4.1	52.0
8 Illinois.....	11,045	499,731	2.21	20	4.0	55.9
9 Maryland.....	10,162	213,073	4.77	3	3.7	59.6
10 Pennsylvania.....	9,944	443,709	2.24	19	3.6	63.2
11 Ohio.....	8,583	398,918	2.15	22	3.1	66.3
12 Virginia.....	7,582	304,116	2.49	17	2.7	69.0
13 Connecticut.....	6,548	174,085	3.76	9	2.4	71.4
14 North Carolina.....	6,343	315,456	2.01	25	2.3	73.7
15 Minnesota.....	5,842	210,184	2.78	15	2.1	75.8
16 Florida.....	5,172	553,709	0.93	44	1.9	77.6
17 Colorado.....	5,012	188,397	2.66	16	1.8	79.4
18 New Mexico.....	4,977	57,078	8.72	1	1.8	81.2
19 Indiana.....	4,487	213,342	2.10	24	1.6	82.8
20 Georgia.....	3,923	321,199	1.22	37	1.4	84.2
21 Wisconsin.....	3,642	198,096	1.84	29	1.3	85.6
22 Arizona.....	3,578	183,272	1.95	27	1.3	86.8
23 Oregon.....	3,572	119,973	2.98	13	1.3	88.1
24 Tennessee.....	2,998	203,071	1.48	33	1.1	89.2
25 Missouri.....	2,731	193,828	1.41	35	1.0	90.2
26 District of Columbia.....	2,686	70,668	3.80	8	1.0	91.2
27 Alabama.....	2,543	130,792	1.94	28	0.9	92.1
28 Kansas.....	2,024	93,263	2.17	21	0.7	92.8
29 Rhode Island.....	1,757	39,363	4.46	6	0.6	93.4
30 New Hampshire.....	1,664	48,202	3.45	10	0.6	94.0
31 South Carolina.....	1,616	127,963	1.26	36	0.6	94.6
32 Mississippi.....	1,519	71,872	2.11	23	0.6	95.2
33 Utah.....	1,506	76,674	1.96	26	0.5	95.7
34 Iowa.....	1,451	102,400	1.42	34	0.5	96.2
35 Delaware.....	1,414	50,486	2.80	14	0.5	96.7
36 Idaho.....	1,209	40,358	2.99	12	0.4	97.2
37 Kentucky.....	1,014	128,315	0.79	46	0.4	97.6
38 Oklahoma.....	968	101,168	0.96	42	0.4	97.9
39 Louisiana.....	954	144,321	0.66	48	0.3	98.2
40 Nebraska.....	710	65,399	1.09	39	0.3	98.5
41 Nevada.....	579	89,711	0.65	49	0.2	98.7
42 West Virginia.....	538	46,726	1.15	38	0.2	98.9
43 Arkansas.....	509	74,540	0.68	47	0.2	99.1
44 Vermont.....	492	20,544	2.39	18	0.2	99.3
45 Hawaii.....	438	46,671	0.94	43	0.2	99.4
46 North Dakota.....	382	21,597	1.77	31	0.1	99.6
47 Maine.....	372	40,829	0.91	45	0.1	99.7
48 Alaska.....	321	31,704	1.01	40	0.1	99.8
49 Montana.....	247	25,584	0.97	41	0.1	99.9
50 South Dakota.....	149	27,337	0.55	50	0.1	100.0
51 Wyoming.....	113	22,279	0.51	51	0.0	100.0

GSP = gross state product

NOTES: U.S. R&D total attributable to states is \$277,577. Other/unknown includes R&D performed in 50 states or District of Columbia, but specific location of performance not provided by survey respondents. Also includes R&D conducted by organizations in United States, but actual performance does not take place in particular state or District of Columbia (e.g., research conducted on marine vessels or in Puerto Rico). U.S. total attributable to states excludes other/unknown component. When state R&D taken as percentage of U.S. R&D, denominator is U.S. total attributable to states.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Industrial Research and Development; Survey of Research and Development Expenditures at Universities and Colleges; Survey of Federal Funds for Research and Development; and U.S. Department of Commerce, Bureau of Economic Analysis, [www.bea.gov/bea/newsrel/gspnewsrelease.htm](http://www.bea.gov/bea/newsrel/gspnewsrelease.htm).

Appendix table 4-25  
**FFRDC R&D expenditures: FY 2003**  
 (Thousands of dollars)

FFRDC	Total	Federal	Sponsoring agency	Location
All FFRDCs.....	12,126,881	11,681,288		
University-administered FFRDCs.....	7,200,056	6,948,179		
Ames Laboratory.....	25,213	25,213	Department of Energy	Ames, IA
Argonne National Laboratory.....	500,828	466,340	Department of Energy	Argonne, IL
Ernest Orlando Lawrence Berkeley National Laboratory.....	441,500	381,264	Department of Energy	Berkeley, CA
Fermi National Accelerator Laboratory.....	303,340	303,041	Department of Energy	Batavia, IL
Jet Propulsion Laboratory.....	1,390,560	1,390,560	NASA	Pasadena, CA
Lawrence Livermore National Laboratory.....	1,286,215	1,258,505	Department of Energy	Livermore, CA
Lincoln Laboratory.....	522,851	516,112	DOD, Department of the Air Force	Lexington, MA
Los Alamos National Laboratory.....	2,106,145	1,990,573	Department of Energy	Los Alamos, NM
National Astronomy and Ionosphere Center.....	11,508	10,644	NSF	Arecibo, PR
National Center for Atmospheric Research.....	140,756	137,993	NSF	Boulder, CO
National Optical Astronomy Observatory.....	44,409	44,409	NSF	Tucson, AZ
National Radio Astronomy Observatory.....	42,842	42,644	NSF	Green Bank, WV
Princeton Plasma Physics Laboratory.....	66,764	66,345	Department of Energy	Princeton, NJ
Software Engineering Institute.....	45,412	43,470	DOD, Office of the Secretary of Defense	Pittsburgh, PA
Stanford Linear Accel Center.....	164,747	164,747	Department of Energy	Stanford, CA
Thomas Jefferson National Accelerator Facility.....	106,966	106,319	Department of Energy	Newport News, VA
Industry-administered FFRDCs.....	2,463,439	2,405,585		
Idaho National Engineering and Environmental Laboratory.....	330,154	318,363	Department of Energy	Idaho Falls, ID
National Cancer Institute at Frederick.....	296,000	296,000	NIH	Frederick, MD
Sandia National Laboratory.....	1,742,862	1,696,799	Department of Energy	Albuquerque, NM
Savannah River Technology.....	94,423	94,423	Department of Energy	Aiken, SC
Nonprofit-administered FFRDC.....	2,463,386	2,327,524		
Aerospace FFRDC.....	32,745	13,619	DOD, Department of the Air Force	El Segundo, CA
Arroyo Center.....	27,889	27,889	DOD, Department of the Army	Santa Monica, CA
Brookhaven National Laboratory.....	452,728	436,969	Department of Energy	Upton, NY
C3I FFRDC.....	32,696	32,696	DOD, Office of the Secretary of Defense	Bedford, MA/McLean, VA
Center for Advanced Aviation System Development.....	6,633	3,180	FAA	McLean, VA
Center for Naval Analyses.....	75,869	71,895	DOD, Department of the Navy	Alexandria, VA
Center for Nuclear Waste Regulatory Analyses.....	17,625	16,884	Nuclear Regulatory Commission	San Antonio, TX
Institute for Defense Analyses Communications and Computing.....	45,960	45,960	National Security Agency	Alexandria, VA
Institute for Defense Analysis Studies.....	110,200	110,200	DOD, Office of the Secretary of Defense	Alexandria, VA
Internal Revenue Service FFRDC.....	2,834	2,834	IRS	McLean, VA
National Defense Research Institute.....	26,908	26,908	DOD, Office of the Secretary of Defense	Santa Monica, CA
National Renewable Energy Laboratory.....	221,496	219,015	Department of Energy	Golden, CO
Oak Ridge National Laboratory.....	690,538	664,210	Department of Energy	Oak Ridge, TN
Pacific Northwest National Laboratory.....	679,000	615,000	Department of Energy	Richland, WA
Project Air Force.....	33,555	33,555	DOD, Department of the Air Force	Santa Monica, CA
Science and Technology Policy Institute.....	6,710	6,710	NSF	Washington, DC

DOD = Department of Defense; FAA = Federal Aviation Administration; FFRDC = federally funded research and development center; IRS = Internal Revenue Service; NASA = National Air and Space Administration; NIH = National Institutes of Health; NSF = National Science Foundation

NOTE: More information about the 36 FFRDCs can be found on NSF website, <http://www.nsf.gov/statistics/nsf05306/start.htm>.

SOURCE: NSF, Division of Science Resources Statistics, *Academic Research and Development Expenditures: Fiscal Year 2003* (forthcoming).

Appendix table 4-26

(Page 1 of 2)

**Federal R&D budget authority, by budget function: FY 1980–2006**

Year	Total	Total defense	Total nondefense	Health	Space research/ technology	Energy	General science	Natural resources/ environment	Transportation
Millions of current dollars									
1980.....	29,739	14,946	14,793	3,694	2,738	3,603	1,233	999	887
1981.....	33,735	18,413	15,322	3,871	3,111	3,501	1,340	1,061	869
1982.....	36,115	22,070	14,045	3,869	2,584	3,012	1,359	965	791
1983.....	38,768	24,936	13,832	4,298	2,134	2,578	1,502	952	876
1984.....	44,214	29,287	14,927	4,779	2,300	2,581	1,676	963	1,040
1985.....	49,887	33,698	16,189	5,418	2,725	2,389	1,862	1,059	1,030
1986.....	53,249	36,926	16,323	5,565	2,894	2,286	1,873	1,062	917
1987.....	57,069	39,152	17,917	6,556	3,398	2,053	2,042	1,133	908
1988.....	59,106	40,099	19,007	7,076	3,683	2,126	2,160	1,160	896
1989.....	62,115	40,665	21,450	7,773	4,555	2,419	2,373	1,255	1,064
1990.....	63,781	39,925	23,856	8,308	5,765	2,726	2,410	1,386	1,045
1991.....	65,898	39,328	26,570	9,226	6,511	2,953	2,635	1,582	1,231
1992.....	68,398	40,061	28,337	10,055	6,744	3,153	2,659	1,688	1,523
1993.....	69,884	41,249	28,635	10,280	6,988	2,677	2,691	1,802	1,703
1994.....	68,331	37,764	30,567	10,993	7,414	2,873	2,712	2,062	1,889
1995.....	68,791	37,204	31,587	11,407	7,916	2,844	2,794	1,989	1,834
1996.....	69,049	37,801	31,248	11,867	7,844	2,521	2,846	1,802	1,795
1997.....	71,653	39,592	32,062	12,670	7,844	2,372	2,944	1,886	1,785
1998.....	73,569	39,823	33,746	13,576	8,198	948	4,360	1,855	1,833
1999.....	77,637	41,306	36,332	15,553	8,245	1,132	4,690	1,842	1,725
2000.....	78,664	42,580	36,084	17,869	5,363	996	4,977	1,999	1,636
2001.....	86,756	45,713	41,043	20,758	6,126	1,314	5,468	2,096	1,640
2002.....	97,624	53,016	44,608	23,560	6,270	1,327	5,753	2,160	1,838
2003.....	112,544	63,048	49,495	26,518	7,355	1,403	6,129	2,151	1,869
2004.....	121,867	69,593	52,274	28,251	7,612	1,344	6,466	2,168	1,864
2005.....	127,336	74,668	52,668	28,746	7,686	1,195	6,482	2,108	1,828
2006.....	127,621	74,760	52,862	28,984	8,089	1,211	6,423	1,990	1,640
Millions of constant FY 2000 dollars									
1980.....	56,024	28,156	27,868	6,959	5,158	6,788	2,323	1,882	1,671
1981.....	57,884	31,594	26,290	6,642	5,338	6,007	2,299	1,820	1,491
1982.....	57,998	35,443	22,555	6,213	4,150	4,837	2,182	1,550	1,270
1983.....	59,626	38,352	21,274	6,610	3,282	3,965	2,310	1,464	1,347
1984.....	65,582	43,441	22,141	7,089	3,412	3,828	2,486	1,428	1,543
1985.....	71,670	48,412	23,258	7,784	3,915	3,432	2,675	1,521	1,480
1986.....	74,760	51,843	22,917	7,813	4,063	3,209	2,630	1,491	1,287
1987.....	78,085	53,570	24,515	8,970	4,649	2,809	2,794	1,550	1,242
1988.....	78,405	53,192	25,213	9,386	4,886	2,820	2,865	1,539	1,189
1989.....	79,315	51,926	27,389	9,925	5,816	3,089	3,030	1,603	1,359
1990.....	78,526	49,155	29,371	10,229	7,098	3,356	2,967	1,706	1,287
1991.....	78,197	46,668	31,529	10,948	7,726	3,504	3,126	1,877	1,461
1992.....	79,174	46,372	32,802	11,639	7,807	3,650	3,078	1,954	1,763
1993.....	79,129	46,706	32,423	11,640	7,912	3,031	3,047	2,040	1,929
1994.....	75,727	41,852	33,875	12,183	8,217	3,184	3,005	2,285	2,093
1995.....	74,636	40,365	34,271	12,377	8,589	3,085	3,031	2,157	1,989
1996.....	73,540	40,260	33,280	12,639	8,354	2,685	3,031	1,919	1,911
1997.....	75,002	41,442	33,560	13,263	8,211	2,483	3,082	1,974	1,869
1998.....	76,047	41,165	34,882	14,033	8,474	980	4,507	1,917	1,895
1999.....	79,217	42,146	37,071	15,870	8,413	1,155	4,785	1,879	1,760
2000.....	78,664	42,580	36,084	17,869	5,363	996	4,977	1,999	1,636
2001.....	84,802	44,683	40,119	20,291	5,988	1,284	5,345	2,048	1,603
2002.....	93,629	50,846	42,783	22,595	6,014	1,273	5,518	2,071	1,763
2003.....	106,041	59,406	46,635	24,985	6,930	1,322	5,775	2,027	1,761
2004.....	112,659	64,334	48,325	26,116	7,037	1,242	5,977	2,004	1,723
2005.....	115,347	67,638	47,709	26,039	6,963	1,082	5,872	1,909	1,656
2006.....	113,366	66,409	46,957	25,746	7,186	1,075	5,705	1,768	1,457

Appendix table 4-26

(Page 2 of 2)

**Federal R&D budget authority, by budget function: FY 1980–2006**

	Agriculture	Education training employment, and social services	International affairs	Veterans benefits/ services	Commerce/ housing credit	Community/ regional development	Administration of justice	Income security	General government
Millions of current dollars									
1980.....	585	468	125	126	101	119	45	47	22
1981.....	659	298	160	143	106	104	34	43	22
1982.....	693	228	165	139	104	63	31	32	10
1983.....	745	189	177	157	107	44	37	32	6
1984.....	762	200	192	218	110	46	24	26	8
1985.....	836	220	210	193	114	50	47	21	17
1986.....	815	248	211	183	111	88	41	14	14
1987.....	822	267	223	215	110	99	49	25	17
1988.....	882	285	224	195	122	108	51	23	17
1989.....	907	347	279	212	128	74	45	27	15
1990.....	950	374	375	216	140	67	44	33	17
1991.....	1,052	433	378	219	178	88	51	30	4
1992.....	1,155	365	371	245	192	95	51	37	4
1993.....	1,152	348	382	250	220	57	49	36	0
1994.....	1,193	373	254	265	380	68	46	46	0
1995.....	1,194	369	287	257	525	70	59	43	1
1996.....	1,176	331	252	259	432	50	56	16	2
1997.....	1,203	373	190	267	409	48	59	9	2
1998.....	1,249	444	163	587	398	42	72	18	2
1999.....	1,288	403	190	644	432	59	88	38	3
2000.....	1,426	418	200	645	406	46	73	25	6
2001.....	1,657	411	252	719	429	54	88	30	3
2002.....	1,606	411	279	756	467	50	91	37	3
2003.....	1,708	430	269	817	463	48	299	38	0
2004.....	1,750	459	264	866	454	47	684	47	0
2005.....	1,803	455	255	784	457	45	789	35	0
2006.....	1,575	420	255	786	389	41	1,034	27	0
Millions of constant FY 2000 dollars									
1980.....	1,102	882	235	237	190	224	85	89	41
1981.....	1,131	511	275	245	182	178	58	74	38
1982.....	1,113	366	265	223	167	101	50	51	16
1983.....	1,146	291	272	241	165	68	57	49	9
1984.....	1,130	297	285	323	163	68	36	39	12
1985.....	1,201	316	302	277	164	72	68	30	24
1986.....	1,144	348	296	257	156	124	58	20	20
1987.....	1,125	365	305	294	151	135	67	34	23
1988.....	1,170	378	297	259	162	143	68	31	23
1989.....	1,158	443	356	271	163	94	57	34	19
1990.....	1,170	460	462	266	172	82	54	41	21
1991.....	1,248	514	449	260	212	105	61	35	4
1992.....	1,337	423	429	284	222	110	59	43	5
1993.....	1,304	394	433	284	249	65	55	41	0
1994.....	1,323	413	282	294	421	75	51	50	0
1995.....	1,295	400	311	279	570	76	64	47	1
1996.....	1,252	353	268	276	460	53	60	17	2
1997.....	1,259	390	199	279	428	50	62	9	2
1998.....	1,291	459	168	607	411	43	74	19	2
1999.....	1,314	411	194	657	441	60	90	39	3
2000.....	1,426	418	200	645	406	46	73	25	6
2001.....	1,620	402	246	702	419	53	86	29	3
2002.....	1,541	394	268	725	448	48	87	35	3
2003.....	1,609	405	253	770	436	45	282	36	0
2004.....	1,618	424	244	801	420	43	632	43	0
2005.....	1,634	412	231	710	414	41	715	32	0
2006.....	1,399	373	227	698	345	36	918	24	0

NOTES: Data for 1980–2004 are actual budget authority, data for 2005 are preliminary estimates, and data for 2006 are proposed based on FY 2006 budget. See appendix table 4-1 for FY gross domestic product implicit price deflators used to convert current dollars to constant 2000 dollars. Beginning in FY 1998, several Department of Energy programs were reclassified from energy to general science. In FY 2000, NASA reclassified the Space Station as an R&D plant; this explains part of drop in space research and technology in that year. FY 2003–06 reflect FY 2004 reclassification of Department of Homeland Security's (DHS) R&D portfolio; whereas DHS R&D funding previously classified as general science and basic and agriculture, it is now classified as administration of justice.

SOURCE: National Science Foundation, Division of Science Resources Statistics, *Federal R&D Funding by Budget Function: Fiscal Years 2004–06* (forthcoming).



Appendix table 4-27

**Federal basic research budget authority, by budget function: FY 1996–2006**

Budget function	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Millions of current dollars											
Total .....	14,442	14,961	15,523	17,433	19,470	21,376	23,848	25,323	26,529	26,840	26,536
Health.....	6,395	6,852	7,356	8,634	10,099	11,642	12,957	14,162	14,850	15,114	15,235
General science.....	2,662	2,753	4,121	4,464	4,722	5,187	5,561	5,907	6,198	6,203	6,146
Space research/technology.....	1,685	1,653	1,610	1,667	1,616	1,695	1,912	2,207	2,474	2,368	2,199
Energy.....	1,182	1,288	34	36	36	40	45	40	32	32	26
National defense.....	1,165	1,090	1,067	1,110	1,184	1,303	1,404	1,410	1,380	1,545	1,353
Agriculture.....	547	548	571	602	651	749	762	824	781	802	738
Transportation .....	456	420	411	358	542	17	17	23	20	37	42
Natural resources/environment.....	147	153	145	142	146	215	471	185	201	152	151
Education, training, employment/social services...	140	142	133	99	107	112	115	125	125	127	134
Commerce/housing credit.....	37	34	35	41	39	50	56	53	46	61	74
Veterans benefits/services.....	13	14	23	263	266	289	465	327	347	315	315
Administration of justice .....	12	13	16	18	20	27	30	42	58	67	105
International affairs.....	2	2	1	0	42	50	53	18	18	18	18
Community/regional development.....	0	0	0	0	0	0	0	1	0	0	0
General government .....	0	0	0	0	0	0	0	0	0	0	0
Income security .....	0	0	0	0	0	0	0	0	0	0	0
Millions of constant FY 2000 dollars											
Total .....	15,381	15,660	16,046	17,788	19,470	20,895	22,872	23,860	24,524	24,313	23,572
Health.....	6,811	7,172	7,604	8,810	10,099	11,380	12,427	13,344	13,728	13,691	13,534
General science.....	2,835	2,882	4,260	4,555	4,722	5,070	5,334	5,566	5,729	5,619	5,460
Space research/technology.....	1,795	1,730	1,664	1,701	1,616	1,657	1,834	2,079	2,287	2,145	1,953
Energy.....	1,259	1,348	35	37	36	39	43	38	30	29	23
National defense.....	1,241	1,141	1,103	1,133	1,184	1,274	1,346	1,328	1,276	1,400	1,202
Agriculture.....	583	574	590	614	651	732	730	776	721	727	656
Transportation .....	486	440	425	365	542	17	16	22	18	34	37
Natural resources/environment.....	157	160	150	145	146	210	452	174	185	138	134
Education, training, employment/social services...	149	149	137	101	107	109	110	118	116	115	119
Commerce/housing credit.....	39	36	36	42	39	49	54	50	43	55	66
Veterans benefits/services.....	14	15	24	268	266	282	446	308	321	285	280
Administration of justice .....	13	14	17	18	20	26	29	40	53	61	93
International affairs.....	2	2	1	0	42	49	51	17	17	16	16
Community/regional development.....	0	0	0	0	0	0	0	1	0	0	0
General government .....	0	0	0	0	0	0	0	0	0	0	0
Income security .....	0	0	0	0	0	0	0	0	0	0	0

NOTES: Data for 1980–2004 are actual budget authority, data for 2005 are preliminary estimates, and data for 2006 are proposed based on FY 2006 budget. See appendix table 4-1 for FY gross domestic product implicit price deflators used to convert current dollars to constant 2000 dollars. Beginning in FY 1998, several Department of Energy programs were reclassified from energy to general science. In FY 2000, NASA reclassified the Space Station as an R&D plant; this explains part of drop in space research and technology in that year. FY 2003–06 reflect FY 2004 reclassification of Department of Homeland Security's (DHS) R&D portfolio; whereas DHS R&D funding previously classified as general science and basic and agriculture, it is now classified as administration of justice.

SOURCE: National Science Foundation, Division of Science Resources Statistics, *Federal R&D Funding by Budget Function: Fiscal Years 2004–06* (forthcoming).

Appendix table 4-28

**Trends in R&D and federal outlays: Selected fiscal years, 1970–2006**

Composition of federal outlays	1970	1980	1990	2000	2002	2004	2006 (estimate)
Billions of current dollars							
Federal outlays .....	195.6	590.9	1,253.1	1,789.1	2,011.0	2,292.2	2,567.6
Mandatory programs <sup>a</sup> .....	61.0	262.1	568.2	951.0	1,105.7	1,236.5	1,410.3
Net interest .....	14.4	52.5	184.3	222.9	170.9	160.2	211.1
Total discretionary .....	120.3	276.3	500.6	614.8	734.3	895.4	946.2
Defense .....	81.9	134.6	300.1	295.0	348.9	454.1	444.3
R&D .....	8.0	14.6	41.1	41.1	48.2	65.3	73.5
Nondefense .....	38.3	141.7	200.4	319.9	385.4	441.4	477.4
R&D .....	7.1	15.6	22.7	32.9	39.7	48.0	51.4
Total federal R&D outlays .....	15.2	30.2	63.8	73.9	87.9	113.4	124.9
Percent							
Federal outlays .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mandatory programs <sup>a</sup> .....	31.2	44.4	45.3	53.2	55.0	53.9	54.9
Net interest .....	7.4	8.9	14.7	12.5	8.5	7.0	8.2
Total discretionary .....	61.5	46.8	39.9	34.4	36.5	39.1	36.9
Defense .....	41.9	22.8	23.9	16.5	17.3	19.8	17.3
R&D .....	4.1	2.5	3.3	2.3	2.4	2.9	2.9
Nondefense .....	19.6	24.0	16.0	17.9	19.2	19.3	18.6
R&D .....	3.6	2.6	1.8	1.8	2.0	2.1	2.0
Total federal R&D outlays .....	7.7	5.1	5.1	4.1	4.4	4.9	4.9
Federal R&D outlays as proportion of corresponding discretionary outlays (%)							
Total federal R&D/total discretionary outlays .....	12.6	10.9	12.7	12.0	12.0	12.7	13.2
Defense .....	9.8	10.9	13.7	13.9	13.8	14.4	16.6
Nondefense .....	18.6	11.0	11.3	10.3	10.3	10.9	10.8

<sup>a</sup>Includes Social Security, Medicare, Medicaid, and other programs.

SOURCE: U.S. Office of Management and Budget, *Historical Tables, Budget of the United States Government: Fiscal Year 2006* (2005).

Science and Engineering Indicators 2006

Appendix table 4-29

**Discrepancy between federal R&D support, as reported by performers and federal agencies: 1980–2003**

(Billions of dollars)

Year	All performers			Industrial performers <sup>a</sup>		
	Performer reported	Agency reported	Difference	Performer reported	Agency reported	Difference
1980.....	30.0	29.8	0.2	12.8	13.0	-0.2
1981.....	33.7	33.1	0.6	15.0	14.9	0.1
1982.....	37.2	36.4	0.8	17.1	17.2	-0.1
1983.....	41.5	38.7	2.8	19.1	17.0	2.1
1984.....	46.5	42.2	4.3	21.7	18.6	3.1
1985.....	52.7	48.4	4.3	25.3	21.7	3.6
1986.....	54.6	51.4	3.2	26.0	24.2	1.8
1987.....	58.6	55.3	3.3	28.8	26.8	2.0
1988.....	60.1	56.8	3.3	28.2	26.7	1.5
1989.....	60.5	61.4	-0.9	26.4	28.5	-2.1
1990.....	61.6	63.6	-2.0	25.8	29.4	-3.6
1991.....	60.8	61.3	-0.5	24.1	26.4	-2.3
1992.....	60.9	65.6	-4.7	22.4	29.7	-7.3
1993.....	60.5	67.3	-6.8	20.8	30.2	-9.4
1994.....	60.8	67.2	-6.4	20.3	30.5	-10.2
1995.....	63.0	68.2	-5.2	21.2	30.2	-9.0
1996.....	63.4	67.7	-4.3	21.4	30.4	-9.0
1997.....	64.6	69.8	-5.2	21.8	31.4	-9.6
1998.....	66.4	72.1	-5.7	22.1	32.0	-9.9
1999.....	67.0	75.3	-8.3	20.6	31.9	-11.3
2000.....	66.4	72.9	-6.5	17.2	27.7	-10.5
2001.....	72.8	79.9	-7.1	16.9	27.0	-10.1
2002.....	77.7	85.9	-8.2	16.4	29.5	-13.1
2003.....	86.7	93.7	-7.0	20.7	33.9	-13.2

<sup>a</sup>Excludes industry-administered federally funded research and development centers.

NOTES: Performer-reported data are expenditures; agency-reported data are obligations.

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), National Patterns of R&D Resources (annual series); and NSF/SRS, *Federal Funds for Research and Development: Fiscal Years 2003, 2004, and 2005* (forthcoming).

**Estimated federal obligations for R&D and R&D plant, by selected agency, performer, and character of work: FY 2005**

(Millions of current dollars)

Agency	Total	Federal intramural	Industrial firms	FFRDCs administered by industry	U&C	FFRDCs administered by U&C	Other nonprofits	FFRDCs administered by nonprofits	State and local government	Foreign
<b>Total R&amp;D and R&amp;D plant</b>										
All agencies.....	110,194.2	25,289.2	44,833.8	1,723.0	24,296.1	5,497.3	6,031.8	1,692.2	420.2	410.5
Department of Agriculture.....	2,120.7	1,485.1	17.7	0.0	599.0	0.0	13.0	0.0	3.0	2.8
Department of Commerce.....	1,049.2	870.4	12.3	0.0	151.2	0.6	8.8	0.0	5.6	0.2
Department of Defense.....	51,750.2	12,299.8	36,446.8	141.2	1,575.5	318.3	295.4	549.7	6.6	116.8
Department of Energy.....	8,781.0	845.1	1,557.4	1,075.2	758.1	3,387.8	80.1	1,075.8	0.5	1.0
Department of Health and Human Services.....	29,123.5	5,908.8	1,655.5	484.5	16,161.4	91.7	4,418.7	26.7	160.3	216.0
Department of the Interior.....	551.6	489.1	13.2	0.0	38.6	0.0	0.9	0.0	8.8	0.9
Department of Transportation.....	756.2	228.2	257.7	2.5	49.9	8.0	28.9	0.2	179.5	1.3
Environmental Protection Agency.....	572.2	271.2	68.0	0.0	175.2	0.0	43.6	0.0	11.8	2.3
National Aeronautics and Space Administration.....	9,762.0	2,065.8	4,510.4	0.1	1,126.2	1,402.4	577.7	14.3	12.8	52.3
National Science Foundation.....	4,225.7	49.1	182.9	0.0	3,381.0	282.2	298.3	5.5	12.4	14.5
All other agencies.....	1,501.8	776.7	111.8	19.5	280.0	6.3	266.4	20.0	18.9	2.4
<b>R&amp;D</b>										
All agencies.....	106,487.8	24,813.0	42,938.0	1,639.3	23,900.3	4,955.4	5,971.5	1,463.9	419.3	387.1
Department of Agriculture.....	1,969.3	1,333.7	17.7	0.0	599.0	0.0	13.0	0.0	3.0	2.8
Department of Commerce.....	979.3	800.5	12.3	0.0	151.2	0.6	8.8	0.0	5.6	0.2
Department of Defense.....	51,402.1	12,199.7	36,198.9	141.2	1,575.5	318.3	295.4	549.7	6.6	116.8
Department of Energy.....	7,957.8	844.0	1,521.9	991.5	751.1	2,918.2	78.0	851.6	0.5	1.0
Department of Health and Human Services.....	28,865.6	5,810.1	1,655.5	484.5	16,008.7	91.7	4,412.1	26.7	160.3	216.0
Department of the Interior.....	548.7	489.1	10.4	0.0	38.6	0.0	0.9	0.0	8.8	0.9
Department of Transportation.....	736.8	228.2	238.3	2.5	49.9	8.0	28.9	0.2	179.5	1.3
Environmental Protection Agency.....	572.2	271.2	68.0	0.0	175.2	0.0	43.6	0.0	11.8	2.3
National Aeronautics and Space Administration.....	8,114.0	2,028.5	2,966.0	0.1	1,096.2	1,397.4	569.8	14.3	12.8	28.9
National Science Foundation.....	3,844.2	35.3	137.2	0.0	3,174.9	214.9	254.6	1.4	11.5	14.5
All other agencies.....	1,497.8	772.7	111.8	19.5	280.0	6.3	266.4	20.0	18.9	2.4
<b>Basic research</b>										
All agencies.....	26,860.3	5,106.5	1,674.8	342.2	13,924.5	1,985.0	2,920.6	655.1	93.1	158.5
Department of Agriculture.....	917.9	646.9	0.3	0.0	262.6	0.0	5.7	0.0	1.0	1.4
Department of Commerce.....	109.7	102.9	1.7	0.0	4.6	0.0	0.4	0.0	0.0	0.0
Department of Defense.....	1,580.1	795.1	122.4	6.8	548.2	13.3	55.0	23.9	1.8	13.7
Department of Energy.....	2,678.1	41.9	144.0	63.8	575.1	1,219.2	23.2	609.9	0.0	1.0
Department of Health and Human Services.....	15,194.8	2,559.5	846.3	271.6	8,845.0	48.8	2,423.1	15.0	65.6	119.9
Department of the Interior.....	37.2	34.0	0.0	0.0	1.9	0.0	0.0	0.0	1.3	0.0
Department of Transportation.....	39.8	6.4	30.6	0.0	0.1	0.0	1.0	0.0	1.7	0.0
Environmental Protection Agency.....	66.2	31.4	7.9	0.0	20.3	0.0	5.0	0.0	1.4	0.3
National Aeronautics and Space Administration.....	2,297.0	574.2	447.5	0.0	610.0	488.9	152.1	5.1	8.8	10.2
National Science Foundation.....	3,623.4	35.2	68.1	0.0	3,034.4	214.9	246.1	1.2	11.5	12.0
All other agencies.....	316.1	279.0	6.0	0.0	22.3	0.0	9.0	0.0	0.0	0.0
<b>Applied research</b>										
All agencies.....	27,838.8	8,176.9	5,012.2	890.6	9,070.0	1,533.3	2,599.4	190.7	234.3	131.4
Department of Agriculture.....	882.3	530.6	17.4	0.0	324.4	0.0	6.8	0.0	2.0	1.1

**Estimated federal obligations for R&D and R&D plant, by selected agency, performer, and character of work: FY 2005**

(Millions of current dollars)

Agency	Total	Federal intramural	Industrial firms	FFRDCs administered by industry	U&C	FFRDCs administered by U&C	Other nonprofits	FFRDCs administered by nonprofits	State and local government	Foreign
Department of Commerce .....	808.1	643.5	6.7	0.0	143.7	0.6	8.4	0.0	5.1	0.2
Department of Defense .....	4,144.3	1,389.6	2,012.1	18.2	497.9	32.0	127.4	43.1	0.9	23.0
Department of Energy .....	3,115.6	558.8	268.9	637.5	128.0	1,384.4	27.0	111.0	0.0	0.0
Department of Health and Human Services .....	13,574.8	3,225.6	809.2	212.9	7,136.4	38.2	1,950.4	11.7	94.5	96.1
Department of the Interior .....	458.3	410.0	9.1	0.0	30.9	0.0	0.5	0.0	7.0	0.8
Department of Transportation .....	454.7	174.5	103.5	2.5	40.8	8.0	19.3	0.2	105.2	0.8
Environmental Protection Agency .....	365.1	173.0	43.4	0.0	111.8	0.0	27.9	0.0	7.5	1.4
National Aeronautics and Space Administration .....	2,919.8	730.0	1,584.6	0.1	326.9	63.7	204.6	4.5	2.7	3.0
National Science Foundation .....	220.8	0.1	69.1	0.0	140.5	0.0	8.5	0.2	0.0	2.5
All other agencies .....	895.0	341.2	88.2	19.4	188.7	6.3	218.6	20.0	9.4	2.5
<b>Development</b>										
All agencies .....	51,788.7	11,529.6	36,251.0	406.5	905.8	1,437.1	451.5	618.1	91.9	97.2
Department of Agriculture .....	169.1	156.2	0.0	0.0	12.0	0.0	0.5	0.0	0.0	0.3
Department of Commerce .....	61.5	54.1	3.9	0.0	2.9	0.0	0.0	0.0	0.5	0.0
Department of Defense .....	45,677.7	10,015.0	34,064.4	116.2	529.4	273.0	113.0	482.7	3.9	80.1
Department of Energy .....	2,164.1	243.3	1,109.0	290.2	48.0	314.6	27.8	130.7	0.5	0.0
Department of Health and Human Services .....	96.0	25.0	0.0	0.0	27.3	4.7	38.6	0.0	0.2	0.0
Department of the Interior .....	53.2	45.1	1.3	0.0	5.8	0.0	0.4	0.0	0.5	0.1
Department of Transportation .....	242.3	47.3	104.2	0.0	9.0	0.0	8.6	0.0	72.6	0.5
Environmental Protection Agency .....	140.9	66.8	16.7	0.0	43.1	0.0	10.7	0.0	2.9	0.6
National Aeronautics and Space Administration .....	2,897.2	724.3	933.9	0.0	159.3	844.8	213.1	4.7	1.3	15.7
National Science Foundation .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All other agencies .....	286.7	152.5	17.6	0.1	69.0	0.0	38.8	0.0	9.5	-0.1
<b>R&amp;D plant</b>										
All agencies .....	3,706.4	476.2	1,895.8	83.7	395.8	541.9	60.3	228.3	0.9	23.4
Department of Agriculture .....	151.4	151.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Department of Commerce .....	69.9	69.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Department of Defense .....	348.1	100.1	247.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Department of Energy .....	823.2	1.1	35.5	83.7	7.0	469.6	2.1	224.2	0.0	0.0
Department of Health and Human Services .....	257.9	98.7	0.0	0.0	152.7	0.0	6.6	0.0	0.0	0.0
Department of the Interior .....	2.9	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Department of Transportation .....	19.4	0.0	19.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Environmental Protection Agency .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
National Aeronautics and Space Administration .....	1,648.0	37.3	1,544.4	0.0	30.0	5.0	7.9	0.0	0.0	23.4
National Science Foundation .....	381.5	13.8	45.7	0.0	206.1	67.3	43.7	4.1	0.9	0.0
All other agencies .....	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

FFRDC = federally funded research and development center; U&amp;C = universities and colleges

SOURCE: National Science Foundation, Division of Science Resources Statistics, *Federal Funds for Research and Development: Fiscal Years 2003, 2004, and 2005* (forthcoming).

Appendix table 4-31

**Estimated federal obligations for research, by agency and S&E field: FY 2005**

(Thousands of current dollars)

Agency	Total	Environmental sciences	Life sciences	Mathematics and computer sciences	Physical sciences	Psychology	Social sciences	Engineering	Other sciences NEC
All agencies .....	54,699,080	3,915,912	29,790,614	2,841,402	5,373,401	1,158,067	1,081,408	9,147,058	1,391,218
Agency for International Development.....	245,076	4,269	167,040	0	0	0	73,064	0	703
Appalachian Regional Commission .....	703	0	0	0	0	0	703	0	0
Department of Agriculture.....	1,800,196	15,032	1,443,372	18,752	94,414	518	150,590	73,502	4,016
Department of Commerce.....	917,836	429,506	90,733	56,174	149,677	91	10,146	170,213	11,296
Department of Defense.....	5,724,380	312,231	694,712	833,607	467,438	87,832	45,689	3,028,853	254,018
Department of Education.....	202,374	0	19,242	0	0	5,174	164,215	13,743	0
Department of Energy.....	5,793,688	297,847	288,572	941,237	2,259,980	0	0	1,999,519	6,533
Department of Health and Human Services.....	28,769,611	488,376	25,497,894	72,351	521,639	990,341	318,211	284,460	596,339
Department of Housing and Urban Development.....	15,905	584	0	139	0	0	12,259	2,104	819
Department of Justice .....	34,800	0	0	600	0	500	29,700	0	4,000
Department of Labor.....	34,027	0	0	0	0	0	34,027	0	0
Department of State .....	2,205	0	0	0	0	0	2,205	0	0
Department of the Interior.....	495,463	313,178	165,129	6,185	0	0	3,151	7,518	302
Department of the Treasury .....	67,612	0	0	0	5,450	1,110	0	0	61,052
Department of Transportation .....	494,538	23,159	12,780	12,004	1,903	17,761	13,000	397,412	16,519
Department of Veterans Affairs .....	343,723	0	307,942	0	0	26,054	0	9,727	0
Environmental Protection Agency.....	431,300	172,023	148,401	13,221	16,465	0	2,576	62,773	15,841
Federal Communications Commission .....	3,360	0	0	80	810	0	1,257	1,213	0
Federal Trade Commission.....	1,603	0	0	0	0	0	1,603	0	0
Library of Congress .....	230	0	0	0	230	0	0	0	0
National Aeronautics and Space Administration .....	5,216,797	1,163,551	334,465	94,370	1,064,256	24,691	429	2,363,684	171,351
National Archives and Records Administration.....	120	0	0	0	120	0	0	0	0
National Science Foundation.....	3,844,158	691,339	578,470	792,682	740,652	3,995	132,738	656,962	247,320
Nuclear Regulatory Commission .....	75,375	0	0	0	0	0	0	75,375	0
Smithsonian Institution .....	114,000	4,817	41,862	0	50,367	0	15,845	0	1,109
Social Security Administration.....	70,000	0	0	0	0	0	70,000	0	0

NEC = not elsewhere classified

SOURCE: National Science Foundation, Division of Science Resources Statistics, *Federal Funds for Research and Development: Fiscal Years 2003, 2004, and 2005* (forthcoming).

Science and Engineering Indicators 2006

**Federal obligations for total research, by detailed S&E field: FY 1984–2005**

(Millions of 2000 dollars)

Field	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
All fields.....	22,217.9	23,177.9	23,168.7	24,547.2	24,739.8	26,515.7	26,621.0	28,441.7	28,349.1	30,447.7	30,378.3	30,850.2
Engineering.....	5,375.6	5,197.2	5,249.3	5,344.8	5,248.3	5,672.3	5,203.7	5,867.3	5,761.1	6,226.9	6,072.5	6,193.4
Aeronautical.....	1,276.2	1,060.2	1,088.9	1,108.8	1,063.6	1,260.1	1,141.4	1,205.9	1,012.4	1,350.8	1,355.1	1,354.4
Astronautical.....	588.6	610.1	739.8	854.6	763.3	865.0	715.1	775.0	729.7	559.3	553.1	592.9
Chemical.....	214.3	365.3	345.1	295.3	342.4	181.6	297.8	361.1	344.4	278.0	264.0	267.0
Civil.....	300.8	311.2	284.9	279.7	285.1	293.4	391.1	361.9	382.2	285.3	308.0	368.2
Electrical.....	934.5	900.5	946.8	1,075.9	969.8	1,076.6	788.0	866.1	878.6	998.1	822.1	820.6
Mechanical.....	282.6	383.6	332.0	319.5	319.4	328.7	330.3	398.1	390.3	528.7	419.0	447.5
Metallurgy and materials.....	506.0	631.0	624.8	495.3	605.8	665.3	682.7	843.3	841.8	787.7	943.6	884.6
Engineering, NEC.....	1,272.7	935.3	886.9	915.8	899.1	1,001.7	857.3	1,055.9	1,181.6	1,439.0	1,407.7	1,458.2
Environmental sciences.....	1,892.5	2,016.6	2,080.3	2,068.3	2,131.7	2,264.2	2,676.7	2,551.0	2,555.4	2,953.6	3,145.4	3,096.9
Atmospheric sciences.....	643.9	698.2	731.9	756.5	779.7	750.8	952.2	952.5	888.2	1,114.3	1,213.5	1,232.1
Geological sciences.....	532.5	616.3	623.2	604.4	585.8	693.1	813.9	864.7	851.6	903.5	928.7	920.4
Oceanography.....	539.2	572.5	603.3	584.8	610.7	628.1	640.3	473.0	531.2	529.2	550.6	441.9
Environmental sciences, NEC.....	177.0	129.6	121.9	122.5	155.3	192.2	270.2	260.8	284.5	406.7	452.7	502.7
Life sciences.....	8,359.7	9,140.6	9,075.7	10,044.9	10,246.7	10,847.5	10,871.1	11,417.8	11,471.9	12,197.1	12,505.8	12,814.5
Biological and agricultural.....	4,931.9	5,395.0	5,421.2	5,963.5	6,066.7	6,410.1	6,375.5	6,642.7	6,521.2	6,860.9	6,763.6	6,946.5
Agricultural sciences.....	759.4	875.3	847.7	775.7	783.6	854.3	851.2	807.3	795.8	807.2	805.9	727.3
Biological sciences (excluding environmental).....	3,801.8	4,145.7	4,202.7	4,791.6	4,883.9	5,086.2	5,102.7	5,289.8	5,133.9	5,423.5	5,259.5	5,343.9
Environmental biology.....	370.8	374.0	370.8	396.2	399.3	469.6	421.4	545.5	591.5	630.1	698.1	875.5
Medical sciences.....	3,133.9	3,402.7	3,313.9	3,646.1	3,901.3	4,114.8	4,164.3	4,106.1	4,525.9	4,987.0	5,388.4	5,394.6
Life sciences, NEC.....	293.8	342.9	340.6	435.4	278.7	322.5	331.3	669.0	424.8	349.1	353.9	473.4
Mathematics and computer sciences.....	653.1	825.9	864.0	876.5	852.8	939.0	1,035.1	1,072.4	1,343.1	1,387.5	1,442.5	1,713.3
Computer sciences.....	318.2	402.7	424.6	407.5	388.3	465.6	692.1	694.1	893.4	935.4	920.1	1,100.0
Mathematics.....	224.0	263.8	259.0	279.8	289.1	301.5	297.1	270.1	368.9	329.3	379.4	280.6
Mathematics and computer sciences, NEC.....	111.0	159.5	180.4	189.2	175.5	172.1	45.9	108.1	80.9	122.9	143.1	332.7
Physical sciences.....	4,403.9	4,376.0	4,308.9	4,450.4	4,400.5	4,731.2	4,689.2	5,025.7	5,138.6	5,012.6	4,713.9	4,641.8
Astronomy.....	567.1	595.8	657.3	714.5	624.5	692.0	735.3	749.6	855.5	777.1	828.5	829.5
Chemistry.....	899.5	934.4	930.0	930.8	932.7	999.3	937.8	983.0	1,037.4	954.7	969.1	936.9
Physics.....	2,723.9	2,608.9	2,535.4	2,536.2	2,620.3	2,797.5	2,776.2	2,920.2	2,984.4	2,987.4	2,707.6	2,659.5
Physical sciences, NEC.....	213.4	236.8	186.2	269.0	223.0	242.5	240.1	373.0	261.3	293.5	208.7	216.1
Psychology.....	395.6	469.9	468.9	505.6	517.1	538.5	552.3	572.4	345.1	623.5	607.8	675.5
Biological aspects.....	119.9	131.0	126.5	134.5	139.7	155.5	160.8	166.4	40.1	42.1	53.3	63.8
Social aspects.....	159.9	205.3	201.5	211.4	198.2	191.4	218.5	234.4	116.8	152.5	129.4	169.6
Psychological sciences, NEC.....	115.8	133.8	141.0	159.7	179.3	191.4	173.0	171.8	188.2	428.8	424.9	442.1
Social sciences.....	647.2	660.9	583.4	656.8	644.4	703.6	775.6	863.0	798.4	764.2	717.5	736.4
Anthropology.....	27.6	25.9	19.1	20.8	19.0	17.8	17.7	19.0	16.3	15.5	18.0	23.5
Economics.....	218.5	229.4	184.3	203.2	211.6	213.0	242.8	222.4	244.9	231.8	214.2	224.1
Political science.....	16.0	21.0	16.3	15.5	16.2	17.2	16.1	20.2	26.2	33.1	28.2	24.2
Sociology.....	104.1	95.5	94.1	101.3	108.5	120.2	143.1	218.3	93.4	86.8	75.5	51.9
Social sciences, NEC.....	281.1	289.2	269.6	316.1	289.2	335.6	355.9	383.2	417.6	396.9	381.7	412.6
Other sciences, NEC.....	490.2	490.8	538.1	599.7	698.4	819.3	817.1	1,072.0	935.6	1,282.3	1,173.0	978.4
All fields.....	30,097.8	30,737.7	31,963.9	34,209.9	38,470.6	43,706.8	46,041.8	48,122.0	50,336.7	49,549.0	4.2	3.9
Engineering.....	6,050.4	5,956.2	6,094.0	6,390.9	6,346.4	8,012.4	7,936.2	7,919.5	8,360.3	8,285.9	2.1	2.1

**Federal obligations for total research, by detailed S&E field: FY 1984–2005**

(Millions of constant 2000 dollars)

Field	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Average growth rate (%)	
									(preliminary)	(preliminary)	1984–2003	1984–2005
All fields.....	30,097.8	30,737.7	31,963.9	34,209.9	38,470.6	43,706.8	46,041.8	48,122.0	50,336.7	49,549.0	4.2	3.9
Engineering .....	6,050.4	5,956.2	6,094.0	6,390.9	6,346.4	8,012.4	7,936.2	7,919.5	8,360.3	8,285.9	2.1	2.1
Aeronautical .....	1,330.7	1,415.9	1,650.2	1,642.5	1,463.9	2,375.4	2,068.8	1,632.1	NA	NA	1.3	NA
Astronautical .....	560.9	624.2	652.4	633.2	515.0	735.8	729.7	661.9	NA	NA	0.6	NA
Chemical .....	229.1	246.0	196.5	207.3	196.5	194.5	193.3	309.0	NA	NA	1.9	NA
Civil .....	319.7	288.5	252.3	335.2	239.2	281.9	290.3	320.0	NA	NA	0.3	NA
Electrical .....	713.3	651.3	660.8	712.9	744.8	869.7	775.6	895.1	NA	NA	-0.2	NA
Mechanical.....	313.1	266.5	258.0	245.3	289.3	312.0	255.0	281.2	NA	NA	-0.0	NA
Metallurgy and materials.....	1,053.3	900.9	815.7	804.0	918.1	1,056.5	959.5	1,021.1	NA	NA	3.8	NA
Engineering, NEC.....	1,530.5	1,563.0	1,608.0	1,810.4	1,979.6	2,186.6	2,663.9	2,799.2	NA	NA	4.2	NA
Environmental sciences.....	3,216.1	3,188.0	3,165.1	3,158.3	3,328.8	3,178.5	3,278.4	3,524.8	3,658.3	3,547.2	3.3	3.0
Atmospheric sciences.....	1,156.3	1,218.7	1,214.0	1,200.4	1,104.3	1,088.5	1,115.9	1,186.6	NA	NA	3.3	NA
Geological sciences.....	835.3	724.1	623.6	673.6	639.2	658.6	647.3	683.1	NA	NA	1.3	NA
Oceanography .....	611.7	625.6	578.7	670.0	673.0	665.8	752.5	797.2	NA	NA	2.1	NA
Environmental sciences, NEC.....	612.8	619.5	748.8	614.3	912.2	765.7	762.7	857.7	NA	NA	8.7	NA
Life sciences .....	12,849.0	13,253.0	14,014.3	15,736.4	17,964.7	22,538.1	24,434.0	26,167.6	27,498.4	26,985.7	6.2	5.7
Biological and agricultural .....	7,061.1	6,849.8	7,312.1	8,211.5	12,375.0	13,798.5	15,656.9	19,228.3	NA	NA	7.4	NA
Agricultural sciences .....	656.1	671.3	788.5	866.7	895.0	985.0	1,004.7	985.6	NA	NA	1.4	NA
Biological sciences (excluding environmental) .....	5,655.3	5,568.8	5,898.8	6,609.4	10,740.0	12,101.2	13,905.1	17,566.4	NA	NA	8.4	NA
Environmental biology .....	749.8	609.7	624.9	735.3	740.0	712.4	747.0	676.4	NA	NA	3.2	NA
Medical sciences.....	5,296.9	5,791.3	6,198.3	6,939.6	4,463.8	6,436.9	6,164.3	5,804.4	NA	NA	3.3	NA
Life sciences, NEC.....	491.1	611.9	503.8	585.3	1,125.9	2,302.7	2,612.9	1,135.0	NA	NA	7.4	NA
Mathematics and computer sciences.....	1,673.8	1,749.9	1,898.7	2,020.9	2,205.6	2,551.8	2,523.0	2,518.1	2,593.8	2,573.9	7.4	6.7
Computer sciences.....	1,192.6	1,323.8	1,445.8	1,547.0	1,659.6	1,977.3	1,959.6	1,934.2	NA	NA	10.0	NA
Mathematics .....	271.1	315.7	345.4	352.3	432.9	387.5	385.5	426.7	NA	NA	3.5	NA
Mathematics and computer sciences, NEC.....	210.1	110.4	107.5	121.6	113.1	187.1	177.9	157.1	NA	NA	1.8	NA
Physical sciences .....	4,178.2	4,343.1	4,351.5	4,149.0	4,788.0	4,497.2	4,779.2	4,731.5	4,977.5	4,867.5	0.4	0.5
Astronomy.....	776.4	810.9	756.9	773.3	880.3	742.1	720.7	821.4	NA	NA	2.0	NA
Chemistry.....	938.4	885.3	846.6	831.5	1,225.6	1,001.8	1,133.3	1,072.2	NA	NA	0.9	NA
Physics.....	2,120.8	2,164.2	2,203.6	2,267.1	2,405.4	2,406.3	2,514.1	2,355.8	NA	NA	-0.8	NA
Physical sciences, NEC.....	342.5	482.5	544.4	276.9	276.7	346.9	411.1	482.1	NA	NA	4.4	NA
Psychology .....	559.1	570.9	610.9	645.5	1,626.7	725.2	868.8	1,041.5	1,063.9	1,049.1	5.2	4.8
Biological aspects.....	66.9	60.5	43.0	18.4	8.2	13.3	10.2	21.9	NA	NA	-8.6	NA
Social aspects .....	88.8	101.2	100.8	68.0	56.0	58.5	50.4	47.7	NA	NA	-6.2	NA
Psychological sciences, NEC.....	403.4	409.2	467.1	559.1	1,562.5	653.4	808.3	972.0	NA	NA	11.8	NA
Social sciences.....	697.2	728.8	833.3	872.3	1,050.4	985.9	942.8	966.5	986.6	979.6	2.1	2.0
Anthropology.....	19.5	22.0	18.8	18.7	15.9	15.2	15.7	13.7	NA	NA	-3.6	NA
Economics.....	206.8	214.8	238.3	221.0	249.5	228.8	218.0	221.0	NA	NA	0.1	NA
Political science.....	17.8	14.8	20.9	20.6	22.6	19.1	17.6	17.4	NA	NA	0.4	NA
Sociology .....	43.9	27.1	104.2	85.5	90.6	93.4	92.2	117.5	NA	NA	0.6	NA
Social sciences, NEC.....	409.2	450.3	451.1	526.5	671.8	629.5	599.1	597.0	NA	NA	4.1	NA
Other sciences, NEC.....	874.1	947.6	996.2	1,236.8	1,160.2	1,217.7	1,279.4	1,252.5	1,197.9	1,260.2	5.1	4.6

NA = not available

NEC = not elsewhere classified

NOTE: Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, *Federal Funds for Research and Development: Fiscal Years 2003, 2004, and 2005* (forthcoming).



Appendix table 4-33

**Federal research and experimentation tax credit claims and number of corporate tax returns claiming the credit, by NAICS industry: 1998–2001**

Industry	NAICS code	Tax credit claims (current \$ millions)				Tax returns			
		1998	1999	2000	2001	1998	1999	2000	2001
All industries.....	11, 21–23, 31–33, 42, 44–81	5,208	5,281	7,079	6,356	9,849	10,019	10,495	10,388
Manufacturing .....	31–33	3,395	3,891	4,855	4,209	4,990	4,721	4,826	4,765
Food.....	311	27	28	37	34	105	99	122	132
Beverage and tobacco products.....	312	16	9	8	12	10	8	7	10
Textiles, apparel, and leather .....	313–16	7	9	8	8	41	41	36	31
Wood products .....	321	1	2	2	2	34	29	26	31
Paper, printing, and support activities .....	322, 323	48	35	35	60	127	101	110	78
Petroleum and coal products .....	324	20	10	NA	35	26	27	NA	30
Chemicals .....	325	861	961	1,070	999	711	580	564	650
Pharmaceuticals and medicines .....	3254	628	713	801	806	381	250	247	297
Plastics and rubber products .....	326	21	26	25	19	163	113	108	118
Nonmetallic mineral products .....	327	11	11	8	10	42	36	36	27
Primary metals .....	331	7	7	6	6	31	36	55	43
Fabricated metal products .....	332	24	25	23	24	368	310	271	260
Machinery .....	333	179	130	149	154	446	417	450	425
Computer and electronic products .....	334	1,145	1,566	2,210	1,677	1,623	1,626	1,617	1,604
Computers and peripheral equipment.....	3341	346	587	691	488	279	252	245	346
Communications equipment.....	3342	362	433	651	433	424	377	285	344
Semiconductor and other electronic components .....	3344	338	427	740	567	555	539	596	552
Navigational, measuring, electromedical, and control instruments .....	3345	68	82	72	139	291	304	331	209
Electrical equipment, appliances, and components .....	335	119	136	178	181	418	401	397	411
Transportation equipment.....	336	748	778	903	786	162	125	195	186
Motor vehicles, trailers, and parts.....	3361–63	613	664	762	639	80	72	84	83
Aerospace products and parts .....	3364	108	96	123	131	43	34	47	53
Furniture and related products.....	337	7	6	8	9	43	38	57	32
Miscellaneous manufacturing .....	339	154	154	162	193	639	734	751	699
Medical equipment and supplies .....	3391	131	133	138	155	382	488	433	431
Nonmanufacturing.....	11, 21–23, 42, 44–81	1,813	1,390	2,224	2,147	4,859	5,298	5,669	5,623
Agriculture, forestry, fishing, and hunting.....	11	12	11	4	3	55	36	39	35
Mining, extraction, and support activities .....	21	9	4	15	10	15	12	15	44
Utilities .....	22	22	18	10	9	44	34	29	23
Construction .....	23	2	7	13	9	31	33	11	15
Trade.....	42, 44, 45	140	124	187	186	392	751	608	693
Transportation and warehousing.....	48, 49	14	14	21	16	18	17	21	19
Information.....	51	1,020	634	1,147	1,001	953	1,466	1,506	1,502
Publishing .....	511	699	277	707	623	635	858	913	975
Software .....	5112	686	264	686	603	612	840	890	952
Broadcasting and telecommunications .....	513	198	188	211	185	111	206	182	179
Finance, insurance, and real estate.....	52, 53	94	111	141	126	109	98	109	124
Professional, scientific, and technical services.....	54	420	418	612	650	2,383	2,645	2,959	2,887
Architectural, engineering, and related services.....	5413	15	34	43	44	142	211	163	136
Computer systems design and related services .....	5415	230	171	262	231	741	1,193	1,329	1,204
Scientific R&D services .....	5417	150	174	254	308	1,298	929	1,122	1,190
Management of companies and enterprises .....	55	43	13	37	82	55	39	66	52
Health care services .....	621–23	NA	4	1	1	NA	7	5	5

NA = not available

NAICS = North American Industry Classification System

NOTE: Data exclude IRS forms 1120S (S corporations), 1120-REIT (Real Estate Investment Trusts), and 1120-RIC (Regulated Investment Companies).

SOURCE: U.S. Internal Revenue Service, Statistics of Income program, special tabulations.

Appendix table 4-34

**Company-funded R&D expenditures within company and contracted out to other companies in United States: 1993–2003**

(Millions of dollars)

Sector	Within companies		Contracted out		Contracted out/ within company (%)
	Current	Constant	Current	Constant	
<b>All industries</b>					
1993 .....	94,591	107,028	3,462	3,917	3.7
1994 .....	97,131	107,614	3,618	4,009	3.7
1995 .....	108,652	117,964	5,177	5,621	4.8
1996 .....	121,015	128,941	5,833	6,215	4.8
1997 .....	133,611	140,034	6,000	6,288	4.5
1998 .....	145,016	150,320	6,710	6,955	4.6
1999 .....	161,594	165,114	9,240	9,441	5.7
2000 .....	182,844	182,844	NA	NA	NA
2001 .....	185,118	180,781	8,723	8,519	4.7
2002 .....	177,467	170,492	7,846	7,538	4.4
2003 .....	183,305	172,932	10,236	9,657	5.6
<b>Manufacturing</b>					
1993 .....	69,901	79,091	2,339	2,647	3.3
1994 .....	73,375	81,294	2,450	2,714	3.3
1995 .....	81,236	88,198	3,812	4,139	4.7
1996 .....	91,845	97,861	4,293	4,574	4.7
1997 .....	101,202	106,067	4,143	4,342	4.1
1998 .....	102,211	105,949	4,641	4,811	4.5
1999 .....	101,283	103,489	4,080	4,169	4.0
2000 .....	113,173	113,173	4,794	4,794	4.2
2001 .....	112,733	110,092	3,957	3,864	3.5
2002 .....	101,344	97,361	4,428	4,254	4.4
2003 .....	108,079	101,963	5,212	4,917	4.8

NA = not available

NOTES: Data are company and other nonfederal funds for industrial R&D performance in United States within company and contracted to external organizations in United States. Starting with 1999 survey, estimates based on North American Industry Classification System. In prior years, estimates based on Standard Industrial Classification System. Constant dollars based on calendar-year gross domestic product price deflator (2000 = 100).

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Industrial Research and Development (annual series), <http://www.nsf.gov/sbe/srs/indus/start.htm>.

Appendix table 4-35

**R&D expenditures contracted out in United States, by selected NAICS industry: 1999–2003**

(Millions of dollars)

Industry	NAICS code	1999	2000	2001	2002	2003
All industries.....	21–23, 31–33, 42, 44–81	9,240	NA	8,723	7,846	10,236
Manufacturing .....	31-33	4,080	4,794	3,957	4,428	5,212
Chemicals .....	325	2,386	2,783	2,065	2,485	2,838
Pharmaceuticals and medicines .....	3254	2,274	2,658	1,899	2,368	2,716
Computer and electronic products .....	334	101	168	565	411	409
Computers and peripheral equipment.....	3341	24	44	118	83	76
Communications equipment.....	3342	D	D	80	19	72
Semiconductor and other electronic components ....	3344	33	D	86	41	123
Navigational, measuring, electromedical, and control instruments .....	3345	12	31	278	264	130
Electrical equipment, appliances, and components .....	335	D	84	60 (S)	35	39
Transportation equipment.....	336	812	771	708	799	1,135
Motor vehicles, trailers, and parts.....	3361-63	D	D	657	617	946
Aerospace products and parts.....	3364	80	D	D	178	182
Selected nonmanufacturing industries						
Information.....	51	504	597	577	363	813
Publishing .....	511	D	161	187	113	410
Software .....	5112	181	157	177	102	395
Professional, scientific, and technical services.....	54	957	1,200	1,676	1,113	1,828
Computer systems design and related services .....	5415	51	119	233	86	153
Scientific R&D services .....	5417	832	907	1,310	890	1,533

NA = not available; D = data withheld to avoid disclosing operations of individual companies; S = imputation of &gt;50%

NAICS = North American Industry Classification System

NOTE: Data are company and other nonfederal funds for industrial R&amp;D performance contracted to external organizations in United States.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Industrial Research and Development (annual series), <http://www.nsf.gov/sbe/srs/indus/start.htm>.

Appendix table 4-36

**Industrial technology alliances registered under National Cooperative Research and Production Act, by selected NAICS code: 1994–2003**

NAICS code	Industry	1994–2003	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
na	All .....	524	63	115	97	45	31	50	45	26	30	22
311	Food manufacturing.....	1	0	0	0	0	0	0	0	0	1	0
324	Petroleum and coal products .....	43	6	15	10	0	3	3	0	3	3	0
325	Chemical .....	56	3	9	7	4	4	8	7	8	4	2
332	Fabricated metal products .....	20	2	2	6	1	2	1	0	4	1	1
333	Machinery .....	10	0	3	0	0	0	2	1	1	2	1
334	Computer and electronic products .....	55	3	11	10	1	7	0	4	0	11	8
335	Electrical equipment, appliances, and components .....	101	15	31	11	6	2	20	9	1	3	3
336	Transportation equipment .....	85	11	15	22	11	9	7	7	0	1	2
339	Miscellaneous manufacturing .....	1	0	0	0	0	0	0	0	0	1	0
513	Broadcasting and telecommunications .....	43	8	11	9	1	2	3	6	1	1	1
541	Professional, scientific, and technical services .....	31	1	7	2	5	0	1	4	6	2	3
na	Other .....	78	14	11	20	16	2	5	7	2	0	1

na = not applicable

NAICS = North American Industry Classification Code

NOTE: Data are annual counts of new alliances.

SOURCE: University of North Carolina–Greensboro, Cooperative Research (CORE) database, special tabulations.

*Science and Engineering Indicators 2006*

## Industrial technology alliances classified by country of ultimate parent company, by technology and type (equity/nonequity): 1980–2003

Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Worldwide .....	185	189	249	246	330	415	466	467	516	525	394	339	481	527	564	674	615	559	545	504	483	607	527	695
Equity .....	81	102	108	117	113	160	151	155	194	274	107	74	102	134	77	81	86	69	57	70	50	57	46	50
Nonequity .....	104	87	141	129	217	255	315	312	322	251	287	265	379	393	487	593	529	490	488	434	433	550	481	645
Information technologies .....	47	53	85	98	145	153	173	171	192	186	197	184	223	214	240	306	270	223	256	218	169	168	141	220
Equity .....	19	27	39	42	47	46	57	51	48	68	28	33	28	33	17	18	30	18	19	23	16	22	19	25
Nonequity .....	28	26	46	56	98	107	116	120	144	118	169	151	195	181	223	288	240	205	237	195	153	146	122	195
Biotechnology .....	31	38	53	42	65	111	103	110	98	66	45	36	98	124	161	164	177	182	147	190	200	355	332	368
Equity .....	4	11	9	12	12	34	14	24	16	17	20	8	18	25	22	13	18	18	10	16	12	13	10	8
Nonequity .....	27	27	44	30	53	77	89	86	82	49	25	28	80	99	139	151	159	164	137	174	188	342	322	360
New materials .....	8	23	24	32	28	50	87	62	61	46	35	21	35	59	33	43	37	29	36	23	22	23	21	22
Equity .....	6	17	19	17	15	19	37	17	30	25	19	8	16	28	3	11	8	5	3	7	2	7	5	1
Nonequity .....	2	6	5	15	13	31	50	45	31	21	16	13	19	31	30	32	29	24	33	16	20	16	16	21
Aerospace/defense .....	23	6	11	9	30	14	27	25	26	42	55	41	53	34	38	51	46	42	38	12	13	26	16	23
Equity .....	1	0	4	2	4	1	3	1	4	14	16	8	14	6	13	17	9	9	9	2	1	4	2	1
Nonequity .....	22	6	7	7	26	13	24	24	22	28	39	33	39	28	25	34	37	33	29	10	12	22	14	22
Automotive .....	15	7	9	8	8	20	22	22	45	49	12	3	4	15	25	25	37	43	32	39	50	22	22	43
Equity .....	6	1	5	5	2	10	11	14	32	38	6	1	0	2	4	4	12	11	14	14	10	12	10	9
Nonequity .....	9	6	4	3	6	10	11	8	13	11	6	2	4	13	21	21	25	32	18	25	40	10	12	34
Chemistry .....	34	25	24	27	25	35	18	33	48	64	44	35	38	63	46	60	29	59	73	35	40	24	10	25
Equity .....	31	21	14	23	20	31	14	30	38	55	22	13	21	28	17	15	10	11	7	8	7	3	2	3
Nonequity .....	3	4	10	4	5	4	4	3	10	9	22	22	17	35	29	45	19	48	66	27	33	21	8	22
U.S. owned worldwide																								
Total .....	118	120	177	160	226	224	268	302	351	329	282	271	367	413	449	526	488	448	444	413	385	447	340	491
Equity .....	52	70	78	85	77	86	93	91	121	137	57	56	63	79	45	33	51	45	33	42	38	26	20	20
Nonequity .....	66	50	99	75	149	138	175	211	230	192	225	215	304	334	404	493	437	403	411	371	347	421	320	471
Information technologies .....	29	34	62	68	97	86	100	128	140	130	156	152	181	184	214	269	229	183	222	183	133	117	92	149
Equity .....	13	17	30	34	29	26	32	34	27	37	17	26	17	21	11	8	19	15	14	11	10	5	10	8
Nonequity .....	16	17	32	34	68	60	68	94	113	93	139	126	164	163	203	261	210	168	208	172	123	112	82	141
Biotechnology .....	24	27	45	27	51	64	75	78	64	46	28	33	77	108	125	127	141	162	120	165	165	274	219	274
Equity .....	2	9	7	7	8	17	9	16	12	7	8	7	13	18	16	6	10	13	5	11	10	7	6	4
Nonequity .....	22	18	38	20	43	47	66	62	52	39	20	26	64	90	109	121	131	149	115	154	155	267	213	270
New materials .....	4	14	14	18	14	17	38	30	37	27	27	16	25	40	27	31	27	22	22	17	18	14	16	18
Equity .....	4	12	12	12	11	10	23	9	20	13	13	6	11	15	3	7	4	3	2	4	2	2	3	1
Nonequity .....	0	2	2	6	3	7	15	21	17	14	14	10	14	25	24	24	23	19	20	13	16	12	13	17
Aerospace/defense .....	15	3	8	4	19	7	10	14	18	23	36	25	34	17	16	28	30	21	29	10	9	18	10	14
Equity .....	0	0	3	1	2	0	2	1	2	6	8	5	7	2	4	6	5	1	3	1	0	2	0	0
Nonequity .....	15	3	5	3	17	7	8	13	16	17	28	20	27	15	12	22	25	20	26	9	9	16	10	14
Automotive .....	6	3	4	5	4	11	12	16	35	32	8	2	1	10	17	15	25	29	19	22	37	16	13	25
Equity .....	4	1	3	3	1	7	8	11	27	22	4	1	0	1	3	2	7	8	7	10	6	7	5	4
Nonequity .....	2	2	1	2	3	4	4	5	8	10	4	1	1	9	14	13	18	21	12	12	31	9	8	21
Chemistry .....	21	17	14	15	17	19	9	12	26	37	24	26	24	46	32	42	15	51	55	24	30	17	6	20
Equity .....	20	16	8	14	13	16	7	10	18	29	10	9	13	17	9	5	4	8	5	4	7	1	1	1
Nonequity .....	1	1	6	1	4	3	2	2	8	8	14	17	11	29	23	37	11	43	50	20	23	16	5	19

## Industrial technology alliances classified by country of ultimate parent company, by technology and type (equity/nonequity): 1980–2003

Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Europe owned worldwide																								
Total .....	95	89	126	107	161	227	229	232	249	289	185	153	227	224	255	306	250	236	252	197	232	284	277	287
Equity.....	42	47	58	46	55	80	83	93	107	169	68	39	61	84	51	52	45	40	39	42	26	37	21	23
Nonequity.....	53	42	68	61	106	147	146	139	142	120	117	114	166	140	204	254	205	196	213	155	206	247	256	264
Information technologies .....	18	27	50	31	70	89	95	81	86	90	72	65	84	67	64	89	70	83	87	59	79	68	62	76
Equity.....	8	15	23	11	25	23	33	32	32	40	16	14	15	17	8	11	13	9	11	10	5	13	7	10
Nonequity.....	10	12	27	20	45	66	62	49	54	50	56	51	69	50	56	78	57	74	76	49	74	55	55	66
Biotechnology.....	15	14	15	21	25	61	35	52	51	36	26	18	61	53	95	98	101	76	81	83	91	171	176	177
Equity.....	3	5	4	6	4	20	6	10	7	12	13	5	13	15	14	7	12	12	7	11	5	11	2	3
Nonequity.....	12	9	11	15	21	41	29	42	44	24	13	13	48	38	81	91	89	64	74	72	86	160	174	174
New materials.....	8	13	15	20	15	20	34	22	23	28	21	8	14	37	14	23	13	14	22	8	7	12	9	6
Equity.....	6	9	13	12	7	10	21	11	15	18	11	4	8	22	0	7	3	2	3	2	0	4	2	1
Nonequity.....	2	4	2	8	8	10	13	11	8	10	10	4	6	15	14	16	10	12	19	6	7	8	7	5
Aerospace/defense.....	13	2	7	6	19	10	18	15	15	28	31	26	31	20	29	31	23	28	23	5	5	17	13	11
Equity.....	1	0	2	1	4	1	1	0	3	9	12	6	10	4	12	11	6	6	6	1	0	2	2	1
Nonequity.....	12	2	5	5	15	9	17	15	12	19	19	20	21	16	17	20	17	22	17	4	5	15	11	10
Automotive.....	12	5	6	4	6	10	12	8	16	20	4	0	0	5	13	13	18	19	17	28	28	12	12	18
Equity.....	4	0	2	2	2	3	5	4	10	15	2	0	0	2	2	3	6	6	8	11	7	9	5	6
Nonequity.....	8	5	4	2	4	7	7	4	6	5	2	0	0	3	11	10	12	13	9	17	21	3	7	12
Chemistry.....	16	12	14	13	12	18	12	23	29	36	29	23	21	33	26	43	23	29	47	22	30	10	4	8
Equity.....	13	8	10	11	9	14	9	22	23	32	15	8	11	19	13	11	9	7	7	5	5	1	1	0
Nonequity.....	3	4	4	2	3	4	3	1	6	4	14	15	10	14	13	32	14	22	40	17	25	9	3	8
Japan owned worldwide																								
Total .....	42	61	79	81	91	121	145	121	100	105	67	70	70	80	72	86	90	54	59	72	54	74	84	106
Equity.....	20	37	31	37	31	56	55	46	44	78	27	18	19	17	6	9	14	5	6	16	10	16	14	16
Nonequity.....	22	24	48	44	60	65	90	75	56	27	40	52	51	63	66	77	76	49	53	56	44	58	70	90
Information technologies .....	15	15	29	37	48	31	43	31	31	31	35	46	34	43	40	44	47	28	32	43	31	42	35	50
Equity.....	7	8	8	13	12	16	19	10	7	19	9	11	5	6	4	3	5	3	1	10	6	10	7	10
Nonequity.....	8	7	21	24	36	15	24	21	24	12	26	35	29	37	36	41	42	25	31	33	25	32	28	40
Biotechnology.....	7	11	16	10	11	29	31	25	10	11	6	3	8	15	11	15	20	13	11	18	9	17	41	28
Equity.....	1	1	1	4	2	6	6	8	1	4	3	0	4	4	0	0	2	1	0	2	2	0	3	2
Nonequity.....	6	10	15	6	9	23	25	17	9	7	3	3	4	11	11	15	18	12	11	16	7	17	38	26
New materials.....	0	6	6	11	14	30	45	32	22	12	9	6	8	6	5	10	6	4	10	6	6	6	6	3
Equity.....	0	5	5	6	7	9	17	6	9	7	7	2	4	2	0	2	3	0	1	3	0	3	3	0
Nonequity.....	0	1	1	5	7	21	28	26	13	5	2	4	4	4	5	8	3	4	9	3	6	3	3	3
Aerospace/defense.....	6	1	0	1	1	0	4	1	0	2	3	6	1	0	0	1	2	2	1	1	3	2	0	2
Equity.....	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Nonequity.....	6	1	0	1	1	0	3	1	0	2	3	6	1	0	0	1	2	2	1	1	2	1	0	2
Automotive.....	2	3	3	3	2	10	10	11	18	24	2	2	3	7	6	5	7	2	6	5	9	4	4	9
Equity.....	1	1	3	2	0	5	5	8	13	23	1	1	0	1	1	1	3	0	3	2	2	4	3	1
Nonequity.....	1	2	0	1	2	5	5	3	5	1	1	1	3	6	5	4	4	2	3	3	7	0	1	8
Chemistry.....	8	8	9	12	8	14	5	14	11	15	11	5	9	8	5	6	6	8	4	3	2	5	2	5
Equity.....	8	7	5	9	7	14	5	12	8	15	6	3	5	4	0	3	3	1	0	1	0	2	1	2
Nonequity.....	0	1	4	3	1	0	0	2	3	0	5	2	4	4	5	3	3	7	4	2	2	3	1	3

## Industrial technology alliances classified by country of ultimate parent company, by technology and type (equity/nonequity): 1980–2003

Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total NT owned worldwide																								
Total .....	19	26	24	20	25	40	30	43	77	98	43	14	47	69	58	77	82	70	40	58	72	87	94	153
Equity.....	12	20	12	16	17	33	18	32	51	79	19	5	23	29	19	17	22	12	10	7	6	10	15	24
Nonequity.....	7	6	12	4	8	7	12	11	26	19	24	9	24	40	39	60	60	58	30	51	66	77	79	129
Information technologies .....	1	3	9	7	8	10	11	9	24	30	16	6	15	17	19	35	42	30	20	28	27	33	29	63
Equity.....	0	3	6	6	5	6	6	6	13	23	3	1	7	6	5	4	11	1	2	2	3	4	6	15
Nonequity.....	1	0	3	1	3	4	5	3	11	7	13	5	8	11	14	31	31	29	18	26	24	29	23	48
Biotechnology.....	3	5	4	1	3	6	2	7	9	5	11	1	11	9	12	12	20	14	6	18	22	48	56	52
Equity.....	0	3	0	0	3	6	0	3	3	2	7	1	3	4	4	1	7	2	2	1	2	2	4	3
Nonequity.....	3	2	4	1	0	0	2	4	6	3	4	0	8	5	8	11	13	12	4	17	20	46	52	49
New materials.....	0	5	3	0	1	2	4	5	11	4	4	2	4	8	3	3	6	2	3	2	4	3	1	7
Equity.....	0	4	2	0	0	2	2	4	6	3	2	1	4	5	2	2	2	2	0	0	0	1	0	0
Nonequity.....	0	1	1	0	1	0	2	1	5	1	2	1	0	3	1	1	4	0	3	2	4	2	1	7
Aerospace/defense.....	1	1	1	1	1	3	2	1	2	5	2	5	11	19	12	15	9	12	6	1	2	5	3	5
Equity.....	0	0	0	0	0	0	0	0	0	3	1	0	5	5	4	6	2	3	1	1	0	2	0	0
Nonequity.....	1	1	1	1	1	3	2	1	2	2	1	5	6	14	8	9	7	9	5	0	2	3	3	5
Automotive.....	1	0	1	1	1	3	1	2	10	12	0	0	0	1	3	2	3	7	5	3	9	3	5	16
Equity.....	1	0	1	1	0	3	1	2	9	12	0	0	0	0	0	1	1	1	4	1	0	3	1	4
Nonequity.....	0	0	0	0	1	0	0	0	1	0	0	0	0	1	3	1	2	6	1	2	9	0	4	12
Chemistry.....	10	9	3	4	5	10	1	9	15	19	6	3	7	11	8	7	2	3	3	7	4	0	1	4
Equity.....	10	8	1	4	4	10	1	9	14	18	5	3	5	7	6	5	1	2	1	2	1	0	0	1
Nonequity.....	0	1	2	0	1	0	0	0	1	1	1	0	2	4	2	2	1	1	2	5	3	0	1	3
United States only owned																								
Total .....	43	39	45	59	84	77	108	124	146	118	139	124	175	211	224	259	242	241	230	202	167	211	135	220
Equity.....	16	14	17	25	25	22	18	20	24	21	17	21	21	25	14	16	21	19	11	11	12	8	5	4
Nonequity.....	27	25	28	34	59	55	90	104	122	97	122	103	154	186	210	243	221	222	219	191	155	203	130	216
Information technologies .....	18	16	8	30	34	35	43	58	68	59	86	78	102	104	130	156	134	99	132	96	49	49	31	58
Equity.....	6	6	6	14	10	8	6	7	4	5	5	10	7	8	4	3	8	5	7	4	4	3	1	2
Nonequity.....	12	10	2	16	24	27	37	51	64	54	81	68	95	96	126	153	126	94	125	92	45	46	30	56
Biotechnology.....	6	11	21	11	27	25	38	33	34	20	11	16	27	53	52	51	51	84	56	79	87	135	94	135
Equity.....	0	4	4	2	4	8	2	6	5	3	3	3	2	3	4	5	2	4	2	3	4	2	2	1
Nonequity.....	6	7	17	9	23	17	36	27	29	17	8	13	25	50	48	46	49	80	54	76	83	133	92	134
New materials.....	0	2	4	4	4	4	12	10	12	7	7	7	13	17	11	13	14	12	10	8	8	5	6	8
Equity.....	0	1	2	0	4	2	4	1	4	2	4	3	4	4	1	3	2	3	0	2	2	0	0	0
Nonequity.....	0	1	2	4	0	2	8	9	8	5	3	4	9	13	10	10	12	9	10	6	6	5	6	8
Aerospace/defense.....	4	2	3	1	9	4	5	9	11	9	19	7	13	6	5	10	13	8	10	5	4	4	1	7
Equity.....	0	0	2	1	0	0	1	1	1	3	3	2	1	0	1	2	1	1	2	0	0	0	0	0
Nonequity.....	4	2	1	0	9	4	4	8	10	6	16	5	12	6	4	8	12	7	8	5	4	4	1	7
Automotive.....	1	1	0	1	0	1	3	5	6	6	6	1	1	4	8	6	12	18	9	6	12	8	4	8
Equity.....	1	0	0	0	0	0	2	3	3	1	3	0	0	0	2	0	3	4	2	1	2	1	2	1
Nonequity.....	0	1	0	1	0	1	1	2	3	5	3	1	1	4	6	6	9	14	7	5	10	7	2	7
Chemistry.....	4	1	1	4	6	2	4	3	5	11	9	9	10	21	14	13	3	23	24	9	9	11	5	9
Equity.....	4	1	0	3	5	2	3	2	4	6	3	3	6	4	1	2	0	3	0	1	1	1	1	0
Nonequity.....	0	0	1	1	1	0	1	1	1	5	6	6	4	17	13	11	3	20	24	8	8	10	4	9

## Industrial technology alliances classified by country of ultimate parent company, by technology and type (equity/nonequity): 1980–2003

Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
United States-Europe owned																								
Total .....	38	35	67	44	78	82	100	114	111	115	87	92	125	129	158	178	151	138	165	135	151	151	128	147
Equity.....	16	21	31	20	27	25	43	41	45	51	23	22	26	34	22	9	17	18	19	25	18	14	5	4
Nonequity.....	22	14	36	24	51	57	57	73	66	64	64	70	99	95	136	169	134	120	146	110	133	137	123	143
Information technologies .....	5	12	31	12	31	29	37	46	43	39	38	38	48	45	49	60	39	49	62	40	51	35	35	36
Equity.....	3	7	16	4	11	6	16	18	16	13	6	8	6	8	5	3	5	6	7	4	2	2	4	0
Nonequity.....	2	5	15	8	20	23	21	28	27	26	32	30	42	37	44	57	34	43	55	36	49	33	31	36
Biotechnology.....	9	6	10	9	15	22	23	31	20	16	11	15	40	38	60	64	71	57	55	64	60	96	75	97
Equity.....	1	3	2	2	2	6	4	6	3	2	2	4	8	9	8	0	4	7	3	7	4	5	0	1
Nonequity.....	8	3	8	7	13	16	19	25	17	14	9	11	32	29	52	64	67	50	52	57	56	91	75	96
New materials.....	4	5	6	8	5	6	14	10	9	11	13	4	5	19	10	14	7	7	10	6	5	6	8	4
Equity.....	4	4	6	7	3	3	12	4	7	6	5	2	4	9	0	4	1	0	2	1	0	2	2	1
Nonequity.....	0	1	0	1	2	3	2	6	2	5	8	2	1	10	10	10	6	7	8	5	5	4	6	3
Aerospace/defense.....	6	1	4	3	9	3	4	5	7	9	15	11	14	6	8	10	9	10	14	4	2	10	7	5
Equity.....	0	0	1	0	2	0	0	0	1	1	5	3	4	0	3	1	3	0	0	1	0	1	0	0
Nonequity.....	6	1	3	3	7	3	4	5	6	8	10	8	10	6	5	9	6	10	14	3	2	9	7	5
Automotive.....	3	1	1	2	3	6	5	4	9	8	1	0	0	3	7	6	9	7	7	12	16	6	5	6
Equity.....	2	0	0	1	1	3	3	3	6	4	1	0	0	1	1	1	2	3	3	7	3	4	1	1
Nonequity.....	1	1	1	1	2	3	2	1	3	4	0	0	0	2	6	5	7	4	4	5	13	2	4	5
Chemistry.....	4	5	6	3	6	7	3	3	10	13	10	14	7	18	13	25	10	21	29	12	20	5	1	5
Equity.....	3	4	4	3	4	4	2	3	6	10	4	4	3	9	5	1	3	4	5	2	5	0	0	0
Nonequity.....	1	1	2	0	2	3	1	0	4	3	6	10	4	9	8	24	7	17	24	10	15	5	1	5
United States-Japan owned																								
Total .....	25	31	51	47	51	51	49	50	60	66	35	46	41	45	40	47	50	38	31	41	27	34	34	40
Equity.....	12	21	22	30	16	28	24	20	30	45	10	9	7	7	1	2	2	5	0	3	4	1	5	3
Nonequity.....	13	10	29	17	35	23	25	30	30	21	25	37	34	38	39	45	48	33	31	38	23	33	29	37
Information technologies .....	6	5	18	22	30	17	18	20	19	22	23	32	22	29	23	29	31	19	17	26	15	16	12	20
Equity.....	4	3	5	12	7	10	9	6	2	13	5	7	2	4	0	0	1	3	0	2	2	0	2	2
Nonequity.....	2	2	13	10	23	7	9	14	17	9	18	25	20	25	23	29	30	16	17	24	13	16	10	18
Biotechnology.....	6	8	12	7	7	15	14	10	6	6	2	2	5	10	7	6	12	13	7	12	7	13	21	11
Equity.....	1	1	1	3	0	1	3	3	1	0	1	0	2	3	0	0	0	1	0	0	1	0	2	0
Nonequity.....	5	7	11	4	7	14	11	7	5	6	1	2	3	7	7	6	12	12	7	12	6	13	19	11
New materials.....	0	3	2	6	4	6	9	8	9	8	4	3	6	1	3	4	1	3	2	2	3	2	2	3
Equity.....	0	3	2	5	4	4	6	2	6	5	2	0	2	0	0	0	0	0	0	1	0	0	1	0
Nonequity.....	0	0	0	1	0	2	3	6	3	3	2	3	4	1	3	4	1	3	2	1	3	2	1	3
Aerospace/defense.....	5	0	0	0	0	0	1	0	0	2	1	5	0	0	0	1	1	1	1	1	1	2	1	0
Equity.....	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nonequity.....	5	0	0	0	0	0	0	0	0	2	1	5	0	0	0	1	1	1	1	1	2	1	0	0
Automotive.....	1	1	2	1	1	2	4	7	13	16	1	1	0	2	2	2	3	0	1	2	4	0	2	3
Equity.....	0	1	2	1	0	2	3	5	12	15	0	1	0	0	0	1	1	0	0	1	1	0	2	0
Nonequity.....	1	0	0	0	1	0	1	2	1	1	1	0	0	2	2	1	2	0	1	1	3	0	0	3
Chemistry.....	7	5	5	6	4	7	2	5	7	8	4	1	2	2	0	3	1	6	2	2	0	1	0	2
Equity.....	7	5	3	6	3	7	2	4	5	8	2	0	0	0	0	1	0	1	0	1	0	0	0	0
Nonequity.....	0	0	2	0	1	0	0	1	2	0	2	1	2	2	0	2	1	5	2	1	0	1	0	2



## Industrial technology alliances classified by country of ultimate parent company, by technology and type (equity/nonequity): 1980–2003

Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
United States-NT owned																								
Total .....	12	15	14	10	13	14	11	14	34	30	21	9	26	28	27	42	45	31	18	35	40	51	43	84
Equity.....	8	14	8	10	9	11	8	10	22	20	7	4	9	13	8	6	11	3	3	3	4	3	5	9
Nonequity.....	4	1	6	0	4	3	3	4	12	10	14	5	17	15	19	36	34	28	15	32	36	48	38	75
Information technologies .....	0	1	5	4	2	5	2	4	10	10	9	4	9	6	12	24	25	16	11	21	18	17	14	35
Equity.....	0	1	3	4	1	2	1	3	5	6	1	1	2	1	2	2	5	1	0	1	2	0	3	4
Nonequity.....	0	0	2	0	1	3	1	1	5	4	8	3	7	5	10	22	20	15	11	20	16	17	11	31
Biotechnology.....	3	2	2	0	2	2	0	4	4	4	4	0	5	7	6	6	7	8	2	10	11	30	29	31
Equity.....	0	1	0	0	2	2	0	1	3	2	2	0	1	3	4	1	4	1	0	1	1	0	2	2
Nonequity.....	3	1	2	0	0	0	0	3	1	2	2	0	4	4	2	5	3	7	2	9	10	30	27	29
New materials.....	0	4	2	0	1	1	3	2	7	1	3	2	1	3	3	0	5	0	0	1	2	1	0	3
Equity.....	0	4	2	0	0	1	1	2	3	0	2	1	1	2	2	0	1	0	0	0	0	0	0	0
Nonequity.....	0	0	0	0	1	0	2	0	4	1	1	1	0	1	1	0	4	0	0	1	2	1	0	3
Aerospace/defense.....	0	0	1	0	1	0	0	0	0	3	1	2	7	5	3	7	7	2	4	0	1	3	2	2
Equity.....	0	0	0	0	0	0	0	0	0	2	0	0	2	2	0	3	1	0	1	0	0	1	0	0
Nonequity.....	0	0	1	0	1	0	0	0	0	1	1	2	5	3	3	4	6	2	3	0	1	2	2	2
Automotive.....	1	0	1	1	0	2	0	0	7	2	0	0	0	1	0	1	1	4	2	2	5	2	2	8
Equity.....	1	0	1	1	0	2	0	0	6	2	0	0	0	0	0	0	1	1	2	1	0	2	0	2
Nonequity.....	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	3	0	1	5	0	2	6
Chemistry.....	6	6	2	2	1	3	0	1	4	5	1	2	5	5	5	1	1	1	0	1	1	0	0	4
Equity.....	6	6	1	2	1	3	0	1	3	5	1	2	4	4	3	1	1	0	0	0	1	0	0	1
Nonequity.....	0	0	1	0	0	0	0	0	1	0	0	0	1	1	2	0	0	1	0	1	0	0	0	3
Europe only owned																								
Total .....	44	30	36	42	55	97	87	72	86	104	59	40	66	43	58	79	60	60	55	42	45	88	93	80
Equity.....	17	12	18	19	16	26	20	22	32	60	21	8	15	30	18	31	13	15	13	11	5	10	10	5
Nonequity.....	27	18	18	23	39	71	67	50	54	44	38	32	51	13	40	48	47	45	42	31	40	78	83	75
Information technologies .....	9	8	9	12	25	48	40	27	27	29	22	17	25	8	6	14	12	20	11	13	15	13	13	20
Equity.....	3	4	4	5	10	10	11	10	8	10	5	3	4	5	1	6	1	3	2	3	2	4	2	1
Nonequity.....	6	4	5	7	15	38	29	17	19	19	17	14	21	3	5	8	11	17	9	10	13	9	11	19
Biotechnology.....	6	5	3	11	10	29	10	17	26	14	7	1	12	9	26	24	17	14	19	13	22	59	69	58
Equity.....	2	0	2	4	2	8	2	3	4	6	5	0	1	5	6	7	3	4	3	3	0	4	2	1
Nonequity.....	4	5	1	7	8	21	8	14	22	8	2	1	11	4	20	17	14	10	16	10	22	55	67	57
New materials.....	4	5	5	9	4	8	13	5	7	12	2	2	6	9	4	3	5	4	4	2	0	4	1	0
Equity.....	2	3	4	4	1	3	3	2	4	7	1	0	1	8	0	0	1	0	0	1	0	2	0	0
Nonequity.....	2	2	1	5	3	5	10	3	3	5	1	2	5	1	4	3	4	4	4	1	0	2	1	0
Aerospace/defense.....	6	1	3	3	10	4	12	9	6	17	16	13	14	3	13	15	13	10	7	1	2	5	5	4
Equity.....	1	0	1	1	2	1	1	0	2	7	7	3	4	1	5	8	3	5	6	0	0	0	2	1
Nonequity.....	5	1	2	2	8	3	11	9	4	10	9	10	10	2	8	7	10	5	1	1	2	5	3	3
Automotive.....	8	2	4	1	2	1	3	2	3	4	3	0	0	0	3	6	7	10	8	13	5	1	4	5
Equity.....	1	0	1	1	1	0	0	0	2	3	1	0	0	0	1	3	3	4	3	3	0	3	2	2
Nonequity.....	7	2	3	0	1	1	3	2	1	1	2	0	0	0	3	5	4	7	4	10	2	1	1	3
Chemistry.....	8	3	5	4	1	3	5	5	8	9	8	4	5	7	6	9	8	4	13	4	5	3	1	2
Equity.....	6	2	4	4	1	2	3	5	7	9	4	0	2	5	5	4	3	1	1	2	0	0	0	0
Nonequity.....	2	1	1	0	0	1	2	0	1	0	4	4	3	2	1	5	5	3	12	2	5	3	1	2

## Industrial technology alliances classified by country of ultimate parent company, by technology and type (equity/nonequity): 1980–2003

Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Europe-Japan owned																								
Total .....	9	17	17	17	19	29	31	25	18	21	20	17	20	23	16	23	18	9	19	10	15	23	19	21
Equity.....	6	10	8	3	7	14	14	14	6	17	13	8	9	8	2	3	6	0	4	4	2	8	1	3
Nonequity.....	3	7	9	14	12	15	17	11	12	4	7	9	11	15	14	20	12	9	15	6	13	15	18	18
Information technologies .....																								
Equity.....	2	3	2	0	1	3	3	1	2	3	3	3	1	2	1	1	1	0	1	2	1	5	0	2
Nonequity.....	2	3	6	5	8	4	11	3	5	3	3	6	6	7	6	7	6	4	8	2	7	9	5	6
Biotechnology.....																								
Equity.....	0	1	1	1	0	7	1	4	1	5	2	1	3	4	3	6	6	0	4	2	1	2	11	8
Nonequity.....	0	1	1	1	0	4	1	3	1	1	1	1	1	4	3	6	4	0	4	1	1	2	11	8
New materials.....																								
Equity.....	0	2	3	3	6	5	7	4	3	2	5	2	1	4	0	3	1	1	6	0	1	1	0	0
Nonequity.....	0	0	0	2	3	2	1	1	2	0	0	0	0	2	0	2	0	1	5	0	1	1	0	0
Aerospace/defense.....																								
Equity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nonequity.....	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
Automotive.....																								
Equity.....	1	0	1	0	0	0	1	1	0	3	0	0	0	0	1	1	0	1	0	1	1	4	0	1
Nonequity.....	0	2	0	1	0	3	2	1	2	0	0	0	0	1	1	0	0	1	1	2	3	0	1	1
Chemistry.....																								
Equity.....	1	1	2	2	2	5	3	7	1	4	3	3	5	3	0	2	3	0	0	0	0	1	1	0
Nonequity.....	0	1	0	2	0	0	0	1	1	0	3	1	2	1	4	1	2	2	2	1	2	1	0	1
Europe-NT owned																								
Total .....	4	7	6	4	9	19	11	21	34	49	19	4	16	29	23	26	21	29	13	10	21	22	37	39
Equity.....	3	4	1	4	5	15	6	16	24	41	11	1	11	12	9	9	9	7	3	2	1	5	5	11
Nonequity.....	1	3	5	0	4	4	5	5	10	8	8	3	5	17	14	17	12	22	10	8	20	17	32	28
Information technologies .....																								
Equity.....	0	1	1	2	3	4	3	3	6	14	2	0	4	2	1	1	6	0	1	1	0	2	1	7
Nonequity.....	0	0	1	0	2	1	1	1	3	2	4	1	0	3	1	6	6	10	4	1	5	4	8	5
Biotechnology.....																								
Equity.....	0	2	0	0	0	3	0	0	0	0	5	1	2	1	0	0	3	1	1	0	1	2	0	1
Nonequity.....	0	0	1	0	0	0	1	0	4	1	1	0	4	1	6	4	4	4	2	4	7	12	21	13
New materials.....																								
Equity.....	0	0	0	0	0	1	0	2	3	3	0	0	2	3	0	2	0	2	0	0	0	0	0	0
Nonequity.....	0	1	1	0	0	0	1	1	0	1	0	0	0	2	0	1	0	0	2	0	1	1	0	2
Aerospace/defense.....																								
Equity.....	0	0	0	0	0	0	0	0	0	1	0	0	2	3	4	2	0	1	0	0	0	1	0	0
Nonequity.....	0	0	0	0	0	3	2	1	2	1	0	2	0	8	4	4	1	6	2	0	1	1	1	2
Automotive.....																								
Equity.....	0	0	0	0	0	0	1	0	2	5	0	0	0	0	1	0	0	0	0	0	0	1	1	2
Nonequity.....	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	3	0	1	3
Chemistry.....																								
Equity.....	3	1	0	2	2	3	1	7	9	9	4	1	1	2	3	4	0	2	1	1	0	0	0	0
Nonequity.....	0	1	1	0	1	0	0	0	0	1	1	0	1	2	0	2	0	0	2	4	3	0	1	0

## Industrial technology alliances classified by country of ultimate parent company, by technology and type (equity/nonequity): 1980–2003

Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Japan only owned																								
Total .....	7	11	9	17	18	39	61	39	18	3	11	6	7	7	10	11	12	3	5	16	6	13	24	34
Equity.....	2	4	0	4	5	12	14	6	6	1	4	1	1	1	1	3	5	0	0	9	3	6	5	7
Nonequity.....	5	7	9	13	13	27	47	33	12	2	7	5	6	6	9	8	7	3	5	7	3	7	19	27
Information technologies .....																								
Equity.....	1	1	0	1	3	3	6	3	3	1	1	1	1	0	1	1	3	0	0	6	2	4	4	3
Nonequity.....	3	2	2	9	5	4	4	4	1	0	5	3	3	2	5	3	2	2	5	5	2	4	12	12
Biotechnology.....																								
Equity.....	0	0	0	1	1	2	3	2	0	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2
Nonequity.....	1	2	2	1	2	5	12	6	2	0	0	0	0	0	1	1	0	0	0	1	0	2	6	5
New materials.....																								
Equity.....	0	0	0	0	0	2	4	1	2	0	0	0	0	0	0	1	1	0	0	2	0	2	2	0
Nonequity.....	0	1	1	2	4	17	24	19	8	2	0	1	0	1	2	2	2	0	1	1	1	0	1	0
Aerospace/defense.....																								
Equity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Nonequity.....	0	1	0	1	1	0	3	1	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	2
Automotive.....																								
Equity.....	0	0	0	1	0	2	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0
Nonequity.....	0	0	0	0	1	2	2	0	2	0	0	1	3	3	0	3	1	0	0	0	0	0	0	3
Chemistry.....																								
Equity.....	0	0	0	1	1	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2
Nonequity.....	0	0	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0
Japan-NT owned																								
Total .....	1	2	2	0	3	2	4	7	4	15	1	1	2	5	6	5	10	4	4	5	6	4	7	11
Equity.....	0	2	1	0	3	2	3	6	2	15	0	0	2	1	2	1	1	0	2	0	1	1	3	3
Nonequity.....	1	0	1	0	0	0	1	1	2	0	1	1	0	4	4	4	9	4	2	5	5	3	4	8
Information technologies .....																								
Equity.....	0	1	1	0	1	0	1	0	0	2	0	0	1	0	2	1	0	0	0	0	1	1	1	3
Nonequity.....	1	0	0	0	0	0	0	0	1	0	0	1	0	3	2	2	4	3	1	2	3	3	1	4
Biotechnology.....																								
Equity.....	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Nonequity.....	0	0	1	0	0	0	1	1	1	0	1	0	0	0	0	2	2	0	0	2	0	0	2	2
New materials.....																								
Equity.....	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0
Nonequity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0
Aerospace/defense.....																								
Equity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nonequity.....	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Automotive.....																								
Equity.....	0	0	0	0	0	1	0	2	1	5	0	0	0	0	0	0	0	0	2	0	0	0	0	0
Nonequity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	1	1	0	1	0	0	1
Chemistry.....																								
Equity.....	0	1	0	0	1	1	0	1	1	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Nonequity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

**Industrial technology alliances classified by country of ultimate parent company, by technology and type (equity/nonequity): 1980–2003**

Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
NT only owned																									
Total .....	2	2	2	6	0	5	4	1	5	4	2	0	3	7	2	4	6	6	5	8	5	10	7	19	
Equity.....	1	0	2	2	0	5	1	0	3	3	1	0	1	3	0	1	1	2	2	2	0	1	2	1	
Nonequity.....	1	2	0	4	0	0	3	1	2	1	1	0	2	4	2	3	5	4	3	6	5	9	5	18	
Information technologies .....	0	0	1	1	0	0	4	1	4	2	1	0	1	3	1	1	1	1	3	3	0	6	4	9	
Equity.....	0	0	1	0	0	0	1	0	2	1	0	0	0	3	0	0	0	0	1	0	0	1	1	1	
Nonequity.....	0	0	0	1	0	0	3	1	2	1	1	0	1	0	1	1	1	1	2	3	0	5	3	8	
Biotechnology.....	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	4	1	1	2	3	4	3	5	
Equity.....	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	
Nonequity.....	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	2	3	4	2	5	
New materials.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Equity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nonequity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Aerospace/defense.....	1	1	0	1	0	0	0	0	0	0	1	0	2	3	1	2	1	3	0	1	0	0	0	1	
Equity.....	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	2	0	1	0	0	0	0	
Nonequity.....	1	1	0	1	0	0	0	0	0	0	0	0	1	3	1	1	0	1	0	0	0	0	0	1	
Automotive.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	2	
Equity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Nonequity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	2	
Chemistry.....	1	0	0	0	0	3	0	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	
Equity.....	1	0	0	0	0	3	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
Nonequity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	

NT = non-Triad (country or region other than United States, Europe, or Japan)

NOTES: Data are annual counts of new technology alliances formed by domestic and multinational corporations worldwide. Alliances may be classified in more than one technology. Biotechnology includes biotechnological pharmaceuticals. Chemistry excludes biotechnology and includes nonbiotechnological pharmaceuticals. Country assignment based on headquarters of ultimate parent company of alliance members, not on location of members. Total number of alliances at top of table is sum of following exclusive ownership categories: U.S. only, U.S.-Europe, U.S.-Japan, U.S.-NT, Europe only, Europe-Japan, Europe-NT, Japan only, Japan-NT, and NT only. Special groupings: U.S. owned worldwide = sum of U.S. only, U.S.-Europe, U.S.-Japan, U.S.-NT; Europe owned worldwide = sum of Europe only, U.S.-Europe, Europe-Japan, Europe-NT; Japan owned worldwide = sum of Japan only, U.S.-Japan, Europe-Japan, Japan-NT; NT owned worldwide = sum of NT only, U.S.-NT, Japan-NT, Europe-NT.

SOURCE: Maastricht Economic Research Institute on Innovation and Technology, Cooperative Agreements and Technology Indicators (CATI-MERIT) database, special tabulations.

## Federal technology transfer indicators, by selected U.S. agency: FY 1987–2003

Agency	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Invention disclosures and patenting																	
All 10 agencies																	
Inventions disclosed .....	2,662	3,047	3,168	3,772	4,213	3,901	3,538	3,753	4,001	4,153	3,842	3,503	3,649	3,566	3,962	4,135	4,348
Patent applications filed .....	848	1,131	1,466	1,727	1,940	1,867	1,838	1,724	1,803	1,723	1,850	1,894	2,092	2,132	2,180	2,118	2,242
Patents issued .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,265	1,466	1,450	1,444	1,605	1,498	1,607
USDA																	
Inventions disclosed .....	83	144	127	158	127	83	110	111	133	129	260	208	162	109	118	151	121
Patent applications filed .....	44	50	71	76	110	70	68	40	80	91	56	64	84	78	83	90	60
Patents issued .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	45	75	74	64	64	53	64
DOC																	
Inventions disclosed .....	43	31	49	46	30	55	66	51	65	71	58	40	38	34	26	17	21
Patent applications filed .....	8	15	28	28	18	53	43	41	35	60	49	66	30	20	12	12	5
Patents issued .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	23	19	28	18	21	20	9
DOD																	
Inventions disclosed .....	953	1,147	1,153	1,383	1,524	1,283	1,189	1,172	1,168	1,115	1,150	1,028	1,060	991	1,005	1,122	1,332
Patent applications filed .....	343	447	616	807	919	850	835	732	759	716	735	755	703	774	809	829	810
Patents issued .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	554	579	547	553	619	617	619
DOE																	
Inventions disclosed .....	857	1,003	1,053	1,335	1,666	1,698	1,443	1,588	1,758	1,886	1,500	1,313	1,474	1,371	1,527	1,498	1,469
Patent applications filed .....	252	336	382	366	397	432	497	543	571	564	705	751	850	788	792	711	866
Patents issued .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	384	512	525	515	605	551	627
EPA																	
Inventions disclosed .....	0	0	0	12	20	9	22	19	15	20	9	14	5	11	17	16	14
Patent applications filed .....	4	5	5	6	8	12	15	15	24	18	13	11	15	10	14	14	23
Patents issued .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12	1	8	6	12	9	8
HHS																	
Inventions disclosed .....	194	226	209	215	215	311	282	307	307	305	268	287	328	375	434	431	472
Patent applications filed .....	98	145	225	239	261	224	193	171	166	147	148	132	241	263	255	262	279
Patents issued .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	152	171	180	132	119	116	136
DOI																	
Inventions disclosed .....	3	6	3	26	26	1	2	2	2	2	5	5	8	16	6	NA	NA
Patent applications filed .....	5	4	11	15	21	1	2	2	2	2	2	5	3	5	22	NA	NA
Patents issued .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	3	1	4	2	NA	NA
NASA																	
Inventions disclosed .....	496	462	532	538	570	416	384	457	517	550	550	554	525	574	696	775	736
Patent applications filed .....	94	129	125	181	205	225	185	179	164	123	140	105	129	158	152	166	163
Patents issued .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	94	105	87	148	159	128	136
DOT																	
Inventions disclosed .....	0	0	0	1	2	1	1	1	0	4	2	4	1	0	2	0	0
Patent applications filed .....	0	0	0	1	1	0	0	1	2	2	1	3	0	1	3	0	0
Patents issued .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1	0	3	0	0	0
VA																	
Inventions disclosed .....	33	28	42	58	33	44	39	45	36	71	40	50	48	85	131	125	183
Patent applications filed .....	NA	NA	3	8	NA	0	0	0	0	0	1	2	37	35	38	34	36
Patents issued .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1	4	4	8

## Federal technology transfer indicators, by selected U.S. agency: FY 1987–2003

Agency	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Invention licenses																	
All 10 agencies																	
Active invention licenses .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,719	3,035	3,140	3,580	3,656
New invention licenses.....	128	129	150	164	206	239	260	337	408	462	487	492	603	510	578	538	588
USDA																	
Active invention licenses .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	218	225	255	267	270
New invention licenses.....	30	24	23	33	29	31	28	9	21	26	22	23	29	24	32	26	27
DOC																	
Active invention licenses .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	43	43	40	41	101
New invention licenses.....	0	0	1	0	2	5	3	3	4	10	11	17	8	4	5	5	59
DOD																	
Active invention licenses .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	177	189	283	350	361
New invention licenses.....	10	10	14	15	25	19	20	28	34	41	34	34	61	67	49	39	49
DOE																	
Active invention licenses .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	981	1,094	1,162	1,327	1,223
New invention licenses.....	37	43	57	62	75	81	96	118	140	154	175	162	202	169	226	206	172
EPA																	
Active invention licenses .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	17	18	16	23	32
New invention licenses.....	0	0	0	1	2	2	2	9	1	2	1	0	2	3	4	9	9
HHS																	
Active invention licenses .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,041	1,222	1,007	1,213	1,298
New invention licenses.....	35	42	48	47	69	96	99	151	176	193	208	215	208	192	212	198	199
DOI																	
Active invention licenses .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12	6	8	NA	NA
New invention licenses.....	3	3	0	0	0	NA	NA	8	3	NA	0	0	0	2	2	NA	NA
NASA																	
Active invention licenses .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	230	238	292	290	295
New invention licenses.....	13	7	7	6	4	5	12	11	29	36	36	40	46	46	42	52	66
DOT																	
Active invention licenses .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	1	0	0
New invention licenses.....	0	0	0	0	0	NA	NA	NA	NA	NA	0	1	0	0	1	0	0
VA																	
Active invention licenses .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	76	69	76
New invention licenses.....	0	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	47	3	5	3	7
CRADAs																	
All 10 agencies																	
Traditional, active .....	34	98	271	460	731	1,078	1,628	2,471	3,121	3,530	3,078	3,038	2,996	2,939	2,837	2,816	2,936
New traditional .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,058	1,034	945	829	679	704	822
Nontraditional, active.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	231	194	833	2,509	2,615
New nontraditional .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	43	121	106	78	75	247	1,878	1,926
USDA																	
Traditional, active .....	9	51	98	128	177	172	172	208	229	244	273	288	298	257	217	222	223
New traditional .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	93	102	101	69	49	58	51

## Federal technology transfer indicators, by selected U.S. agency: FY 1987–2003

Agency	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Nontraditional, active.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	3	6
New nontraditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1	4
DOC																	
Traditional, active.....	0	9	44	82	115	177	292	368	407	406	377	337	275	221	188	139	92
New traditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	90	77	67	46	26	26	12
Nontraditional, active.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	59	1,744	1,811
New nontraditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1,693	1,755
DOD																	
Traditional, active.....	3	10	36	113	193	277	365	563	845	1,086	1,360	1,424	1,350	1,364	1,418	1,376	1,523
New traditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	408	399	449	425	296	347	523
Nontraditional, active.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	547	537	611
New nontraditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	163	102	107
DOE																	
Traditional, active.....	0	0	0	1	43	250	582	1,094	1,392	1,677	963	868	715	687	558	680	661
New traditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	274	266	240	151	204	192	140
Nontraditional, active.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	0
New nontraditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	0
EPA																	
Traditional, active.....	0	0	2	11	31	30	28	35	30	35	34	37	38	44	45	55	77
New traditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11	12	13	40	18	18	27
Nontraditional, active.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	4	14
New nontraditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	3	12
HHS																	
Traditional, active.....	22	28	89	110	144	146	149	147	152	NA	NA	NA	237	244	289	261	254
New traditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	44	32	43	58	50	61	52	54
Nontraditional, active.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	231	194	209	209	173
New nontraditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	43	121	106	78	75	76	74	48
DOI																	
Traditional, active.....	0	0	1	12	11	1	3	9	15	22	23	30	30	40	41	NA	NA
New traditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9	7	10	8	14	NA	NA
Nontraditional, active.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9	NA	NA
New nontraditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7	NA	NA
NASA																	
Traditional, active.....	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0
New traditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	1	0	0	0	0
Nontraditional, active.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	0
New nontraditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	0
DOT																	
Traditional, active.....	0	0	0	1	9	17	30	38	37	43	36	39	51	79	78	80	96
New traditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14	13	5	38	11	9	7
Nontraditional, active.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	4	12	0
New nontraditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	5	0

**Federal technology transfer indicators, by selected U.S. agency: FY 1987–2003**

Agency	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
VA																	
Traditional, active .....	0	0	1	2	8	8	7	9	14	17	12	15	1	2	2	2	10
New traditional .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6	9	1	2	0	2	8
Nontraditional, active.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0
New nontraditional.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0

NA = data not requested or not available

CRADA = cooperative research and development agreement; DOC = Department of Commerce; DOD = Department of Defense; DOE = Department of Energy; DOI = Department of the Interior; DOT = Department of Transportation; EPA = Environmental Protection Agency; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; USDA = Department of Agriculture; VA = Department of Veterans Affairs

NOTES: Licenses and patent data not limited to CRADA activity. Invention licenses include patent licenses and material transfer licenses. Data are for CRADAs for agreements established under authority of 15 U.S. Code § 3710a. NASA collaborative R&D agreements under the National Aeronautics and Space Act of 1958 not included. Active CRADAs are those legally in force at any time during fiscal year. Traditional CRADAs involve collaborative R&D by federal laboratory and nonfederal partners. Nontraditional CRADAs are established for special purposes, such as material transfer or technical assistance that may result in protected information. Data for FY 1999 on may not be comparable to prior years because of methodological changes in data collection and processing.

SOURCES: Before 1999: U.S. Department of Commerce, Office of the Secretary, *Summary Report on Federal Laboratory Technology Transfer: 2002 Report to the President and the Congress Under the Technology Transfer and Commercialization Act* (2002). For FY 1999 on: U.S. Department of Commerce, Office of the Secretary, *Summary Report on Federal Laboratory Technology Transfer: FY 2003 Activity Metrics and Outcomes, 2004 Report to the President and the Congress Under The Technology Transfer and Commercialization Act* (2004).

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Appendix table 4-39

**SBIR award funding, by type of award and federal agency: FY 1983–2003**

(Millions of current dollars)

FY	All agencies			DOD	HHS	NASA	DOE	NSF	USDA	DOT	EPA	ED	DOC
	Total	Phase I	Phase II										
1983.....	45	45	0	20	7	5	5	5	1	—	—	—	0
1984.....	108	48	60	45	23	13	16	7	2	2	1	1	0
1985.....	199	69	130	78	45	29	26	10	3	3	2	1	0
1986.....	298	99	199	151	57	36	29	15	4	4	3	2	1
1987.....	351	110	241	194	67	32	28	17	4	3	3	2	2
1988.....	389	102	285	208	73	47	30	17	4	3	3	2	1
1989.....	432	108	322	233	79	52	33	19	4	4	3	2	1
1990.....	461	118	342	241	84	62	39	20	4	4	3	2	1
1991.....	483	128	336	241	93	69	39	22	5	6	4	3	1
1992.....	508	128	371	242	102	79	43	23	6	3	4	2	2
1993.....	698	154	491	385	126	86	50	29	7	4	5	3	2
1994.....	718	220	474	354	133	116	53	34	7	7	5	3	4
1995.....	835	232	602	414	181	118	70	42	9	10	7	3	8
1996.....	916	229	646	479	189	114	62	41	9	7	5	3	6
1997.....	1,107	278	789	569	252	121	75	54	10	8	6	4	7
1998.....	1,067	262	804	540	267	96	76	53	13	6	5	5	7
1999.....	1,097	300	797	514	314	89	81	60	13	6	5	5	7
2000.....	1,190	302	888	549	355	93	86	65	15	6	8	6	7
2001.....	1,294	317	977	576	412	106	87	72	16	6	6	7	7
2002.....	1,435	412	1,023	621	487	110	96	78	17	6	6	8	7
2003.....	1,670	455	1,215	804	531	109	94	90	17	3	6	8	8

— = &lt;\$500,000

DOC = Department of Commerce; DOD = Department of Defense; SBIR = Small Business Innovation Research program; DOE = Department of Energy; DOT = Department of Transportation; ED = Department of Education; EPA = Environmental Protection Agency; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation; USDA = Department of Agriculture

NOTES: Data are agency obligations through FY 03 based on information from the Small Business Administration. Data on the SBIR program at the Department of Homeland Security are not available from this source because the program started in FY 04. Data do not necessarily contain subsequent-year revisions and may not add to total.

SOURCE: U.S. Small Business Administration, *Small Business Innovation Research Program Annual Report* (annual series).

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Appendix table 4-40

**Small business technology transfer program award funding, by type of award and federal agency: FY 1994–2003**

(Millions of current dollars)

FY	All agencies			DOD	HHS	NASA	DOE	NSF
	Total	Phase I	Phase II					
1994.....	19	19	0	9	5	2	2	1
1995.....	33	23	10	15	9	3	5	2
1996.....	65	23	42	29	18	9	5	3
1997.....	69	24	45	37	13	12	4	3
1998.....	65	20	45	33	17	6	5	3
1999.....	65	24	41	31	20	6	5	3
2000.....	70	24	46	33	22	6	5	5
2001.....	71	25	46	27	25	6	5	8
2002.....	92	36	55	43	31	7	6	6
2003.....	92	41	51	43	31	6	6	6

DOD = Department of Defense; DOE = Department of Energy; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation

NOTES: Data are agency obligations through FY 03 based on information from the Small Business Administration. Data do not necessarily contain subsequent-year revisions and may not add to total.

SOURCE: U.S. Small Business Administration, *Small Business Technology Transfer Program Annual Report* (annual series).

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Appendix table 4-41

**Advanced Technology Program projects, number of participants, and funding: FY 1990–2002**

Year	Projects	SA	JV	Participants	Project funding (current \$ millions)						
					Total	ATP			Industry		
						All	To JV	To SA	All	From JV	From SA
1990.....	11	6	5	35	98	46	38	8	52	45	7
1991.....	28	18	10	83	202	93	65	28	109	83	26
1992.....	21	18	3	32	97	48	19	29	49	19	30
1993.....	29	24	5	50	118	60	19	41	58	20	38
1994.....	88	50	38	211	640	309	216	93	331	233	98
1995.....	103	62	41	318	827	414	304	110	413	340	73
1996.....	8	6	2	12	37	19	9	10	18	10	8
1997.....	64	49	15	101	304	162	75	87	142	81	61
1998.....	79	52	27	168	460	235	143	92	225	157	68
1999.....	37	26	11	57	212	110	61	49	102	64	38
2000.....	54	39	15	95	274	144	70	74	130	74	56
2001.....	59	46	13	88	286	164	79	85	122	81	41
2002.....	61	51	10	79	289	156	59	97	133	61	72

ATP = Advanced Technology Program; JV = joint ventures; SA = single applicants

NOTES: For multiyear projects, total funding attributed to year award was made. Participants include single applicants, JV leaders, and JV members and exclude subcontractors and informal collaborators.

SOURCE: U.S. Department of Commerce, National Institute of Standards and Technology, Advanced Technology Program, special tabulations.

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## International R&amp;D expenditures and R&amp;D as percentage of gross domestic product, by selected country and for all OECD countries: 1981–2003

Year	United States	Japan <sup>a</sup>	Germany <sup>b</sup>	France	United Kingdom	Italy	Canada	Russian Federation	Total OECD
Billions of constant 2000 U.S. dollars <sup>c</sup>									
1981.....	123.1	42.3	29.7	19.5	21.1	8.6	6.4	NA	275.2
1982.....	129.7	45.3	30.4	20.9	NA	8.9	6.9	NA	288.4
1983.....	139.0	48.7	30.8	21.7	20.6	9.5	7.0	NA	304.1
1984.....	152.4	52.0	31.7	23.1	NA	10.4	7.6	NA	327.1
1985.....	165.5	57.6	34.8	24.1	22.3	11.9	8.2	NA	355.6
1986.....	169.4	58.6	35.8	24.5	23.4	12.3	8.6	NA	366.5
1987.....	173.0	62.6	37.7	25.5	23.8	13.3	8.7	NA	380.1
1988.....	177.3	67.3	39.0	26.7	24.3	14.1	9.0	NA	394.8
1989.....	181.1	73.4	40.5	28.4	25.0	14.8	9.6	NA	411.4
1990.....	186.7	79.4	41.0	30.2	25.1	15.7	10.0	33.5	429.8
1991.....	191.1	81.2	44.7	30.5	23.9	15.1	10.2	24.2	449.8
1992.....	191.8	80.4	43.5	31.0	23.4	14.7	10.7	10.2	451.7
1993.....	188.0	78.3	41.9	31.1	24.3	13.9	11.3	9.2	447.5
1994.....	188.0	77.6	41.2	30.9	24.8	13.2	12.2	8.8	450.7
1995.....	199.9	82.6	42.0	31.0	24.8	13.0	12.3	7.9	476.9
1996.....	210.7	88.1	42.3	31.2	24.5	13.2	12.2	8.7	498.0
1997.....	222.9	91.8	43.7	30.7	24.4	14.1	12.7	9.4	521.0
1998.....	235.1	94.2	45.0	31.0	25.0	14.5	14.1	8.4	540.7
1999.....	249.3	94.8	48.4	32.2	26.8	14.4	15.1	9.8	568.3
2000.....	265.2	98.4	50.9	33.4	27.4	15.2	16.8	11.1	601.5
2001.....	268.4	101.5	51.6	34.9	28.2	16.2	18.0	13.0	619.3
2002.....	266.6	102.8	52.2	35.8	29.0	NA	17.5	14.5	624.9
2003.....	269.3	NA	51.5	NA	NA	NA	17.6	15.9	NA
Percent of GDP									
1981.....	2.34	2.12	2.43	1.93	2.38	0.88	1.24	NA	1.93
1982.....	2.52	2.21	2.50	2.02	NA	0.90	1.39	NA	2.02
1983.....	2.58	2.34	2.50	2.06	2.20	0.95	1.36	NA	2.07
1984.....	2.64	2.43	2.50	2.16	NA	1.01	1.40	NA	2.13
1985.....	2.75	2.56	2.68	2.22	2.24	1.12	1.44	NA	2.24
1986.....	2.72	2.53	2.70	2.21	2.26	1.13	1.48	NA	2.24
1987.....	2.69	2.60	2.80	2.24	2.20	1.19	1.43	NA	2.25
1988.....	2.65	2.62	2.79	2.24	2.14	1.22	1.40	NA	2.23
1989.....	2.61	2.71	2.79	2.29	2.15	1.24	1.47	NA	2.24
1990.....	2.65	2.79	2.67	2.37	2.15	1.29	1.53	2.03	2.28
1991.....	2.71	2.76	2.52	2.37	2.07	1.23	1.60	1.43	2.21
1992.....	2.64	2.71	2.40	2.38	2.03	1.18	1.64	0.74	2.17
1993.....	2.52	2.63	2.33	2.40	2.06	1.13	1.70	0.77	2.12
1994.....	2.42	2.58	2.24	2.34	2.01	1.05	1.76	0.84	2.07
1995.....	2.51	2.69	2.25	2.31	1.95	1.00	1.72	0.85	2.09
1996.....	2.55	2.78	2.25	2.30	1.88	1.01	1.68	0.97	2.11
1997.....	2.58	2.84	2.29	2.22	1.81	1.05	1.68	1.04	2.13
1998.....	2.61	2.95	2.31	2.17	1.80	1.07	1.79	0.95	2.16

**International R&D expenditures and R&D as percentage of gross domestic product, by selected country and for all OECD countries: 1981–2003**

Year	United States	Japan <sup>a</sup>	Germany <sup>b</sup>	France	United Kingdom	Italy	Canada	Russian Federation	Total OECD
Percent of GDP									
1999.....	2.65	2.96	2.44	2.18	1.87	1.04	1.82	1.00	2.19
2000.....	2.72	2.99	2.49	2.18	1.85	1.07	1.92	1.05	2.23
2001.....	2.73	3.07	2.51	2.23	1.86	1.11	2.03	1.18	2.28
2002.....	2.66	3.12	2.53	2.26	1.87	NA	1.90	1.25	2.26
2003.....	2.60	NA	2.50	NA	NA	NA	1.87	1.28	NA

NA = not available or not applicable

GDP = gross domestic product; OECD = Organisation for Economic Co-operation and Development

<sup>a</sup>Data for 1996 on may not be consistent with earlier data because of changes in methodology.

<sup>b</sup>1981–90 data for West Germany.

<sup>c</sup>Conversions of foreign currencies to U.S. dollars calculated with each country's GDP implicit price deflator and with OECD purchasing power parity exchange rates.

SOURCE: OECD, *Main Science and Technology Indicators* (2004).

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Appendix table 4-43

**International nondefense R&D expenditures and nondefense R&D as percentage of gross domestic product, by selected country: 1981–2003**

Year	United States	Japan <sup>a</sup>	Germany <sup>b</sup>	France	United Kingdom	Italy	Canada
Billions of constant 2000 U.S. dollars <sup>c</sup>							
1981.....	92	42	29	16	16	8	6
1982.....	93	45	29	17	NA	9	7
1983.....	98	48	30	18	16	9	7
1984.....	106	52	30	19	NA	10	7
1985.....	114	57	33	20	18	11	8
1986.....	116	58	34	20	19	12	8
1987.....	118	62	36	21	20	13	8
1988.....	123	67	37	22	21	14	9
1989.....	130	73	39	23	19	15	9
1990.....	139	79	39	25	20	16	10
1991.....	148	81	43	25	20	15	10
1992.....	150	80	42	26	19	15	10
1993.....	147	77	41	26	20	14	11
1994.....	151	77	40	26	21	13	12
1995.....	162	82	41	27	21	13	12
1996.....	174	87	41	27	21	13	12
1997.....	185	91	42	28	21	14	12
1998.....	197	93	44	28	21	14	14
1999.....	213	94	47	30	23	14	15
2000.....	229	98	50	31	23	15	17
2001.....	231	101	51	32	25	16	18
2002.....	225	102	52	33	26	NA	NA
2003.....	225	NA	51	NA	NA	NA	NA
Percent of GDP							
1981.....	1.7	2.1	2.3	1.6	1.9	0.9	1.2
1982.....	1.8	2.2	2.4	1.6	NA	0.9	1.3
1983.....	1.8	2.3	2.4	1.7	1.7	0.9	1.3
1984.....	1.8	2.4	2.4	1.8	NA	1.0	1.3
1985.....	1.9	2.5	2.6	1.8	1.8	1.1	1.4
1986.....	1.9	2.5	2.6	1.8	1.8	1.1	1.4
1987.....	1.8	2.6	2.7	1.8	1.8	1.2	1.4
1988.....	1.8	2.6	2.7	1.8	1.8	1.2	1.3
1989.....	1.9	2.7	2.7	1.9	1.7	1.2	1.4
1990.....	2.0	2.8	2.5	1.9	1.7	1.3	1.5
1991.....	2.1	2.7	2.4	1.9	1.7	1.2	1.6
1992.....	2.1	2.7	2.3	2.0	1.7	1.2	1.6
1993.....	2.0	2.6	2.3	2.0	1.7	1.1	1.7
1994.....	1.9	2.6	2.2	2.0	1.7	1.0	1.7
1995.....	2.0	2.7	2.2	2.0	1.7	1.0	1.7
1996.....	2.1	2.8	2.2	2.0	1.6	1.0	1.7
1997.....	2.1	2.8	2.2	2.0	1.5	1.1	1.7
1998.....	2.2	2.9	2.3	2.0	1.5	1.1	1.8
1999.....	2.3	2.9	2.4	2.0	1.6	1.0	1.8
2000.....	2.4	3.0	2.4	2.0	1.6	1.1	1.9
2001.....	2.4	3.1	2.5	2.1	1.6	1.1	2.0
2002.....	2.2	3.1	2.5	2.1	1.7	NA	NA
2003.....	2.2	NA	2.5	NA	NA	NA	NA

NA = not available

GDP = gross domestic product

<sup>a</sup>Data for 1996 on may not be consistent with earlier data because of changes in methodology.<sup>b</sup>1981–90 data for West Germany.<sup>c</sup>Nondefense R&D data are estimates. Nondefense R&D/GDP obtained directly from Organisation for Economic Co-operation and Development (OECD) reports, or for following countries and years, estimated by the National Science Foundation from OECD data: United States, all years; Japan, 1995 on; Germany, 1990 and earlier; United Kingdom, 1981–84 and 1986–88; Italy 1986, and earlier; and Canada, 1990 on. Conversions of foreign currency to U.S. dollars calculated with OECD purchasing power parity exchange rates.

NOTE: Nondefense R&amp;D/GDP for Russian Federation was 1.2 in 1990, 0.6 in 1995, 0.8 in 2000, and 0.9 in 2002.

SOURCE: OECD, *Main Science and Technology Indicators* (2004).

Appendix table 4-44

## International R&amp;D expenditures for selected countries, by performing sector and source of funds: Selected years, 2002–04

Country and R&D performer	Source of R&D funds						Performers (% distribution)
	Total	Industry	Government	Higher education	Private nonprofit	Abroad	
Japan (2002) (billions of yen).....	15,551,513	11,486,713	2,830,142	1,004,191	171,032	59,435	100.0
Industry.....	11,576,842	11,334,347	112,181	916	72,420	56,978	74.4
Government.....	1,483,209	17,621	1,460,999	768	3,696	125	9.5
Higher education.....	2,158,797	56,197	1,082,057	1,002,239	17,564	740	13.9
Private nonprofit.....	332,665	78,548	174,905	268	77,352	1,592	2.1
Percent distribution, sources.....	100.0	73.9	18.2	6.5	1.1	0.4	na
Germany (2003) (millions of euros).....	54,310	35,910	16,910	0	230	1,260	100.0
Industry.....	37,910	34,610	2,310	NA	80	910	69.8
Government.....	7,300	200	6,800	NA	150	150	13.4
Higher education.....	9,100	1,100	7,800	NA	NA	200	16.8
Private nonprofit.....	NA	NA	NA	NA	NA	NA	0.0
Percent distribution, sources.....	100.0	66.1	31.1	0.0	0.4	2.3	na
France (2002) (millions of euros).....	34,527	17,990	13,244	242	295	2,756	100.0
Industry.....	21,839	17,342	2,256	1	4	2,236	63.3
Government.....	5,709	382	4,997	16	13	301	16.5
Higher education.....	6,512	186	5,931	204	18	174	18.9
Private nonprofit.....	468	81	60	21	260	45	1.4
Percent distribution, sources.....	100.0	52.1	38.4	0.7	0.9	8.0	na
Italy (2003) (millions of euros).....	NA	NA	NA	NA	NA	NA	na
Industry.....	7,102	5,555	1,025	5	15	502	na
Government.....	2,507	73	2,136	4	183	112	na
Higher education.....	NA	NA	NA	NA	NA	NA	na
Private nonprofit.....	NA	NA	NA	NA	NA	NA	na
Percent distribution, sources.....	NA	NA	NA	NA	NA	NA	na
United Kingdom (2002) (millions of pounds).....	19,568	9,138	5,268	196	963	4,003	100.0
Industry.....	13,110	8,654	884	NA	4	3,567	67.0
Government.....	1,752	183	1,426	11	72	60	9.0
Higher education.....	4,416	257	2,914	182	714	349	22.6
Private nonprofit.....	290	44	44	2	174	26	1.5
Percent distribution, sources.....	100.0	46.7	26.9	1.0	4.9	20.5	na
Canada (2004) (millions of Canadian dollars).....	24,487	11,314	8,672	1,781	787	1,933	100.0
Industry.....	12,534	10,403	327	NA	NA	1,804	51.2
Government.....	2,564	93	2,470	NA	NA	1	10.5
Higher education.....	9,319	807	5,847	1,781	758	126	38.1
Private nonprofit.....	70	11	28	NA	29	2	0.3
Percent distribution, sources.....	100.0	46.2	35.4	7.3	3.2	7.9	na
Russian Federation (2003) (billions of rubles).....	169,862	52,257	101,252	807	278	15,268	100.0
Industry.....	116,248	44,402	59,897	78	205	11,667	68.4
Government.....	42,945	4,926	34,808	24	23	3,164	25.3
Higher education.....	10,298	2,870	6,294	704	13	416	6.1
Private nonprofit.....	372	59	253	1	38	21	0.2
Percent distribution, sources.....	100.0	30.8	59.6	0.5	0.2	9.0	na
South Korea (2003) (billions of won).....	19,068,682	14,113,599	4,548,933	256,825	70,467	78,858	100.0
Industry.....	14,509,663	13,653,286	772,178	4,003	10,765	69,431	76.1
Government.....	2,401,051	130,956	2,264,378	557	3,861	1,299	12.6
Higher education.....	1,932,663	262,304	1,379,634	251,973	30,660	8,092	10.1
Private nonprofit.....	225,304	67,053	132,743	292	25,180	36	1.2
Percent distribution, sources.....	100.0	74.0	23.9	1.3	0.4	0.4	na
United States (2003) (millions of U.S. dollars).....	284,584	179,615	88,778	7,944	8,247	NA	100.0
Industry.....	196,112	176,415	19,697	NA	NA	NA	68.9
Government.....	25,747	0	25,747	NA	NA	NA	9.0
Higher education.....	47,683	2,123	34,630	7,944	2,986	NA	16.8
Private nonprofit.....	15,042	1,077	8,704	NA	5,261	NA	5.3
Percent distribution, sources.....	100.0	63.1	31.2	2.8	2.9	NA	na

NA = assumed negligible or not available; na = not applicable

SOURCE: Organisation for Economic Co-operation and Development, special tabulations (2005).

Appendix table 4-45

**Proportion of industry R&D expenditures financed by foreign sources, by selected country/region: 1981–2003**

(Percent)

Year	Canada	France	Germany <sup>a</sup>	Italy	United Kingdom	Japan	Russian Federation	European Union-15
1981.....	7.4	7.1	1.2	4.3	8.7	0.1	NA	4.6
1982.....	10.7	4.8	1.3	4.7	NA	0.1	NA	NA
1983.....	16.6	4.6	1.4	4.3	6.8	0.1	NA	3.7
1984.....	17.1	6.5	1.5	6.2	NA	0.1	NA	NA
1985.....	14.3	6.9	1.4	6.1	11.1	0.1	NA	5.0
1986.....	13.6	8.0	1.4	7.3	12.2	0.1	NA	5.5
1987.....	16.8	8.7	1.5	6.9	12.0	0.1	NA	5.5
1988.....	18.0	9.2	2.1	6.6	12.0	0.1	NA	5.8
1989.....	17.1	10.9	2.7	6.5	13.4	0.1	NA	6.8
1990.....	17.9	11.1	2.7	7.3	15.5	0.1	NA	7.4
1991.....	18.5	11.4	2.6	9.6	16.0	0.1	NA	7.5
1992.....	17.8	12.0	2.5	6.3	14.9	0.1	NA	7.4
1993.....	17.7	11.3	1.9	6.9	15.4	0.1	NA	7.6
1994.....	19.4	11.2	2.0	9.5	16.0	0.1	1.9	8.2
1995.....	19.5	11.1	2.2	8.2	19.1	0.1	5.1	8.8
1996.....	20.8	11.4	2.3	9.6	21.7	0.1	6.1	9.2
1997.....	20.0	10.6	2.8	9.0	18.8	0.4	8.5	9.1
1998.....	25.8	9.4	2.7	8.1	22.1	0.4	11.1	9.2
1999.....	25.4	8.8	2.1	8.1	22.7	0.5	19.8	9.0
2000.....	29.1	9.0	2.1	8.2	21.5	0.6	13.6	8.8
2001.....	21.0	8.7	2.4	6.6	24.4	0.5	9.2	9.4
2002.....	21.0	10.2	2.4	6.8	27.2	0.5	8.4	10.2
2003.....	21.0	NA	2.4	7.1	NA	NA	10.0	NA

NA = not available

<sup>a</sup>1981–90 data for West Germany.SOURCE: Organisation for Economic Co-operation and Development, *Main Science and Technology Indicators* (2004).



Appendix table 4-46

**Source of total and industry R&D expenditures for OECD countries: 1981–2002**

(Percent distribution)

Year	Total R&D			Industry R&D	
	Government	Industry	Other	Government	Other sources
1981.....	44.0	51.8	4.2	22.1	77.9
1982.....	43.5	52.4	4.1	22.3	77.7
1983.....	43.1	52.8	4.1	22.0	78.0
1984.....	42.3	53.5	4.2	21.7	78.3
1985.....	41.5	54.3	4.3	21.8	78.3
1986.....	41.0	54.5	4.5	21.5	78.5
1987.....	40.9	54.4	4.7	21.5	78.5
1988.....	39.4	55.8	4.9	19.8	80.2
1989.....	37.8	57.0	5.2	17.7	82.3
1990.....	36.8	57.8	5.4	16.5	83.5
1991.....	35.6	58.8	5.6	14.6	85.4
1992.....	35.0	59.2	5.8	13.3	86.7
1993.....	35.2	58.6	6.2	12.7	87.3
1994.....	34.5	58.9	6.6	11.9	88.1
1995.....	34.0	59.4	6.6	11.7	88.3
1996.....	32.4	60.8	6.8	10.9	89.1
1997.....	31.2	61.9	6.9	10.2	89.8
1998.....	30.7	62.1	7.3	9.8	90.2
1999.....	29.7	63.0	7.3	8.9	91.1
2000.....	28.3	64.4	7.3	7.4	92.6
2001.....	28.8	63.6	7.6	7.2	92.8
2002.....	30.0	62.2	7.9	7.2	92.8

OECD = Organisation for Economic Co-operation and Development

SOURCE: OECD, *Main Science and Technology Indicators* (2004).*Science and Engineering Indicators 2006.*

Appendix table 4-47

**Government R&D budget appropriations, by selected country and socioeconomic objective: Selected years, 2001–04**

(Percent)

Socioeconomic objective (2002)	United States (2004)	Japan (2003)	France (2003)	Germany (2004)	United Kingdom (2002)	Italy (2001)	South Korea (2004)	Russian Federation (2001)	Canada (2002)
Total (2000 US \$ millions) .....	116,889	24,525	17,316	16,263	12,041	10,189	7,275	6,092	5,421
Exploration and exploitation of Earth .....	0.8	1.7	0.9	1.8	1.7	1.9	1.4	1.5	2.9
Infrastructure and general planning of land use .....	1.6	4.1	0.5	1.9	1.3	0.4	4.2	1.4	3.2
Control and care of environment .....	0.5	0.9	3.0	3.4	1.6	2.3	4.5	1.6	4.6
Protection and improvement of human health .....	23.1	4.0	5.2	4.3	13.2	7.0	7.9	2.0	15.4
Energy .....	1.2	17.2	4.0	2.9	0.5	3.6	5.2	2.0	4.2
Agriculture production and technology .....	2.0	3.3	2.0	2.0	3.3	1.9	8.3	9.9	8.2
Industrial production and technology .....	0.4	7.2	6.4	12.1	4.7	10.2	27.4	11.2	12.4
Social structures and relationships .....	1.1	0.7	0.8	4.0	3.6	4.4	2.7	2.0	3.1
Exploration and exploitation of space .....	7.8	6.7	8.2	5.3	1.9	7.3	3.0	10.1	5.5
GUF .....	NA	34.4	22.8	39.4	20.2	43.7	NA	NA	29.5
Nonoriented research .....	5.7	15.3	21.9	17.1	13.3	13.3	22.1	14.0	6.1
Other civil research .....	0.0	0.0	1.6	0.6	0.4	0.0	NA	0.9	1.1
Defense .....	55.8	4.5	22.8	6.1	34.1	4.0	13.4	43.5	3.7

NA = not available

GUF = general university funds

NOTES: United States, Russian Federation, and South Korea do not have category equivalent to GUF. Conversions of foreign currency to U.S. dollars are calculated with Organisation for Economic Co-operation and Development (OECD) purchasing power parity exchange rates. Detail may not add to total because of rounding. U.S. data based on budget authority. Because of GUF and slight differences in accounting practices, distribution of government budgets among socioeconomic objectives may not completely reflect actual distribution of government-funded research in particular objectives. Japanese data based on science and technology budget data, which include items other than R&D. Such items are small proportion of budget; therefore, data may still be used as approximate indicator of relative government emphasis on R&D by objective.

SOURCES: OECD, unpublished tabulations (2005); and *Main Science and Technology Indicators* (2004).

*Science and Engineering Indicators 2006.*

Appendix table 4-48

**R&D expenditures by majority-owned affiliates of foreign companies in United States, by country/region of ultimate beneficial owner: 1980 and 1987–2002**

(Millions of current U.S. dollars)

R&D expenditure	1980	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total .....	1,517	4,497	5,485	6,720	8,511	9,127	10,745	11,262	12,671	14,846	15,641	17,216	22,375	24,027	26,180	26,463	27,508
Manufacturing .....	1,245	3,809	4,773	5,915	7,282	7,839	9,056	9,560	10,855	12,828	13,090	14,270	18,788	19,991	20,990	20,054	20,228
Country/region																	
Canada.....	113	D	D	D	D	D	D	D	D	1,337	1,452	1,668	2,352	2,385	3,693	2,136	1,583
Europe.....	1,217	3,458	4,241	5,414	6,762	7,275	8,325	8,628	9,487	11,442	11,535	12,327	16,425	18,055	18,634	19,973	20,735
France.....	39	332	402	510	766	913	1,230	1,190	1,383	1,529	1,680	1,783	1,881	2,434	2,596	2,662	2,620
Germany.....	281	824	963	1,216	1,435	1,596	1,855	2,003	2,147	3,563	2,747	2,923	5,381	6,135	5,603	5,686	5,659
Italy.....	D	D	73	93	151	143	91	132	157	172	D	D	D	294	D	D	245
Netherlands.....	D	540	615	690	757	642	685	674	719	786	937	990	964	1,296	1,421	1,660	1,773
Sweden.....	D	124	160	205	271	225	322	180	263	D	D	687	713	428	373	465	454
Switzerland.....	329	D	D	1,060	1,455	1,637	1,873	2,117	2,127	2,490	2,699	2,369	3,076	3,008	2,922	3,107	3,295
United Kingdom.....	247	790	1,085	1,568	1,809	1,987	2,090	2,139	2,428	2,316	2,575	2,984	3,720	3,678	4,632	4,819	5,459
Asia/Pacific.....	D	179	345	412	796	834	1,080	1,232	1,397	1,611	2,116	2,642	2,961	2,820	2,864	2,946	3,263
Japan.....	D	133	282	369	709	741	938	1,112	1,200	1,259	1,531	2,036	2,584	2,535	2,644	2,719	D
Other.....	D	46	63	43	87	93	142	120	197	352	585	606	377	285	220	227	NA
Latin America/other Western Hemisphere .....	155	329	302	352	314	330	534	D	610	317	364	373	396	564	735	1,126	1,035
Middle East.....	2	14	9	10	9	9	20	38	62	72	100	103	132	D	D	177	D
Africa.....	D	D	D	D	D	D	4	5	2	D	D	D	D	D	D	36	35

D = data withheld to avoid disclosing operations of individual companies; NA = not available

NOTES: Preliminary estimates for 2002. Data are for majority-owned (>50%) nonbank U.S. affiliates of foreign parent companies. Data for 1980 and 1987–96 for R&D funded by affiliates; 1997 to latest data for R&D performed by affiliates. Manufacturing data exclude petroleum manufacturing before 1997. Total R&D funded based on R&D spending according to funding source. Total R&D performed refers to R&D expenditures according to who conducts R&D activity, whether for performer or for others under contract, and excludes R&D expenditures conducted by others under contract. Ultimate beneficial owner refers to person proceeding up U.S. affiliate's ownership chain beginning with and including foreign parent not owned >50% by another person.

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Foreign Direct Investment in the United States (annual series), <http://www.bea.gov/bea/di/di1fdiop.htm>.

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Appendix table 4-49

**R&D performed by majority-owned affiliates of foreign companies in United States, by NAICS industry of affiliate: 1997–2002**

(Millions of current U.S. dollars)

Industry/sector	NAICS code	1997	1998	1999	2000	2001	2002
Total .....		17,216	22,375	24,027	26,180	26,463	27,508
Manufacturing .....	31–33	14,270	18,788	19,991	20,990	20,054	20,228
Food .....	311	239	224	205	200	197	117
Printing and related support activities .....	323	34	42	76	54	43	38
Petroleum and coal products .....	324	272	479	D	D	D	D
Chemicals .....	325	6,754	7,770	7,679	7,341	7,563	7,997
Basic chemicals .....	3251	617	623	832	D	D	491
Pharmaceuticals and medicines .....	3254	5,304	6,381	6,191	5,943	6,124	6,703
Other chemicals .....	325 (minus 3251, 3254)	833	766	656	NA	NA	542
Plastics and rubber products .....	326	331	349	372	301	305	285
Nonmetallic mineral products .....	327	214	146	172	199	206	214
Primary metals .....	331	60	65	61	67	D	50
Fabricated metal products .....	332	203	181	149	213	D	154
Machinery .....	333	721	677	898	1,748	D	1,872
Agriculture, construction, and mining machinery .....	3331	103	69	290	237	201	189
Industrial machinery .....	3332	83	90	D	119	D	333
Other machinery .....	333 (minus 3331, 3332)	535	518	D	1,392	1,408	1,351
Computer and electronic products .....	334	3,413	4,487	5,031	6,152	4,867	4,885
Computers and peripheral equipment .....	3341	120	324	D	D	104	675
Communications equipment .....	3342	2,243	3,045	3,431	4,607	2,998	2,087
Semiconductors and other electronic components .....	3344	586	635	917	1,003	1,077	351
Other electronic products .....	334 (minus 3341, 3342, 3344)	464	483	D	NA	688	1,772
Electrical equipment, appliances, and components .....	335	781	885	1,195	823	875	396
Transportation equipment .....	336	641	2,762	3,204	3,344	3,193	3,183
Motor vehicles, bodies, and trailers .....	3361, 3362, 3363	500	2,555	D	3,082	2,910	2,956
Other transportation equipment .....	336 (minus 3361, 3362, 3363)	141	207	D	262	283	227
Other manufacturing .....	607	721	NA	NA	NA	NA	—
Wholesale trade .....	42	D	D	D	D	D	4,973
Information .....	51	260	329	548	790	D	723
Publishing industries .....	511	D	D	D	D	D	679
Motion picture and sound recording industries .....	512	5	1	—	—	—	3
Broadcasting and telecommunications .....	513	7	6	D	D	13	NA
Information services and data processing services .....	514	D	D	D	D	180	NA
Finance and insurance (except depository institutions) .....	52	12	D	D	D	D	D
Professional, scientific, and technical services .....	54	597	685	836	828	804	964
Architectural, engineering, and related services .....	5413	12	13	36	18	13	D
Computer systems design and related services .....	5415	281	333	315	314	204	125
Management, scientific, and technical consulting .....	5416	—	—	0	0	D	12
Other professional, scientific, and technical services .....	54 (minus 5413, 5415, 5416)	303	339	485	495	D	D

D = data withheld to avoid disclosing operations of individual companies; NA = not available; — = &lt;\$500,000

NAICS = North American Industry Classification System

NOTES: Preliminary estimates for 2002. Data for majority-owned (&gt;50% ownership) nonbank U.S. affiliates of foreign parent companies. Data exclude expenditures for R&amp;D conducted by others under contract.

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Foreign Direct Investment in the United States (annual series), <http://www.bea.gov/bea/di/1fdiop.htm>.

Appendix table 4-50

(Page 1 of 2)

**R&D funded by and performed by majority-owned affiliates of foreign companies in United States,  
by NAICS industry of affiliate: 2002**

(Millions of current U.S. dollars)

Industry	Funded by affiliates			Performed by affiliates			
	Total	Performed by		Total	Funded by		
		Themselves	Others <sup>a</sup>		Themselves	Federal government	Others <sup>a</sup>
All industries.....	25,453	24,863	591	27,508	24,863	555	2,090
Manufacturing.....	19,746	19,222	524	20,228	19,222	521	484
Food.....	105	102	2	117	102	0	15
Beverages and tobacco products.....	84	80	4	80	80	0	0
Textiles, apparel, and leather products.....	D	D	0	D	D	0	0
Paper.....	82	81	1	81	81	0	0
Printing and related support activities.....	38	38	0	38	38	0	0
Petroleum and coal products.....	D	D	—	D	D	0	0
Chemicals.....	8,046	7,763	284	7,997	7,763	0	235
Basic chemicals.....	491	491	0	491	491	0	0
Resins and synthetic rubber, fibers, and filaments.....	261	261	0	261	261	0	0
Pharmaceuticals and medicines.....	6,752	6,469	284	6,703	6,469	0	235
Soap, cleaning compounds, and toilet preparations.....	321	321	0	321	321	0	0
Other.....	221	221	0	221	221	0	0
Plastics and rubber products.....	285	285	0	285	285	0	0
Nonmetallic mineral products.....	214	214	0	214	214	0	0
Primary and fabricated metals.....	161	155	6	204	155	45	4
Primary metals.....	49	48	1	50	48	0	2
Fabricated metal products.....	112	107	5	154	107	45	2
Machinery.....	1,732	1,727	5	1,872	1,727	D	D
Agriculture, construction, and mining machinery.....	190	189	2	189	189	0	0
Industrial machinery.....	333	333	—	333	333	0	0
Other.....	1,209	1,205	3	1,351	1,205	D	D
Computers and electronic products.....	4,579	4,395	185	4,885	4,395	D	D
Computers and peripheral equipment.....	675	675	0	675	675	0	0
Communications equipment.....	2,120	2,087	33	2,087	2,087	0	0
Semiconductors and other electronic components.....	351	351	0	351	351	0	0
Navigational, measuring, and other instruments.....	1,394	1,243	152	1,730	1,243	D	D
Other.....	39	39	0	42	39	0	3
Electrical equipment, appliances, and components.....	396	396	0	396	396	0	—
Transportation equipment.....	3,128	3,114	14	3,183	3,114	D	D
Motor vehicles, bodies and trailers, and parts.....	2,949	2,941	8	2,956	2,941	D	D
Other.....	179	173	6	227	173	54	0
Other.....	726	704	22	704	704	1	0
Wholesale trade.....	4,037	3,976	61	4,973	3,976	D	D
Motor vehicles and motor vehicle parts and supplies.....	382	328	55	334	328	0	6
Electrical goods.....	1,127	1,126	2	1,137	1,126	D	D
Petroleum and petroleum products.....	205	205	0	206	205	1	0
Other.....	2,321	2,317	5	3,296	2,317	0	979
Retail trade.....	53	53	0	53	53	0	0
Food and beverage stores.....	—	—	0	—	—	0	0
Other.....	53	53	0	53	53	0	0
Information.....	712	711	2	723	711	D	D
Publishing industries.....	668	667	1	679	667	D	D
Motion picture and sound recording industries.....	3	3	0	3	3	0	—
Telecommunications.....	11	11	1	11	11	0	0
Other.....	30	30	0	30	30	0	0
Finance (except depository institutions) and insurance.....	D	D	0	D	D	D	0
Finance, except depository institutions.....	D	D	0	D	D	D	0
Insurance carriers and related activities.....	6	6	0	6	6	0	0
Real estate and rental and leasing.....	21	21	0	21	21	0	0
Real estate.....	—	—	0	—	—	0	0
Rental and leasing (except real estate).....	21	21	0	21	21	0	0
Professional, scientific, and technical services.....	362	362	0	964	362	0	602
Architectural, engineering, and related services.....	58	58	0	D	58	0	D
Computer systems design and related services.....	125	125	0	125	125	0	0
Management, scientific, and technical consulting.....	12	12	0	12	12	0	0

Appendix table 4-50

(Page 2 of 2)

**R&D funded by and performed by majority-owned affiliates of foreign companies in United States,  
by NAICS industry of affiliate: 2002**

(Millions of current U.S. dollars)

Industry	Funded by affiliates			Performed by affiliates			
	Total	Performed by		Total	Funded by		
		Themselves	Others <sup>a</sup>		Themselves	Federal government	Others <sup>a</sup>
Other .....	168	168	0	D	168	0	D
Other industries .....	D	D	4	D	D	D	0
Agriculture, forestry, fishing, and hunting .....	77	77	0	77	77	0	0
Mining .....	140	136	4	D	136	D	0
Utilities .....	13	13	0	13	13	0	0
Construction .....	D	D	—	D	D	0	0
Transportation and warehousing .....	3	3	0	3	3	0	0
Management of nonbank companies and enterprises .....	7	7	0	7	7	0	0
Administration, support, and waste management .....	30	30	0	30	30	0	0
Health care and social assistance .....	D	D	0	D	D	0	0
Accommodation and food services .....	—	—	0	—	—	0	0
Miscellaneous services .....	D	D	0	D	D	0	0

— = ≤\$500,000; D = data withheld to avoid disclosing operations of individual companies

NAICS = North American Industry Classification System

<sup>a</sup> Including but not limited to foreign parents and affiliates of same company located outside United States.

NOTES: Second and fifth data columns show same data from two different perspectives. Data are preliminary estimates. Data for majority-owned (>50%) nonbank U.S. affiliates of foreign parent companies. R&D funded based on R&D spending according to funding source. R&D performed refers to R&D expenditures according to who conducts R&D activity, whether for performer itself or for others under contract, and excludes R&D expenditures conducted by others under contract.

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Foreign Direct Investment in the United States (2002), <http://www.bea.gov/bea/di/di1fdiop.htm>.*Science and Engineering Indicators 2006*

Appendix table 4-51

**R&D performed abroad by majority-owned foreign affiliates of U.S. parent companies, by country/economy/region: 1994–2002**

(Millions of current U.S. dollars)

Country/economy/region	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total .....	11,877	12,582	14,039	14,593	14,664	18,144	20,457	19,702	21,151
Manufacturing .....	10,053	10,791	12,205	12,505	12,819	16,388	18,455	17,383	18,696
Country/region									
Canada .....	836	1,068	1,563	1,823	1,750	1,681	2,332	2,131	2,345
Europe .....	8,676	9,144	9,662	10,003	10,387	12,217	12,870	12,060	D
Belgium .....	469	292	356	310	320	375	412	407	511
France .....	1,372	1,271	1,315	1,281	1,328	1,452	1,465	1,411	1,480
Germany .....	2,849	3,068	3,073	2,940	3,022	3,377	3,115	3,280	3,603
Ireland .....	396	171	193	320	363	251	465	537	D
Italy .....	365	346	554	569	584	504	592	541	567
Netherlands .....	415	495	547	480	384	374	369	475	477
Spain .....	D	288	327	181	184	D	213	181	199
Sweden .....	72	691	443	405	445	1,036	1,341	813	1,316
Switzerland .....	191	242	190	230	223	231	286	392	405
United Kingdom .....	2,158	1,935	2,139	2,843	3,065	4,000	4,111	3,642	3,735
Asia/Pacific .....	1,775	1,865	2,076	1,869	1,603	3,226	3,936	4,194	3,881
Australia .....	230	287	409	369	290	294	349	286	329
China .....	7	13	25	35	52	319	506	D	646
Hong Kong .....	51	55	38	82	66	214	D	289	D
India .....	5	5	9	22	23	20	D	D	80
Indonesia .....	5	9	6	5	4	1	2	3	3
Japan .....	1,130	1,286	1,333	1,089	962	1,523	1,630	1,507	1,433
Korea .....	17	29	34	41	29	101	143	157	167
Malaysia .....	27	21	23	32	30	161	218	D	D
New Zealand .....	7	9	16	18	15	9	8	10	6
Philippines .....	14	23	14	12	10	31	40	48	50
Singapore .....	167	63	88	73	62	426	551	755	589
Taiwan .....	110	61	75	84	55	122	143	139	70
Thailand .....	3	5	5	5	4	7	13	18	22
Latin America/other									
Western Hemisphere .....	477	389	546	663	748	613	663	562	D
Argentina .....	21	22	42	43	56	26	38	43	24
Brazil .....	238	249	346	437	446	288	253	199	306
Chile .....	2	15	6	7	6	4	11	8	6
Colombia .....	8	9	9	12	11	6	10	11	10
Costa Rica .....	2	2	2	4	6	2	D	4	7
Mexico .....	183	58	121	126	191	238	303	248	284
Venezuela .....	17	25	9	11	14	40	22	24	42
Middle East .....	98	97	170	208	141	389	630	726	889
Israel .....	96	97	169	208	141	389	630	726	889
Africa .....	15	19	21	26	35	18	25	29	D
South Africa .....	14	17	18	22	30	14	21	24	D
Addenda									
Eastern Europe .....	5	18	36	48	79	54	83	38	68
European Union .....	8,271	8,852	9,386	9,691	10,058	11,900	12,472	11,578	D
OPEC .....	24	35	16	18	19	42	25	27	46

D = data withheld to avoid disclosing operations of individual companies

OPEC = Organization of the Petroleum Exporting Countries

NOTES: Data for majority-owned (>50% ownership) nonbank foreign affiliates of nonbank U.S. parents. Data include R&D expenditures performed by affiliates, whether for themselves or for others, under contract. Data exclude R&D expenditures made by others for affiliates under contract. Manufacturing data exclude petroleum manufacturing before 1999. European Union includes 12 countries for 1994 and 15 countries thereafter. Preliminary estimates for 2002.

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of U.S. Direct Investment Abroad (annual series), <http://www.bea.gov/bea/di/di1usdop.htm>.

Appendix table 4-52

**R&D performed abroad by majority-owned foreign affiliates of U.S. parent companies, by selected NAICS industry of affiliate: 1999–2002**

(Millions of current U.S. dollars)

Industry/sector	NAICS code	1999	2000	2001	2002
All industries.....	na	18,144	20,457	19,702	21,151
Mining.....	21	8	16	10	13
Utilities.....	22	—	2	1	1
Manufacturing.....	31–33	16,388	18,455	17,383	18,696
Food.....	311	367	279	321	338
Chemicals.....	325	4,340	4,609	4,503	4,819
Primary and fabricated metals.....	na	151	184	153	181
Machinery.....	333	748	772	743	642
Computers and electronic products.....	334	3,773	5,440	5,697	5,278
Electrical equipment, appliances, and components....	335	214	310	339	418
Transportation equipment.....	336	5,669	5,765	4,690	5,898
Wholesale trade.....	42	515	553	739	635
Information.....	51	161	410	410	507
Finance (except depository institutions) and insurance....	52	1	3	13	14
Professional, scientific, and technical services.....	54	1,040	930	1,062	1,237
Other industries.....	na	31	89	83	48

— = ≤ \$500,000; na = not applicable

NAICS = North American Industry Classification System

NOTES: Data for majority-owned (>50% ownership) nonbank foreign affiliates of nonbank U.S. parents. Data include R&D expenditures performed by affiliates, whether for themselves or for others, under contract. Data exclude R&D expenditures made by others for affiliates under contract. Manufacturing data exclude petroleum manufacturing before 1999. Preliminary estimates for 2002.

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of U.S. Direct Investment Abroad (annual series), <http://www.bea.gov/bea/di/di1usdop.htm>.



Appendix table 4-53

**R&D expenditures in United States by U.S. MNC parent companies: 1994–2002**

(Millions of current U.S. dollars)

Type of R&D expenditure and sector	1994	1995	1996	1997	1998	1999	2000	2001	2002
<b>All industries</b>									
Performed .....	91,574	97,667	100,551	106,800	113,777	126,291	135,467	143,017	137,968
For themselves .....	75,673	NA	NA	NA	NA	111,008	NA	NA	NA
For federal government .....	13,267	NA	NA	NA	NA	7,810	NA	NA	NA
For others .....	2,633	NA	NA	NA	NA	7,473	NA	NA	NA
Funded .....	81,234	NA	NA	NA	NA	121,352	NA	NA	NA
Performed by themselves .....	75,673	NA	NA	NA	NA	NA	NA	NA	NA
Performed by others .....	5,561	NA	NA	NA	NA	NA	NA	NA	NA
<b>Manufacturing</b>									
Performed .....	79,035	86,414	89,973	94,791	100,770	104,842	109,744	115,118	111,237
For themselves .....	64,762	NA	NA	NA	NA	91,575	NA	NA	NA
For federal government .....	12,039	NA	NA	NA	NA	7,658	NA	NA	NA
For others .....	2,233	NA	NA	NA	NA	5,609	NA	NA	NA
Funded .....	69,552	NA	NA	NA	NA	101,085	NA	NA	NA
Performed by themselves .....	64,762	NA	NA	NA	NA	NA	NA	NA	NA
Performed by others .....	4,790	NA	NA	NA	NA	NA	NA	NA	NA

NA = not available

MNC = multinational corporation

NOTES: Preliminary estimates for 2002. U.S. MNC parent company is a company that resides in United States and owns or controls at least 10% of voting securities or equivalent of foreign business enterprise. Funded R&D is based on R&D funded by MNC parent company itself, regardless of performer. R&D performed includes R&D performed by U.S. MNC parent companies, regardless of funding source, whether for performer itself or for others, including R&D performed for federal government; excludes R&D conducted by others under contract. Estimates for 1999 on based on North American Industry Classification System, and data for manufacturing include petroleum industry. In prior years, estimates based on Standard Industrial Classification System, and manufacturing data excluded the petroleum industry. Full methodology notes available at original source (see below).

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of U.S. Direct Investment Abroad (annual series), <http://www.bea.gov/bea/di/di1usdop.htm>.

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Appendix table 4-54

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**R&D performed in United States by U.S. MNC parent companies, by NAICS industry: 1999–2002**

(Millions of current U.S. dollars)

Industry/sector	NAICS code	1999	2000	2001	2002
All industries.....	na	126,291	135,467	143,017	137,968
Mining.....	21	212	329	411	382
Oil and gas extraction.....	211	53	46	49	33
Other mining.....	na	159	284	362	349
Utilities.....	22	81	108	59	52
Manufacturing.....	31–33	104,842	109,744	115,118	111,237
Food.....	311	934	890	914	1,023
Beverages and tobacco products.....	312	501	467	469	D
Textiles, apparel, and leather products.....	313	275	248	125	D
Wood products.....	321	31	D	D	78
Paper.....	322	1,478	1,498	1,358	1,384
Printing and related support activities.....	323	129	148	D	157
Petroleum and coal products.....	324	990	977	1,002	1,044
Chemicals.....	325	28,198	29,212	31,927	32,830
Basic chemicals.....	3251	1,627	1,569	1,742	1,656
Resins and synthetic rubber, fibers and filaments.....	3252	2,784	2,963	2,972	2,537
Pharmaceuticals and medicines.....	3254	18,382	20,591	23,169	24,373
Soap, cleaning compounds, and toilet preparations.....	3256	1,957	2,249	2,153	2,007
Other chemicals.....	na	3,449	1,841	1,892	2,257
Plastics and rubber products.....	326	1,031	955	929	936
Nonmetallic mineral products.....	327	371	406	339	338
Primary and fabricated metals.....	na	1,320	1,417	1,038	1,308
Primary metals.....	331	760	818	484	513
Fabricated metal products.....	332	560	600	554	794
Machinery.....	333	5,252	7,196	8,561	8,023
Agriculture, construction, and mining machinery.....	3331	1,340	1,343	1,484	1,527
Industrial machinery.....	3332	1,250	1,607	1,579	1,377
Other machinery.....	na	2,662	4,247	5,497	5,120
Computers and electronic products.....	334	30,298	35,616	38,356	35,308
Computers and peripheral equipment.....	3341	5,659	6,952	7,727	7,675
Communications equipment.....	3342	13,276	14,614	14,526	11,588
Audio and video equipment.....	3343	407	436	359	334
Semiconductors and other electronic components.....	3344	8,997	10,252	11,114	11,213
Navigational, measuring, and other instruments.....	3345	1,579	2,960	4,158	4,146
Magnetic and optical media.....	3346	381	402	473	352
Electrical equipment, appliances, and components.....	335	2,958	2,511	2,008	1,745
Transportation equipment.....	336	29,162	25,834	25,147	23,224
Motor vehicles, bodies and trailers, and parts.....	3361, 3362, 3363	17,513	16,223	18,183	16,575
Other transportation equipment.....	na	11,649	9,611	6,964	6,649
Furniture and related products.....	337	90	D	128	130
Miscellaneous manufacturing.....	339	1,826	2,176	2,570	3,151
Wholesale trade: durable and nondurable goods.....	42	4,000	3,755	4,032	2,751
Professional and commercial equipment and supplies.....	4214	2,635	2,404	2,489	1,378
Other durable goods wholesalers.....	na	774	577	638	535
Petroleum and petroleum products.....	4227	D	231	238	219
Other nondurable goods wholesalers.....	na	D	543	666	619
Information.....	51	6,763	8,251	9,514	9,427
Publishing industries.....	511	4,050	5,510	6,452	6,436
Motion picture and sound recording industries.....	512	D	12	12	12
Broadcasting and telecommunications.....	513	869	820	796	626
Broadcasting, cable networks, and program distribution.....	5131, 5132	D	14	14	38
Telecommunications.....	5133	D	806	782	589
Information services and data processing services.....	514	D	1,909	2,254	2,353
Finance (except depository institutions) and insurance.....	52	315	510	617	672
Finance (except depository institutions).....	na	240	458	477	543
Securities, commodity contracts, and other intermediation and related activities.....	523	D	254	D	340
Other finance (except depository institutions).....	na	D	204	D	204
Insurance carriers and related activities.....	524	75	52	141	128
Professional, scientific, and technical services.....	54	8,522	10,042	10,348	10,471
Architectural, engineering, and related services.....	5413	49	24	18	D
Computer systems design and related services.....	5415	7,453	8,359	8,929	8,941

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**R&D performed in United States by U.S. MNC parent companies, by NAICS industry: 1999–2002**

(Millions of current U.S. dollars)

Industry/sector	NAICS code	1999	2000	2001	2002
Management, scientific, and technical consulting .....	5416	D	D	D	544
Advertising and related services .....	5418	D	D	D	D
Other professional, scientific, and technical services .....	na	716	874	802	934
Other industries .....	na	1,556	2,729	2,918	2,977
Agriculture, forestry, fishing and hunting .....	11	2	2	D	31
Construction .....	23	D	D	D	D
Retail trade .....	44-45	D	D	D	D
Transportation and warehousing .....	48-49	26	8	12	13
Real estate and rental and leasing .....	53	D	6	7	7
Real estate .....	531	0	0	0	0
Rental and leasing (except real estate) .....	532	D	6	7	7
Management of companies and enterprises (except bank companies) .....	55	0	0	0	0
Administration, support, and waste management .....	56	6	D	D	D
Health care and social assistance .....	62	D	30	32	31
Accommodation and food services .....	72	25	31	42	D
Accommodation .....	721	0	0	0	0
Food services and drinking places .....	722	25	31	42	D
Miscellaneous services .....	na	15	16	17	52

D = data withheld to avoid disclosing operations of individual companies; na = not applicable

MNC = multinational corporation; NAICS = North American Industry Classification System

NOTES: Preliminary estimates for 2002. U.S. MNC parent company is a company that resides in United States and owns or controls at least 10% of voting securities or equivalent of foreign business enterprise. Data include R&D performed by U.S. MNC parent companies, regardless of funding source, whether for performer itself or for others, including R&D performed for federal government; data exclude R&D conducted by others under contract.

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of U.S. Direct Investment Abroad (annual series), <http://www.bea.gov/bea/di/di1usdop.htm>.

Appendix table 4-55

**Company and other nonfederal funds for industrial R&D performed abroad: 1985–2003**

(Millions of current U.S. dollars)

Year	Total	Manufacturing	Nonmanufacturing
1985.....	3,650	3,632	18
1986.....	4,624	4,597	27
1987.....	5,226	5,162	64
1988.....	6,208	6,062	146
1989.....	6,706	6,450	256
1990.....	7,952	7,537	415
1991.....	9,147	8,369	778
1992.....	10,063	9,228	835
1993.....	9,565	7,795	1,770
1994.....	9,395	7,895	1,500
1995.....	13,052	10,846	2,206
1996.....	14,050	11,540	2,510
1997.....	13,107	11,743	1,364
1998.....	16,008	12,658	3,350
1999.....	16,765	12,354	4,411
2000.....	17,463	12,252	5,211
2001.....	17,869	10,998	6,871
2002.....	24,868	17,093	7,775
2003.....	28,768	17,509	11,259

NAICS = North American Industry Classification System

NOTES: Data for industrial R&D performed outside 50 U.S. states and District of Columbia funded by U.S. R&D-performing companies and other sources except federal government. Starting with 1999 survey, estimates based on NAICS. In prior years, estimates based on Standard Industrial Classification System.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Industrial Research and Development (annual series), <http://www.nsf.gov/sbe/srs/indus/start.htm>.

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**Company and other nonfederal funds for industrial R&D performed abroad, by NAICS industry: 1999–2003**

(Millions of current U.S. dollars)

Industry/sector	NAICS code	1999	2000	2001	2002	2003
All industries.....	21–23, 31–33, 42, 44–81	16,765	17,463	17,869	24,868	28,768
Manufacturing industries.....	31–33	12,354	12,252	10,998	17,093	17,509
Food.....	311	87	95 (S)	210	300	278
Beverage and tobacco products.....	312	D	D	0	D	D
Textiles, apparel, and leather.....	313–16	D	D	26	25	31
Wood products.....	321	D	0	D	D	7
Paper, printing, and support activities.....	322, 323	D	D	D	544	694
Petroleum and coal products.....	324	D	9	D	16	20
Chemicals.....	325	3,243	3,578	2,328	3,989	4,492
Basic chemicals.....	3251	D	256	152	249	230
Resin, synthetic rubber, fibers, and filament.....	3252	D	D	D	366	385
Pharmaceuticals and medicines.....	3254	2,832	3,030	1,720	3,268	3,751
Other chemicals.....	Other 325	95	D	D	107	126
Plastics and rubber products.....	326	172	168	181	218	234
Nonmetallic mineral products.....	327	40	40	15	32	27
Primary metals.....	331	7	D	12	23	19
Fabricated metal products.....	332	75	65	61	371	311
Machinery.....	333	707	736	527	788	772
Computer and electronic products.....	334	1,902	1,705	2,562	3,763	2,927
Computers and peripheral equipment.....	3341	289	D	478 (S)	383 (S)	172
Communications equipment.....	3342	D	377	633	969	983
Semiconductor and other electronic components.....	3344	302	327	852	1,647	1,006
Navigational, measuring, electromedical, and control instruments.....	3345	1,112	679	586	756	758
Other computer and electronic products.....	Other 334	D	D	12	7	9
Electrical equipment, appliances, and components.....	335	433	455	418 (S)	279	306
Transportation equipment.....	336	3,933	3,640	2,832	5,160	5,314
Motor vehicles, trailers, and parts.....	3361–63	D	D	D	4,598	4,680
Aerospace products and parts.....	3364	D	D	138	552	624
Other transportation equipment.....	Other 336	17	D	D	10	9
Furniture and related products.....	337	D	D	D	—	D
Miscellaneous manufacturing.....	339	963	942	1,226	1,578	2,076
Medical equipment and supplies.....	3391	D	D	1,150	1,472	1,963
Other miscellaneous manufacturing.....	Other 339	D	D	76	106	113
Nonmanufacturing industries.....	21–23, 42, 44–81	4,411	5,211	6,871	7,775	11,258
Mining, extraction, and support activities.....	21	48	43	37	48	46
Utilities.....	22	0	0	0	D	D
Construction.....	23	D	D	D	D	D
Wholesale trade.....	42	NA	NA	NA	NA	7,521
Professional and commercial equipment and supplies, including computers.....	4214	NA	NA	NA	NA	4,007
Electrical goods.....	4216	NA	NA	NA	NA	141
Drugs and druggists' sundries.....	4222	NA	NA	NA	NA	2,976
Other wholesale trade.....	Other 42	NA	NA	NA	NA	397
Retail trade.....	44, 45	NA	NA	NA	NA	299
Transportation and warehousing.....	48, 49	0	0	0	0	D
Information.....	51	1,379	1,564	1,672	1,806	2,074
Publishing.....	511	637	940	983	D	1,359
Newspaper, periodical, book, and database.....	5111	0	D	8	D	24
Software.....	5112	637	D	975	1,058	1,336
Broadcasting and telecommunications.....	513	D	D	D	D	D
Telecommunications.....	5133	D	D	D	D	D
Other broadcasting and telecommunications.....	Other 513	NA	NA	NA	NA	0
Other information.....	Other 51	D	D	D	D	D
Finance, insurance, and real estate.....	52, 53	D	D	24	113	72
Professional, scientific, and technical services.....	54	523	904	881	964	1,145
Architectural, engineering, and related services.....	5413	D	371	78	D	98
Computer systems design and related services.....	5415	146	D	302	600	592
Scientific R&D services.....	5417	287	292	488	297	449
Other professional, scientific, and technical services.....	Other 54	D	D	12	D	5

Appendix table 4-56

(Page 2 of 2)

**Company and other nonfederal funds for industrial R&D performed abroad, by NAICS industry: 1999–2003**

(Millions of current U.S. dollars)

Industry/sector	NAICS code	1999	2000	2001	2002	2003
Management of companies and enterprises .....	55	18	D	D	D	D
Health care services .....	621–23	D	D	D	D	3
Other nonmanufacturing .....	56, 61, 624, 71, 72, 81	14	75 (S)	43	65	76

S = imputation of &gt;50%; D = data withheld to avoid disclosing operations of individual companies; — = &lt; \$500,000; NA = not available

NAICS = North American Industry Classification System

NOTES: Data for industrial R&D performed outside 50 U.S. states and District of Columbia funded by U.S. R&D-performing companies and other sources except federal government. Starting with 1999 survey, estimates based on NAICS. In prior years, estimates based on Standard Industrial Classification System.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Industrial Research and Development (annual series), <http://www.nsf.gov/sbe/srs/indus/start.htm>.

*Science and Engineering Indicators 2006*

Appendix table 4-57  
**R&D expenditures and population, by region: 2000**

Region	R&D (PPP \$ billions)	Population (millions)
World.....	728,751	6,086
Africa.....	4,723	812
Asia.....	209,043	3,676
Europe.....	203,063	728
North America.....	285,295	415
Oceania.....	8,677	31
South America and Caribbean...	17,951	423

PPP = purchasing power parity

NOTES: R&D estimates from 80 countries. Detail may not add to total because of rounding.

SOURCES: Organisation for Economic Co-operation and Development, *Main Science and Technology Indicators* (2004); Iberoamerican Web of Science and Technology Indicators, <http://www.ricyt.edu.ar>, accessed 1 April 2005; and United Nations Educational, Scientific and Cultural Organization (UNESCO), Institute for Statistics, <http://www.uis.unesco.org>, accessed 7 April 2005.

*Science and Engineering Indicators 2006*

## Share of business expenditures for R&amp;D, by industry and selected country/economy: 2001–03

(Percent)

Industry	ISIC	EU (2002)	Australia (2002)	Belgium (2002)	Canada (2003)	Czech Republic (2003)	Denmark (2002)	Finland (2003)
Total business enterprise .....		100.0	100.0	100.0	100.0	100.0	100.0	100.0
Manufacturing .....	15–37	82.9	47.3	82.3	60.1	63.6	59.4	84.0
Food products, beverages, and tobacco .....	15–16	1.9	3.9	2.4	0.7	0.4	4.4	1.3
Textiles, textile products, leather, and footwear .....	17–19	0.6	0.4	2.0	0.8	0.9	0.3	0.3
Wood, paper, printing, and publishing .....	20–22	0.6	1.9	1.1	2.7	0.3	0.6	3.3
Chemical, rubber, plastics, and fuel products .....	23–25	22.5	8.3	41.9	11.0	7.6	26.0	9.9
Coke, refined petroleum products, and nuclear fuel .....	23	0.7	0.8	0.9	0.6	0.0	0.0	0.4
Chemicals and chemical products .....	24	20.0	6.5	39.1	10.0	6.2	24.7	7.8
Chemicals excluding pharmaceuticals .....	24 (minus 2423)	6.8	2.7	15.8	1.4	3.1	2.5	5.4
Pharmaceuticals .....	2423	13.2	3.8	23.3	8.6	3.0	22.2	2.4
Rubber and plastics products .....	25	1.7	0.9	1.9	0.4	1.4	1.3	1.7
Other nonmetallic mineral products .....	26	0.8	1.4	1.5	0.1	2.9	0.2	0.5
Basic metals .....	27	1.0	4.6	2.5	1.6	1.0	0.3	1.2
Fabricated metal products (excluding machinery and equipment) .....	28	1.1	1.1	2.2	1.4	1.8	0.8	2.1
Machinery and equipment, instruments, and transportation equipment .....	29–35	53.9	25.3	27.8	41.3	48.1	26.0	64.6
Machinery and equipment, NEC .....	29	7.5	3.2	4.2	2.4	7.3	8.7	6.2
Office, accounting, and computing machinery .....	30	2.2	0.6	0.3	3.4	0.1	0.7	0.1
Electrical machinery and apparatus, NEC .....	31	3.1	0.7	2.2	1.3	3.3	3.5	4.1
Radio, TV, and communication equipment .....	32	12.2	3.5	15.2	22.2	3.7	4.5	49.8
Instruments, watches, and clocks .....	33	5.1	5.1	1.2	2.1	2.0	8.5	3.2
Motor vehicles .....	34	15.9	10.6	2.4	2.6	27.4	0.1	0.3
Other transportation equipment .....	35	7.9	1.7	2.4	7.4	4.3	0.1	0.9
Building and repairing ships and boats .....	351	0.3	1.0	0.0	NA	0.0	NA	0.3
Aircraft and spacecraft .....	353	6.8	0.0	2.1	7.3	2.5	NA	0.2
Railroad and other transportation equipment, NEC .....	352+359	0.8	0.7	0.2	0.1	1.7	NA	0.4
Furniture, manufacturing, NEC .....	36	0.6	0.3	0.7	0.5	0.4	0.8	0.4
Recycling .....	37	NA	0.1	0.1	NA	0.3	NA	0.2
Electricity, gas, and water .....	40–41	0.8	0.9	0.9	1.3	0.0	0.3	0.7
Construction .....	45	0.4	1.1	1.0	0.3	1.3	0.5	1.4
Services .....	50–99	14.8	42.2	14.5	35.8	34.6	39.7	13.4
Wholesale and retail trade, repairs .....	50–52	NA	7.2	1.0	5.1	2.9	3.9	0.0
Hotels and restaurants .....	55	NA	0.3	0.0	NA	0.0	NA	NA
Transport and storage .....	60–63	NA	0.5	0.9	0.2	0.5	NA	0.4
Post and telecommunications .....	64	NA	5.6	1.7	1.7	0.1	3.9	6.2
Post and courier activities .....	641	NA	0.5	0.0	NA	0.1	NA	NA
Telecommunications .....	642	NA	5.1	1.7	NA	0.0	3.8	NA
Financial intermediation .....	65–67	NA	4.0	0.7	2.1	0.1	6.5	NA
Real estate, renting, and business activities .....	70–74	NA	23.7	9.7	26.8	28.6	25.2	NA
Computer and related activities .....	72	NA	12.0	4.0	9.2	8.5	14.0	5.0
Software consultancy and supply .....	722	NA	11.6	2.3	NA	6.4	11.8	NA
Other computer and related activities, NEC .....	72 (minus 722)	NA	0.5	1.7	NA	2.1	2.2	NA
R&D .....	73	NA	5.8	0.3	13.4	16.6	1.2	NA
Other business activities .....	74	NA	5.8	5.3	4.2	3.5	10.0	1.0
Community, social, and personal services .....	75–99	NA	0.9	0.5	NA	2.4	0.2	0.8



**Share of business expenditures for R&D, by industry and selected country/economy: 2001–03**

(Percent)

Industry	ISIC	France (2002)	Germany (2003)	Ireland (2001)	Italy (2003)	Japan (2002)	Korea (2003)	Netherlands (2002)
Total business enterprise .....		100.0	100.0	100.0	100.0	100.0	100.0	100.0
Manufacturing .....	15–37	84.6	90.9	68.3	78.1	91.1	85.5	76.0
Food products, beverages, and tobacco .....	15–16	2.3	0.8	5.5	1.7	2.2	1.4	6.2
Textiles, textile products, leather, and footwear .....	17–19	0.5	0.6	0.7	1.3	0.5	0.6	0.3
Wood, paper, printing, and publishing .....	20–22	0.4	0.3	1.4	0.5	1.0	0.3	0.9
Chemical, rubber, plastics, and fuel products .....	23–25	22.8	18.2	11.1	17.1	18.5	8.9	19.8
Coke, refined petroleum products, and nuclear fuel .....	23	0.8	0.1	0.0	0.1	0.3	1.0	0.2
Chemicals and chemical products .....	24	18.8	16.4	9.8	14.1	15.8	6.7	18.8
Chemicals excluding pharmaceuticals .....	24 (minus 2423)	6.0	9.5	2.1	5.8	7.5	5.0	10.4
Pharmaceuticals .....	2423	12.8	7.0	7.7	8.4	8.3	1.7	8.4
Rubber and plastics products .....	25	3.2	1.6	1.3	2.9	2.3	1.2	0.9
Other nonmetallic mineral products .....	26	1.1	0.8	1.2	0.6	1.3	0.7	0.7
Basic metals .....	27	1.3	0.7	0.3	0.4	2.4	1.9	1.8
Fabricated metal products (excluding machinery and equipment) .....	28	0.8	1.4	0.8	0.8	0.7	0.5	1.3
Machinery and equipment, instruments, and transportation equipment .....	29–35	54.6	67.6	47.1	55.1	64	70.8	44.6
Machinery and equipment, NEC .....	29	4.5	10.8	2.2	9.3	7.8	5.1	10.6
Office, accounting, and computing machinery .....	30	1.1	1.5	2.8	0.7	12.8	1.1	26.7
Electrical machinery and apparatus, NEC .....	31	3.5	2.9	1.3	3.3	8.1	1.5	1.7
Radio, TV, and communication equipment .....	32	13.1	9.4	33.5	13.2	15.9	45.5	0.2
Instruments, watches, and clocks .....	33	6.8	6.1	6.5	5.2	3.9	1.4	2.6
Motor vehicles .....	34	14.6	29.3	0.7	12.6	14.3	13.7	2.3
Other transportation equipment .....	35	10.9	7.6	0.1	10.8	1.1	2.5	0.6
Building and repairing ships and boats .....	351	0.1	0.2	0.0	0.2	0.1	1.7	0.4
Aircraft and spacecraft .....	353	10.7	6.3	0.0	9.7	0.8	0.6	0.0
Railroad and other transportation equipment, NEC .....	352+359	0.2	1.1	0.1	0.9	0.2	0.3	0.2
Furniture, manufacturing, NEC .....	36	0.9	0.4	0.5	0.5	0.7	0.3	0.4
Recycling .....	37	0.0	0.0	NA	0.0	NA	0.0	0.0
Electricity, gas, and water .....	40–41	1.8	0.2	NA	0.5	0.7	1.1	0.5
Construction .....	45	0.4	0.1	NA	0.2	1.2	4.4	0.7
Services .....	50–99	11.1	8.5	31.6	20.9	6.8	9.0	19.5
Wholesale and retail trade, repairs .....	50–52	0.0	NA	0.3	1.7	0.4	0.1	5.4
Hotels and restaurants .....	55	0.0	NA	0.0	0.0	NA	0.0	NA
Transport and storage .....	60–63	NA	2.2	0.0	0.2	0.2	0.0	0.3
Post and telecommunications .....	64	5.8	NA	0.1	0.2	NA	3.0	0.3
Post and courier activities .....	641	NA	NA	0.0	0.0	NA	0.0	NA
Telecommunications .....	642	5.7	NA	0.1	0.2	NA	3.0	NA
Financial intermediation .....	65–67	NA	NA	1.1	3.0	0.0	0.0	0.9
Real estate, renting, and business activities .....	70–74	5.3	5.9	29.5	15.8	6.1	5.7	12.3
Computer and related activities .....	72	3.8	NA	27.5	3.3	1.7	4.1	6.5
Software consultancy and supply .....	722	3.4	NA	24.5	2.5	NA	3.5	5.2
Other computer and related activities, NEC .....	72 (minus 722)	0.3	NA	3.0	0.7	NA	0.6	1.3
R&D .....	73	NA	NA	0.8	10.9	4.2	0.3	2.5
Other business activities .....	74	1.5	NA	1.3	1.5	0.2	1.3	3.3
Community, social, and personal services .....	75–99	NA	NA	0.6	0.1	NA	0.2	0.2

**Share of business expenditures for R&D, by industry and selected country/economy: 2001–03**

(Percent)

Industry	ISIC	Norway (2003)	Poland (2002)	Spain (2002)	Sweden (2003)	United Kingdom (2002)	United States (2002) <sup>a</sup>
Total business enterprise .....		100.0	100.0	100.0	100.0	100.0	100.0
Manufacturing .....		50.5	81.1	68.4	87.9	77.3	70.9
Food products, beverages, and tobacco .....	15–16	5.7	1.8	2.9	0.6	2.3	1.1
Textiles, textile products, leather, and footwear .....	17–19	0.8	1.2	1.6	0.1	0.1	0.1
Wood, paper, printing, and publishing .....	20–22	3.2	0.7	0.9	2.1	0.3	1.8
Chemical, rubber, plastics, and fuel products .....	23–25	7.5	32.9	20.5	21.8	32.1	12.1
Coke, refined petroleum products, and nuclear fuel .....	23	0.1	0.9	1.0	0.2	2.0	0.6
Chemicals and chemical products .....	24	6.6	28.3	18.1	21.1	29.6	10.7
Chemicals excluding pharmaceuticals .....	24 (minus 2423)	3.8	10.0	5.2	1.6	4.4	3.3
Pharmaceuticals .....	2423	2.8	18.3	13.0	19.5	25.2	10.9
Rubber and plastics products .....	25	0.8	3.7	1.3	0.4	0.5	0.8
Other nonmetallic mineral products .....	26	0.7	1.2	1.4	0.3	0.4	0.2
Basic metals .....	27	3.2	3.8	1.7	1.7	0.4	0.2
Fabricated metal products (excluding machinery and equipment) .....	28	1.9	0.5	1.6	0.6	0.4	0.7
Machinery and equipment, instruments, and transportation equipment .....	29–35	26.0	37.8	36.8	60.4	40.9	50.3
Machinery and equipment, NEC .....	29	7.1	9.0	6.6	7.0	5.9	3.3
Office, accounting, and computing machinery .....	30	0.1	0.1	1.1	1.0	1.1	10.1
Electrical machinery and apparatus, NEC .....	31	2.3	9.2	3.9	2.1	3.5	3.1
Radio, TV, and communication equipment .....	32	5.4	4.8	4.4	22.1	7.3	9.8
Instruments, watches, and clocks .....	33	5.8	2.0	2.2	5.5	3.4	10.3
Motor vehicles .....	34	1.8	6.2	9.6	18.9	7.1	7.9
Other transportation equipment .....	35	3.5	6.4	9.0	3.8	12.7	5.6
Building and repairing ships and boats .....	351	3.1	1.2	1.8	0.1	0.7	NA
Aircraft and spacecraft .....	353	0.3	4.5	6.1	3.2	10.3	5.0
Railroad and other transportation equipment, NEC .....	352+359	0.1	0.7	1.1	0.4	1.7	0.6
Furniture, manufacturing, NEC .....	36	1.3	1.3	0.8	0.3	0.4	0.8
Recycling .....	37	0.1	0.0	0.1	NA	0.0	NA
Electricity, gas, and water .....	40–41	2.1	1.1	1.5	0.7	0.9	0.1
Construction .....	45	2.2	0.4	1.1	0.2	0.3	0.1
Services .....		33.4	12.5	27.3	10.4	20.2	27.4
Wholesale and retail trade, repairs .....	50–52	2.8	0.0	2.0	0.0	NA	1.3
Hotels and restaurants .....	55	0.0	0.0	0.2	0.0	NA	NA
Transport and storage .....	60–63	1.4	0.2	0.8	0.1	NA	0.2
Post and telecommunications .....	64	3.3	5.1	7.3	1.5	5.7	NA
Post and courier activities .....	641	0.0	0.0	0.0	NA	NA	NA
Telecommunications .....	642	3.3	5.1	7.3	NA	NA	0.9
Financial intermediation .....	65–67	2.8	0.1	2.6	1.3	NA	1.0
Real estate, renting, and business activities .....	70–74	23.2	5.0	13.0	6.5	13.8	NA
Computer and related activities .....	72	13.6	0.0	6.7	2.6	6.8	10.4
Software consultancy and supply .....	722	9.9	0.0	5.6	1.6	NA	4.2
Other computer and related activities, NEC .....	72 (minus 722)	3.6	0.0	1.1	1.0	NA	6.2
R&D .....	73	3.6	4.9	0.1	3.7	4.3	6.8
Other business activities .....	74	6.0	0.1	6.2	0.3	2.7	NA
Community, social, and personal services .....	75–99	0.0	2.1	1.3	0.9	0.1	NA

NA = not available

EU = European Union; ISIC = International Standard Industrial Classification; NEC = not elsewhere classified

<sup>a</sup>Data for United States adjusted to reclassify some wholesale trade R&D as manufacturing R&D.

NOTES: Data are for years in parentheses. Because Organisation for Economic Co-operation and Development (OECD) and National Science Foundation (NSF) analysts adjust country data to achieve internationally comparable estimates, these data may differ from individual countries' survey estimates. Detail may not add to total because of rounding.

SOURCES: OECD, ANBERD database, [http://www1.oecd.org/dsti/sti/stat-ana/stats/eas\\_anb.htm](http://www1.oecd.org/dsti/sti/stat-ana/stats/eas_anb.htm) (March 2005); and NSF, special tabulations.

Appendix table 5-1

**Academic R&D expenditures directed to basic research, applied research, and development: 1970–2004**

(Percent distribution)

Year	All academic R&D	Basic research	Applied research	Development
1970.....	100.0	76.7	18.7	4.6
1971.....	100.0	76.7	19.5	3.8
1972.....	100.0	73.9	22.5	3.7
1973.....	100.0	71.2	24.6	4.3
1974.....	100.0	71.0	24.7	4.4
1975.....	100.0	69.5	26.2	4.4
1976.....	100.0	68.6	26.7	4.7
1977.....	100.0	68.3	25.9	5.8
1978.....	100.0	67.6	25.0	7.5
1979.....	100.0	67.0	24.8	8.2
1980.....	100.0	66.8	25.1	8.0
1981.....	100.0	66.9	25.1	8.0
1982.....	100.0	67.0	25.2	7.9
1983.....	100.0	66.9	25.6	7.5
1984.....	100.0	67.1	25.5	7.4
1985.....	100.0	68.1	24.5	7.3
1986.....	100.0	68.8	24.1	7.1
1987.....	100.0	67.5	25.1	7.4
1988.....	100.0	65.7	26.6	7.7
1989.....	100.0	65.4	26.8	7.8
1990.....	100.0	65.7	26.0	8.3
1991.....	100.0	66.3	25.3	8.4
1992.....	100.0	66.6	25.2	8.2
1993.....	100.0	66.6	25.1	8.3
1994.....	100.0	66.7	24.9	8.4
1995.....	100.0	67.0	25.0	8.0
1996.....	100.0	67.7	24.8	7.6
1997.....	100.0	70.9	22.2	6.9
1998.....	100.0	73.8	20.0	6.2
1999.....	100.0	74.3	20.7	4.9
2000.....	100.0	74.5	21.7	3.8
2001.....	100.0	74.7	21.5	3.8
2002.....	100.0	74.9	21.5	3.6
2003.....	100.0	74.8	21.6	3.6
2004.....	100.0	74.8	21.7	3.5

NOTES: Data for 2003 and 2004 are preliminary. Expenditure levels for academic R&D refer to calendar years and are approximations based on fiscal year data. Because of changes in estimation procedures, character of work data before FY 1998 not comparable with that of later years. For details of methodological issues of measurement, see National Science Foundation, Division of Science Resources Statistics (NSF/SRS), *National Patterns of Research and Development Resources: Methodology Report* (forthcoming). Data based on annual reports by performers. See appendix tables 4-3, 4-7, 4-11, and 4-15.

SOURCE: NSF/SRS, *National Patterns of R&D Resources* (annual series).

Appendix table 5-2  
**Support for academic R&D, by sector: 1972–2003**

(Page 1 of 2)

Year	All sources	Federal government	State/local government	Industry	Academic institutions	All other sources
Millions of current dollars						
1972.....	2,630	1,795	270	74	305	187
1973.....	2,884	1,985	295	84	318	202
1974.....	3,023	2,032	307	96	370	218
1975.....	3,409	2,288	332	113	417	259
1976.....	3,729	2,512	364	123	446	285
1977.....	4,067	2,726	374	139	514	314
1978.....	4,625	3,059	414	170	623	359
1979.....	5,366	3,598	472	193	735	368
1980.....	6,063	4,098	491	236	835	403
1981.....	6,847	4,571	546	291	1,004	435
1982.....	7,324	4,768	616	337	1,111	491
1983.....	7,882	4,989	626	389	1,302	576
1984.....	8,620	5,431	690	475	1,411	613
1985.....	9,687	6,064	752	560	1,617	694
1986.....	10,928	6,712	915	700	1,869	732
1987.....	12,153	7,343	1,023	790	2,168	828
1988.....	13,463	8,193	1,106	872	2,356	935
1989.....	14,977	8,991	1,224	994	2,698	1,071
1990.....	16,286	9,638	1,324	1,127	3,006	1,191
1991.....	17,585	10,234	1,474	1,204	3,367	1,307
1992.....	18,818	11,093	1,491	1,279	3,547	1,409
1993.....	19,951	11,957	1,559	1,360	3,589	1,486
1994.....	21,027	12,649	1,554	1,422	3,827	1,574
1995.....	22,170	13,332	1,689	1,489	4,047	1,613
1996.....	23,046	13,840	1,811	1,605	4,170	1,619
1997.....	24,370	14,314	1,909	1,737	4,698	1,712
1998.....	25,855	15,150	1,944	1,888	5,002	1,870
1999.....	27,530	16,101	2,021	2,033	5,380	1,994
2000.....	30,067	17,535	2,200	2,156	5,923	2,254
2001.....	32,797	19,223	2,321	2,220	6,607	2,426
2002.....	36,370	21,860	2,506	2,187	7,128	2,689
2003.....	40,077	24,734	2,653	2,162	7,683	2,845
Millions of constant 2000 dollars						
1972.....	8,854	6,042	907	250	1,026	628
1973.....	9,297	6,400	950	271	1,026	650
1974.....	9,088	6,110	923	289	1,112	655
1975.....	9,283	6,231	903	308	1,137	704
1976.....	9,472	6,381	924	313	1,132	723
1977.....	9,611	6,442	884	328	1,215	742
1978.....	10,239	6,772	917	376	1,379	795
1979.....	10,995	7,373	967	396	1,506	754
1980.....	11,421	7,720	925	444	1,574	759
1981.....	11,748	7,844	936	500	1,722	746
1982.....	11,761	7,657	990	541	1,784	789
1983.....	12,122	7,674	963	598	2,002	886
1984.....	12,787	8,055	1,024	705	2,092	910
1985.....	13,917	8,712	1,080	804	2,323	997
1986.....	15,342	9,423	1,285	982	2,624	1,028
1987.....	16,628	10,047	1,400	1,081	2,967	1,133
1988.....	17,859	10,868	1,467	1,157	3,125	1,241
1989.....	19,124	11,480	1,562	1,269	3,445	1,367
1990.....	20,051	11,866	1,630	1,387	3,701	1,467
1991.....	20,867	12,144	1,749	1,429	3,995	1,550
1992.....	21,783	12,840	1,725	1,480	4,106	1,630
1993.....	22,590	13,538	1,765	1,540	4,064	1,683
1994.....	23,303	14,018	1,722	1,576	4,242	1,745
1995.....	24,054	14,464	1,833	1,615	4,391	1,750
1996.....	24,544	14,740	1,929	1,710	4,442	1,724
1997.....	25,508	14,983	1,999	1,818	4,917	1,792

Appendix table 5-2  
**Support for academic R&D, by sector: 1972–2003**

(Page 2 of 2)

Year	All sources	Federal government	State/local government	Industry	Academic institutions	All other sources
Millions of constant 2000 dollars						
1998.....	26,726	15,661	2,009	1,952	5,171	1,933
1999.....	28,090	16,429	2,062	2,074	5,490	2,035
2000.....	30,067	17,535	2,200	2,156	5,923	2,254
2001.....	32,058	18,790	2,268	2,170	6,458	2,372
2002.....	34,882	20,965	2,403	2,098	6,836	2,579
2003.....	37,762	23,305	2,500	2,037	7,240	2,680
Percent distribution						
1972.....	100.0	68.2	10.2	2.8	11.6	7.1
1973.....	100.0	68.8	10.2	2.9	11.0	7.0
1974.....	100.0	67.2	10.2	3.2	12.2	7.2
1975.....	100.0	67.1	9.7	3.3	12.2	7.6
1976.....	100.0	67.4	9.8	3.3	11.9	7.6
1977.....	100.0	67.0	9.2	3.4	12.6	7.7
1978.....	100.0	66.1	9.0	3.7	13.5	7.8
1979.....	100.0	67.1	8.8	3.6	13.7	6.9
1980.....	100.0	67.6	8.1	3.9	13.8	6.6
1981.....	100.0	66.8	8.0	4.3	14.7	6.4
1982.....	100.0	65.1	8.4	4.6	15.2	6.7
1983.....	100.0	63.3	7.9	4.9	16.5	7.3
1984.....	100.0	63.0	8.0	5.5	16.4	7.1
1985.....	100.0	62.6	7.8	5.8	16.7	7.2
1986.....	100.0	61.4	8.4	6.4	17.1	6.7
1987.....	100.0	60.4	8.4	6.5	17.8	6.8
1988.....	100.0	60.9	8.2	6.5	17.5	6.9
1989.....	100.0	60.0	8.2	6.6	18.0	7.1
1990.....	100.0	59.2	8.1	6.9	18.5	7.3
1991.....	100.0	58.2	8.4	6.8	19.1	7.4
1992.....	100.0	58.9	7.9	6.8	18.9	7.5
1993.....	100.0	59.9	7.8	6.8	18.0	7.4
1994.....	100.0	60.2	7.4	6.8	18.2	7.5
1995.....	100.0	60.1	7.6	6.7	18.3	7.3
1996.....	100.0	60.1	7.9	7.0	18.1	7.0
1997.....	100.0	58.7	7.8	7.1	19.3	7.0
1998.....	100.0	58.6	7.5	7.3	19.3	7.2
1999.....	100.0	58.5	7.3	7.4	19.5	7.2
2000.....	100.0	58.3	7.3	7.2	19.7	7.5
2001.....	100.0	58.6	7.1	6.8	20.1	7.4
2002.....	100.0	60.1	6.9	6.0	19.6	7.4
2003.....	100.0	61.7	6.6	5.4	19.2	7.1

NOTE: See appendix table 4-1 for gross domestic product implicit price deflators used to convert current dollars to constant 2000 dollars.

SOURCES: National Science Foundation, Division of Science Resources Statistics, *Academic Research and Development Expenditures: Fiscal Year 2003* (forthcoming); and Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Appendix table 5-3

**Federal and nonfederal R&D expenditures at academic institutions, by field and source of funds: 2003**

Field	All R&D expenditures		Federal expenditures		Nonfederal expenditures	
	Millions of dollars	Percent distribution	Millions of dollars	Percent distribution	Millions of dollars	Percent distribution
All fields.....	40,077	100.0	24,734	100.0	15,343	100.0
Science .....	34,079	85.0	21,126	85.4	12,952	84.4
Physical sciences .....	3,273	8.2	2,353	9.5	920	6.0
Astronomy.....	392	1.0	272	1.1	121	0.8
Chemistry .....	1,220	3.0	816	3.3	404	2.6
Physics .....	1,420	3.5	1,088	4.4	332	2.2
Other.....	240	0.6	177	0.7	63	0.4
Mathematics .....	429	1.1	295	1.2	134	0.9
Computer sciences.....	1,304	3.3	936	3.8	368	2.4
Earth, atmospheric, and ocean sciences .....	2,188	5.5	1,440	5.8	748	4.9
Atmospheric sciences .....	396	1.0	297	1.2	98	0.6
Earth sciences.....	724	1.8	440	1.8	284	1.9
Ocean sciences.....	774	1.9	536	2.2	238	1.5
Other.....	294	0.7	166	0.7	128	0.8
Life sciences .....	23,764	59.3	14,645	59.2	9,119	59.4
Agricultural sciences .....	2,555	6.4	762	3.1	1,793	11.7
Biological sciences.....	7,392	18.4	5,017	20.3	2,375	15.5
Medical sciences.....	12,787	31.9	8,249	33.4	4,538	29.6
Other.....	1,030	2.6	617	2.5	413	2.7
Psychology .....	769	1.9	553	2.2	216	1.4
Social sciences.....	1,661	4.1	667	2.7	995	6.5
Economics .....	314	0.8	108	0.4	207	1.3
Political science .....	289	0.7	92	0.4	197	1.3
Sociology .....	372	0.9	183	0.7	189	1.2
Other.....	686	1.7	284	1.1	401	2.6
Other sciences .....	691	1.7	238	1.0	453	3.0
Engineering .....	5,999	15.0	3,608	14.6	2,391	15.6
Aeronautical/astronautical.....	402	1.0	306	1.2	96	0.6
Bioengineering/biomedical .....	314	0.8	190	0.8	123	0.8
Chemical .....	454	1.1	248	1.0	206	1.3
Civil.....	776	1.9	327	1.3	450	2.9
Electrical/electronic.....	1,402	3.5	925	3.7	477	3.1
Mechanical.....	822	2.1	533	2.2	290	1.9
Materials .....	535	1.3	303	1.2	232	1.5
Other.....	1,295	3.2	776	3.1	518	3.4

NOTES: Detail may not add to total because of rounding. See appendix table 5-2 for detail on nonfederal sources.

SOURCES: National Science Foundation, Division of Science Resources Statistics, *Academic Research and Development Expenditures: Fiscal Year 2003* (forthcoming); and Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Appendix table 5-4  
**Academic R&D funds provided by federal government, by field: Selected years, 1980–2003**  
 (Percent)

Field	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
All fields.....	67.6	59.2	58.2	58.9	59.9	60.2	60.1	60.1	58.7	58.6	58.5	58.3	58.6	60.1	61.7
Science .....	67.4	59.5	58.6	59.3	60.1	60.3	60.2	60.0	58.7	58.7	58.7	58.6	58.9	60.4	62.0
Physical sciences .....	81.9	72.8	71.4	71.8	71.0	71.8	72.6	72.2	71.0	71.0	71.5	70.6	70.3	70.6	71.9
Astronomy.....	75.6	66.1	64.4	66.5	63.8	67.7	68.2	66.1	63.7	62.2	70.9	71.8	68.7	69.0	69.2
Chemistry .....	77.7	68.7	67.3	68.1	68.2	68.2	69.1	69.0	67.2	67.0	67.2	65.6	65.5	65.3	66.9
Physics .....	86.8	77.5	77.1	76.9	75.3	76.0	77.0	76.7	75.9	75.8	75.6	74.7	74.7	75.8	76.6
Other.....	78.7	71.8	66.4	67.7	70.3	70.8	70.8	71.0	71.0	74.7	68.6	66.9	70.7	71.0	73.7
Mathematics .....	78.4	72.6	74.1	74.0	74.6	72.8	73.5	72.2	69.8	69.0	67.0	67.4	67.3	69.2	68.8
Computer sciences.....	70.4	66.5	67.0	68.4	69.7	71.5	70.9	72.7	71.4	68.8	67.7	66.6	67.4	68.4	71.8
Earth, atmospheric, and ocean sciences .....	73.1	63.7	62.7	63.7	66.0	67.6	67.1	67.6	66.1	66.3	65.2	64.2	64.8	64.0	65.8
Atmospheric sciences .....	84.1	75.7	74.1	72.1	76.3	79.4	78.6	78.4	76.0	77.8	77.5	77.5	77.3	73.3	75.2
Earth sciences.....	69.7	57.7	56.7	57.7	58.5	59.6	59.9	60.1	59.8	60.8	58.9	58.9	59.3	57.8	60.8
Ocean sciences.....	77.6	69.6	67.7	71.7	72.0	71.0	70.0	69.6	66.2	66.4	67.1	66.7	66.4	67.5	69.3
Other.....	59.1	50.8	52.7	51.5	58.4	66.6	65.3	67.1	66.9	65.1	60.1	55.8	58.5	58.3	56.6
Life sciences .....	64.9	58.3	57.2	58.0	58.9	58.8	58.4	58.2	57.1	57.1	57.3	57.6	58.3	60.0	61.6
Agricultural sciences .....	30.9	26.2	25.9	27.6	28.9	29.7	29.3	29.3	27.9	26.7	26.8	26.6	26.6	28.1	29.8
Biological sciences.....	74.0	64.5	63.7	64.7	65.3	65.7	64.9	64.7	64.2	64.1	64.0	65.1	65.1	67.0	67.9
Medical sciences.....	74.4	64.3	62.7	62.7	63.3	62.7	63.0	63.0	61.2	61.0	60.8	60.6	61.4	62.8	64.5
Other.....	67.3	59.1	60.0	58.2	59.3	58.8	56.7	58.0	56.9	55.5	58.2	56.8	59.2	59.6	59.9
Psychology .....	73.3	64.8	65.8	65.4	67.0	67.1	67.2	67.7	68.5	67.2	66.7	67.9	68.4	70.7	71.9
Social sciences.....	53.8	32.2	33.7	34.5	37.7	37.6	38.1	38.6	36.3	37.6	37.7	37.8	37.9	38.9	40.1
Economics .....	48.8	27.1	28.6	29.8	33.4	31.4	32.0	33.4	34.4	35.3	33.8	34.9	33.2	35.4	34.3
Political science .....	43.4	22.0	22.8	24.7	28.3	31.0	34.5	34.6	29.5	30.3	27.0	27.3	28.5	28.2	31.7
Sociology .....	65.0	45.5	46.3	50.1	49.7	49.1	48.5	51.6	46.9	47.1	44.9	45.5	45.3	47.9	49.1
Other.....	54.1	33.9	35.5	34.2	38.4	38.4	37.8	36.4	33.9	36.5	40.1	39.3	40.1	39.8	41.5
Other sciences .....	53.6	41.2	33.8	32.4	35.1	37.1	45.0	41.6	40.8	38.5	34.5	34.4	31.9	35.7	34.4
Engineering .....	68.6	57.4	56.4	57.2	58.9	59.4	59.8	60.2	58.8	57.8	57.4	56.6	56.8	58.5	60.1
Aeronautical/astronautical .....	79.5	77.7	76.4	76.7	75.2	76.1	76.2	73.5	74.2	68.4	70.4	70.7	75.1	72.1	76.0
Bioengineering/biomedical .....	NA	NA	NA	NA	NA	NA	NA	NA	61.9	55.5	52.9	52.3	56.9	59.4	60.8
Chemical .....	64.4	50.6	48.4	48.4	52.2	54.0	54.2	54.8	52.4	51.8	51.6	52.3	51.8	53.4	54.7
Civil.....	64.0	41.1	39.2	42.3	41.6	40.6	43.2	43.5	42.5	39.8	41.0	39.4	39.8	41.9	42.1
Electrical/electronic .....	75.7	65.1	64.2	63.9	65.7	65.8	66.4	67.6	66.3	66.4	64.1	62.7	62.4	62.8	66.0
Mechanical.....	67.0	61.0	59.7	59.7	64.2	65.2	65.2	64.5	62.3	61.8	62.1	60.6	60.6	65.1	64.8
Materials .....	NA	50.9	50.4	48.7	50.3	50.2	53.2	54.5	57.2	56.6	56.8	56.8	53.2	56.2	56.7
Other.....	65.7	54.6	54.8	57.6	58.9	60.1	58.4	59.7	55.8	55.4	55.9	56.4	56.4	58.1	60.0

NA = not available

SOURCES: National Science Foundation, Division of Science Resources Statistics, *Academic Research and Development Expenditures: Fiscal Year 2003* (forthcoming); and Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Science and Engineering Indicators 2006

Appendix table 5-5  
Expenditures for academic R&D, by field: Selected years, 1973–2003

Field	1973	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Millions of current dollars																
All fields.....	2,884	6,063	16,286	17,585	18,818	19,951	21,027	22,170	23,046	24,370	25,855	27,530	30,067	32,797	36,370	40,077
Science .....	2,551	5,201	13,630	14,679	15,756	16,795	17,672	18,655	19,338	20,531	21,786	23,269	25,513	27,778	30,848	34,079
Physical sciences .....	328	677	1,807	1,939	2,055	2,130	2,177	2,256	2,258	2,371	2,483	2,605	2,712	2,804	3,016	3,273
Astronomy.....	24	59	170	211	238	259	267	304	276	288	303	385	386	378	402	392
Chemistry .....	114	244	648	671	705	740	760	771	802	821	876	919	961	1,007	1,131	1,220
Physics .....	167	323	842	881	921	940	957	989	988	1,059	1,078	1,149	1,207	1,241	1,287	1,420
Other.....	23	52	147	176	191	191	193	191	193	204	226	153	158	178	196	240
Mathematics .....	37	78	222	230	248	272	282	279	288	289	310	313	341	360	388	429
Computer sciences.....	36	124	515	554	555	608	646	682	690	710	747	861	876	956	1,125	1,304
Earth, atmospheric, and ocean sciences .....	209	508	1,069	1,119	1,242	1,319	1,397	1,434	1,489	1,533	1,624	1,692	1,765	1,831	2,020	2,188
Atmospheric sciences .....	NA	76	173	175	194	210	203	208	224	246	269	288	288	301	341	396
Earth sciences.....	NA	188	355	384	413	417	456	457	446	450	514	545	563	555	640	724
Ocean sciences.....	NA	176	377	389	427	458	455	473	533	537	546	604	633	675	720	774
Other.....	209	68	164	171	207	234	283	295	285	301	296	254	281	300	318	294
Life sciences .....	1,530	3,218	8,725	9,472	10,196	10,851	11,468	12,188	12,716	13,591	14,596	15,630	17,468	19,216	21,421	23,764
Agricultural sciences .....	277	676	1,349	1,458	1,512	1,558	1,661	1,814	1,910	1,966	1,996	2,036	2,177	2,326	2,452	2,555
Biological sciences.....	557	1,028	2,859	3,064	3,304	3,536	3,711	3,836	3,912	4,183	4,584	5,039	5,619	5,945	6,581	7,392
Medical sciences.....	646	1,423	4,154	4,546	4,964	5,324	5,639	6,070	6,391	6,908	7,472	8,003	8,986	10,191	11,501	12,787
Other.....	51	91	363	404	417	433	457	468	503	534	545	552	686	753	887	1,030
Psychology.....	74	110	253	283	329	350	358	371	382	396	444	464	517	583	672	769
Social sciences.....	231	339	703	750	815	896	954	1,019	1,097	1,125	1,131	1,252	1,299	1,442	1,586	1,661
Economics .....	48	91	201	209	222	231	243	250	271	261	261	266	255	272	285	314
Political science .....	26	54	115	125	142	151	161	173	180	175	176	200	230	253	272	289
Sociology .....	62	87	132	156	163	183	196	215	231	257	253	271	301	329	378	372
Other.....	96	107	255	260	288	331	354	380	415	432	442	514	513	588	651	686
Other sciences .....	106	146	336	332	315	369	390	427	419	515	449	451	535	586	620	691
Engineering .....	333	862	2,656	2,907	3,062	3,156	3,355	3,515	3,707	3,839	4,069	4,261	4,554	5,019	5,522	5,999
Aeronautical/astronautical .....	NA	53	164	180	197	213	217	241	233	247	250	260	257	339	343	402
Bioengineering/biomedical .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	77	102	137	174	213	282	314
Chemical.....	NA	61	218	244	261	274	279	297	317	317	327	349	376	415	431	454
Civil.....	NA	83	284	315	340	371	403	431	455	472	495	529	601	664	717	776
Electrical/electronic.....	NA	183	663	679	704	698	745	819	888	942	1,042	1,017	1,118	1,163	1,306	1,402
Mechanical.....	NA	140	391	421	451	483	502	521	519	518	568	625	633	687	781	822
Materials.....	NA	NA	274	304	294	299	310	330	349	389	391	384	399	453	468	535
Other.....	333	341	663	764	817	818	899	877	946	878	894	960	998	1,085	1,195	1,295
Millions of constant 2000 dollars																
All fields.....	9,297	11,421	20,051	20,867	21,783	22,590	23,303	24,054	24,544	25,508	26,726	28,090	30,067	32,058	34,882	37,762
Science .....	8,223	9,798	16,781	17,418	18,238	19,017	19,585	20,240	20,596	21,490	22,519	23,742	25,513	27,152	29,585	32,110
Physical sciences .....	1,058	1,276	2,225	2,301	2,379	2,412	2,413	2,448	2,405	2,482	2,567	2,658	2,712	2,741	2,893	3,084
Astronomy.....	78	110	210	251	276	293	296	330	294	301	313	392	386	370	386	369
Chemistry .....	366	460	798	796	816	838	842	837	854	859	906	938	961	985	1,085	1,150
Physics .....	538	608	1,036	1,046	1,066	1,065	1,061	1,073	1,052	1,108	1,115	1,172	1,207	1,213	1,234	1,338
Other.....	76	98	181	208	221	216	214	208	205	214	233	156	158	174	188	226



Appendix table 5-5  
Expenditures for academic R&D, by field: Selected years, 1973–2003

Field	1973	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Millions of constant 2000 dollars																
Mathematics .....	120	147	273	273	287	308	312	302	307	303	321	320	341	352	372	404
Computer sciences.....	115	234	634	658	643	688	716	740	735	743	772	879	876	935	1,079	1,229
Earth, atmospheric, and ocean sciences.....	675	957	1,316	1,328	1,438	1,493	1,548	1,556	1,586	1,604	1,679	1,726	1,765	1,790	1,937	2,061
Atmospheric sciences .....	NA	143	213	207	225	238	225	226	239	257	278	294	288	295	327	373
Earth sciences.....	NA	354	437	456	478	472	505	496	475	471	531	557	563	543	614	682
Ocean sciences.....	NA	332	464	462	495	519	504	514	568	562	564	616	633	660	691	729
Other.....	675	128	202	202	240	265	313	320	303	315	306	259	281	293	305	277
Life sciences.....	4,932	6,062	10,743	11,240	11,803	12,287	12,709	13,223	13,543	14,226	15,088	15,948	17,468	18,783	20,544	22,391
Agricultural sciences.....	893	1,273	1,660	1,730	1,750	1,764	1,841	1,968	2,034	2,058	2,063	2,077	2,177	2,274	2,351	2,408
Biological sciences.....	1,795	1,937	3,520	3,636	3,825	4,004	4,112	4,162	4,166	4,379	4,738	5,141	5,619	5,812	6,311	6,965
Medical sciences.....	2,082	2,681	5,115	5,395	5,746	6,028	6,249	6,586	6,806	7,231	7,723	8,166	8,986	9,961	11,031	12,048
Other.....	163	171	447	479	482	490	507	508	536	559	563	563	686	736	851	971
Psychology.....	238	207	311	336	380	396	397	402	406	415	459	474	517	570	645	724
Social sciences.....	745	639	866	890	944	1,015	1,057	1,106	1,168	1,178	1,170	1,277	1,299	1,409	1,521	1,565
Economics .....	154	171	247	248	256	262	269	272	289	273	270	272	255	266	273	296
Political science .....	82	103	142	148	164	171	178	188	191	184	181	204	230	248	261	272
Sociology .....	198	164	162	185	189	208	217	233	246	269	261	277	301	321	363	350
Other.....	311	201	314	309	334	374	393	413	442	452	457	524	513	575	624	646
Other sciences .....	341	275	414	394	365	417	432	463	446	539	464	461	535	573	594	651
Engineering .....	1,074	1,624	3,270	3,449	3,545	3,573	3,718	3,814	3,948	4,019	4,206	4,348	4,554	4,906	5,296	5,652
Aeronautical/astronautical.....	NA	100	201	214	228	241	241	262	248	259	258	266	257	331	329	379
Bioengineering/biomedical.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	105	139	174	208	270	295
Chemical.....	NA	114	269	290	302	310	309	322	338	331	338	356	376	405	413	427
Civil.....	NA	157	350	374	393	421	446	467	484	494	512	540	601	649	688	731
Electrical/electronic.....	NA	345	816	806	815	790	825	888	945	986	1,077	1,037	1,118	1,137	1,252	1,321
Mechanical.....	NA	264	481	499	522	547	557	565	553	542	587	638	633	672	749	775
Materials.....	NA	NA	337	360	340	338	344	358	372	407	405	392	399	443	449	504
Other.....	1,074	643	817	906	946	926	996	952	1,008	919	924	979	998	1,061	1,146	1,220
Percent distribution																
All fields.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Science .....	88.4	85.8	83.7	83.5	83.7	84.2	84.0	84.1	83.9	84.2	84.3	84.5	84.9	84.7	84.8	85.0
Physical sciences .....	11.4	11.2	11.1	11.0	10.9	10.7	10.4	10.2	9.8	9.7	9.6	9.5	9.0	8.6	8.3	8.2
Astronomy.....	0.8	1.0	1.0	1.2	1.3	1.3	1.3	1.4	1.2	1.2	1.2	1.4	1.3	1.2	1.1	1.0
Chemistry .....	3.9	4.0	4.0	3.8	3.7	3.7	3.6	3.5	3.5	3.4	3.4	3.3	3.2	3.1	3.1	3.0
Physics.....	5.8	5.3	5.2	5.0	4.9	4.7	4.6	4.5	4.3	4.3	4.2	4.2	4.0	3.8	3.5	3.5
Other.....	0.8	0.9	0.9	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.9	0.6	0.5	0.5	0.5	0.6
Mathematics .....	1.3	1.3	1.4	1.3	1.3	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.1	1.1
Computer sciences.....	1.2	2.0	3.2	3.2	3.0	3.0	3.1	3.1	3.0	2.9	2.9	3.1	2.9	2.9	3.1	3.3
Earth, atmospheric, and ocean sciences.....	7.3	8.4	6.6	6.4	6.6	6.6	6.6	6.5	6.5	6.3	6.3	6.1	5.9	5.6	5.6	5.5
Atmospheric sciences .....	NA	1.3	1.1	1.0	1.0	1.1	1.0	0.9	1.0	1.0	1.0	1.0	1.0	0.9	0.9	1.0
Earth sciences.....	NA	3.1	2.2	2.2	2.2	2.1	2.2	2.1	1.9	1.8	2.0	2.0	1.9	1.7	1.8	1.8
Ocean sciences.....	NA	2.9	2.3	2.2	2.3	2.3	2.2	2.1	2.3	2.2	2.1	2.2	2.1	2.1	2.0	1.9
Other.....	7.3	1.1	1.0	1.0	1.1	1.2	1.3	1.3	1.2	1.2	1.1	0.9	0.9	0.9	0.9	0.7

Appendix table 5-5  
**Expenditures for academic R&D, by field: Selected years, 1973–2003**

Field	1973	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	Percent distribution															
Life sciences .....	53.0	53.1	53.6	53.9	54.2	54.4	54.5	55.0	55.2	55.8	56.5	56.8	58.1	58.6	58.9	59.3
Agricultural sciences .....	9.6	11.1	8.3	8.3	8.0	7.8	7.9	8.2	8.3	8.1	7.7	7.4	7.2	7.1	6.7	6.4
Biological sciences.....	19.3	17.0	17.6	17.4	17.6	17.7	17.6	17.3	17.0	17.2	17.7	18.3	18.7	18.1	18.1	18.4
Medical sciences.....	22.4	23.5	25.5	25.9	26.4	26.7	26.8	27.4	27.7	28.3	28.9	29.1	29.9	31.1	31.6	31.9
Other.....	1.8	1.5	2.2	2.3	2.2	2.2	2.2	2.1	2.2	2.2	2.1	2.0	2.3	2.3	2.4	2.6
Psychology.....	2.6	1.8	1.6	1.6	1.7	1.8	1.7	1.7	1.7	1.6	1.7	1.7	1.7	1.8	1.8	1.9
Social sciences.....	8.0	5.6	4.3	4.3	4.3	4.5	4.5	4.6	4.8	4.6	4.4	4.5	4.3	4.4	4.4	4.1
Economics .....	1.7	1.5	1.2	1.2	1.2	1.2	1.2	1.1	1.2	1.1	1.0	1.0	0.8	0.8	0.8	0.8
Political science .....	0.9	0.9	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.8	0.8	0.7	0.7
Sociology .....	2.1	1.4	0.8	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.0	1.0	1.0	1.0	1.0	0.9
Other.....	3.3	1.8	1.6	1.5	1.5	1.7	1.7	1.7	1.8	1.8	1.7	1.9	1.7	1.8	1.8	1.7
Other sciences .....	3.7	2.4	2.1	1.9	1.7	1.8	1.9	1.9	1.8	2.1	1.7	1.6	1.8	1.8	1.7	1.7
Engineering .....	11.6	14.2	16.3	16.5	16.3	15.8	16.0	15.9	16.1	15.8	15.7	15.5	15.1	15.3	15.2	15.0
Aeronautical/astronautical.....	NA	0.9	1.0	1.0	1.0	1.1	1.0	1.1	1.0	1.0	1.0	0.9	0.9	1.0	0.9	1.0
Bioengineering/biomedical .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.3	0.4	0.5	0.6	0.6	0.8	0.8
Chemical.....	NA	1.0	1.3	1.4	1.4	1.4	1.3	1.3	1.4	1.3	1.3	1.3	1.2	1.3	1.2	1.1
Civil.....	NA	1.4	1.7	1.8	1.8	1.9	1.9	1.9	2.0	1.9	1.9	1.9	2.0	2.0	2.0	1.9
Electrical/electronic.....	NA	3.0	4.1	3.9	3.7	3.5	3.5	3.7	3.9	3.9	4.0	3.7	3.7	3.5	3.6	3.5
Mechanical.....	NA	2.3	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.1	2.2	2.3	2.1	2.1	2.1	2.1
Materials .....	NA	NA	1.7	1.7	1.6	1.5	1.5	1.5	1.5	1.6	1.5	1.4	1.3	1.4	1.3	1.3
Other.....	11.6	5.6	4.1	4.3	4.3	4.1	4.3	4.0	4.1	3.6	3.5	3.5	3.3	3.3	3.3	3.2

NA = not available

NOTES: Detail may not add to total because of rounding. See appendix table 4-1 for gross domestic product implicit price deflators used to convert current dollars to constant 2000 dollars.

SOURCES: National Science Foundation, Division of Science Resources Statistics, *Academic Research and Development Expenditures: Fiscal Year 2003* (forthcoming); and Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Appendix table 5-6

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**Federal obligations for academic R&D, by agency: 1970–2005**

Year	All agencies	Department of Agriculture	Department of Defense	Department of Energy <sup>a</sup>	National Aeronautics and Space Administration	National Institutes of Health <sup>b</sup>	National Science Foundation	All other agencies
1970.....	1,476	65	216	100	131	518	228	217
1971.....	1,645	72	211	94	134	603	267	264
1972.....	1,904	87	217	85	119	756	362	277
1973.....	1,917	94	204	83	111	761	374	289
1974.....	2,214	95	197	94	99	1,027	389	312
1975.....	2,411	108	203	132	108	1,077	435	348
1976.....	2,552	120	240	145	119	1,185	437	307
1977.....	2,905	140	273	188	118	1,311	511	364
1978.....	3,375	186	383	240	127	1,493	537	408
1979.....	3,889	200	438	260	139	1,880	617	355
1980.....	4,263	216	495	285	158	2,012	685	412
1981.....	4,466	243	573	300	171	2,101	702	376
1982.....	4,605	255	664	277	186	2,140	715	369
1983.....	4,966	275	724	297	189	2,392	783	306
1984.....	5,547	261	830	321	204	2,715	880	335
1985.....	6,340	293	940	357	237	3,158	1,002	352
1986.....	6,559	274	1,098	345	254	3,243	992	355
1987.....	7,337	280	1,017	386	294	3,903	1,096	361
1988.....	7,828	305	1,071	406	338	4,199	1,143	366
1989.....	8,672	328	1,189	454	434	4,565	1,254	449
1990.....	9,138	348	1,213	500	471	4,779	1,321	505
1991.....	10,169	386	1,152	621	534	5,521	1,436	520
1992.....	10,271	438	1,403	640	586	5,064	1,540	600
1993.....	11,208	433	1,616	583	614	5,848	1,562	553
1994.....	11,797	439	1,703	565	641	6,191	1,680	577
1995.....	11,928	435	1,589	594	708	6,271	1,734	597
1996.....	11,978	376	1,447	601	665	6,620	1,740	529
1997.....	12,559	441	1,345	583	719	7,057	1,819	595
1998.....	13,381	415	1,419	623	787	7,565	1,875	697
1999.....	14,959	492	1,474	630	787	8,762	2,076	739
2000.....	16,821	554	1,606	668	845	10,087	2,265	796
2001.....	19,588	652	2,285	743	942	11,528	2,498	939
2002.....	21,290	592	2,219	762	1,075	13,062	2,696	885
2003.....	22,687	634	1,934	790	1,096	14,350	2,978	904
2004 (estimated).....	23,954	722	1,913	805	1,116	15,404	3,081	913
2005 (estimated).....	23,894	592	1,575	751	1,096	15,781	3,175	923
	Millions of constant 2000 dollars							
1970.....	5,462	241	799	370	485	1,917	844	803
1971.....	5,798	254	744	331	472	2,125	941	931
1972.....	6,409	293	730	286	401	2,545	1,218	932
1973.....	6,180	303	658	268	358	2,453	1,206	932
1974.....	6,657	286	592	283	298	3,088	1,170	938
1975.....	6,566	294	553	359	294	2,933	1,185	948
1976.....	6,483	305	610	368	302	3,010	1,110	780
1977.....	6,865	331	645	444	279	3,098	1,208	860
1978.....	7,473	412	848	531	281	3,306	1,189	903
1979.....	7,969	410	897	533	285	3,852	1,264	727
1980.....	8,031	407	933	537	298	3,790	1,290	776
1981.....	7,663	417	983	515	293	3,605	1,205	645
1982.....	7,395	410	1,066	445	299	3,437	1,148	593
1983.....	7,638	423	1,114	457	291	3,679	1,204	471
1984.....	8,228	387	1,231	476	303	4,027	1,305	497

Appendix table 5-6

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**Federal obligations for academic R&D, by agency: 1970–2005**

Year	All agencies	Department of Agriculture	Department of Defense	Department of Energy <sup>a</sup>	National	National	National	All other agencies
					Aeronautics and Space Administration	Institutes of Health <sup>b</sup>	Science Foundation	
Millions of constant 2000 dollars								
1985.....	9,108	421	1,350	513	340	4,537	1,440	506
1986.....	9,209	385	1,542	484	357	4,553	1,393	498
1987.....	10,039	383	1,392	528	402	5,340	1,500	494
1988.....	10,384	405	1,421	539	448	5,570	1,516	486
1989.....	11,073	419	1,518	580	554	5,829	1,601	573
1990.....	11,250	428	1,493	616	580	5,884	1,626	622
1991.....	12,067	458	1,367	737	634	6,551	1,704	617
1992.....	11,889	507	1,624	741	678	5,862	1,783	695
1993.....	12,691	490	1,830	660	695	6,622	1,769	626
1994.....	13,074	487	1,887	626	710	6,861	1,862	639
1995.....	12,941	472	1,724	644	768	6,804	1,881	648
1996.....	12,757	400	1,541	640	708	7,051	1,853	563
1997.....	13,146	462	1,408	610	753	7,387	1,904	623
1998.....	13,832	429	1,467	644	814	7,820	1,938	720
1999.....	15,263	502	1,504	643	803	8,940	2,118	754
2000.....	16,821	554	1,606	668	845	10,087	2,265	796
2001.....	19,147	637	2,234	726	921	11,268	2,442	918
2002.....	20,419	568	2,128	731	1,031	12,527	2,586	849
2003.....	21,376	597	1,822	744	1,033	13,521	2,806	852
2004 (estimated).....	22,144	667	1,768	744	1,032	14,240	2,848	844
2005 (estimated).....	21,644	536	1,427	680	993	14,295	2,876	836
Percent distribution								
1970.....	100.0	4.4	14.6	6.8	8.9	35.1	15.4	14.7
1971.....	100.0	4.4	12.8	5.7	8.1	36.7	16.2	16.0
1972.....	100.0	4.6	11.4	4.5	6.3	39.7	19.0	14.5
1973.....	100.0	4.9	10.6	4.3	5.8	39.7	19.5	15.1
1974.....	100.0	4.3	8.9	4.2	4.5	46.4	17.6	14.1
1975.....	100.0	4.5	8.4	5.5	4.5	44.7	18.0	14.4
1976.....	100.0	4.7	9.4	5.7	4.7	46.4	17.1	12.0
1977.....	100.0	4.8	9.4	6.5	4.1	45.1	17.6	12.5
1978.....	100.0	5.5	11.3	7.1	3.8	44.2	15.9	12.1
1979.....	100.0	5.1	11.3	6.7	3.6	48.3	15.9	9.1
1980.....	100.0	5.1	11.6	6.7	3.7	47.2	16.1	9.7
1981.....	100.0	5.4	12.8	6.7	3.8	47.0	15.7	8.4
1982.....	100.0	5.5	14.4	6.0	4.0	46.5	15.5	8.0
1983.....	100.0	5.5	14.6	6.0	3.8	48.2	15.8	6.2
1984.....	100.0	4.7	15.0	5.8	3.7	48.9	15.9	6.0
1985.....	100.0	4.6	14.8	5.6	3.7	49.8	15.8	5.6
1986.....	100.0	4.2	16.7	5.3	3.9	49.4	15.1	5.4
1987.....	100.0	3.8	13.9	5.3	4.0	53.2	14.9	4.9
1988.....	100.0	3.9	13.7	5.2	4.3	53.6	14.6	4.7
1989.....	100.0	3.8	13.7	5.2	5.0	52.6	14.5	5.2
1990.....	100.0	3.8	13.3	5.5	5.2	52.3	14.5	5.5
1991.....	100.0	3.8	11.3	6.1	5.3	54.3	14.1	5.1
1992.....	100.0	4.3	13.7	6.2	5.7	49.3	15.0	5.8
1993.....	100.0	3.9	14.4	5.2	5.5	52.2	13.9	4.9
1994.....	100.0	3.7	14.4	4.8	5.4	52.5	14.2	4.9
1995.....	100.0	3.6	13.3	5.0	5.9	52.6	14.5	5.0
1996.....	100.0	3.1	12.1	5.0	5.6	55.3	14.5	4.4
1997.....	100.0	3.5	10.7	4.6	5.7	56.2	14.5	4.7
1998.....	100.0	3.1	10.6	4.7	5.9	56.5	14.0	5.2
1999.....	100.0	3.3	9.9	4.2	5.3	58.6	13.9	4.9
2000.....	100.0	3.3	9.5	4.0	5.0	60.0	13.5	4.7

Appendix table 5-6

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**Federal obligations for academic R&D, by agency: 1970–2005**

Year	All agencies	Department of Agriculture	Department of Defense	Department of Energy <sup>a</sup>	National	National	National	All other agencies
					Aeronautics and Space Administration	Institutes of Health <sup>b</sup>	Science Foundation	
Percent distribution								
2001.....	100.0	3.3	11.7	3.8	4.8	58.9	12.8	4.8
2002.....	100.0	2.8	10.4	3.6	5.0	61.4	12.7	4.2
2003.....	100.0	2.8	8.5	3.5	4.8	63.3	13.1	4.0
2004 (estimated) .....	100.0	3.0	8.0	3.4	4.7	64.3	12.9	3.8
2005 (estimated) .....	100.0	2.5	6.6	3.1	4.6	66.0	13.3	3.9

<sup>a</sup>Data for 1970–73 for Atomic Energy Commission; data for 1974–76 for Energy Research and Development Administration; data for 1977 and thereafter for Department of Energy.

<sup>b</sup>Includes Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA), an agency in the U.S. Department of Health and Human Services replaced in 1992 by the Substance Abuse and Mental Health Services Administration. Three research entities of ADAMHA (National Institute of Mental Health, National Institute on Alcohol Abuse and Alcoholism, and National Institute on Drug Abuse) were merged at that time into National Institutes of Health.

NOTES: Detail may not add to total because of rounding. See appendix table 4-1 for gross domestic product implicit price deflators used to convert current dollars to constant 2000 dollars.

SOURCES: National Science Foundation, Division of Science Resources Statistics, *Federal Funds for Research and Development: Fiscal Years 2003, 2004, and 2005* (forthcoming); and *Federal Funds for Research and Development: Detailed Historical Tables: Fiscal Years 1951–2002*, NSF 03-325 (2003), <http://www.nsf.gov/statistics/nsf03325/start.htm>.

Appendix table 5-7

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**Federal obligations for academic research, by agency: 1970–2005**

Year	All agencies	Department of Agriculture	Department of Defense	Department of Energy <sup>a</sup>	National Aeronautics and Space Administration	National Institutes of Health <sup>b</sup>	National Science Foundation	All other agencies
1970.....	1,276	65	173	97	65	480	223	174
1971.....	1,430	72	184	90	70	551	254	210
1972.....	1,643	87	177	81	48	677	346	226
1973.....	1,691	94	161	79	80	749	370	158
1974.....	1,958	94	167	86	85	1,004	369	153
1975.....	2,079	108	165	112	91	1,036	420	148
1976.....	2,250	119	192	116	98	1,138	429	158
1977.....	2,584	139	221	134	105	1,269	505	211
1978.....	2,928	181	243	175	116	1,437	534	241
1979.....	3,333	198	271	204	125	1,657	612	266
1980.....	3,699	214	313	224	146	1,835	680	287
1981.....	3,920	240	363	248	157	1,929	698	284
1982.....	4,045	253	413	236	156	1,995	713	280
1983.....	4,468	273	472	273	170	2,246	783	250
1984.....	5,030	260	539	311	177	2,573	880	290
1985.....	5,726	292	587	336	213	2,990	1,002	305
1986.....	5,883	273	707	334	225	3,054	992	298
1987.....	6,640	279	681	372	263	3,651	1,096	298
1988.....	7,023	304	729	384	310	3,856	1,143	297
1989.....	7,793	326	840	437	387	4,167	1,254	382
1990.....	8,137	346	795	479	422	4,349	1,321	426
1991.....	8,868	384	794	596	474	4,729	1,436	456
1992.....	9,061	436	912	605	512	4,517	1,540	538
1993.....	9,892	429	1,090	547	539	5,253	1,562	472
1994.....	10,292	436	1,079	529	555	5,517	1,680	496
1995.....	10,354	431	1,047	558	588	5,481	1,734	516
1996.....	10,707	373	1,071	566	560	5,924	1,740	471
1997.....	11,173	437	945	552	596	6,309	1,819	515
1998.....	11,739	408	963	564	648	6,716	1,875	566
1999.....	13,204	482	989	562	745	7,733	2,076	617
2000.....	16,022	547	1,113	619	721	10,087	2,265	670
2001.....	18,657	643	1,697	695	812	11,528	2,498	785
2002.....	20,285	581	1,591	702	933	13,062	2,696	721
2003.....	21,676	627	1,302	729	937	14,350	2,978	754
2004 (estimated).....	22,865	714	1,211	748	957	15,404	3,081	751
2005 (estimated).....	22,995	587	1,046	703	937	15,781	3,175	766
	Millions of constant 2000 dollars							
1970.....	4,722	241	640	359	241	1,776	825	644
1971.....	5,040	254	649	317	247	1,942	895	740
1972.....	5,530	293	596	273	162	2,279	1,165	761
1973.....	5,451	303	519	255	258	2,415	1,193	509
1974.....	5,887	283	502	259	256	3,019	1,109	460
1975.....	5,662	294	449	305	248	2,822	1,144	403
1976.....	5,715	302	488	295	249	2,891	1,090	401
1977.....	6,106	328	522	317	248	2,999	1,193	499
1978.....	6,483	401	538	387	257	3,182	1,182	534
1979.....	6,829	406	555	418	256	3,395	1,254	545
1980.....	6,968	403	590	422	275	3,457	1,281	541
1981.....	6,726	412	623	426	269	3,310	1,198	487
1982.....	6,496	406	663	379	251	3,204	1,145	450
1983.....	6,872	420	726	420	261	3,454	1,204	385
1984.....	7,461	386	799	461	263	3,817	1,305	430

Appendix table 5-7

(Page 2 of 3)

**Federal obligations for academic research, by agency: 1970–2005**

Year	All agencies	Department of Agriculture	Department of Defense	Department of Energy <sup>a</sup>	National	National	National	All other agencies
					Aeronautics and Space Administration	Institutes of Health <sup>b</sup>	Science Foundation	
Millions of constant 2000 dollars								
1985.....	8,226	419	843	483	306	4,296	1,440	438
1986.....	8,260	383	993	469	316	4,288	1,393	418
1987.....	9,085	382	932	509	360	4,995	1,500	408
1988.....	9,316	403	967	509	411	5,115	1,516	394
1989.....	9,951	416	1,073	558	494	5,321	1,601	488
1990.....	10,018	426	979	590	520	5,354	1,626	524
1991.....	10,523	456	942	707	562	5,612	1,704	541
1992.....	10,489	505	1,056	700	593	5,229	1,783	623
1993.....	11,201	486	1,234	619	610	5,948	1,769	534
1994.....	11,406	483	1,196	586	615	6,114	1,862	550
1995.....	11,234	468	1,136	605	638	5,947	1,881	560
1996.....	11,403	397	1,141	603	596	6,309	1,853	502
1997.....	11,695	457	989	578	624	6,604	1,904	539
1998.....	12,134	422	995	583	670	6,942	1,938	585
1999.....	13,473	492	1,009	573	760	7,890	2,118	630
2000.....	16,022	547	1,113	619	721	10,087	2,265	670
2001.....	18,237	629	1,659	679	794	11,268	2,442	767
2002.....	19,455	557	1,526	673	895	12,527	2,586	691
2003.....	20,424	591	1,227	687	883	13,521	2,806	710
2004 (estimated).....	21,137	660	1,120	691	885	14,240	2,848	694
2005 (estimated).....	20,830	532	948	637	849	14,295	2,876	694
Percent distribution								
1970.....	100.0	5.1	13.6	7.6	5.1	37.6	17.5	13.6
1971.....	100.0	5.0	12.9	6.3	4.9	38.5	17.8	14.7
1972.....	100.0	5.3	10.8	4.9	2.9	41.2	21.1	13.8
1973.....	100.0	5.6	9.5	4.7	4.7	44.3	21.9	9.3
1974.....	100.0	4.8	8.5	4.4	4.3	51.3	18.8	7.8
1975.....	100.0	5.2	7.9	5.4	4.4	49.8	20.2	7.1
1976.....	100.0	5.3	8.5	5.2	4.4	50.6	19.1	7.0
1977.....	100.0	5.4	8.6	5.2	4.1	49.1	19.5	8.2
1978.....	100.0	6.2	8.3	6.0	4.0	49.1	18.2	8.2
1979.....	100.0	5.9	8.1	6.1	3.8	49.7	18.4	8.0
1980.....	100.0	5.8	8.5	6.1	3.9	49.6	18.4	7.8
1981.....	100.0	6.1	9.3	6.3	4.0	49.2	17.8	7.2
1982.....	100.0	6.3	10.2	5.8	3.9	49.3	17.6	6.9
1983.....	100.0	6.1	10.6	6.1	3.8	50.3	17.5	5.6
1984.....	100.0	5.2	10.7	6.2	3.5	51.2	17.5	5.8
1985.....	100.0	5.1	10.3	5.9	3.7	52.2	17.5	5.3
1986.....	100.0	4.6	12.0	5.7	3.8	51.9	16.9	5.1
1987.....	100.0	4.2	10.3	5.6	4.0	55.0	16.5	4.5
1988.....	100.0	4.3	10.4	5.5	4.4	54.9	16.3	4.2
1989.....	100.0	4.2	10.8	5.6	5.0	53.5	16.1	4.9
1990.....	100.0	4.3	9.8	5.9	5.2	53.4	16.2	5.2
1991.....	100.0	4.3	9.0	6.7	5.3	53.3	16.2	5.1
1992.....	100.0	4.8	10.1	6.7	5.7	49.9	17.0	5.9
1993.....	100.0	4.3	11.0	5.5	5.4	53.1	15.8	4.8
1994.....	100.0	4.2	10.5	5.1	5.4	53.6	16.3	4.8
1995.....	100.0	4.2	10.1	5.4	5.7	52.9	16.7	5.0
1996.....	100.0	3.5	10.0	5.3	5.2	55.3	16.3	4.4
1997.....	100.0	3.9	8.5	4.9	5.3	56.5	16.3	4.6
1998.....	100.0	3.5	8.2	4.8	5.5	57.2	16.0	4.8
1999.....	100.0	3.7	7.5	4.3	5.6	58.6	15.7	4.7
2000.....	100.0	3.4	6.9	3.9	4.5	63.0	14.1	4.2

Appendix table 5-7

(Page 3 of 3)

**Federal obligations for academic research, by agency: 1970–2005**

Year	All agencies	Department of Agriculture	Department of Defense	Department of Energy <sup>a</sup>	National Aeronautics and Space Administration	National Institutes of Health <sup>b</sup>	National Science Foundation	All other agencies
					Percent distribution			
2001.....	100.0	3.4	9.1	3.7	4.4	61.8	13.4	4.2
2002.....	100.0	2.9	7.8	3.5	4.6	64.4	13.3	3.6
2003.....	100.0	2.9	6.0	3.4	4.3	66.2	13.7	3.5
2004 (estimated) .....	100.0	3.1	5.3	3.3	4.2	67.4	13.5	3.3
2005 (estimated) .....	100.0	2.6	4.5	3.1	4.1	68.6	13.8	3.3

<sup>a</sup>Data for 1970–73 for Atomic Energy Commission; data for 1974–76 for Energy Research and Development Administration; data for 1977 and thereafter for U.S. Department of Energy.

<sup>b</sup>Includes Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA), an agency in the U.S. Department of Health and Human Services replaced in 1992 by the Substance Abuse and Mental Health Services Administration. Three research entities of ADAMHA (National Institute of Mental Health, National Institute on Alcohol Abuse and Alcoholism, and National Institute on Drug Abuse) were merged at that time into National Institutes of Health.

NOTES: Academic research includes basic and applied research. Detail may not add to total because of rounding. See appendix table 4-1 for gross domestic product implicit price deflators used to convert current dollars to constant 2000 dollars.

SOURCES: National Science Foundation, Division of Science Resources Statistics, *Federal Funds for Research and Development: Fiscal Years 2003, 2004, and 2005* (forthcoming); and *Federal Funds for Research and Development: Detailed Historical Tables: Fiscal Years 1951–2002*, NSF 03-325 (2003), <http://www.nsf.gov/statistics/nsf03325/start.htm>.

*Science and Engineering Indicators 2006*



Appendix table 5-8

**Federal agencies' academic research obligations, by field: FY 2003**

(Percent distribution)

Field	Department of Agriculture	Department of Defense	Department of Energy	Department of Health and Human Services	National Aeronautics and Space Administration	National Science Foundation
All fields.....	100.0	100.0	100.0	100.0	100.0	100.0
Science .....	97.0	57.0	89.1	99.0	81.4	82.3
Physical sciences .....	3.4	10.8	58.6	1.9	39.8	19.0
Astronomy.....	0.0	0.0	0.0	0.0	27.9	2.4
Chemistry .....	3.4	3.8	10.6	1.6	1.9	5.7
Physics .....	0.0	5.3	40.2	0.0	5.9	7.2
Other.....	0.0	1.7	7.8	0.2	4.1	3.6
Mathematics .....	0.2	2.3	1.9	0.2	0.1	5.5
Computer sciences.....	0.0	18.1	1.4	0.0	3.7	18.2
Earth, atmospheric, and ocean sciences.....	1.1	8.1	11.8	1.7	13.3	14.9
Atmospheric sciences .....	1.1	1.0	3.7	0.0	5.3	3.3
Earth sciences.....	0.0	0.4	4.7	0.0	0.9	4.2
Oceanography.....	0.0	6.3	0.4	0.0	1.1	6.7
Other.....	0.0	0.3	3.0	1.7	6.1	0.7
Life sciences .....	82.6	15.8	15.5	88.7	5.9	16.3
Agricultural sciences .....	44.0	0.1	0.0	0.0	0.1	0.0
Biological sciences (excluding environmental) .....	19.7	8.1	7.8	66.6	3	13.2
Environmental biology .....	17.7	0.3	0.0	0.0	0.2	3.1
Medical sciences.....	1.1	4.8	7.7	18.9	1.4	0.0
Other.....	0.0	2.4	0.0	3.2	1.3	0.0
Psychology .....	0.0	1.2	0.0	3.5	0.3	0.1
Biological aspects .....	0.0	0.9	0.0	0.0	0	0.0
Social aspects.....	0.0	0.1	0.0	0.0	0	0.1
Other.....	0.0	0.2	0.0	3.5	0.2	0.0
Social sciences.....	9.3	0.0	0.0	1.0	0	3.6
Anthropology.....	0.0	0.0	0.0	0.0	0	0.3
Economics .....	7.1	0.0	0.0	0.0	0	0.6
Political science .....	0.0	0.0	0.0	0.0	0	0.2
Sociology .....	2.2	0.0	0.0	0.0	0	0.2
Other.....	0.0	0.0	0.0	1.0	0	2.3
Other sciences .....	0.4	0.7	0.0	2.0	18.3	4.8
Engineering .....	3.0	43.0	10.9	1.0	18.6	17.7
Aeronautical .....	0.0	2.2	0.0	0.0	5.8	0.0
Astronautical .....	0.0	0.5	0.0	0.0	1.9	0.0
Chemical.....	0.1	0.8	2.8	0.0	0.3	2.2
Civil.....	0.0	0.3	0.8	0.0	0	1.7
Electrical .....	0.0	13.0	0.5	0.0	1.5	2.3
Mechanical.....	0.0	4.6	1.2	0.0	0.8	0.3
Materials .....	0.0	8.9	2.1	0.0	1.1	4.4
Other.....	2.9	12.6	3.5	1.0	7.1	6.8

NOTES: Academic research includes both basic and applied research. Agencies shown are only ones that report research obligations to academia by S&E field; they represent approximately 97% of academic research obligations. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, *Federal Funds for Research and Development: Fiscal Years 2003, 2004, and 2005* (forthcoming).

Appendix table 5-9  
**Federal academic research obligations provided by major agencies, by field: FY 2003**  
 (Percent distribution)

Field	All agencies	Department of Agriculture	Department of Defense	Department of Energy	Department of Health and Human Services	National Aeronautics and Space Administration	National Science Foundation
All fields .....	100.0	3.0	6.2	3.5	68.9	4.4	14.1
Science .....	100.0	3.1	3.8	3.3	73.4	3.9	12.5
Physical sciences .....	100.0	1.2	7.9	23.8	15.0	20.7	31.4
Astronomy.....	100.0	0.0	0.0	0.0	0.0	78.2	21.8
Chemistry .....	100.0	3.7	8.7	13.5	41.1	3.1	29.9
Physics .....	100.0	0.0	11.0	46.3	0.0	8.7	34.0
Other.....	100.0	0.0	8.6	21.9	13.7	15.0	40.8
Mathematics .....	100.0	0.4	12.9	5.8	10.3	0.3	69.0
Computer sciences.....	100.0	0.0	28.8	1.2	0.2	4.2	66.0
Earth, atmospheric, and ocean sciences.....	100.0	0.7	10.4	8.4	24.8	12.3	43.4
Atmospheric sciences .....	100.0	3.6	6.9	13.6	0.0	25.2	50.6
Earth sciences.....	100.0	0.0	3.2	20.0	0.2	4.7	71.8
Ocean sciences.....	100.0	0.0	27.9	1.0	0.0	3.4	67.7
Other.....	100.0	0.0	1.3	6.1	70.8	16.1	5.8
Life sciences .....	100.0	3.6	1.4	0.8	90.4	0.4	3.4
Agricultural sciences .....	100.0	99.2	0.5	0.0	0.0	0.4	0.0
Biological sciences (excluding environmental) .....	100.0	1.2	1.0	0.5	93.2	0.3	3.8
Environmental biology .....	100.0	53.1	2.0	0.0	0.0	0.7	44.2
Medical sciences.....	100.0	0.2	2.2	1.9	95.2	0.4	0.0
Other.....	100.0	0.0	6.0	0.0	91.6	2.4	0.0
Psychology .....	100.0	0.0	2.9	0.0	95.9	0.5	0.7
Biological aspects .....	100.0	0.0	98.3	0.0	0.0	1.7	0.0
Social aspects.....	100.0	0.0	23.7	0.0	1.6	4.6	70.0
Other.....	100.0	0.0	0.6	0.0	99.0	0.4	0.0
Social sciences.....	100.0	18.8	0.0	0.0	46.3	0.1	34.7
Anthropology.....	100.0	0.0	0.0	0.0	0.0	0.0	100.0
Economics .....	100.0	70.6	0.0	0.0	3.2	0.0	26.2
Political science .....	100.0	0.0	0.0	0.0	0.0	0.0	100.0
Sociology .....	100.0	73.5	0.0	0.0	1.7	0.3	24.5
Other.....	100.0	0.0	0.0	0.0	66.7	0.2	33.1
Other sciences .....	100.0	0.4	1.4	0.0	46.7	28.0	23.5
Engineering .....	100.0	1.3	37.1	5.3	9.8	11.5	35.0
Aeronautical .....	100.0	0.0	34.8	0.0	0.0	65.2	0.0
Astronautical .....	100.0	0.0	27.2	0.0	0.0	72.8	0.0
Chemical .....	100.0	0.4	10.4	20.5	0.0	2.8	65.9
Civil.....	100.0	0.2	7.2	9.5	0.0	0.4	82.7
Electrical .....	100.0	0.0	66.1	1.5	0.0	5.4	27.0
Mechanical.....	100.0	0.1	69.8	10.5	0.0	9.3	10.3
Materials.....	100.0	0.0	42.4	5.5	0.0	3.9	48.2
Other.....	100.0	2.9	26.3	4.1	23.6	10.6	32.5

NOTES: Academic research includes both basic and applied research. Agencies shown are only ones that report research obligations to academia by S&E field; they represent approximately 97% of academic research obligations.

SOURCE: National Science Foundation, Division of Science Resources Statistics, *Federal Funds for Research and Development: Fiscal Years 2003, 2004, and 2005* (forthcoming).

Appendix table 5-10

**Sources of R&D funds at private and public institutions: 1983, 1993, and 2003**

Source of funds	All institutions		Private institutions		Public institutions	
	Current \$ millions	Percent distribution	Current \$ millions	Percent distribution	Current \$ millions	Percent distribution
<b>1983</b>						
All sources.....	7,882	100.0	2,770	100.0	5,111	100.0
Federal government.....	4,989	63.3	2,121	76.6	2,869	56.1
State/local government.....	626	7.9	53	1.9	573	11.2
Industry.....	389	4.9	145	5.2	244	4.8
Academic institutions.....	1,302	16.5	233	8.4	1,069	20.9
Other.....	576	7.3	219	7.9	358	7.0
<b>1993</b>						
All sources.....	19,951	100.0	6,575	100.0	13,376	100.0
Federal government.....	11,957	59.9	4,785	72.8	7,171	53.6
State/local government.....	1,559	7.8	142	2.2	1,416	10.6
Industry.....	1,360	6.8	466	7.1	895	6.7
Academic institutions.....	3,589	18.0	607	9.2	2,982	22.3
Other.....	1,486	7.4	574	8.7	912	6.8
<b>2003</b>						
All sources.....	40,077	100.0	12,722	100.0	27,355	100.0
Federal government.....	24,734	61.7	9,439	74.2	15,295	55.9
State/local government.....	2,653	6.6	289	2.3	2,364	8.6
Industry.....	2,162	5.4	703	5.5	1,459	5.3
Academic institutions.....	7,683	19.2	1,281	10.1	6,402	23.4
Other.....	2,845	7.1	1,010	7.9	1,834	6.7

NOTE: Detail may not add to total because of rounding.

SOURCES: National Science Foundation, Division of Science Resources Statistics, *Academic Research and Development Expenditures: Fiscal Year 2003* (forthcoming); and Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Appendix table 5-11

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**Top 100 academic institutions in R&D expenditures, by source of funds: 2003**

(Millions of current dollars)

Rank and academic institution	All sources	Federal government	State/local government	Industry	Academic institutions	All other sources
All institutions.....	40,077	24,734	2,653	2,162	7,683	2,845
1 University of California—Los Angeles (public).....	849	421	67	30	208	123
2 University of Michigan, all campuses (public).....	780	517	17	36	158	53
3 University of Wisconsin—Madison (public).....	721	396	41	16	199	69
4 University of Washington—Seattle (public).....	685	566	12	48	44	16
5 University of California—San Francisco (public).....	671	372	27	37	128	108
6 University of California—San Diego (public).....	647	400	24	29	123	71
7 Johns Hopkins University (private).....	637	525	3	18	41	51
8 Johns Hopkins University Applied Physics Laboratory <sup>a</sup> (private).....	607	582	1	2	18	4
9 Stanford University (private).....	603	484	4	31	42	42
10 University of Pennsylvania (private).....	565	416	2	27	43	77
Total, top 10.....	6,765	4,678	199	274	1,001	614
11 Cornell University, all campuses (private).....	555	321	62	26	104	43
12 Pennsylvania State University, all campuses (public).....	533	301	56	78	97	1
13 Duke University (private).....	520	307	15	122	46	31
14 Texas A&M University, all campuses (public).....	511	204	115	29	143	21
15 University of Minnesota, all campuses (public).....	509	293	59	24	70	61
16 University of California—Berkeley (public).....	507	238	35	22	142	70
17 Ohio State University, all campuses (public).....	496	198	12	46	188	52
18 University of Illinois at Urbana-Champaign (public).....	494	266	53	13	141	20
19 Massachusetts Institute of Technology (private).....	486	356	—	81	13	36
20 University of California—Davis (public).....	482	208	40	23	164	48
Total, top 20.....	11,859	7,371	645	737	2,108	996
21 Washington University (private).....	474	357	10	13	59	35
22 Baylor College of Medicine (private).....	462	303	3	18	62	77
23 University of Arizona (public).....	455	259	18	31	126	21
24 Columbia University in the City of New York (private).....	438	386	2	5	22	23
25 University of Colorado, all campuses (public).....	437	378	8	10	22	18
26 University of Florida (public).....	430	195	71	24	124	16
27 University of Southern California (private).....	414	300	11	25	77	0
28 University of Pittsburgh, all campuses (public).....	410	346	11	4	24	25
29 Harvard University (private).....	409	349	2	6	0	53
30 University of North Carolina at Chapel Hill (public).....	391	281	16	7	88	0
Total, top 30.....	16,177	10,524	796	881	2,712	1,264
31 Yale University (private).....	388	297	—	15	25	49
32 Georgia Institute of Technology, all campuses (public).....	364	204	8	33	116	4
33 University of Texas at Austin (public).....	344	232	21	32	43	16
34 Indiana University, all campuses (public).....	338	154	5	8	125	46
35 Emory University (private).....	323	228	8	6	33	48
36 University of Maryland at College Park (public).....	322	183	19	8	101	10
37 Michigan State University (public).....	321	134	57	11	107	13
38 Northwestern University (private).....	320	200	3	9	76	31
39 University of Texas M.D. Anderson Cancer Center (public).....	315	123	78	31	45	37
40 Louisiana State University, all campuses (public).....	315	99	88	16	88	23
Total, top 40.....	19,526	12,378	1,084	1,052	3,470	1,541
41 Purdue University, all campuses (public).....	309	129	44	35	101	—
42 University of Georgia (public).....	300	94	57	16	132	—
43 University of Maryland at Baltimore (public).....	297	126	28	65	41	37
44 University of Iowa (public).....	292	197	9	21	55	10
45 University of Illinois at Chicago (public).....	292	168	9	7	86	21
46 North Carolina State University at Raleigh (public).....	286	96	83	36	63	8
47 University of Rochester (private).....	286	208	12	25	28	13
48 University of Alabama at Birmingham (public).....	284	245	—	6	19	14
49 University of Texas Southwestern Medical Center Dallas (public).....	277	177	16	12	7	65
50 Vanderbilt University (private).....	276	222	—	5	37	12
Total, top 50.....	22,426	14,041	1,342	1,280	4,040	1,720
51 Rutgers the State University of New Jersey, all campuses (public).....	275	106	35	11	95	27
52 University of Kentucky, all campuses (public).....	272	120	42	7	85	18
53 University of Cincinnati, all campuses (public).....	255	185	5	5	46	13
54 Case Western Reserve University (private).....	251	205	6	5	15	19
55 Virginia Polytechnic Institute and State University (public).....	248	98	58	25	56	10

Appendix table 5-11

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**Top 100 academic institutions in R&D expenditures, by source of funds: 2003**

(Millions of current dollars)

Rank and academic institution	All sources	Federal government	State/local government	Industry	Academic institutions	All other sources
56 University of Chicago (private).....	247	201	7	3	16	20
57 New York University (private).....	242	166	6	8	29	33
58 California Institute of Technology (private).....	241	219	4	5	11	2
59 SUNY at Buffalo, all campuses (public).....	240	130	8	11	68	24
60 University of California–Irvine (public).....	235	134	11	11	49	29
Total, top 60.....	24,930	15,606	1,523	1,371	4,511	1,917
61 Boston University (private).....	225	204	—	8	0	12
62 University of Utah (public).....	224	152	3	5	37	27
63 University of Tennessee system (public).....	217	100	40	14	43	19
64 Mount Sinai School of Medicine (private).....	215	153	5	13	20	24
65 Wayne State University (public).....	214	103	17	14	65	15
66 University of South Florida (public).....	213	106	10	2	72	23
67 University of Virginia, all campuses (public).....	206	173	—	9	13	10
68 University of Missouri, Columbia (public).....	205	84	22	5	89	5
69 SUNY at Stony Brook, all campuses (public).....	200	112	5	5	65	14
70 Iowa State University (public).....	200	82	42	14	58	3
Total, top 70.....	27,049	16,877	1,666	1,459	4,973	2,069
71 Oregon Health Sciences University (public).....	197	164	4	9	7	14
72 Rockefeller University (private).....	192	75	8	3	76	30
73 University of Medicine and Dentistry of New Jersey (public).....	191	105	10	11	42	22
74 University of Connecticut, all campuses (public).....	190	112	7	12	44	16
75 Colorado State University (public).....	187	117	21	15	32	2
76 Carnegie Mellon University (private).....	186	158	4	13	6	6
77 University of Nebraska at Lincoln (public).....	185	59	5	7	109	4
78 Princeton University (private).....	180	104	5	8	49	13
79 University of Hawaii at Manoa (public).....	179	144	12	7	17	0
80 University of Miami (private).....	178	131	5	17	9	16
Total, top 80.....	28,914	18,046	1,747	1,562	5,364	2,191
81 Yeshiva University (private).....	177	129	0	0	48	0
82 Washington State University (public).....	175	71	7	4	83	11
83 University of Oklahoma, all campuses (public).....	174	75	14	11	59	15
84 University of Kansas, all campuses (public).....	173	91	6	3	62	11
85 Oregon State University (public).....	168	100	32	—	30	5
86 Mississippi State University (public).....	166	80	32	6	48	0
87 University of New Mexico, all campuses (public).....	158	107	3	2	41	5
88 Dartmouth College (private).....	156	106	3	5	29	13
89 University of Texas Medical Branch at Galveston (public).....	153	93	14	8	25	14
90 Clemson University (public).....	153	63	17	12	61	—
Total, top 90.....	30,568	18,960	1,877	1,613	5,850	2,264
91 Florida State University (public).....	152	88	10	1	48	5
92 Medical University of South Carolina (public).....	151	93	—	7	44	5
93 University of Texas Health Science Center Houston (public).....	149	107	3	12	12	15
94 University of California–Santa Barbara (public).....	149	88	3	14	27	18
95 University of Massachusetts at Worcester (public).....	149	109	27	4	0	8
96 Arizona State University (public).....	146	72	18	8	44	3
97 Utah State University (public).....	139	95	19	3	17	3
98 University of Texas Health Science Center San Antonio (public).....	133	87	6	8	22	11
99 Wake Forest University (private).....	130	108	—	13	2	7
100 University of Alaska Fairbanks, all campuses (public).....	129	73	3	23	30	0
Total, top 100.....	31,995	19,881	1,965	1,707	6,097	2,339

— = &lt; \$1 million

\*Not officially classified as federally funded research and development center but functions as one and performs almost as much R&D as Johns Hopkins University. Included as separate entry to provide better measure of distribution of academic R&D dollars and ranking of individual institutions.

NOTE: Public and private refer to institutional control.

SOURCES: National Science Foundation, Division of Science Resources Statistics, *Academic Research and Development Expenditures: Fiscal Year 2003* (forthcoming); and Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Appendix table 5-12

**Academic institutions receiving federal R&D support, by selected Carnegie classification: 1972–2002**

Year	All academic institutions	Carnegie institution type	
		Research/ doctorate granting	Other
1972.....	617	223	394
1973.....	534	219	315
1974.....	547	217	330
1975.....	558	221	337
1976.....	572	222	350
1977.....	617	220	397
1978.....	674	221	453
1979.....	663	223	440
1980.....	683	223	460
1981.....	619	225	394
1982.....	586	223	363
1983.....	600	226	374
1984.....	602	225	377
1985.....	646	226	420
1986.....	650	225	425
1987.....	764	228	536
1988.....	685	228	457
1989.....	716	229	487
1990.....	748	228	520
1991.....	777	227	550
1992.....	839	228	611
1993.....	891	227	664
1994.....	907	227	680
1995.....	901	228	673
1996.....	843	228	615
1997.....	844	228	616
1998.....	794	230	564
1999.....	791	228	563
2000.....	814	227	587
2001.....	842	227	615
2002.....	833	228	605

NOTE: Institutions designated by 1994 Carnegie classification code. For information on these institutional categories, see Carnegie Foundation for the Advancement of Teaching, *A Classification of Institutions of Higher Education*, Princeton University Press (1994), and chapter 2 sidebar, "Carnegie Classification of Academic Institutions."

SOURCES: National Science Foundation, Division of Science Resources Statistics, *Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions: FY 2002*, NSF 05-309, (2005); and Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

## Current expenditures for research equipment at academic institutions, by field: Selected years, 1983–2003

Field	1983	1986	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	Millions of current dollars															
All fields.....	450	783	1,013	1,025	1,034	1,042	1,107	1,239	1,214	1,288	1,294	1,325	1,434	1,509	1,697	1,808
Science .....	371	637	793	791	809	824	857	967	929	988	996	1,040	1,128	1,177	1,334	1,425
Physical sciences .....	81	163	191	190	198	207	207	240	234	243	254	248	250	240	274	296
Astronomy.....	4	6	13	14	14	17	20	22	21	26	25	29	25	15	19	19
Chemistry .....	32	59	73	69	70	75	78	81	88	90	91	102	103	100	121	118
Physics .....	37	89	91	88	94	90	90	114	105	108	122	106	109	112	121	138
Other.....	8	9	14	18	20	26	19	22	19	19	16	11	12	13	12	20
Mathematics .....	4	7	10	11	10	15	15	14	13	15	14	12	10	12	10	7
Computer sciences.....	20	43	48	59	45	54	59	77	67	71	63	63	56	65	101	99
Earth, atmospheric, and ocean sciences.....	31	51	72	70	78	77	83	83	88	94	101	99	100	87	132	119
Atmospheric sciences .....	5	10	11	10	11	15	12	14	14	15	14	14	12	12	14	17
Earth sciences.....	12	18	27	29	30	27	30	27	31	35	38	35	37	29	33	42
Ocean sciences.....	11	18	20	19	28	24	27	28	29	31	33	37	34	34	74	50
Other.....	3	6	13	12	9	11	15	15	14	13	17	13	17	11	11	9
Life sciences .....	209	331	420	412	430	418	435	464	444	479	495	556	629	688	734	814
Agricultural sciences.....	41	58	54	53	59	53	68	63	63	69	76	72	77	82	71	74
Biological sciences.....	74	120	171	168	174	171	175	191	180	196	190	244	268	283	295	335
Medical sciences.....	87	138	177	169	176	178	173	187	183	198	213	221	263	302	339	372
Other.....	7	15	19	22	21	16	18	23	18	15	16	19	21	20	29	33
Psychology.....	7	9	11	11	11	15	13	12	12	13	13	12	14	14	19	23
Social sciences.....	9	14	15	14	18	19	21	27	25	24	22	18	19	17	17	18
Economics .....	2	4	4	5	5	5	6	7	6	5	4	4	3	2	2	3
Political science .....	1	1	1	2	2	3	3	3	3	3	3	2	2	2	2	2
Sociology .....	1	2	3	3	3	4	4	4	4	4	4	3	3	3	4	3
Other.....	5	7	7	5	7	8	9	12	11	11	11	9	11	9	9	9
Other sciences .....	10	20	25	25	18	18	23	51	45	49	33	32	51	54	47	49
Engineering .....	76	138	207	217	213	205	232	256	269	281	279	264	286	309	339	361
Aeronautical/astronautical .....	3	8	13	17	12	13	19	16	16	19	19	22	20	23	24	22
Bioengineering/biomedical .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	6	8	14	15	18	20
Chemical.....	6	14	18	20	20	22	19	22	24	23	28	27	26	31	30	32
Civil.....	7	12	20	18	16	18	19	22	26	28	21	23	29	32	43	30
Electrical/electronic.....	23	36	58	52	57	56	66	68	75	83	82	70	72	79	79	86
Mechanical.....	11	19	32	34	31	35	37	42	43	46	51	51	54	48	54	55
Materials.....	NA	NA	27	33	29	23	25	28	32	36	29	28	30	49	41	60
Other.....	29	58	51	59	61	51	66	73	69	62	60	57	61	55	74	78
	Millions of constant 2000 dollars															
All fields.....	693	1,099	1,247	1,217	1,197	1,180	1,227	1,344	1,293	1,349	1,337	1,352	1,434	1,475	1,628	1,703
Science .....	571	894	976	939	937	933	950	1,049	989	1,034	1,029	1,061	1,128	1,150	1,279	1,342
Physical sciences .....	124	229	235	225	230	235	230	260	249	255	262	253	250	235	263	279
Astronomy.....	6	8	16	17	16	19	22	24	23	28	26	29	25	14	18	18
Chemistry .....	50	83	90	82	81	85	87	88	94	94	94	104	103	98	116	112
Physics .....	56	126	112	104	109	101	99	124	112	113	126	108	109	110	116	130
Other.....	12	13	17	21	23	29	22	23	21	20	16	12	12	12	12	19

## Current expenditures for research equipment at academic institutions, by field: Selected years, 1983–2003

Field	1983	1986	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	Millions of constant 2000 dollars															
Mathematics .....	6	10	13	13	12	17	17	16	14	16	15	12	10	11	10	7
Computer sciences .....	31	60	59	69	52	61	65	83	72	75	66	64	56	63	97	93
Earth, atmospheric, and ocean sciences .....	48	72	89	83	90	87	92	90	94	98	105	101	100	85	126	112
Atmospheric sciences .....	8	14	14	12	13	16	13	15	14	16	15	15	12	12	14	16
Earth sciences .....	18	25	34	34	35	31	33	29	33	37	39	35	37	29	31	39
Ocean sciences .....	17	25	25	23	32	27	30	30	31	32	34	38	34	34	71	47
Other .....	5	8	16	14	10	13	16	16	15	13	17	14	17	11	10	9
Life sciences .....	322	464	517	489	498	474	482	503	473	501	512	567	629	672	704	767
Agricultural sciences .....	63	81	66	63	68	60	75	69	67	73	78	74	77	80	68	70
Biological sciences .....	113	168	210	199	202	194	194	208	192	205	197	249	268	276	283	316
Medical sciences .....	134	194	218	201	203	201	192	203	195	207	220	225	263	296	325	351
Other .....	11	21	23	26	24	18	20	24	20	16	16	19	21	20	28	31
Psychology .....	10	12	13	13	13	17	14	13	13	14	14	12	14	14	18	22
Social sciences .....	15	20	18	17	21	21	24	29	27	25	23	18	19	16	16	17
Economics .....	3	5	5	5	6	5	6	8	7	6	4	4	3	2	2	3
Political science .....	1	2	2	2	3	3	3	3	4	3	3	2	2	2	2	2
Sociology .....	2	3	4	3	4	4	4	5	5	5	4	3	3	3	4	3
Other .....	8	10	8	6	8	9	10	13	12	12	11	9	11	9	9	9
Other sciences .....	16	28	31	30	21	20	26	55	48	51	34	33	51	53	45	46
Engineering .....	117	194	255	257	247	232	257	277	286	295	288	269	286	302	325	340
Aeronautical/astronautical .....	5	11	16	21	14	15	21	18	17	20	20	22	20	23	23	21
Bioengineering/biomedical .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	6	8	14	15	17	19
Chemical .....	9	20	22	24	23	24	21	24	26	25	29	28	26	30	29	30
Civil .....	11	16	25	21	18	21	21	24	27	29	22	24	29	31	41	28
Electrical/electronic .....	35	51	72	62	66	63	73	74	80	87	85	71	72	77	76	81
Mechanical .....	17	27	40	41	36	39	42	45	45	48	53	52	54	47	52	52
Materials .....	NA	NA	33	39	33	27	28	30	34	38	30	29	30	48	39	57
Other .....	45	81	63	71	70	58	73	79	74	65	62	58	61	54	71	74
	Percent distribution															
All fields .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Science .....	82.3	81.4	78.3	77.2	78.2	79.1	77.4	78.0	76.5	76.7	77.0	78.5	78.7	78.0	78.6	78.8
Physical sciences .....	17.9	20.8	18.9	18.5	19.2	19.9	18.7	19.3	19.3	18.9	19.6	18.7	17.4	15.9	16.2	16.4
Astronomy .....	0.9	0.7	1.3	1.4	1.4	1.6	1.8	1.8	1.8	2.1	2.0	2.2	1.7	1.0	1.1	1.1
Chemistry .....	7.2	7.5	7.2	6.8	6.8	7.2	7.1	6.6	7.2	6.9	7.0	7.7	7.2	6.7	7.2	6.6
Physics .....	8.1	11.4	9.0	8.6	9.1	8.6	8.1	9.2	8.7	8.4	9.4	8.0	7.6	7.5	7.1	7.7
Other .....	1.7	1.1	1.4	1.8	1.9	2.5	1.8	1.7	1.6	1.5	1.2	0.9	0.9	0.8	0.7	1.1
Mathematics .....	0.8	0.9	1.0	1.0	1.0	1.5	1.3	1.2	1.1	1.2	1.1	0.9	0.7	0.8	0.6	0.4
Computer sciences .....	4.4	5.4	4.7	5.7	4.4	5.1	5.3	6.2	5.5	5.5	4.9	4.8	3.9	4.3	5.9	5.5
Earth, atmospheric, and ocean sciences .....	6.9	6.5	7.1	6.8	7.5	7.4	7.5	6.7	7.3	7.3	7.8	7.5	6.9	5.8	7.8	6.6
Atmospheric sciences .....	1.2	1.3	1.1	1.0	1.1	1.4	1.0	1.1	1.1	1.2	1.1	1.1	0.8	0.8	0.9	1.0
Earth sciences .....	2.6	2.3	2.7	2.8	2.9	2.6	2.7	2.2	2.6	2.7	2.9	2.6	2.6	2.0	1.9	2.3
Ocean sciences .....	2.5	2.3	2.0	1.9	2.7	2.3	2.5	2.2	2.4	2.4	2.5	2.8	2.3	2.3	4.3	2.8
Other .....	0.7	0.7	1.3	1.2	0.9	1.1	1.3	1.2	1.2	1.0	1.3	1.0	1.2	0.8	0.6	0.5



## Current expenditures for research equipment at academic institutions, by field: Selected years, 1983–2003

Field	1983	1986	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	Percent distribution															
Life sciences .....	46.4	42.2	41.5	40.2	41.6	40.1	39.2	37.4	36.6	37.1	38.3	41.9	43.9	45.6	43.3	45.0
Agricultural sciences .....	9.1	7.4	5.3	5.2	5.7	5.1	6.1	5.1	5.2	5.4	5.9	5.4	5.3	5.4	4.2	4.1
Biological sciences .....	16.4	15.3	16.9	16.4	16.9	16.4	15.8	15.4	14.9	15.2	14.7	18.4	18.7	18.7	17.4	18.5
Medical sciences .....	19.4	17.7	17.5	16.5	17.0	17.1	15.7	15.1	15.1	15.4	16.4	16.7	18.3	20.0	20.0	20.6
Other .....	1.6	1.9	1.9	2.1	2.0	1.5	1.6	1.8	1.5	1.2	1.2	1.4	1.5	1.4	1.7	1.8
Psychology .....	1.4	1.1	1.1	1.1	1.1	1.5	1.1	1.0	1.0	1.0	1.0	0.9	1.0	1.0	1.1	1.3
Social sciences .....	2.1	1.8	1.5	1.4	1.7	1.8	1.9	2.1	2.1	1.9	1.7	1.3	1.3	1.1	1.0	1.0
Economics .....	0.5	0.5	0.4	0.4	0.5	0.4	0.5	0.6	0.5	0.4	0.3	0.3	0.2	0.2	0.1	0.2
Political science .....	0.2	0.2	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.1
Sociology .....	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2
Other .....	1.1	0.9	0.7	0.5	0.7	0.8	0.8	1.0	0.9	0.9	0.8	0.6	0.8	0.6	0.5	0.5
Other sciences .....	2.3	2.6	2.5	2.5	1.8	1.7	2.1	4.1	3.7	3.8	2.5	2.4	3.5	3.6	2.8	2.7
Engineering .....	16.9	17.7	20.5	21.1	20.6	19.7	20.9	20.6	22.2	21.8	21.5	19.9	19.9	20.5	20.0	20.0
Aeronautical/astronautical .....	0.8	1.0	1.2	1.7	1.1	1.3	1.7	1.3	1.3	1.5	1.5	1.6	1.4	1.5	1.4	1.2
Bioengineering/biomedical .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.3	0.5	0.6	0.9	1.0	1.1	1.1
Chemical .....	1.3	1.8	1.8	1.9	1.9	2.1	1.7	1.8	2.0	1.8	2.2	2.1	1.8	2.1	1.8	1.8
Civil .....	1.6	1.5	2.0	1.7	1.5	1.8	1.7	1.8	2.1	2.1	1.7	1.8	2.0	2.1	2.5	1.7
Electrical/electronic .....	5.0	4.6	5.8	5.1	5.5	5.4	5.9	5.5	6.2	6.4	6.4	5.3	5.0	5.2	4.7	4.7
Mechanical .....	2.5	2.4	3.2	3.3	3.0	3.3	3.4	3.4	3.5	3.6	3.9	3.8	3.8	3.2	3.2	3.1
Materials .....	NA	NA	2.7	3.2	2.8	2.2	2.3	2.3	2.6	2.8	2.2	2.1	2.1	3.3	2.4	3.3
Other .....	6.5	7.4	5.1	5.8	5.9	4.9	6.0	5.9	5.7	4.8	4.7	4.3	4.3	3.6	4.4	4.3

NA = not available

NOTES: Detail may not add to total because of rounding. See appendix table 4-1 for gross domestic product implicit price deflators used to convert current dollars to constant 2000 dollars.

SOURCES: National Science Foundation, Division of Science Resources Statistics, *Academic Research and Development Expenditures: Fiscal Year 2003* (forthcoming); and Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Appendix table 5-14

**Federal share of current funding for research equipment at academic institutions, by field: Selected years, 1983–2003**

(Percent)

Field	1983	1986	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
All fields.....	62.3	64.0	59.9	59.6	59.8	61.2	60.6	59.3	59.5	58.6	59.8	58.2	56.3	55.5	59.1	63.4
Science .....	61.6	65.3	60.1	60.1	60.8	61.9	60.5	59.0	59.0	59.4	59.8	58.1	56.6	56.1	59.3	64.2
Physical sciences .....	78.8	80.1	75.3	73.5	76.4	74.1	72.8	74.6	73.0	70.8	73.9	74.8	70.0	66.9	70.2	73.3
Astronomy.....	84.0	70.1	63.1	61.6	68.9	65.6	63.8	61.5	70.7	65.1	81.6	86.5	83.4	83.1	80.6	74.6
Chemistry.....	71.7	73.1	71.4	68.1	71.9	70.4	68.4	70.1	68.7	65.4	67.0	67.3	61.4	57.7	62.1	65.4
Physics.....	83.4	85.8	81.1	79.0	80.8	75.8	79.0	81.7	77.1	76.2	76.4	79.7	76.8	71.9	76.4	78.7
Other.....	84.4	75.7	69.5	76.8	76.9	84.5	70.8	67.6	72.3	73.8	81.5	67.1	55.2	76.3	72.8	81.6
Mathematics.....	66.4	76.1	65.8	62.7	68.3	75.1	73.5	65.6	74.7	59.3	70.6	64.4	67.3	51.9	66.7	71.3
Computer sciences.....	72.7	82.5	65.8	74.6	65.7	69.9	68.9	63.5	70.8	68.9	70.4	69.0	60.4	64.1	73.7	83.3
Earth, atmospheric, and ocean sciences.....	61.7	68.2	65.9	61.4	67.4	70.8	72.9	69.9	70.0	73.1	67.8	67.4	63.9	61.3	61.5	72.7
Atmospheric sciences.....	71.3	81.3	76.8	75.8	78.2	78.1	81.6	71.5	64.1	74.6	81.2	79.0	79.3	74.4	76.3	80.9
Earth sciences.....	54.9	54.8	56.8	53.2	58.2	61.5	66.9	62.9	65.5	70.1	66.4	59.2	50.8	55.3	58.2	62.2
Ocean sciences.....	63.7	77.7	75.1	71.7	76.6	79.9	80.3	76.5	81.7	76.3	70.7	72.1	74.4	63.4	61.5	81.3
Other.....	63.5	57.4	61.4	52.4	56.0	64.5	64.8	68.6	61.2	72.3	53.8	63.0	60.8	56.8	51.6	57.5
Life sciences.....	54.9	57.0	53.2	53.6	53.8	54.3	52.5	48.6	50.2	50.2	50.9	49.9	52.7	52.6	55.6	60.1
Agricultural sciences.....	26.8	31.1	28.3	30.6	36.5	36.7	35.3	31.9	30.3	31.4	31.8	33.0	27.8	28.2	29.9	39.6
Biological sciences.....	66.0	66.9	60.2	60.5	61.1	60.8	61.0	56.0	58.8	55.7	56.5	57.0	60.2	58.7	59.7	64.0
Medical sciences.....	58.5	59.5	54.3	54.4	53.4	54.1	51.8	48.3	49.9	51.4	53.2	48.3	53.1	53.7	58.4	61.5
Other.....	58.2	54.8	50.6	50.8	44.3	45.6	41.5	34.6	36.6	48.8	43.5	41.3	44.0	49.4	45.6	51.0
Psychology.....	69.7	67.6	63.8	64.6	63.8	68.6	59.9	63.5	62.5	62.7	62.6	65.5	64.2	63.0	70.9	74.2
Social sciences.....	32.9	30.4	32.4	36.6	43.1	40.1	41.5	39.5	40.1	37.2	39.9	38.3	32.6	37.1	36.9	45.4
Economics.....	40.4	31.3	27.2	33.8	48.4	39.3	43.5	38.9	40.2	31.2	34.3	37.3	54.3	40.1	36.7	56.8
Political science.....	36.9	26.2	24.4	32.0	45.8	30.6	49.0	36.8	33.8	36.0	47.1	32.0	37.0	35.9	21.6	52.0
Sociology.....	59.6	42.1	43.2	52.6	52.2	52.9	46.0	46.7	48.3	43.3	47.4	42.2	44.6	35.2	43.0	50.7
Other.....	21.4	27.0	32.8	32.3	33.8	38.0	36.1	38.1	38.8	38.0	37.0	38.6	22.6	37.1	37.9	38.5
Other sciences.....	59.8	58.4	46.1	38.3	28.4	41.3	45.6	63.9	39.9	63.3	47.0	26.1	25.0	38.7	18.4	19.5
Engineering.....	64.8	57.6	57.6	55.8	55.3	57.3	59.3	59.3	60.5	55.0	59.0	57.5	54.6	52.1	57.0	59.0
Aeronautical/astronautical.....	76.7	74.1	81.1	83.8	75.1	81.3	76.9	77.4	71.3	70.2	69.0	70.6	63.6	71.2	78.9	83.4
Bioengineering/biomedical.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	53.1	42.3	46.7	43.1	47.4	52.6	57.7
Chemical.....	58.1	58.8	46.1	49.0	50.5	46.7	58.0	58.8	56.7	55.0	55.6	49.2	52.3	51.7	55.2	55.6
Civil.....	51.5	50.8	58.7	46.7	44.9	44.5	44.6	44.2	44.3	43.7	43.2	49.2	35.2	39.1	59.2	60.4
Electrical/electronic.....	71.1	66.0	61.8	58.2	59.4	65.9	66.8	61.8	68.7	61.6	66.8	65.4	61.8	58.4	60.0	67.8
Mechanical.....	68.5	61.6	56.8	51.8	60.1	64.5	65.8	63.7	63.2	62.7	64.2	63.7	64.9	59.1	63.6	69.1
Materials.....	NA	NA	66.5	59.7	48.8	51.0	48.6	50.5	53.3	51.4	59.4	60.9	60.9	45.1	53.2	45.0
Other.....	63.2	52.0	52.2	59.0	56.4	55.1	56.8	62.7	60.6	47.8	52.6	49.4	46.3	52.1	51.9	54.0

NA = not available

SOURCES: National Science Foundation, Division of Science Resources Statistics, *Academic Research and Development Expenditures: Fiscal Year 2003* (forthcoming); and Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

Appendix table 5-15

**Expenditures of current funds for research equipment at academic institutions as percentage of total academic R&D expenditures, by field: Selected years, 1983–2003**

Field	1983	1986	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
All fields.....	5.7	7.2	6.2	5.8	5.5	5.2	5.3	5.6	5.3	5.3	5.0	4.8	4.8	4.6	4.7	4.5
Science .....	5.5	6.9	5.8	5.4	5.1	4.9	4.8	5.2	4.8	4.8	4.6	4.5	4.4	4.2	4.3	4.2
Physical sciences .....	9.0	12.7	10.6	9.8	9.6	9.7	9.5	10.6	10.4	10.3	10.2	9.5	9.2	8.6	9.1	9.1
Astronomy.....	5.7	5.7	7.8	6.8	5.9	6.5	7.5	7.4	7.7	9.2	8.4	7.5	6.4	3.9	4.8	4.9
Chemistry.....	9.7	12.5	11.3	10.3	10.0	10.1	10.3	10.5	11.0	10.9	10.4	11.1	10.7	10.0	10.7	9.7
Physics.....	8.8	14.2	10.8	10.0	10.2	9.5	9.4	11.6	10.6	10.2	11.3	9.2	9.1	9.1	9.4	9.7
Other.....	10.1	10.5	9.5	10.2	10.4	13.6	10.0	11.3	10.1	9.3	6.9	7.4	7.9	7.2	6.3	8.5
Mathematics.....	3.5	4.5	4.6	4.6	4.2	5.6	5.3	5.2	4.6	5.3	4.6	3.7	2.9	3.2	2.6	1.7
Computer sciences.....	10.7	13.3	9.3	10.6	8.1	8.8	9.1	11.2	9.7	10.1	8.5	7.3	6.4	6.8	9.0	7.6
Earth, atmospheric, and ocean sciences.....	5.0	6.6	6.8	6.3	6.3	5.9	6.0	5.8	5.9	6.1	6.2	5.9	5.6	4.8	6.5	5.4
Atmospheric sciences.....	5.3	8.3	6.6	5.9	5.7	6.9	5.7	6.6	6.0	6.1	5.4	5.0	4.2	4.1	4.2	4.4
Earth sciences.....	5.3	6.5	7.7	7.5	7.3	6.5	6.6	5.9	7.0	7.8	7.3	6.4	6.6	5.3	5.1	5.8
Ocean sciences.....	5.1	6.4	5.3	4.9	6.5	5.3	6.0	5.8	5.5	5.7	6.0	6.2	5.3	5.1	10.2	6.5
Other.....	3.8	5.6	8.1	7.0	4.4	4.9	5.2	5.0	4.9	4.2	5.7	5.2	5.9	3.8	3.4	3.1
Life sciences.....	4.9	5.6	4.8	4.4	4.2	3.9	3.8	3.8	3.5	3.5	3.4	3.6	3.6	3.6	3.4	3.4
Agricultural sciences.....	4.4	5.3	4.0	3.6	3.9	3.4	4.1	3.5	3.3	3.5	3.8	3.5	3.5	3.5	2.9	2.9
Biological sciences.....	5.2	6.2	6.0	5.5	5.3	4.8	4.7	5.0	4.6	4.7	4.2	4.8	4.8	4.8	4.5	4.5
Medical sciences.....	4.8	5.3	4.3	3.7	3.5	3.3	3.1	3.1	2.9	2.9	2.8	2.8	2.9	3.0	2.9	2.9
Other.....	5.4	6.1	5.2	5.4	5.0	3.6	3.9	4.8	3.6	2.9	2.9	3.4	3.1	2.7	3.3	3.2
Psychology.....	4.8	5.1	4.2	3.9	3.4	4.4	3.5	3.3	3.2	3.3	3.0	2.5	2.8	2.5	2.8	3.0
Social sciences.....	2.7	3.0	2.1	1.9	2.2	2.1	2.2	2.6	2.3	2.1	2.0	1.4	1.5	1.2	1.1	1.1
Economics.....	2.2	2.7	2.0	2.2	2.3	2.0	2.3	2.9	2.4	2.0	1.5	1.4	1.2	0.8	0.9	0.9
Political science.....	1.6	2.0	1.3	1.6	1.7	1.9	1.8	1.8	1.9	1.9	1.9	1.0	0.7	0.8	0.8	0.8
Sociology.....	1.8	2.3	2.2	1.7	2.1	2.0	1.9	1.9	1.9	1.7	1.6	1.2	1.1	0.9	1.0	0.9
Other.....	4.4	4.3	2.6	1.9	2.4	2.4	2.6	3.1	2.6	2.6	2.5	1.7	2.2	1.6	1.4	1.4
Other sciences.....	6.3	8.8	7.5	7.6	5.8	4.9	6.0	11.9	10.8	9.4	7.2	7.1	9.4	9.3	7.6	7.1
Engineering.....	6.8	8.4	7.8	7.5	7.0	6.5	6.9	7.3	7.3	7.3	6.8	6.2	6.3	6.2	6.1	6.0
Aeronautical/astronautical.....	5.0	8.0	7.7	9.7	5.9	6.2	8.7	6.8	6.9	7.8	7.8	8.3	7.8	6.9	7.0	5.5
Bioengineering/biomedical.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.8	6.1	5.6	7.8	7.1	6.4	6.4
Chemical.....	6.3	10.6	8.3	8.2	7.6	7.9	6.7	7.4	7.6	7.4	8.7	7.8	6.9	7.5	7.0	7.0
Civil.....	5.7	6.6	7.1	5.7	4.6	5.0	4.7	5.2	5.7	5.9	4.3	4.4	4.8	4.8	5.9	3.9
Electrical/electronic.....	8.6	9.1	8.8	7.7	8.1	8.0	8.8	8.3	8.5	8.8	7.9	6.9	6.4	6.8	6.1	6.1
Mechanical.....	7.5	8.3	8.3	8.1	6.9	7.2	7.5	8.0	8.2	8.9	9.0	8.1	8.6	7.0	6.9	6.7
Materials.....	NA	NA	9.9	10.9	9.7	7.8	8.0	8.5	9.1	9.3	7.4	7.4	7.5	10.9	8.7	11.2
Other.....	6.9	9.4	7.7	7.8	7.4	6.2	7.3	8.4	7.3	7.1	6.7	5.9	6.1	5.0	6.2	6.1

NA = not available

SOURCES: National Science Foundation, Division of Science Resources Statistics, *Academic Research and Development Expenditures: Fiscal Year 2003* (forthcoming); and Integrated Science and Engineering Resources Data System (WebCASPAR), <http://webcaspar.nsf.gov>.

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Appendix table 5-16

**Costs for new construction of S&E research space in academic institutions, by field and expected time of construction: FY 2002–05**

(Millions of dollars)

Field	Started in FY 2002–03	Planned to start in FY 2004–05	Deferred projects <sup>a</sup>
All fields.....	7,632.5	9,092.0	8,410.9
Physical sciences .....	791.5	906.1	1,052.2
Mathematics .....	10.5	40.8	170.5
Computer sciences.....	346.7	232.3	185.9
Earth, atmospheric, and ocean sciences .....	221.3	252.3	378.2
Agricultural sciences.....	142.2	353.0	267.8
Biological sciences.....	2,060.6	2,550.3	2,435.3
Medical sciences.....	2,339.5	2,960.5	2,361.1
Psychology.....	73.4	139.2	170.7
Social sciences.....	148.7	85.0	213.2
Other sciences.....	445.0	280.0	132.5
Engineering .....	1,053.0	1,292.4	1,043.4
Animal research space .....	739.8	579.1	226.1

<sup>a</sup>Deferred construction projects are facilities needed for current research program commitments but not funded or scheduled for FY 2004 or 2005. Only those included in institutional plan included here.

NOTES: Animal research space listed separately and also included in individual field totals. Survey of Research and Development Expenditures at Universities and Colleges does not collect data separately on expenditures for research involving animals. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Science and Engineering Research Facilities, Fiscal Year 2003.

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Appendix table 5-17

**New construction of S&E research space in academic institutions, by field and time of construction: FY 2002–05**

(Millions of square feet)

Field	Construction started FY 2002–03		Construction planned to start FY 2004–05	
	Number of institutions	Total NASF	Number of institutions	Total NASF
All fields.....	216	16.1	190	19.1
Physical sciences .....	59	1.5	48	1.7
Mathematics .....	5	—	8	0.1
Computer sciences.....	27	1.0	21	0.8
Earth, atmospheric, and ocean sciences .....	30	0.6	27	0.7
Agricultural sciences .....	32	0.8	26	0.7
Biological sciences .....	107	4.0	88	4.6
Medical sciences.....	76	5.0	74	5.5
Psychology .....	19	0.2	10	0.3
Social sciences.....	11	0.2	17	0.3
Other sciences.....	23	0.7	17	0.8
Engineering .....	63	2.2	60	3.6
Animal research space .....	64	1.4	55	1.1

— = &gt;0 but &lt;50,000 NASF

NASF = net assignable square feet

NOTES: Animal research space listed separately and also included in individual field totals. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Science and Engineering Research Facilities, Fiscal Year 2003.

Appendix table 5-18

**Source of funds for construction of S&E research space in academic institutions, by year of project start and type of institution:  
FY 1986–2003**

(Millions of current dollars)

Year of project start/type of institution	All sources	Federal government	State/local government	Institutional/other
<b>1986 or 1987</b>				
All institutions.....	2,050.6	145.4	779.1	1,125.4
Doctorate granting.....	1,887.7	129.9	690.4	1,066.7
Nondoctorate granting.....	162.9	15.5	88.7	58.8
<b>1988 or 1989</b>				
All institutions.....	2,464.5	352.0	890.7	1,219.9
Doctorate granting.....	2,315.0	339.0	807.3	1,166.9
Nondoctorate granting.....	149.5	13.0	83.4	53.1
<b>1990 or 1991</b>				
All institutions.....	2,975.6	476.3	956.6	1,542.7
Doctorate granting.....	2,847.2	465.5	947.9	1,433.8
Nondoctorate granting.....	128.4	10.8	8.7	108.9
<b>1992 or 1993</b>				
All institutions.....	2,811.9	459.3	968.6	1,384.1
Doctorate granting.....	2,719.6	452.3	893.2	1,374.2
Nondoctorate granting.....	92.2	7.0	75.4	9.9
<b>1994 or 1995</b>				
All institutions.....	2,767.5	206.4	1,180.9	1,380.2
Doctorate granting.....	2,436.9	201.3	890.3	1,345.3
Nondoctorate granting.....	330.5	5.2	290.5	34.9
<b>1996 or 1997</b>				
All institutions.....	3,110.3	270.9	966.6	1,873.0
Doctorate granting.....	2,843.2	268.3	880.6	1,694.4
Nondoctorate granting.....	267.1	2.5	86.0	178.6
<b>1998 or 1999</b>				
All institutions.....	2,765.4	237.8	939.0	1,588.6
Doctorate granting.....	2,562.5	206.0	869.1	1,487.5
Nondoctorate granting.....	202.9	31.8	70.0	101.0
<b>2002 or 2003</b>				
All institutions.....	7,632.5	359.7	2,457.8	4,815.0
Doctorate granting.....	7,375.0	326.7	2,371.6	4,676.7
Nondoctorate granting.....	257.4	32.9	86.3	138.2

NOTES: Institutional and other sources of funds include institution's operating funds, endowments, private donations, tax-exempt bonds and other debt financing, and indirect costs recovered from federal and nonfederal sources. No data for 2001 because question on construction costs not asked on FY 2001 survey. FY 2003 survey only reported construction projects costing >\$250,000; construction projects costing >\$100,000 were reported in previous cycles. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Science and Engineering Research Facilities, Fiscal Years 1986–2003.

Appendix table 5-19

**Condition of S&E research space in academic institutions, by field: FY 2003**

(Percent NASF)

Field	NASF (millions)	Superior	Satisfactory	Requires renovations	Requires replacement
All fields.....	164.6	30	49	16	5
Physical sciences .....	19.8	24	50	19	6
Mathematics .....	1.5	26	62	9	2
Computer sciences.....	3.0	41	47	8	4
Earth, atmospheric, and ocean sciences .....	8.7	25	52	17	7
Agricultural sciences .....	23.4	25	52	17	6
Biological sciences .....	34.6	32	45	18	5
Medical sciences.....	33.8	37	44	15	4
Psychology .....	4.3	30	50	16	4
Social sciences.....	5.5	24	54	16	7
Other sciences.....	3.7	25	57	14	4
Engineering .....	26.2	27	52	15	5
Animal research space .....	15.6	32	47	13	8

NASF = net assignable square feet

NOTES: NASF reported only for institutions that rated condition of space for current research program. Consequently, NASF reported in this table may vary slightly from NASF reported in other tables. Condition assessed relative to current research program. Animal research space listed separately and also included in individual field totals. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Science and Engineering Research Facilities, Fiscal Year 2003.

Appendix table 5-20

**Highest desktop port speed and speed of the majority of desktop ports, by type of institution: FY 2003 and 2004**

(Percent distribution)

Year and type of institution	Number of institutions	Highest desktop port speed				Speed of majority of desktop ports			
		≤10 mb	100 mb	1 gb	Other	≤10 mb	100 mb	1 gb	Other
FY 2003									
All academic .....	425	—	60	38	2	28	72	1	0
Doctorate granting.....	302	0	53	46	1	29	70	1	0
Nondoctorate granting .....	123	1	77	19	3	24	75	1	0
Control									
Public.....	280	0	58	40	3	29	71	—	0
Private.....	145	1	64	34	1	26	72	1	0
FY 2004 (estimated)									
All academic .....	419	—	46	52	2	16	81	2	0
Doctorate granting.....	299	0	37	61	2	17	81	2	0
Nondoctorate granting .....	120	1	67	30	3	15	83	3	0
Control									
Public.....	277	0	44	53	3	17	81	3	0
Private.....	142	1	49	50	1	15	82	2	0

— = &gt;0% but &lt;0.5%

mb = megabits/second; gb = gigabits/second

NOTES: One biomedical research institution reported having no desktop ports. Some institutions reported connection speeds in category "other." For purposes of comparison, table designates "other" as highest speed. Detail may not add to total because of rounding or absence of desktop ports.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Science and Engineering Research Facilities, Fiscal Year 2003.

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Appendix table 5-21

**Commodity Internet (Internet 1) connection speeds, by type of institution: FY 2003 and 2004**

(Percent distribution)

Type of institution	Number of connections	T1/DS1 (1.5 mb)	T3/DS3 (45 mb)	OC-3 (155 mb)	OC-12 (622 mb)	1 gb	OC-48 (2.4 gb)	Other
FY 2003								
All academic .....	1,130	49	22	15	3	6	—	5
Doctorate granting.....	864	48	20	17	3	8	—	5
Nondoctorate granting .....	266	53	29	11	1	1	—	4
FY 2004 (estimated)								
All academic .....	1,137	43	22	15	3	10	1	7
Doctorate granting.....	893	43	18	15	3	12	1	7
Nondoctorate granting .....	244	42	33	13	2	4	—	5

— = &gt;0% but &lt;0.5%

mb = megabits/second; gb = gigabits/second

NOTES: Some institutions reported connection speeds in category "other." Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Science and Engineering Research Facilities, Fiscal Year 2003.

**S&E doctorate holders employed in research universities and other academic institutions, by type of position and primary work activity: 1973–2003**

(Thousands)

Institution type, position, and primary work activity	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>All academic institutions</b>																
All positions.....	118.0	134.1	145.4	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5	258.3
Teaching.....	73.3	83.8	82.2	83.8	95.9	97.7	101.0	99.3	100.9	103.4	98.3	100.2	105.4	108.6	109.0	105.9
Research.....	27.8	30.8	37.0	41.3	46.5	48.9	55.9	66.5	72.2	73.9	80.2	83.0	88.6	91.4	93.8	102.9
Other work.....	16.9	19.4	26.2	30.2	24.7	29.6	33.3	30.1	33.5	33.2	35.2	34.3	38.6	40.2	42.8	49.5
Full-time faculty.....	103.3	116.4	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	178.4	184.0	187.4	194.1
Teaching.....	69.9	80.2	78.4	79.7	92.1	91.9	94.9	93.6	93.9	96.7	91.4	91.9	95.4	98.6	97.9	91.5
Research.....	19.8	21.4	25.8	28.1	31.8	33.6	39.5	48.6	51.6	53.8	56.9	56.6	58.0	60.4	62.8	71.5
Other work.....	13.6	14.8	21.3	23.4	18.0	22.9	22.5	22.2	24.2	22.6	24.1	22.9	24.9	25.0	26.8	31.1
Postdocs.....	4.2	6.2	7.6	8.1	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5	15.8
Teaching.....	0.1	0.1	0.1	0.2	0.1	0.4	0.2	0.2	0.4	0.1	0.0	0.6	0.6	0.4	0.5	0.4
Research.....	3.8	5.7	6.8	6.9	7.7	7.1	7.5	8.4	10.3	9.2	12.7	15.1	16.7	16.6	15.6	14.1
Other work.....	0.2	0.4	0.7	1.0	0.7	0.7	0.9	0.7	0.8	0.6	0.7	1.1	1.5	1.5	1.4	1.3
All other types of positions.....	10.5	11.5	12.2	15.9	16.6	19.4	24.6	22.1	25.4	27.6	28.1	29.4	35.3	37.5	40.7	48.4
Teaching.....	3.3	3.5	3.6	3.9	3.7	5.4	5.9	5.5	6.6	6.6	6.9	7.7	9.4	9.5	10.6	14.0
Research.....	4.1	3.8	4.3	6.2	6.9	8.1	9.0	9.6	10.3	10.9	10.7	11.4	13.8	14.3	15.4	17.3
Other work.....	3.1	4.2	4.2	5.8	6.0	5.9	9.8	7.1	8.6	10.1	10.4	10.3	12.1	13.7	14.6	17.1
<b>Research universities</b>																
All positions.....	65.2	73.4	78.2	83.5	91.0	89.9	102.8	106.9	112.5	111.6	113.0	112.8	113.6	117.2	119.6	127.4
Teaching.....	32.3	36.5	33.4	34.0	39.3	36.8	38.3	36.0	35.8	34.5	32.8	31.7	33.4	33.3	31.9	28.2
Research.....	22.9	25.5	29.5	32.1	37.5	37.4	45.4	53.7	58.1	57.9	60.6	62.4	60.6	64.3	66.9	73.4
Other work.....	10.1	11.4	15.4	17.4	14.3	15.6	19.1	17.2	18.7	19.2	19.5	18.7	19.6	19.7	20.8	25.7
Full-time faculty.....	55.7	61.5	64.7	67.1	73.8	72.2	80.6	84.2	86.6	85.8	84.4	81.6	81.5	84.1	84.8	89.5
Teaching.....	31.1	35.1	32.1	32.5	37.9	34.9	35.9	33.6	32.9	32.2	30.5	29.1	29.9	30.2	28.0	24.0
Research.....	16.3	17.4	20.0	21.1	25.1	25.2	31.5	38.4	40.7	41.1	41.5	41.0	39.5	42.2	44.2	50.3
Other work.....	8.3	8.9	12.6	13.5	10.7	12.1	13.3	12.2	13.0	12.5	12.4	11.5	12.1	11.8	12.6	15.2
Postdocs.....	3.5	5.3	6.5	6.8	7.0	6.7	7.4	8.1	9.7	8.3	11.3	13.6	13.9	14.1	13.8	12.7
Teaching.....	0.1	0.1	0.1	0.1	0.0	0.2	0.2	0.2	0.2	0.1	0.0	0.3	0.4	0.3	0.4	0.2
Research.....	3.2	4.9	5.9	5.8	6.5	6.1	6.5	7.3	8.9	7.8	10.8	12.4	12.3	12.6	12.4	11.5
Other work.....	0.2	0.3	0.6	0.9	0.5	0.4	0.7	0.6	0.6	0.4	0.6	0.9	1.2	1.2	1.0	1.0
All other types of positions.....	6.0	6.6	7.1	9.6	10.2	11.0	14.8	14.5	16.2	17.5	17.3	17.5	18.2	19.0	21.0	25.1
Teaching.....	1.2	1.3	1.2	1.4	1.3	1.8	2.3	2.2	2.6	2.2	2.4	2.3	3.1	2.8	3.5	4.0
Research.....	3.3	3.3	3.6	5.2	5.9	6.0	7.5	7.9	8.4	9.0	8.3	8.9	8.8	9.5	10.2	11.6
Other work.....	1.6	2.2	2.2	3.0	3.1	3.1	5.0	4.4	5.1	6.4	6.6	6.2	6.4	6.8	7.3	9.5
<b>Other universities and colleges</b>																
All positions.....	52.7	60.7	67.2	71.8	76.0	86.2	87.4	89.0	94.1	99.0	100.8	104.8	118.9	122.9	126.0	130.9
Teaching.....	41.0	47.3	48.8	49.8	56.7	60.8	62.7	63.3	65.1	69.0	65.5	68.5	72.0	75.3	77.1	77.7
Research.....	4.9	5.3	7.5	9.2	9.0	11.4	10.6	12.8	14.1	16.0	19.6	20.7	27.9	27.1	26.9	29.4
Other work.....	6.8	8.1	10.9	12.8	10.4	13.9	14.2	12.9	14.9	14.0	15.7	15.6	19.0	20.5	21.9	23.8
Full-time faculty.....	47.6	54.9	61.0	64.1	68.2	76.2	76.2	80.2	83.2	87.3	88.1	89.7	96.8	99.9	102.6	104.6
Teaching.....	38.8	45.1	46.4	47.3	54.1	57.0	59.0	60.0	61.1	64.5	61.0	62.8	65.5	68.4	69.9	67.6
Research.....	3.5	3.9	5.8	7.0	6.7	8.4	8.0	10.1	10.9	12.7	15.3	15.5	18.5	18.3	18.6	21.1
Other work.....	5.3	5.9	8.8	9.9	7.4	10.8	9.2	10.0	11.2	10.2	11.7	11.3	12.8	13.2	14.2	15.9
Postdocs.....	0.7	0.9	1.1	1.3	1.5	1.6	1.3	1.2	1.8	1.5	2.0	3.2	5.0	4.5	3.7	3.1

**S&E doctorate holders employed in research universities and other academic institutions, by type of position and primary work activity: 1973–2003**

(Thousands)

Institution type, position, and primary work activity	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
Teaching .....	0.0	0.1	0.0	0.1	0.1	0.3	0.0	0.0	0.2	0.1	0.0	0.3	0.2	0.1	0.1	0.1
Research.....	0.6	0.8	0.9	1.1	1.2	1.1	1.1	1.0	1.4	1.3	1.9	2.7	4.4	4.0	3.1	2.7
Other work.....	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.4	0.3	0.4	0.3
All other types of positions .....	4.5	4.8	5.2	6.3	6.4	8.5	9.9	7.6	9.1	10.1	10.8	11.8	17.0	18.5	19.6	23.2
Teaching .....	2.1	2.1	2.5	2.5	2.4	3.6	3.7	3.2	3.8	4.4	4.6	5.3	6.3	6.7	7.1	10.0
Research.....	0.9	0.6	0.7	1.0	1.1	2.1	1.5	1.6	1.9	2.0	2.4	2.4	4.9	4.9	5.2	5.6
Other work.....	1.5	2.0	2.0	2.8	2.9	2.8	4.7	2.7	3.4	3.7	3.9	4.1	5.8	6.9	7.3	7.7

NOTES: Institutions designated by 1994 Carnegie classification code. For information on these institutional categories, see Carnegie Foundation for the Advancement of Teaching, *A Classification of Institutions of Higher Education*, Princeton University Press (1994), and chapter 2 sidebar, "Carnegie Classification of Academic Institutions." Full-time faculty includes full, associate, and assistant professors plus instructors. Other positions include full-time nonfaculty positions such as research associates, adjunct positions, lecturers, administrative positions, and part-time positions of all kinds. Research includes basic or applied research, development, or design. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations.

Science and Engineering Indicators 2006

**S&E doctorate holders employed in academia, by type of position, Carnegie institution type, and administrative control of institution: 1973–2003**

(Thousands)

Institution control, institution type, and position	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>All universities and colleges</b>																
<b>All academic institutions</b>																
All positions.....	118.0	134.1	145.4	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5	258.3
Full-time senior faculty.....	74.0	84.3	90.7	97.2	107.3	115.6	119.7	127.3	131.0	133.0	128.6	127.3	131.9	136.7	136.9	141.4
Full-time junior faculty.....	29.3	32.1	34.9	34.0	34.6	32.8	37.2	37.2	38.7	40.1	43.8	44.0	46.4	47.4	50.5	52.7
Full-time nonfaculty.....	7.6	8.3	8.8	11.4	12.6	13.4	18.1	16.4	19.2	20.2	22.2	23.9	26.4	29.3	31.7	35.1
Postdocs.....	4.2	6.2	7.6	8.1	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5	15.8
Part-time positions.....	2.8	3.2	3.4	4.5	4.0	6.0	6.5	5.7	6.2	7.4	5.9	5.5	8.9	8.2	9.0	13.2
<b>Research universities</b>																
All positions.....	65.2	73.4	78.2	83.5	91.0	89.9	102.8	106.9	112.5	111.6	113.0	112.8	113.6	117.2	119.6	127.4
Full-time senior faculty.....	41.0	45.6	48.0	50.0	55.6	56.2	61.0	65.0	66.4	65.6	62.6	61.1	61.5	64.2	63.1	66.1
Full-time junior faculty.....	14.7	15.9	16.7	17.1	18.1	16.0	19.7	19.3	20.2	20.2	21.8	20.5	20.0	20.0	21.7	23.4
Full-time nonfaculty.....	4.6	5.1	5.6	7.5	8.1	8.1	11.7	11.5	13.2	13.9	14.6	15.7	15.1	16.4	18.3	20.4
Postdocs.....	3.5	5.3	6.5	6.8	7.0	6.7	7.4	8.1	9.7	8.3	11.3	13.6	13.9	14.1	13.8	12.7
Part-time positions.....	1.5	1.5	1.5	2.1	2.1	2.9	3.1	3.0	3.0	3.6	2.7	1.8	3.1	2.6	2.8	4.7
<b>Doctorate-granting institutions</b>																
All positions.....	14.0	15.9	17.2	17.2	18.8	19.5	21.2	22.2	23.5	24.9	24.2	25.0	25.8	26.3	26.3	26.9
Full-time senior faculty.....	9.3	10.9	11.6	11.6	13.4	14.5	15.0	16.4	16.4	17.0	16.2	16.0	16.9	17.4	17.4	17.0
Full-time junior faculty.....	3.8	3.8	4.4	4.2	3.9	3.5	3.6	3.9	4.4	5.1	5.4	5.6	5.1	5.4	5.5	5.7
Full-time nonfaculty.....	0.4	0.6	0.5	0.8	0.8	0.7	1.6	1.1	1.3	1.7	1.7	1.9	1.9	2.0	1.9	2.7
Postdocs.....	0.2	0.2	0.3	0.3	0.3	0.2	0.3	0.2	0.5	0.3	0.5	0.8	0.9	0.8	0.7	0.6
Part-time positions.....	0.3	0.4	0.4	0.4	0.3	0.5	0.6	0.6	0.9	0.8	0.5	0.7	1.0	0.7	0.8	0.9
<b>Comprehensive institutions</b>																
All positions.....	21.3	24.8	26.5	26.9	30.5	31.6	35.6	36.0	38.4	39.5	39.5	41.5	42.0	43.6	44.8	46.6
Full-time senior faculty.....	14.5	17.0	18.9	19.5	22.5	24.0	26.3	27.5	28.7	29.8	29.0	29.1	28.4	29.6	29.9	30.8
Full-time junior faculty.....	5.8	6.1	6.3	5.6	6.3	5.2	6.0	6.3	6.5	6.8	7.4	8.2	9.2	9.9	10.6	10.9
Full-time nonfaculty.....	0.5	1.0	0.6	0.9	1.1	1.1	2.0	1.3	1.9	1.5	1.9	2.2	2.0	2.2	2.3	2.3
Postdocs.....	0.1	0.1	0.1	0.2	0.1	0.3	0.0	0.0	0.1	0.2	0.1	0.4	0.6	0.1	0.1	0.1
Part-time positions.....	0.4	0.5	0.6	0.8	0.6	1.0	1.2	0.9	1.2	1.2	1.0	1.6	1.7	1.8	1.9	2.4
<b>Freestanding medical schools</b>																
All positions.....	3.3	4.3	4.9	5.9	7.2	7.0	8.3	9.0	9.7	9.6	10.8	11.2	9.8	11.9	12.6	12.7
Full-time senior faculty.....	1.6	2.0	2.2	2.6	3.6	3.8	4.0	4.6	4.8	4.7	5.3	5.1	4.3	5.7	6.2	6.2
Full-time junior faculty.....	1.2	1.6	1.9	2.1	2.0	1.9	2.5	2.6	2.9	3.1	3.2	3.3	3.1	3.1	3.2	3.5
Full-time nonfaculty.....	0.2	0.2	0.2	0.4	0.4	0.6	0.7	0.7	1.0	0.7	1.1	1.2	0.8	1.0	1.3	1.3
Postdocs.....	0.2	0.4	0.5	0.6	1.1	0.6	0.8	0.8	0.9	0.8	1.1	1.4	1.4	1.7	1.6	1.1
Part-time positions.....	0.1	0.2	0.1	0.2	0.1	0.2	0.3	0.3	0.2	0.3	0.1	0.2	0.2	0.4	0.3	0.5
<b>Liberal arts colleges</b>																
All positions.....	8.8	10.4	10.8	11.3	12.0	12.6	14.0	14.6	15.3	15.8	16.0	15.8	17.3	18.5	18.6	19.1
Full-time senior faculty.....	5.6	6.3	6.6	7.2	8.1	8.4	9.3	10.3	10.8	11.2	10.9	10.7	11.1	12.3	12.1	12.0
Full-time junior faculty.....	2.5	3.1	3.3	2.9	2.7	2.9	3.2	3.1	3.1	2.9	3.7	3.9	4.4	4.5	4.3	4.6
Full-time nonfaculty.....	0.4	0.6	0.5	0.7	0.8	0.7	0.9	0.7	0.8	1.0	0.9	0.8	0.9	0.9	1.0	1.2
Postdocs.....	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.2	0.1	0.1
Part-time positions.....	0.3	0.3	0.3	0.5	0.4	0.6	0.6	0.5	0.4	0.8	0.4	0.3	0.7	0.6	1.1	1.2

**S&E doctorate holders employed in academia, by type of position, Carnegie institution type, and administrative control of institution: 1973–2003**

(Thousands)

Institution control, institution type, and position	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>Public universities and colleges</b>																
<b>All academic institutions</b>																
All positions.....	80.9	93.0	100.4	104.3	113.9	115.9	130.2	135.3	141.2	142.6	144.6	145.7	148.7	153.1	156.4	162.9
Full-time senior faculty .....	52.4	60.2	65.2	66.9	76.2	79.7	85.0	90.7	92.6	93.7	90.6	88.7	89.8	92.5	91.9	95.3
Full-time junior faculty .....	20.4	22.1	23.7	22.4	22.7	20.2	24.1	25.0	25.4	25.8	27.9	28.3	28.2	29.4	31.7	32.3
Full-time nonfaculty .....	4.1	5.2	5.1	7.4	8.0	7.8	11.9	10.2	12.5	13.4	14.1	15.3	15.4	16.5	18.3	19.6
Postdocs .....	2.3	3.6	4.4	4.8	4.8	4.6	4.7	5.3	6.4	5.3	8.2	9.9	9.8	9.9	8.9	7.3
Part-time positions.....	1.5	2.0	2.1	2.8	2.3	3.7	4.4	4.1	4.2	4.4	3.9	3.5	5.6	4.9	5.5	8.5
<b>Research universities</b>																
All positions .....	48.8	54.8	58.6	62.9	66.7	66.6	75.3	79.0	81.7	80.8	81.9	80.8	82.9	83.6	84.3	88.2
Full-time senior faculty .....	31.8	35.4	37.7	39.2	43.3	44.3	47.2	50.7	51.5	50.8	48.5	47.1	48.3	48.7	47.4	49.8
Full-time junior faculty .....	11.0	11.8	12.4	12.8	12.5	11.2	13.9	14.0	14.2	13.7	14.9	14.0	13.7	13.8	15.2	15.6
Full-time nonfaculty .....	3.0	3.3	3.7	5.1	5.4	5.4	7.9	7.3	8.5	9.4	9.4	10.2	10.7	11.5	12.6	13.5
Postdocs.....	2.0	3.1	3.8	4.1	3.9	3.7	4.0	4.5	5.3	4.3	7.0	8.1	8.0	7.9	7.1	6.0
Part-time positions.....	1.0	1.1	1.1	1.6	1.5	2.0	2.3	2.5	2.3	2.6	2.0	1.4	2.3	1.7	2.0	3.4
<b>Doctorate-granting institutions</b>																
All positions .....	10.2	11.4	12.2	11.8	13.3	13.7	15.0	15.3	16.5	17.3	16.9	17.7	18.4	18.5	18.4	18.8
Full-time senior faculty .....	6.9	8.1	8.5	8.1	9.7	10.4	10.6	11.6	11.6	12.1	11.6	11.6	12.3	12.5	12.4	12.2
Full-time junior faculty .....	2.7	2.6	2.9	2.8	2.7	2.3	2.5	2.6	3.1	3.5	3.6	3.8	3.7	3.7	3.7	3.8
Full-time nonfaculty .....	0.3	0.4	0.3	0.6	0.6	0.5	1.3	0.7	0.9	1.1	1.0	1.3	1.4	1.3	1.4	1.8
Postdocs.....	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.3	0.2	0.4	0.5	0.5	0.6	0.5	0.4
Part-time positions.....	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.3	0.6	0.4	0.2	0.4	0.5	0.3	0.4	0.6
<b>Comprehensive institutions</b>																
All positions .....	16.2	18.8	20.4	19.9	22.4	23.6	26.2	26.8	28.2	28.4	28.9	30.2	31.0	31.5	32.5	33.2
Full-time senior faculty .....	11.0	12.9	14.6	14.7	17.0	18.2	19.8	20.5	21.3	21.9	21.5	21.4	21.0	21.6	22.0	22.1
Full-time junior faculty .....	4.5	4.9	4.9	3.8	4.2	3.7	4.1	4.5	4.6	4.6	5.2	6.0	6.6	7.1	7.4	7.5
Full-time nonfaculty .....	0.4	0.7	0.4	0.8	0.9	0.9	1.4	1.0	1.4	1.3	1.4	1.7	1.6	1.6	1.9	1.8
Postdocs.....	0.1	0.1	0.0	0.1	0.1	0.2	0.0	0.0	0.1	0.2	0.1	0.3	0.5	0.1	0.1	0.1
Part-time positions.....	0.2	0.3	0.4	0.5	0.3	0.7	0.9	0.7	0.8	0.5	0.6	0.9	1.3	1.2	1.1	1.8
<b>Freestanding medical schools</b>																
All positions .....	2.3	3.1	3.6	4.3	5.4	5.2	5.9	6.1	6.6	6.8	7.4	7.7	6.4	8.2	9.0	8.6
Full-time senior faculty .....	1.1	1.4	1.6	1.9	2.7	2.9	3.0	3.3	3.3	3.5	3.8	3.7	3.0	4.0	4.5	4.5
Full-time junior faculty .....	0.9	1.2	1.4	1.4	1.5	1.3	1.6	1.6	1.8	2.0	2.1	2.4	1.9	2.0	2.2	2.4
Full-time nonfaculty .....	0.2	0.1	0.2	0.4	0.3	0.4	0.4	0.4	0.7	0.5	0.8	0.8	0.5	0.6	0.9	0.7
Postdocs.....	0.1	0.3	0.3	0.5	0.8	0.4	0.6	0.5	0.6	0.5	0.7	0.8	0.8	1.2	1.1	0.7
Part-time positions.....	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.3	0.2	0.4
<b>Liberal arts colleges</b>																
All positions .....	1.0	1.3	1.5	1.5	1.7	1.9	2.2	2.5	2.7	2.6	2.6	2.4	3.0	2.7	2.9	3.1
Full-time senior faculty .....	0.6	0.7	0.9	1.0	1.2	1.3	1.5	1.8	1.8	2.0	2.0	1.6	2.0	1.9	1.8	1.7
Full-time junior faculty .....	0.3	0.4	0.4	0.3	0.4	0.5	0.4	0.5	0.5	0.5	0.5	0.6	0.7	0.6	0.7	0.9
Full-time nonfaculty .....	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2
Postdocs.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Part-time positions.....	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.2

**S&E doctorate holders employed in academia, by type of position, Carnegie institution type, and administrative control of institution: 1973–2003**

(Thousands)

Institution control, institution type, and position	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>Private universities and colleges</b>																
<b>All academic institutions</b>																
All positions.....	34.7	40.0	42.2	45.0	51.0	50.3	58.3	60.2	65.1	67.0	67.1	68.7	68.8	74.8	76.7	77.3
Full-time senior faculty .....	21.0	23.6	24.3	26.2	29.8	30.2	34.0	36.4	38.3	39.1	37.2	37.3	36.6	41.3	41.9	41.4
Full-time junior faculty .....	8.7	9.8	10.8	10.7	11.7	10.6	12.6	12.0	13.2	14.1	15.5	15.1	15.7	16.1	16.4	17.3
Full-time nonfaculty .....	2.3	2.9	2.9	3.4	4.3	4.2	5.9	6.1	6.6	6.6	7.7	7.8	6.6	7.4	8.0	9.3
Postdocs .....	1.7	2.5	3.2	3.2	3.7	3.3	3.8	4.0	5.0	4.5	4.9	6.6	7.4	7.1	7.4	5.9
Part-time positions.....	1.1	1.2	1.1	1.5	1.6	2.0	1.9	1.6	1.9	2.8	1.8	1.8	2.6	2.8	3.0	3.4
<b>Research universities</b>																
All positions .....	16.4	18.6	19.6	20.6	24.4	23.2	27.5	27.9	30.8	30.8	31.1	32.0	30.7	33.6	35.3	35.0
Full-time senior faculty .....	9.3	10.1	10.3	10.7	12.4	11.9	13.7	14.2	14.9	14.8	14.1	14.1	13.3	15.5	15.7	15.4
Full-time junior faculty .....	3.7	4.1	4.2	4.3	5.6	4.8	5.8	5.3	6.1	6.5	6.9	6.5	6.3	6.1	6.5	7.2
Full-time nonfaculty .....	1.6	1.8	1.9	2.4	2.7	2.7	3.8	4.3	4.7	4.5	5.2	5.5	4.4	4.9	5.6	6.1
Postdocs.....	1.4	2.1	2.8	2.7	3.1	2.9	3.4	3.6	4.4	4.0	4.3	5.5	5.9	6.2	6.6	5.2
Part-time positions.....	0.5	0.4	0.4	0.5	0.6	0.9	0.8	0.5	0.8	1.0	0.6	0.4	0.9	0.9	0.8	1.1
<b>Doctorate-granting institutions</b>																
All positions .....	3.8	4.5	5.0	5.4	5.5	5.8	6.2	6.9	7.1	7.5	7.3	7.3	7.4	7.9	7.9	7.8
Full-time senior faculty .....	2.4	2.8	3.1	3.4	3.7	4.1	4.4	4.8	4.8	4.9	4.6	4.4	4.5	4.9	5.0	4.7
Full-time junior faculty .....	1.1	1.3	1.5	1.4	1.2	1.2	1.1	1.3	1.3	1.6	1.7	1.7	1.4	1.7	1.8	1.8
Full-time nonfaculty .....	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.5	0.4	0.6	0.7	0.6	0.5	0.6	0.5	0.9
Postdocs.....	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.2	0.1	0.1	0.3	0.5	0.2	0.2	0.1
Part-time positions.....	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.5	0.4	0.3	0.3
<b>Comprehensive institutions</b>																
All positions .....	5.1	5.9	6.2	7.0	8.2	8.0	9.4	9.2	10.1	11.1	10.6	11.2	11.0	12.1	12.3	12.8
Full-time senior faculty .....	3.5	4.1	4.3	4.8	5.5	5.8	6.5	7.0	7.4	8.0	7.5	7.7	7.4	8.0	8.0	8.3
Full-time junior faculty .....	1.2	1.3	1.4	1.8	2.1	1.5	1.9	1.8	1.9	2.2	2.2	2.2	2.6	2.9	3.2	3.3
Full-time nonfaculty .....	0.2	0.3	0.2	0.2	0.2	0.3	0.7	0.2	0.5	0.2	0.5	0.5	0.5	0.6	0.4	0.5
Postdocs.....	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1
Part-time positions.....	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.4	0.7	0.4	0.7	0.5	0.6	0.7	0.6
<b>Freestanding medical schools</b>																
All positions .....	0.9	1.2	1.3	1.5	1.8	1.8	2.3	2.9	3.1	2.8	3.4	3.4	3.5	3.7	3.6	3.1
Full-time senior faculty .....	0.4	0.5	0.6	0.7	0.9	0.9	1.0	1.3	1.4	1.3	1.5	1.5	1.2	1.6	1.7	1.4
Full-time junior faculty .....	0.4	0.4	0.5	0.6	0.5	0.5	0.8	1.0	1.1	1.0	1.1	1.0	1.2	1.1	0.9	0.9
Full-time nonfaculty .....	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.3	0.2	0.2	0.3	0.4	0.3	0.4	0.4	0.4
Postdocs.....	0.0	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.7	0.5	0.5	0.3
Part-time positions.....	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1

**S&E doctorate holders employed in academia, by type of position, Carnegie institution type, and administrative control of institution: 1973–2003**

(Thousands)

Institution control, institution type, and position	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
Liberal arts colleges																
All positions .....	7.8	9.1	9.3	9.8	10.4	10.6	11.8	12.1	12.6	13.2	13.4	13.4	14.3	15.8	15.7	15.7
Full-time senior faculty .....	5.0	5.6	5.6	6.1	6.9	7.1	7.8	8.5	9.0	9.2	8.9	9.1	9.1	10.4	10.3	10.2
Full-time junior faculty .....	2.1	2.7	2.9	2.6	2.3	2.4	2.8	2.5	2.6	2.4	3.2	3.4	3.8	3.9	3.6	3.6
Full-time nonfaculty .....	0.3	0.5	0.4	0.6	0.7	0.6	0.7	0.6	0.6	0.9	0.8	0.6	0.6	0.7	0.9	0.9
Postdocs .....	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.2	0.1	0.1
Part-time positions .....	0.2	0.3	0.2	0.4	0.4	0.5	0.4	0.4	0.4	0.6	0.4	0.2	0.6	0.5	0.9	0.9

NOTES: Employment at institutions without Carnegie code or with unknown administrative control included only in total. Freestanding schools of engineering and technology included under comprehensive institutions. Senior faculty includes full and associate professors; junior faculty includes assistant professors and instructors; and full-time nonfaculty includes positions such as research associates, adjunct positions, lecturers, and administrative positions. Institutions designated by 1994 Carnegie classification code. For information on these institutional categories see Carnegie Foundation for the Advancement of Teaching, *A Classification of Institutions of Higher Education*, Princeton University Press (1994), and chapter 2 sidebar, "Carnegie Classification of Academic Institutions." Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations.

Science and Engineering Indicators 2006

**S&E doctorate holders employed in academia, by type of position and degree field: 1973–2003**

(Thousands)

Position and field	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>All positions</b>																
All fields .....	118.0	134.1	145.4	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5	258.3
Science .....	105.6	120.7	130.7	139.5	151.0	158.1	170.4	174.8	183.9	187.8	190.6	193.7	205.9	214.7	218.9	230.0
Physical sciences .....	22.1	23.6	25.0	24.6	25.4	25.1	27.0	27.2	27.7	27.7	28.6	29.3	30.2	30.9	30.4	31.5
Mathematics .....	9.7	11.0	11.7	12.2	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9	15.4
Computer sciences .....	NA	NA	NA	0.1	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8	5.2
Earth, atmospheric, and ocean sciences .....	3.4	3.9	4.2	4.2	4.6	4.8	5.2	5.6	5.9	6.0	6.4	6.4	7.3	7.8	8.2	8.8
Life sciences .....	34.9	39.4	42.6	47.0	51.3	54.9	58.7	61.3	64.8	66.9	68.2	71.6	77.3	81.9	84.3	89.2
Psychology .....	12.2	14.8	16.2	17.7	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4	31.3
Social sciences .....	23.4	28.0	31.1	33.6	36.9	38.9	42.0	42.2	44.5	44.8	44.4	42.5	44.9	46.2	46.9	48.6
Engineering .....	12.4	13.4	14.8	15.8	16.1	18.1	19.9	21.2	22.9	22.8	23.1	23.8	26.6	25.5	26.6	28.3
<b>All full-time faculty</b>																
All fields .....	103.3	116.4	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	178.4	184.0	187.4	194.1
Science .....	92.0	104.2	112.2	116.9	127.3	132.0	139.0	145.2	149.6	153.1	152.3	151.3	156.8	163.0	165.5	171.3
Physical sciences .....	17.8	18.9	20.0	20.0	20.5	20.2	21.2	22.0	21.5	21.7	21.3	20.9	21.4	21.7	21.6	22.5
Mathematics .....	9.3	10.4	10.9	11.4	11.7	12.3	12.7	12.9	13.5	14.2	14.7	13.0	13.6	13.1	12.6	13.0
Computer sciences .....	NA	NA	NA	0.1	0.3	0.4	0.7	0.9	1.3	1.8	2.3	2.8	3.0	3.3	3.3	4.2
Earth, atmospheric, and ocean sciences .....	3.0	3.4	3.6	3.5	3.8	4.0	4.2	4.4	4.7	4.5	4.5	4.7	5.1	5.6	5.9	6.1
Life sciences .....	29.5	33.1	34.9	37.3	40.9	43.5	45.6	48.1	49.3	51.1	50.8	52.8	55.2	58.1	60.4	63.2
Psychology .....	10.8	12.8	13.9	14.3	16.4	17.3	18.5	19.2	20.2	20.7	19.5	20.1	20.8	21.9	22.6	21.7
Social sciences .....	21.6	25.5	28.8	30.4	33.7	34.4	36.1	37.7	39.0	39.0	39.2	37.1	37.7	39.2	39.2	40.5
Engineering .....	11.3	12.2	13.5	14.3	14.7	16.4	17.9	19.3	20.2	20.1	20.1	20.0	21.5	21.1	21.9	22.8
<b>Full-time professors</b>																
All fields .....	42.6	47.9	51.0	57.5	64.4	69.9	72.8	79.1	83.1	82.5	80.0	77.7	80.9	83.1	84.8	87.2
Science .....	37.8	42.4	44.7	50.1	56.4	60.9	63.7	68.7	72.5	72.6	69.7	68.6	70.2	72.4	74.1	75.9
Physical sciences .....	7.7	8.6	9.2	10.0	11.2	11.9	12.6	13.5	13.2	12.8	12.1	11.6	11.4	11.6	11.2	11.6
Mathematics .....	3.2	3.5	3.9	4.4	5.0	5.6	6.1	6.5	6.9	6.7	7.1	6.6	6.9	6.6	6.6	6.5
Computer sciences .....	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.7	0.8	1.2
Earth, atmospheric, and ocean sciences .....	1.3	1.4	1.6	1.7	1.9	2.0	2.0	2.0	2.3	2.0	2.1	2.3	2.4	2.6	2.8	2.7
Life sciences .....	12.3	13.6	13.9	15.5	17.0	19.3	19.6	21.7	22.5	22.9	21.2	22.5	22.5	23.3	24.5	25.4
Psychology .....	3.9	4.6	4.8	5.6	6.5	7.0	7.6	8.3	9.1	9.5	8.7	8.7	9.5	9.4	9.9	9.7
Social sciences .....	9.4	10.6	11.3	12.9	14.7	15.1	15.9	16.8	18.5	18.6	18.4	16.6	17.1	18.2	18.2	18.7
Engineering .....	4.7	5.6	6.4	7.4	8.0	9.0	9.2	10.4	10.6	9.9	10.3	9.1	10.7	10.6	10.7	11.3



**S&E doctorate holders employed in academia, by type of position and degree field: 1973–2003**

(Thousands)

Position and field	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>Full-time associate professors</b>																
All fields .....	31.4	36.3	39.7	39.7	42.9	45.7	46.9	48.2	47.9	50.5	48.6	49.6	51.0	53.6	52.2	54.2
Science .....	27.4	32.2	35.3	35.5	38.5	40.9	42.2	43.3	42.6	44.7	43.3	43.5	45.2	47.6	46.1	48.2
Physical sciences.....	5.3	6.0	6.1	6.0	5.6	5.2	5.1	4.9	4.5	4.7	4.8	4.8	5.2	5.1	5.3	5.4
Mathematics.....	2.8	3.4	3.7	3.9	4.0	4.1	4.0	4.1	4.0	5.1	4.4	4.0	3.9	4.1	3.6	3.7
Computer sciences .....	NA	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.8	0.7	1.4	1.4	1.4	1.6	1.7
Earth, atmospheric, and ocean sciences....	0.9	1.1	1.1	1.1	1.0	1.1	1.2	1.2	1.3	1.6	1.6	1.3	1.3	1.5	1.4	1.6
Life sciences.....	8.6	9.8	10.7	11.5	12.5	13.4	14.1	14.1	14.0	14.6	14.6	14.7	15.8	17.3	16.7	17.7
Psychology .....	3.3	4.1	4.3	4.3	5.2	5.9	5.9	6.0	5.9	5.9	5.6	5.8	5.8	6.2	6.0	5.9
Social sciences .....	6.5	7.9	9.4	8.8	10.2	11.2	11.8	12.7	12.6	12.0	11.6	11.5	11.7	11.9	11.4	12.2
Engineering.....	4.0	4.2	4.4	4.2	4.4	4.7	4.7	4.9	5.3	5.9	5.3	6.2	5.8	6.0	6.1	5.9
<b>Full-time junior faculty</b>																
All fields .....	29.3	32.1	34.9	34.0	34.6	32.8	37.2	37.2	38.7	40.1	43.8	44.0	46.4	47.4	50.5	52.7
Science .....	26.7	29.6	32.2	31.3	32.3	30.2	33.1	33.2	34.4	35.8	39.3	39.3	41.5	42.9	45.4	47.2
Physical sciences.....	4.8	4.3	4.8	4.0	3.7	3.1	3.5	3.6	3.7	4.1	4.3	4.5	4.8	5.1	5.0	5.5
Mathematics.....	3.3	3.5	3.3	3.1	2.6	2.5	2.7	2.4	2.6	2.4	3.2	2.4	2.8	2.4	2.3	2.8
Computer sciences .....	NA	NA	NA	0.1	0.2	0.3	0.6	0.6	0.9	1.0	1.4	1.2	1.3	1.2	0.9	1.3
Earth, atmospheric, and ocean sciences....	0.8	0.9	0.9	0.7	0.9	0.9	1.1	1.1	1.1	0.9	0.9	1.1	1.3	1.5	1.7	1.8
Life sciences.....	8.5	9.7	10.3	10.3	11.3	10.8	11.9	12.3	12.8	13.7	15.0	15.6	16.9	17.5	19.2	20.1
Psychology .....	3.6	4.2	4.8	4.4	4.8	4.5	5.0	4.9	5.2	5.4	5.2	5.5	5.5	6.2	6.6	6.1
Social sciences .....	5.7	7.1	8.2	8.6	8.8	8.1	8.4	8.2	7.9	8.4	9.3	9.0	8.9	9.1	9.6	9.5
Engineering.....	2.6	2.5	2.7	2.8	2.3	2.7	4.0	4.0	4.3	4.3	4.5	4.8	5.0	4.5	5.1	5.6
<b>All other full-time positions</b>																
All fields .....	7.6	8.3	8.8	11.4	12.6	13.4	18.1	16.4	19.2	20.2	22.2	23.9	26.4	29.3	31.7	35.1
Science .....	6.8	7.4	8.0	10.5	11.5	12.3	16.6	15.3	17.7	18.4	20.7	21.7	23.3	26.4	28.3	31.6
Physical sciences.....	1.9	1.9	2.1	2.0	2.4	2.5	3.0	2.6	3.3	3.2	3.7	3.8	4.6	5.6	5.5	6.0
Mathematics.....	0.2	0.3	0.4	0.4	0.4	0.3	0.5	0.4	0.5	0.6	0.5	0.6	0.8	0.8	1.0	1.1
Computer sciences .....	NA	NA	NA	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.6
Earth, atmospheric, and ocean sciences....	0.3	0.3	0.3	0.5	0.5	0.5	0.7	0.8	0.7	0.9	1.1	1.1	1.4	1.4	1.6	1.9
Life sciences.....	2.5	2.4	2.8	3.9	4.0	4.6	6.2	6.0	6.7	7.2	7.7	8.4	8.4	9.5	10.5	11.9
Psychology .....	0.8	1.0	1.2	1.8	2.2	2.2	2.9	2.8	2.9	2.8	3.9	3.9	4.0	4.6	4.9	5.6
Social sciences .....	1.0	1.5	1.2	1.9	2.0	2.2	3.2	2.6	3.5	3.5	3.7	3.6	3.9	4.3	4.5	4.5
Engineering.....	0.8	0.9	0.8	0.9	1.1	1.1	1.5	1.1	1.5	1.8	1.5	2.1	3.1	3.0	3.4	3.6

**S&E doctorate holders employed in academia, by type of position and degree field: 1973–2003**

(Thousands)

Position and field	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>Postdocs</b>																
All fields .....	4.2	6.2	7.6	8.1	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5	15.8
Science.....	4.0	5.9	7.2	7.8	8.4	8.0	8.5	8.8	10.9	9.4	12.3	15.6	17.2	17.5	16.6	14.6
Physical sciences.....	1.7	2.1	2.2	1.9	1.9	1.4	1.9	2.0	2.4	1.9	3.0	3.9	3.2	2.9	2.6	2.2
Mathematics.....	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.0	0.5	0.5	0.6	0.8	0.5
Computer sciences .....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1
Earth, atmospheric, and ocean sciences....	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.5	0.6	0.5	0.4	0.4
Life sciences.....	1.9	3.0	4.0	4.7	5.2	5.1	5.2	5.6	6.8	6.4	8.2	9.2	10.8	11.7	11.0	10.0
Psychology .....	0.2	0.4	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.5	0.4	1.1	1.3	1.2	1.2	0.9
Social sciences .....	0.1	0.2	0.3	0.3	0.3	0.6	0.3	0.1	0.4	0.3	0.2	0.4	0.7	0.5	0.6	0.5
Engineering.....	0.2	0.3	0.4	0.3	0.2	0.3	0.2	0.5	0.6	0.5	1.0	1.2	1.7	1.1	0.9	1.1
<b>Part-time positions</b>																
All fields .....	2.9	3.2	3.4	4.5	4.0	6.0	6.5	5.7	6.2	7.4	5.9	5.5	8.9	8.2	9.0	13.2
Science.....	2.8	3.1	3.2	4.3	3.9	5.7	6.2	5.4	5.6	6.9	5.4	5.1	8.6	7.9	8.5	12.5
Physical sciences.....	0.6	0.6	0.6	0.7	0.6	1.0	0.9	0.6	0.5	0.9	0.7	0.7	1.0	0.7	0.7	0.8
Mathematics.....	0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.7	0.7	0.6	0.8
Computer sciences .....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2
Earth, atmospheric, and ocean sciences.....	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.3	0.4
Life sciences.....	0.9	0.9	1.0	1.2	1.2	1.7	1.7	1.6	1.9	2.3	1.6	1.2	2.9	2.6	2.4	4.0
Psychology.....	0.4	0.5	0.6	1.0	0.8	1.0	1.0	1.0	1.0	1.2	1.2	1.1	1.1	1.3	1.8	3.1
Social sciences .....	0.7	0.8	0.8	1.0	1.0	1.6	2.2	1.8	1.7	2.0	1.3	1.3	2.6	2.2	2.7	3.1
Engineering.....	0.1	0.1	0.1	0.3	0.2	0.4	0.3	0.3	0.5	0.5	0.5	0.4	0.3	0.4	0.4	0.8

NA = not available

NOTES: Faculty defined by position: professors and associate professors are senior faculty; assistant professors and instructors are junior faculty; other full-time positions include nonfaculty positions such as research associates, adjunct positions, lecturers, and administrative positions. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations.

**Recent S&E doctorate holders employed in academia, by years since doctorate, Carnegie institution type, type of position, and tenure status: 1973–2003**

(Percent distribution)

Years since doctorate and institution type	Total	Position			Tenure track			Not tenure tracked
		Full-time faculty	Postdocs	Other	Total	Tenured	Untenured	
<b>1–3 years</b>								
<b>All universities and colleges</b>								
1973 .....	100.0	73.6	13.0	13.4	NA	NA	NA	NA
1975 .....	100.0	70.4	18.3	11.3	NA	NA	NA	NA
1977 .....	100.0	64.8	22.9	12.3	NA	NA	NA	NA
1979 .....	100.0	59.2	25.0	15.8	45.1	7.4	37.7	54.9
1981 .....	100.0	56.9	28.4	14.7	45.0	5.2	39.8	55.0
1983 .....	100.0	56.5	27.9	15.7	66.2	8.4	57.8	33.8
1985 .....	100.0	54.7	27.4	17.9	49.0	4.2	44.8	51.0
1987 .....	100.0	51.8	29.8	18.5	48.6	3.8	44.8	51.4
1989 .....	100.0	47.6	33.5	19.0	44.1	3.7	40.4	55.9
1991 .....	100.0	55.1	27.4	17.5	65.2	4.6	60.6	34.8
1993 .....	100.0	47.6	33.4	19.0	36.3	1.9	34.4	63.7
1995 .....	100.0	41.4	39.6	19.0	31.2	2.6	28.6	68.8
1997 .....	100.0	40.6	41.4	18.0	32.0	2.6	29.5	68.0
1999 .....	100.0	37.3	43.1	19.5	28.8	2.0	26.8	71.2
2001 .....	100.0	43.6	39.1	17.3	33.7	2.7	31.0	66.3
2003 .....	100.0	44.5	34.0	21.6	36.5	2.1	34.4	63.5
<b>Research universities</b>								
1973 .....	100.0	60.3	21.8	17.9	NA	NA	NA	NA
1975 .....	100.0	56.6	29.0	14.4	NA	NA	NA	NA
1977 .....	100.0	50.5	36.0	13.5	NA	NA	NA	NA
1979 .....	100.0	47.7	35.6	16.6	34.8	1.6	33.2	65.2
1981 .....	100.0	45.6	38.8	15.6	36.3	1.1	35.2	63.7
1983 .....	100.0	43.3	40.5	16.2	56.9	2.6	54.3	43.1
1985 .....	100.0	43.5	37.2	19.3	39.6	0.6	39.1	60.4
1987 .....	100.0	40.0	40.3	19.7	39.2	1.3	37.9	60.8
1989 .....	100.0	36.3	44.2	19.5	36.0	1.2	34.8	64.0
1991 .....	100.0	41.9	38.4	19.7	57.3	2.4	55.0	42.7
1993 .....	100.0	33.4	46.3	20.3	23.7	0.7	23.0	76.3
1995 .....	100.0	26.7	54.4	18.8	19.6	0.4	19.2	80.4
1997 .....	100.0	26.8	56.4	16.9	19.5	0.6	18.9	80.5
1999 .....	100.0	24.1	57.9	18.0	18.9	0.7	18.2	81.1
2001 .....	100.0	29.8	52.8	17.5	22.3	1.1	21.2	77.7
2003 .....	100.0	31.2	47.6	21.2	25.4	0.4	25.0	74.6
<b>Other universities and colleges</b>								
1973 .....	100.0	87.1	4.0	8.9	NA	NA	NA	NA
1975 .....	100.0	86.5	5.9	7.6	NA	NA	NA	NA
1977 .....	100.0	82.0	7.2	10.8	NA	NA	NA	NA
1979 .....	100.0	75.6	9.9	14.5	59.5	15.6	43.9	40.5

**Recent S&E doctorate holders employed in academia, by years since doctorate, Carnegie institution type, type of position, and tenure status: 1973–2003**

(Percent distribution)

Years since doctorate and institution type	Total	Position			Tenure track			Not tenure tracked
		Full-time faculty	Postdocs	Other	Total	Tenured	Untenured	
1981 .....	100.0	75.7	11.1	13.1	59.4	12.1	47.4	40.6
1983 .....	100.0	75.2	9.9	14.9	76.9	15.1	61.8	23.1
1985 .....	100.0	73.5	10.8	15.7	63.5	9.9	53.6	36.5
1987 .....	100.0	73.2	10.6	16.1	64.4	8.1	56.4	35.6
1989 .....	100.0	67.9	14.2	17.9	56.9	7.5	49.4	43.1
1991 .....	100.0	75.0	10.7	14.3	73.0	6.7	66.2	27.0
1993 .....	100.0	69.9	13.2	16.9	56.1	3.8	52.3	43.9
1995 .....	100.0	63.3	17.5	19.2	48.6	5.9	42.7	51.4
1997 .....	100.0	57.9	22.7	19.4	47.6	4.9	42.6	52.4
1999 .....	100.0	55.0	23.4	21.6	42.1	3.7	38.4	57.9
2001 .....	100.0	62.3	20.7	17.0	49.1	4.8	44.3	50.9
2003 .....	100.0	62.2	15.7	22.1	51.3	4.3	47.0	48.7
<b>4–7 years</b>								
<b>All universities and colleges</b>								
1973 .....	100.0	89.2	2.3	8.4	NA	NA	NA	NA
1975 .....	100.0	87.1	4.3	8.3	NA	NA	NA	NA
1977 .....	100.0	85.0	5.3	9.7	NA	NA	NA	NA
1979 .....	100.0	81.2	6.1	12.9	65.7	26.3	39.4	32.8
1981 .....	100.0	80.8	6.3	13.2	70.3	24.9	45.3	28.4
1983 .....	100.0	76.8	5.7	17.2	65.7	23.8	42.0	26.1
1985 .....	100.0	76.9	6.9	16.4	65.2	19.4	45.8	29.0
1987 .....	100.0	75.0	7.6	17.2	60.4	16.6	43.8	28.9
1989 .....	100.0	73.2	9.1	17.8	59.5	12.6	46.9	30.1
1991 .....	100.0	75.0	7.1	17.6	65.1	21.2	43.9	24.7
1993 .....	100.0	72.1	11.1	16.7	60.4	12.4	48.0	39.6
1995 .....	100.0	70.3	12.9	16.8	59.3	12.4	46.9	40.7
1997 .....	100.0	66.3	14.8	19.0	54.1	11.6	42.5	45.9
1999 .....	100.0	65.4	14.1	20.5	52.4	10.4	42.0	47.6
2001 .....	100.0	63.1	13.2	23.7	49.6	9.0	40.6	50.4
2003 .....	100.0	64.9	9.7	25.4	53.7	12.5	41.1	46.3
<b>Research universities</b>								
1973 .....	100.0	86.6	3.7	9.7	NA	NA	NA	NA
1975 .....	100.0	82.1	7.7	9.8	NA	NA	NA	NA
1977 .....	100.0	77.8	9.4	13.3	NA	NA	NA	NA
1979 .....	100.0	74.0	9.8	16.7	60.0	20.2	39.8	38.5
1981 .....	100.0	74.4	8.9	16.8	61.6	16.2	45.4	36.8
1983 .....	100.0	70.5	8.7	21.2	60.2	14.4	45.8	31.9
1985 .....	100.0	69.1	10.9	20.0	58.7	11.9	46.8	35.0
1987 .....	100.0	67.0	11.4	21.9	53.1	12.2	40.9	35.1
1989 .....	100.0	65.1	13.7	20.9	52.3	7.5	44.8	35.9

**Recent S&E doctorate holders employed in academia, by years since doctorate, Carnegie institution type, type of position, and tenure status: 1973–2003**

(Percent distribution)

Years since doctorate and institution type	Total	Position			Tenure track			Not tenure tracked
		Full-time faculty	Postdocs	Other	Total	Tenured	Untenured	
1991 .....	100.0	65.9	11.6	22.8	56.9	16.2	40.7	28.2
1993 .....	100.0	64.5	17.5	18.6	52.4	6.9	45.5	47.6
1995 .....	100.0	59.9	19.8	19.9	49.0	7.6	41.3	51.0
1997 .....	100.0	55.2	21.3	23.1	43.5	5.9	37.7	56.5
1999 .....	100.0	54.8	21.0	24.3	41.8	5.8	36.0	58.2
2001 .....	100.0	50.0	22.1	28.0	37.9	4.9	33.0	62.1
2003 .....	100.0	53.7	15.9	30.4	43.7	8.1	35.6	56.3
<b>Other universities and colleges</b>								
1973 .....	100.0	92.0	0.9	7.1	NA	NA	NA	NA
1975 .....	100.0	91.8	1.1	6.8	NA	NA	NA	NA
1977 .....	100.0	92.1	1.6	6.5	NA	NA	NA	NA
1979 .....	100.0	89.2	1.9	8.7	71.9	32.9	39.0	26.5
1981 .....	100.0	87.9	3.4	9.3	80.1	34.8	45.3	18.9
1983 .....	100.0	84.4	2.7	13.4	71.3	33.3	38.1	20.3
1985 .....	100.0	86.2	2.2	12.1	73.0	28.5	44.5	21.9
1987 .....	100.0	87.4	2.4	10.9	70.4	22.6	47.7	20.4
1989 .....	100.0	84.6	2.4	13.3	69.7	19.9	49.8	22.0
1991 .....	100.0	86.3	2.2	11.2	75.2	27.4	47.9	20.3
1993 .....	100.0	82.6	3.4	14.6	70.2	19.1	51.1	29.8
1995 .....	100.0	81.6	5.1	13.2	71.2	17.9	53.3	28.8
1997 .....	100.0	77.5	7.7	14.9	64.6	17.3	47.3	35.4
1999 .....	100.0	75.3	7.6	16.9	62.3	14.7	47.7	37.7
2001 .....	100.0	76.1	4.5	19.4	61.1	13.0	48.1	38.9
2003 .....	100.0	75.6	3.8	20.6	63.2	16.8	46.4	36.8

NA = not available

NOTES: Institutions designated by 1994 Carnegie classification code. For information on these institutional categories, see Carnegie Foundation for the Advancement of Teaching, *A Classification of Institutions of Higher Education*, Princeton University Press (1994), and chapter 2 sidebar, "Carnegie Classification of Academic Institutions." Recent doctorate holders defined as having earned doctorate within either 3 years or 4–7 years preceding survey year. Full-time faculty includes full, associate, and assistant professors plus instructors. Other positions include full-time nonfaculty appointments such as research associates, adjunct appointments, lecturers, administrative positions, and part-time appointments of all kinds. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations.

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Appendix table 5-26

(Page 1 of 2)

**Age distribution of S&E doctorate holders employed in academia, by type of position: 1973–2003**

Position	Age (years)		Age distribution (%)					
	Mean	Median	All ages	<35	35–44	45–54	55–64	≥65
<b>All positions</b>								
1973 .....	42.0	40.0	100.0	28.3	35.2	23.3	10.9	2.2
1975 .....	42.4	39.9	100.0	25.9	36.8	23.7	11.7	2.0
1977 .....	42.7	40.0	100.0	22.9	38.9	23.8	12.4	2.0
1979 .....	43.3	40.7	100.0	20.1	40.3	23.8	13.6	2.2
1981 .....	44.0	41.5	100.0	18.3	40.5	23.7	14.5	2.9
1983 .....	44.8	42.5	100.0	14.9	40.8	25.2	15.7	3.4
1985 .....	45.2	43.2	100.0	14.2	39.2	26.8	15.9	3.8
1987 .....	45.6	44.2	100.0	12.9	36.5	30.6	16.5	3.5
1989 .....	46.1	45.0	100.0	12.1	34.7	32.2	16.9	4.1
1991 .....	46.3	45.3	100.0	11.5	33.7	34.2	16.9	3.8
1993 .....	45.8	45.0	100.0	13.3	33.3	34.4	16.1	3.0
1995 .....	46.2	45.3	100.0	12.7	32.9	33.6	17.4	3.5
1997 .....	46.6	45.8	100.0	13.3	30.7	32.8	19.6	3.6
1999 .....	47.0	46.3	100.0	12.2	30.5	31.0	22.5	3.8
2001 .....	47.4	46.9	100.0	12.0	29.1	31.8	23.1	4.0
2003 .....	47.3	47.0	100.0	12.8	28.7	30.8	23.9	3.8
<b>Full-time faculty</b>								
1973 .....	42.4	41.0	100.0	25.6	36.6	24.6	11.3	2.0
1975 .....	42.8	40.6	100.0	22.9	38.2	25.1	12.0	1.8
1977 .....	43.3	40.9	100.0	19.2	40.1	25.7	13.3	1.7
1979 .....	44.0	41.6	100.0	16.2	41.1	25.9	14.7	2.0
1981 .....	44.7	42.4	100.0	14.7	41.2	25.8	15.7	2.7
1983 .....	45.5	43.4	100.0	11.3	41.2	27.5	17.2	2.8
1985 .....	45.8	43.9	100.0	10.8	39.6	29.0	17.0	3.5
1987 .....	46.6	45.1	100.0	9.2	35.9	33.2	18.1	3.5
1989 .....	47.1	46.0	100.0	8.3	33.8	35.4	18.8	3.8
1991 .....	47.0	46.4	100.0	8.8	32.7	36.8	18.3	3.4
1993 .....	46.9	46.0	100.0	9.3	32.4	36.9	18.0	3.3
1995 .....	47.5	46.9	100.0	8.0	31.9	36.6	19.8	3.8
1997 .....	48.0	47.5	100.0	8.2	29.9	35.6	22.2	4.0
1999 .....	48.5	48.0	100.0	7.3	29.4	33.3	25.7	4.3
2001 .....	48.8	48.3	100.0	7.6	28.0	34.1	25.9	4.4
2003 .....	48.6	49.0	100.0	8.8	27.7	32.3	26.8	4.4
<b>Postdocs</b>								
1973 .....	32.1	31.0	100.0	81.2	15.2	3.0	0.6	0.0
1975 .....	32.7	31.2	100.0	78.0	18.7	2.0	1.1	0.2
1977 .....	32.9	31.1	100.0	75.3	21.7	2.4	0.6	0.0
1979 .....	33.1	31.6	100.0	71.7	25.5	2.1	0.7	0.0
1981 .....	33.1	31.6	100.0	71.9	24.6	2.6	0.6	0.3
1983 .....	33.7	31.7	100.0	68.4	27.0	3.5	1.0	0.2
1985 .....	33.3	31.9	100.0	70.6	27.2	2.1	0.1	0.0
1987 .....	33.8	32.0	100.0	68.4	28.3	2.4	0.5	0.4
1989 .....	34.6	32.6	100.0	63.9	29.9	4.5	1.0	0.7
1991 .....	34.7	33.1	100.0	57.2	39.0	2.8	1.0	0.0
1993 .....	33.9	32.7	100.0	62.3	34.7	2.5	0.5	0.0
1995 .....	35.0	33.0	100.0	56.6	35.9	5.8	1.6	0.1
1997 .....	35.0	33.0	100.0	60.7	32.3	4.6	2.1	0.3
1999 .....	34.5	33.0	100.0	57.6	36.8	5.3	0.3	0.0
2001 .....	34.6	33.0	100.0	59.9	34.6	4.5	0.8	0.1
2003 .....	34.9	33.0	100.0	60.0	32.4	6.5	1.1	0.0
<b>Other positions</b>								
1973 .....	41.9	39.0	100.0	34.6	30.3	18.7	10.9	5.4
1975 .....	43.3	40.0	100.0	27.5	32.0	21.8	13.4	5.4
1977 .....	42.5	38.3	100.0	28.4	37.4	17.5	10.6	6.1
1979 .....	42.5	38.6	100.0	25.2	41.6	17.0	10.9	5.2
1981 .....	43.3	39.6	100.0	21.8	43.6	17.0	11.1	6.4
1983 .....	44.1	39.9	100.0	19.3	43.6	17.5	10.6	8.9
1985 .....	45.3	42.5	100.0	15.9	41.0	21.6	14.7	6.8
1987 .....	43.9	41.1	100.0	16.9	43.9	23.3	10.9	5.0
1989 .....	44.9	42.2	100.0	14.2	43.3	23.5	11.2	7.8

Appendix table 5-26

**Age distribution of S&E doctorate holders employed in academia, by type of position: 1973–2003**

Position	Age (years)		Age distribution (%)					
	Mean	Median	All ages	<35	35–44	45–54	55–64	≥65
1991 .....	46.1	44.0	100.0	11.6	38.2	28.7	14.2	7.3
1993 .....	44.6	43.2	100.0	14.2	37.9	33.9	11.3	2.7
1995 .....	44.8	43.5	100.0	15.0	37.0	31.7	12.4	3.8
1997 .....	45.8	44.7	100.0	13.4	33.9	33.5	15.7	3.4
1999 .....	46.0	45.0	100.0	13.6	33.1	32.4	17.9	3.1
2001 .....	46.8	45.6	100.0	11.5	31.8	32.6	20.2	3.9
2003 .....	46.3	46.0	100.0	13.3	31.7	32.8	19.3	2.8

NOTES: Faculty positions include full, associate, and assistant professors and instructors. Other positions include full-time nonfaculty positions such as research associates, adjunct positions, lecturers, administrative positions, and part-time positions of all kinds. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations.

Appendix table 5-27

**Age distribution of S&E doctorate holders in full-time faculty positions at research universities and other academic institutions: 1973–2003**

Age and institution type	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
Thousands																
All universities and colleges.....	103.3	116.4	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	178.4	184.0	187.4	194.1
Research universities.....	55.7	61.5	64.7	67.1	73.8	72.2	80.6	84.2	86.6	85.8	84.4	81.6	81.5	84.1	84.8	89.5
Other universities and colleges.....	47.6	54.9	61.0	64.1	68.2	76.2	76.2	80.2	83.2	87.3	88.1	89.7	96.8	99.9	102.6	104.6
Percent distribution																
All universities and colleges																
All ages (years).....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<30.....	3.6	2.9	2.3	1.7	1.5	1.1	1.0	0.7	0.5	0.8	1.1	0.7	0.8	0.8	0.9	0.8
30–34.....	22.0	20.1	16.9	14.5	13.2	10.2	9.9	8.5	7.8	8.1	8.3	7.3	7.5	6.5	6.7	8.0
35–39.....	19.9	21.6	23.7	23.3	20.7	18.6	18.2	15.9	15.1	14.9	15.3	14.9	13.1	13.2	12.4	12.7
40–44.....	16.6	16.6	16.4	17.8	20.5	22.6	21.4	20.0	18.6	17.8	17.1	17.0	16.7	16.2	15.6	15.0
45–49.....	13.6	13.8	14.3	14.1	13.8	15.1	17.0	20.1	20.8	19.4	18.4	17.9	17.2	16.8	16.8	16.6
50–54.....	11.0	11.3	11.4	11.8	12.0	12.4	12.0	13.1	14.6	17.4	18.5	18.7	18.5	16.5	17.4	15.7
55–59.....	7.0	7.5	8.4	9.3	9.4	10.3	9.7	10.5	11.1	11.0	10.6	12.4	14.5	16.7	15.5	15.3
60–64.....	4.3	4.6	4.8	5.4	6.3	7.0	7.3	7.6	7.7	7.2	7.5	7.4	7.7	9.0	10.3	11.5
≥65.....	2.0	1.8	1.7	2.0	2.7	2.8	3.5	3.5	3.8	3.4	3.3	3.8	4.0	4.3	4.4	4.4
Research universities																
All ages (years).....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<30.....	3.4	3.0	2.5	2.2	2.1	1.4	1.2	1.0	0.6	0.8	1.2	0.9	0.9	0.7	1.1	1.0
30–34.....	20.6	18.8	16.4	14.9	14.1	11.2	11.4	9.8	9.3	9.1	9.4	7.3	7.0	6.3	6.6	8.0
35–39.....	19.3	20.3	21.0	21.7	19.8	18.0	17.9	16.6	17.1	16.6	16.6	16.4	14.0	13.8	12.2	12.6
40–44.....	16.4	16.3	16.2	17.2	18.8	20.2	20.0	18.7	17.2	17.5	17.6	18.4	17.6	17.3	16.5	15.7
45–49.....	14.3	14.2	14.7	13.9	12.6	14.9	15.4	17.8	18.4	17.8	16.9	16.9	17.3	16.5	16.9	16.6
50–54.....	11.4	12.2	12.3	12.1	12.1	12.1	12.0	12.9	13.8	15.6	16.0	16.5	17.3	15.9	16.3	15.4
55–59.....	7.7	8.3	9.3	10.0	10.4	10.8	9.8	10.3	10.9	10.7	11.0	11.8	13.5	15.2	14.3	14.2
60–64.....	4.8	5.0	5.4	5.8	6.8	8.0	8.2	8.5	8.0	7.7	7.8	7.5	7.8	9.3	10.7	11.2
≥65.....	2.1	1.9	2.2	2.3	3.2	3.5	4.1	4.3	4.8	4.2	3.7	4.2	4.7	4.9	5.3	5.4
Other universities and colleges																
All ages (years).....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<30.....	3.8	2.8	2.1	1.2	0.9	0.8	0.8	0.4	0.4	0.8	0.9	0.6	0.7	0.8	0.8	0.7
30–34.....	23.6	21.4	17.5	14.1	12.2	9.4	8.2	7.1	6.3	7.1	7.3	7.2	7.9	6.7	6.7	8.0
35–39.....	20.7	23.0	26.5	25.1	21.6	19.1	18.5	15.2	13.1	13.1	14.1	13.5	12.5	12.6	12.5	12.8
40–44.....	16.8	17.0	16.6	18.4	22.3	24.9	22.8	21.3	20.1	18.1	16.7	15.7	16.0	15.3	14.8	14.3
45–49.....	12.8	13.3	13.9	14.3	15.0	15.2	18.8	22.5	23.4	20.9	19.9	18.8	17.1	17.0	16.7	16.6
50–54.....	10.5	10.3	10.4	11.6	11.8	12.7	12.0	13.4	15.4	19.2	20.8	20.6	19.5	17.1	18.2	15.9
55–59.....	6.2	6.5	7.5	8.5	8.4	9.8	9.6	10.8	11.2	11.3	10.2	12.9	15.4	17.9	16.5	16.3
60–64.....	3.6	4.2	4.2	5.1	5.8	5.9	6.3	6.6	7.4	6.8	7.1	7.2	7.5	8.7	10.1	11.8
≥65.....	1.8	1.6	1.2	1.7	2.0	2.2	2.9	2.6	2.7	2.7	3.0	3.3	3.5	3.8	3.6	3.5

NOTES: Faculty positions include full, associate, and assistant professors and instructors. Institutions designated by 1994 Carnegie classification code. For information on these institutional categories, see Carnegie Foundation for the Advancement of Teaching, *A Classification of Institutions of Higher Education*, Princeton University Press (1994), and chapter 2 sidebar, "Carnegie Classification of Academic Institutions." Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations.



**S&E doctorate holders employed in academia, by type of position, sex, and degree field: 1973–2003**

(Thousands)

Position, sex, and field	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>All positions</b>																
Both sexes, all fields.....	118.0	134.1	145.5	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5	258.3
Science.....	105.6	120.7	130.7	139.5	151.0	158.1	170.4	174.8	183.9	187.8	190.6	193.7	205.9	214.7	218.9	230.0
Physical sciences.....	22.1	23.6	25.0	24.6	25.4	25.1	27.0	27.2	27.7	27.7	28.6	29.3	30.2	30.9	30.4	31.5
Mathematics.....	9.7	11.0	11.7	12.2	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9	15.4
Computer sciences.....	NA	NA	NA	0.1	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8	5.2
Earth, atmospheric, and ocean sciences.....	3.4	3.9	4.2	4.2	4.6	4.8	5.2	5.6	5.9	6.0	6.4	6.4	7.3	7.8	8.2	8.8
Life sciences.....	34.9	39.4	42.6	47.0	51.3	54.9	58.7	61.3	64.8	66.9	68.2	71.6	77.3	81.9	84.3	89.2
Psychology.....	12.2	14.8	16.2	17.7	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4	31.3
Social sciences.....	23.4	28.0	31.1	33.6	36.9	38.9	42.0	42.2	44.5	44.8	44.4	42.5	44.9	46.2	46.9	48.6
Engineering.....	12.4	13.4	14.8	15.8	16.1	18.1	19.9	21.2	22.9	22.8	23.1	23.8	26.6	25.5	26.6	28.3
Male, all fields.....	107.2	120.3	129.0	136.0	144.0	149.8	159.2	162.0	168.0	168.7	166.9	165.1	173.3	175.8	175.0	179.8
Science.....	94.9	106.9	114.3	120.3	128.1	132.0	139.7	141.4	145.8	146.9	144.8	142.9	148.4	152.4	150.7	154.5
Physical sciences.....	20.7	22.1	23.3	22.9	23.5	23.2	24.9	24.9	25.2	25.4	25.7	25.9	26.2	27.0	26.2	27.1
Mathematics.....	9.0	10.3	10.8	11.3	11.3	11.8	12.3	12.5	13.0	13.9	13.7	12.8	13.5	12.9	12.6	12.7
Computer sciences.....	NA	NA	NA	0.1	0.3	0.4	0.7	0.9	1.3	1.6	2.1	2.5	2.6	2.9	2.9	4.3
Earth, atmospheric, and ocean sciences.....	3.3	3.8	4.1	4.0	4.3	4.5	4.9	5.1	5.3	5.4	5.7	5.5	6.2	6.4	6.6	7.0
Life sciences.....	30.8	34.3	36.6	40.1	42.9	44.5	46.7	47.9	49.5	50.1	49.4	50.1	52.6	55.1	54.9	55.9
Psychology.....	10.0	11.8	12.6	13.5	14.9	15.1	16.0	16.2	16.5	16.0	14.7	14.7	15.4	15.6	15.7	15.4
Social sciences.....	21.0	24.7	26.9	28.5	30.9	32.3	34.3	33.9	35.1	34.6	33.4	31.3	31.9	32.4	31.7	32.2
Engineering.....	12.3	13.3	14.7	15.7	15.9	17.8	19.5	20.6	22.2	21.8	22.1	22.3	24.8	23.4	24.3	25.3
Female, all fields.....	10.7	13.8	16.5	19.4	23.1	26.5	31.1	34.0	38.7	41.9	46.9	52.4	59.2	64.4	70.5	78.5
Science.....	10.7	13.8	16.4	19.2	22.9	26.1	30.7	33.5	38.0	40.9	45.8	50.9	57.5	62.3	68.2	75.5
Physical sciences.....	1.3	1.5	1.6	1.7	1.9	1.9	2.1	2.3	2.5	2.3	2.9	3.5	4.0	3.9	4.2	4.5
Mathematics.....	0.6	0.8	0.9	0.9	1.1	1.1	1.3	1.4	1.5	1.4	1.7	1.8	2.1	2.2	2.3	2.7
Computer sciences.....	NA	NA	NA	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.5	0.6	0.7	0.8	0.8	1.0
Earth, atmospheric, and ocean sciences.....	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7	0.7	0.9	1.1	1.4	1.6	1.8
Life sciences.....	4.0	5.1	6.0	6.9	8.4	10.3	12.1	13.3	15.3	16.8	18.8	21.5	24.7	26.7	29.4	33.3
Psychology.....	2.2	3.0	3.6	4.3	5.2	5.9	7.1	7.6	8.5	9.2	10.3	11.5	11.9	13.4	14.7	15.9
Social sciences.....	2.4	3.3	4.2	5.2	6.0	6.5	7.7	8.3	9.4	10.2	10.9	11.2	13.0	13.8	15.2	16.4
Engineering.....	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.6	0.7	1.0	1.1	1.5	1.7	2.1	2.3	3.0
<b>Full-time senior faculty</b>																
Both sexes, all fields.....	74.0	84.3	90.7	97.2	107.3	115.6	119.7	127.3	131.0	133.0	128.6	127.3	131.9	136.7	136.9	141.4
Science.....	65.3	74.5	80.0	85.6	94.9	101.8	105.8	112.0	115.2	117.2	113.0	112.1	115.4	120.1	120.2	124.2
Physical sciences.....	13.0	14.6	15.3	16.0	16.8	17.1	17.7	18.3	17.8	17.6	16.9	16.4	16.7	16.6	16.5	17.0
Mathematics.....	5.9	6.9	7.6	8.3	9.1	9.7	10.0	10.5	10.9	11.8	11.5	10.6	10.8	10.8	10.2	10.2
Computer sciences.....	NA	NA	NA	0.0	0.0	0.1	0.1	0.3	0.4	0.9	0.9	1.7	1.7	2.1	2.4	2.9
Earth, atmospheric, and ocean sciences.....	2.2	2.5	2.7	2.8	2.9	3.1	3.1	3.2	3.6	3.6	3.7	3.6	3.8	4.1	4.2	4.3
Life sciences.....	21.0	23.4	24.6	27.0	29.6	32.6	33.7	35.8	36.4	37.4	35.8	37.2	38.3	40.6	41.2	43.1
Psychology.....	7.3	8.7	9.1	9.9	11.7	12.8	13.5	14.3	15.0	15.3	14.3	14.5	15.3	15.6	15.9	15.7
Social sciences.....	15.9	18.5	20.7	21.7	24.9	26.3	27.7	29.5	31.1	30.6	29.9	28.1	28.8	30.1	29.6	31.0
Engineering.....	8.7	9.7	10.7	11.6	12.4	13.7	13.9	15.3	15.9	15.8	15.7	15.3	16.6	16.6	16.8	17.2

**S&E doctorate holders employed in academia, by type of position, sex, and degree field: 1973–2003**

(Thousands)

Position, sex, and field	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
Male, all fields.....	69.7	78.9	84.7	90.2	98.7	104.9	107.4	113.2	115.2	115.5	110.3	107.0	109.4	110.6	108.3	109.1
Science.....	61.0	69.2	74.0	78.7	86.4	91.3	93.7	98.2	99.6	100.1	95.0	92.2	93.3	94.8	92.4	93.0
Physical sciences.....	12.5	14.1	14.7	15.4	16.2	16.4	17.0	17.5	16.9	16.9	16.0	15.4	15.6	15.4	15.0	15.3
Mathematics.....	5.6	6.5	7.2	7.9	8.6	9.1	9.3	9.8	10.0	10.8	10.5	9.8	10.0	9.7	9.1	9.1
Computer sciences.....	NA	NA	NA	0.0	0.0	0.1	0.1	0.3	0.4	0.8	0.8	1.4	1.3	1.6	2.0	2.4
Earth, atmospheric, and ocean sciences.....	2.2	2.5	2.7	2.7	2.8	3.0	3.0	3.1	3.4	3.4	3.5	3.4	3.3	3.6	3.6	3.5
Life sciences.....	19.5	21.6	22.7	24.8	26.9	29.1	29.4	31.0	31.0	31.4	29.3	29.3	30.0	31.1	30.4	30.7
Psychology.....	6.4	7.6	7.8	8.4	9.7	10.5	10.8	11.2	11.5	11.3	10.2	10.1	10.7	10.3	10.3	9.4
Social sciences.....	14.7	16.9	18.8	19.5	22.3	23.2	24.1	25.3	26.4	25.5	24.7	22.8	22.4	23.2	21.9	22.6
Engineering.....	8.7	9.7	10.7	11.5	12.2	13.6	13.7	15.1	15.7	15.4	15.3	14.8	16.1	15.8	15.9	16.1
Female, all fields.....	4.3	5.4	6.0	7.0	8.6	10.7	12.4	14.0	15.8	17.6	18.3	20.3	22.5	26.1	28.6	32.3
Science.....	4.3	5.4	6.0	6.9	8.5	10.5	12.2	13.8	15.6	17.1	18.0	19.8	22.0	25.3	27.8	31.2
Physical sciences.....	0.5	0.5	0.6	0.6	0.6	0.7	0.8	0.9	0.9	0.7	0.9	1.0	1.1	1.3	1.5	1.7
Mathematics.....	0.3	0.4	0.4	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.0	0.8	0.8	1.1	1.1	1.2
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.5	0.4	0.5
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.4	0.6	0.6	0.8
Life sciences.....	1.5	1.8	1.9	2.2	2.7	3.5	4.3	4.8	5.4	6.1	6.5	7.8	8.3	9.5	10.8	12.4
Psychology.....	0.8	1.1	1.2	1.4	2.0	2.4	2.7	3.1	3.5	4.0	4.1	4.4	4.6	5.4	5.6	6.3
Social sciences.....	1.1	1.5	1.8	2.2	2.6	3.1	3.6	4.1	4.7	5.1	5.2	5.3	6.4	7.0	7.7	8.4
Engineering.....	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.4	0.3	0.5	0.5	0.8	0.9	1.1
Full-time junior faculty																
Both sexes, all fields.....	29.3	32.1	34.9	34.0	34.6	32.8	37.2	37.2	38.7	40.1	43.8	44.0	46.4	47.4	50.5	52.7
Science.....	26.7	29.6	32.2	31.3	32.3	30.2	33.1	33.2	34.4	35.8	39.3	39.3	41.5	42.9	45.4	47.2
Physical sciences.....	4.8	4.3	4.8	4.0	3.7	3.1	3.5	3.6	3.7	4.1	4.3	4.5	4.8	5.1	5.0	5.5
Mathematics.....	3.3	3.5	3.3	3.1	2.6	2.5	2.7	2.4	2.6	2.4	3.2	2.4	2.8	2.4	2.3	2.8
Computer sciences.....	NA	NA	NA	0.1	0.2	0.3	0.6	0.6	0.9	1.0	1.4	1.2	1.3	1.2	0.9	1.3
Earth, atmospheric, and ocean sciences.....	0.8	0.9	0.9	0.7	0.9	0.9	1.1	1.1	1.1	0.9	0.9	1.1	1.3	1.5	1.7	1.8
Life sciences.....	8.5	9.7	10.3	10.3	11.3	10.8	11.9	12.3	12.8	13.7	15.0	15.6	16.9	17.5	19.2	20.1
Psychology.....	3.6	4.2	4.8	4.4	4.8	4.5	5.0	4.9	5.2	5.4	5.2	5.5	5.5	6.2	6.6	6.1
Social sciences.....	5.7	7.1	8.2	8.6	8.8	8.1	8.4	8.2	7.9	8.4	9.3	9.0	8.9	9.1	9.6	9.5
Engineering.....	2.6	2.5	2.7	2.8	2.3	2.7	4.0	4.0	4.3	4.3	4.5	4.8	5.0	4.5	5.1	5.6
Male, all fields.....	26.0	27.5	28.9	27.3	27.1	25.2	27.8	27.2	27.6	28.1	29.7	28.5	29.5	30.1	31.0	31.4
Science.....	23.5	25.1	26.3	24.6	24.9	22.6	23.9	23.4	23.5	24.2	25.7	24.4	25.1	26.2	26.7	26.8
Physical sciences.....	4.5	4.0	4.4	3.6	3.2	2.7	3.0	3.2	3.2	3.4	3.5	3.4	3.5	4.0	3.9	4.3
Mathematics.....	3.1	3.2	2.9	2.7	2.2	2.2	2.3	2.0	2.2	2.2	2.7	2.0	2.2	1.7	1.7	2.0
Computer sciences.....	NA	NA	NA	0.1	0.2	0.3	0.5	0.5	0.8	0.8	1.1	1.0	1.0	0.9	0.7	1.0
Earth, atmospheric, and ocean sciences.....	0.7	0.9	0.8	0.7	0.9	0.8	0.9	0.9	0.9	0.7	0.7	0.7	1.0	1.1	1.2	1.3
Life sciences.....	7.5	8.1	8.4	8.1	8.9	8.1	8.5	8.5	8.4	8.8	9.5	9.5	9.8	10.4	11.0	11.1
Psychology.....	2.7	3.0	3.3	2.8	3.0	2.6	2.7	2.7	2.9	3.0	2.3	2.4	2.1	2.7	2.7	2.3
Social sciences.....	5.0	5.9	6.5	6.6	6.5	5.9	6.0	5.6	5.2	5.3	5.9	5.5	5.5	5.4	5.5	4.9
Engineering.....	2.6	2.4	2.7	2.7	2.2	2.6	3.8	3.8	4.0	3.9	4.0	4.1	4.4	3.9	4.3	4.6

**S&E doctorate holders employed in academia, by type of position, sex, and degree field: 1973–2003**

(Thousands)

Position, sex, and field	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
Female, all fields .....	3.3	4.6	6.0	6.8	7.5	7.7	9.4	10.0	11.2	12.0	14.1	15.6	17.0	17.3	19.4	21.4
Science .....	3.3	4.6	5.9	6.7	7.4	7.6	9.2	9.7	10.8	11.6	13.6	14.9	16.4	16.7	18.7	20.3
Physical sciences.....	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.7	0.9	1.1	1.3	1.1	1.1	1.3
Mathematics.....	0.2	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.3	0.5	0.5	0.6	0.7	0.6	0.9
Computer sciences .....	NA	NA	NA	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.2	0.3	0.2	0.2	0.3
Earth, atmospheric, and ocean sciences....	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.4	0.3	0.4	0.5	0.5
Life sciences.....	1.1	1.6	1.9	2.2	2.4	2.7	3.4	3.8	4.5	4.9	5.5	6.1	7.1	7.1	8.1	9.0
Psychology .....	0.9	1.2	1.5	1.6	1.8	1.9	2.3	2.2	2.3	2.4	2.9	3.1	3.4	3.5	3.9	3.8
Social sciences .....	0.8	1.2	1.7	2.1	2.3	2.1	2.4	2.6	2.7	3.0	3.4	3.5	3.5	3.7	4.1	4.7
Engineering.....	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.7	0.6	0.5	0.8	1.0
All other full-time positions																
Both sexes, all fields.....	7.6	8.3	8.8	11.4	12.6	13.4	18.1	16.4	19.2	20.2	22.2	23.9	26.4	29.3	31.7	35.1
Science .....	6.8	7.4	8.0	10.5	11.5	12.4	16.6	15.3	17.7	18.4	20.8	21.6	23.3	26.4	28.3	31.6
Physical sciences.....	1.9	1.9	2.1	2.0	2.4	2.5	3.0	2.6	3.3	3.2	3.7	3.8	4.6	5.6	5.5	6.0
Mathematics.....	0.2	0.3	0.4	0.4	0.4	0.3	0.5	0.4	0.5	0.7	0.5	0.6	0.8	0.8	1.0	1.1
Computer sciences .....	NA	NA	NA	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.6
Earth, atmospheric, and ocean sciences....	0.3	0.3	0.3	0.5	0.5	0.5	0.7	0.8	0.7	0.9	1.1	1.1	1.4	1.4	1.6	1.9
Life sciences.....	2.5	2.4	2.8	3.9	4.0	4.6	6.2	6.0	6.7	7.2	7.7	8.4	8.4	9.5	10.5	11.9
Psychology.....	0.8	1.0	1.2	1.8	2.2	2.2	2.9	2.8	2.9	2.8	3.9	3.9	4.0	4.6	4.9	5.6
Social sciences .....	1.0	1.5	1.2	1.9	2.0	2.2	3.2	2.6	3.5	3.5	3.7	3.6	3.9	4.3	4.5	4.5
Engineering.....	0.8	0.9	0.8	0.9	1.1	1.1	1.5	1.1	1.5	1.8	1.5	2.1	3.1	3.0	3.4	3.6
Male, all fields.....	6.5	7.2	7.4	9.4	10.0	10.3	14.3	12.0	13.9	14.4	15.4	16.1	18.0	20.5	21.4	23.5
Science.....	5.7	6.4	6.6	8.6	8.9	9.3	12.8	10.9	12.5	12.8	13.9	14.2	15.3	17.9	18.3	20.4
Physical sciences.....	1.8	1.8	1.9	1.8	2.1	2.2	2.7	2.2	2.9	2.9	3.3	3.2	4.0	4.9	4.8	5.2
Mathematics.....	0.2	0.3	0.4	0.3	0.3	0.2	0.4	0.4	0.4	0.6	0.4	0.5	0.7	0.7	0.8	0.8
Computer sciences .....	NA	NA	NA	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.6
Earth, atmospheric, and ocean sciences....	0.3	0.3	0.3	0.5	0.5	0.5	0.7	0.7	0.6	0.7	0.9	0.9	1.2	1.1	1.3	1.6
Life sciences.....	2.0	1.9	2.2	3.0	3.0	3.2	4.6	4.1	4.6	4.9	5.1	5.6	5.3	6.2	6.5	7.1
Psychology .....	0.7	0.8	0.9	1.4	1.4	1.4	1.8	1.6	1.5	1.2	1.9	1.7	1.8	2.1	2.0	2.5
Social sciences .....	0.8	1.3	0.9	1.6	1.6	1.7	2.5	1.8	2.4	2.4	2.2	2.1	2.2	2.6	2.7	2.7
Engineering.....	0.8	0.9	0.8	0.9	1.1	1.0	1.5	1.0	1.4	1.7	1.5	2.0	2.7	2.6	3.1	3.1
Female, all fields .....	1.1	1.0	1.4	2.0	2.6	3.1	3.8	4.5	5.3	5.8	6.7	7.7	8.4	8.8	10.4	11.6
Science.....	1.1	1.0	1.4	1.9	2.6	3.0	3.8	4.5	5.2	5.6	6.7	7.5	8.2	8.5	10.0	11.1
Physical sciences.....	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.6	0.7	0.6	0.7	0.8
Mathematics.....	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.1	0.3
Computer sciences .....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Earth, atmospheric, and ocean sciences....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3
Life sciences.....	0.6	0.5	0.6	0.9	1.0	1.3	1.6	1.8	2.1	2.4	2.6	2.8	3.1	3.3	4.0	4.8
Psychology .....	0.2	0.2	0.3	0.5	0.8	0.8	1.1	1.3	1.4	1.6	2.0	2.2	2.2	2.5	2.9	3.0
Social sciences .....	0.2	0.2	0.2	0.3	0.4	0.5	0.7	0.8	1.1	1.1	1.5	1.5	1.7	1.7	1.8	1.7
Engineering.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.3	0.4	0.5

**S&E doctorate holders employed in academia, by type of position, sex, and degree field: 1973–2003**

(Thousands)

Position, sex, and field	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>Postdocs</b>																
Both sexes, all fields.....	4.2	6.2	7.6	8.1	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5	15.8
Science.....	4.0	5.9	7.2	7.8	8.4	8.0	8.5	8.8	10.9	9.4	12.3	15.6	17.2	17.5	16.6	14.6
Physical sciences.....	1.7	2.1	2.2	1.9	1.9	1.4	1.9	2.0	2.4	1.9	3.0	3.9	3.2	2.9	2.6	2.2
Mathematics.....	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.0	0.5	0.5	0.6	0.8	0.5
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1
Earth, atmospheric, and ocean sciences....	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.5	0.6	0.5	0.4	0.4
Life sciences.....	1.9	3.0	4.0	4.7	5.2	5.1	5.2	5.6	6.8	6.4	8.2	9.2	10.8	11.7	11.0	10.0
Psychology.....	0.2	0.4	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.5	0.4	1.1	1.3	1.2	1.2	0.9
Social sciences.....	0.1	0.2	0.3	0.3	0.3	0.6	0.3	0.1	0.4	0.3	0.2	0.4	0.7	0.5	0.6	0.5
Engineering.....	0.2	0.3	0.4	0.3	0.2	0.3	0.2	0.5	0.6	0.5	1.0	1.2	1.7	1.1	0.9	1.1
Male, all fields.....	3.5	4.9	6.1	6.3	6.3	5.8	6.0	6.8	8.2	6.8	9.2	11.1	12.1	11.2	10.5	9.8
Science.....	3.4	4.7	5.7	6.0	6.1	5.5	5.9	6.3	7.6	6.4	8.3	10.1	10.6	10.3	9.9	8.9
Physical sciences.....	1.5	1.9	1.9	1.7	1.6	1.2	1.6	1.7	2.0	1.5	2.5	3.3	2.5	2.3	2.0	1.8
Mathematics.....	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.3	0.3	0.5	0.6	0.3
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1
Earth, atmospheric, and ocean sciences....	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.4	0.3	0.3
Life sciences.....	1.5	2.2	2.9	3.5	3.6	3.3	3.4	3.8	4.7	4.1	5.2	5.5	6.2	6.6	6.2	5.7
Psychology.....	0.1	0.2	0.4	0.4	0.5	0.3	0.4	0.3	0.3	0.2	0.1	0.4	0.5	0.3	0.4	0.4
Social sciences.....	0.1	0.1	0.2	0.2	0.1	0.4	0.2	0.1	0.2	0.2	0.1	0.2	0.5	0.3	0.3	0.3
Engineering.....	0.2	0.3	0.4	0.3	0.2	0.3	0.2	0.5	0.5	0.4	0.9	1.0	1.4	0.9	0.7	0.9
Female, all fields.....	0.6	1.3	1.6	1.8	2.2	2.5	2.6	2.6	3.3	3.0	4.1	5.7	6.8	7.3	6.9	6.0
Science.....	0.6	1.3	1.6	1.8	2.2	2.5	2.6	2.6	3.3	3.0	4.0	5.5	6.6	7.1	6.7	5.8
Physical sciences.....	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.3	0.4	0.3	0.6	0.6	0.6	0.6	0.6	0.4
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.2
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1
Life sciences.....	0.4	0.8	1.1	1.2	1.6	1.8	1.8	1.8	2.2	2.3	3.0	3.7	4.6	5.1	4.7	4.3
Psychology.....	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.4	0.5	0.3	0.3	0.7	0.8	0.9	0.8	0.5
Social sciences.....	0.0	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2
Engineering.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2
<b>Part-time positions</b>																
Both sexes, all fields.....	2.9	3.2	3.4	4.5	4.0	6.0	6.5	5.7	6.2	7.4	5.9	5.5	8.9	8.2	9.0	13.2
Science.....	2.8	3.1	3.2	4.3	3.9	5.7	6.2	5.4	5.6	6.9	5.4	5.1	8.6	7.9	8.5	12.5
Physical sciences.....	0.6	0.6	0.6	0.7	0.6	1.0	0.9	0.6	0.5	0.9	0.7	0.7	1.0	0.7	0.7	0.8
Mathematics.....	0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.7	0.7	0.6	0.8
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2
Earth, atmospheric, and ocean sciences....	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.3	0.4
Life sciences.....	0.9	0.9	1.0	1.2	1.2	1.7	1.7	1.6	1.9	2.3	1.6	1.2	2.9	2.6	2.4	4.0
Psychology.....	0.4	0.5	0.6	1.0	0.8	1.0	1.0	1.0	1.0	1.2	1.2	1.1	1.1	1.3	1.8	3.1
Social sciences.....	0.7	0.8	0.8	1.0	1.0	1.6	2.2	1.8	1.7	2.0	1.3	1.3	2.6	2.2	2.7	3.1
Engineering.....	0.1	0.1	0.1	0.3	0.2	0.4	0.3	0.3	0.5	0.5	0.5	0.4	0.3	0.4	0.4	0.8

**S&E doctorate holders employed in academia, by type of position, sex, and degree field: 1973–2003**

(Thousands)

Position, sex, and field	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
Male, all fields.....	1.5	1.8	1.8	2.7	1.9	3.5	3.6	2.7	3.1	3.8	2.3	2.4	4.4	3.4	3.8	6.1
Science.....	1.4	1.7	1.6	2.4	1.7	3.2	3.3	2.5	2.6	3.4	1.9	2.0	4.1	3.2	3.5	5.4
Physical sciences.....	0.4	0.3	0.4	0.5	0.3	0.8	0.6	0.4	0.3	0.6	0.5	0.5	0.7	0.5	0.4	0.5
Mathematics.....	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.3	0.3	0.4	0.3	0.6
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
Earth, atmospheric, and ocean sciences....	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.3
Life sciences.....	0.4	0.5	0.4	0.5	0.4	0.7	0.7	0.5	0.8	1.0	0.4	0.3	1.3	0.8	0.7	1.3
Psychology.....	0.1	0.2	0.2	0.5	0.3	0.4	0.4	0.4	0.3	0.2	0.1	0.1	0.3	0.3	0.3	0.8
Social sciences.....	0.4	0.5	0.4	0.6	0.5	1.1	1.4	1.0	0.8	1.2	0.5	0.7	1.4	1.0	1.4	1.7
Engineering.....	0.1	0.1	0.1	0.3	0.2	0.3	0.3	0.3	0.5	0.5	0.4	0.3	0.2	0.2	0.4	0.7
Female, all fields.....	1.4	1.5	1.6	1.9	2.1	2.5	2.9	3.0	3.1	3.5	3.6	3.1	4.5	4.9	5.1	7.2
Science.....	1.4	1.5	1.6	1.9	2.1	2.5	2.9	2.9	3.1	3.5	3.5	3.1	4.4	4.7	5.1	7.1
Physical sciences.....	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.3	0.3	0.2	0.3
Mathematics.....	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.3	0.3	0.2
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Earth, atmospheric, and ocean sciences....	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1
Life sciences.....	0.5	0.5	0.6	0.6	0.7	0.9	1.0	1.1	1.1	1.3	1.2	0.9	1.6	1.8	1.7	2.7
Psychology.....	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.7	0.9	1.1	1.0	0.8	1.0	1.5	2.3
Social sciences.....	0.3	0.3	0.3	0.4	0.5	0.5	0.9	0.8	0.8	0.8	0.8	0.7	1.2	1.2	1.3	1.4
Engineering.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1

NA = not available

NOTES: Faculty defined by position: professors and associate professors are senior faculty; assistant professors and instructors are junior faculty; other full-time positions include nonfaculty positions such as research associates, adjunct positions, lecturers, and administrative positions. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations.

**S&E doctorate holders employed in academia, by type of position, degree field, and race/ethnicity: 1973–2003**

(Thousands)

Position, field, and race/ethnicity	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
All positions .....	118.0	134.1	145.4	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5	258.3
Science .....	105.6	120.6	130.7	139.5	150.9	157.9	170.3	174.7	183.8	187.8	190.6	193.7	205.9	214.7	218.9	230.0
Physical sciences .....	22.1	23.6	25.0	24.6	25.3	25.1	27.0	27.2	27.7	27.7	28.6	29.4	30.2	30.9	30.4	31.5
Mathematics .....	9.7	11.0	11.7	12.2	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9	15.4
Computer sciences.....	NA	NA	NA	0.1	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8	5.2
Earth, atmospheric, and ocean sciences.....	3.4	3.9	4.2	4.2	4.6	4.8	5.2	5.6	5.9	6.1	6.4	6.4	7.3	7.8	8.2	8.8
Life sciences .....	34.9	39.4	42.6	47.0	51.3	54.8	58.7	61.2	64.8	66.9	68.2	71.6	77.3	81.9	84.3	89.2
Psychology.....	12.2	14.8	16.2	17.7	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4	31.3
Social sciences.....	23.4	28.0	31.1	33.6	36.9	38.8	41.9	42.1	44.5	44.8	44.4	42.5	44.9	46.2	46.9	48.6
Engineering .....	12.4	13.4	14.8	15.8	16.1	18.1	19.9	21.2	22.8	22.8	23.1	23.8	26.6	25.5	26.6	28.3
White.....	107.7	121.6	131.4	140.0	149.9	157.2	168.4	172.8	181.0	183.5	181.8	182.6	193.2	198.2	201.0	203.3
Science .....	96.9	109.9	118.8	126.5	135.9	142.0	152.0	155.7	163.0	165.3	164.3	165.0	173.0	178.8	180.8	183.7
Physical sciences.....	19.7	21.1	22.1	21.9	22.3	21.9	23.4	23.3	23.7	23.8	23.4	23.8	24.4	25.3	24.7	24.8
Mathematics .....	8.8	10.0	10.6	10.8	11.0	11.5	11.9	12.2	12.6	13.0	12.9	12.0	12.6	12.3	12.1	11.9
Computer sciences.....	NA	NA	NA	0.1	0.2	0.4	0.6	0.9	1.1	1.4	1.6	2.1	2.2	2.7	2.7	3.4
Earth, atmospheric, and ocean sciences.....	3.3	3.7	4.0	4.0	4.3	4.5	4.9	5.2	5.5	5.7	5.9	5.7	6.6	7.0	7.3	7.6
Life sciences.....	32.1	35.8	38.8	42.4	46.1	49.3	52.7	54.6	57.6	59.2	59.1	61.3	64.9	67.2	68.4	69.8
Psychology.....	11.6	13.9	15.2	16.8	18.8	19.6	21.3	22.0	23.2	23.2	22.9	23.6	24.4	25.5	26.6	26.6
Social sciences .....	21.4	25.3	28.2	30.5	33.1	34.7	37.2	37.5	39.4	39.1	38.6	36.5	38.0	38.9	39.0	39.5
Engineering.....	10.8	11.6	12.6	13.5	14.0	15.2	16.4	17.2	18.1	18.2	17.5	17.6	20.2	19.4	20.2	19.7
Asian/Pacific Islander.....	5.0	6.1	6.7	9.8	10.8	11.8	14.0	15.0	16.3	16.8	20.9	22.4	25.4	26.3	27.6	34.5
Science .....	4.0	5.0	5.4	7.8	9.1	9.4	11.1	11.5	12.2	13.1	16.2	17.5	20.3	21.7	22.8	28.1
Physical sciences.....	1.1	1.3	1.4	1.8	2.0	2.2	2.6	2.9	2.8	2.6	3.8	4.1	4.1	4.0	3.9	4.7
Mathematics .....	0.4	0.5	0.5	0.9	0.9	1.0	1.1	1.1	1.3	1.6	1.9	1.8	2.2	2.1	2.0	2.7
Computer sciences.....	NA	NA	NA	0.0	0.1	0.1	0.1	0.1	0.3	0.5	0.7	0.9	0.9	0.9	0.9	1.5
Earth, atmospheric, and ocean sciences.....	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.3	0.2	0.4	0.5	0.5	0.6	0.6	0.9
Life sciences.....	1.3	1.8	2.0	3.1	3.6	3.6	4.0	4.4	4.7	5.1	6.3	6.8	8.5	9.9	11.0	13.1
Psychology.....	0.1	0.1	0.2	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.7	0.8	0.9	1.1
Social sciences .....	1.0	1.1	1.2	1.6	2.0	2.0	2.5	2.2	2.4	2.6	2.7	2.8	3.2	3.5	3.6	4.1
Engineering.....	1.1	1.1	1.3	1.9	1.8	2.4	3.0	3.5	4.1	3.7	4.7	4.9	5.2	4.6	4.8	6.4
Underrepresented minority .....	2.4	3.2	3.7	4.9	5.8	6.5	7.2	7.8	9.0	9.9	10.7	12.4	13.7	15.6	16.8	20.3
Science .....	2.2	2.9	3.4	4.5	5.5	6.0	6.7	7.2	8.3	9.0	9.8	11.2	12.6	14.1	15.2	18.2
Physical sciences.....	0.5	0.5	0.5	0.7	0.9	0.9	0.9	1.0	1.1	1.2	1.4	1.4	1.7	1.6	1.7	2.0
Mathematics .....	0.2	0.2	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.5	0.7	0.8	0.7	0.8	0.8	0.9
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.3
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3
Life sciences.....	0.8	1.1	1.2	1.3	1.5	1.7	1.8	2.1	2.4	2.6	2.7	3.5	3.9	4.7	4.9	6.2
Psychology.....	0.3	0.4	0.6	0.5	0.8	1.0	1.2	1.2	1.3	1.5	1.6	2.0	2.3	2.7	2.9	3.6
Social sciences .....	0.5	0.8	0.8	1.5	1.8	2.0	2.1	2.3	2.8	3.0	3.1	3.2	3.6	3.9	4.3	4.9
Engineering.....	0.2	0.2	0.3	0.4	0.3	0.5	0.5	0.5	0.7	0.9	0.9	1.2	1.2	1.5	1.6	2.2

**S&E doctorate holders employed in academia, by type of position, degree field, and race/ethnicity: 1973–2003**

(Thousands)

Position, field, and race/ethnicity	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
Black.....	1.3	1.7	1.7	1.9	2.6	3.1	3.3	3.5	3.8	4.6	4.8	5.8	6.6	7.3	8.2	9.7
Science.....	1.2	1.6	1.7	1.9	2.5	2.9	3.2	3.3	3.5	4.2	4.5	5.4	6.1	6.6	7.4	8.6
Physical sciences.....	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.3	0.5	0.5	0.7	0.6	0.8	0.8
Mathematics.....	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Life sciences.....	0.4	0.6	0.6	0.6	0.6	0.8	0.9	0.9	1.0	1.2	1.3	1.7	1.9	2.1	2.2	2.7
Psychology.....	0.2	0.2	0.3	0.3	0.4	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.2	1.4	1.6	1.8
Social sciences.....	0.3	0.5	0.5	0.7	1.0	1.1	1.3	1.2	1.2	1.6	1.6	1.7	2.0	2.0	2.3	2.7
Engineering.....	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.4	0.3	0.5	0.5	0.7	0.7	1.1
Hispanic.....	0.9	1.2	1.6	2.4	2.5	2.6	3.1	3.4	4.3	4.5	5.0	5.7	6.2	7.3	7.8	8.8
Science.....	0.8	1.1	1.4	2.1	2.4	2.4	2.8	3.1	3.9	4.1	4.4	5.0	5.6	6.6	7.0	7.9
Physical sciences.....	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.8	0.8	0.8	0.9	0.8	0.8	1.0
Mathematics.....	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.4
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Life sciences.....	0.4	0.4	0.5	0.7	0.8	0.8	0.8	1.0	1.2	1.2	1.3	1.6	1.8	2.3	2.5	2.8
Psychology.....	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.8	1.0	1.1	1.2	1.5
Social sciences.....	0.1	0.2	0.2	0.6	0.5	0.6	0.7	0.8	1.1	1.1	1.2	1.1	1.3	1.6	1.7	1.8
Engineering.....	0.1	0.1	0.2	0.3	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.7	0.6	0.7	0.8	0.9
American Indian/Alaska Native.....	0.2	0.3	0.4	0.6	0.7	0.7	0.8	0.8	1.0	0.8	0.9	0.9	0.9	1.0	0.9	1.8
Science.....	0.2	0.3	0.3	0.6	0.7	0.7	0.7	0.8	0.9	0.8	0.9	0.8	0.8	0.9	0.8	1.7
Physical sciences.....	0.0	0.1	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.2
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Life sciences.....	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.6
Psychology.....	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
Social sciences.....	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.3	0.5	0.3	0.4	0.3	0.3	0.3	0.3	0.4
Engineering.....	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Full-time faculty.....	103.3	116.4	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	178.4	184.0	187.4	194.1
Science.....	92.0	104.2	112.2	116.9	127.2	132.0	139.0	145.1	149.5	153.1	152.2	151.3	156.8	163.0	165.5	171.3
Physical sciences.....	17.8	18.9	20.0	20.0	20.5	20.2	21.2	22.0	21.5	21.7	21.3	20.9	21.4	21.7	21.6	22.5
Mathematics.....	9.3	10.4	10.9	11.4	11.7	12.3	12.7	12.9	13.5	14.2	14.7	13.0	13.6	13.1	12.6	13.0
Computer sciences.....	NA	NA	NA	0.1	0.3	0.4	0.7	0.9	1.3	1.8	2.3	2.8	3.0	3.3	3.3	4.2
Earth, atmospheric, and ocean sciences.....	3.0	3.4	3.6	3.5	3.8	4.0	4.2	4.4	4.7	4.5	4.5	4.7	5.1	5.6	5.9	6.1
Life sciences.....	29.5	33.1	34.9	37.3	40.9	43.5	45.6	48.1	49.3	51.1	50.8	52.8	55.2	58.1	60.4	63.2
Psychology.....	10.8	12.8	13.9	14.3	16.4	17.3	18.5	19.2	20.2	20.7	19.5	20.1	20.8	21.9	22.6	21.7
Social sciences.....	21.6	25.5	28.8	30.3	33.7	34.4	36.1	37.6	39.0	39.0	39.2	37.1	37.7	39.2	39.2	40.5
Engineering.....	11.3	12.2	13.5	14.3	14.7	16.4	17.9	19.3	20.2	20.1	20.1	20.0	21.5	21.1	21.9	22.8

**S&E doctorate holders employed in academia, by type of position, degree field, and race/ethnicity: 1973–2003**

(Thousands)

Position, field, and race/ethnicity	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
White.....	94.9	106.2	114.3	118.7	128.1	133.4	139.7	146.2	149.8	151.8	148.7	147.1	151.1	155.4	156.3	155.9
Science.....	84.9	95.6	102.6	106.5	115.4	119.4	124.9	130.3	133.6	135.7	133.1	131.7	134.5	139.3	139.8	139.9
Physical sciences.....	16.1	17.2	18.0	18.0	18.5	17.8	18.8	19.3	18.9	18.9	18.0	17.8	17.9	18.3	17.9	18.3
Mathematics.....	8.5	9.5	9.9	10.1	10.3	10.9	11.1	11.4	11.7	12.2	12.3	10.7	11.0	10.7	10.1	10.1
Computer sciences.....	NA	NA	NA	0.0	0.2	0.3	0.5	0.7	1.0	1.3	1.5	1.9	2.0	2.4	2.3	2.6
Earth, atmospheric, and ocean sciences.....	2.9	3.3	3.5	3.3	3.6	3.8	4.0	4.1	4.4	4.3	4.2	4.3	4.7	5.1	5.3	5.4
Life sciences.....	27.5	30.4	32.1	33.9	37.2	39.7	41.3	43.3	44.4	46.0	45.1	46.7	48.3	50.2	51.4	51.5
Psychology.....	10.3	12.1	13.0	13.6	15.4	16.2	17.1	17.9	18.8	19.2	18.0	18.4	18.8	19.6	20.1	18.8
Social sciences.....	19.7	23.2	26.1	27.5	30.1	30.7	32.2	33.5	34.4	33.8	34.1	31.9	31.8	33.0	32.8	33.3
Engineering.....	10.0	10.6	11.6	12.2	12.7	14.0	14.8	15.9	16.2	16.2	15.6	15.3	16.7	16.1	16.5	16.0
Asian/Pacific Islander.....	4.0	4.7	5.0	7.8	8.4	9.1	10.9	11.7	12.3	12.6	14.8	14.5	16.5	17.0	18.4	22.9
Science.....	3.0	3.7	3.9	6.0	6.7	7.2	8.2	8.7	8.9	9.5	11.1	10.9	12.7	13.2	14.4	18.0
Physical sciences.....	0.7	0.8	0.9	1.3	1.2	1.5	1.6	1.8	1.7	1.7	2.2	2.0	2.2	2.2	2.3	2.7
Mathematics.....	0.4	0.5	0.5	0.8	0.9	1.0	1.1	1.1	1.3	1.5	1.7	1.6	2.0	1.7	1.7	2.2
Computer sciences.....	NA	NA	NA	0.0	0.0	0.1	0.1	0.1	0.3	0.5	0.7	0.8	0.8	0.8	0.8	1.4
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.3	0.2	0.3	0.3	0.5
Life sciences.....	0.9	1.2	1.2	2.1	2.3	2.4	2.8	3.1	3.0	3.0	3.7	3.5	4.1	4.9	5.7	7.2
Psychology.....	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.7
Social sciences.....	0.9	1.1	1.1	1.5	1.9	1.9	2.1	2.1	2.1	2.4	2.3	2.4	2.8	2.9	3.1	3.3
Engineering.....	0.9	1.0	1.1	1.8	1.7	1.9	2.7	3.0	3.4	3.1	3.7	3.6	3.8	3.8	4.0	4.9
Underrepresented minority.....	2.0	2.7	3.2	4.2	5.0	5.4	5.8	6.3	7.4	8.4	8.6	9.8	10.6	11.6	12.5	15.2
Science.....	1.9	2.5	2.9	3.9	4.8	5.0	5.4	5.9	6.8	7.6	7.8	8.7	9.6	10.4	11.2	13.4
Physical sciences.....	0.4	0.4	0.4	0.6	0.8	0.8	0.7	0.8	0.8	1.0	1.1	1.0	1.3	1.3	1.4	1.5
Mathematics.....	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.7	0.6	0.7	0.7	0.8
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
Life sciences.....	0.7	0.9	1.0	1.1	1.3	1.3	1.4	1.6	1.8	2.0	2.0	2.6	2.7	3.1	3.3	4.5
Psychology.....	0.2	0.3	0.5	0.4	0.6	0.7	0.9	0.9	1.0	1.1	1.1	1.3	1.5	1.8	2.0	2.2
Social sciences.....	0.4	0.6	0.8	1.4	1.6	1.7	1.8	2.0	2.5	2.8	2.8	2.8	3.1	3.3	3.4	4.0
Engineering.....	0.1	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.8	0.8	1.1	1.0	1.1	1.4	1.8
Black.....	1.1	1.4	1.5	1.7	2.3	2.5	2.7	2.8	3.2	4.0	3.8	4.6	5.0	5.5	5.9	7.3
Science.....	1.1	1.3	1.5	1.6	2.1	2.3	2.6	2.6	3.0	3.6	3.5	4.2	4.5	4.9	5.2	6.3
Physical sciences.....	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.3	0.3	0.3	0.4	0.6	0.5	0.6	0.6
Mathematics.....	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Life sciences.....	0.3	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.8	1.0	1.0	1.3	1.3	1.4	1.4	2.0
Psychology.....	0.1	0.2	0.3	0.2	0.4	0.4	0.5	0.5	0.6	0.7	0.6	0.6	0.7	1.0	1.1	1.1
Social sciences.....	0.3	0.4	0.4	0.6	0.9	0.9	1.1	1.0	1.1	1.5	1.4	1.5	1.7	1.7	1.7	2.2
Engineering.....	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.2	0.2	0.3	0.3	0.5	0.4	0.6	0.7	1.0



**S&E doctorate holders employed in academia, by type of position, degree field, and race/ethnicity: 1973–2003**

(Thousands)

Position, field, and race/ethnicity	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
Hispanic.....	0.7	1.0	1.3	2.0	2.1	2.2	2.4	2.7	3.3	3.7	3.9	4.4	4.8	5.2	5.9	6.4
Science.....	0.6	0.9	1.2	1.7	2.0	2.0	2.2	2.5	3.0	3.3	3.5	3.8	4.3	4.7	5.3	5.6
Physical sciences.....	0.1	0.2	0.2	0.3	0.4	0.4	0.4	0.5	0.4	0.6	0.6	0.5	0.7	0.7	0.7	0.8
Mathematics.....	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.5	0.5	0.4
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Earth, atmospheric, and ocean sciences...	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Life sciences.....	0.3	0.4	0.4	0.5	0.7	0.6	0.6	0.8	0.9	0.9	0.9	1.2	1.3	1.5	1.7	2.0
Psychology.....	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.5	0.7	0.7	0.8	0.9
Social sciences.....	0.1	0.2	0.2	0.5	0.5	0.5	0.5	0.7	0.9	1.0	1.0	1.0	1.1	1.3	1.4	1.3
Engineering.....	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.6	0.5	0.5	0.6	0.7
American Indian/Alaska Native.....	0.2	0.3	0.4	0.6	0.6	0.7	0.7	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.7	1.5
Science.....	0.2	0.3	0.3	0.6	0.6	0.6	0.6	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.7	1.4
Physical sciences.....	0.0	0.1	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Life sciences.....	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.5
Psychology.....	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
Social sciences.....	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.4
Engineering.....	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Postdocs.....	4.2	6.2	7.6	8.1	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5	15.8
Science.....	4.0	5.9	7.2	7.8	8.4	8.0	8.5	8.8	10.9	9.4	12.3	15.6	17.2	17.5	16.6	14.6
Physical sciences.....	1.7	2.1	2.2	1.9	1.9	1.4	1.9	2.0	2.4	1.9	3.0	3.9	3.2	2.9	2.6	2.2
Mathematics.....	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.0	0.5	0.5	0.6	0.8	0.5
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1
Earth, atmospheric, and ocean sciences.....	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.5	0.6	0.5	0.4	0.4
Life sciences.....	1.9	3.0	4.0	4.7	5.2	5.1	5.2	5.6	6.8	6.4	8.2	9.2	10.8	11.7	11.0	10.0
Psychology.....	0.2	0.4	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.5	0.4	1.1	1.3	1.2	1.2	0.9
Social sciences.....	0.1	0.2	0.3	0.3	0.3	0.6	0.3	0.1	0.4	0.3	0.2	0.4	0.7	0.5	0.6	0.5
Engineering.....	0.2	0.3	0.4	0.3	0.2	0.3	0.2	0.5	0.6	0.5	1.0	1.2	1.7	1.1	0.9	1.1
White.....	3.6	5.0	6.2	6.8	6.9	6.8	7.1	7.4	9.0	7.1	9.1	11.2	12.5	11.9	11.4	9.9
Science.....	3.4	4.8	6.0	6.7	6.7	6.8	7.0	7.2	8.7	6.9	8.8	10.7	11.6	11.2	10.9	9.3
Physical sciences.....	1.4	1.7	1.7	1.5	1.3	1.2	1.3	1.3	1.6	1.2	2.0	2.3	2.0	1.8	1.8	1.3
Mathematics.....	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.3	0.3	0.5	0.7	0.4
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1
Earth, atmospheric, and ocean sciences.....	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.4	0.3	0.5	0.5	0.4	0.3
Life sciences.....	1.7	2.4	3.3	4.1	4.4	4.3	4.5	4.7	5.6	4.8	5.9	6.5	7.0	7.2	6.7	6.4
Psychology.....	0.1	0.4	0.4	0.6	0.6	0.5	0.7	0.6	0.8	0.4	0.3	0.9	1.1	0.9	1.0	0.7
Social sciences.....	0.1	0.2	0.3	0.3	0.3	0.5	0.3	0.1	0.3	0.2	0.1	0.3	0.6	0.3	0.4	0.3
Engineering.....	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.2	0.3	0.5	0.9	0.7	0.6	0.5

**S&E doctorate holders employed in academia, by type of position, degree field, and race/ethnicity: 1973–2003**

(Thousands)

Position, field, and race/ethnicity	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
Asian/Pacific Islander .....	0.5	1.0	1.1	1.1	1.4	1.1	1.1	1.6	1.9	2.3	3.6	4.7	5.3	5.2	4.9	4.8
Science .....	0.4	0.9	1.0	1.0	1.4	0.9	1.1	1.3	1.6	2.0	2.9	4.0	4.7	4.9	4.6	4.3
Physical sciences.....	0.2	0.4	0.4	0.4	0.6	0.2	0.5	0.6	0.7	0.6	0.9	1.4	1.1	1.1	0.8	0.8
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Computer sciences .....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1
Life sciences.....	0.2	0.5	0.5	0.5	0.8	0.6	0.6	0.6	0.9	1.3	1.9	2.2	3.2	3.6	3.6	3.0
Psychology.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Social sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Engineering.....	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.3	0.3	0.7	0.7	0.7	0.2	0.3	0.5
Underrepresented minority .....	0.1	0.1	0.2	0.2	0.2	0.4	0.4	0.4	0.6	0.4	0.6	0.9	1.1	1.5	1.1	1.1
Science .....	0.1	0.1	0.2	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.6	0.9	1.0	1.4	1.1	1.0
Physical sciences.....	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Computer sciences .....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Life sciences.....	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.4	0.5	0.6	0.8	0.6	0.6
Psychology.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.1	0.1
Social sciences .....	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1
Engineering.....	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.1
Black.....	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.3	0.5	0.5	0.5	0.4
Science.....	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.3	0.5	0.5	0.5	0.4
Physical sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computer sciences .....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Life sciences.....	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.3	0.3	0.2	0.2
Psychology .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1
Social sciences .....	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1
Engineering.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Hispanic.....	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.4	0.3	0.4	0.6	0.5	0.9	0.6	0.6
Science.....	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.4	0.3	0.4	0.6	0.5	0.8	0.6	0.6
Physical sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computer sciences .....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Life sciences.....	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.5	0.4	0.4
Psychology .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1
Social sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
Engineering.....	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0

**S&E doctorate holders employed in academia, by type of position, degree field, and race/ethnicity: 1973–2003**

(Thousands)

Position, field, and race/ethnicity	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
American Indian/Alaska Native .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
Science .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Physical sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computer sciences .....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Life sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Psychology .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Social sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Engineering.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Full-time nonfaculty and part-time positions .....	10.5	11.5	12.2	15.9	16.6	19.4	24.6	22.1	25.4	27.6	28.1	29.4	35.3	37.5	40.7	48.4
Science .....	9.6	10.5	11.3	14.8	15.3	18.0	22.8	20.7	23.3	25.4	26.0	26.8	31.9	34.2	36.8	44.0
Physical sciences.....	2.6	2.5	2.7	2.7	3.0	3.5	3.9	3.3	3.8	4.2	4.4	4.5	5.6	6.3	6.2	6.7
Mathematics.....	0.4	0.6	0.7	0.7	0.6	0.5	0.7	0.6	0.8	0.9	0.8	1.1	1.5	1.5	1.6	1.9
Computer sciences.....	NA	NA	NA	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.9
Earth, atmospheric, and ocean sciences.....	0.3	0.4	0.4	0.6	0.6	0.7	0.9	0.9	0.9	1.2	1.4	1.3	1.6	1.7	1.9	2.3
Life sciences.....	3.4	3.3	3.7	5.0	5.2	6.3	7.8	7.6	8.7	9.5	9.2	9.6	11.3	12.0	12.9	15.9
Psychology.....	1.2	1.5	1.8	2.8	3.0	3.1	3.9	3.8	4.0	4.0	5.1	5.0	5.2	5.9	6.6	8.7
Social sciences .....	1.6	2.2	1.9	2.9	2.9	3.8	5.5	4.3	5.1	5.5	5.0	5.0	6.5	6.5	7.1	7.6
Engineering.....	0.9	1.0	0.9	1.2	1.3	1.4	1.8	1.4	2.0	2.2	2.0	2.5	3.4	3.3	3.9	4.4
White.....	9.3	10.4	10.9	14.5	15.0	17.0	21.6	19.3	22.2	24.6	24.0	24.3	29.6	31.0	33.3	37.6
Science.....	8.6	9.5	10.1	13.4	13.7	15.8	20.0	18.2	20.6	22.8	22.4	22.5	27.0	28.3	30.1	34.4
Physical sciences.....	2.2	2.3	2.4	2.5	2.6	3.0	3.3	2.7	3.2	3.6	3.5	3.7	4.4	5.2	5.1	5.2
Mathematics.....	0.3	0.5	0.6	0.6	0.6	0.5	0.7	0.6	0.7	0.8	0.6	0.9	1.2	1.1	1.3	1.5
Computer sciences .....	NA	NA	NA	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.7
Earth, atmospheric, and ocean sciences.....	0.3	0.4	0.4	0.6	0.6	0.6	0.8	0.9	0.8	1.2	1.3	1.1	1.5	1.4	1.7	1.9
Life sciences.....	3.0	2.9	3.3	4.4	4.5	5.3	6.9	6.6	7.5	8.4	8.1	8.1	9.5	9.8	10.2	12.0
Psychology.....	1.1	1.5	1.7	2.6	2.8	2.9	3.5	3.5	3.6	3.6	4.5	4.3	4.5	5.0	5.6	7.2
Social sciences .....	1.5	2.0	1.7	2.7	2.7	3.5	4.7	3.9	4.7	5.1	4.4	4.3	5.6	5.5	5.9	5.9
Engineering.....	0.7	0.9	0.8	1.1	1.2	1.1	1.6	1.1	1.6	1.8	1.6	1.8	2.7	2.6	3.1	3.1
Asian/Pacific Islander .....	0.6	0.4	0.6	0.9	1.0	1.6	2.0	1.8	2.0	1.9	2.5	3.2	3.6	4.1	4.3	6.7
Science.....	0.5	0.4	0.5	0.9	1.0	1.4	1.8	1.5	1.7	1.5	2.2	2.6	2.9	3.5	3.7	5.8
Physical sciences.....	0.2	0.1	0.1	0.2	0.2	0.5	0.5	0.5	0.5	0.4	0.7	0.7	0.9	0.8	0.8	1.1
Mathematics.....	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.4
Computer sciences .....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.3
Life sciences.....	0.2	0.1	0.3	0.4	0.6	0.7	0.7	0.7	0.9	0.8	0.8	1.1	1.2	1.5	1.7	2.9
Psychology.....	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3
Social sciences .....	0.0	0.1	0.1	0.1	0.1	0.1	0.4	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.8
Engineering.....	0.1	0.0	0.1	0.1	0.0	0.2	0.2	0.3	0.4	0.3	0.3	0.6	0.6	0.6	0.5	0.9

**S&E doctorate holders employed in academia, by type of position, degree field, and race/ethnicity: 1973–2003**

(Thousands)

Position, field, and race/ethnicity	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
Underrepresented minority .....	0.3	0.4	0.3	0.5	0.5	0.8	1.0	1.1	1.1	1.1	1.5	1.8	2.1	2.5	3.1	4.1
Science .....	0.3	0.4	0.3	0.4	0.5	0.7	0.9	1.0	1.0	1.0	1.4	1.7	2.0	2.4	2.9	3.8
Physical sciences.....	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.2	0.4
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Life sciences.....	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.6	0.8	1.0	1.1
Psychology.....	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.6	0.6	0.7	0.8	1.2
Social sciences.....	0.0	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.3	0.3	0.5	0.5	0.8	0.9
Engineering.....	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3
Black.....	0.2	0.2	0.2	0.2	0.3	0.5	0.4	0.6	0.4	0.5	0.7	0.9	1.2	1.2	1.8	2.0
Science.....	0.2	0.2	0.2	0.2	0.3	0.5	0.4	0.6	0.4	0.5	0.7	0.9	1.1	1.2	1.7	1.9
Physical sciences.....	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Life sciences.....	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.3	0.3	0.4	0.5	0.5
Psychology.....	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.3	0.4	0.4	0.3	0.5	0.6
Social sciences.....	0.0	0.1	0.0	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.3	0.3	0.5	0.4
Engineering.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Hispanic.....	0.1	0.1	0.2	0.2	0.3	0.3	0.5	0.5	0.6	0.5	0.7	0.7	0.8	1.2	1.2	1.8
Science.....	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.8	1.1	1.1	1.7
Physical sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Life sciences.....	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.3	0.3	0.4	0.5
Psychology.....	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.6
Social sciences.....	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4
Engineering.....	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.1
American Indian/Alaska Native.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
Science.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2
Physical sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computer sciences.....	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Life sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Psychology.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Social sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Engineering.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NA = not available

NOTES: Faculty defined by position: professors and associate professors are senior faculty; assistant professors and instructors are junior faculty; other full-time positions include nonfaculty positions such as research associates, adjunct positions, lecturers, and administrative positions. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations.

**S&E doctorate holders employed at academic institutions, by type of position, degree field, and place of birth: 1973–2003**

Position, field, and place of birth	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>All positions</b>																
All fields .....	118,100	134,100	145,400	155,300	167,100	176,100	190,200	195,900	206,600	210,600	213,800	217,500	232,500	240,200	245,500	258,300
United States.....	102,500	116,800	127,200	132,500	142,400	149,200	159,500	164,300	171,800	174,100	173,300	175,800	186,000	191,200	194,100	197,900
Foreign.....	13,600	15,300	16,400	21,700	23,600	25,700	29,700	30,800	34,000	36,300	40,500	41,800	46,500	49,000	51,500	60,400
Foreign (%).....	11.0	12.0	11.0	14.0	14.0	15.0	16.0	16.0	17.0	17.0	19.0	19.0	20.0	20.0	21.0	23.0
<b>Physical sciences</b> .....	22,100	23,600	25,000	24,600	25,300	25,100	27,000	27,200	27,700	27,700	28,600	29,400	30,200	30,900	30,400	31,500
United States.....	18,700	20,200	21,300	20,600	21,200	21,000	22,200	22,000	22,300	22,400	22,000	22,800	23,300	24,000	23,400	23,600
Foreign.....	2,900	3,000	3,200	3,800	4,000	4,000	4,700	5,000	5,300	5,300	6,600	6,500	6,900	7,000	7,000	7,900
Foreign (%).....	13.0	13.0	13.0	16.0	16.0	16.0	17.0	18.0	19.0	19.0	23.0	22.0	23.0	23.0	23.0	25.0
<b>Mathematics</b> .....	9,700	11,000	11,700	12,200	12,400	12,900	13,600	13,800	14,500	15,200	15,500	14,600	15,600	15,200	14,900	15,400
United States.....	8,400	9,600	10,300	10,200	10,200	10,500	10,900	11,200	11,300	11,600	11,500	10,900	11,300	11,000	10,700	10,300
Foreign.....	1,100	1,300	1,200	1,900	2,000	2,300	2,600	2,600	3,100	3,600	4,000	3,700	4,200	4,200	4,200	5,100
Foreign (%).....	11.0	11.0	10.0	15.0	16.0	18.0	19.0	19.0	21.0	24.0	26.0	26.0	27.0	28.0	28.0	33.0
<b>Computer sciences</b> .....	NA	NA	NA	100	300	500	800	1,100	1,500	2,000	2,500	3,100	3,300	3,700	3,800	5,200
United States.....	NA	NA	NA	—	200	300	500	800	900	1,100	1,500	1,800	1,900	2,300	2,300	2,900
Foreign.....	NA	NA	NA	—	100	100	300	300	600	900	1,100	1,300	1,400	1,400	1,500	2,300
Foreign (%).....	NA	NA	NA	—	30.0	30.0	32.0	29.0	38.0	44.0	42.0	42.0	44.0	37.0	39.0	44.0
<b>Earth, atmospheric, and ocean sciences</b> .....	3,400	3,900	4,200	4,200	4,600	4,800	5,200	5,600	5,900	6,100	6,400	6,400	7,300	7,800	8,200	8,800
United States.....	3,100	3,500	3,700	3,700	4,000	4,200	4,500	4,900	5,000	5,300	5,400	5,300	5,900	6,600	6,800	7,000
Foreign.....	300	400	400	500	500	600	700	700	800	800	1,000	1,100	1,400	1,200	1,400	1,800
Foreign (%).....	8.0	10.0	11.0	11.0	12.0	13.0	14.0	12.0	14.0	13.0	16.0	17.0	19.0	16.0	17.0	20.0
<b>Life sciences</b> .....	34,900	39,400	42,600	47,000	51,300	54,800	58,700	61,200	64,800	66,900	68,200	71,600	77,300	81,900	84,300	89,200
United States.....	30,900	34,800	37,800	40,700	44,400	47,700	51,000	53,100	56,000	57,800	57,800	60,500	64,000	66,400	67,400	69,700
Foreign.....	3,300	3,900	4,300	5,900	6,500	6,600	7,300	7,800	8,400	9,100	10,400	11,100	13,300	15,500	16,800	19,500
Foreign (%).....	9.0	10.0	10.0	13.0	13.0	12.0	12.0	13.0	13.0	14.0	15.0	16.0	17.0	19.0	20.0	22.0
<b>Psychology</b> .....	12,200	14,800	16,200	17,700	20,100	21,000	23,100	23,700	25,000	25,200	25,000	26,100	27,300	29,000	30,400	31,300
United States.....	11,300	13,700	15,100	16,500	18,600	19,500	21,300	22,100	23,200	23,400	23,200	24,400	25,200	26,800	28,000	28,500
Foreign.....	800	900	900	1,100	1,500	1,400	1,700	1,600	1,700	1,700	1,700	1,800	2,100	2,200	2,400	2,800
Foreign (%).....	6.0	6.0	6.0	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	8.0	8.0	8.0	9.0
<b>Social sciences</b> .....	23,400	28,000	31,100	33,600	36,900	38,800	41,900	42,100	44,500	44,800	44,400	42,500	44,900	46,200	46,900	48,600
United States.....	20,100	24,100	27,100	28,600	31,300	32,800	35,200	35,900	37,700	37,500	37,100	35,300	36,800	37,500	38,100	38,800
Foreign.....	2,900	3,500	3,700	4,700	5,400	5,800	6,600	6,100	6,700	7,200	7,300	7,200	8,100	8,700	8,800	9,700
Foreign (%).....	13.0	12.0	12.0	14.0	15.0	15.0	16.0	15.0	15.0	16.0	17.0	17.0	18.0	19.0	19.0	20.0
<b>Engineering</b> .....	12,400	13,400	14,800	15,800	16,100	18,100	19,900	21,200	22,800	22,800	23,100	23,800	26,600	25,500	26,600	28,300
United States.....	10,000	11,000	11,900	12,100	12,500	13,200	13,900	14,400	15,300	15,100	14,800	14,800	17,500	16,700	17,200	17,000
Foreign.....	2,300	2,300	2,700	3,700	3,600	4,900	6,000	6,700	7,500	7,700	8,400	9,000	9,100	8,800	9,400	11,300
Foreign (%).....	19.0	17.0	18.0	23.0	23.0	27.0	30.0	32.0	33.0	34.0	36.0	38.0	34.0	35.0	35.0	40.0

**S&E doctorate holders employed at academic institutions, by type of position, degree field, and place of birth: 1973–2003**

Position, field, and place of birth	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>Full-time senior faculty</b>																
All fields .....	74,000	84,300	90,700	97,200	107,300	115,600	119,700	127,300	131,000	133,000	128,600	127,300	131,900	136,700	136,900	141,400
United States.....	64,200	73,100	79,300	83,000	91,500	98,400	101,300	108,300	110,900	113,500	108,400	107,400	109,900	113,200	112,400	113,500
Foreign.....	8,100	9,600	9,900	13,300	14,900	16,300	17,900	18,500	19,600	19,500	20,200	19,900	22,000	23,400	24,500	27,900
Foreign (%) .....	11.0	12.0	11.0	14.0	14.0	14.0	15.0	15.0	15.0	15.0	16.0	16.0	17.0	17.0	18.0	20.0
Physical sciences.....	13,000	14,600	15,300	16,000	16,800	17,100	17,700	18,300	17,800	17,600	16,900	16,400	16,700	16,600	16,500	17,000
United States .....	11,100	12,500	13,000	13,600	14,300	14,400	14,900	15,300	14,800	14,900	14,100	13,900	14,000	13,900	13,400	13,900
Foreign .....	1,600	1,800	1,900	2,200	2,400	2,500	2,700	2,900	2,800	2,600	2,900	2,500	2,700	2,800	3,100	3,100
Foreign (%) .....	12.0	12.0	12.0	14.0	14.0	15.0	16.0	16.0	16.0	15.0	17.0	16.0	16.0	17.0	19.0	18.0
Mathematics.....	5,900	6,900	7,600	8,300	9,100	9,700	10,000	10,500	10,900	11,800	11,500	10,600	10,800	10,800	10,200	10,200
United States .....	5,100	6,000	6,700	7,000	7,500	8,000	8,100	8,800	8,900	9,600	9,100	8,400	8,200	8,100	7,700	7,100
Foreign .....	700	800	800	1,200	1,400	1,600	1,800	1,700	1,900	2,200	2,400	2,200	2,600	2,700	2,500	3,100
Foreign (%) .....	11.00	12.0	11.0	14.0	16.0	16.0	18.0	16.0	18.0	19.0	21.0	21.0	24.0	25.0	25.0	31.0
Computer sciences.....	NA	NA	NA	—	—	100	100	300	400	900	900	1,700	1,700	2,100	2,400	2,900
United States .....	NA	NA	NA	—	—	100	—	200	300	500	600	1,100	900	1,300	1,400	1,600
Foreign .....	NA	NA	NA	—	—	—	100	100	100	400	300	600	700	900	1,000	1,300
Foreign (%) .....	NA	NA	NA	—	—	—	—	26.0	24.0	46.0	35.0	37.0	45.0	40.0	42.0	46.0
Earth, atmospheric, and ocean sciences.....	2,200	2,500	2,700	2,800	2,900	3,100	3,100	3,200	3,600	3,600	3,700	3,600	3,800	4,100	4,200	4,300
United States .....	2,000	2,200	2,400	2,400	2,500	2,600	2,700	2,900	3,100	3,300	3,300	3,200	3,200	3,600	3,500	3,500
Foreign .....	100	200	300	300	300	400	400	300	500	300	400	400	600	500	700	800
Foreign (%) .....	7.0	8.0	10.0	11.0	12.0	13.0	12.0	11.0	13.0	9.0	12.0	12.0	15.0	13.0	17.0	17.0
Life sciences.....	21,000	23,400	24,600	27,000	29,600	32,600	33,700	35,800	36,400	37,400	35,800	37,200	38,300	40,600	41,200	43,100
United States .....	18,800	20,900	22,000	23,800	26,000	28,700	29,500	31,500	32,100	33,400	31,700	33,200	33,900	35,800	36,200	36,900
Foreign .....	1,700	2,000	2,100	2,900	3,200	3,700	4,000	4,100	4,200	4,000	4,100	4,000	4,400	4,800	5,000	6,200
Foreign (%) .....	8.0	8.0	9.0	11.0	11.0	11.0	12.0	12.0	11.0	11.0	12.0	11.0	12.0	12.0	12.0	14.0
Psychology.....	7,300	8,700	9,100	9,900	11,700	12,800	13,500	14,300	15,000	15,300	14,300	14,500	15,300	15,600	15,900	15,700
United States .....	6,600	7,900	8,400	9,200	10,700	11,900	12,400	13,200	13,900	14,400	13,400	13,700	14,200	14,500	14,800	14,400
Foreign .....	500	600	500	600	900	900	1,000	1,000	1,000	900	800	900	1,100	1,100	1,100	1,200
Foreign (%) .....	7.0	7.0	6.0	6.0	8.0	7.0	8.0	7.0	7.0	6.0	6.0	6.0	7.0	7.0	7.0	8.0
Social sciences .....	15,900	18,500	20,700	21,700	24,900	26,300	27,700	29,500	31,100	30,600	29,900	28,100	28,800	30,100	29,600	31,000
United States .....	13,500	15,700	17,900	18,100	20,900	22,200	23,300	25,200	26,400	26,200	25,400	23,900	24,100	25,100	24,400	25,200
Foreign .....	2,000	2,500	2,500	3,400	3,800	4,000	4,300	4,200	4,600	4,400	4,500	4,200	4,700	5,100	5,200	5,800
Foreign (%) .....	13.0	13.0	12.0	16.0	15.0	15.0	16.0	14.0	15.0	14.0	15.0	15.0	16.0	17.0	18.0	19.0
Engineering.....	8,700	9,700	10,700	11,600	12,400	13,700	13,900	15,300	15,900	15,800	15,700	15,300	16,600	16,600	16,800	17,200
United States .....	7,100	7,900	8,800	8,800	9,600	10,500	10,300	11,200	11,400	11,200	10,900	10,200	11,300	11,100	11,000	10,800
Foreign .....	1,500	1,700	1,800	2,700	2,800	3,200	3,600	4,100	4,500	4,600	4,800	5,100	5,300	5,500	5,800	6,400
Foreign (%) .....	18.0	18.0	17.0	24.0	22.0	23.0	26.0	27.0	28.0	29.0	31.0	33.0	32.0	33.0	35.0	37.0

**S&E doctorate holders employed at academic institutions, by type of position, degree field, and place of birth: 1973–2003**

Position, field, and place of birth	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>Full-time junior faculty</b>																
All fields .....	29,300	32,100	34,900	34,000	34,600	32,800	37,200	37,200	38,700	40,100	43,800	44,000	46,400	47,400	50,500	52,700
United States.....	26,000	28,800	31,400	29,300	29,900	27,700	30,600	30,700	31,000	30,800	33,500	34,300	35,600	36,700	38,700	38,000
Foreign.....	3,300	3,200	3,400	4,700	4,600	5,000	6,400	6,400	7,600	9,200	10,300	9,700	10,900	10,600	11,700	14,700
Foreign (%) .....	11.0	10.0	10.0	14.0	13.0	15.0	17.0	17.0	20.0	23.0	24.0	22.0	23.0	23.0	23.0	28.0
Physical sciences.....	4,800	4,300	4,800	4,000	3,700	3,100	3,500	3,600	3,700	4,100	4,300	4,500	4,800	5,100	5,000	5,500
United States .....	4,200	3,900	4,200	3,300	3,100	2,600	2,900	3,100	3,000	3,100	3,200	3,500	3,500	3,700	3,700	3,800
Foreign .....	600	500	500	700	500	400	600	600	700	1,000	1,200	1,000	1,300	1,300	1,300	1,700
Foreign (%) .....	12.0	11.0	11.0	17.0	14.0	15.0	18.0	15.0	19.0	26.0	27.0	22.0	26.0	26.0	26.0	31.0
Mathematics.....	3,300	3,500	3,300	3,100	2,600	2,500	2,700	2,400	2,600	2,400	3,200	2,400	2,800	2,400	2,300	2,800
United States .....	3,000	3,100	3,000	2,600	2,100	1,900	2,100	1,900	1,700	1,300	1,700	1,500	1,800	1,700	1,600	1,700
Foreign .....	400	300	300	500	500	600	700	500	1,000	1,100	1,500	900	1,000	700	700	1,100
Foreign (%) .....	11.0	10.0	8.0	17.0	20.0	24.0	24.0	22.0	36.0	45.0	46.0	38.0	35.0	28.0	30.0	39.0
Computer sciences.....	NA	NA	NA	100	200	300	600	600	900	1,000	1,400	1,200	1,300	1,200	900	1,300
United States .....	NA	NA	NA	—	200	300	400	400	500	500	700	600	700	800	600	600
Foreign .....	NA	NA	NA	—	100	100	200	200	400	500	700	600	600	400	300	700
Foreign (%) .....	NA	NA	NA	—	28.0	25.0	29.0	33.0	48.0	47.0	48.0	50.0	47.0	36.0	33.0	53.0
Earth, atmospheric, and ocean sciences.....	800	900	900	700	900	900	1,100	1,100	1,100	900	900	1,100	1,300	1,500	1,700	1,800
United States .....	700	800	800	600	800	800	900	1,000	900	800	600	900	1,100	1,300	1,500	1,500
Foreign .....	100	100	100	100	100	100	100	100	200	200	200	200	200	200	200	300
Foreign (%) .....	10.0	12.0	10.0	11.0	10.0	9.0	14.0	13.0	16.0	17.0	28.0	18.0	19.0	13.0	12.0	19.0
Life sciences.....	8,500	9,700	10,300	10,300	11,300	10,800	11,900	12,300	12,800	13,700	15,000	15,600	16,900	17,500	19,200	20,100
United States .....	7,700	8,700	9,500	8,800	9,900	9,700	10,600	10,700	11,300	11,600	12,700	13,200	13,900	13,900	14,800	14,700
Foreign .....	800	900	800	1,500	1,300	1,100	1,300	1,500	1,500	2,000	2,300	2,400	3,000	3,600	4,400	5,400
Foreign (%) .....	9.0	10.0	8.0	14.0	12.0	10.0	11.0	12.0	12.0	15.0	15.0	15.0	18.0	21.0	23.0	27.0
Psychology.....	3,600	4,200	4,800	4,400	4,800	4,500	5,000	4,900	5,200	5,400	5,200	5,500	5,500	6,200	6,600	6,100
United States .....	3,400	4,000	4,500	4,100	4,500	4,200	4,600	4,600	4,800	5,000	4,800	5,100	5,000	5,700	6,100	5,300
Foreign .....	200	200	300	300	200	200	300	300	400	300	400	400	500	500	600	700
Foreign (%) .....	4.0	4.0	6.0	7.0	5.0	5.0	6.0	6.0	8.0	6.0	8.0	8.0	9.0	9.0	9.0	12.0
Social sciences.....	5,700	7,100	8,200	8,600	8,800	8,100	8,400	8,200	7,900	8,400	9,300	9,000	8,900	9,100	9,600	9,500
United States .....	5,000	6,300	7,100	7,600	7,500	6,800	7,000	6,900	6,600	6,300	7,300	6,800	6,600	6,900	7,500	7,400
Foreign .....	700	800	1,000	1,000	1,200	1,300	1,300	1,300	1,400	2,100	2,000	2,200	2,300	2,200	2,200	2,200
Foreign (%) .....	13.0	11.0	12.0	12.0	14.0	16.0	16.0	16.0	17.0	25.0	21.0	24.0	26.0	24.0	23.0	23.0
Engineering.....	2,600	2,500	2,700	2,800	2,300	2,700	4,000	4,000	4,300	4,300	4,500	4,800	5,000	4,500	5,100	5,600
United States .....	2,000	2,100	2,200	2,100	1,700	1,500	2,100	2,200	2,300	2,300	2,400	2,800	3,000	2,800	3,000	3,000
Foreign .....	500	400	500	600	600	1,200	1,900	1,800	2,100	2,000	2,100	2,000	2,000	1,700	2,000	2,600
Foreign (%) .....	20.0	16.0	18.0	23.0	27.0	44.0	47.0	46.0	47.0	46.0	47.0	42.0	40.0	38.0	39.0	47.0

**S&E doctorate holders employed at academic institutions, by type of position, degree field, and place of birth: 1973–2003**

Position, field, and place of birth	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>Full-time other</b>																
All fields .....	7,500	8,300	8,800	11,400	12,600	13,400	18,100	16,400	19,200	20,200	22,200	23,900	26,400	29,300	31,700	35,100
United States.....	6,500	7,300	7,600	9,900	10,800	11,000	15,400	13,700	16,000	16,700	18,600	19,000	21,800	23,700	25,400	26,700
Foreign.....	900	900	1,200	1,500	1,700	2,300	2,700	2,700	3,100	3,500	3,600	4,800	4,600	5,600	6,300	8,500
Foreign (%) .....	14.0	11.0	13.0	13.0	14.0	18.0	15.0	16.0	16.0	17.0	16.0	20.0	17.0	19.0	20.0	24.0
Physical sciences.....	1,900	1,900	2,100	2,000	2,400	2,500	3,000	2,600	3,300	3,200	3,700	3,800	4,600	5,600	5,500	6,000
United States .....	1,600	1,700	1,900	1,700	2,000	2,000	2,600	2,100	2,600	2,600	2,800	2,900	3,600	4,400	4,300	4,400
Foreign .....	300	200	200	300	400	500	400	600	700	600	900	900	1,000	1,100	1,200	1,600
Foreign (%) .....	17.0	12.0	12.0	15.0	15.0	22.0	14.0	21.0	20.0	19.0	25.0	23.0	22.0	20.0	22.0	27.0
Mathematics.....	200	300	400	400	400	300	500	400	500	600	500	600	800	800	1,000	1,100
United States .....	200	300	400	300	300	300	500	300	400	400	300	400	700	500	700	800
Foreign .....	—	100	100	100	—	—	—	100	100	300	100	200	200	300	300	300
Foreign (%) .....	—	16.0	16.0	22.0	—	—	—	33.0	17.0	43.0	25.0	31.0	19.0	34.0	30.0	28.0
Computer sciences.....	NA	NA	NA	—	—	100	100	100	100	100	200	200	200	300	300	600
United States .....	NA	NA	NA	—	—	—	100	100	100	100	100	100	100	200	200	500
Foreign .....	NA	NA	NA	—	—	—	—	—	—	—	—	100	—	100	100	100
Foreign (%) .....	NA	NA	NA	—	—	—	—	—	—	—	—	38.0	—	31.0	33.0	19.0
Earth, atmospheric, and ocean sciences.....	300	300	300	500	500	500	700	800	700	900	1,100	1,100	1,400	1,400	1,600	1,900
United States .....	300	300	300	400	500	400	600	600	600	800	1,000	800	1,200	1,000	1,200	1,500
Foreign .....	—	—	—	100	—	100	100	100	100	100	100	300	300	300	400	500
Foreign (%) .....	—	—	—	14.0	—	15.0	18.0	18.0	13.0	9.0	9.0	24.0	19.0	25.0	25.0	24.0
Life sciences.....	2,500	2,400	2,800	3,900	4,000	4,600	6,200	6,000	6,700	7,200	7,700	8,400	8,400	9,500	10,500	11,900
United States .....	2,100	2,000	2,200	3,100	3,200	3,600	5,200	5,000	5,500	6,000	6,500	6,900	7,000	7,500	8,200	8,500
Foreign .....	400	300	500	700	800	900	900	1,000	1,200	1,200	1,200	1,600	1,400	2,000	2,300	3,400
Foreign (%) .....	16.0	12.0	18.0	19.0	20.0	20.0	15.0	16.0	17.0	17.0	16.0	19.0	16.0	21.0	22.0	28.0
Psychology.....	800	1,000	1,200	1,800	2,200	2,200	2,900	2,800	2,900	2,800	3,900	3,900	4,000	4,600	4,900	5,600
United States .....	800	1,000	1,200	1,700	2,100	2,000	2,700	2,600	2,800	2,600	3,600	3,600	3,700	4,300	4,500	5,100
Foreign .....	—	—	—	100	200	200	200	200	200	200	300	400	300	300	400	500
Foreign (%) .....	—	—	—	6.0	7.0	9.0	7.0	8.0	6.0	9.0	9.0	9.0	8.0	7.0	8.0	8.0
Social sciences .....	1,000	1,500	1,200	1,900	2,000	2,200	3,200	2,600	3,500	3,500	3,700	3,600	3,900	4,300	4,500	4,500
United States .....	900	1,300	1,000	1,800	1,800	1,900	2,600	2,300	3,000	3,200	3,300	3,100	3,300	3,600	3,800	3,500
Foreign .....	100	100	100	100	200	300	600	300	500	400	400	500	600	800	700	900
Foreign (%) .....	8.0	9.0	11.0	5.0	11.0	12.0	18.0	12.0	13.0	10.0	11.0	15.0	15.0	18.0	16.0	21.0
Engineering.....	800	900	800	900	1,100	1,100	1,500	1,100	1,500	1,800	1,500	2,100	3,100	3,000	3,400	3,600
United States .....	600	800	600	800	1,000	800	1,100	700	1,000	1,100	1,000	1,200	2,300	2,200	2,600	2,400
Foreign .....	100	100	100	100	100	300	400	300	500	700	500	900	800	800	900	1,200
Foreign (%) .....	18.0	11.0	19.0	13.0	7.0	28.0	25.0	32.0	32.0	38.0	35.0	43.0	26.0	27.0	26.0	34.0



**S&E doctorate holders employed at academic institutions, by type of position, degree field, and place of birth: 1973–2003**

Position, field, and place of birth	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>Postdocs</b>																
All fields .....	4,200	6,200	7,600	8,100	8,500	8,300	8,700	9,300	11,500	9,900	13,300	16,800	18,900	18,500	17,500	15,800
United States.....	3,300	4,800	6,000	6,500	6,600	6,700	6,800	6,700	8,300	6,600	8,100	10,400	11,400	11,200	10,300	9,000
Foreign.....	700	1,300	1,600	1,700	1,900	1,500	1,800	2,600	3,100	3,200	5,200	6,400	7,500	7,400	7,100	6,800
Foreign (%) .....	17.0	21.0	21.0	20.0	22.0	18.0	21.0	28.0	27.0	33.0	39.0	38.0	40.0	40.0	41.0	43.0
Physical sciences.....	1,700	2,100	2,200	1,900	1,900	1,400	1,900	2,000	2,400	1,900	3,000	3,900	3,200	2,900	2,600	2,200
United States .....	1,300	1,700	1,700	1,400	1,300	1,100	1,200	1,100	1,400	1,000	1,600	2,100	1,600	1,500	1,600	1,000
Foreign .....	300	500	500	500	600	300	700	900	1,000	900	1,400	1,800	1,600	1,400	1,100	1,300
Foreign (%) .....	20.0	22.0	23.0	27.0	32.0	23.0	36.0	46.0	43.0	47.0	47.0	47.0	50.0	48.0	42.0	57.0
Mathematics.....	—	100	100	100	100	100	100	300	200	100	—	500	500	600	800	500
United States .....	—	100	100	100	100	100	100	100	100	—	—	200	200	300	400	100
Foreign .....	—	—	—	—	—	—	—	200	100	100	—	300	200	300	400	300
Foreign (%) .....	—	—	—	—	—	—	—	64.0	49.0	—	—	62.0	54.0	57.0	50.0	69.0
Computer sciences.....	NA	NA	NA	—	—	—	—	—	—	—	—	100	100	100	—	100
United States .....	NA	NA	NA	—	—	—	—	—	—	—	—	—	—	100	—	—
Foreign .....	NA	NA	NA	—	—	—	—	—	—	—	—	—	—	—	—	100
Foreign (%) .....	NA	NA	NA	—	—	—	—	—	—	—	—	—	—	—	—	—
Earth, atmospheric, and ocean sciences.....	100	100	200	100	200	200	200	300	300	300	500	500	600	500	400	400
United States .....	100	100	100	100	100	100	100	200	200	200	300	300	400	400	300	200
Foreign .....	—	—	—	—	—	—	—	—	—	200	200	200	200	100	100	200
Foreign (%) .....	—	—	—	—	—	—	—	—	—	44.0	36.0	40.0	39.0	15.0	25.0	42.0
Life sciences.....	1,900	3,000	4,000	4,700	5,200	5,100	5,200	5,600	6,800	6,400	8,200	9,200	10,800	11,700	11,000	10,000
United States .....	1,600	2,400	3,200	3,900	4,300	4,300	4,300	4,500	5,400	4,700	5,500	6,200	6,700	7,000	6,300	6,100
Foreign .....	300	700	700	800	1,000	800	900	1,100	1,400	1,700	2,700	3,000	4,100	4,700	4,700	4,000
Foreign (%) .....	15.0	22.0	19.0	17.0	19.0	16.0	18.0	19.0	20.0	26.0	33.0	33.0	38.0	40.0	43.0	40.0
Psychology.....	200	400	500	600	600	600	700	700	800	500	400	1,100	1,300	1,200	1,200	900
United States .....	100	400	500	600	600	500	700	600	800	400	300	1,000	1,100	1,000	1,100	800
Foreign .....	—	—	—	—	—	—	—	—	—	100	100	100	200	100	100	100
Foreign (%) .....	—	—	—	—	—	—	—	—	—	13.0	16.0	8.0	16.0	11.0	8.0	14.0
Social sciences.....	100	200	300	300	300	600	300	100	400	300	200	400	700	500	600	500
United States .....	100	200	300	200	300	500	300	100	200	200	100	300	600	400	400	300
Foreign .....	—	100	—	100	—	100	—	—	100	100	100	100	100	100	200	200
Foreign (%) .....	—	22.0	—	42.0	—	19.0	—	—	32.0	30.0	51.0	23.0	17.0	23.0	33.0	37.0
Engineering.....	200	300	400	300	200	300	200	500	600	500	1,000	1,200	1,700	1,100	900	1,100
United States .....	100	200	200	200	—	100	—	100	200	100	200	300	700	400	300	400
Foreign .....	100	100	200	200	100	200	100	400	400	300	800	900	900	700	500	700
Foreign (%) .....	42.0	41.0	55.0	51.0	—	65.0	—	76.0	66.0	68.0	76.0	72.0	56.0	60.0	56.0	63.0

**S&E doctorate holders employed at academic institutions, by type of position, degree field, and place of birth: 1973–2003**

Position, field, and place of birth	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>Part-time</b>																
All fields .....	2,900	3,200	3,400	4,500	4,000	6,000	6,500	5,700	6,200	7,400	5,900	5,500	8,900	8,200	9,000	13,200
United States.....	2,500	2,800	3,000	3,900	3,400	5,400	5,400	4,900	5,500	6,500	4,700	4,600	7,300	6,400	7,200	10,700
Foreign.....	300	300	400	500	500	500	1,000	700	600	900	1,100	900	1,600	1,900	1,800	2,600
Foreign (%) .....	12.0	10.0	11.0	12.0	13.0	9.0	15.0	13.0	10.0	12.0	19.0	17.0	18.0	23.0	20.0	19.0
Physical sciences.....	600	600	600	700	600	1,000	900	600	500	900	700	700	1,000	700	700	800
United States.....	500	500	500	600	500	900	600	500	400	800	400	500	600	400	500	500
Foreign.....	100	100	100	100	100	100	200	100	100	100	300	300	300	300	200	200
Foreign (%) .....	15.0	12.0	9.0	18.0	18.0	9.0	25.0	16.0	16.0	14.0	39.0	35.0	33.0	40.0	29.0	30.0
Mathematics.....	100	200	200	300	200	200	200	200	300	300	300	500	700	700	600	800
United States.....	100	200	200	200	200	200	200	100	200	300	200	400	500	400	400	600
Foreign.....	—	—	—	100	—	—	100	—	—	—	100	100	200	300	200	300
Foreign (%) .....	—	—	—	21.0	—	—	23.0	—	—	—	34.0	24.0	31.0	40.0	33.0	31.0
Computer sciences.....	NA	NA	NA	—	—	—	—	—	—	—	—	—	100	100	100	200
United States.....	NA	NA	NA	—	—	—	—	—	—	—	—	—	100	100	100	100
Foreign.....	NA	NA	NA	—	—	—	—	—	—	—	—	—	—	—	—	100
Foreign (%) .....	NA	NA	NA	—	—	—	—	—	—	—	—	—	—	—	—	38.0
Earth, atmospheric, and ocean sciences.....	100	100	100	100	100	100	200	200	200	300	300	200	200	300	300	400
United States.....	100	100	100	100	100	100	200	200	200	200	200	200	200	200	300	300
Foreign.....	—	—	—	—	—	—	—	—	—	100	—	—	100	100	—	—
Foreign (%) .....	—	—	—	—	—	—	—	—	—	22.0	—	—	29.0	25	—	—
Life sciences.....	900	900	1,000	1,200	1,200	1,700	1,700	1,600	1,900	2,300	1,600	1,200	2,900	2,600	2,400	4,000
United States.....	800	800	900	1,000	1,000	1,500	1,400	1,400	1,800	2,100	1,400	1,100	2,500	2,100	2,000	3,400
Foreign.....	100	100	100	100	100	200	200	200	200	200	200	100	400	400	400	600
Foreign (%) .....	13.0	9.0	11.0	9.0	11.0	10.0	13.0	12.0	9.0	7.0	10.0	11.0	15.0	17.0	17.0	14.0
Psychology.....	400	500	600	1,000	800	1,000	1,000	1,000	1,000	1,100	1,200	1,100	1,100	1,300	1,800	3,100
United States.....	400	500	500	900	700	900	900	1,000	900	1,000	1,100	1,100	1,100	1,300	1,600	2,800
Foreign.....	—	—	—	100	100	100	100	—	100	100	100	—	—	100	200	300
Foreign (%) .....	—	—	—	10.0	12.0	9.0	14.0	—	8.0	11.0	5.0	—	—	5.0	11.0	9.0
Social sciences.....	700	800	800	1,000	1,000	1,600	2,200	1,800	1,700	2,000	1,300	1,300	2,600	2,200	2,700	3,100
United States.....	500	700	700	900	800	1,400	1,900	1,500	1,500	1,700	1,000	1,200	2,200	1,700	2,100	2,400
Foreign.....	100	100	100	100	100	100	300	200	200	300	300	200	500	600	500	700
Foreign (%) .....	15.0	8.0	9.0	9.0	13.0	8.0	13.0	14.0	10.0	15.0	23.0	14.0	17.0	25.0	19.0	23.0
Engineering.....	100	100	100	300	200	400	300	300	500	500	500	400	300	400	400	800
United States.....	100	100	100	200	100	300	300	200	500	400	300	200	200	200	200	400
Foreign.....	—	—	—	100	—	—	—	100	100	100	200	200	100	200	200	400
Foreign (%) .....	—	—	—	18.0	—	—	—	28.0	13.0	20.0	40.0	42.0	46.0	53.0	50.0	47.0

— = sample too small; NA = not available

NOTES: Values rounded to nearest hundred. Foreign (%) based on actual rather than rounded values and reported to nearest whole number. Small number of unknowns through 1987 not shown. Senior faculty includes full and associate professors. Junior faculty includes assistant professors and instructors. Other full-time positions include nonfaculty positions such as research associates, adjunct appointments, lecturers, and administrative positions. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations.

Appendix table 5-31

(Page 1 of 3)

**S&E doctorate holders employed in academia, by degree field, type of position, and primary work activity: 1973–2003**

(Thousands)

Field, position, and work activity	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>All fields</b>																
All positions.....	118.0	134.1	145.4	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5	258.3
Research.....	27.8	30.8	37.0	41.3	46.5	48.9	55.9	66.5	72.2	73.9	80.2	83.0	88.6	91.4	93.8	102.9
Teaching.....	73.3	83.8	82.2	83.8	95.9	97.7	101.0	99.3	100.9	103.4	98.3	100.2	105.4	108.6	109.0	105.9
Other.....	16.9	19.4	26.2	30.2	24.7	29.6	33.3	30.1	33.5	33.2	35.2	34.3	38.6	40.2	42.8	49.5
Full-time faculty.....	103.3	116.4	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	178.4	184.0	187.4	194.1
Research.....	19.8	21.4	25.8	28.1	31.8	33.6	39.5	48.6	51.6	53.8	56.8	56.6	58.0	60.4	62.8	71.5
Teaching.....	69.9	80.2	78.4	79.7	92.1	91.9	94.9	93.6	93.9	96.7	91.4	91.9	95.4	98.6	97.9	85.0
Other.....	13.6	14.8	21.3	23.4	18.0	22.9	22.5	22.2	24.2	22.6	24.1	22.9	24.9	25.0	26.8	37.6
<b>Physical sciences</b>																
All positions.....	22.1	23.6	25.0	24.6	25.3	25.1	27.0	27.2	27.7	27.7	28.6	29.4	30.2	30.9	30.4	31.5
Research.....	5.9	6.4	7.9	7.5	8.0	7.7	9.4	10.2	10.9	10.6	12.0	12.6	12.7	12.2	11.9	12.6
Teaching.....	14.0	14.6	13.8	13.4	14.7	14.0	14.4	14.0	13.7	13.8	12.8	12.9	13.5	14.0	13.8	13.3
Other.....	2.2	2.6	3.3	3.7	2.6	3.3	3.2	2.9	3.1	3.3	3.8	3.8	4.0	4.7	4.7	5.7
Full-time faculty.....	17.8	18.9	20.0	20.0	20.5	20.2	21.2	22.0	21.5	21.7	21.3	20.9	21.4	21.7	21.6	22.5
Research.....	3.0	3.4	4.4	4.4	4.6	4.5	5.6	6.5	6.5	6.7	7.1	6.9	6.8	6.7	6.6	7.7
Teaching.....	13.3	13.9	13.1	12.7	14.1	13.1	13.6	13.4	12.8	12.8	11.8	11.6	12.2	12.7	12.6	11.8
Other.....	1.5	1.7	2.5	2.8	1.8	2.6	2.0	2.0	2.2	2.1	2.3	2.3	2.4	2.3	2.4	3.1
<b>Mathematics</b>																
All positions.....	9.7	11.0	11.7	12.2	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9	15.4
Research.....	1.5	1.5	1.8	2.1	1.9	2.0	2.7	3.2	3.5	3.5	3.4	3.3	3.5	2.9	3.3	3.8
Teaching.....	7.4	8.5	8.5	8.6	9.1	9.4	9.3	9.2	9.5	10.1	10.3	9.8	10.2	10.5	10.2	9.4
Other.....	0.8	1.0	1.4	1.6	1.3	1.6	1.6	1.4	1.5	1.6	1.8	1.5	1.8	1.7	1.4	2.2
Full-time faculty.....	9.3	10.4	10.9	11.4	11.7	12.3	12.7	12.9	13.5	14.2	14.7	13.0	13.6	13.1	12.6	13.0
Research.....	1.4	1.3	1.6	1.8	1.8	1.8	2.5	2.7	3.2	3.2	3.1	2.7	2.8	2.3	2.3	3.1
Teaching.....	7.2	8.2	8.1	8.3	8.8	9.0	8.9	9.0	9.0	9.6	10.0	9.0	9.3	9.4	9.2	8.2
Other.....	0.7	0.9	1.2	1.3	1.1	1.4	1.3	1.2	1.3	1.4	1.6	1.3	1.5	1.4	1.1	1.7
<b>Computer sciences</b>																
All positions.....	NA	NA	NA	0.1	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8	5.2
Research.....	NA	NA	NA	0.0	0.1	0.2	0.4	0.7	0.8	1.1	0.9	1.0	1.1	1.1	1.3	1.9
Teaching.....	NA	NA	NA	0.1	0.2	0.3	0.3	0.3	0.6	0.7	1.4	1.8	1.8	2.1	1.9	2.5
Other.....	NA	NA	NA	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.5	0.5	0.5	0.8
Full-time faculty.....	NA	NA	NA	0.1	0.3	0.4	0.7	0.9	1.3	1.8	2.3	2.8	3.0	3.3	3.3	4.2
Research.....	NA	NA	NA	0.0	0.1	0.1	0.3	0.5	0.7	1.0	0.7	0.9	1.0	0.9	1.1	1.6
Teaching.....	NA	NA	NA	0.1	0.2	0.3	0.3	0.3	0.5	0.7	1.3	1.7	1.7	2.0	1.8	2.3
Other.....	NA	NA	NA	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4

**S&E doctorate holders employed in academia, by degree field, type of position, and primary work activity: 1973–2003**

(Thousands)

Field, position, and work activity	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>Earth, atmospheric, and ocean sciences</b>																
All positions.....	3.4	3.9	4.2	4.2	4.6	4.8	5.2	5.6	5.9	6.0	6.4	6.4	7.3	7.8	8.2	8.8
Research.....	0.7	0.8	1.0	1.0	1.4	1.5	1.6	2.1	2.4	2.5	2.7	2.6	2.9	2.9	3.1	3.6
Teaching.....	2.3	2.7	2.7	2.5	2.8	2.8	3.0	2.9	3.0	3.0	2.9	3.0	3.2	3.8	4.1	3.7
Other.....	0.4	0.4	0.5	0.7	0.4	0.5	0.6	0.6	0.5	0.5	0.8	0.8	1.2	1.1	1.1	1.5
Full-time faculty.....	3.0	3.4	3.6	3.5	3.8	4.0	4.2	4.4	4.7	4.5	4.5	4.7	5.1	5.6	5.9	6.1
Research.....	0.5	0.5	0.6	0.6	0.8	0.9	0.9	1.3	1.5	1.5	1.6	1.5	1.6	1.5	1.7	2.2
Teaching.....	2.2	2.6	2.6	2.4	2.8	2.7	2.9	2.8	2.8	2.8	2.5	2.8	2.9	3.4	3.6	3.2
Other.....	0.3	0.3	0.4	0.5	0.2	0.4	0.4	0.4	0.3	0.2	0.4	0.4	0.6	0.7	0.6	0.7
<b>Life sciences</b>																
All positions.....	34.9	39.4	42.6	47.0	51.3	54.9	58.7	61.3	64.8	66.9	68.2	71.6	77.3	81.9	84.3	89.2
Research.....	12.8	14.5	16.6	19.7	23.2	24.3	27.1	31.5	33.8	34.5	36.0	37.7	40.5	43.2	43.7	46.4
Teaching.....	16.6	19.0	18.1	18.1	20.5	21.1	20.9	20.1	20.3	20.9	20.2	21.8	23.4	25.1	25.7	25.2
Other.....	5.5	5.9	8.0	9.3	7.6	9.4	10.6	9.7	10.7	11.5	12.0	12.2	13.4	13.6	14.8	17.6
Full-time faculty.....	29.5	33.1	34.9	37.3	40.9	43.5	45.6	48.1	49.3	51.1	50.8	52.8	55.2	58.1	60.4	63.2
Research.....	9.3	10.3	11.4	13.1	15.5	16.5	18.6	22.3	22.6	23.8	24.1	24.7	25.7	27.0	27.7	30.1
Teaching.....	15.7	18.1	17.1	17.1	19.6	19.6	19.5	18.7	18.7	19.1	18.4	19.8	20.7	22.5	22.8	21.4
Other.....	4.5	4.7	6.4	7.1	5.8	7.4	7.4	7.2	7.9	8.2	8.3	8.3	8.7	8.6	9.9	11.7
<b>Psychology</b>																
All positions.....	12.2	14.8	16.2	17.7	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4	31.3
Research.....	2.0	2.2	2.8	3.4	4.1	4.4	4.6	5.2	5.9	6.2	6.7	7.4	8.0	8.6	8.7	10.0
Teaching.....	7.7	9.7	9.4	9.5	11.7	11.6	12.3	13.0	12.8	12.8	11.6	11.9	12.4	13.0	13.3	13.3
Other.....	2.5	2.9	4.0	4.8	4.4	5.0	6.2	5.6	6.3	6.2	6.7	6.9	7.0	7.3	8.4	8.1
Full-time faculty.....	10.8	12.8	13.9	14.3	16.4	17.3	18.5	19.2	20.2	20.7	19.5	20.1	20.8	21.9	22.6	21.7
Research.....	1.6	1.5	2.0	2.2	2.5	2.9	3.3	3.9	4.5	5.0	5.3	5.4	5.9	6.1	6.3	7.1
Teaching.....	7.3	9.2	8.9	8.9	11.0	10.9	11.6	12.1	11.9	12.2	10.5	10.9	11.3	11.9	11.9	10.8
Other.....	2.0	2.1	3.0	3.2	2.9	3.5	3.6	3.3	3.8	3.6	3.7	3.8	3.6	3.9	4.3	3.8
<b>Social sciences</b>																
All positions.....	23.4	28.0	31.1	33.6	36.9	38.9	42.0	42.2	44.5	44.8	44.4	42.5	44.9	46.2	46.9	48.6
Research.....	2.8	3.2	4.1	4.2	4.5	4.9	5.7	7.5	8.2	8.4	10.7	9.8	9.8	11.1	11.7	13.0
Teaching.....	16.9	20.5	21.0	22.6	26.8	27.7	29.1	28.5	28.8	29.8	27.6	26.9	28.3	28.0	28.0	27.3
Other.....	3.7	4.3	6.0	6.8	5.6	6.1	7.1	6.1	7.6	6.6	6.1	5.8	6.8	7.2	7.2	8.2
Full-time faculty.....	21.6	25.5	28.8	30.4	33.7	34.4	36.1	37.7	39.0	39.0	39.2	37.1	37.7	39.2	39.2	40.5
Research.....	2.5	2.7	3.6	3.4	3.8	3.8	4.6	6.3	7.1	7.1	8.9	8.3	7.6	9.2	9.7	10.8
Teaching.....	16.1	19.5	20.1	21.4	25.7	25.9	26.8	26.5	26.4	27.6	25.9	24.6	25.3	24.9	24.9	23.7
Other.....	3.0	3.3	5.2	5.5	4.2	4.7	4.7	4.8	5.4	4.3	4.5	4.2	4.8	5.1	4.7	6.0

**S&E doctorate holders employed in academia, by degree field, type of position, and primary work activity: 1973–2003**

(Thousands)

Field, position, and work activity	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>Engineering</b>																
All positions.....	12.4	13.4	14.8	15.8	16.1	18.1	19.9	21.2	22.8	22.8	23.1	23.8	26.6	25.5	26.6	28.3
Research.....	2.1	2.3	2.9	3.4	3.3	3.9	4.4	6.2	6.9	7.2	7.9	8.7	10.1	9.4	10.1	11.6
Teaching.....	8.4	8.9	8.7	9.1	10.1	10.8	11.7	11.3	12.2	12.2	11.6	12.1	12.6	12.1	11.9	11.2
Other.....	1.9	2.3	3.1	3.3	2.7	3.5	3.8	3.7	3.7	3.4	3.7	3.0	3.8	4.0	4.7	5.5
Full-time faculty.....	11.3	12.2	13.5	14.3	14.7	16.4	17.9	19.3	20.2	20.1	20.1	20.0	21.5	21.1	21.9	22.8
Research.....	1.5	1.7	2.3	2.6	2.7	3.0	3.7	5.0	5.4	5.5	6.0	6.3	6.7	6.7	7.4	8.9
Teaching.....	8.1	8.7	8.5	8.9	10.0	10.4	11.2	11.0	11.7	11.8	11.0	11.5	12.0	11.7	11.2	10.2
Other.....	1.6	1.8	2.7	2.8	2.0	2.9	2.9	3.3	3.1	2.7	3.1	2.2	2.8	2.7	3.3	3.7

NA = not available

NOTES: Faculty positions include full, associate, and assistant professors and instructors. Research includes basic or applied research, development, or design. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations.

Science and Engineering Indicators 2006

Appendix table 5-32

**S&E doctorate holders employed in academia whose primary or secondary work activity was teaching or research, by type of position and degree field: 1973–2003**

(Thousands)

Position, work activity, and field	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>All positions</b>																
<b>Teaching</b>																
All fields .....	94.9	110.4	110.8	115.2	125.2	131.3	138.5	151.4	155.8	160.8	145.2	147.1	153.5	158.7	160.6	160.0
Physical sciences .....	17.5	18.9	18.6	18.4	18.9	18.6	19.6	20.9	20.4	20.9	18.5	19.2	18.8	20.2	19.2	18.8
Mathematics .....	8.8	10.3	10.6	10.9	11.0	11.5	12.2	12.8	13.3	14.0	13.5	12.8	13.3	13.3	12.9	12.8
Computer sciences .....	NA	NA	NA	0.1	0.3	0.4	0.6	0.8	1.3	1.8	2.0	2.5	2.6	2.9	2.9	3.7
Earth, atmospheric, and ocean sciences .....	2.7	3.2	3.2	3.1	3.5	3.8	3.8	4.3	4.5	4.7	4.1	4.3	4.6	5.0	5.4	5.4
Life sciences .....	25.3	29.6	28.3	29.8	32.9	34.6	35.0	40.5	41.4	43.3	36.5	38.6	41.6	43.6	44.4	43.5
Psychology .....	9.8	12.3	12.4	13.2	15.0	15.3	16.5	18.2	18.6	18.8	17.3	17.8	18.0	19.0	19.7	19.6
Social sciences .....	20.2	24.7	25.9	27.6	31.0	32.8	35.2	36.7	37.6	39.0	36.5	35.2	36.6	37.2	37.9	37.8
Engineering .....	10.5	11.4	11.7	12.1	12.7	14.3	15.6	17.2	18.6	18.3	16.8	16.8	18.0	17.5	18.3	18.4
<b>Research</b>																
All fields .....	82.3	90.6	85.0	90.0	100.7	104.7	115.2	144.0	151.6	156.6	150.1	153.5	164.7	168.1	172.5	178.7
Physical sciences .....	16.3	16.9	16.3	15.4	16.3	16.1	17.7	20.3	20.8	20.8	20.0	20.6	21.8	21.6	21.0	22.0
Mathematics .....	6.8	7.5	6.8	6.9	6.8	7.2	7.6	9.7	10.2	10.7	9.5	9.4	10.1	9.9	9.8	9.7
Computer sciences .....	NA	NA	NA	0.1	0.3	0.4	0.6	1.0	1.3	1.7	2.0	2.4	2.4	2.6	2.6	3.9
Earth, atmospheric, and ocean sciences .....	2.5	2.8	2.9	2.7	3.2	3.3	3.7	4.6	4.9	5.1	5.0	5.1	5.6	5.7	6.3	6.5
Life sciences .....	26.0	29.0	28.7	32.1	37.1	38.3	41.4	48.8	51.8	53.3	51.8	53.8	57.9	60.8	63.1	65.1
Psychology .....	7.3	8.5	7.7	8.3	9.9	10.5	10.7	14.3	14.3	15.7	14.9	15.6	16.1	17.2	18.2	18.9
Social sciences .....	14.3	16.9	13.8	14.7	17.6	17.8	20.9	28.5	30.5	31.1	29.3	28.1	29.8	30.9	31.4	31.9
Engineering .....	9.0	9.0	8.9	9.8	9.5	11.2	12.5	16.8	17.6	18.2	17.5	18.5	20.9	19.4	20.2	20.7
<b>Full-time faculty</b>																
<b>Teaching</b>																
All fields .....	88.6	103.4	104.7	107.9	117.7	122.3	127.9	141.0	143.6	148.1	134.0	134.0	138.1	143.1	144.2	140.0
Physical sciences .....	15.9	17.4	17.3	17.2	17.6	17.3	18.1	19.5	18.9	19.2	17.0	17.2	17.2	18.2	17.6	17.0
Mathematics .....	8.5	9.9	10.1	10.5	10.6	11.1	11.7	12.3	12.7	13.3	13.1	11.8	12.0	11.8	11.4	11.2
Computer sciences .....	NA	NA	NA	0.1	0.3	0.3	0.6	0.8	1.3	1.7	1.9	2.4	2.4	2.9	2.7	3.3
Earth, atmospheric, and ocean sciences .....	2.6	3.1	3.1	3.0	3.3	3.6	3.7	4.0	4.2	4.2	3.6	3.9	4.1	4.5	4.7	4.7
Life sciences .....	23.2	27.3	26.4	27.5	30.6	31.6	31.9	36.9	37.3	38.7	32.8	34.4	36.4	38.5	39.4	37.4
Psychology .....	9.1	11.4	11.6	12.0	13.7	14.1	15.1	16.7	16.9	17.5	15.4	16.0	16.1	16.9	17.4	16.0
Social sciences .....	19.1	23.3	24.7	26.1	29.5	30.6	32.1	34.3	34.7	36.0	34.1	32.3	32.9	33.5	33.9	33.4
Engineering .....	10.1	10.9	11.4	11.5	12.2	13.7	14.8	16.5	17.6	17.5	16.1	16.0	16.9	16.8	17.1	17.0
<b>Research</b>																
All fields .....	72.0	78.9	71.6	74.1	83.8	86.9	95.1	121.4	125.8	131.4	121.7	121.7	127.0	129.2	133.3	136.8
Physical sciences .....	13.0	13.4	12.4	11.7	12.5	12.5	13.4	16.1	16.0	16.4	14.4	14.2	14.9	14.7	14.5	15.6
Mathematics .....	6.6	7.1	6.4	6.4	6.5	6.9	7.3	9.1	9.8	10.2	9.1	8.4	8.9	8.5	8.3	8.4
Computer sciences .....	NA	NA	NA	0.0	0.2	0.3	0.5	0.8	1.2	1.6	1.8	2.2	2.2	2.4	2.3	3.3
Earth, atmospheric, and ocean sciences .....	2.1	2.5	2.5	2.2	2.6	2.6	2.9	3.6	4.0	3.8	3.6	3.7	3.9	4.0	4.6	4.7
Life sciences .....	21.8	24.1	22.9	24.7	28.7	29.6	31.9	38.3	39.0	41.0	38.4	39.5	41.2	42.5	44.6	46.1
Psychology .....	6.6	7.5	6.7	6.6	8.0	8.8	9.0	12.1	12.2	13.9	12.6	12.9	13.3	13.9	14.6	14.6
Social sciences .....	13.6	15.9	12.9	13.5	16.5	16.0	18.8	26.1	27.9	28.3	26.6	25.3	25.8	27.2	27.8	27.5
Engineering .....	8.2	8.3	8.0	8.9	8.8	10.2	11.4	15.2	15.7	16.2	15.1	15.5	16.7	15.9	16.6	16.8

NOTES: Research includes basic or applied research, development, or design. Faculty includes full, associate, and assistant professors and instructors. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations.

Appendix table 5-33  
**Estimates of academic S&E doctoral researchers and graduate research assistants, by degree field: 1973–2003**  
 (Thousands)

Field	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003
<b>All doctoral researchers and graduate research assistants</b>																
All fields .....	118.2	130.6	128.7	139.0	153.4	159.6	176.2	214.2	230.6	241.8	240.3	243.4	252.7	259.4	272.4	293.1
Physical sciences .....	22.6	23.3	23.1	23.2	24.9	25.2	28.0	31.9	33.2	33.0	32.3	32.4	33.1	32.9	32.8	35.4
Mathematics .....	7.5	8.1	7.6	7.7	7.6	8.0	8.6	10.8	11.5	12.1	10.9	10.9	11.5	11.2	11.2	11.5
Computer sciences.....	NA	NA	NA	0.9	1.4	1.8	2.7	3.8	4.6	5.3	5.8	6.3	6.4	7.5	9.0	11.4
Earth, atmospheric, and ocean sciences.....	5.0	5.6	6.1	6.3	6.7	6.8	7.4	8.2	9.1	9.5	9.7	9.8	9.9	9.9	10.5	11.1
Life sciences .....	35.4	40.3	41.7	47.5	53.4	54.8	59.3	69.0	74.9	79.1	79.8	83.0	86.5	89.7	94.2	100.7
Psychology.....	9.2	10.7	10.0	10.8	12.8	13.5	13.8	17.5	18.1	19.9	19.5	20.2	20.9	22.0	23.2	24.5
Social sciences.....	18.3	21.7	18.7	19.9	22.8	22.8	26.0	34.0	36.7	37.9	36.7	35.3	36.5	38.1	39.2	40.3
Engineering.....	19.4	20.0	20.5	22.7	23.9	26.8	30.4	39.0	42.2	45.0	45.5	45.6	47.8	48.1	52.4	58.2
<b>Doctoral researchers</b>																
All fields .....	82.3	90.6	85.0	90.0	100.7	104.7	115.2	144.0	151.6	156.6	150.1	153.5	164.7	168.1	172.5	178.7
Physical sciences.....	16.3	16.9	16.3	15.4	16.3	16.1	17.7	20.3	20.8	20.8	20.0	20.6	21.8	21.6	21.0	22.0
Mathematics .....	6.8	7.5	6.8	6.9	6.8	7.2	7.6	9.7	10.2	10.7	9.5	9.4	10.1	9.9	9.8	9.7
Computer sciences.....	NA	NA	NA	0.1	0.3	0.4	0.6	1.0	1.3	1.7	2.0	2.4	2.4	2.6	2.6	3.9
Earth, atmospheric, and ocean sciences.....	2.5	2.8	2.9	2.7	3.2	3.3	3.7	4.6	4.9	5.1	5.0	5.1	5.6	5.7	6.3	6.5
Life sciences .....	26.0	29.0	28.7	32.1	37.1	38.3	41.4	48.8	51.8	53.3	51.8	53.8	57.9	60.8	63.1	65.1
Psychology.....	7.3	8.5	7.7	8.3	9.9	10.5	10.7	14.3	14.3	15.7	14.9	15.6	16.1	17.2	18.2	18.9
Social sciences .....	14.3	16.9	13.8	14.7	17.6	17.8	20.9	28.5	30.5	31.1	29.3	28.1	29.8	30.9	31.4	31.9
Engineering.....	9.0	9.0	8.9	9.8	9.5	11.2	12.5	16.8	17.6	18.2	17.5	18.5	20.9	19.4	20.2	20.7
<b>Graduate research assistants</b>																
All fields .....	35.9	40.0	43.7	49.0	52.7	54.9	61.0	70.2	79.0	85.2	90.2	89.9	88.0	91.3	99.9	114.3
Physical sciences.....	6.3	6.4	6.8	7.8	8.6	9.1	10.3	11.6	12.4	12.2	12.3	11.8	11.3	11.3	11.8	13.5
Mathematics .....	0.7	0.6	0.8	0.8	0.8	0.8	1.0	1.1	1.3	1.4	1.4	1.5	1.4	1.3	1.4	1.8
Computer sciences.....	0.7	0.7	0.7	0.8	1.1	1.4	2.1	2.8	3.3	3.6	3.8	3.9	4.0	4.9	6.4	7.5
Earth, atmospheric, and ocean sciences.....	2.6	2.8	3.2	3.6	3.5	3.5	3.7	3.6	4.2	4.4	4.7	4.7	4.3	4.2	4.2	4.6
Life sciences .....	9.4	11.3	13.0	15.4	16.3	16.5	17.9	20.2	23.1	25.8	28.0	29.2	28.6	28.9	31.1	35.5
Psychology.....	1.9	2.2	2.3	2.5	2.9	3.0	3.1	3.2	3.8	4.2	4.6	4.6	4.8	4.8	5.0	5.6
Social sciences .....	4.0	4.8	4.9	5.2	5.2	5.0	5.1	5.5	6.2	6.8	7.4	7.2	6.7	7.2	7.8	8.4
Engineering.....	10.4	11.0	11.6	12.9	14.4	15.6	17.9	22.2	24.6	26.8	28.0	27.1	26.9	28.7	32.2	37.4

NOTES: Academic doctoral researchers are those reporting basic or applied research, development, or design as primary or secondary work activity. Graduate research assistants are full-time graduate students with research assistantships as primary mechanism of support. Detail may not add to total because of rounding.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations; and Survey of Graduate Students and Postdoctorates in Science and Engineering, special tabulations.

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Appendix table 5-34

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**Estimates of total academic S&E doctoral employment, S&E doctoral researchers, and S&E graduate research assistants, by Carnegie institution type and work activity: 1973–2003**

Institution type	All positions		Researchers		Research as primary activity		Research assistants	
	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution
<b>All universities and colleges</b>								
1973 .....	118.0	100.0	82.3	100.0	27.8	100.0	35.9	100.0
1975 .....	134.1	100.0	90.6	100.0	30.8	100.0	40.0	100.0
1977 .....	145.4	100.0	85.0	100.0	37.0	100.0	43.7	100.0
1979 .....	155.3	100.0	90.0	100.0	41.3	100.0	49.0	100.0
1981 .....	167.1	100.0	100.7	100.0	46.5	100.0	52.7	100.0
1983 .....	176.1	100.0	104.7	100.0	48.9	100.0	54.9	100.0
1985 .....	190.2	100.0	115.2	100.0	55.9	100.0	61.0	100.0
1987 .....	195.9	100.0	144.0	100.0	66.5	100.0	70.2	100.0
1989 .....	206.6	100.0	151.6	100.0	72.2	100.0	79.1	100.0
1991 .....	210.6	100.0	156.6	100.0	73.9	100.0	85.2	100.0
1993 .....	213.8	100.0	150.1	100.0	80.2	100.0	90.2	100.0
1995 .....	217.5	100.0	153.5	100.0	83.0	100.0	89.9	100.0
1997 .....	232.5	100.0	164.7	100.0	88.6	100.0	88.0	100.0
1999 .....	240.2	100.0	168.1	100.0	91.4	100.0	91.3	100.0
2001 .....	245.5	100.0	172.5	100.0	93.8	100.0	99.9	100.0
2003 .....	258.3	100.0	178.7	100.0	102.9	100.0	114.3	100.0
<b>Research universities</b>								
1973 .....	65.2	55.3	52.5	63.8	22.9	82.3	32.3	89.9
1975 .....	73.4	54.7	58.0	64.0	25.5	82.8	35.6	89.0
1977 .....	78.2	53.8	55.9	65.8	29.5	79.7	38.8	88.8
1979 .....	83.5	53.8	59.0	65.6	32.1	77.7	42.6	86.9
1981 .....	91.0	54.5	66.6	66.1	37.5	80.6	45.2	85.8
1983 .....	89.9	51.1	66.3	63.3	37.4	76.5	47.1	85.8
1985 .....	102.8	54.0	75.1	65.2	45.4	81.2	52.2	85.6
1987 .....	106.9	54.6	90.0	62.5	53.7	80.8	59.9	85.3
1989 .....	112.5	54.5	94.7	62.5	58.1	80.5	66.5	84.1
1991 .....	111.6	53.0	93.8	59.9	57.9	78.3	70.1	82.3
1993 .....	112.9	52.8	91.1	60.7	60.6	75.6	73.9	81.9
1995 .....	112.8	51.9	92.0	59.9	62.4	75.2	73.1	81.3
1997 .....	113.6	48.9	92.3	56.0	60.6	68.4	70.6	80.2
1999 .....	117.2	48.8	95.5	56.8	64.3	70.4	73.1	80.1
2001 .....	119.6	48.7	97.8	56.7	66.9	71.3	79.7	79.9
2003 .....	127.3	49.3	102.4	57.3	73.4	71.4	91.1	79.7
<b>Doctorate-granting institutions</b>								
1973 .....	14.0	11.9	9.9	12.0	1.7	6.2	3.1	8.6
1975 .....	15.9	11.9	10.6	11.7	1.8	5.8	3.7	9.3
1977 .....	17.2	11.8	9.4	11.1	2.4	6.5	4.0	9.2
1979 .....	17.2	11.1	9.2	10.2	2.6	6.3	4.4	9.0
1981 .....	18.8	11.3	10.5	10.4	2.6	5.6	5.0	9.5
1983 .....	19.5	11.1	10.7	10.2	2.8	5.7	5.3	9.7
1985 .....	21.2	11.1	12.4	10.8	3.5	6.3	5.8	9.5
1987 .....	22.2	11.3	16.2	11.3	4.4	6.6	6.7	9.5
1989 .....	23.5	11.4	16.8	11.1	4.9	6.8	7.9	10.0
1991 .....	24.9	11.8	18.4	11.7	5.9	8.0	9.2	10.8
1993 .....	24.2	11.3	17.4	11.6	6.7	8.4	9.9	11.0
1995 .....	25.0	11.5	17.7	11.5	7.2	8.7	9.9	11.0
1997 .....	25.8	11.1	19.1	11.6	8.2	9.3	10.3	11.7
1999 .....	26.3	10.9	19.3	11.5	8.2	9.0	10.7	11.7
2001 .....	26.3	10.7	18.8	10.9	7.7	8.2	12.2	12.3
2003 .....	26.9	10.4	18.9	10.6	8.6	8.4	14.3	12.5



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**Estimates of total academic S&E doctoral employment, S&E doctoral researchers, and S&E graduate research assistants, by Carnegie institution type and work activity: 1973–2003**

Institution type	All positions		Researchers		Research as primary activity		Research assistants	
	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution
<b>Comprehensive institutions</b>								
1973 .....	21.3	18.1	11.0	13.3	0.6	2.3	0.2	0.6
1975 .....	24.8	18.5	12.5	13.8	0.8	2.7	0.4	0.9
1977 .....	26.5	18.2	10.3	12.1	1.3	3.5	0.4	1.0
1979 .....	26.9	17.3	10.3	11.5	1.7	4.1	1.4	2.9
1981 .....	30.5	18.3	12.0	11.9	1.2	2.6	1.7	3.3
1983 .....	31.6	17.9	12.8	12.2	1.4	2.9	1.9	3.5
1985 .....	35.6	18.7	14.4	12.5	1.5	2.7	1.3	2.1
1987 .....	36.0	18.4	20.1	14.0	1.8	2.7	1.6	2.2
1989 .....	38.4	18.6	21.5	14.2	2.4	3.4	2.9	3.7
1991 .....	39.5	18.8	24.0	15.3	2.8	3.9	3.8	4.5
1993 .....	39.5	18.5	21.5	14.3	4.1	5.1	4.0	4.4
1995 .....	41.5	19.1	23.0	15.0	4.3	5.2	4.5	5.0
1997 .....	42.0	18.1	23.7	14.4	4.7	5.3	4.4	5.0
1999 .....	43.6	18.2	23.5	14.0	3.9	4.2	4.8	5.2
2001 .....	44.8	18.2	26.0	15.1	4.3	4.6	4.8	4.9
2003 .....	46.6	18.0	25.9	14.5	4.8	4.7	5.6	4.9
<b>Freestanding medical schools</b>								
1973 .....	3.3	2.8	2.6	3.1	1.5	5.3	0.3	0.8
1975 .....	4.3	3.2	3.2	3.5	2.1	6.8	0.3	0.8
1977 .....	4.9	3.4	3.5	4.1	2.5	6.8	0.3	0.7
1979 .....	5.9	3.8	4.2	4.7	3.1	7.5	0.4	0.8
1981 .....	7.2	4.3	5.3	5.3	4.1	8.8	0.5	0.9
1983 .....	7.0	4.0	5.1	4.9	3.9	8.0	0.5	0.9
1985 .....	8.3	4.4	5.9	5.1	4.5	8.1	0.7	1.1
1987 .....	9.0	4.6	7.2	5.0	5.3	8.0	1.1	1.6
1989 .....	9.7	4.7	7.6	5.0	5.6	7.8	1.6	2.0
1991 .....	9.6	4.6	7.8	5.0	6.0	8.1	1.9	2.2
1993 .....	10.8	5.1	8.2	5.5	6.4	8.0	2.2	2.4
1995 .....	11.2	5.1	8.4	5.5	6.7	8.1	2.4	2.7
1997 .....	9.8	4.2	7.4	4.5	5.9	6.7	2.5	2.8
1999 .....	11.9	5.0	9.2	5.5	7.5	8.2	2.6	2.8
2001 .....	12.6	5.1	9.5	5.5	7.7	8.2	2.9	2.9
2003 .....	12.7	4.9	9.6	5.4	7.8	7.6	3.2	2.8
<b>Liberal arts colleges</b>								
1973 .....	8.8	7.4	4.2	5.1	0.2	0.8	0.0	0.1
1975 .....	10.4	7.8	4.6	5.1	0.2	0.8	0.0	0.1
1977 .....	10.8	7.4	3.6	4.2	0.5	1.3	0.0	0.0
1979 .....	11.3	7.3	3.5	3.9	0.4	1.0	0.1	0.1
1981 .....	12.0	7.2	4.4	4.4	0.4	0.9	0.0	0.1
1983 .....	12.6	7.2	4.1	3.9	0.3	0.6	0.0	0.1
1985 .....	14.0	7.4	5.4	4.7	0.4	0.7	0.0	0.1
1987 .....	14.6	7.5	7.7	5.4	0.6	0.9	0.0	0.0
1989 .....	15.3	7.4	8.6	5.7	0.5	0.6	0.1	0.1
1991 .....	15.8	7.5	9.0	5.7	0.4	0.5	0.0	0.1
1993 .....	16.0	7.5	8.0	5.3	1.0	1.2	0.1	0.1
1995 .....	15.8	7.3	7.9	5.2	0.7	0.9	0.1	0.1
1997 .....	17.3	7.4	9.3	5.6	1.1	1.2	0.0	0.0
1999 .....	18.5	7.7	9.1	5.4	0.9	1.0	0.1	0.1
2001 .....	18.6	7.6	9.5	5.5	0.9	1.0	0.1	0.1
2003 .....	19.1	7.4	9.8	5.5	1.3	1.3	0.1	0.1

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**Estimates of total academic S&E doctoral employment, S&E doctoral researchers, and S&E graduate research assistants, by Carnegie institution type and work activity: 1973–2003**

Institution type	All positions		Researchers		Research as primary activity		Research assistants	
	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution
All others								
1973 .....	5.4	4.5	2.2	2.7	0.9	3.1	0.0	0.1
1975 .....	5.3	4.0	1.7	1.8	0.3	1.1	0.0	0.1
1977 .....	7.8	5.4	2.4	2.8	0.9	2.3	0.1	0.1
1979 .....	10.5	6.8	3.8	4.3	1.4	3.3	0.1	0.1
1981 .....	7.6	4.5	2.0	2.0	0.7	1.5	0.2	0.4
1983 .....	15.5	8.8	5.8	5.5	3.0	6.2	0.1	0.2
1985 .....	8.3	4.4	2.0	1.8	0.7	1.3	0.9	1.5
1987 .....	7.2	3.7	2.7	1.9	0.6	1.0	0.9	1.3
1989 .....	7.2	3.5	2.5	1.6	0.7	0.9	0.1	0.1
1991 .....	9.2	4.4	3.6	2.3	0.9	1.2	0.1	0.1
1993 .....	10.4	4.9	4.0	2.6	1.4	1.8	0.1	0.1
1995 .....	11.2	5.1	4.4	2.9	1.8	2.2	0.1	0.1
1997 .....	24.0	10.3	12.9	7.9	8.1	9.2	0.1	0.1
1999 .....	22.7	9.5	11.4	6.8	6.6	7.2	0.1	0.1
2001 .....	23.6	9.6	10.9	6.3	6.3	6.7	0.1	0.1
2003 .....	25.6	9.9	12.1	6.8	6.9	6.7	0.2	0.2

NOTES: Researchers are those reporting basic or applied research, development, or design as either primary or secondary work activity. Graduate research assistants are full-time graduate students with research assistantships as primary mechanism of support. Institutions designated by 1994 Carnegie classification code. For information on these institutional categories, see Carnegie Foundation for the Advancement of Teaching, *A Classification of Institutions of Higher Education*, Princeton University Press (1994), and chapter 2 sidebar, "Carnegie Classification of Academic Institutions." Freestanding schools of engineering and technology included under comprehensive institutions. Employment at institutions without Carnegie code or with unknown administrative control included under "all others." Detail may not add to total because of rounding.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations; and Survey of Graduate Students and Postdoctorates in Science and Engineering, special tabulations.

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**Estimates of academic S&E doctoral researchers, by type of position and work activity: 1973–2003**

Position	All academic employment		Researchers		Research as primary activity	
	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution
<b>All positions</b>						
1973 .....	118.0	100.0	82.3	100.0	27.8	100.0
1975 .....	134.1	100.0	90.6	100.0	30.8	100.0
1977 .....	145.4	100.0	85.0	100.0	37.0	100.0
1979 .....	155.3	100.0	90.0	100.0	41.3	100.0
1981 .....	167.1	100.0	100.7	100.0	46.5	100.0
1983 .....	176.1	100.0	104.7	100.0	48.9	100.0
1985 .....	190.2	100.0	115.2	100.0	55.9	100.0
1987 .....	195.9	100.0	144.0	100.0	66.5	100.0
1989 .....	206.6	100.0	151.6	100.0	72.2	100.0
1991 .....	210.6	100.0	156.6	100.0	73.9	100.0
1993 .....	213.8	100.0	150.1	100.0	80.2	100.0
1995 .....	217.5	100.0	153.5	100.0	83.0	100.0
1997 .....	232.5	100.0	164.7	100.0	88.6	100.0
1999 .....	240.2	100.0	168.1	100.0	91.4	100.0
2001 .....	245.5	100.0	172.5	100.0	93.8	100.0
2003 .....	258.3	100.0	178.7	100.0	102.9	100.0
<b>Full-time faculty</b>						
1973 .....	103.3	87.6	72.0	87.5	19.8	71.3
1975 .....	116.4	86.8	78.9	87.1	21.4	69.5
1977 .....	125.6	86.4	71.6	84.2	25.8	69.7
1979 .....	131.2	84.5	74.1	82.3	28.1	68.0
1981 .....	141.9	84.9	83.8	83.2	31.8	68.4
1983 .....	148.4	84.3	86.9	83.0	33.6	68.7
1985 .....	156.9	82.5	95.1	82.6	39.5	70.7
1987 .....	164.4	83.9	121.4	84.3	48.6	73.1
1989 .....	169.8	82.2	125.8	83.0	51.6	71.5
1991 .....	173.1	82.2	131.4	83.9	53.8	72.8
1993 .....	172.4	80.6	121.7	81.1	56.9	70.9
1995 .....	171.4	78.8	121.7	79.3	56.6	68.2
1997 .....	178.4	76.7	127.0	77.1	58.0	65.5
1999 .....	184.0	76.6	129.2	76.9	60.4	66.1
2001 .....	187.4	76.3	133.3	77.3	62.8	67.0
2003 .....	194.1	75.2	136.8	76.5	71.5	69.5
<b>Postdocs</b>						
1973 .....	4.2	3.5	4.0	4.9	3.8	13.8
1975 .....	6.2	4.6	5.9	6.5	5.7	18.5
1977 .....	7.6	5.2	7.1	8.4	6.8	18.4
1979 .....	8.1	5.2	7.4	8.2	6.9	16.7
1981 .....	8.5	5.1	8.0	7.9	7.7	16.6
1983 .....	8.3	4.7	7.4	7.1	7.1	14.5
1985 .....	8.7	4.6	7.8	6.8	7.5	13.4
1987 .....	9.3	4.7	8.9	6.2	8.4	12.6
1989 .....	11.5	5.6	10.8	7.1	10.3	14.3
1991 .....	9.9	4.7	9.4	6.0	9.2	12.4
1993 .....	13.3	6.2	13.3	8.9	12.7	15.8
1995 .....	16.8	7.7	16.1	10.5	15.1	18.2
1997 .....	18.9	8.1	18.0	10.9	16.7	18.8
1999 .....	18.5	7.7	17.9	10.6	16.6	18.2
2001 .....	17.5	7.1	16.6	9.6	15.6	16.6
2003 .....	15.8	6.1	15.3	8.6	14.1	13.7

Appendix table 5-35

(Page 2 of 2)

**Estimates of academic S&E doctoral researchers, by type of position and work activity: 1973–2003**

Position	All academic employment		Researchers		Research as primary activity	
	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution
Other						
1973 .....	10.5	8.9	6.3	7.6	4.1	14.9
1975 .....	11.5	8.6	5.8	6.4	3.8	12.3
1977 .....	12.2	8.4	6.3	7.4	4.4	11.8
1979 .....	16.0	10.3	8.5	9.5	6.3	15.2
1981 .....	16.6	9.9	8.9	8.8	6.9	14.9
1983 .....	19.4	11.0	10.3	9.9	8.1	16.6
1985 .....	24.6	13.0	12.2	10.6	8.9	16.0
1987 .....	22.1	11.3	13.7	9.5	9.6	14.4
1989 .....	25.4	12.3	15.0	9.9	10.3	14.3
1991 .....	27.6	13.1	15.7	10.0	11.0	14.8
1993 .....	28.0	13.1	15.1	10.0	10.7	13.3
1995 .....	29.3	13.5	15.7	10.2	11.4	13.7
1997 .....	35.3	15.2	19.8	12.0	13.8	15.6
1999 .....	37.6	15.6	21.0	12.5	14.3	15.7
2001 .....	40.7	16.6	22.6	13.1	15.4	16.5
2003 .....	48.4	18.7	26.6	14.9	17.3	16.8

NOTES: Researchers are those reporting basic or applied research, development, or design as either primary or secondary work activity. Full-time faculty includes full, associate, and assistant professors plus instructors. Other positions include full-time nonfaculty positions such as research associates, adjunct positions, lecturers, administrative positions, and part-time positions of all kinds. Detail may not add to total because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations.

*Science and Engineering Indicators 2006*

Appendix table 5-36

(Page 1 of 3)

**Estimates of academic S&E doctoral researchers and graduate research assistants, by degree field and work activity: 1973–2003**

Field	All academic employment		Researchers		Research as primary activity		Research assistants	
	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution
<b>All fields</b>								
1973 .....	118.0	100.0	82.3	100.0	27.8	100.0	35.9	100.0
1975 .....	134.1	100.0	90.6	100.0	30.8	100.0	40.0	100.0
1977 .....	145.4	100.0	85.0	100.0	37.0	100.0	43.7	100.0
1979 .....	155.3	100.0	90.0	100.0	41.3	100.0	49.0	100.0
1981 .....	167.1	100.0	100.7	100.0	46.5	100.0	52.7	100.0
1983 .....	176.1	100.0	104.7	100.0	48.9	100.0	54.9	100.0
1985 .....	190.2	100.0	115.2	100.0	55.9	100.0	61.0	100.0
1987 .....	195.9	100.0	144.0	100.0	66.5	100.0	70.2	100.0
1989 .....	206.6	100.0	151.6	100.0	72.2	100.0	79.0	100.0
1991 .....	210.6	100.0	156.6	100.0	73.9	100.0	85.2	100.0
1993 .....	213.8	100.0	150.1	100.0	80.2	100.0	90.2	100.0
1995 .....	217.5	100.0	153.5	100.0	83.0	100.0	89.9	100.0
1997 .....	232.5	100.0	164.7	100.0	88.6	100.0	88.0	100.0
1999 .....	240.2	100.0	168.1	100.0	91.4	100.0	91.3	100.0
2001 .....	245.5	100.0	172.5	100.0	93.8	100.0	99.9	100.0
2003 .....	258.3	100.0	178.7	100.0	102.9	100.0	114.3	100.0
<b>Physical sciences</b>								
1973 .....	22.1	18.7	16.3	19.8	5.9	21.3	6.3	17.5
1975 .....	23.6	17.6	16.9	18.7	6.4	20.8	6.4	16.1
1977 .....	25.0	17.2	16.3	19.2	7.9	21.3	6.8	15.6
1979 .....	24.6	15.9	15.4	17.1	7.5	18.3	7.8	15.9
1981 .....	25.3	15.2	16.3	16.2	8.0	17.1	8.6	16.3
1983 .....	25.1	14.3	16.1	15.3	7.7	15.9	9.1	16.7
1985 .....	27.0	14.2	17.7	15.4	9.4	16.8	10.3	16.9
1987 .....	27.2	13.9	20.3	14.1	10.2	15.3	11.6	16.5
1989 .....	27.7	13.4	20.8	13.7	10.9	15.1	12.4	15.7
1991 .....	27.7	13.1	20.8	13.3	10.6	14.4	12.2	14.4
1993 .....	28.6	13.4	20.0	13.3	12.0	15.0	12.3	13.6
1995 .....	29.4	13.5	20.6	13.4	12.6	15.2	11.8	13.1
1997 .....	30.2	13.0	21.8	13.2	12.7	14.4	11.3	12.8
1999 .....	30.9	12.9	21.6	12.8	12.2	13.3	11.3	12.3
2001 .....	30.4	12.4	21.0	12.2	11.9	12.7	11.8	11.8
2003 .....	31.5	12.2	22.0	12.3	12.6	12.2	13.5	11.8
<b>Mathematics</b>								
1973 .....	9.7	8.2	6.8	8.3	1.5	5.4	0.7	1.9
1975 .....	11.0	8.2	7.5	8.2	1.5	4.7	0.6	1.6
1977 .....	11.7	8.0	6.8	8.0	1.8	4.9	0.8	1.8
1979 .....	12.2	7.9	6.9	7.7	2.1	5.0	0.8	1.7
1981 .....	12.4	7.4	6.8	6.8	1.9	4.2	0.8	1.4
1983 .....	12.9	7.3	7.2	6.9	2.0	4.0	0.8	1.5
1985 .....	13.6	7.1	7.6	6.6	2.7	4.8	1.0	1.6
1987 .....	13.8	7.1	9.7	6.7	3.2	4.7	1.1	1.6
1989 .....	14.5	7.0	10.2	6.8	3.5	4.8	1.3	1.6
1991 .....	15.2	7.2	10.7	6.9	3.5	4.8	1.4	1.6
1993 .....	15.5	7.2	9.5	6.3	3.4	4.2	1.4	1.6
1995 .....	14.6	6.7	9.4	6.1	3.3	3.9	1.5	1.6
1997 .....	15.6	6.7	10.1	6.2	3.5	4.0	1.4	1.6
1999 .....	15.2	6.3	9.9	5.9	2.9	3.2	1.3	1.4
2001 .....	14.9	6.1	9.8	5.7	3.3	3.5	1.4	1.4
2003 .....	15.4	6.0	9.7	5.4	3.8	3.7	1.8	1.6
<b>Computer sciences</b>								
1973 .....	NA	NA	NA	NA	NA	NA	0.7	1.8
1975 .....	NA	NA	NA	NA	NA	NA	0.7	1.9
1977 .....	NA	NA	NA	NA	NA	NA	0.7	1.7
1979 .....	0.1	0.1	0.1	0.1	0.0	0.1	0.8	1.7
1981 .....	0.3	0.2	0.3	0.3	0.1	0.2	1.1	2.1
1983 .....	0.5	0.3	0.4	0.3	0.2	0.4	1.4	2.5
1985 .....	0.8	0.4	0.6	0.5	0.4	0.7	2.1	3.4

Appendix table 5-36

(Page 2 of 3)

**Estimates of academic S&E doctoral researchers and graduate research assistants, by degree field and work activity: 1973–2003**

Field	All academic employment		Researchers		Research as primary activity		Research assistants	
	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution
1987 .....	1.1	0.5	1.0	0.7	0.7	1.0	2.8	4.0
1989 .....	1.5	0.7	1.3	0.9	0.8	1.1	3.3	4.2
1991 .....	2.0	0.9	1.7	1.1	1.1	1.4	3.6	4.2
1993 .....	2.5	1.2	2.0	1.3	0.9	1.1	3.8	4.2
1995 .....	3.1	1.4	2.4	1.6	1.0	1.3	3.9	4.4
1997 .....	3.3	1.4	2.4	1.5	1.1	1.2	4.0	4.6
1999 .....	3.7	1.5	2.6	1.6	1.1	1.2	4.9	5.4
2001 .....	3.8	1.5	2.6	1.5	1.3	1.4	6.4	6.4
2003 .....	5.2	2.0	3.9	2.2	1.9	1.8	7.5	6.6
<b>Earth, atmospheric, and ocean sciences</b>								
1973 .....	3.4	2.9	2.5	3.0	0.7	2.5	2.6	7.1
1975 .....	3.9	2.9	2.8	3.1	0.8	2.7	2.8	7.1
1977 .....	4.2	2.9	2.9	3.4	1.0	2.7	3.2	7.4
1979 .....	4.2	2.7	2.7	3.0	1.0	2.4	3.6	7.3
1981 .....	4.6	2.7	3.2	3.2	1.4	2.9	3.5	6.6
1983 .....	4.8	2.7	3.3	3.1	1.5	3.0	3.5	6.4
1985 .....	5.2	2.8	3.7	3.2	1.6	2.9	3.7	6.1
1987 .....	5.6	2.8	4.6	3.2	2.1	3.2	3.6	5.2
1989 .....	5.9	2.8	4.9	3.2	2.4	3.3	4.2	5.3
1991 .....	6.0	2.9	5.1	3.3	2.5	3.4	4.4	5.2
1993 .....	6.4	3.0	5.0	3.3	2.7	3.4	4.7	5.2
1995 .....	6.4	3.0	5.1	3.3	2.6	3.1	4.7	5.2
1997 .....	7.3	3.2	5.6	3.4	2.9	3.2	4.3	4.9
1999 .....	7.8	3.2	5.6	3.4	2.9	3.2	4.2	4.7
2001 .....	8.2	3.3	6.3	3.6	3.1	3.3	4.2	4.2
2003 .....	8.8	3.4	6.5	3.7	3.6	3.5	4.6	4.0
<b>Life sciences</b>								
1973 .....	34.9	29.5	26.0	31.6	12.8	46.0	9.4	26.2
1975 .....	39.4	29.4	29.0	32.0	14.5	47.0	11.3	28.2
1977 .....	42.6	29.3	28.7	33.7	16.6	44.7	13.0	29.8
1979 .....	47.0	30.3	32.1	35.6	19.7	47.6	15.4	31.3
1981 .....	51.3	30.7	37.1	36.8	23.2	49.9	16.3	30.9
1983 .....	54.8	31.1	38.3	36.6	24.3	49.7	16.5	30.0
1985 .....	58.7	30.8	41.4	35.9	27.1	48.4	17.9	29.3
1987 .....	61.2	31.3	48.8	33.9	31.5	47.3	20.2	28.7
1989 .....	64.8	31.3	51.8	34.1	33.8	46.7	23.1	29.3
1991 .....	66.9	31.8	53.3	34.1	34.5	46.7	25.8	30.3
1993 .....	68.2	31.9	51.8	34.5	36.0	44.9	28.0	31.1
1995 .....	71.6	32.9	53.8	35.1	37.7	45.3	29.2	32.5
1997 .....	77.3	33.2	57.9	35.2	40.5	45.7	28.6	32.5
1999 .....	81.9	34.1	60.8	36.2	43.2	47.2	28.9	31.7
2001 .....	84.3	34.3	63.1	36.6	43.7	46.6	31.1	31.2
2003 .....	89.2	34.5	65.1	36.4	46.4	45.1	35.5	31.1
<b>Psychology</b>								
1973 .....	12.2	10.4	7.3	8.9	2.0	7.3	1.9	5.4
1975 .....	14.8	11.0	8.5	9.4	2.2	7.1	2.2	5.5
1977 .....	16.2	11.1	7.7	9.1	2.8	7.5	2.3	5.3
1979 .....	17.7	11.4	8.3	9.2	3.4	8.3	2.5	5.2
1981 .....	20.1	12.0	9.9	9.8	4.1	8.8	2.9	5.5
1983 .....	21.0	11.9	10.5	10.0	4.4	8.9	3.0	5.4
1985 .....	23.1	12.1	10.7	9.3	4.6	8.2	3.1	5.0
1987 .....	23.7	12.1	14.3	9.9	5.2	7.8	3.2	4.6
1989 .....	25.0	12.1	14.3	9.5	5.9	8.2	3.8	4.9
1991 .....	25.2	12.0	15.7	10.0	6.2	8.4	4.2	5.0
1993 .....	25.0	11.7	14.9	9.9	6.7	8.3	4.6	5.1
1995 .....	26.1	12.0	15.6	10.1	7.4	8.9	4.6	5.1
1997 .....	27.3	11.7	16.1	9.8	8.0	9.0	4.8	5.4
1999 .....	29.0	12.1	17.2	10.2	8.6	9.5	4.8	5.3
2001 .....	30.4	12.4	18.2	10.5	8.7	9.3	5.0	5.0
2003 .....	31.3	12.1	18.9	10.6	10.0	9.7	5.6	4.9

Appendix table 5-36

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**Estimates of academic S&E doctoral researchers and graduate research assistants, by degree field and work activity: 1973–2003**

Field	All academic employment		Researchers		Research as primary activity		Research assistants	
	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution
<b>Social sciences</b>								
1973 .....	23.4	19.8	14.3	17.4	2.8	10.2	4.0	11.1
1975 .....	28.0	20.9	16.9	18.6	3.2	10.2	4.8	12.0
1977 .....	31.1	21.4	13.8	16.2	4.1	11.1	4.9	11.2
1979 .....	33.6	21.6	14.7	16.3	4.2	10.1	5.2	10.6
1981 .....	36.9	22.1	17.6	17.5	4.5	9.7	5.2	9.8
1983 .....	38.8	22.0	17.8	17.0	4.9	10.1	5.0	9.2
1985 .....	41.9	22.0	20.9	18.2	5.7	10.2	5.1	8.3
1987 .....	42.1	21.5	28.5	19.8	7.5	11.3	5.5	7.8
1989 .....	44.5	21.5	30.5	20.1	8.2	11.3	6.2	7.9
1991 .....	44.8	21.3	31.1	19.8	8.4	11.3	6.8	8.0
1993 .....	44.4	20.8	29.3	19.5	10.7	13.4	7.4	8.2
1995 .....	42.5	19.5	28.1	18.3	9.8	11.8	7.2	8.0
1997 .....	44.9	19.3	29.8	18.1	9.8	11.1	6.7	7.7
1999 .....	46.2	19.2	30.9	18.4	11.1	12.1	7.2	7.9
2001 .....	46.9	19.1	31.4	18.2	11.7	12.4	7.8	7.8
2003 .....	48.6	18.8	31.9	17.9	13.0	12.7	8.4	7.3
<b>Engineering</b>								
1973 .....	12.4	10.5	9.0	11.0	2.1	7.4	10.4	29.0
1975 .....	13.4	10.0	9.0	10.0	2.3	7.5	11.0	27.6
1977 .....	14.8	10.1	8.9	10.5	2.9	7.9	11.6	26.6
1979 .....	15.8	10.2	9.8	10.9	3.4	8.2	12.9	26.3
1981 .....	16.1	9.7	9.5	9.5	3.3	7.2	14.4	27.3
1983 .....	18.1	10.3	11.2	10.7	3.9	7.9	15.6	28.3
1985 .....	19.9	10.5	12.5	10.8	4.4	7.9	17.9	29.4
1987 .....	21.2	10.8	16.8	11.6	6.2	9.3	22.2	31.6
1989 .....	22.8	11.0	17.6	11.6	6.9	9.5	24.6	31.1
1991 .....	22.8	10.8	18.2	11.6	7.2	9.7	26.8	31.5
1993 .....	23.1	10.8	17.5	11.7	7.9	9.8	28.0	31.0
1995 .....	23.8	10.9	18.5	12.1	8.7	10.5	27.1	30.1
1997 .....	26.6	11.4	20.9	12.7	10.1	11.4	26.9	30.6
1999 .....	25.5	10.6	19.4	11.6	9.4	10.3	28.7	31.4
2001 .....	26.6	10.8	20.2	11.7	10.1	10.7	32.2	32.2
2003 .....	28.3	10.9	20.7	11.6	11.6	11.3	37.4	32.7

NA = not available

NOTES: Researchers are those reporting basic or applied research, development, or design as either primary or secondary work activity. Graduate research assistants are full-time students with research assistantships as primary mechanism of support. Detail may not add to total because of rounding.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations; and Survey of Graduate Students and Postdoctorates in Science and Engineering, special tabulations.

**Academic S&E doctorate holders with federal support, by degree field, type of position, and work activity: 1973–2003**

(Percent)

Field, position, and work activity	1973	1975	1977	1979	1981	1983	1985 <sup>a</sup>	1987	1989	1991	1993 <sup>a</sup>	1995 <sup>a</sup>	1997 <sup>a</sup>	1999	2001	2003
<b>All fields</b>																
Research as primary activity.....	78.5	79.0	75.4	75.2	80.6	79.9	73.5	79.9	79.8	80.7	67.2	69.1	66.9	73.9	73.9	72.0
Research as secondary activity.....	38.3	35.6	37.5	35.3	35.3	40.5	28.9	38.7	40.7	40.0	23.9	27.5	26.4	36.6	36.2	35.8
Full-time faculty.....	42.0	39.6	38.2	36.2	38.8	41.7	34.3	45.6	46.6	48.0	32.9	35.7	34.7	43.1	43.2	44.6
Full-time other.....	60.2	58.8	68.1	58.3	58.5	59.4	49.8	60.6	60.9	58.8	42.5	43.1	47.0	49.9	49.1	47.9
Postdocs.....	87.7	86.3	86.0	82.1	86.3	82.2	78.5	82.1	83.5	84.5	83.1	80.1	74.1	80.3	74.3	78.1
<b>Physical sciences</b>																
Research as primary activity.....	83.1	82.4	79.2	79.4	88.9	84.7	79.5	86.2	87.3	88.3	75.3	77.4	75.6	83.0	83.8	85.3
Research as secondary activity.....	41.7	39.4	39.2	37.7	42.5	49.3	34.4	48.9	52.6	49.5	35.4	38.3	34.8	53.1	46.3	45.5
Full-time faculty.....	43.7	39.3	39.9	38.2	44.6	46.5	37.4	49.9	53.5	52.9	37.7	41.6	39.2	50.4	47.9	52.0
Full-time other.....	42.2	64.1	75.9	72.4	70.3	72.1	66.1	72.6	72.1	72.0	61.1	52.8	63.8	68.8	64.1	61.1
Postdocs.....	68.3	90.2	89.4	81.9	90.2	87.3	84.4	90.5	86.8	87.6	87.1	84.6	80.4	82.5	82.4	75.8
<b>Mathematics</b>																
Research as primary activity.....	52.7	50.1	42.3	44.0	52.7	71.0	51.5	66.8	68.1	74.5	40.7	45.9	48.2	60.6	59.5	59.2
Research as secondary activity.....	26.6	18.2	20.4	20.8	21.6	32.6	19.8	23.8	28.4	26.3	16.5	17.0	15.5	25.4	32.9	25.2
Full-time faculty.....	26.8	18.8	18.0	20.4	21.0	29.9	21.4	30.4	32.8	34.0	18.3	21.1	19.4	28.3	30.1	31.0
Full-time other.....	33.6	33.5	46.9	54.6	30.1	43.4	29.1	47.8	52.8	67.2	40.6	34.6	43.9	38.4	48.0	24.1
Postdocs.....	48.8	35.8	55.1	43.2	56.3	66.3	48.5	34.4	53.4	80.4	—	45.3	35.6	54.7	61.9	65.9
<b>Computer sciences</b>																
Research as primary activity.....	NA	NA	NA	34.8	29.7	44.6	45.0	61.7	52.4	49.4	39.9	43.2	41.1	55.6	47.2	48.9
Research as secondary activity.....	NA	NA	NA	58.3	19.4	84.6	57.2	66.3	74.9	71.2	64.7	75.8	59.4	85.0	82.4	77.8
Full-time faculty.....	NA	NA	NA	23.3	35.8	30.1	19.7	58.7	31.4	27.7	29.0	28.6	43.3	49.5	44.1	44.2
Full-time other.....	NA	NA	NA	—	25.0	67.9	80.6	79.7	47.1	67.7	59.1	62.9	63.1	74.9	47.2	47.7
Postdocs.....	NA	NA	NA	57.1	100.0	100.0	0.0	88.2	100.0	—	100.0	78.0	97.2	100.0	100.0	95.8
<b>Earth, atmospheric, and ocean sciences</b>																
Research as primary activity.....	88.4	82.0	82.0	78.4	89.0	86.3	85.7	88.4	90.4	89.9	81.9	85.7	84.2	79.8	84.8	81.2
Research as secondary activity.....	39.0	41.4	37.9	46.3	41.3	47.8	42.0	49.2	52.9	55.5	37.1	38.9	41.2	63.2	60.7	60.7
Full-time faculty.....	42.2	43.0	37.8	40.0	45.1	50.3	44.8	54.6	60.2	61.4	45.5	48.6	52.3	61.7	62.3	62.9
Full-time other.....	58.7	79.9	80.3	75.2	68.6	78.9	78.4	79.5	80.9	90.7	67.9	72.0	71.0	74.5	70.6	63.9
Postdocs.....	87.5	75.0	95.2	96.9	91.9	90.7	96.6	91.7	90.6	73.4	83.3	91.0	85.8	74.3	91.8	91.4
<b>Life sciences</b>																
Research as primary activity.....	83.4	85.0	83.0	82.2	85.4	84.6	80.0	87.0	86.7	86.5	76.2	75.3	73.1	79.9	78.9	76.8
Research as secondary activity.....	48.8	47.4	50.1	44.2	45.9	51.4	39.2	50.6	50.9	50.8	34.8	36.4	34.8	45.1	43.7	46.2
Full-time faculty.....	57.1	56.4	54.9	51.4	55.6	57.8	50.5	63.4	62.1	63.7	48.6	49.0	47.6	55.1	55.5	56.9
Full-time other.....	68.1	70.9	72.1	64.8	68.5	68.5	58.4	71.0	74.1	67.2	45.8	46.3	46.2	49.9	47.4	47.7
Postdocs.....	88.8	87.7	88.4	84.6	86.0	82.6	78.3	82.1	86.8	84.4	84.1	81.9	77.7	82.6	77.6	81.3
<b>Psychology</b>																
Research as primary activity.....	72.0	70.1	70.2	72.5	77.3	70.4	66.8	70.5	73.0	70.8	63.8	62.4	65.0	68.2	72.2	68.8
Research as secondary activity.....	35.2	34.0	29.0	24.9	23.8	26.2	22.2	23.9	29.2	27.0	15.9	19.0	16.7	24.8	26.3	25.2
Full-time faculty.....	36.4	34.1	30.6	28.3	27.5	27.3	23.6	28.3	34.0	32.9	25.2	25.1	24.9	31.5	32.9	34.2
Full-time other.....	48.1	41.6	65.4	46.3	52.3	40.3	32.7	37.1	39.6	36.3	23.8	30.7	28.3	30.4	38.2	35.5
Postdocs.....	84.9	86.4	82.5	86.8	92.0	84.2	70.8	88.1	66.3	95.8	71.7	71.4	71.8	71.8	59.2	71.8



**Academic S&E doctorate holders with federal support, by degree field, type of position, and work activity: 1973–2003**

(Percent)

Field, position, and work activity	1973	1975	1977	1979	1981	1983	1985 <sup>a</sup>	1987	1989	1991	1993 <sup>a</sup>	1995 <sup>a</sup>	1997 <sup>a</sup>	1999	2001	2003
Social sciences.....	25.5	23.7	23.3	20.4	21.8	23.7	17.2	27.2	27.7	28.4	14.2	16.1	15.2	22.9	21.5	21.9
Research as primary activity.....	61.4	61.1	51.4	53.6	53.8	55.8	44.5	50.3	49.8	51.2	33.4	37.2	30.1	44.3	43.4	42.6
Research as secondary activity.....	21.7	20.3	23.4	21.5	18.6	24.3	14.9	24.9	25.8	25.4	8.3	12.2	11.6	18.0	17.0	16.4
Full-time faculty .....	25.2	23.7	22.6	19.0	21.2	22.5	16.2	27.1	27.4	27.8	13.4	15.4	14.8	22.5	21.3	21.8
Full-time other.....	36.3	31.6	35.3	37.3	32.7	34.0	26.6	36.2	33.8	32.7	22.1	22.6	22.7	29.3	29.4	28.7
Postdocs .....	57.6	54.6	54.7	84.9	47.9	64.6	54.7	27.4	57.6	52.5	88.1	68.5	33.9	65.0	35.8	41.8
Engineering .....	53.5	50.6	51.1	49.1	51.0	54.7	43.0	57.1	56.3	63.2	42.6	49.9	49.7	56.9	56.8	57.3
Research as primary activity.....	80.6	81.4	78.0	72.4	80.2	83.9	74.5	82.0	78.1	86.5	69.4	74.5	70.8	75.7	77.2	74.8
Research as secondary activity.....	51.9	50.5	53.7	52.8	56.8	54.4	38.0	54.8	57.1	58.9	34.3	43.1	41.0	51.0	52.6	52.0
Full-time faculty .....	52.5	49.9	49.3	49.5	49.8	54.7	42.2	56.0	55.2	62.9	40.9	48.4	46.4	55.2	56.7	55.9
Full-time other.....	65.5	67.3	86.6	53.0	60.7	63.1	44.3	76.4	71.2	66.8	59.5	56.7	67.9	64.2	61.8	67.5
Postdocs .....	84.7	84.3	74.7	51.1	98.9	82.7	91.4	74.8	76.0	90.0	65.7	72.7	62.1	80.4	56.8	73.8

— = too few cases; NA = not available

<sup>a</sup>Not comparable with other years and understates degree of federal support by asking whether work performed during week of April 15 was supported by government. In other years, question pertains to work conducted over course of year.

NOTES: Full-time faculty includes full, associate, and assistant professors plus instructors. Other full-time positions include nonfaculty appointments such as research associates, adjunct appointments, lecturers, and administrative positions. Research includes basic or applied research, development, and design.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations.

*Science and Engineering Indicators 2006*

Appendix table 5-38

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**S&E doctorate holders employed in academia with federal support, by degree field, years since doctorate, and type of position: 1973–2003**

(Percent)

Field	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full time	Postdocs	All positions	Full-time faculty	Other full time	Postdocs
<b>All fields</b>								
1973 .....	44.1	32.9	72.5	87.1	44.6	42.4	65.8	91.1
1975 .....	44.2	31.1	58.3	87.8	42.5	40.0	66.2	83.2
1977 .....	44.5	28.8	61.2	87.0	42.2	37.8	71.6	85.3
1979 .....	47.2	29.6	58.9	86.6	43.0	37.4	67.3	83.1
1981 .....	51.0	30.8	63.1	87.9	46.5	41.2	64.8	86.9
1983 .....	50.2	33.7	59.0	86.1	50.1	45.3	68.1	84.8
1985 <sup>a</sup> .....	43.2	23.9	59.3	79.1	42.4	36.2	63.3	81.0
1987 .....	53.3	36.7	56.1	82.0	54.8	49.7	71.6	84.2
1989 .....	57.2	38.7	58.7	84.7	57.8	53.5	70.0	89.1
1991 .....	53.6	38.3	56.6	83.8	57.4	53.4	66.6	88.7
1993 <sup>a</sup> .....	43.5	20.8	43.7	80.7	41.1	34.0	46.8	87.3
1995 <sup>a</sup> .....	47.0	23.2	40.1	78.5	43.9	36.1	52.0	86.0
1997 <sup>a</sup> .....	45.3	21.0	42.4	74.1	41.9	33.7	49.6	78.5
1999 .....	52.8	28.8	45.5	79.5	47.4	41.4	46.6	83.3
2001 .....	48.4	29.4	45.5	73.4	46.1	39.8	50.7	78.6
2003 .....	48.6	30.5	45.5	77.6	47.6	42.4	55.4	80.8
<b>Physical sciences</b>								
1973 .....	58.4	31.2	78.3	88.5	44.8	39.5	72.1	98.5
1975 .....	64.1	27.9	60.7	93.2	43.8	36.6	77.3	85.1
1977 .....	63.2	28.9	95.7	88.5	51.6	40.5	77.5	92.4
1979 .....	59.1	25.5	73.7	84.7	52.0	39.0	72.1	91.7
1981 .....	69.3	25.2	94.3	88.1	57.9	49.4	84.5	97.9
1983 .....	70.4	33.8	82.7	88.2	66.2	56.3	85.3	84.8
1985 <sup>a</sup> .....	64.3	18.7	86.6	84.6	50.8	35.7	78.7	91.4
1987 .....	80.9	66.7	69.9	90.2	68.7	56.0	97.1	93.1
1989 .....	77.9	49.2	82.1	88.0	72.4	61.9	89.0	90.6
1991 .....	69.9	44.1	78.8	87.2	67.2	55.1	88.5	100.0
1993 <sup>a</sup> .....	63.1	21.3	64.9	84.5	58.2	43.9	70.0	94.5
1995 <sup>a</sup> .....	62.8	21.0	41.9	84.1	53.9	37.8	60.2	86.7
1997 <sup>a</sup> .....	64.2	30.0	71.4	77.7	53.4	41.2	67.9	96.5
1999 .....	68.0	39.3	69.9	80.5	57.0	46.7	65.5	89.4
2001 .....	62.2	31.0	55.4	80.9	54.1	39.4	73.9	83.7
2003 .....	59.2	39.1	42.4	78.4	51.1	44.1	61.5	67.1
<b>Mathematics</b>								
1973 .....	17.5	16.3	58.5	38.7	29.0	29.4	15.4	100.0
1975 .....	14.5	13.0	37.6	28.3	18.9	18.5	0.0	57.9
1977 .....	16.2	12.2	45.9	56.4	19.2	17.6	82.0	52.2
1979 .....	24.8	22.5	52.9	42.5	32.3	30.2	64.9	46.9
1981 .....	10.8	9.5	0.0	44.1	29.7	27.6	62.7	81.5
1983 .....	31.8	29.8	7.1	73.4	39.8	39.8	51.3	100.0
1985 <sup>a</sup> .....	14.7	14.1	—	34.6	27.0	26.8	26.7	100.0
1987 .....	15.6	7.4	81.8	37.6	34.9	35.5	7.3	10.3
1989 .....	29.1	24.9	53.8	52.4	39.0	39.1	78.6	100.0
1991 .....	39.8	35.8	54.9	80.4	28.3	28.6	40.9	—
1993 <sup>a</sup> .....	15.7	14.8	0.0	100.0	15.2	14.0	100.0	—
1995 <sup>a</sup> .....	17.7	13.4	0.0	40.0	25.6	19.6	42.4	70.6
1997 <sup>a</sup> .....	14.9	3.5	29.1	32.9	16.7	14.9	0.0	42.2
1999 .....	36.4	24.0	0.0	58.7	32.2	33.5	0.0	47.2
2001 .....	34.6	21.6	34.6	56.3	42.2	38.6	62.4	100.0
2003 .....	37.0	25.7	24.3	67.7	33.9	36.2	0.0	54.1
<b>Computer sciences</b>								
1973 .....	NA	NA	NA	NA	NA	NA	NA	NA
1975 .....	NA	NA	NA	NA	NA	NA	NA	NA
1977 .....	NA	NA	NA	NA	NA	NA	NA	NA
1979 .....	34.8	25.0	—	57.1	—	—	—	—
1981 .....	27.7	24.1	25.0	100.0	52.4	52.4	—	—
1983 .....	45.7	35.1	60.0	100.0	43.5	40.4	92.3	—

Appendix table 5-38

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**S&E doctorate holders employed in academia with federal support, by degree field, years since doctorate, and type of position: 1973–2003**

(Percent)

Field	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full time	Postdocs	All positions	Full-time faculty	Other full time	Postdocs
1985 <sup>a</sup> .....	54.1	46.4	77.2	0.0	36.7	31.0	100.0	—
1987.....	47.2	46.3	42.0	100.0	73.2	66.3	100.0	0.0
1989.....	33.0	29.3	50.0	100.0	70.8	78.0	35.7	100.0
1991.....	23.1	23.1	25.1	—	66.2	63.9	100.0	100.0
1993 <sup>a</sup> .....	44.7	39.5	100.0	100.0	30.7	30.9	27.3	100.0
1995 <sup>a</sup> .....	38.2	31.4	61.1	75.9	38.1	38.3	23.9	—
1997 <sup>a</sup> .....	40.5	29.7	74.3	97.0	40.4	37.7	75.6	—
1999.....	59.7	50.6	77.5	100.0	56.6	56.5	85.9	—
2001.....	31.4	25.9	44.2	100.0	49.2	47.3	53.2	—
2003.....	41.7	32.6	22.2	95.8	43.6	40.8	59.2	—
<b>Earth, atmospheric, and ocean sciences</b>								
1973.....	53.7	44.0	73.1	87.1	53.4	50.6	77.5	100.0
1975.....	50.7	38.4	85.3	74.2	54.0	49.8	97.0	100.0
1977.....	44.3	22.5	60.5	94.4	46.9	38.3	82.1	100.0
1979.....	67.2	41.3	97.3	96.7	49.6	43.1	72.3	100.0
1981.....	66.1	43.2	79.7	100.0	57.2	53.3	72.7	0.0
1983.....	61.8	36.7	75.7	92.8	64.5	59.5	100.0	66.7
1985 <sup>a</sup> .....	56.0	33.4	83.9	96.4	59.6	50.6	81.2	100.0
1987.....	64.2	42.3	87.9	89.6	71.1	61.9	88.9	100.0
1989.....	70.4	52.8	88.5	90.1	81.2	78.0	92.9	93.8
1991.....	76.0	61.7	100.0	77.4	76.6	75.3	100.0	64.1
1993 <sup>a</sup> .....	68.2	33.0	97.8	74.2	59.9	50.2	72.6	100.0
1995 <sup>a</sup> .....	65.4	35.8	87.4	88.0	66.4	58.9	86.2	100.0
1997 <sup>a</sup> .....	67.3	35.0	74.7	94.2	57.1	49.4	70.7	69.4
1999.....	61.7	42.9	89.7	79.8	65.3	62.7	75.6	55.5
2001.....	80.7	64.0	84.2	90.0	54.1	48.7	69.3	95.6
2003.....	73.8	49.1	82.8	89.4	67.9	68.8	70.9	100.0
<b>Life sciences</b>								
1973.....	60.8	48.3	77.0	89.0	59.7	57.3	75.1	89.2
1975.....	61.8	46.4	72.5	87.6	60.1	57.6	76.2	87.5
1977.....	61.6	38.1	70.4	88.9	59.6	56.6	73.3	90.2
1979.....	65.9	40.6	75.8	85.9	57.3	51.4	76.5	84.2
1981.....	71.8	51.7	76.5	88.1	64.0	58.8	70.8	85.7
1983.....	68.2	52.8	65.1	84.7	67.1	64.5	72.6	83.7
1985 <sup>a</sup> .....	59.6	34.1	67.2	78.9	61.1	55.6	72.3	81.7
1987.....	70.2	53.5	73.8	82.1	71.4	68.3	81.0	83.0
1989.....	74.5	50.2	79.3	89.1	71.9	67.5	79.1	89.3
1991.....	68.1	49.9	60.0	83.0	70.6	66.8	79.2	86.3
1993 <sup>a</sup> .....	61.2	32.2	44.8	81.9	55.7	46.4	52.0	86.7
1995 <sup>a</sup> .....	58.5	30.3	35.3	80.3	54.0	43.9	47.4	87.4
1997 <sup>a</sup> .....	58.3	23.0	42.2	77.5	52.3	42.4	48.4	78.8
1999.....	65.0	35.0	46.2	82.4	57.2	47.2	49.3	83.0
2001.....	59.2	34.2	39.0	76.8	56.4	48.9	49.5	78.8
2003.....	62.4	36.7	52.3	81.7	57.2	49.9	57.5	83.0
<b>Psychology</b>								
1973.....	34.3	28.5	59.7	95.3	37.8	36.9	52.1	71.4
1975.....	35.0	25.5	53.7	88.5	35.3	34.9	32.8	71.2
1977.....	35.3	26.8	71.7	86.0	31.5	27.9	60.5	73.0
1979.....	35.2	22.5	22.2	95.5	39.3	31.4	76.5	87.6
1981.....	46.5	33.2	41.6	93.4	34.7	28.6	54.5	88.2
1983.....	31.2	19.8	34.2	89.3	32.3	28.2	37.1	87.2
1985 <sup>a</sup> .....	30.6	15.6	44.5	70.1	29.2	26.2	38.7	72.5
1987.....	37.5	28.5	28.8	82.7	33.2	25.6	40.3	97.9
1989.....	41.7	34.6	36.1	64.9	36.1	36.7	33.1	63.1
1991.....	35.9	23.9	24.3	100.0	38.8	38.6	24.8	86.9
1993 <sup>a</sup> .....	21.6	12.0	27.5	61.6	23.2	24.6	15.5	48.2
1995 <sup>a</sup> .....	33.5	17.5	40.6	63.5	26.1	21.8	36.0	82.1
1997 <sup>a</sup> .....	34.5	24.2	19.0	70.9	29.5	22.3	36.4	77.3

Appendix table 5-38

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**S&E doctorate holders employed in academia with federal support, by degree field, years since doctorate, and type of position: 1973–2003**

(Percent)

Field	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full time	Postdocs	All positions	Full-time faculty	Other full time	Postdocs
1999 .....	33.4	22.4	29.9	63.6	35.6	34.7	23.8	100.0
2001 .....	35.5	20.0	41.7	64.1	34.9	32.6	42.7	45.6
2003 .....	31.2	26.6	28.8	61.1	37.5	32.4	46.9	100.0
<b>Social sciences</b>								
1973 .....	24.7	23.7	53.7	23.9	29.0	28.7	34.1	93.1
1975 .....	23.1	22.5	29.0	61.7	26.2	26.2	42.4	39.2
1977 .....	24.8	24.2	12.3	61.4	24.6	23.2	56.3	48.0
1979 .....	26.6	22.8	37.6	97.5	20.8	19.2	52.2	70.8
1981 .....	20.4	16.3	48.7	56.0	24.3	24.3	25.2	60.0
1983 .....	28.2	23.6	49.0	77.9	28.1	23.6	57.5	93.8
1985 <sup>a</sup> .....	15.6	12.3	27.8	44.4	19.3	15.7	51.0	41.0
1987 .....	22.5	20.9	34.5	21.4	29.9	27.7	54.0	0.0
1989 .....	25.6	24.7	24.3	41.9	33.2	31.6	51.4	83.9
1991 .....	21.7	19.5	38.8	31.7	36.6	33.8	44.2	100.0
1993 <sup>a</sup> .....	11.2	7.2	25.4	88.2	14.9	14.4	21.9	100.0
1995 <sup>a</sup> .....	15.9	10.7	28.8	80.8	17.8	16.0	41.8	49.8
1997 <sup>a</sup> .....	14.1	10.9	26.8	33.7	17.4	15.6	26.3	57.7
1999 .....	21.1	15.2	26.1	77.1	22.8	21.7	31.3	48.1
2001 .....	20.5	21.2	24.0	41.8	21.2	20.3	28.0	63.3
2003 .....	18.3	14.7	34.5	38.6	22.7	22.3	32.0	49.8
<b>Engineering</b>								
1973 .....	50.8	45.2	74.2	87.1	50.7	49.9	78.6	66.7
1975 .....	53.7	48.9	65.8	83.8	54.4	53.1	82.3	100.0
1977 .....	55.2	47.2	84.8	72.9	52.9	52.3	64.8	64.9
1979 .....	55.5	48.5	71.9	99.4	55.1	58.8	33.8	16.9
1981 .....	54.4	43.2	100.0	100.0	65.6	61.9	83.9	100.0
1983 .....	47.1	36.7	58.2	98.3	64.3	62.2	99.0	100.0
1985 <sup>a</sup> .....	43.9	37.8	66.1	94.5	47.6	46.3	66.4	0.0
1987 .....	53.3	43.7	79.2	75.7	65.5	64.2	97.6	100.0
1989 .....	56.0	48.9	71.9	73.3	70.8	68.6	91.8	100.0
1991 .....	66.6	62.1	67.7	89.9	73.2	73.0	79.7	100.0
1993 <sup>a</sup> .....	43.4	32.1	65.1	68.7	51.2	49.4	65.9	70.3
1995 <sup>a</sup> .....	51.1	38.5	50.3	72.6	62.1	60.3	72.5	86.5
1997 <sup>a</sup> .....	50.0	35.5	66.4	66.3	51.3	48.4	62.5	60.5
1999 .....	58.5	40.0	70.9	78.1	55.5	56.4	44.8	94.2
2001 .....	54.9	49.1	77.0	57.1	58.3	59.2	54.9	74.2
2003 .....	56.1	47.7	60.5	71.2	64.3	61.6	72.7	100.0

— = too few cases; NA = not available

\*Not comparable with other years and understates degree of federal support by asking whether work performed during week of April 15 was supported by government. In other years, question pertains to work conducted over course of year.

NOTES: Recent doctorate-holders defined as having earned doctorate within either 3 years or 4–7 years preceding survey year. Full-time faculty includes full, associate, and assistant professors plus instructors. Other full-time positions include nonfaculty appointments such as research associates, adjunct appointments, lecturers, and administrative positions.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, special tabulations.

Appendix table 5-39

**Broad and detailed fields for publications output data**

Clinical medicine	Biology	Mathematics
Addictive diseases	Agriculture and food science	Applied mathematics
Allergy	Botany	General mathematics
Anesthesiology	Dairy and animal science	Miscellaneous mathematics
Arthritis and rheumatism	Ecology	Probability and statistics
Cancer	Entomology	
Cardiovascular system	General biology	Psychology
Dentistry	General zoology	Behavioral and comparative psychology
Dermatology and venereal disease	Marine and hydrobiology	Clinical psychology
Endocrinology	Miscellaneous biology	Developmental and child psychology
Environmental and occupational health	Miscellaneous zoology	Experimental psychology
Fertility		General psychology
Gastroenterology	Chemistry	Human factors
General and internal medicine	Analytical chemistry	Miscellaneous psychology
Geriatrics	Applied chemistry	Psychoanalysis
Hematology	General chemistry	Social psychology
Immunology	Inorganic and nuclear chemistry	
Miscellaneous clinical	Organic chemistry	Social sciences
Nephrology	Physical chemistry	Anthropology and archaeology
Neurology and neurosurgery	Polymers	Area studies
Obstetrics and gynecology		Criminology
Ophthalmology	Physics	Demography
Orthopedics	Acoustics	Economics
Otorhinolaryngology	Applied physics	General social sciences
Pathology	Chemical physics	Geography and regional science
Pediatrics	Fluids and plasmas	International relations
Pharmacology	General physics	Miscellaneous social sciences
Pharmacy	Miscellaneous physics	Planning and urban studies
Psychiatry	Nuclear and particle physics	Political science and public administration
Radiology and nuclear medicine	Optics	Science studies
Respiratory system	Solid state physics	Sociology
Surgery		
Tropical medicine	Earth and space sciences	Health sciences
Urology	Astronomy and astrophysics	Gerontology and aging
Veterinary medicine	Earth and planetary science	Health policy and services
	Environmental science	Nursing
Biomedical research	Geology	Public health
Anatomy and morphology	Meteorology and atmospheric sciences	Rehabilitation
Biochemistry and molecular biology	Oceanography and limnology	Social studies of medicine
Biomedical engineering		Speech/language pathology and audiology
Biophysics	Engineering and technology	
Cell biology, cytology, and histology	Aerospace technology	Professional
Embryology	Chemical engineering	Communication
Genetics and heredity	Civil engineering	Education
General biomedical research	Computers	Information and library science
Microbiology	Electrical and electronics engineering	Law
Microscopy	General engineering	Management and business
Miscellaneous biomedical research	Industrial engineering	Miscellaneous professional fields
Nutrition and dietetics	Materials science	Social work
Parasitology	Mechanical engineering	
Physiology	Metals and metallurgy	
Virology	Miscellaneous engineering and technology	
	Nuclear technology	
	Operations research and management	

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; and iplQ, Inc.

Appendix table 5-40  
**S&E articles in selected journal databases: 1988–2003**

Year	CAS	Compendex	Inspec	PASCAL	<i>SCI</i> and <i>SSCI</i>
1988.....	389,685	146,234	246,707	NA	466,419
1989.....	397,158	169,249	247,765	NA	497,102
1990.....	394,945	208,776	257,580	488,344	508,795
1991.....	453,640	240,124	250,189	528,456	515,530
1992.....	430,250	213,363	252,129	574,906	547,617
1993.....	448,736	268,276	259,697	580,354	540,491
1994.....	542,514	333,420	279,674	524,509	567,204
1995.....	562,955	380,501	299,950	460,586	580,809
1996.....	579,107	406,524	320,342	476,759	593,568
1997.....	585,530	376,311	325,780	498,951	594,467
1998.....	559,009	310,497	331,147	510,692	617,762
1999.....	591,092	249,584	332,261	508,755	632,059
2000.....	573,469	240,719	333,444	500,362	632,781
2001.....	606,679	351,485	315,792	NA	649,795
2002.....	NA	NA	NA	NA	641,388
2003.....	NA	NA	NA	NA	698,726

NA = not available

CAS = Chemical Abstracts Service; Inspec = Information Service for Physics, Electronics and Computing; *SCI* = *Science Citation Index*; *SSCI* = *Social Sciences Citation Index*

NOTES: Compendex is a comprehensive database of engineering scholarly journals, trade magazines, and conference proceedings; PASCAL, a multilingual, multidisciplinary database, covers core scientific literature in science, technology, and medicine, with special emphasis on European literature.

SOURCES: American Chemical Society (ACS), CAS, <http://www.cas.org>; Elsevier Engineering Information, Inc., Compendex, <http://www.ei.org/compendex.html>, and Inspec, <http://www.ei.org/inspec.html>; Institut de l'Information Scientifique et Technique du Centre National de la Recherche Scientifique (INIST-CNRS), PASCAL, <http://www.inist.fr/en/PRODUITS/pascal.php> (to search database: <http://stneasy.cas.org>); and Thomson ISI, *SCI* and *SSCI*, <http://www.isinet.com/products/citation/>.

Appendix table 5-41  
**S&E articles, by region and country/economy: 1988–2003**

Region and country/economy	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
All countries.....	466,419	497,102	508,795	515,530	547,617	540,491	567,204	580,809	593,568	594,467	617,762	632,059	632,781	649,795	641,388	698,726
Major S&E article producers.....	353,862	377,817	389,307	397,004	422,045	421,573	442,390	455,429	467,036	468,143	487,006	497,069	496,599	512,166	501,778	546,626
United States.....	177,662	187,224	191,559	194,015	198,864	197,397	199,769	202,887	201,798	197,531	197,890	198,524	196,221	200,870	195,792	211,233
EU-15.....	134,551	145,337	149,032	152,761	166,230	166,540	179,710	185,842	193,172	195,060	205,479	209,006	208,128	211,177	204,769	220,002
Austria.....	2,241	2,675	2,690	2,756	3,047	3,051	3,177	3,477	3,618	3,880	4,172	4,210	4,259	4,526	4,405	4,906
Belgium.....	3,586	3,905	4,103	4,164	4,431	4,512	4,949	5,260	5,583	5,509	5,822	5,924	5,739	5,984	5,933	6,604
Denmark.....	3,445	3,722	3,716	3,776	4,141	4,068	4,458	4,408	4,477	4,512	4,782	4,909	4,929	4,988	4,740	5,291
Finland.....	2,789	2,981	3,071	3,211	3,438	3,603	3,974	4,134	4,354	4,523	4,564	4,872	4,878	5,098	4,873	5,202
France.....	21,409	22,686	22,937	23,518	26,172	26,225	28,266	29,309	29,755	30,061	31,809	32,097	30,960	31,317	29,928	31,971
Germany.....	29,292	31,821	32,295	32,929	35,120	34,103	36,901	38,100	39,123	40,743	43,953	43,550	43,440	43,623	41,863	44,305
Greece.....	1,239	1,518	1,397	1,598	1,736	1,759	1,974	2,068	2,265	2,407	2,666	2,705	2,892	3,329	3,373	3,770
Ireland.....	790	826	902	915	946	1,003	1,168	1,210	1,269	1,318	1,526	1,526	1,596	1,665	1,650	1,758
Italy.....	11,229	12,509	13,062	13,778	15,462	15,279	17,000	17,904	19,342	19,147	20,321	20,819	21,038	22,313	22,314	24,696
Luxembourg.....	7	11	17	15	23	22	26	31	20	33	33	34	42	46	33	46
Netherlands.....	8,581	9,736	10,176	10,106	11,060	11,360	11,961	12,330	12,438	12,779	12,756	12,642	12,466	12,602	12,517	13,475
Portugal.....	429	510	587	640	712	794	914	989	1,090	1,250	1,404	1,765	1,813	2,142	2,173	2,625
Spain.....	5,432	6,116	6,837	7,269	9,267	9,759	10,534	11,343	12,234	13,040	13,786	14,860	14,776	15,570	15,868	16,826
Sweden.....	7,573	8,126	8,172	8,139	8,273	8,547	8,972	9,284	9,697	9,677	9,967	10,129	9,815	10,314	9,829	10,237
United Kingdom.....	36,509	38,195	39,069	39,950	42,404	42,456	45,436	45,993	47,904	46,183	47,916	48,965	49,485	47,660	45,269	48,288
Japan.....	34,435	36,569	38,570	39,590	44,143	43,339	46,692	47,603	50,392	50,171	54,658	56,134	55,413	57,420	55,085	60,067
East Asia-4.....	7,214	8,687	10,146	10,638	12,807	14,297	16,220	19,097	21,675	25,381	28,980	33,405	36,837	42,699	46,132	55,324
China.....	4,619	5,411	6,285	6,186	6,956	7,566	7,821	9,261	10,070	12,530	13,807	16,197	18,142	20,978	23,609	29,186
Singapore.....	410	517	572	599	755	854	1,022	1,184	1,181	1,338	1,635	1,984	2,301	2,603	2,677	3,122
South Korea.....	771	1,035	1,170	1,361	1,759	2,184	2,931	3,806	4,728	5,636	7,075	8,386	9,386	11,037	11,745	13,746
Taiwan.....	1,414	1,724	2,119	2,492	3,337	3,693	4,446	4,846	5,696	5,878	6,463	6,838	7,008	8,082	8,100	9,270
Other regions/countries																
Other Western Europe.....	9,327	9,901	10,851	10,939	12,162	12,379	13,307	13,826	14,597	15,456	16,170	16,974	17,548	17,971	18,293	20,939
Croatia.....	na	na	na	na	17	575	508	563	614	631	589	671	704	710	657	845
Cyprus.....	15	15	17	8	22	24	24	41	54	66	61	58	60	74	85	92
Iceland.....	69	68	89	104	105	122	137	158	149	147	177	136	154	174	193	203
Norway.....	2,192	2,247	2,426	2,403	2,655	2,637	2,805	2,953	2,950	3,012	3,100	3,127	3,195	3,252	3,118	3,339
Slovenia.....	na	na	na	na	10	404	459	443	478	595	625	707	901	876	856	969
Switzerland.....	5,316	5,548	5,901	6,098	6,651	6,871	7,372	7,361	7,489	7,912	8,096	8,297	8,454	8,107	7,744	8,542
Turkey.....	507	668	750	846	1,048	1,172	1,397	1,713	2,206	2,440	2,818	3,240	3,482	4,098	5,072	6,224
Yugoslavia.....	1,211	1,330	1,641	1,447	1,621	496	514	507	568	555	605	622	513	547	460	600
All others.....	17	26	26	33	35	79	91	87	91	99	99	115	86	131	108	124
Other Asia.....	10,116	11,075	10,566	10,937	11,539	11,329	11,592	11,355	11,478	11,158	11,985	12,779	12,294	13,456	14,005	15,779
Bangladesh.....	95	99	116	104	151	153	136	170	155	146	138	168	160	177	160	204
India.....	8,882	9,744	9,200	9,517	10,100	9,763	9,928	9,591	9,736	9,419	10,066	10,589	10,047	11,076	11,538	12,774
Indonesia.....	59	86	104	89	86	103	120	133	137	146	138	172	165	207	167	178
Malaysia.....	208	241	233	260	247	293	345	373	372	339	402	493	470	494	485	520
Pakistan.....	235	263	257	315	277	349	324	339	274	258	276	300	277	282	334	368
Philippines.....	127	149	157	148	150	148	141	151	153	174	167	187	177	158	178	179
Sri Lanka.....	107	101	106	84	82	83	85	82	78	68	75	94	104	76	95	141
Thailand.....	287	272	282	298	300	317	383	338	386	415	530	558	655	727	808	1,072

**S&E articles, by region and country/economy: 1988–2003**

Region and country/economy	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Vietnam.....	52	66	60	65	74	67	61	102	113	120	107	112	144	158	144	216
All others.....	64	55	50	58	72	54	71	76	74	74	86	106	96	101	96	125
Eastern Europe/former USSR.....	41,597	43,697	42,836	41,218	43,214	35,976	38,199	36,390	35,074	34,259	34,680	34,421	35,844	33,686	33,901	35,067
Armenia.....	na	na	na	na	21	165	178	182	179	186	169	156	167	152	201	175
Azerbaijan.....	na	na	na	na	15	197	189	157	125	87	94	70	89	68	73	107
Bulgaria.....	1,089	1,219	1,216	1,169	1,218	1,380	1,024	963	968	977	931	900	887	784	789	829
Belarus.....	na	na	na	na	30	708	1,021	728	597	576	598	616	576	528	480	532
Czech Republic.....	2,746	2,995	3,079	2,881	3,132	3,308	2,179	1,993	2,249	2,231	2,333	2,374	2,458	2,622	2,778	2,950
Estonia.....	na	na	na	na	2	177	202	240	248	255	299	320	344	339	333	368
Georgia.....	na	na	na	na	12	158	136	148	126	135	131	129	141	110	132	117
Hungary.....	1,714	1,847	1,722	1,806	1,824	1,718	1,774	1,826	1,839	1,939	2,144	2,313	2,292	2,479	2,308	2,503
Kazakhstan.....	na	na	na	na	19	250	191	173	143	125	122	109	113	116	123	128
Latvia.....	na	na	na	na	37	180	159	154	168	152	164	173	159	157	171	153
Lithuania.....	na	na	na	na	5	149	189	179	196	209	248	284	262	272	338	322
Moldova.....	na	na	na	na	15	156	159	140	136	116	98	95	96	77	76	78
Poland.....	4,030	4,245	3,999	3,919	4,113	3,848	4,041	4,535	4,597	4,445	4,891	5,195	5,342	5,686	6,023	6,770
Romania.....	393	513	377	395	568	507	675	648	871	835	858	909	956	997	900	988
Russia.....	na	na	na	na	817	19,659	21,612	19,974	18,464	18,343	17,841	17,149	18,271	15,846	15,818	15,782
Slovakia.....	na	na	na	na	44	na	1,151	1,137	1,175	1,051	1,144	997	1,007	955	936	943
Ukraine.....	na	na	na	na	162	2,894	2,923	2,856	2,600	2,287	2,362	2,351	2,365	2,256	2,183	2,089
USSR.....	31,625	32,879	32,443	31,047	31,127	130	na	na	na	na	na	na	na	na	na	na
Uzbekistan.....	na	na	na	na	50	275	290	295	347	264	213	242	273	204	192	192
All others.....	na	na	na	na	5	116	105	63	45	46	39	38	45	39	47	42
Near East/North Africa.....	7,896	8,400	8,241	8,153	8,423	8,830	9,141	9,647	9,706	10,063	10,522	10,752	11,111	11,802	11,987	13,465
Algeria.....	66	73	98	106	120	123	125	151	156	151	165	179	204	225	240	285
Egypt.....	1,130	1,278	1,254	1,429	1,288	1,279	1,380	1,359	1,359	1,242	1,302	1,362	1,376	1,548	1,564	1,720
Iran.....	86	91	94	126	150	175	233	271	312	366	523	699	825	995	1,277	1,806
Israel.....	4,916	5,134	4,968	4,873	5,234	5,575	5,559	5,921	5,815	6,203	6,240	6,091	6,314	6,487	6,415	6,941
Jordan.....	161	174	176	148	135	130	144	153	167	193	217	245	242	240	237	263
Kuwait.....	304	326	368	209	104	112	186	166	240	210	251	298	243	257	234	244
Lebanon.....	54	61	29	47	52	54	62	56	68	96	111	129	139	202	158	223
Morocco.....	113	108	97	128	170	164	182	237	256	298	370	425	471	469	461	428
Oman.....	13	20	27	32	37	42	46	53	63	63	76	88	99	96	116	114
Saudi Arabia.....	569	577	644	613	653	713	734	781	754	682	700	637	595	580	581	573
Syria.....	19	28	34	31	49	49	48	47	52	60	42	60	56	61	54	67
Tunisia.....	96	107	104	121	131	91	135	147	159	206	230	269	278	344	361	452
United Arab Emirates.....	23	30	33	57	77	109	98	122	145	154	157	137	144	159	169	193
All others.....	346	394	314	235	222	214	208	183	159	140	138	132	124	138	120	158
Central/South America.....	5,632	6,404	6,886	7,052	7,923	7,990	8,525	9,547	10,468	11,522	12,900	14,250	14,747	16,355	17,122	18,933
Argentina.....	1,423	1,518	1,627	1,499	1,526	1,585	1,747	1,969	2,212	2,430	2,546	2,705	2,792	2,930	3,161	3,086
Brazil.....	1,766	2,117	2,374	2,640	3,107	2,885	3,073	3,471	3,830	4,362	5,202	5,950	6,195	7,205	7,650	8,684
Chile.....	682	745	830	819	835	877	798	899	928	974	987	1,062	1,100	1,203	1,260	1,500
Colombia.....	86	111	122	106	125	122	145	167	196	230	237	254	320	324	353	337
Costa Rica.....	55	55	54	55	62	61	66	70	72	78	73	76	82	92	94	84
Cuba.....	67	90	108	94	131	113	141	166	194	177	234	242	282	299	201	264



Appendix table 5-41  
**S&E articles, by region and country/economy: 1988–2003**

Region and country/economy	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Mexico .....	884	1,046	1,038	1,082	1,336	1,502	1,663	1,901	2,124	2,271	2,615	2,925	2,950	3,209	3,307	3,747
Peru .....	68	67	77	70	73	66	64	68	72	71	71	60	77	93	87	129
Uruguay .....	42	50	57	64	81	91	84	98	115	133	136	159	158	155	151	194
Venezuela.....	292	328	314	329	377	395	420	430	432	484	528	523	509	535	525	563
All others.....	268	278	286	294	268	292	324	307	292	313	272	293	281	310	333	345
Sub-Saharan Africa .....	4,544	4,504	4,355	4,409	4,356	4,321	4,263	4,161	3,982	4,028	3,985	4,207	3,973	3,990	4,151	4,219
Botswana.....	9	20	17	18	20	28	19	34	45	38	38	50	58	59	71	76
Cameroon.....	35	41	46	54	58	75	84	73	60	81	77	71	76	75	108	123
Ethiopia.....	71	58	70	93	88	84	86	99	88	109	80	106	90	93	101	99
Ghana.....	37	36	40	47	72	52	67	65	77	88	67	85	95	90	73	83
Kenya.....	291	300	255	260	295	346	280	310	275	256	270	278	237	230	239	258
Nigeria.....	886	864	815	719	666	604	470	464	433	458	418	451	428	332	353	384
Senegal Republic .....	na	na	na	na	2	na	75	77	64	65	73	71	73	62	54	79
South Africa .....	2,523	2,499	2,406	2,552	2,419	2,377	2,459	2,364	2,282	2,237	2,268	2,366	2,237	2,327	2,427	2,364
Tanzania.....	64	71	69	77	93	94	105	92	107	100	91	104	100	87	87	86
Uganda.....	21	17	29	20	29	44	39	49	43	55	59	73	78	91	79	90
Zimbabwe.....	116	123	131	103	119	124	139	109	119	123	122	102	104	113	104	96
All others.....	488	476	478	466	495	494	439	425	392	417	421	452	398	431	453	481
Other																
Canada .....	21,391	22,501	22,792	22,903	24,180	23,824	24,565	24,532	24,583	23,077	22,796	23,417	22,873	22,626	22,555	24,803
Australia.....	9,896	10,730	10,664	10,742	11,452	11,929	12,695	13,387	13,911	13,955	14,710	15,186	14,700	14,788	14,713	15,809
New Zealand.....	2,075	1,993	2,227	2,102	2,253	2,256	2,454	2,466	2,684	2,748	2,953	2,927	3,037	2,903	2,829	3,034
All others.....	83	78	70	71	70	81	74	69	49	58	57	75	55	53	54	52

na = not applicable

EU = European Union; USSR = Union of Soviet Socialist Republics

NOTES: Article counts from set of journals classified and covered by *Science Citation Index (SCI)* and *Social Sciences Citation Index (SSCI)*. Articles assigned to region/country/economy on basis of institutional address(es) listed on article. Articles on fractional-count basis, i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on basis of proportion of its participating institutions. EU-15 consists of 15 EU countries before expansion of member countries on May 1, 2004. Countries with article output <0.01% of world output in 2003 grouped in "All others," except Luxembourg. Germany's output includes articles from former East Germany before 1992. China's output includes articles from Hong Kong economy before 2000. Czech Republic's output includes articles from former Czechoslovakia before 1996. Article output from former USSR included. Detail may not add to total because of rounding.

SOURCES: Thomson ISI, *SCI* and *SSCI*, <http://www.isinet.com/products/citation/>; iPLQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-42  
**Share of S&E world article output by country/economy: 1988, 1996, and 2003**  
 (Percent)

Rank and country/economy	1988	1996	2003
1 United States.....	38.1	34.0	30.3
2 Japan .....	7.4	8.5	8.6
3 United Kingdom.....	7.8	8.1	6.9
4 Germany .....	6.3	6.6	6.3
5 France.....	4.6	5.0	4.6
6 China .....	1.0	1.7	4.2
7 Canada.....	4.6	4.1	3.6
8 Italy.....	2.4	3.3	3.5
9 Spain.....	1.2	2.1	2.4
10 Russia.....	na	3.1	2.3
11 Australia.....	2.1	2.3	2.2
12 South Korea.....	0.2	0.8	2.0
13 Netherlands.....	1.8	2.1	1.9
14 India.....	1.9	1.6	1.8
15 Sweden.....	1.6	1.6	1.5
16 Taiwan .....	0.3	1.0	1.3
17 Brazil.....	0.4	0.6	1.2
18 Switzerland .....	1.1	1.3	1.2
19 Israel.....	1.1	1.0	1.0
20 Poland.....	0.9	0.8	1.0
21 Belgium.....	0.8	0.9	0.9
22 Turkey.....	0.1	0.4	0.9
23 Denmark .....	0.7	0.8	0.8
24 Finland .....	0.6	0.7	0.7
25 Austria .....	0.5	0.6	0.7

na = not applicable

NOTES: Countries/economies ranked by share of world article output in 2003. Articles assigned to country/economy on basis of institutional address(es) listed on article. Articles on fractional-count basis, i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on basis of proportion of its participating institutions. China includes Hong Kong.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iPLQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

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Appendix table 5-43

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## Per capita output of S&amp;E articles, by selected country/economy: 2000-03

Country/economy	Articles/million inhabitants	Country/economy	Articles/million inhabitants
Sweden .....	1,136.65	Tonga .....	8.86
Switzerland.....	1,119.96	Suriname .....	8.84
Israel .....	1,018.46	Kazakhstan .....	8.22
Finland .....	974.27	Zimbabwe .....	8.09
Denmark.....	933.34	Algeria .....	8.04
Netherlands .....	800.21	Kenya .....	7.81
United Kingdom .....	796.48	Uzbekistan .....	7.80
Australia .....	773.17	Colombia.....	7.80
Canada.....	747.56	Guyana .....	7.17
New Zealand .....	745.12	Mongolia.....	6.92
Norway.....	715.28	Senegal Republic .....	6.63
United States.....	706.79	Cameroon .....	6.54
Singapore .....	676.50	Belize.....	5.64
Iceland.....	672.44	Sri Lanka .....	5.51
Belgium.....	599.19	Solomon Islands.....	5.11
Austria.....	573.96	Malawi.....	4.41
Germany.....	525.14	Ghana .....	4.17
France .....	523.86	Benin .....	4.09
Taiwan.....	502.69	Libya.....	4.03
OECD.....	489.77	Bolivia.....	3.98
Slovenia.....	456.43	Peru.....	3.88
Japan .....	452.78	Swaziland .....	3.77
Ireland .....	435.18	Tajikistan .....	3.71
Italy .....	400.66	Albania.....	3.68
Spain.....	394.26	Bosnia and Herzegovina .....	3.61
Greece.....	328.86	Syria .....	3.61
Czech Republic.....	272.23	Uganda .....	3.58
South Korea.....	256.51	Ecuador .....	3.43
Estonia .....	254.91	Kyrgyzstan .....	3.41
Hungary.....	240.11	Zambia .....	2.79
Portugal.....	227.68	Congo, Republic of the .....	2.72
Slovakia.....	175.57	Nigeria .....	2.71
Croatia.....	165.52	Côte d'Ivoire.....	2.71
Poland .....	160.31	Burkina Faso.....	2.68
Cyprus.....	109.95	Mauritania.....	2.68
Russia .....	109.50	Tanzania .....	2.49
All countries.....	107.65	Pakistan .....	2.29
Kuwait.....	106.89	Philippines .....	2.17
Bulgaria.....	100.81	Vietnam .....	2.16
Lithuania .....	89.33	Nepal .....	2.05
Chile.....	85.29	Togo.....	1.87
Argentina.....	83.33	Equatorial Guinea.....	1.86
Turkey .....	74.30	Madagascar .....	1.80
Latvia .....	68.31	Eritrea .....	1.63
Armenia.....	57.07	Nicaragua .....	1.62
Serbia and Montenegro.....	57.04	Paraguay.....	1.54
South Africa.....	52.90	Guatemala .....	1.49
Belarus .....	51.62	Ethiopia.....	1.47
Uruguay.....	49.78	Niger.....	1.39
Jordan .....	48.37	Bangladesh.....	1.34
United Arab Emirates .....	47.83	Mali .....	1.34
Brazil.....	45.26	Sudan .....	1.23
Ukraine.....	44.49	Central African Republic .....	1.17
Lebanon .....	44.05	Iraq.....	1.16
Romania .....	43.04	Laos.....	1.01
Botswana .....	40.38	Honduras .....	1.00
Tunisia.....	39.66	Indonesia .....	0.88
Mexico.....	34.17	Cambodia .....	0.79
Macedonia.....	30.57	Dominican Republic .....	0.73
Saudi Arabia .....	26.76	Yemen.....	0.69
Egypt.....	24.49	El Salvador.....	0.69
Costa Rica .....	23.03	Mozambique .....	0.68

Appendix table 5-43

(Page 2 of 2)

**Per capita output of S&E articles, by selected country/economy: 2000–03**

Country/economy	Articles/million inhabitants	Country/economy	Articles/million inhabitants
Georgia.....	22.97	Namibia .....	10.04
Cuba.....	22.65	Turkmenistan .....	0.60
Venezuela.....	21.78	Chad.....	0.50
Iran.....	20.90	Sierra Leone .....	0.49
Malaysia .....	20.78	Haiti .....	0.46
Jamaica.....	19.31	Burundi.....	0.40
China.....	19.17	Rwanda .....	0.39
Moldova.....	18.08	Djibouti.....	0.36
Panama.....	17.28	Angola .....	0.28
Gabon Republic .....	16.74	Liberia .....	0.23
Morocco .....	15.40	Myanmar .....	0.13
Mauritius .....	14.70	Congo, Democratic Republic of the.....	0.10
Thailand .....	14.16	North Korea.....	0.05
India .....	11.34	Somalia.....	0.03
Azerbaijan.....	10.17	Afghanistan.....	0.01

OECD = Organisation for Economic Co-operation and Development

NOTES: Countries/economies ranked by average per-capita S&E article output for 2000–03. Articles on fractional-count basis, i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on basis of proportion of its participating institutions.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iPLQ, Inc.; National Science Foundation, Division of Science Resources Statistics, special tabulations; population data (except Taiwan): World Bank, World Development Indicators database, <http://www.worldbank.org/data/wdi2005/>; Taiwan population: U.S. Central Intelligence Agency, *The World Factbook 2002* and prior editions (annual series).

**Regional and country portfolio of S&E articles, by field: 1996**

(Percent distribution)

Region and country/economy	Articles (number)	All fields	Clinical medicine	Biomedical research	Biology	Chemistry	Physics	Earth/space sciences	Engineering/ technology	Mathematics	Psychology	Social sciences	Health sciences	Professional fields
All countries/economies.....	593,568	100.0	29.1	14.9	6.8	12.1	14.2	5.1	7.0	1.7	2.5	3.2	1.3	2.3
Major S&E article producers.....	467,036	100.0	31.1	15.4	6.1	11.0	13.2	4.9	7.0	1.6	2.6	3.2	1.4	2.5
United States.....	201,798	100.0	31.2	16.8	6.1	7.5	9.4	5.5	6.4	1.6	4.1	4.7	2.2	4.5
EU-15.....	193,172	100.0	32.9	15.1	6.3	12.4	14.0	5.2	5.7	1.8	1.7	2.7	0.9	1.3
Austria.....	3,618	100.0	41.9	14.2	5.3	9.3	14.2	3.5	5.2	1.6	1.2	2.8	0.1	0.7
Belgium.....	5,583	100.0	34.5	15.1	7.4	12.3	14.2	4.1	5.5	1.7	1.4	2.2	0.4	1.2
Denmark.....	4,477	100.0	40.5	17.8	8.5	6.5	10.9	6.4	3.3	1.2	0.9	2.5	0.4	1.2
Finland.....	4,354	100.0	43.6	13.5	9.0	7.4	8.6	4.9	5.5	1.0	2.1	1.3	1.4	1.5
France.....	29,755	100.0	28.4	16.7	5.6	14.0	16.7	6.4	6.0	3.2	0.9	1.6	0.2	0.4
Germany.....	39,123	100.0	28.3	15.1	5.3	15.8	19.2	4.6	5.7	1.7	1.7	1.7	0.3	0.7
Greece.....	2,265	100.0	28.6	8.5	7.8	14.6	13.5	8.2	11.7	2.5	0.5	2.3	0.4	1.4
Ireland.....	1,269	100.0	34.9	17.6	8.3	9.5	8.9	4.3	4.7	1.8	2.7	4.2	1.2	2.0
Italy.....	19,342	100.0	38.4	13.3	4.3	12.7	16.5	4.9	5.9	1.7	0.7	1.0	0.2	0.4
Luxembourg.....	20	100.0	46.0	20.5	2.5	5.7	5.7	6.5	0.0	0.0	0.0	4.1	0.0	9.0
Netherlands.....	12,438	100.0	37.3	15.2	7.1	9.4	10.4	5.3	4.4	1.2	3.5	3.4	1.2	1.7
Portugal.....	1,090	100.0	16.8	13.5	10.4	17.5	15.3	4.8	13.5	2.5	1.4	2.8	0.2	1.2
Spain.....	12,234	100.0	27.3	14.9	10.6	19.4	13.0	4.9	4.9	2.3	0.9	1.1	0.2	0.6
Sweden.....	9,697	100.0	41.7	15.5	7.0	8.2	10.2	5.2	5.0	1.0	1.8	1.8	1.6	1.0
United Kingdom.....	47,904	100.0	33.5	15.0	6.3	9.3	10.1	5.3	6.1	1.2	2.6	5.3	2.3	2.9
Japan.....	50,392	100.0	29.8	14.0	6.3	15.6	20.4	2.3	9.6	0.8	0.6	0.4	0.1	0.1
East Asia-4.....	21,675	100.0	16.5	7.5	3.7	19.8	25.3	3.4	17.5	2.7	0.5	1.6	0.3	1.2
China.....	10,070	100.0	13.5	5.1	3.3	22.5	29.6	4.0	14.5	3.6	0.8	1.4	0.3	1.4
Singapore.....	1,181	100.0	18.0	10.3	3.3	12.7	14.4	2.8	25.6	4.2	0.4	3.9	0.3	4.1
South Korea.....	4,728	100.0	12.3	10.0	2.7	22.2	28.2	2.4	18.1	1.6	0.3	1.2	0.2	0.7
Taiwan.....	5,696	100.0	24.8	9.1	5.1	14.5	17.4	3.5	20.8	1.8	0.3	1.5	0.2	0.8
Other regions/countries														
Other Western Europe														
Croatia.....	614	100.0	22.1	6.8	3.7	25.5	12.7	5.6	3.3	2.1	2.4	14.6	0.4	0.7
Cyprus.....	54	100.0	8.4	9.2	9.3	1.9	19.2	11.5	10.9	9.0	0.0	6.5	0.0	14.0
Iceland.....	149	100.0	43.8	9.0	12.9	4.0	5.4	10.6	1.3	0.9	4.9	3.0	2.4	1.7
Norway.....	2,950	100.0	36.2	11.5	10.9	8.4	5.6	9.4	6.2	1.2	2.6	5.2	1.3	1.4
Switzerland.....	7,489	100.0	34.2	17.7	4.6	12.2	17.5	4.8	4.2	1.2	1.3	1.5	0.3	0.5
Turkey.....	2,206	100.0	41.6	6.7	4.5	16.6	8.7	5.7	11.2	0.7	1.0	2.0	0.2	1.1
Yugoslavia.....	568	100.0	22.2	8.9	3.5	18.7	19.8	3.7	18.8	2.1	0.4	0.7	0.5	0.6
All others.....	91	100.0	19.6	5.3	10.9	26.0	17.8	6.0	10.7	0.0	0.0	3.6	0.2	0.0
Other Asia														
Bangladesh.....	155	100.0	21.0	9.2	11.7	17.3	10.8	4.2	10.2	0.6	0.0	13.6	1.2	0.0
India.....	9,736	100.0	11.9	13.9	6.8	26.8	20.4	4.6	12.0	1.1	0.3	1.7	0.1	0.5
Indonesia.....	137	100.0	18.9	11.2	26.7	3.4	7.0	11.2	5.1	0.0	0.9	10.2	3.0	2.4
Malaysia.....	372	100.0	20.1	9.6	17.6	29.1	4.4	4.5	5.3	0.9	0.9	4.3	0.9	2.3
Pakistan.....	274	100.0	24.2	7.4	11.4	20.0	15.9	4.7	5.6	1.3	0.3	6.0	1.8	1.2
Philippines.....	153	100.0	12.7	10.1	52.1	1.5	4.3	6.9	1.3	0.0	0.7	7.4	0.4	2.6
Sri Lanka.....	78	100.0	20.0	19.7	23.3	8.1	10.5	4.3	0.6	0.0	0.0	7.7	2.6	3.2

**Regional and country portfolio of S&E articles, by field: 1996**

(Percent distribution)

Region and country/economy	Articles (number)	All fields	Clinical medicine	Biomedical research	Biology	Chemistry	Physics	Earth/space sciences	Engineering/ technology	Mathematics	Psychology	Social sciences	Health sciences	Professional fields
Thailand.....	386	100.0	44.1	12.3	15.5	7.0	3.5	3.0	8.5	0.3	1.0	2.8	1.1	1.0
Vietnam.....	113	100.0	17.7	7.4	3.2	10.3	23.6	4.4	6.7	21.3	0.0	3.2	2.2	0.0
All others.....	74	100.0	23.7	7.1	16.4	8.6	6.1	18.4	1.7	0.0	4.2	10.8	1.1	2.0
Eastern Europe/former USSR.....	35,074	100.0	7.3	12.3	4.8	26.3	32.8	5.0	7.0	1.9	0.8	1.5	0.1	0.3
Armenia.....	179	100.0	3.4	19.6	2.0	10.4	54.0	5.6	1.7	3.1	0.0	0.0	0.3	0.0
Azerbaijan.....	125	100.0	2.0	5.1	3.6	40.8	40.6	0.4	5.5	1.2	0.0	0.8	0.0	0.0
Bulgaria.....	968	100.0	11.4	9.9	6.1	28.2	23.1	4.7	10.5	3.4	1.2	0.8	0.4	0.5
Belarus.....	597	100.0	3.9	12.1	3.1	23.5	47.9	0.9	6.5	1.2	0.0	0.5	0.0	0.4
Czech Republic.....	2,249	100.0	11.1	14.4	7.3	31.6	15.3	6.1	5.9	1.8	2.3	4.0	0.1	0.2
Estonia.....	248	100.0	19.8	10.1	6.5	16.2	28.6	11.9	3.6	1.1	0.8	1.2	0.0	0.1
Georgia.....	126	100.0	3.6	8.1	1.2	18.2	48.6	4.8	7.5	4.5	2.0	1.6	0.0	0.0
Hungary.....	1,839	100.0	18.9	13.0	5.1	29.2	17.3	4.6	5.0	2.4	1.1	2.3	0.2	1.0
Kazakhstan.....	143	100.0	0.0	4.3	8.1	46.1	25.0	7.2	6.5	0.0	0.1	2.8	0.0	0.0
Latvia.....	168	100.0	7.1	10.1	3.3	29.1	32.4	7.8	7.0	2.0	0.0	0.0	0.0	1.4
Lithuania.....	196	100.0	7.9	8.7	3.8	25.5	37.8	4.1	10.1	1.4	0.0	0.5	0.2	0.0
Moldova.....	136	100.0	1.5	6.1	2.2	40.9	43.5	0.0	1.8	2.6	0.7	0.7	0.0	0.0
Poland.....	4,597	100.0	13.6	8.6	4.8	28.5	29.1	4.2	6.7	2.4	0.6	0.9	0.1	0.5
Romania.....	871	100.0	3.8	4.3	0.9	38.5	33.9	1.7	10.2	5.5	0.0	0.8	0.2	0.2
Russia.....	18,464	100.0	4.4	14.5	5.2	23.9	36.4	5.4	6.4	1.7	0.8	1.1	0.0	0.2
Slovakia.....	1,175	100.0	14.7	16.7	3.3	29.4	14.2	4.0	4.3	1.5	2.7	8.9	0.0	0.3
Ukraine.....	2,600	100.0	3.0	5.2	2.1	23.2	45.0	4.7	14.7	1.5	0.3	0.3	0.0	0.2
Uzbekistan.....	347	100.0	1.4	3.5	1.7	57.1	32.2	2.4	0.7	0.9	0.0	0.1	0.0	0.0
All others.....	45	100.0	2.2	19.3	5.5	22.8	22.3	20.2	3.3	2.2	0.0	2.2	0.0	0.0
Near East/North Africa.....	9,706	100.0	30.1	10.0	7.4	13.7	14.6	4.0	9.5	2.9	2.1	2.9	0.9	1.9
Algeria.....	156	100.0	7.4	8.8	7.3	21.7	29.2	6.9	13.5	3.4	0.0	1.6	0.0	0.2
Egypt.....	1,359	100.0	18.5	5.2	7.6	36.0	12.2	4.6	13.8	0.8	0.2	1.0	0.2	0.1
Iran.....	312	100.0	23.0	5.0	6.9	33.7	15.1	2.6	10.7	1.9	0.0	1.0	0.0	0.1
Israel.....	5,815	100.0	33.0	12.2	7.0	6.8	16.3	3.1	7.3	3.5	3.3	3.8	1.2	2.5
Jordan.....	167	100.0	25.9	5.3	6.5	18.2	14.4	6.4	16.6	0.6	0.5	3.0	0.6	2.1
Kuwait.....	240	100.0	23.9	15.0	5.2	14.9	4.4	10.3	18.7	1.0	1.0	3.1	0.8	1.8
Lebanon.....	68	100.0	39.9	7.1	6.8	4.4	8.5	2.2	12.6	3.7	2.9	8.5	0.0	3.4
Morocco.....	256	100.0	11.3	6.1	7.7	27.7	21.1	8.2	8.8	7.1	0.2	1.1	0.0	0.8
Oman.....	63	100.0	39.7	2.3	26.0	7.6	7.2	5.1	4.9	3.2	0.0	1.6	0.8	1.6
Saudi Arabia.....	754	100.0	44.1	9.0	5.5	9.5	7.8	4.1	13.6	1.6	0.1	1.1	0.9	2.6
Syria.....	52	100.0	10.8	1.8	63.7	8.7	9.1	1.9	1.0	1.0	0.0	1.9	0.0	0.0
Tunisia.....	159	100.0	27.0	6.9	5.9	23.9	15.9	6.7	5.2	6.4	0.0	0.7	0.0	1.5
United Arab Emirates.....	145	100.0	48.5	8.5	3.7	9.5	2.5	9.3	5.2	1.7	3.4	4.1	1.7	1.7
All others.....	159	100.0	23.1	2.7	10.0	18.5	10.6	9.5	17.2	1.9	0.0	3.0	2.0	1.6
Central/South America.....	10,468	100.0	23.4	15.7	12.6	12.7	18.0	6.0	4.8	1.8	1.2	1.6	1.8	0.5
Argentina.....	2,212	100.0	23.2	16.4	14.9	14.3	17.3	5.6	5.2	1.2	0.7	1.0	0.1	0.2
Brazil.....	3,830	100.0	22.2	17.9	9.4	11.7	21.4	5.2	5.2	2.3	0.7	1.5	1.9	0.4
Chile.....	928	100.0	33.3	12.5	11.3	16.9	6.4	9.6	4.5	2.3	0.4	1.6	0.6	0.5
Colombia.....	196	100.0	23.5	13.3	22.2	8.1	14.5	3.8	4.9	1.4	3.3	1.7	0.6	2.6

**Regional and country portfolio of S&E articles, by field: 1996**

(Percent distribution)

Region and country/economy	Articles (number)	All fields	Clinical medicine	Biomedical research	Biology	Chemistry	Physics	Earth/space sciences	Engineering/ technology	Mathematics	Psychology	Social sciences	Health sciences	Professional fields
Costa Rica.....	72	100.0	24.2	21.4	34.4	6.1	0.0	6.5	2.1	0.7	1.4	2.8	0.0	0.5
Cuba.....	194	100.0	25.7	16.7	9.0	18.6	18.9	2.8	4.0	0.9	0.8	1.1	1.4	0.3
Mexico.....	2,124	100.0	20.3	12.1	13.5	11.1	22.6	6.6	4.3	1.5	2.1	1.7	4.1	0.3
Peru.....	72	100.0	34.2	14.1	25.5	0.5	6.7	2.9	2.4	0.0	0.7	8.3	3.6	1.2
Uruguay.....	115	100.0	36.4	19.6	9.0	7.6	13.5	6.6	1.7	3.0	0.0	1.0	1.0	0.5
Venezuela.....	432	100.0	16.8	18.1	13.0	21.4	11.7	5.6	6.2	2.1	2.7	1.7	0.5	0.3
All others.....	724	100.0	22.3	15.9	17.6	14.5	7.8	7.0	4.6	1.4	2.9	3.6	1.1	1.3
Sub-Saharan Africa.....	3,982	100.0	33.1	11.4	20.2	7.8	4.5	7.2	3.5	0.9	1.9	5.3	1.7	2.5
Botswana.....	45	100.0	6.5	13.5	28.0	3.4	0.0	4.1	2.2	2.2	0.0	24.7	2.2	13.1
Cameroon.....	60	100.0	33.7	9.0	23.3	5.6	10.9	6.8	5.0	0.0	2.5	0.6	2.5	0.0
Ethiopia.....	88	100.0	39.4	8.6	32.2	6.2	0.0	3.3	0.0	0.0	0.0	3.8	0.3	6.3
Ghana.....	77	100.0	40.9	5.6	25.5	3.9	3.9	3.6	2.6	0.0	0.3	3.5	3.0	7.2
Kenya.....	275	100.0	48.2	10.1	24.8	1.1	0.2	4.5	0.7	0.0	0.8	6.8	1.3	1.5
Nigeria.....	433	100.0	26.2	11.6	27.4	13.0	3.0	4.7	1.9	0.6	0.6	3.9	2.9	4.1
Senegal.....	64	100.0	41.9	15.8	13.6	2.0	2.8	5.5	3.7	0.8	0.0	10.5	3.5	0.0
South Africa.....	2,282	100.0	27.7	12.4	17.0	10.0	6.3	9.1	4.7	1.1	2.9	5.7	0.9	2.2
Tanzania.....	107	100.0	53.2	9.6	21.0	0.5	0.0	6.3	2.3	0.0	0.2	4.1	2.0	0.9
Uganda.....	43	100.0	59.8	5.2	22.0	0.0	0.0	3.1	0.0	0.0	0.0	2.3	4.6	2.9
Zimbabwe.....	119	100.0	47.7	9.7	19.9	1.1	1.3	5.7	1.3	0.4	2.0	4.5	4.4	2.1
All others.....	392	100.0	47.3	9.0	22.6	1.6	2.5	4.8	2.1	1.3	0.6	2.9	4.0	1.7
Other														
Australia.....	13,911	100.0	29.7	12.6	14.6	8.0	8.1	7.0	5.3	1.6	3.1	4.9	2.8	2.2
Canada.....	24,583	100.0	27.1	14.8	11.6	8.7	7.7	7.5	7.6	1.8	4.2	4.7	1.9	2.6
New Zealand.....	2,684	100.0	28.0	10.2	23.7	6.7	3.9	8.7	3.2	1.1	4.5	4.7	1.5	3.8
All others.....	49	100.0	41.5	8.7	24.0	2.0	0.0	8.4	2.0	2.0	0.0	5.1	0.4	5.8

EU = European Union; USSR = Union of Soviet Socialist Republics

NOTES: Publication counts from set of journals classified and covered by *Science Citation Index (SCI)* and *Social Sciences Citation Index (SSCI)*. Articles assigned to region/country/economy on basis of institutional address(es) listed on article. Articles on fractional-count basis, i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on basis of proportion of its participating institutions. Countries with article output <0.0% of world output in 2003 grouped in "all others" except Luxembourg. China includes Hong Kong.

SOURCES: Thomson ISI, *SCI* and *SSCI*, <http://www.isinet.com/products/citation/>; iPLQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

**Regional and country portfolio of S&E articles, by field: 2003**

(Percent distribution)

Region and country/economy	Articles (number)	All fields	Clinical medicine	Biomedical research	Biology	Chemistry	Physics	Earth/space sciences	Engineering/ technology	Mathematics	Psychology	Social sciences	Health sciences	Professional fields
All countries/economies.....	698,726	100.0	27.9	13.7	7.1	11.9	13.9	5.5	9.0	2.2	2.2	3.1	1.4	2.1
Major S&E article producers.....	546,626	100.0	29.3	14.2	6.4	11.0	13.3	5.4	9.0	2.1	2.3	3.2	1.5	2.3
United States.....	211,233	100.0	31.2	16.3	6.6	7.5	8.8	5.9	7.0	3.7	1.8	4.6	2.4	4.1
EU-15.....	220,002	100.0	31.6	13.7	6.8	11.1	13.3	5.7	7.6	2.0	2.5	3.0	1.2	1.5
Austria.....	4,906	100.0	42.3	12.9	5.0	9.1	12.4	4.4	6.2	1.3	2.7	2.4	0.4	1.0
Belgium.....	6,604	100.0	31.5	13.7	8.5	11.1	13.3	5.0	7.4	2.2	2.3	2.6	0.8	1.6
Denmark.....	5,291	100.0	36.5	17.5	11.7	7.0	9.1	6.1	4.3	1.4	1.5	2.6	0.9	1.4
Finland.....	5,202	100.0	35.9	13.2	10.5	7.5	9.6	5.1	7.9	2.0	1.5	2.5	2.3	2.1
France.....	31,971	100.0	26.4	14.3	5.9	12.9	16.9	6.8	8.6	1.0	4.7	1.8	0.3	0.5
Germany.....	44,305	100.0	31.3	13.7	5.3	12.4	16.8	5.4	7.7	2.0	2.2	1.9	0.6	0.8
Greece.....	3,770	100.0	32.4	8.0	8.8	12.3	12.3	6.2	12.1	0.8	2.6	3.1	0.3	1.2
Ireland.....	1,758	100.0	30.7	14.6	11.6	10.5	10.0	3.9	7.3	1.3	2.2	4.8	1.6	1.6
Italy.....	24,696	100.0	34.8	12.3	4.9	11.5	16.7	6.2	8.0	0.9	2.8	1.2	0.3	0.5
Luxembourg.....	46	100.0	29.9	13.1	12.8	4.7	12.9	3.2	7.6	1.1	1.6	4.3	2.7	6.1
Netherlands.....	13,475	100.0	38.6	13.3	6.8	7.9	8.8	5.2	5.7	4.0	1.4	4.0	1.8	2.5
Portugal.....	2,625	100.0	13.4	13.5	12.3	16.4	16.6	5.5	15.8	0.8	3.4	1.4	0.3	0.7
Spain.....	16,826	100.0	24.5	13.0	12.0	17.8	11.9	5.5	7.4	1.1	3.5	1.9	0.4	1.0
Sweden.....	10,237	100.0	36.5	15.4	7.5	8.5	10.0	4.4	7.1	2.2	1.5	2.6	3.0	1.4
United Kingdom.....	48,288	100.0	32.1	14.2	6.2	8.2	9.3	6.0	7.1	3.1	1.6	6.1	2.8	3.4
Japan.....	60,067	100.0	27.2	13.3	6.3	14.7	20.8	3.1	12.1	0.4	1.3	0.5	0.1	0.1
East Asia-4.....	55,324	100.0	14.9	9.2	4.2	20.2	22.5	4.0	19.2	2.8	0.5	1.0	0.4	1.1
China.....	29,186	100.0	10.7	8.2	4.2	24.8	24.9	4.3	16.8	0.4	3.6	0.8	0.3	0.9
Singapore.....	3,122	100.0	15.3	9.4	2.7	12.8	18.2	2.4	28.1	0.8	3.1	3.7	0.6	3.0
South Korea.....	13,746	100.0	17.0	12.0	4.3	16.5	22.7	2.8	20.7	0.3	1.8	0.9	0.4	0.8
Taiwan.....	9,270	100.0	25.0	8.0	4.7	13.8	16.3	5.0	21.3	0.7	1.6	1.2	0.7	1.7
Other regions/countries														
Other Western Europe														
Croatia.....	845	100.0	21.4	8.4	6.8	18.2	13.3	3.4	4.9	1.2	1.1	20.3	0.3	0.8
Cyprus.....	92	100.0	18.6	3.7	3.1	9.6	16.3	4.8	9.3	4.2	8.0	12.5	0.1	9.8
Iceland.....	203	100.0	34.1	14.6	10.0	6.1	5.4	13.8	3.2	3.1	1.6	1.9	4.3	2.0
Norway.....	3,339	100.0	32.8	12.0	14.3	5.2	4.5	10.0	5.8	3.4	1.5	5.6	2.9	2.0
Switzerland.....	8,542	100.0	31.8	16.0	5.6	12.5	14.5	6.6	6.2	1.3	1.6	2.4	0.7	0.9
Turkey.....	6,224	100.0	44.6	7.2	7.6	11.2	8.9	4.6	10.9	0.8	1.0	1.6	0.7	1.0
Yugoslavia.....	600	100.0	17.3	8.4	5.5	19.2	20.8	3.6	20.2	0.3	3.6	0.6	0.3	0.2
All others.....	124	100.0	22.9	6.1	4.5	24.9	16.2	10.0	10.3	1.5	2.0	1.3	0.4	0.0
Other Asia														
Bangladesh.....	204	100.0	14.3	10.3	10.5	13.2	19.1	7.9	13.7	0.7	0.0	6.2	3.6	0.5
India.....	12,774	100.0	15.5	12.9	6.9	26.6	18.1	4.9	11.9	0.2	1.2	1.1	0.2	0.4
Indonesia.....	178	100.0	16.5	13.1	24.3	8.4	7.9	9.4	5.9	0.4	0.9	10.5	2.3	0.6
Malaysia.....	520	100.0	20.4	9.5	16.9	17.6	9.0	4.2	15.5	1.1	1.3	3.2	0.0	1.4
Pakistan.....	368	100.0	20.1	9.8	18.8	21.1	15.1	3.3	5.9	0.4	0.2	4.1	0.7	0.4
Philippines.....	179	100.0	15.9	12.5	32.4	4.8	8.0	5.9	3.4	1.6	3.1	9.6	2.0	0.9
Sri Lanka.....	141	100.0	25.2	8.9	29.5	5.5	13.0	6.3	4.8	0.4	0.4	3.2	1.7	1.1



**Regional and country portfolio of S&E articles, by field: 2003**

(Percent distribution)

Region and country/economy	Articles (number)	All fields	Clinical medicine	Biomedical research	Biology	Chemistry	Physics	Earth/space sciences	Engineering/ technology	Mathematics	Psychology	Social sciences	Health sciences	Professional fields
Thailand.....	1,072	100.0	31.7	13.0	15.9	15.7	4.7	3.6	9.2	0.6	0.8	1.8	2.2	0.8
Vietnam.....	216	100.0	14.3	4.9	11.0	5.3	37.0	2.9	5.4	0.0	12.6	1.8	4.1	0.7
All others.....	125	100.0	33.1	9.9	17.9	3.3	5.4	14.2	2.6	0.1	2.7	6.6	3.4	0.8
Eastern Europe/former USSR.....	35,067	100.0	9.1	9.0	4.7	25.5	30.6	5.9	9.2	0.7	3.6	1.5	0.1	0.2
Armenia.....	175	100.0	3.2	5.8	0.9	17.3	56.3	7.5	5.0	0.0	3.4	0.6	0.0	0.0
Azerbaijan.....	107	100.0	0.7	2.7	2.1	34.7	44.3	3.9	7.4	0.0	2.8	0.9	0.5	0.0
Bulgaria.....	829	100.0	11.9	10.8	6.1	24.9	21.1	3.9	16.9	0.1	3.5	0.5	0.1	0.2
Belarus.....	532	100.0	3.1	6.5	3.5	26.3	45.0	1.1	10.6	0.0	2.9	0.8	0.0	0.1
Czech Republic.....	2,950	100.0	16.1	16.3	8.5	22.8	15.9	5.3	8.4	1.1	2.8	2.3	0.0	0.6
Estonia.....	368	100.0	13.9	12.2	11.1	10.5	17.6	11.7	11.2	3.8	1.8	3.9	1.7	0.5
Georgia.....	117	100.0	10.1	4.1	2.0	13.0	39.6	9.6	9.5	0.0	9.5	1.9	0.1	0.6
Hungary.....	2,503	100.0	26.4	14.4	5.4	20.0	16.0	3.0	7.6	0.8	4.2	1.6	0.2	0.4
Kazakhstan.....	128	100.0	3.4	5.4	2.4	43.9	24.5	3.8	8.7	0.0	6.6	1.2	0.0	0.0
Latvia.....	153	100.0	7.1	12.4	2.1	26.6	31.3	3.1	14.1	0.3	0.3	2.0	0.7	0.0
Lithuania.....	322	100.0	10.3	12.1	8.6	17.5	25.4	3.3	9.4	0.0	10.2	2.2	0.8	0.1
Moldova.....	78	100.0	1.9	4.3	4.3	25.8	55.7	0.0	5.8	0.0	1.0	1.3	0.0	0.0
Poland.....	6,770	100.0	15.5	8.7	6.1	25.4	26.8	4.1	8.7	0.4	3.4	0.7	0.1	0.1
Romania.....	988	100.0	3.6	3.0	1.1	39.3	29.6	3.0	10.9	0.2	8.5	0.7	0.0	0.3
Russia.....	15,782	100.0	3.5	7.6	3.5	27.2	35.6	8.0	8.5	0.8	3.5	1.6	0.1	0.2
Slovakia.....	943	100.0	13.1	16.7	6.0	19.9	21.4	3.3	6.8	2.3	2.4	7.5	0.1	0.5
Ukraine.....	2,089	100.0	3.4	4.2	2.0	21.6	45.0	4.7	15.5	0.2	3.0	0.3	0.0	0.0
Uzbekistan.....	192	100.0	2.9	2.0	2.7	36.2	46.1	2.9	3.8	0.5	1.9	0.5	0.5	0.0
All others.....	42	100.0	7.3	1.1	4.3	11.8	22.2	27.2	9.5	0.0	9.4	5.9	0.0	1.2
Near East/North Africa.....	13,465	100.0	27.3	9.5	6.5	16.3	14.9	3.6	11.3	1.9	3.6	2.4	1.0	1.7
Algeria.....	285	100.0	5.0	2.8	2.9	17.7	36.0	2.6	27.1	0.0	5.7	0.1	0.0	0.0
Egypt.....	1,720	100.0	18.6	5.7	5.4	31.0	17.1	4.5	15.6	0.0	1.0	0.4	0.1	0.4
Iran.....	1,806	100.0	18.2	4.0	5.1	39.3	13.6	2.7	12.8	0.7	2.3	0.7	0.1	0.3
Israel.....	6,941	100.0	32.3	13.0	6.9	7.4	14.9	3.2	7.3	3.1	3.9	3.7	1.6	2.7
Jordan.....	263	100.0	20.1	8.2	13.2	12.3	14.9	5.8	19.6	0.2	2.4	2.2	1.0	0.0
Kuwait.....	244	100.0	38.9	8.4	6.9	9.0	2.2	3.4	19.7	3.8	2.6	2.0	1.9	1.2
Lebanon.....	223	100.0	49.5	6.9	5.3	3.7	3.9	5.1	11.6	0.4	4.3	4.9	2.6	1.7
Morocco.....	428	100.0	15.1	5.3	7.2	21.5	22.3	6.2	11.1	0.1	10.9	0.4	0.0	0.0
Oman.....	114	100.0	25.3	7.4	10.8	9.6	12.8	7.3	21.1	1.3	3.7	0.3	0.0	0.4
Saudi Arabia.....	573	100.0	35.2	5.4	3.2	16.9	11.6	3.4	18.1	0.6	3.0	1.0	0.8	1.0
Syria.....	67	100.0	16.7	10.0	44.1	13.2	5.7	7.8	1.2	0.0	0.0	0.7	0.5	0.0
Tunisia.....	452	100.0	24.4	7.2	6.5	19.8	14.1	4.2	14.8	0.0	8.1	0.7	0.0	0.2
United Arab Emirates.....	193	100.0	25.2	12.1	5.8	6.5	7.8	4.7	20.6	2.9	4.8	3.5	1.5	4.7
All others.....	158	100.0	29.7	12.3	3.9	12.0	8.7	5.5	18.1	0.6	2.2	3.5	1.3	2.1
Central/South America.....	18,933	100.0	22.6	14.4	13.9	12.5	16.5	5.8	7.9	0.8	2.4	1.5	1.3	0.5
Argentina.....	3,086	100.0	21.3	15.2	18.7	13.4	14.5	6.7	5.7	0.5	1.9	1.4	0.4	0.3
Brazil.....	8,684	100.0	24.6	15.7	10.8	12.9	17.1	4.3	9.0	0.6	2.4	1.0	1.4	0.4
Chile.....	1,500	100.0	24.5	10.5	11.7	15.2	10.8	10.5	7.7	0.9	4.3	2.1	0.5	1.3
Colombia.....	337	100.0	25.2	14.3	17.1	8.9	15.7	3.4	6.2	2.3	2.4	2.6	1.5	0.5

**Regional and country portfolio of S&E articles, by field: 2003**

(Percent distribution)

Region and country/economy	Articles (number)	All fields	Clinical medicine	Biomedical research	Biology	Chemistry	Physics	Earth/space sciences	Engineering/ technology	Mathematics	Psychology	Social sciences	Health sciences	Professional fields
Costa Rica.....	84	100.0	25.1	16.6	36.3	1.2	5.7	4.6	2.3	1.2	1.8	2.8	2.5	0.0
Cuba.....	264	100.0	24.3	19.4	12.4	13.5	17.7	1.6	7.4	0.5	0.9	1.3	0.9	0.0
Mexico.....	3,747	100.0	17.5	12.0	15.6	9.8	21.2	7.4	8.4	1.5	2.1	2.1	1.9	0.5
Peru.....	129	100.0	28.7	13.0	25.2	6.3	5.9	7.3	6.0	0.4	1.2	3.2	2.6	0.3
Uruguay.....	194	100.0	21.6	27.3	18.6	6.8	12.4	4.3	1.7	0.0	3.9	2.1	0.7	0.5
Venezuela.....	563	100.0	20.5	13.6	12.1	21.4	14.1	3.1	9.7	0.3	2.9	1.4	0.6	0.2
All others.....	908	100.0	22.9	12.9	18.9	15.7	10.7	5.5	6.9	0.8	2.0	2.3	0.9	0.4
Sub-Saharan Africa.....	4,219	100.0	26.4	11.3	23.3	7.5	4.5	7.9	5.2	1.9	1.3	5.8	2.2	2.7
Botswana.....	76	100.0	12.2	4.1	25.2	14.4	11.8	4.1	1.8	0.0	1.3	11.8	0.9	12.5
Cameroon.....	123	100.0	27.6	9.3	27.7	3.9	16.8	3.6	3.9	0.7	2.2	3.4	0.8	0.0
Ethiopia.....	99	100.0	30.0	9.9	37.4	2.4	1.0	7.8	0.5	0.0	0.0	6.1	2.4	2.5
Ghana.....	83	100.0	36.3	10.2	19.7	5.6	6.2	2.2	3.4	0.6	0.0	10.0	4.5	1.2
Kenya.....	258	100.0	32.0	11.9	32.4	1.5	0.8	8.0	1.2	0.8	0.0	7.5	1.6	2.4
Nigeria.....	384	100.0	29.1	9.0	32.2	6.0	3.6	4.9	3.3	0.6	0.4	5.5	2.2	3.3
Senegal.....	79	100.0	28.3	8.3	27.1	8.7	6.3	4.4	4.0	0.0	3.6	4.9	3.2	1.3
South Africa.....	2,364	100.0	21.3	12.6	18.4	10.4	5.0	9.9	7.4	3.0	1.7	5.6	1.6	3.1
Tanzania.....	86	100.0	44.8	16.4	20.0	1.5	2.3	6.1	0.0	0.0	1.2	4.0	3.7	0.0
Uganda.....	90	100.0	35.3	7.0	32.1	0.0	0.0	5.0	1.1	1.7	0.0	6.5	10.7	0.6
Zimbabwe.....	96	100.0	34.9	7.6	30.7	0.5	2.1	5.5	2.6	0.7	0.9	10.1	1.2	3.1
All others.....	481	100.0	38.8	9.2	28.4	2.5	2.6	4.5	2.7	0.7	1.6	4.3	3.7	1.1
Other														
Australia.....	15,809	100.0	30.2	12.3	14.9	7.3	6.8	7.5	6.6	3.7	1.4	4.2	2.4	2.6
Canada.....	24,803	100.0	29.0	14.6	9.9	8.0	7.3	6.9	8.6	3.9	2.0	4.6	2.6	2.4
New Zealand.....	3,034	100.0	25.3	9.5	23.5	5.3	4.2	10.1	5.1	4.8	1.5	4.9	1.7	4.2
All others.....	52	100.0	31.4	12.3	23.8	4.2	0.0	8.9	5.4	1.0	2.9	9.6	0.0	0.5

EU = European Union; USSR = Union of Soviet Socialist Republics

NOTES: Publication counts from set of journals classified and covered by *Science Citation Index (SCI)* and *Social Sciences Citation Index (SSCI)*. Articles assigned to region/country/economy on basis of institutional address(es) listed on article. Articles on fractional-count basis, i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on basis of proportion of its participating institutions. Countries with article output <0.0% of world output in 2003 grouped in "all others" except Luxembourg. China includes Hong Kong.

SOURCES: Thomson ISI, *SCI* and *SSCI*, <http://www.isinet.com/products/citation/>; iPLQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

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Appendix table 5-46  
**Breadth of international S&E collaboration, by country/economy and income level: 1996 and 2003**

Income level, rank, and country/economy	Collaborating countries	
	1996	2003
<b>High income</b>		
1 United States.....	155	172
2 United Kingdom.....	144	158
3 France.....	126	146
4 European Union.....	136	143
5 Germany.....	123	136
6 Netherlands.....	110	131
7 Canada.....	110	130
8 Japan.....	97	128
9 Italy.....	110	126
10 Belgium.....	111	121
11 Sweden.....	100	116
12 Spain.....	88	115
13 Australia.....	101	114
14 Denmark.....	89	112
15 Austria.....	78	101
16 Israel.....	70	91
17 South Korea.....	54	91
18 Ireland.....	53	77
19 Taiwan.....	52	69
20 Singapore.....	50	64
<b>Middle and low income</b>		
1 India.....	82	107
2 Brazil.....	83	106
3 South Africa.....	76	104
4 China.....	83	102
5 Mexico.....	77	98
6 Russia.....	82	94
7 Turkey.....	57	94
8 Poland.....	70	90
9 Argentina.....	55	87
10 Thailand.....	60	80
11 Chile.....	63	78
12 Hungary.....	71	77
13 Kenya.....	66	75
14 Egypt.....	60	72
15 Ukraine.....	59	68
16 Zimbabwe.....	37	67
17 Saudi Arabia.....	42	63
18 Nigeria.....	49	61
19 Morocco.....	41	60
20 Algeria.....	33	54
21 Armenia.....	34	43
22 Ethiopia.....	26	40

NOTES: Data are number of countries that have jointly authored publications (based on institutional address) with indicated country. Countries ranked by number of collaborating countries in 2003.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iplQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations. Income classification by the World Bank, <http://www.worldbank.org/data/countryclass/countryclass.html>.

## Coauthorship share of United States, EU-15, Japan, and East Asia-4 on international S&amp;E articles of indicated region and country/economy: 1988

(Percent)

Region and country/economy	S&E articles (number)		United States	EU-15							Japan	East Asia-4		
	Total	International		Total	France	Germany <sup>a</sup>	Italy	Netherlands	Spain	UK		Total	China	South Korea
<b>Major S&amp;E article producers</b>														
United States.....	187,225	19,294	na	47.0	7.4	9.4	5.1	3.0	1.6	10.6	7.9	4.6	2.7	0.8
EU-15.....	144,157	25,179	48.2	na	na	na	na	na	na	na	4.0	2.0	1.7	0.1
Austria.....	2,678	782	20.9	54.1	4.3	29.0	4.3	2.7	0.5	5.7	2.2	0.6	0.5	0.0
Belgium.....	4,386	1,425	21.1	57.8	18.0	7.9	4.7	11.3	2.2	7.3	1.5	0.3	0.3	0.0
Denmark.....	4,044	1,090	25.9	50.6	3.9	10.2	5.0	2.5	1.0	11.0	2.0	0.5	0.5	0.0
Finland.....	3,185	724	27.6	47.6	4.2	5.9	1.8	3.4	0.3	7.9	1.6	0.5	0.5	0.0
France.....	24,393	5,681	25.2	41.5	na	9.2	7.0	2.9	4.1	8.3	2.1	1.0	0.8	0.1
Germany <sup>b</sup> .....	29,164	6,435	28.6	38.7	8.1	na	4.4	4.0	1.6	8.2	3.8	1.2	1.0	0.1
Greece.....	1,487	448	34.4	48.8	11.3	12.7	2.1	1.5	0.5	16.1	1.2	0.3	0.3	0.0
Ireland.....	941	286	21.3	58.5	7.2	5.7	2.2	4.0	1.1	33.2	1.7	2.1	1.9	0.0
Italy.....	12,821	3,096	31.3	45.1	12.4	8.5	na	2.5	2.4	10.7	1.4	1.4	1.2	0.1
Netherlands.....	9,797	2,192	27.8	51.8	7.8	12.0	3.8	na	1.6	12.4	2.1	0.8	0.7	0.0
Portugal.....	542	203	21.3	67.9	15.7	7.8	2.1	5.5	4.9	25.4	0.7	0.3	0.3	0.0
Spain.....	6,109	1,255	24.6	58.4	18.8	8.4	6.9	2.6	na	15.1	1.7	0.1	0.1	0.0
Sweden.....	8,767	2,211	31.5	42.1	4.9	7.4	3.8	2.8	0.7	8.4	2.1	0.9	0.7	0.0
United Kingdom.....	40,335	7,125	29.7	36.1	6.6	7.4	4.9	3.7	2.5	na	2.2	1.9	1.4	0.1
Japan.....	36,041	3,097	49.5	25.5	3.9	7.8	1.6	1.5	0.7	5.3	na	6.7	4.1	1.4
East Asia-4.....	8,194	1,824	50.9	20.9	3.4	4.4	2.3	1.0	0.1	7.1	13.1	na	na	na
China.....	5,256	1,181	44.8	26.1	4.3	5.4	3.1	1.4	0.1	8.2	12.0	0.9	na	0.1
Singapore.....	468	111	21.9	26.8	1.2	0.6	0.9	0.0	0.0	18.5	6.8	4.8	2.6	0.6
South Korea.....	909	249	60.6	9.0	2.4	3.1	0.9	0.4	0.0	1.7	21.8	1.0	0.3	na
Taiwan.....	1,581	303	71.9	6.3	1.4	1.1	0.4	0.2	0.0	2.5	11.5	2.8	1.8	0.4
<b>Other regions/countries</b>														
<b>Other Asia</b>														
Bangladesh.....	129	63	34.1	39.1	0.0	4.4	4.4	0.0	0.0	20.5	4.4	0.7	0.0	0.0
India.....	9,403	976	34.5	38.5	4.3	10.9	3.0	1.6	0.4	14.4	4.5	0.7	0.4	0.0
Indonesia.....	106	81	23.3	37.3	8.9	0.7	0.0	13.4	0.0	10.9	12.4	4.1	0.6	1.0
Malaysia.....	254	83	18.3	38.9	3.1	4.1	0.0	0.0	0.0	29.2	10.2	5.7	2.4	1.4
Pakistan.....	277	78	27.0	43.7	0.0	8.4	1.2	0.0	0.0	22.8	3.1	0.0	0.0	0.0
Philippines.....	171	83	38.2	19.0	4.4	7.0	1.1	1.7	0.0	2.3	20.4	1.8	1.5	0.0
Sri Lanka.....	144	66	20.0	45.8	10.9	7.7	0.0	2.7	0.0	16.4	3.6	0.9	0.0	0.9
Thailand.....	397	205	29.5	31.8	2.0	4.5	0.0	1.4	0.0	16.8	17.3	1.2	0.2	0.5
Vietnam.....	71	37	0.0	55.2	14.7	12.9	2.6	8.6	0.0	0.0	0.0	0.0	0.0	0.0
<b>Other Western Europe</b>														
Cyprus.....	18	5	0.0	81.8	0.0	0.0	27.3	0.0	0.0	36.4	0.0	0.0	0.0	0.0
Iceland.....	94	44	3.3	58.3	3.0	5.3	0.0	0.0	0.0	31.5	1.0	0.0	0.0	0.0
Norway.....	2,564	684	3.1	55.3	2.6	7.6	1.9	1.9	0.5	12.0	1.3	0.6	0.4	0.0
Switzerland.....	6,764	2,485	2.8	59.2	12.6	16.5	9.8	2.8	1.7	7.0	2.4	0.8	0.8	0.0
Turkey.....	576	129	5.4	44.4	4.1	15.4	1.8	2.0	0.5	14.9	1.1	0.5	0.5	0.0
Yugoslavia.....	1,482	491	30.2	43.8	4.8	19.6	4.9	1.8	0.5	5.2	1.2	0.5	0.2	0.0

**Coauthorship share of United States, EU-15, Japan, and East Asia-4 on international S&E articles of indicated region and country/economy: 1988**

(Percent)

Region and country/economy	S&E articles (number)		United States	EU-15						East Asia-4				
	Total	International		Total	France	Germany <sup>a</sup>	Italy	Netherlands	Spain	UK	Japan	Total	China	South Korea
Eastern Europe/former USSR .....	43,219	3,485	20.5	62.2	8.7	13.3	6.6	2.7	0.8	6.1	2.1	0.5	0.4	0.0
Bulgaria.....	1,233	270	8.3	41.0	7.2	8.5	4.8	0.4	0.1	5.0	1.6	0.1	0.1	0.0
Hungary .....	2,110	718	24.3	43.4	4.8	11.0	4.5	1.9	0.6	4.6	2.6	0.1	0.1	0.0
Poland.....	4,696	1,211	21.4	53.3	9.1	14.2	5.7	2.9	0.8	6.0	1.0	0.5	0.5	0.0
Romania.....	440	88	18.7	43.6	4.9	6.9	14.1	2.5	1.1	6.0	3.0	2.1	2.1	0.0
Former USSR.....	32,240	615	8.8	44.5	5.4	22.4	4.4	1.5	0.4	2.7	1.1	0.3	0.2	0.0
Central/South America .....	6,612	1,896	44.9	41.1	10.3	7.1	4.4	1.2	4.3	8.3	1.7	0.2	0.1	0.0
Argentina .....	1,566	266	31.1	46.0	16.0	7.8	7.5	0.9	2.9	5.5	0.3	0.0	0.0	0.0
Brazil.....	2,100	621	39.6	38.9	10.4	8.5	4.1	1.1	1.7	8.3	1.8	0.5	0.3	0.0
Chile.....	820	247	37.6	38.4	7.3	8.7	4.0	1.7	9.9	2.8	1.4	0.0	0.0	0.0
Colombia.....	118	59	59.8	25.6	4.4	6.2	4.0	0.0	1.5	8.5	1.5	0.0	0.0	0.0
Costa Rica.....	80	47	59.1	21.3	0.0	11.3	0.0	2.0	1.3	1.6	0.0	0.0	0.0	0.0
Cuba .....	98	55	5.3	51.1	5.9	0.0	15.6	0.0	1.6	0.8	0.0	0.0	0.0	0.0
Mexico .....	1,058	321	50.4	31.1	8.5	4.5	1.0	1.6	6.4	5.8	0.7	0.0	0.0	0.0
Peru .....	108	70	41.1	39.5	9.5	8.2	0.8	0.0	4.1	9.0	4.7	0.3	0.3	0.0
Uruguay .....	50	16	19.6	46.4	11.3	6.2	0.0	0.0	6.2	6.2	0.0	0.0	0.0	0.0
Venezuela.....	360	124	40.6	37.9	7.0	1.5	4.0	0.0	5.9	14.0	2.0	0.0	0.0	0.0
Near East/North Africa .....	9,326	2,691	49.9	36.3	13.2	7.6	1.4	1.0	0.3	9.3	1.1	0.3	0.3	0.0
Algeria.....	109	78	3.1	86.4	74.5	1.7	1.5	0.0	0.0	5.6	0.0	0.0	0.0	0.0
Egypt.....	1,292	306	31.9	38.4	8.5	12.2	2.2	0.7	0.0	10.7	1.5	0.5	0.5	0.0
Iran .....	112	47	41.1	33.0	5.8	1.9	3.9	0.0	1.3	18.1	0.0	2.6	2.6	0.0
Israel.....	5,845	1,706	62.4	24.6	5.2	8.3	1.1	1.2	0.2	5.2	1.2	0.3	0.1	0.0
Jordan.....	191	55	41.8	34.1	2.5	8.2	0.0	0.0	0.0	20.1	0.0	0.0	0.0	0.0
Kuwait.....	342	74	22.1	42.4	1.3	1.3	0.0	0.7	0.0	30.7	2.8	0.9	0.9	0.0
Lebanon.....	64	17	41.2	43.7	30.3	0.0	0.0	3.4	0.0	10.1	0.0	0.0	0.0	0.0
Morocco.....	178	119	14.6	79.1	72.6	2.3	0.8	0.0	1.7	1.2	0.8	0.8	0.8	0.0
Oman .....	22	14	19.8	58.9	8.7	4.7	0.0	11.6	0.0	21.1	0.0	0.0	0.0	0.0
Saudi Arabia.....	638	131	36.2	28.9	0.0	0.7	2.7	0.7	0.0	23.4	0.0	0.0	0.0	0.0
Tunisia.....	139	79	3.5	94.3	88.1	1.2	1.2	1.2	1.2	0.0	0.0	0.6	0.6	0.0
United Arab Emirates.....	29	11	11.0	39.0	4.9	8.5	0.0	0.0	0.0	25.6	2.4	0.0	0.0	0.0
Sub-Saharan Africa.....	5,195	1,247	29.0	51.1	11.5	5.8	2.6	1.9	0.1	19.4	2.1	0.5	0.2	0.0
Cameroon .....	52	31	14.2	68.7	42.9	0.0	0.0	0.0	0.0	20.0	3.8	0.0	0.0	0.0
Ethiopia.....	91	37	10.3	61.5	0.0	9.4	8.5	2.6	0.0	25.6	0.0	0.0	0.0	0.0
Ghana .....	48	18	20.2	60.0	7.1	0.0	6.3	3.2	0.0	34.0	9.5	0.0	0.0	0.0
Kenya.....	371	146	35.5	34.8	1.5	1.8	0.0	1.7	0.0	22.9	3.3	0.0	0.0	0.0
Nigeria .....	966	153	37.5	43.1	3.3	6.8	2.1	1.7	0.2	23.8	1.9	0.2	0.2	0.0
Senegal.....	0	0	na	na	na	na	na	na	na	na	na	na	na	na
South Africa.....	2,724	385	35.7	36.3	2.5	9.6	2.7	0.9	0.2	15.4	2.2	0.5	0.0	0.0
Tanzania.....	86	39	12.8	46.8	3.7	7.0	0.0	3.1	0.0	16.7	2.3	0.0	0.0	0.0
Uganda.....	25	7	0.0	75.1	14.0	0.0	4.0	0.0	0.0	57.1	0.0	0.0	0.0	0.0
Zimbabwe.....	144	52	23.9	43.3	0.0	0.0	0.0	5.4	0.0	25.1	0.0	0.0	0.0	0.0

**Coauthorship share of United States, EU-15, Japan, and East Asia-4 on international S&E articles of indicated region and country/economy: 1988**

(Percent)

Region and country/economy	S&E articles (number)		United States	EU-15							Japan	East Asia-4		
	Total	International		Total	France	Germany <sup>a</sup>	Italy	Netherlands	Spain	UK		Total	China	South Korea
Other														
Australia.....	10,951	1,985	37.3	32.8	2.3	5.4	1.3	1.3	0.2	17.9	3.3	3.6	2.4	0.1
Canada.....	24,008	4,906	51.3	27.3	7.3	3.2	1.6	1.6	0.6	7.8	3.6	2.2	1.5	0.2
New Zealand .....	2,349	493	35.6	25.5	2.7	2.2	0.3	0.8	0.1	16.5	2.5	0.8	0.7	0.0

na = not applicable

EU = European Union; UK = United Kingdom; USSR = Union of Soviet Socialist Republics

<sup>a</sup>Includes former East Germany.<sup>b</sup>Includes former West Germany only.

NOTES: Data are region/country/economy's share of internationally coauthored articles with indicated region/country/economy. Authorship based on institutional address. International articles are those with at least one author at institutional address in given country/economy and one author at foreign address. Share based on article counts calculated on whole-count basis, i.e., each collaborating institution is credited one count. EU-15 consists of 15 EU countries before expansion of member countries on May 1, 2004 (listed countries plus Luxembourg). China data include Hong Kong. Eastern Europe consists of Bulgaria, Czech Republic, Hungary, Poland, and Romania.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iplQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

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**Coauthorship share of United States, EU-15, Japan, and East Asia-4 on international S&E articles of indicated region and country/economy: 1996**

(Percent)

Region and country/economy	S&E articles (number)		United States	EU-15							Japan	East Asia-4		
	Total	International		Total	France	Germany	Italy	Netherlands	Spain	UK		Total	China	South Korea
<b>Major S&amp;E article producers</b>														
United States.....	221,414	39,046	na	46.9	6.9	9.9	5.6	3.1	2.4	10.2	8.3	6.6	2.6	2.0
EU-15.....	215,494	58,576	41.4	na	na	na	na	na	na	na	4.9	3.0	2.2	0.3
Austria.....	4,902	2,194	18.2	50.9	5.0	25.0	4.5	2.5	2.0	6.6	1.5	1.2	1.0	0.2
Belgium.....	7,641	3,514	15.8	60.6	17.1	8.5	5.0	10.4	3.4	9.1	1.9	0.9	0.7	0.1
Denmark.....	6,036	2,632	20.3	54.1	5.6	8.9	5.8	3.6	2.7	11.0	1.9	0.9	0.4	0.1
Finland.....	5,456	1,950	22.8	46.0	4.2	7.6	3.7	2.7	1.5	7.2	3.0	1.3	0.9	0.1
France.....	36,933	13,105	21.0	43.2	na	9.3	7.3	2.9	4.9	8.7	2.3	1.1	0.8	0.1
Germany.....	48,333	16,464	24.6	38.1	7.4	na	4.9	3.9	2.3	8.4	3.3	2.1	1.7	0.2
Greece.....	2,910	1,106	21.3	58.6	11.3	11.1	8.1	2.1	2.5	15.8	0.9	1.2	0.7	0.3
Ireland.....	1,666	695	15.6	68.1	6.2	8.0	4.9	5.1	2.8	33.0	0.7	1.1	0.5	0.1
Italy.....	23,581	8,011	25.8	46.2	11.1	8.7	na	3.4	4.0	10.4	2.2	1.2	1.0	0.1
Netherlands.....	15,638	5,604	22.4	52.3	6.8	11.3	5.3	na	2.4	12.1	2.2	0.8	0.6	0.1
Portugal.....	1,549	807	10.9	70.0	13.9	7.2	5.0	5.3	9.8	19.1	1.5	1.4	1.0	0.1
Spain.....	14,901	4,771	19.8	55.5	13.9	8.1	8.2	3.2	na	12.2	1.1	0.6	0.4	0.1
Sweden.....	12,461	4,875	21.8	44.6	5.3	7.9	4.2	2.9	2.0	8.3	3.3	1.9	1.4	0.3
United Kingdom.....	56,923	16,292	25.4	39.8	7.2	8.4	5.7	4.0	3.5	na	3.4	2.6	1.7	0.3
Japan.....	54,614	7,973	41.7	27.3	3.6	6.8	2.3	1.6	0.7	7.0	na	9.5	4.9	3.2
East Asia-4.....	24,923	6,085	46.5	23.9	2.8	5.8	2.2	0.8	0.4	7.8	13.4	na	na	na
China.....	11,923	3,341	32.8	31.2	3.8	8.2	3.0	1.1	0.5	9.1	13.0	5.1	na	1.6
Singapore.....	1,430	449	25.1	25.6	1.5	1.6	0.7	0.2	0.3	16.0	6.4	16.0	12.5	0.2
South Korea.....	5,566	1,490	55.7	13.1	1.5	2.9	2.4	0.5	0.4	3.3	16.6	4.0	3.3	na
Taiwan.....	6,302	1,103	65.6	10.8	2.0	1.9	1.1	0.4	0.4	3.5	7.3	7.2	5.0	0.7
<b>Other regions/countries</b>														
<b>Other Asia</b>														
Bangladesh.....	223	117	30.7	34.7	0.7	1.7	2.9	2.8	0.0	12.5	8.3	0.5	0.3	0.1
India.....	10,688	1,719	34.9	37.6	6.5	10.3	3.5	1.8	1.5	10.2	6.1	2.2	1.2	0.3
Indonesia.....	269	220	23.7	25.4	7.5	4.5	0.0	5.5	0.0	4.0	26.1	3.3	2.1	0.1
Malaysia.....	486	207	10.9	30.8	2.0	1.3	0.6	1.0	0.1	23.3	14.6	16.3	13.5	0.2
Pakistan.....	368	166	32.0	44.8	1.1	8.8	2.3	2.8	0.6	21.8	1.1	3.7	2.8	0.0
Philippines.....	251	163	29.0	23.9	3.0	3.1	0.2	6.0	0.6	7.0	12.3	5.0	3.2	0.0
Sri Lanka.....	109	58	16.3	61.5	5.2	2.7	0.0	1.6	0.0	36.0	6.9	0.0	0.0	0.0
Thailand.....	599	376	30.8	25.5	2.7	2.7	0.5	1.8	0.0	11.0	19.2	3.1	1.6	0.3
Vietnam.....	182	124	9.1	58.1	13.5	11.6	4.0	8.2	0.0	7.8	9.9	4.3	1.3	1.1
<b>Other Western Europe</b>														
Croatia.....	771	278	21.4	53.1	4.9	17.4	13.5	2.6	1.1	5.0	2.4	0.8	0.4	0.0
Cyprus.....	93	57	20.5	56.8	4.8	6.2	12.5	5.4	2.1	10.2	0.0	2.2	1.4	0.6
Iceland.....	221	115	19.4	64.9	1.8	8.2	0.1	2.4	0.7	12.7	2.1	0.4	0.4	0.0
Macedonia.....	52	27	11.7	38.8	0.0	26.6	7.8	0.0	0.0	0.0	0.0	2.2	2.2	0.0
Norway.....	3,850	1,553	19.4	60.7	5.1	7.5	3.3	3.4	2.1	9.3	2.2	1.0	0.8	0.1
Slovenia.....	666	309	18.1	55.0	6.0	12.3	11.1	2.7	1.3	6.4	1.0	1.0	0.7	0.0

**Coauthorship share of United States, EU-15, Japan, and East Asia-4 on international S&E articles of indicated region and country/economy: 1996**

(Percent)

Region and country/economy	S&E articles (number)		United States	EU-15						East Asia-4				
	Total	International		Total	France	Germany	Italy	Netherlands	Spain	UK	Japan	Total	China	South Korea
Switzerland .....	10,540	5,028	22.9	57.9	10.8	16.7	9.3	3.6	1.5	8.2	2.5	0.9	0.5	0.2
Turkey .....	2,513	569	30.7	43.2	3.4	7.7	3.8	2.8	0.9	17.7	4.0	1.1	0.6	0.4
Yugoslavia .....	678	202	22.4	39.7	4.8	9.6	4.1	0.3	4.3	9.0	4.1	1.3	0.7	0.0
Eastern Europe/former USSR .....	42,102	13,624	20.6	61.8	10.5	18.5	6.9	3.4	2.3	7.7	3.5	1.1	0.5	0.4
Armenia .....	245	107	18.3	41.8	7.7	10.4	4.1	2.2	4.4	2.5	0.0	0.5	0.5	0.0
Azerbaijan .....	156	55	4.3	11.6	0.0	4.0	6.0	0.0	0.0	0.0	3.0	1.6	1.6	0.0
Bulgaria .....	1,253	503	11.1	61.5	9.8	18.3	10.3	2.0	4.6	5.2	3.9	0.7	0.6	0.1
Belarus .....	759	283	4.4	45.7	5.7	16.5	6.2	1.9	1.4	6.6	1.5	3.2	2.5	0.2
Czech Republic .....	3,094	1,481	15.4	54.5	9.6	15.4	5.0	3.5	2.7	7.2	2.4	0.4	0.2	0.0
Estonia .....	373	216	14.6	69.0	9.3	11.7	2.6	1.5	1.1	2.9	0.5	0.2	0.2	0.0
Georgia .....	176	83	9.4	35.9	6.6	11.8	6.0	2.0	1.6	2.0	2.0	0.2	0.2	0.0
Hungary .....	2,618	1,343	24.5	50.7	7.2	13.4	5.9	2.7	1.4	8.1	4.0	0.6	0.3	0.2
Kazakhstan .....	169	43	14.2	13.1	0.0	1.5	1.9	0.0	0.0	0.0	1.9	0.8	0.8	0.0
Latvia .....	228	105	11.8	64.5	6.8	14.2	2.8	2.2	1.7	5.8	3.9	0.0	0.0	0.0
Lithuania .....	272	128	12.0	64.0	9.3	13.6	7.0	2.4	1.3	5.7	1.3	0.0	0.0	0.0
Moldova .....	184	84	2.1	34.0	4.7	13.1	8.7	0.2	1.9	0.0	0.0	0.0	0.0	0.0
Poland .....	6,239	2,865	18.4	53.7	10.6	14.9	6.6	2.8	2.2	6.4	2.4	0.7	0.3	0.3
Romania .....	1,169	508	14.6	63.4	15.1	13.8	12.6	2.0	2.2	8.1	1.7	0.9	0.6	0.1
Russia .....	21,776	5,827	19.5	52.8	8.6	17.7	6.0	3.0	1.7	6.6	3.4	1.3	0.5	0.6
Slovakia .....	1,558	650	12.5	53.9	8.4	14.4	6.3	2.4	1.9	5.9	1.5	0.3	0.2	0.0
Ukraine .....	3,195	1,060	9.3	41.6	7.7	12.6	3.6	4.2	1.9	5.1	2.7	0.8	0.3	0.3
Uzbekistan .....	384	65	7.6	27.4	4.2	12.6	2.2	0.0	0.3	5.3	5.1	3.6	1.9	1.3
Central/South America .....	13,360	5,484	39.5	43.3	9.9	5.7	4.5	1.3	8.1	8.0	1.8	0.7	0.5	0.1
Argentina .....	2,720	916	29.1	44.7	9.0	5.6	4.7	1.4	13.9	4.5	1.1	0.7	0.4	0.2
Brazil .....	5,005	2,090	35.7	39.7	10.3	5.7	5.6	1.2	2.6	8.8	2.2	1.0	0.7	0.1
Chile .....	1,291	612	31.4	39.8	9.4	8.1	2.7	1.8	6.4	5.3	1.3	0.4	0.4	0.0
Colombia .....	327	212	35.3	32.2	6.9	3.8	3.4	0.9	11.8	4.8	0.5	1.3	0.7	0.6
Costa Rica .....	145	121	50.0	30.7	5.3	7.2	0.3	1.1	3.7	7.8	1.0	0.2	0.1	0.0
Cuba .....	280	157	10.4	44.0	4.1	4.3	4.1	0.1	25.1	1.9	2.6	0.7	0.7	0.0
Mexico .....	2,759	1,119	40.1	29.6	5.8	3.2	2.4	0.9	7.4	6.9	0.9	0.7	0.4	0.1
Peru .....	128	97	49.5	28.8	8.1	2.1	0.9	0.0	7.7	4.2	0.0	0.6	0.0	0.0
Uruguay .....	183	111	19.7	42.4	5.8	6.4	3.9	1.2	8.5	3.9	2.9	0.4	0.0	0.4
Venezuela .....	574	247	32.7	34.9	9.2	1.9	4.7	1.0	9.4	6.3	1.1	0.9	0.8	0.0
Near East/North Africa .....	12,329	4,782	39.9	40.8	14.3	8.4	3.2	1.9	1.6	7.3	2.1	0.8	0.4	0.2
Algeria .....	259	181	4.5	82.2	68.5	2.3	1.3	1.0	1.3	4.2	0.5	0.5	0.5	0.0
Egypt .....	1,650	535	33.3	33.9	2.6	10.4	3.6	3.0	0.7	7.2	5.1	0.6	0.6	0.1
Iran .....	393	142	26.5	27.6	5.1	4.2	0.5	0.8	0.8	14.7	8.9	1.1	0.0	0.2
Israel .....	7,429	2,853	49.3	31.0	5.4	10.0	3.3	2.1	1.4	5.1	1.7	0.9	0.4	0.2
Jordan .....	209	76	22.1	37.3	3.2	11.2	3.2	0.0	0.6	17.0	1.2	1.2	1.2	0.0
Kuwait .....	304	114	33.0	33.0	3.3	9.7	0.0	0.7	0.0	11.6	1.3	0.8	0.8	0.0
Lebanon .....	93	42	54.0	18.6	11.2	2.1	2.2	0.0	0.0	3.0	2.0	5.8	2.4	2.8



**Coauthorship share of United States, EU-15, Japan, and East Asia-4 on international S&E articles of indicated region and country/economy: 1996**

(Percent)

Region and country/economy	S&E articles (number)		United States	EU-15							Japan	East Asia-4		
	Total	International		Total	France	Germany	Italy	Netherlands	Spain	UK		Total	China	South Korea
Morocco.....	472	377	8.2	81.3	66.2	1.9	3.4	0.2	4.6	2.0	0.7	0.1	0.0	0.0
Oman.....	87	40	33.0	27.7	5.6	1.1	0.5	2.1	0.0	14.9	0.0	0.0	0.0	0.0
Saudi Arabia.....	872	216	31.2	31.8	5.3	2.1	1.3	3.0	0.6	16.2	1.9	0.4	0.4	0.0
Tunisia.....	228	125	5.1	81.0	69.4	1.2	3.0	0.5	0.9	2.6	0.6	0.0	0.0	0.0
United Arab Emirates.....	196	89	18.1	35.3	1.4	4.6	0.2	0.0	0.0	26.1	0.5	0.0	0.0	0.0
Sub-Saharan Africa.....	5,252	2,332	25.6	53.4	10.9	6.3	2.9	3.3	0.6	17.5	1.8	1.1	0.6	0.2
Cameroon.....	102	73	10.5	64.2	37.2	2.4	1.2	5.6	0.0	11.4	1.2	0.0	0.0	0.0
Ethiopia.....	131	77	9.4	62.5	2.9	11.2	1.5	2.9	0.0	16.1	1.7	0.0	0.0	0.0
Ghana.....	114	67	16.7	54.8	0.0	11.3	3.6	4.4	0.0	28.5	3.8	0.0	0.0	0.0
Kenya.....	448	301	29.5	42.7	1.7	2.4	2.0	2.1	0.4	24.8	1.6	0.3	0.3	0.0
Nigeria.....	529	177	25.6	45.3	5.2	6.5	5.1	0.8	0.3	22.4	2.7	1.3	0.3	1.0
Senegal Republic.....	111	82	12.0	71.1	47.6	3.2	2.5	4.1	0.0	4.0	0.4	0.0	0.0	0.0
South Africa.....	2,733	808	29.4	38.3	5.3	9.3	2.4	1.3	1.1	14.2	2.0	2.3	1.3	0.3
Tanzania.....	190	148	15.2	59.9	0.8	0.8	4.0	6.8	0.6	16.0	2.4	0.8	0.8	0.0
Uganda.....	72	48	40.7	38.6	2.5	14.7	5.4	1.9	0.2	12.7	0.0	0.0	0.0	0.0
Zimbabwe.....	190	122	24.2	45.6	3.8	2.6	0.7	4.9	0.0	17.1	0.0	1.1	1.1	0.0
Other														
Australia.....	29,556	9,065	47.5	29.3	6.7	4.7	2.2	1.9	1.4	7.2	5.1	4.8	2.8	0.5
Canada.....	16,354	4,394	30.5	37.2	4.3	6.6	2.0	2.1	0.6	15.6	3.6	3.1	2.3	0.4
New Zealand.....	3,289	1,082	31.7	31.7	3.6	5.6	1.0	0.7	0.3	15.2	3.9	2.8	1.8	0.3

na = not applicable

EU = European Union; UK = United Kingdom; USSR = Union of Soviet Socialist Republics

NOTES: Data are region/country/economy's share of internationally coauthored articles with indicated region/country/economy. Authorship based on institutional address. International articles are those with at least one author at institutional address in given country/economy and one author at foreign address. Share based on article counts calculated on whole-count basis, i.e., each collaborating institution is credited one count. EU-15 consists of 15 EU countries before expansion of member countries on May 1, 2004 (listed countries plus Luxembourg). China data include Hong Kong. Eastern Europe consists of Bulgaria, Czech Republic, Hungary, Poland, and Romania.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iplQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

**Coauthorship share of United States, EU-15, Japan, and East Asia-4 on international S&E articles of indicated region and country/economy: 2003**

(Percent)

Region and country/economy	S&E articles (number)		United States	EU-15							Japan	East Asia-4		
	Total	International		Total	France	Germany	Italy	Netherlands	Spain	UK		Total	China	South Korea
<b>Major S&amp;E article producers</b>														
United States.....	242,397	60,180	na	44.4	6.0	9.6	5.3	3.0	2.8	9.2	8.4	10.7	4.7	3.6
EU-15.....	255,262	90,779	38.6	na	na	na	na	na	na	na	5.4	5.0	3.5	0.8
Austria.....	7,066	3,622	15.4	53.5	5.4	23.2	6.0	2.9	2.8	5.8	2.5	1.5	1.1	0.2
Belgium.....	9,941	5,547	15.1	56.9	14.5	8.4	4.9	9.3	3.4	9.2	2.1	1.9	1.5	0.2
Denmark.....	7,624	3,873	19.8	51.9	5.5	8.6	4.1	3.9	3.2	10.5	2.0	1.6	1.0	0.4
Finland.....	7,062	3,256	18.6	50.8	4.4	8.7	3.6	3.9	2.2	9.7	2.6	2.1	1.1	0.6
France.....	43,242	19,900	18.7	43.7	na	9.4	7.9	2.9	4.8	8.4	3.0	2.3	1.6	0.4
Germany.....	59,597	26,689	22.7	37.9	7.2	na	5.0	3.9	2.6	8.1	3.5	3.5	2.5	0.5
Greece.....	4,946	2,019	22.7	52.3	8.0	10.7	6.9	2.8	2.5	14.3	2.2	1.1	0.6	0.3
Ireland.....	2,520	1,265	16.4	61.2	4.9	7.8	4.5	4.3	3.5	27.8	1.8	1.9	1.1	0.2
Italy.....	31,567	12,669	24.2	48.7	10.8	9.2	na	3.6	5.3	10.4	2.4	1.3	0.8	0.3
Netherlands.....	18,746	8,905	21.2	53.1	6.7	11.7	5.8	na	2.8	11.8	2.5	1.6	1.1	0.3
Portugal.....	3,758	2,010	13.5	60.6	11.4	6.7	5.6	3.0	10.7	13.3	1.3	1.7	1.3	0.1
Spain.....	21,756	8,624	19.5	52.5	11.1	7.9	9.0	3.0	na	10.4	1.3	1.0	0.7	0.2
Sweden.....	14,374	7,086	20.0	47.1	4.5	9.4	3.8	3.1	2.3	9.6	3.0	2.6	1.9	0.4
United Kingdom.....	62,729	24,999	23.8	41.2	6.9	8.9	5.8	4.1	3.5	na	3.5	3.9	2.6	0.5
Japan.....	67,728	14,534	34.5	25.0	4.0	6.3	2.2	1.5	0.8	5.8	na	16.0	8.0	5.9
East Asia-4.....	63,400	16,110	42.6	22.4	3.1	5.8	1.6	1.0	0.6	6.4	15.8	na	na	na
China.....	34,110	9,132	33.1	26.2	3.7	7.1	1.7	1.2	0.7	7.0	14.4	8.8	na	2.8
Singapore.....	3,934	1,499	28.5	17.9	1.4	2.8	0.7	0.4	0.4	9.1	4.6	24.9	20.4	1.2
South Korea.....	16,114	4,507	47.8	11.7	1.8	3.0	1.4	0.6	0.3	2.6	18.6	6.8	5.3	na
Taiwan.....	10,448	2,178	44.8	11.5	1.4	2.7	1.2	0.4	0.4	3.7	11.7	15.8	11.0	2.6
<b>Other regions/countries</b>														
<b>Other Asia</b>														
Bangladesh.....	333	218	21.5	35.3	0.7	6.7	0.4	1.8	0.1	9.9	19.6	1.0	0.3	0.5
India.....	14,529	3,187	28.2	34.3	5.0	10.9	3.4	1.8	1.2	8.2	10.2	8.3	2.5	2.7
Indonesia.....	379	323	17.8	28.5	5.2	7.2	1.5	7.7	0.4	4.0	24.5	4.5	1.6	0.5
Malaysia.....	731	357	10.8	22.7	1.2	2.5	0.6	2.1	0.4	14.3	11.3	19.6	13.2	1.2
Pakistan.....	520	258	26.4	39.4	2.3	9.5	3.9	1.3	1.2	17.8	7.0	4.1	2.0	1.7
Philippines.....	338	249	25.7	17.0	2.2	2.6	0.8	2.7	0.4	3.1	20.2	7.5	5.5	1.3
Sri Lanka.....	213	129	22.7	36.2	0.7	2.1	0.0	3.8	0.0	22.5	18.1	1.2	1.2	0.0
Thailand.....	1,627	983	32.1	22.9	2.7	2.9	0.5	1.5	0.3	9.0	19.2	5.1	2.2	0.9
Vietnam.....	422	343	9.1	45.5	13.0	6.5	2.4	3.6	0.5	6.0	16.3	8.0	1.5	4.4
<b>Other Western Europe</b>														
Croatia.....	1,131	470	17.3	48.5	7.4	15.6	10.7	1.6	2.2	3.8	1.5	1.7	0.3	0.5
Cyprus.....	167	111	18.3	49.5	2.3	4.8	8.7	2.0	1.0	14.8	0.4	1.8	1.0	0.3
Iceland.....	349	227	19.7	59.1	3.8	3.3	1.4	2.6	1.1	12.8	2.9	1.1	0.3	0.0
Macedonia.....	80	41	12.7	43.0	2.8	10.6	4.0	0.2	0.4	8.2	5.6	0.0	0.0	0.0
Norway.....	4,780	2,403	19.5	58.1	5.3	6.7	3.6	4.5	2.2	10.1	2.0	1.2	0.7	0.3
Slovenia.....	1,367	664	15.4	47.7	5.9	9.5	7.8	3.3	1.2	6.4	6.0	2.2	0.9	0.7

**Coauthorship share of United States, EU-15, Japan, and East Asia-4 on international S&E articles of indicated region and country/economy: 2003**

(Percent)

Region and country/economy	S&E articles (number)		United States	EU-15						East Asia-4				
	Total	International		Total	France	Germany	Italy	Netherlands	Spain	UK	Japan	Total	China	South Korea
Switzerland .....	13,343	7,711	20.8	57.8	10.4	17.3	7.8	3.0	2.3	7.7	2.5	1.5	0.8	0.4
Turkey .....	7,062	1,517	37.2	36.7	4.1	7.3	4.0	1.9	1.4	13.1	3.9	1.0	0.3	0.5
Yugoslavia .....	779	328	16.0	48.2	5.9	14.6	3.7	2.2	3.5	7.4	4.9	2.2	1.9	0.1
Eastern Europe/former USSR .....	45,967	20,477	20.0	59.2	9.8	18.8	5.9	2.6	2.5	6.4	5.8	2.6	0.9	1.2
Armenia .....	312	200	18.9	50.6	11.4	19.2	8.8	1.6	1.4	3.7	1.7	2.2	0.3	1.1
Azerbaijan .....	158	84	6.8	16.9	2.9	3.3	0.2	1.3	0.9	6.5	6.1	0.2	0.2	0.0
Bulgaria .....	1,299	799	12.2	58.6	8.4	16.5	7.9	1.7	4.0	6.3	3.8	1.6	0.8	0.3
Belarus .....	762	391	5.8	47.2	4.8	20.9	4.9	0.7	0.2	3.7	3.9	2.7	1.2	1.3
Czech Republic .....	4,204	2,144	13.9	51.1	10.4	14.9	5.3	2.2	2.4	5.6	4.8	1.3	0.6	0.2
Estonia .....	550	297	10.7	63.4	3.4	12.1	3.0	1.6	1.8	4.7	1.6	0.4	0.1	0.3
Georgia .....	202	134	13.0	53.0	5.3	23.4	10.1	0.5	1.6	3.5	2.0	1.8	0.8	1.0
Hungary .....	3,769	2,140	21.9	51.8	6.3	13.8	4.7	3.0	2.2	7.0	4.1	1.1	0.5	0.5
Kazakhstan .....	202	113	12.4	32.7	2.0	7.8	7.7	0.7	4.0	7.5	10.2	3.5	0.1	3.4
Latvia .....	258	168	10.5	55.4	7.4	18.1	3.0	1.6	0.4	5.2	2.2	0.0	0.0	0.0
Lithuania .....	483	265	18.0	58.0	4.9	11.5	5.5	1.5	1.6	7.8	2.1	0.9	0.1	0.0
Moldova .....	158	129	10.9	51.1	4.8	16.9	5.1	3.6	4.5	5.5	1.7	0.0	0.0	0.0
Poland .....	9,328	4,318	19.4	48.8	9.8	14.8	4.6	2.2	2.1	5.3	4.2	1.9	0.7	0.6
Romania .....	1,612	1,037	12.2	60.5	16.6	13.2	9.9	2.1	3.0	4.6	6.3	1.9	0.7	0.4
Russia .....	20,630	8,363	18.5	52.1	8.1	18.6	5.5	2.6	2.0	5.0	6.2	3.2	1.2	1.4
Slovakia .....	1,456	869	10.5	49.2	6.0	12.2	4.4	1.6	1.3	7.1	2.9	0.8	0.4	0.3
Ukraine .....	3,064	1,672	14.3	43.6	6.7	16.6	3.3	1.6	2.4	5.2	2.9	3.6	0.3	2.7
Uzbekistan .....	279	143	16.3	28.2	4.2	12.4	5.1	0.2	0.4	2.5	8.8	6.8	1.1	5.7
Central/South America .....	24,205	10,094	37.4	44.7	9.0	7.0	4.3	1.4	9.7	7.2	2.2	1.4	0.9	0.3
Argentina .....	4,031	1,716	26.7	42.8	7.2	6.8	4.2	1.3	14.1	4.6	1.7	0.7	0.3	0.1
Brazil .....	10,779	3,794	33.2	38.7	8.8	7.3	4.4	1.4	3.2	7.2	2.4	1.6	1.1	0.3
Chile .....	2,236	1,231	28.6	43.7	9.5	7.7	4.3	0.7	10.3	5.1	1.0	1.3	0.5	0.5
Colombia .....	578	391	31.1	35.6	6.0	2.9	1.3	1.5	13.9	7.1	1.6	1.4	0.6	0.7
Costa Rica .....	183	158	31.6	33.5	5.8	5.9	0.7	5.5	3.5	4.9	0.9	3.2	0.7	0.8
Cuba .....	436	302	5.5	50.4	5.5	5.6	7.5	0.2	21.6	4.1	0.6	0.2	0.0	0.0
Mexico .....	5,002	2,215	38.1	33.4	6.4	4.0	2.6	1.3	10.0	6.0	2.0	1.6	1.1	0.3
Peru .....	270	232	38.4	31.5	3.8	6.0	2.8	1.2	4.3	6.0	0.4	0.4	0.3	0.0
Uruguay .....	318	214	23.5	36.0	9.4	2.1	3.2	0.0	7.9	5.2	1.1	0.4	0.4	0.0
Venezuela .....	822	438	34.3	37.3	9.2	4.4	3.0	0.3	11.6	6.0	1.4	0.5	0.4	0.2
Near East/North Africa .....	17,434	7,192	31.8	44.2	14.6	9.0	3.8	1.7	2.0	7.2	2.8	2.2	1.2	0.4
Algeria .....	442	275	3.1	83.2	69.5	2.6	1.7	0.1	2.4	1.9	0.9	0.5	0.3	0.0
Egypt .....	2,155	763	24.9	37.9	3.1	12.7	4.6	1.5	1.4	7.2	10.1	2.4	1.1	0.8
Iran .....	2,098	550	23.6	37.4	4.7	5.9	2.6	1.4	0.5	15.1	3.3	2.6	0.9	0.4
Israel .....	9,122	3,809	41.8	34.3	5.7	10.6	3.8	2.0	1.8	5.4	2.2	2.4	1.6	0.4
Jordan .....	349	154	18.7	47.6	3.0	16.6	3.2	0.9	0.2	20.2	0.4	1.6	0.8	0.3
Kuwait .....	325	136	27.3	28.8	0.2	3.6	0.6	0.1	0.4	11.1	0.8	0.7	0.0	0.7
Lebanon .....	296	136	24.4	49.9	35.9	1.1	2.7	0.4	1.4	8.0	1.0	0.1	0.0	0.0

**Coauthorship share of United States, EU-15, Japan, and East Asia-4 on international S&E articles of indicated region and country/economy: 2003**

(Percent)

Region and country/economy	S&E articles (number)		United States	EU-15							Japan	East Asia-4		
	Total	International		Total	France	Germany	Italy	Netherlands	Spain	UK		Total	China	South Korea
Morocco.....	692	475	5.2	80.3	51.8	4.8	8.7	0.3	8.6	1.8	0.3	1.2	0.3	0.4
Oman.....	171	100	19.9	31.6	4.8	3.8	0.7	0.4	0.0	16.9	2.4	1.7	0.0	0.4
Saudi Arabia.....	767	333	23.9	25.2	2.8	1.8	1.9	0.7	1.2	10.2	1.1	3.3	1.7	0.4
Tunisia.....	650	372	4.8	83.1	70.4	2.1	2.7	0.5	1.5	1.9	1.0	0.2	0.1	0.0
United Arab Emirates.....	294	167	22.1	37.5	6.1	7.1	0.0	1.7	1.2	9.8	0.8	2.1	1.8	0.0
Sub-Saharan Africa.....	6,293	3,765	24.9	52.7	10.5	7.2	2.5	4.8	1.2	15.7	2.5	1.1	0.6	0.4
Cameroon.....	222	169	10.7	61.0	31.7	6.4	0.6	4.1	1.8	7.7	1.5	1.8	1.1	0.7
Ethiopia.....	188	150	13.1	58.1	4.8	8.4	4.9	8.1	0.8	12.3	2.0	0.2	0.2	0.0
Ghana.....	155	120	21.8	47.6	1.5	10.5	1.7	5.0	0.0	18.3	3.4	1.2	0.9	0.2
Kenya.....	527	438	33.5	42.2	1.7	5.5	0.6	8.2	0.3	18.3	2.4	0.3	0.2	0.1
Nigeria.....	493	193	20.7	39.5	2.1	8.2	7.1	1.3	0.5	15.9	6.0	1.9	0.7	1.0
Senegal Republic.....	164	133	12.6	55.2	34.5	1.7	1.6	3.6	4.2	2.7	0.8	1.0	0.6	0.0
South Africa.....	3,218	1,504	26.2	42.1	5.5	7.7	1.8	3.6	1.4	14.5	2.0	1.6	0.8	0.6
Tanzania.....	207	189	17.0	48.8	0.8	3.7	1.6	4.5	1.2	17.1	4.7	0.3	0.1	0.2
Uganda.....	183	153	34.8	34.6	1.4	1.1	2.9	3.3	0.3	16.4	1.4	0.0	0.0	0.0
Zimbabwe.....	182	148	20.0	39.4	2.5	1.8	1.8	4.4	0.0	15.1	0.4	0.5	0.5	0.0
Other														
Australia.....	20,259	7,879	27.3	36.7	3.6	6.3	2.8	2.6	1.2	13.6	5.1	9.5	6.6	1.0
Canada.....	32,145	12,978	43.7	24.1	5.8	5.0	2.5	1.8	1.4	7.5	3.8	5.5	3.4	1.0
New Zealand.....	4,034	1,717	29.2	30.5	2.5	4.4	1.4	1.7	0.9	15.9	3.0	4.3	2.3	0.8

na = not applicable

EU = European Union; UK = United Kingdom; USSR = Union of Soviet Socialist Republics

NOTES: Data are region/country/economy's share of internationally coauthored articles with indicated region/country/economy. Authorship based on institutional address. International articles are those with at least one author at institutional address in given country/economy and one author at foreign address. Share based on article counts calculated on whole-count basis, i.e., each collaborating institution is credited one count. EU-15 consists of 15 EU countries before expansion of member countries on May 1, 2004 (listed countries plus Luxembourg). China data include Hong Kong. Eastern Europe consists of Bulgaria, Czech Republic, Hungary, Poland, and Romania.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iplQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

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Appendix table 5-50

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**Coauthorship share of Eastern Europe and former USSR and selected countries of Western Europe and Asia on international S&E articles of indicated region and country/economy: 1988**

(Percent)

Region and country/economy	S&E articles (number)		Other Asia		Other Western Europe	Eastern Europe/former USSR		
	Total	International	Total	India		Total	E. Europe	Former USSR
<b>Major S&amp;E article producers</b>								
United States.....	187,225	19,294	2.7	1.7	5.0	3.0	2.3	0.8
EU-15.....	144,157	25,179	3.2	1.9	10.1	9.5	5.5	3.9
Austria.....	2,678	782	2.0	1.0	6.7	8.1	5.8	2.3
Belgium.....	4,386	1,425	1.1	0.7	3.9	3.4	1.9	1.5
Denmark.....	4,044	1,090	1.1	0.4	7.1	4.0	1.9	2.2
Finland.....	3,185	724	0.7	0.5	5.1	8.0	3.6	4.3
France.....	24,393	5,681	1.2	0.7	6.1	4.4	2.8	1.6
Germany.....	29,164	6,435	2.3	1.7	8.6	6.3	4.5	1.8
Greece.....	1,487	448	0.2	0.1	3.5	4.4	3.8	0.7
Ireland.....	941	286	0.7	0.3	1.6	1.4	1.2	0.2
Italy.....	12,821	3,096	1.0	0.8	7.2	5.3	3.5	1.8
Netherlands.....	9,797	2,192	1.4	0.6	4.3	3.9	2.4	1.5
Portugal.....	542	203	0.1	0.0	2.0	0.5	0.5	0.0
Spain.....	6,109	1,255	0.4	0.4	3.6	1.8	1.0	0.8
Sweden.....	8,767	2,211	1.2	0.3	8.9	4.6	2.9	1.7
United Kingdom.....	40,335	7,125	3.4	1.9	4.4	2.6	1.8	0.8
Japan.....	36,041	3,097	3.4	1.2	2.5	1.9	1.2	0.7
East Asia-4.....	8,194	1,824	1.0	0.3	1.5	0.9	0.6	0.2
China.....	5,256	1,181	0.6	0.3	1.9	1.3	0.9	0.2
Singapore.....	468	111	5.0	2.0	1.7	0.9	0.0	0.9
South Korea.....	909	249	1.8	0.1	0.2	0.5	0.5	0.0
Taiwan.....	1,581	303	0.9	0.2	0.7	0.0	0.0	0.0
<b>Other regions/countries</b>								
<b>Other Asia</b>								
Bangladesh.....	129	63	8.8	2.9	1.2	1.5	1.5	0.0
India.....	9,403	976	1.4	na	2.7	2.6	1.0	1.6
Indonesia.....	106	81	2.0	0.3	1.1	0.0	0.0	0.0
Malaysia.....	254	83	5.6	0.7	3.2	0.0	0.0	0.0
Pakistan.....	277	78	11.0	1.2	7.4	0.0	0.0	0.0
Philippines.....	171	83	8.1	2.8	0.0	0.0	0.0	0.0
Sri Lanka.....	144	66	14.5	1.5	2.6	0.0	0.0	0.0
Thailand.....	397	205	5.9	2.2	1.2	0.0	0.0	0.0
Vietnam.....	71	37	5.2	0.0	0.0	37.1	15.5	21.6
<b>Other Western Europe</b>								
Cyprus.....	18	5	0.0	0.0	0.0	0.0	0.0	0.0
Iceland.....	94	44	0.0	0.0	6.6	1.3	0.0	1.3
Norway.....	2,564	684	1.4	1.1	3.4	4.2	3.0	1.2
Switzerland.....	6,764	2,485	1.1	0.6	1.4	3.0	1.7	1.3
Turkey.....	576	129	4.4	1.5	7.1	1.5	0.4	1.1
Yugoslavia.....	1,482	491	0.1	0.0	3.9	13.8	4.5	9.3
<b>Eastern Europe/former USSR</b>								
Bulgaria.....	1,233	270	0.5	0.5	1.9	44.4	5.9	38.5
Hungary.....	2,110	718	1.0	0.8	4.4	17.3	3.1	14.2
Poland.....	4,696	1,211	0.8	0.3	3.5	11.5	2.3	9.2
Romania.....	440	88	1.3	1.1	3.3	25.1	4.9	20.2
Former USSR.....	32,240	615	2.4	1.0	6.3	33.3	33.3	na

Appendix table 5-50

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**Coauthorship share of Eastern Europe and former USSR and selected countries of Western Europe and Asia on international S&E articles of indicated region and country/economy: 1988**

(Percent)

Region and country/economy	S&E articles (number)		Other Asia		Other Western Europe	Eastern Europe/former USSR		
	Total	International	Total	India		Total	E. Europe	Former USSR
Central/South America.....	6,612	1,896	0.9	0.6	1.7	2.3	1.0	1.3
Argentina.....	1,566	266	0.3	0.3	2.1	0.1	0.1	0.0
Brazil.....	2,100	621	1.0	0.7	1.3	2.1	1.4	0.7
Chile.....	820	247	0.4	0.4	2.1	0.4	0.4	0.0
Colombia.....	118	59	0.0	0.0	0.0	0.0	0.0	0.0
Costa Rica.....	80	47	2.0	2.0	2.0	0.0	0.0	0.0
Cuba.....	98	55	0.5	0.0	0.5	33.5	2.4	31.1
Mexico.....	1,058	321	0.8	0.8	2.2	2.4	1.8	0.5
Peru.....	108	70	3.2	0.6	1.2	0.0	0.0	0.0
Uruguay.....	50	16	0.0	0.0	0.0	3.1	3.1	0.0
Venezuela.....	360	124	0.8	0.3	1.5	0.5	0.5	0.0
Near East/North Africa.....	9,326	2,691	0.9	0.7	1.9	1.7	1.3	0.4
Algeria.....	109	78	0.0	0.0	0.0	3.5	2.3	1.2
Egypt.....	1,292	306	1.6	1.2	0.9	5.2	4.6	0.6
Iran.....	112	47	1.9	1.9	0.0	4.5	4.5	0.0
Israel.....	5,845	1,706	0.3	0.3	2.2	0.8	0.7	0.1
Jordan.....	191	55	2.2	2.2	1.6	0.0	0.0	0.0
Kuwait.....	342	74	0.9	0.9	3.5	3.8	1.3	2.5
Lebanon.....	64	17	0.0	0.0	0.0	0.0	0.0	0.0
Morocco.....	178	119	0.0	0.0	0.8	0.0	0.0	0.0
Oman.....	22	14	0.0	0.0	5.8	0.0	0.0	0.0
Saudi Arabia.....	638	131	2.2	1.4	1.9	0.0	0.0	0.0
Tunisia.....	139	79	0.0	0.0	0.5	0.0	0.0	0.0
United Arab Emirates.....	29	11	0.0	0.0	0.0	0.0	0.0	0.0
Sub-Saharan Africa.....	5,195	1,247	1.2	0.8	3.4	0.7	0.5	0.2
Cameroon.....	52	31	0.0	0.0	2.9	0.0	0.0	0.0
Ethiopia.....	91	37	0.0	0.0	5.1	0.0	0.0	0.0
Ghana.....	48	18	0.0	0.0	0.0	0.0	0.0	0.0
Kenya.....	371	146	1.9	1.9	6.1	0.0	0.0	0.0
Nigeria.....	966	153	1.8	1.8	0.6	1.3	0.6	0.6
Senegal Republic.....	0	0	na	na	na	na	na	na
South Africa.....	2,724	385	0.1	0.0	2.4	0.3	0.2	0.0
Tanzania.....	86	39	3.9	2.3	5.4	0.0	0.0	0.0
Uganda.....	25	7	0.0	0.0	0.0	14.0	0.0	14.0
Zimbabwe.....	144	52	0.0	0.0	0.0	0.0	0.0	0.0
Other			0.0					
Australia.....	10,951	1,985	3.6	1.1	2.1	0.8	0.5	0.3
Canada.....	24,008	4,906	2.0	1.6	2.4	2.4	1.9	0.5
New Zealand.....	2,349	493	1.5	0.5	1.9	0.2	0.0	0.2

na = not applicable

EU = European Union; USSR = Union of Soviet Socialist Republics

NOTES: Data are region/country/economy's share of internationally coauthored articles with indicated region/country/economy. Authorship based on institutional address. International articles are those with at least one author at institutional address in given country/economy and one author at foreign address. Share based on article counts calculated on whole-count basis, i.e., each collaborating institution is credited one count. EU-15 consists of 15 EU countries before expansion of member countries on May 1, 2004 (listed countries plus Luxembourg). Germany data include former West Germany only. China data include Hong Kong. Eastern Europe consists of Bulgaria, Czech Republic, Hungary, Poland, and Romania.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iplq, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-51

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**Coauthorship share of Eastern Europe and former USSR and selected countries of Western Europe and Asia on international S&E articles of indicated region and country/economy: 1996**

(Percent)

Region and country/economy	S&E articles (number)		Other Asia		Other Western Europe	Eastern Europe/former USSR		
	Total	International	Total	India		Total	E. Europe	Former USSR
<b>Major S&amp;E article producers</b>								
United States.....	221,414	39,046	2.3	1.4	4.5	6.3	3.0	2.6
EU-15.....	215,494	58,576	2.5	1.4	9.1	16.9	7.7	6.4
Austria.....	4,902	2,194	0.7	0.2	16.2	13.3	7.8	2.0
Belgium.....	7,641	3,514	0.9	0.4	3.6	7.2	4.3	2.0
Denmark.....	6,036	2,632	0.8	0.4	6.4	6.1	2.0	2.9
Finland.....	5,456	1,950	0.7	0.5	5.8	13.7	4.7	5.7
France.....	36,933	13,105	1.2	0.8	5.0	9.8	4.9	3.5
Germany.....	48,333	16,464	1.5	1.0	6.6	14.0	5.9	6.0
Greece.....	2,910	1,106	0.4	0.2	5.6	6.9	3.8	2.0
Ireland.....	1,666	695	0.4	0.2	2.9	3.0	1.7	1.2
Italy.....	23,581	8,011	0.8	0.6	6.0	9.4	4.8	3.2
Netherlands.....	15,638	5,604	1.3	0.4	4.7	7.7	3.3	3.1
Portugal.....	1,549	807	0.4	0.2	3.8	4.8	2.3	1.9
Spain.....	14,901	4,771	0.6	0.5	2.7	6.3	3.2	2.2
Sweden.....	12,461	4,875	1.0	0.3	7.8	9.5	3.8	3.1
United Kingdom.....	56,923	16,292	2.3	1.0	4.2	6.1	2.9	2.4
Japan.....	54,614	7,973	3.4	1.2	2.4	5.3	2.3	2.3
East Asia-4.....	24,923	6,085	1.8	0.6	1.3	2.3	0.6	1.2
China.....	11,923	3,341	2.1	0.5	1.6	1.9	0.6	0.9
Singapore.....	1,430	449	5.1	2.8	1.6	1.4	0.7	0.4
South Korea.....	5,566	1,490	0.5	0.3	1.1	3.3	0.8	2.2
Taiwan.....	6,302	1,103	1.0	0.3	0.7	1.9	0.6	0.9
<b>Other regions/countries</b>								
<b>Other Asia</b>								
Bangladesh.....	223	117	15.9	9.1	1.6	0.4	0.0	0.4
India.....	10,688	1,719	1.6	na	2.2	3.0	1.3	1.1
Indonesia.....	269	220	4.8	0.4	1.1	0.2	0.2	0.0
Malaysia.....	486	207	12.4	6.7	0.7	0.4	0.4	0.0
Pakistan.....	368	166	2.2	0.2	3.8	0.9	0.9	0.0
Philippines.....	251	163	8.8	0.9	0.8	0.0	0.0	0.0
Sri Lanka.....	109	58	4.2	0.0	0.0	1.1	1.1	0.0
Thailand.....	599	376	5.6	0.7	1.8	1.0	0.8	0.0
Vietnam.....	182	124	4.1	0.1	1.0	5.8	3.8	1.9
Other Western Europe.....	19,219	7,947	0.7	0.4	na	6.8	3.2	2.4
Croatia.....	771	278	0.2	0.2	8.6	5.3	4.1	0.7
Cyprus.....	93	57	0.8	0.6	7.0	4.6	3.5	1.1
Iceland.....	221	115	0.0	0.0	6.2	2.0	0.5	1.5
Macedonia.....	52	27	0.0	0.0	30.1	13.3	2.2	7.8
Norway.....	3,850	1,553	0.5	0.4	2.4	7.0	2.7	3.2
Slovenia.....	666	309	0.9	0.6	8.8	8.7	5.9	1.8
Switzerland.....	10,540	5,028	0.7	0.4	1.2	6.0	3.1	2.3
Turkey.....	2,513	569	0.6	0.2	3.1	9.2	2.0	1.2
Yugoslavia.....	678	202	0.9	0.5	5.6	16.4	9.7	4.2
Eastern Europe/former USSR.....	42,102	13,624	0.5	0.4	4.3	na	na	na
Armenia.....	245	107	1.0	1.0	3.7	28.5	4.5	20.6
Azerbaijan.....	156	55	0.0	0.0	48.4	23.8	0.0	20.6
Bulgaria.....	1,253	503	0.7	0.3	5.8	10.6	3.9	5.6
Belarus.....	759	283	0.4	0.4	0.5	41.0	13.8	22.6
Czech Republic.....	3,094	1,481	0.5	0.3	3.9	14.4	3.7	4.0
Estonia.....	373	216	0.3	0.3	1.4	9.8	2.6	5.5
Georgia.....	176	83	1.0	1.0	1.1	48.0	5.3	36.9
Hungary.....	2,618	1,343	0.8	0.5	5.3	6.1	3.0	1.6
Kazakhstan.....	169	43	0.6	0.6	0.0	63.6	2.7	47.2
Latvia.....	228	105	0.0	0.0	0.2	15.4	3.3	8.6
Lithuania.....	272	128	0.0	0.0	5.6	11.4	5.4	5.0
Moldova.....	184	84	0.7	0.7	3.3	57.9	31.3	11.6
Poland.....	6,239	2,865	0.5	0.3	3.6	13.6	2.0	5.6
Romania.....	1,169	508	0.8	0.4	2.3	8.4	2.5	2.5

Appendix table 5-51

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**Coauthorship share of Eastern Europe and former USSR and selected countries of Western Europe and Asia on international S&E articles of indicated region and country/economy: 1996**

(Percent)

Region and country/economy	S&E articles (number)		Other Asia		Other Western Europe	Eastern Europe/former USSR		
	Total	International	Total	India		Total	E. Europe	Former USSR
Russia .....	21,776	5,827	0.4	0.3	3.5	12.4	5.0	na
Slovakia .....	1,558	650	0.5	0.3	3.5	22.9	17.1	3.9
Ukraine .....	3,195	1,060	0.2	0.2	3.2	36.5	11.0	20.8
Uzbekistan .....	384	65	0.8	0.8	5.3	44.0	1.2	33.0
Central/South America .....	13,360	5,484	0.8	0.6	1.4	4.9	2.0	1.9
Argentina .....	2,720	916	0.3	0.3	1.0	1.4	0.5	0.6
Brazil .....	5,005	2,090	0.7	0.6	1.6	4.7	1.7	2.0
Chile .....	1,291	612	0.9	0.1	1.2	3.1	1.3	1.5
Colombia .....	327	212	1.7	0.8	2.1	3.5	0.3	2.4
Costa Rica .....	145	121	1.0	0.8	0.3	0.0	0.0	0.0
Cuba .....	280	157	0.1	0.0	0.5	5.7	3.8	1.5
Mexico .....	2,759	1,119	1.5	1.2	1.2	8.8	4.0	3.0
Peru .....	128	97	1.8	0.3	2.7	0.9	0.0	0.0
Uruguay .....	183	111	0.0	0.0	0.0	1.5	0.7	0.0
Venezuela .....	574	247	0.0	0.0	0.8	3.4	2.2	1.0
Near East/North Africa .....	12,329	4,782	1.1	0.6	2.5	4.7	2.2	2.0
Algeria .....	259	181	0.7	0.0	1.1	3.5	2.4	1.1
Egypt .....	1,650	535	1.3	0.7	1.7	3.3	2.6	0.5
Iran .....	393	142	1.0	0.7	2.4	6.9	4.1	1.8
Israel .....	7,429	2,853	0.6	0.4	2.6	5.5	2.1	2.6
Jordan .....	209	76	0.0	0.0	0.2	1.6	1.6	0.0
Kuwait .....	304	114	3.5	2.0	4.1	1.8	1.8	0.0
Lebanon .....	93	42	1.3	0.0	1.3	2.0	0.0	1.0
Morocco .....	472	377	0.3	0.2	1.6	2.2	1.2	0.8
Oman .....	87	40	12.3	7.0	1.6	0.0	0.0	0.0
Saudi Arabia .....	872	216	1.9	1.0	4.1	2.8	2.4	0.4
Tunisia .....	228	125	0.0	0.0	5.2	2.5	1.0	1.5
United Arab Emirates .....	196	89	5.3	2.0	2.1	1.6	1.2	0.5
Sub-Saharan Africa .....	5,252	2,332	1.8	0.8	3.6	2.5	1.2	0.7
Cameroon .....	102	73	0.0	0.0	3.6	1.2	0.0	0.0
Ethiopia .....	131	77	0.0	0.0	6.4	1.7	0.0	1.7
Ghana .....	114	67	0.0	0.0	4.7	0.0	0.0	0.0
Kenya .....	448	301	1.3	0.2	3.2	1.0	0.7	0.0
Nigeria .....	529	177	4.0	0.3	0.3	1.6	1.6	0.0
Senegal Republic .....	111	82	1.4	0.0	0.8	0.0	0.0	0.0
South Africa .....	2,733	808	1.7	1.3	2.4	5.5	2.7	1.8
Tanzania .....	190	148	0.0	0.0	11.3	0.4	0.0	0.4
Uganda .....	72	48	0.7	0.0	2.0	0.0	0.0	0.0
Zimbabwe .....	190	122	3.1	0.7	5.7	1.5	0.6	0.1
Other								
Australia .....	16,354	4,394	2.9	0.8	2.4	2.5	1.0	1.3
Canada .....	29,556	9,065	1.4	0.9	2.4	4.0	2.1	1.5
New Zealand .....	3,289	1,082	1.4	0.7	1.5	1.3	0.8	0.5

na = not applicable

EU = European Union; USSR = Union of Soviet Socialist Republics

NOTES: Data are region/country/economy's share of internationally coauthored articles with indicated region/country/economy. Authorship based on institutional address. International articles are those with at least one author at institutional address in given country/economy and one author at foreign address. Share based on article counts calculated on whole-count basis, i.e., each collaborating institution is credited one count. EU-15 consists of 15 EU countries before expansion of member countries on May 1, 2004 (listed countries plus Luxembourg). China data include Hong Kong. Eastern Europe consists of Bulgaria, Czech Republic, Hungary, Poland, and Romania.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iPLQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.



Appendix table 5-52

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**Coauthorship share of Eastern Europe and former USSR and selected countries of Western Europe and Asia on international S&E articles of indicated region and country/economy: 2003**

(Percent)

Region and country/economy	S&E articles (number)		Other Asia		Other Western Europe	Eastern Europe/former USSR		
	Total	International	Total	India		Total	E. Europe	Former USSR
<b>Major S&amp;E article producers</b>								
United States.....	242,397	60,180	2.5	1.4	4.5	6.1	2.8	2.4
EU-15.....	255,262	90,779	2.8	1.6	9.0	15.8	7.2	5.9
Austria.....	7,066	3,622	1.2	0.4	7.0	10.8	6.0	1.9
Belgium.....	9,941	5,547	1.0	0.4	3.8	8.3	4.8	2.5
Denmark.....	7,624	3,873	1.3	0.5	7.8	5.7	2.5	2.2
Finland.....	7,062	3,256	0.8	0.4	5.1	12.4	4.5	5.0
France.....	43,242	19,900	1.4	0.8	5.3	9.3	4.9	3.2
Germany.....	59,597	26,689	1.8	1.3	6.4	13.8	5.7	5.7
Greece.....	4,946	2,019	0.4	0.3	5.8	9.3	5.6	2.1
Ireland.....	2,520	1,265	1.2	0.7	3.2	5.4	2.0	2.3
Italy.....	31,567	12,669	1.1	0.8	5.4	7.5	3.6	2.7
Netherlands.....	18,746	8,905	1.5	0.6	4.5	5.9	2.7	2.5
Portugal.....	3,758	2,010	0.8	0.5	2.9	9.3	4.1	3.1
Spain.....	21,756	8,624	0.5	0.4	3.2	5.7	2.9	1.9
Sweden.....	14,374	7,086	1.4	0.5	6.6	9.5	3.4	3.8
United Kingdom.....	62,729	24,999	2.1	1.0	4.5	5.0	2.3	1.8
Japan.....	67,728	14,534	5.4	2.2	2.4	7.1	3.0	3.3
East Asia-4.....	63,400	16,110	2.7	1.6	1.1	3.4	0.9	1.7
China.....	34,110	9,132	1.8	0.8	1.1	2.2	0.8	1.1
Singapore.....	3,934	1,499	4.4	2.0	1.4	1.2	0.8	0.4
South Korea.....	16,114	4,507	2.7	1.7	1.1	5.1	1.0	2.8
Taiwan.....	10,448	2,178	4.2	3.2	1.1	4.2	1.6	2.0
<b>Other regions/countries</b>								
<b>Other Asia</b>								
Bangladesh.....	333	218	12.5	8.3	1.2	0.3	0.1	0.0
India.....	14,529	3,187	2.7	na	2.1	3.1	1.8	0.9
Indonesia.....	379	323	8.7	1.0	0.1	0.7	0.4	0.2
Malaysia.....	731	357	17.5	9.6	2.2	1.5	1.0	0.1
Pakistan.....	520	258	3.4	1.1	3.9	2.2	1.2	0.3
Philippines.....	338	249	12.7	6.2	1.8	0.3	0.0	0.2
Sri Lanka.....	213	129	6.3	2.8	2.9	0.8	0.6	0.0
Thailand.....	1,627	983	4.6	0.8	1.3	0.8	0.3	0.4
Vietnam.....	422	343	6.4	1.5	1.9	3.8	2.1	1.5
<b>Other Western Europe</b>								
Croatia.....	1,131	470	0.3	0.1	15.2	9.9	6.2	2.0
Cyprus.....	167	111	3.0	1.3	9.3	4.3	2.8	1.0
Iceland.....	349	227	0.2	0.0	9.8	2.1	1.1	0.0
Macedonia.....	80	41	4.5	0.7	19.5	13.3	10.5	0.9
Norway.....	4,780	2,403	0.4	0.3	3.3	6.2	2.4	2.6
Slovenia.....	1,367	664	0.9	0.5	11.0	10.4	6.4	2.5
Switzerland.....	13,343	7,711	1.0	0.6	1.4	5.8	2.9	2.2
Turkey.....	7,062	1,517	1.0	0.3	2.8	8.7	2.5	1.5
Yugoslavia.....	779	328	1.7	1.1	6.6	10.9	6.8	2.2
<b>Eastern Europe/former USSR</b>								
Armenia.....	312	200	0.0	0.0	1.9	18.4	5.5	11.4
Azerbaijan.....	158	84	0.0	0.0	52.4	14.2	0.9	9.9
Bulgaria.....	1,299	799	0.9	0.6	4.5	13.9	7.3	5.0
Belarus.....	762	391	0.9	0.8	1.9	33.9	10.0	20.8
Czech Republic.....	4,204	2,144	0.9	0.6	4.2	16.5	5.1	4.2
Estonia.....	550	297	0.6	0.4	4.5	15.3	6.8	4.4
Georgia.....	202	134	0.0	0.0	3.2	23.0	6.9	13.0
Hungary.....	3,769	2,140	1.0	0.8	4.4	8.6	4.7	1.8
Kazakhstan.....	202	113	0.7	0.0	1.6	32.5	4.4	23.7
Latvia.....	258	168	0.1	0.0	3.1	23.8	6.2	10.3
Lithuania.....	483	265	0.3	0.1	4.3	12.8	5.0	3.4
Moldova.....	158	129	0.0	0.0	2.6	30.3	18.2	6.8
Poland.....	9,328	4,318	0.7	0.5	3.9	14.6	3.3	5.2
Romania.....	1,612	1,037	0.4	0.1	4.5	8.7	5.0	1.6

Appendix table 5-52

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**Coauthorship share of Eastern Europe and former USSR and selected countries of Western Europe and Asia on international S&E articles of indicated region and country/economy: 2003**

(Percent)

Region and country/economy	S&E articles (number)		Other Asia		Other Western Europe	Eastern Europe/former USSR		
	Total	International	Total	India		Total	E. Europe	Former USSR
Russia.....	20,630	8,363	0.5	0.3	3.6	10.2	5.0	na
Slovakia.....	1,456	869	0.4	0.3	4.0	26.3	19.8	4.7
Ukraine.....	3,064	1,672	0.3	0.3	4.2	24.3	12.2	9.9
Uzbekistan.....	279	143	3.0	0.9	1.2	24.1	0.7	17.7
Central/South America.....	24,205	10,094	1.1	0.8	1.9	4.2	1.5	1.7
Argentina.....	4,031	1,716	0.5	0.3	1.8	2.2	1.5	0.3
Brazil.....	10,779	3,794	1.2	0.9	1.8	4.1	1.5	1.8
Chile.....	2,236	1,231	0.7	0.5	1.3	3.3	1.5	1.2
Colombia.....	578	391	1.8	1.2	3.2	1.5	0.3	0.7
Costa Rica.....	183	158	2.4	1.0	1.0	0.3	0.1	0.0
Cuba.....	436	302	1.2	0.4	1.7	1.0	0.3	0.4
Mexico.....	5,002	2,215	1.1	0.8	1.0	6.7	1.9	3.2
Peru.....	270	232	1.6	0.9	1.9	1.0	0.1	0.5
Uruguay.....	318	214	0.7	0.6	0.3	0.4	0.0	0.4
Venezuela.....	822	438	0.4	0.3	1.1	1.8	0.9	0.5
Near East/North Africa.....	17,434	7,192	1.6	0.9	3.4	5.1	2.5	1.5
Algeria.....	442	275	0.9	0.6	1.3	2.0	1.1	0.1
Egypt.....	2,155	763	1.0	0.6	2.5	3.7	2.5	0.8
Iran.....	2,098	550	4.1	2.3	2.2	2.2	0.7	0.8
Israel.....	9,122	3,809	0.7	0.5	4.0	6.7	2.9	2.4
Jordan.....	349	154	1.4	0.1	1.9	2.6	0.6	0.8
Kuwait.....	325	136	5.1	3.0	1.8	8.8	2.9	0.2
Lebanon.....	296	136	0.1	0.0	1.5	2.9	2.8	0.0
Morocco.....	692	475	0.8	0.6	1.5	2.2	1.4	0.5
Oman.....	171	100	7.8	4.3	7.6	1.5	1.5	0.0
Saudi Arabia.....	767	333	5.3	2.6	3.9	2.6	2.0	0.3
Tunisia.....	650	372	0.5	0.1	1.9	2.0	1.2	0.6
United Arab Emirates.....	294	167	2.4	1.3	2.5	2.7	2.3	0.0
Sub-Saharan Africa.....	6,293	3,765	1.7	0.8	4.7	1.5	1.0	0.3
Cameroon.....	222	169	0.8	0.1	2.9	0.6	0.6	0.0
Ethiopia.....	188	150	1.4	0.6	9.1	0.4	0.4	0.0
Ghana.....	155	120	1.2	0.5	2.9	0.9	0.0	0.4
Kenya.....	527	438	1.3	0.2	3.7	0.2	0.2	0.0
Nigeria.....	493	193	3.5	2.7	0.6	0.4	0.0	0.2
Senegal Republic.....	164	133	1.8	0.2	1.2	0.3	0.0	0.3
South Africa.....	3,218	1,504	1.4	1.1	2.8	3.1	2.2	0.5
Tanzania.....	207	189	1.1	0.7	8.8	0.1	0.0	0.0
Uganda.....	183	153	1.8	0.4	7.6	0.2	0.1	0.0
Zimbabwe.....	182	148	2.8	0.7	6.2	0.1	0.0	0.0
Other								
Australia.....	20,259	7,879	3.1	0.8	2.4	2.4	1.1	0.9
Canada.....	32,145	12,978	1.4	0.9	2.7	3.5	2.0	1.1
New Zealand.....	4,034	1,717	1.8	0.5	2.5	1.3	0.8	0.3

na = not applicable

EU = European Union; USSR = Union of Soviet Socialist Republics

NOTES: Data are region/country/economy's share of internationally coauthored articles with indicated region/country/economy. Authorship based on institutional address. International articles are those with at least one author at institutional address in given country/economy and one author at foreign address. Share based on article counts calculated on whole-count basis, i.e., each collaborating institution is credited one count. EU-15 consists of 15 EU countries before expansion of member countries on May 1, 2004 (listed countries plus Luxembourg). China data include Hong Kong. Eastern Europe consists of Bulgaria, Czech Republic, Hungary, Poland, and Romania.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iPLQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-53

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**Coauthorship share of selected regions and countries on international S&E articles of indicated region and country/economy: 1988**

(Percent)

Region and country/economy	S&E articles (number)		Central/South America	Near East/North Africa		Sub-Saharan Africa	Other		
	Total	International		Total	Israel		Total	Australia	Canada
<b>Major S&amp;E article producers</b>									
United States.....	187,225	19,294	4.1	6.6	5.3	1.8	17.2	3.7	12.6
EU-15.....	144,157	25,179	3.8	4.8	2.1	3.2	11.2	3.4	7.1
Austria.....	2,678	782	0.4	1.2	1.0	0.7	3.1	1.2	1.6
Belgium.....	4,386	1,425	1.5	1.6	0.9	3.4	4.3	0.9	3.4
Denmark.....	4,044	1,090	0.4	1.6	1.4	1.2	5.6	1.7	3.7
Finland.....	3,185	724	1.0	0.2	0.0	1.3	6.4	1.9	3.8
France.....	24,393	5,681	3.2	5.5	1.5	2.3	7.3	0.7	6.4
Germany.....	29,164	6,435	2.1	2.8	1.9	1.1	4.7	1.7	2.7
Greece.....	1,487	448	0.9	0.3	0.1	0.2	5.6	0.2	5.0
Ireland.....	941	286	1.4	1.7	0.0	1.7	7.9	1.3	6.6
Italy.....	12,821	3,096	2.2	1.1	0.5	1.0	3.1	0.8	2.4
Netherlands.....	9,797	2,192	0.9	1.2	0.9	1.0	4.7	1.1	3.3
Portugal.....	542	203	3.1	1.0	1.0	0.4	2.5	0.0	2.5
Spain.....	6,109	1,255	6.0	0.6	0.3	0.1	2.7	0.3	2.4
Sweden.....	8,767	2,211	1.1	1.5	1.1	1.2	4.9	1.1	3.7
United Kingdom.....	40,335	7,125	2.1	3.3	1.3	3.2	11.2	4.8	5.2
Japan.....	36,041	3,097	0.8	0.9	0.6	0.7	8.0	1.9	5.6
East Asia-4.....	8,194	1,824	0.1	0.5	0.2	0.3	10.8	4.4	6.0
China.....	5,256	1,181	0.1	0.6	0.2	0.2	11.7	4.7	6.6
Singapore.....	468	111	0.0	0.9	0.9	2.6	28.7	21.1	6.4
South Korea.....	909	249	0.0	0.2	0.2	0.0	4.8	0.6	4.2
Taiwan.....	1,581	303	0.3	0.2	0.2	0.3	5.2	0.5	4.7
<b>Other regions/countries</b>									
<b>Other Asia</b>									
Bangladesh.....	129	63	0.0	1.5	0.0	0.0	8.8	6.3	2.4
India.....	9,403	976	1.4	1.8	0.4	1.0	10.9	2.3	8.0
Indonesia.....	106	81	0.4	0.7	0.0	1.3	17.4	14.7	2.1
Malaysia.....	254	83	0.0	0.5	0.5	1.3	16.4	13.1	3.3
Pakistan.....	277	78	1.2	1.6	0.5	0.0	5.1	1.2	1.2
Philippines.....	171	83	1.4	0.0	0.0	0.9	10.2	3.8	4.2
Sri Lanka.....	144	66	0.3	0.0	0.0	0.3	11.8	9.1	1.4
Thailand.....	397	205	0.0	0.3	0.0	0.8	12.0	8.4	3.0
Vietnam.....	71	37	2.6	0.0	0.0	0.0	0.0	0.0	0.0
Other Western Europe.....	11,453	3,782	0.9	1.2	1.0	1.1	27.8	1.1	26.4
Cyprus.....	18	5	0.0	0.0	0.0	0.0	18.2	0.0	18.2
Iceland.....	94	44	2.0	0.0	0.0	1.3	26.3	0.0	26.3
Norway.....	2,564	684	0.5	1.3	1.1	1.2	27.7	1.2	25.9
Switzerland.....	6,764	2,485	1.1	1.2	1.0	1.2	26.0	1.2	24.6
Turkey.....	576	129	0.7	1.7	0.0	0.7	32.5	0.7	31.8
Yugoslavia.....	1,482	491	0.6	1.2	0.7	0.2	4.6	0.7	3.8
Eastern Europe/former USSR.....	43,219	3,485	1.2	1.4	0.5	0.3	4.5	0.5	4.0
Bulgaria.....	1,233	270	0.1	0.3	0.0	0.0	1.9	0.1	1.8
Hungary.....	2,110	718	0.5	2.0	0.9	0.3	4.0	1.0	2.9
Poland.....	4,696	1,211	1.0	1.2	0.3	0.2	5.7	0.3	5.4
Romania.....	440	88	0.0	2.1	1.1	0.7	0.0	0.0	0.0
Former USSR.....	32,240	615	1.1	0.6	0.1	0.3	1.4	0.3	1.1
Central/South America.....	6,612	1,896	na	1.0	0.7	0.7	5.7	0.6	5.0
Argentina.....	1,566	266	15.1	1.0	0.9	0.6	3.2	1.4	1.8
Brazil.....	2,100	621	7.7	0.3	0.3	0.2	6.5	0.4	5.9
Chile.....	820	247	12.3	2.4	1.3	1.0	4.1	0.8	3.2
Colombia.....	118	59	4.7	0.0	0.0	1.0	7.2	1.5	5.7
Costa Rica.....	80	47	14.6	0.0	0.0	0.0	1.0	0.0	1.0
Cuba.....	98	55	7.3	0.8	0.8	1.1	0.0	0.0	0.0
Mexico.....	1,058	321	5.2	1.1	1.1	0.2	5.9	0.1	5.7
Peru.....	108	70	6.0	0.0	0.0	1.4	2.4	0.0	2.4
Uruguay.....	50	16	17.5	0.0	0.0	13.4	0.0	0.0	0.0
Venezuela.....	360	124	11.4	2.0	1.0	0.0	3.4	0.0	3.4

Appendix table 5-53

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**Coauthorship share of selected regions and countries on international S&E articles of indicated region and country/economy: 1988**

(Percent)

Region and country/economy	S&E articles (number)		Central/South America	Near East/North Africa		Sub-Saharan Africa	Other		
	Total	International		Total	Israel		Total	Australia	Canada
Near East/North Africa .....	9,326	2,691	0.7	na	na	1.4	5.8	0.7	5.1
Algeria.....	109	78	0.0	0.8	0.0	0.0	6.2	2.3	3.9
Egypt.....	1,292	306	0.2	13.1	1.7	1.8	4.7	0.0	4.5
Iran .....	112	47	0.0	1.3	1.3	0.0	15.5	1.9	13.6
Israel.....	5,845	1,706	0.7	0.3	na	1.3	6.0	0.6	5.4
Jordan.....	191	55	0.0	14.3	0.0	3.3	2.7	2.7	0.0
Kuwait.....	342	74	1.3	10.0	0.0	1.3	11.1	3.9	7.2
Lebanon.....	64	17	0.0	15.1	0.0	0.0	0.0	0.0	0.0
Morocco.....	178	119	0.4	0.0	0.0	0.0	3.6	0.0	3.6
Oman.....	22	14	0.0	5.8	0.0	9.7	0.0	0.0	0.0
Saudi Arabia.....	638	131	2.2	19.7	1.1	3.7	5.2	0.9	4.3
Tunisia .....	139	79	0.0	0.0	0.0	0.0	1.2	0.0	1.2
United Arab Emirates.....	29	11	0.0	34.1	0.0	8.5	4.9	0.0	4.9
Sub-Saharan Africa.....	5,195	1,247	0.9	2.9	1.7	na	8.0	3.1	4.4
Cameroon .....	52	31	4.8	0.0	0.0	5.7	0.0	0.0	0.0
Ethiopia.....	91	37	0.0	0.0	0.0	16.2	6.8	0.0	3.4
Ghana .....	48	18	0.0	0.0	0.0	5.5	4.7	4.7	0.0
Kenya.....	371	146	0.0	0.3	0.3	9.1	9.0	1.9	7.1
Nigeria .....	966	153	0.6	1.3	0.0	3.8	7.9	1.0	6.9
Senegal Republic.....	0	0	na	na	na	na	na	na	na
South Africa.....	2,724	385	1.8	6.8	5.4	1.9	12.0	6.1	5.1
Tanzania.....	86	39	0.0	2.3	0.0	8.7	17.8	2.3	15.5
Uganda.....	25	7	4.0	0.0	0.0	7.0	0.0	0.0	0.0
Zimbabwe.....	144	52	0.0	0.0	0.0	17.6	15.2	12.5	2.7
Other									
Australia.....	10,951	1,985	0.6	1.0	0.5	2.0	12.8	na	6.4
Canada.....	24,008	4,906	2.1	2.7	1.8	1.1	5.4	2.4	na
New Zealand.....	2,349	493	0.2	0.2	0.0	1.0	30.5	23.6	5.9

na = not applicable

EU = European Union; USSR = Union of Soviet Socialist Republics

NOTES: Data are region/country/economy's share of internationally coauthored articles with indicated region/country/economy. Authorship based on institutional address. International articles are those with at least one author at institutional address in given country/economy and one author at foreign address. Share based on article counts calculated on whole-count basis, i.e., each collaborating institution is credited one count. EU-15 consists of 15 EU countries before expansion of member countries on May 1, 2004 (listed countries plus Luxembourg). Eastern Europe consists of Bulgaria, Czech Republic, Hungary, Poland, and Romania. China data include Hong Kong. Germany data include former West Germany only.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iplQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-54

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**Coauthorship share of selected regions and countries on international S&E articles of indicated region and country/economy: 1996**

(Percent)

Region and country/economy	S&E articles (number)		Central/South America	Near East/North Africa		Sub-Saharan Africa	Other		
	Total	International		Total	Israel		Total	Australia	Canada
<b>Major S&amp;E article producers</b>									
United States.....	221,414	39,046	4.9	4.5	3.4	1.4	14.4	3.2	10.4
EU-15.....	215,494	58,576	5.0	4.1	1.9	2.6	10.4	3.6	6.0
Austria.....	4,902	2,194	1.2	1.4	0.6	0.8	4.1	1.0	2.7
Belgium.....	7,641	3,514	1.9	1.7	0.7	2.0	3.4	0.7	2.6
Denmark.....	6,036	2,632	1.3	1.0	0.7	1.9	5.4	1.9	3.1
Finland.....	5,456	1,950	1.2	1.1	0.7	0.4	4.0	1.2	2.6
France.....	36,933	13,105	3.8	4.5	1.1	1.6	6.4	1.3	4.8
Germany.....	48,333	16,464	1.8	2.3	1.7	0.9	4.8	1.8	2.7
Greece.....	2,910	1,106	0.6	0.7	0.6	0.5	3.4	0.3	3.1
Ireland.....	1,666	695	1.0	0.4	0.2	0.9	5.9	2.0	3.1
Italy.....	23,581	8,011	2.5	1.7	1.1	0.6	3.6	1.1	2.4
Netherlands.....	15,638	5,604	1.2	1.6	1.1	1.2	4.7	1.6	3.0
Portugal.....	1,549	807	3.7	0.4	0.2	0.4	2.7	0.5	2.1
Spain.....	14,901	4,771	8.0	1.6	1.1	0.3	3.4	0.5	2.8
Sweden.....	12,461	4,875	2.3	0.7	0.6	1.8	5.4	2.2	2.6
United Kingdom.....	56,923	16,292	2.7	2.0	0.8	2.5	9.1	4.1	4.0
Japan.....	54,614	7,973	1.2	1.2	0.6	0.5	7.6	2.8	4.3
<b>East Asia-4</b>									
China.....	11,923	3,341	0.9	0.6	0.4	0.4	10.4	3.6	6.3
Singapore.....	1,430	449	0.4	0.8	0.8	0.8	16.9	11.1	4.4
South Korea.....	5,566	1,490	0.4	0.6	0.4	0.3	4.3	1.6	2.5
Taiwan.....	6,302	1,103	0.6	0.7	0.5	0.2	4.1	1.5	2.5
<b>Other regions/countries</b>									
<b>Other Asia</b>									
Bangladesh.....	223	117	0.7	1.5	0.0	1.1	4.6	0.7	3.2
India.....	10,688	1,719	1.7	1.8	0.6	1.0	7.9	2.4	5.1
Indonesia.....	269	220	1.7	1.0	0.0	0.9	11.8	8.0	2.3
Malaysia.....	486	207	0.7	1.7	0.0	2.6	9.0	5.6	2.6
Pakistan.....	368	166	0.4	5.3	0.3	0.5	5.4	1.8	3.5
Philippines.....	251	163	2.5	1.2	0.9	1.4	15.2	12.3	2.8
Sri Lanka.....	109	58	0.0	0.0	0.0	1.6	8.5	5.3	1.6
Thailand.....	599	376	0.9	1.2	1.0	1.8	9.0	6.4	2.2
Vietnam.....	182	124	0.5	0.5	0.0	0.4	6.4	5.2	1.2
<b>Other Western Europe</b>									
Croatia.....	771	278	0.3	1.5	1.2	0.1	6.3	3.8	2.5
Cyprus.....	93	57	0.3	2.4	0.0	0.3	5.1	0.0	5.1
Iceland.....	221	115	0.3	0.3	0.1	0.1	4.3	0.4	3.9
Macedonia.....	52	27	0.0	1.7	0.0	0.0	2.2	2.2	0.0
Norway.....	3,850	1,553	0.6	0.9	0.4	1.4	3.9	0.8	2.9
Slovenia.....	666	309	1.5	1.3	1.3	0.6	3.1	1.0	2.0
Switzerland.....	10,540	5,028	1.2	1.5	1.2	1.1	4.1	1.2	2.7
Turkey.....	2,513	569	0.7	3.3	1.5	0.6	3.5	0.7	2.6
Yugoslavia.....	678	202	1.0	2.6	1.2	1.3	4.8	1.2	3.1
<b>Eastern Europe/former USSR</b>									
Armenia.....	245	107	2.0	1.8	1.8	0.2	2.2	0.1	2.0
Azerbaijan.....	156	55	3.2	1.6	0.0	1.6	0.8	0.0	0.8
Bulgaria.....	1,253	503	1.3	1.2	0.5	0.3	2.9	0.9	1.8
Belarus.....	759	283	0.8	1.1	1.0	0.0	1.4	0.2	1.2
Czech Republic.....	3,094	1,481	2.3	1.6	1.1	0.2	4.4	1.0	3.3
Estonia.....	373	216	1.2	0.4	0.4	0.0	2.7	0.7	2.0
Georgia.....	176	83	1.0	1.0	1.0	0.4	0.0	0.0	0.0
Hungary.....	2,618	1,343	0.9	2.1	1.3	0.4	4.6	1.1	3.5
Kazakhstan.....	169	43	0.0	5.5	5.5	0.0	0.2	0.2	0.0
Latvia.....	228	105	0.6	0.0	0.0	0.0	3.7	0.4	3.3
Lithuania.....	272	128	1.4	1.0	0.7	0.0	3.2	3.2	0.0
Moldova.....	184	84	0.0	0.0	0.0	0.0	2.1	0.0	2.1
Poland.....	6,239	2,865	1.5	1.2	0.7	0.8	3.7	0.5	3.1
Romania.....	1,169	508	2.4	1.4	0.4	0.0	4.2	0.3	3.7
Russia.....	21,776	5,827	1.6	1.5	1.3	0.3	3.3	1.0	2.3

Appendix table 5-54

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**Coauthorship share of selected regions and countries on international S&E articles of indicated region and country/economy: 1996**

(Percent)

Region and country/economy	S&E articles (number)		Central/South	Near East/North Africa		Sub-Saharan	Other		
	Total	International	America	Total	Israel	Africa	Total	Australia	Canada
Slovakia .....	1,558	650	2.0	0.4	0.4	0.5	2.0	0.3	1.6
Ukraine .....	3,195	1,060	3.0	1.0	0.7	0.6	1.1	0.3	0.8
Uzbekistan .....	384	65	0.9	1.6	0.9	0.9	2.8	0.1	2.7
Central/South America .....	13,360	5,484	na	0.9	0.6	0.7	6.0	1.2	4.6
Argentina .....	2,720	916	15.5	0.9	0.6	0.6	4.8	1.6	2.9
Brazil .....	5,005	2,090	8.0	0.8	0.4	0.4	5.2	0.9	4.1
Chile .....	1,291	612	16.1	0.8	0.7	1.0	4.0	1.2	2.8
Colombia .....	327	212	17.8	0.5	0.4	1.2	3.8	1.4	2.1
Costa Rica .....	145	121	9.5	0.5	0.0	1.0	5.8	0.3	5.5
Cuba .....	280	157	29.3	0.1	0.0	2.1	4.6	0.1	4.3
Mexico .....	2,759	1,119	10.2	1.0	0.8	0.3	5.6	0.9	4.6
Peru .....	128	97	11.1	0.0	0.0	0.9	3.7	0.3	3.4
Uruguay .....	183	111	28.4	1.7	1.5	0.2	2.8	0.8	1.8
Venezuela .....	574	247	19.6	0.6	0.2	0.1	5.9	1.0	4.3
Near East/North Africa .....	12,329	4,782	1.1	na	na	1.0	5.9	1.8	3.9
Algeria .....	259	181	1.5	3.3	0.0	0.1	2.1	0.3	1.8
Egypt .....	1,650	535	1.2	13.6	0.5	1.4	4.5	0.3	4.2
Iran .....	393	142	0.1	1.7	0.4	0.7	23.0	13.7	9.0
Israel .....	7,429	2,853	1.2	0.3	na	1.0	6.0	1.9	3.9
Jordan .....	209	76	0.2	31.5	1.4	2.2	2.6	1.4	1.2
Kuwait .....	304	114	1.2	15.3	0.0	1.6	4.5	1.6	3.0
Lebanon .....	93	42	0.0	6.4	0.0	0.0	8.4	0.0	7.0
Morocco .....	472	377	0.7	1.9	0.2	0.4	2.6	0.0	2.6
Oman .....	87	40	2.3	12.6	0.0	3.5	7.0	2.1	4.9
Saudi Arabia .....	872	216	0.0	18.7	0.5	1.6	5.6	0.4	5.1
Tunisia .....	228	125	1.2	3.2	0.0	0.2	1.0	0.2	0.8
United Arab Emirates .....	196	89	0.2	34.1	0.0	0.5	2.5	2.5	0.0
Sub-Saharan Africa .....	5,252	2,332	1.5	2.1	1.3	na	6.7	2.5	3.8
Cameroon .....	102	73	1.5	1.7	0.0	11.4	4.7	1.2	3.5
Ethiopia .....	131	77	0.0	0.0	0.0	12.9	5.4	0.0	5.4
Ghana .....	114	67	0.0	1.8	1.8	14.2	4.0	2.7	1.3
Kenya .....	448	301	1.8	2.5	1.5	8.2	7.8	0.9	6.7
Nigeria .....	529	177	3.6	1.9	0.0	8.7	5.0	0.6	3.3
Senegal Republic .....	111	82	0.4	0.0	0.0	11.6	2.3	0.0	2.3
South Africa .....	2,733	808	1.7	3.2	2.8	3.7	9.8	5.5	3.5
Tanzania .....	190	148	0.4	0.0	0.0	6.7	3.0	0.4	2.6
Uganda .....	72	48	0.6	1.2	0.0	14.5	1.7	1.7	0.0
Zimbabwe .....	190	122	2.6	0.4	0.0	12.8	3.1	1.2	1.9
Other									
Australia .....	16,354	4,394	1.5	2.0	1.3	1.3	9.8	na	5.3
Canada .....	29,556	9,065	2.6	1.9	1.1	0.9	3.3	2.6	na
New Zealand .....	3,289	1,082	0.8	0.6	0.4	0.7	23.5	17.0	6.2

na = not applicable

EU = European Union; USSR = Union of Soviet Socialist Republics

NOTES: Data are region/country/economy's share of internationally coauthored articles with indicated region/country/economy. Authorship based on institutional address. International articles are those with at least one author at institutional address in given country/economy and one author at foreign address. Share based on article counts calculated on whole-count basis, i.e., each collaborating institution is credited one count. EU-15 consists of 15 EU countries before expansion of member countries on May 1, 2004 (listed countries plus Luxembourg). China data include Hong Kong. Eastern Europe consists of Bulgaria, Czech Republic, Hungary, Poland, and Romania.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iPIQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-55

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**Coauthorship share of selected regions and countries on international S&E articles of indicated region and country/economy: 2003**

(Percent)

Region and country/economy	S&E articles (number)		Central/South America	Near East/North Africa		Sub-Saharan Africa	Other		
	Total	International		Total	Israel		Total	Australia	Canada
<b>Major S&amp;E article producers</b>									
United States.....	242,397	60,180	5.4	3.5	2.5	1.4	13.0	3.4	8.8
EU-15.....	255,262	90,779	6.2	4.3	1.8	2.8	10.1	4.0	5.4
Austria.....	7,066	3,622	1.6	1.6	0.7	1.0	4.0	1.7	2.2
Belgium.....	9,941	5,547	2.6	2.0	0.8	2.2	4.0	1.4	2.5
Denmark.....	7,624	3,873	1.4	1.3	0.8	1.8	5.4	2.2	2.8
Finland.....	7,062	3,256	1.4	1.2	0.8	0.4	4.6	1.4	2.9
France.....	43,242	19,900	4.4	4.9	1.1	1.8	5.3	1.4	3.7
Germany.....	59,597	26,689	2.6	2.4	1.5	1.0	4.5	1.8	2.4
Greece.....	4,946	2,019	0.6	1.2	0.8	0.4	4.0	0.9	3.0
Ireland.....	2,520	1,265	1.0	1.0	0.2	0.4	6.5	2.6	3.5
Italy.....	31,567	12,669	3.1	1.6	0.9	0.7	4.0	1.6	2.3
Netherlands.....	18,746	8,905	1.5	1.2	0.8	2.0	5.0	2.0	2.7
Portugal.....	3,758	2,010	5.4	1.1	0.6	1.2	2.2	0.8	1.4
Spain.....	21,756	8,624	10.7	1.6	0.8	0.5	3.4	1.1	2.1
Sweden.....	14,374	7,086	1.6	1.0	0.6	1.6	5.6	2.5	2.8
United Kingdom.....	62,729	24,999	2.7	1.9	0.8	2.3	9.0	4.1	3.8
Japan.....	67,728	14,534	1.4	1.3	0.6	0.5	6.3	2.6	3.4
East Asia-4.....	63,400	16,110	0.9	1.0	0.6	0.3	9.8	4.6	4.7
China.....	34,110	9,132	0.9	0.9	0.7	0.2	10.5	5.2	4.9
Singapore.....	3,934	1,499	0.6	1.1	0.5	0.2	15.4	9.1	5.1
South Korea.....	16,114	4,507	0.7	0.7	0.3	0.4	4.5	1.6	2.6
Taiwan.....	10,448	2,178	0.6	1.1	0.6	0.1	4.8	1.3	3.2
<b>Other regions/countries</b>									
<b>Other Asia</b>									
Bangladesh.....	333	218	0.9	3.0	0.5	1.6	2.3	1.9	3.4
India.....	14,529	3,187	2.2	1.9	0.6	1.0	3.4	2.3	0.8
Indonesia.....	379	323	1.5	0.0	0.0	0.8	14.2	10.1	3.4
Malaysia.....	731	357	0.8	2.3	0.1	1.7	9.9	6.8	2.0
Pakistan.....	520	258	1.4	3.7	0.0	1.5	4.9	3.1	1.8
Philippines.....	338	249	1.9	2.2	0.6	2.2	10.7	4.3	3.7
Sri Lanka.....	213	129	0.4	1.0	0.0	1.0	7.6	6.1	1.5
Thailand.....	1,627	983	1.3	0.9	0.5	0.8	11.1	6.9	3.6
Vietnam.....	422	343	0.7	0.2	0.0	0.3	7.7	5.8	1.7
<b>Other Western Europe</b>									
Croatia.....	1,131	470	0.7	1.9	1.4	0.3	2.7	1.1	1.4
Cyprus.....	167	111	0.5	6.0	4.7	1.4	5.5	1.4	4.1
Iceland.....	349	227	0.5	0.4	0.4	0.5	3.7	1.0	2.6
Macedonia.....	80	41	0.0	0.0	0.0	1.0	0.4	0.0	0.4
Norway.....	4,780	2,403	0.9	1.3	0.8	2.1	5.0	1.6	2.9
Slovenia.....	1,367	664	1.9	1.9	1.5	0.2	2.6	0.7	1.7
Switzerland.....	13,343	7,711	1.6	1.5	1.0	1.5	4.6	1.6	2.7
Turkey.....	7,062	1,517	0.6	4.1	1.9	0.2	3.8	1.0	2.5
Yugoslavia.....	779	328	3.5	1.8	1.2	1.2	3.1	0.7	2.2
<b>Eastern Europe/former USSR</b>									
Armenia.....	312	200	3.1	2.0	0.7	0.0	1.1	0.0	1.1
Azerbaijan.....	158	84	0.0	3.1	1.0	0.0	0.3	0.0	0.3
Bulgaria.....	1,299	799	2.0	1.2	0.9	0.0	1.4	0.4	0.9
Belarus.....	762	391	2.2	0.3	0.1	0.4	0.8	0.2	0.7
Czech Republic.....	4,204	2,144	1.3	2.2	1.5	0.3	3.4	0.8	2.4
Estonia.....	550	297	0.4	0.6	0.0	0.2	2.3	1.0	1.4
Georgia.....	202	134	1.5	1.7	1.7	0.0	0.8	0.6	0.2
Hungary.....	3,769	2,140	1.2	2.0	1.3	0.3	3.4	0.7	2.6
Kazakhstan.....	202	113	2.0	2.8	1.8	0.0	1.5	0.0	1.5
Latvia.....	258	168	1.2	1.4	1.0	0.4	2.0	1.1	0.9
Lithuania.....	483	265	1.0	0.8	0.8	0.2	1.5	0.5	0.9
Moldova.....	158	129	0.5	2.0	2.0	0.0	0.9	0.3	0.6
Poland.....	9,328	4,318	1.5	1.1	0.8	0.4	3.6	0.8	2.6
Romania.....	1,612	1,037	1.1	1.4	0.5	0.2	2.8	0.8	1.9
Russia.....	20,630	8,363	1.8	1.3	1.1	0.1	2.6	0.8	1.8

Appendix table 5-55

(Page 2 of 2)

**Coauthorship share of selected regions and countries on international S&E articles of indicated region and country/economy: 2003**

(Percent)

Region and country/economy	S&E articles (number)		Central/South	Near East/North Africa		Sub-Saharan	Other		
	Total	International	America	Total	Israel	Africa	Total	Australia	Canada
Slovakia .....	1,456	869	1.3	1.6	0.6	0.3	2.9	0.8	1.8
Ukraine .....	3,064	1,672	3.1	2.1	1.9	0.1	1.5	0.6	0.9
Uzbekistan .....	279	143	4.0	3.1	2.9	0.8	3.7	0.0	3.7
Central/South America .....	24,205	10,094	na	1.1	0.8	0.7	5.3	1.2	3.9
Argentina .....	4,031	1,716	17.9	1.0	0.7	0.5	4.1	1.3	2.5
Brazil .....	10,779	3,794	10.1	0.8	0.5	0.6	5.4	1.1	4.1
Chile .....	2,236	1,231	14.7	1.0	0.9	0.5	3.8	1.2	2.3
Colombia .....	578	391	17.6	1.9	1.5	1.4	2.7	0.6	2.1
Costa Rica .....	183	158	21.2	1.5	1.5	1.7	2.8	0.3	2.3
Cuba .....	436	302	36.2	0.3	0.0	0.0	2.9	0.3	2.5
Mexico .....	5,002	2,215	9.5	1.3	0.9	0.6	4.7	0.9	3.7
Peru .....	270	232	20.6	0.1	0.0	1.0	3.2	0.3	2.9
Uruguay .....	318	214	33.3	0.7	0.7	1.8	1.6	0.9	0.6
Venezuela .....	822	438	18.6	0.5	0.3	0.2	3.9	0.9	2.7
Near East/North Africa .....	17,434	7,192	1.5	na	na	1.0	6.3	1.6	4.6
Algeria .....	442	275	0.6	5.7	0.0	1.1	0.9	0.0	0.6
Egypt .....	2,155	763	0.8	11.8	0.5	0.8	4.1	0.4	3.6
Iran .....	2,098	550	0.4	1.3	0.0	0.0	22.8	7.8	14.5
Israel .....	9,122	3,809	1.9	0.2	na	0.8	4.8	1.3	3.4
Jordan .....	349	154	1.4	17.8	2.7	0.2	6.4	1.0	5.4
Kuwait .....	325	136	1.1	15.5	0.3	1.3	8.8	0.6	7.6
Lebanon .....	296	136	1.0	10.6	0.0	0.1	8.3	2.2	6.0
Morocco .....	692	475	1.5	2.6	0.2	0.6	3.8	0.3	3.4
Oman .....	171	100	1.1	12.4	0.9	2.7	11.3	4.7	4.4
Saudi Arabia .....	767	333	1.4	20.9	0.1	4.6	7.8	1.0	6.2
Tunisia .....	650	372	0.5	3.5	0.1	0.9	1.7	0.3	1.4
United Arab Emirates .....	294	167	0.7	20.2	0.5	0.7	8.4	2.1	6.0
Sub-Saharan Africa .....	6,293	3,765	2.1	1.8	0.8		6.9	3.6	3.0
Cameroon .....	222	169	1.8	0.3	0.0	16.1	2.5	1.8	0.6
Ethiopia .....	188	150	0.3	1.1	0.4	10.6	3.5	0.9	2.4
Ghana .....	155	120	0.0	2.7	1.4	14.0	4.4	0.3	4.1
Kenya .....	527	438	2.2	1.5	0.7	9.0	3.6	0.9	2.6
Nigeria .....	493	193	3.8	1.3	0.7	17.9	4.4	2.8	0.9
Senegal Republic .....	164	133	2.7	1.6	0.0	22.8	0.1	0.0	0.1
South Africa .....	3,218	1,504	2.6	2.4	1.3	5.0	10.8	6.7	3.4
Tanzania .....	207	189	1.7	0.5	0.2	13.0	3.9	1.7	2.2
Uganda .....	183	153	1.0	0.3	0.0	15.5	2.7	0.0	2.4
Zimbabwe .....	182	148	1.3	0.9	0.9	21.1	7.2	1.9	5.2
Other									
Australia .....	20,259	7,879	1.6	1.2	0.5	1.6	9.1	na	5.0
Canada .....	32,145	12,978	2.8	2.3	1.0	0.8	3.9	3.1	na
New Zealand .....	4,034	1,717	1.3	0.9	0.3	0.9	24.3	17.9	6.3

na = not applicable

EU = European Union; USSR = Union of Soviet Socialist Republics

NOTES: Data are region/country/economy's share of internationally coauthored articles with indicated region/country/economy. Authorship based on institutional address. International articles are those with at least one author at institutional address in given country/economy and one author at foreign address. Share based on article counts calculated on whole-count basis, i.e., each collaborating institution is credited one count. EU-15 consists of 15 EU countries before expansion of member countries on May 1, 2004 (listed countries plus Luxembourg). China data include Hong Kong. Eastern Europe consists of Bulgaria, Czech Republic, Hungary, Poland, and Romania.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iPLQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.



## R&amp;D expenditures and S&amp;E article output of top 200 U.S. academic institutions for R&amp;D, by quartile of R&amp;D growth: 1988–2003

Quartile of R&D growth, academic institution, and rank of institution	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average annual change (%)
	Total R&D (\$ thousands)																
Total annual R&D growth .....	12,556,884	13,936,321	15,211,303	16,437,641	17,565,552	18,578,852	19,567,508	20,664,342	21,507,439	22,750,433	24,127,079	25,811,543	28,249,837	30,799,741	34,058,273	37,529,309	13.3
Quartile 1 .....	1,714,527	2,002,251	2,252,539	2,492,871	2,752,182	2,967,846	3,187,532	3,416,433	3,710,676	4,011,259	4,291,941	4,798,484	5,444,187	6,265,730	7,003,633	7,995,226	24.4
C.R. Drew University of Medicine & Science (196) .....	2,826	2,898	4,970	7,043	7,862	6,852	9,347	12,500	16,386	17,205	17,205	24,484	31,045	36,717	48,839	49,888	111.0
George Mason University (178) .....	3,834	4,220	8,011	9,726	11,930	15,830	18,871	22,221	23,230	19,126	22,543	26,766	26,793	32,881	38,849	44,980	71.5
University of Maryland–Baltimore County (199) .....	3,975	4,342	5,385	6,809	7,619	7,544	8,117	11,868	14,304	19,799	18,155	21,854	26,044	29,641	36,323	42,906	65.3
North Dakota State University (138) .....	8,638	10,433	12,468	31,935	34,466	34,971	36,977	40,677	43,661	35,197	40,007	44,696	50,063	64,882	72,105	91,812	64.2
University of Texas–El Paso (200) .....	2,641	4,168	6,889	9,447	10,147	12,480	12,062	12,705	13,548	15,850	14,092	21,961	20,877	21,889	23,684	27,185	62.0
New Jersey Institute of Technology (144) .....	8,327	11,402	15,225	16,463	21,126	23,781	29,983	30,940	39,110	38,728	40,982	40,982	47,895	62,747	69,138	73,664	52.3
University of Louisiana–Lafayette (183) .....	5,092	6,817	8,319	10,232	10,815	11,319	11,099	13,416	13,429	22,381	24,768	30,735	32,692	32,073	47,796	43,769	50.6
University of Central Florida (134) .....	11,307	30,991	30,618	41,935	27,629	33,922	33,599	37,147	21,488	38,592	35,530	42,466	47,646	79,287	66,351	89,880	46.3
Georgia State University (171) .....	5,843	7,000	8,942	9,271	10,026	12,133	17,100	17,867	18,114	27,069	31,153	36,523	36,600	38,960	44,564	45,653	45.4
Medical University of South Carolina (117) .....	20,949	23,017	23,128	25,877	31,900	42,543	46,249	57,495	54,426	57,111	57,940	55,819	65,243	116,687	132,030	150,551	41.2
University of Arkansas for Medical Sciences (151) .....	9,851	10,834	11,898	14,250	15,889	15,686	22,762	28,389	33,354	37,336	39,487	44,066	49,074	51,921	45,046	63,677	36.4
University of Montana (180) .....	6,842	6,482	7,332	7,871	10,177	15,169	16,908	18,881	21,421	21,151	20,133	24,372	29,590	33,535	39,367	43,562	35.8
State University of New York–Albany (119) .....	19,625	24,240	22,034	20,580	35,856	37,860	43,353	38,771	66,247	57,415	50,568	64,278	82,792	70,119	67,493	120,655	34.3
University of Nebraska Medical Center (133) .....	14,684	17,291	17,844	27,858	31,564	31,669	33,997	38,287	42,612	45,365	50,453	54,205	51,547	60,695	71,000	85,007	31.9
College of William & Mary (159) .....	8,031	15,394	17,792	18,508	18,890	21,793	20,443	20,597	25,183	24,051	25,966	31,322	33,299	35,829	39,858	46,029	31.5
University of Nevada–Las Vegas (179) .....	7,369	11,409	15,449	19,491	13,300	19,373	15,486	17,268	16,893	15,628	16,912	20,170	24,215	27,008	30,527	42,205	31.5
Medical College of Georgia (148) .....	9,925	11,363	12,052	12,082	21,426	24,935	28,020	31,369	35,971	38,725	39,806	41,103	45,596	52,191	51,705	56,398	31.2
University Mississippi, all campuses (149) .....	15,125	17,092	22,071	24,748	23,361	23,734	25,000	26,862	26,215	26,231	28,079	32,129	44,927	58,410	71,893	85,378	31.0
University of Puerto Rico–Medical Sciences Campus (192) .....	5,517	6,528	6,293	11,014	18,296	14,622	17,765	17,354	15,005	15,575	19,830	17,114	21,373	23,913	29,089	31,124	30.9
Emory University (53) .....	60,896	64,713	82,774	91,940	101,398	120,125	136,186	148,178	149,168	163,619	172,884	189,170	206,070	236,997	271,238	323,224	28.7
University of South Florida (84) .....	40,396	60,973	76,404	72,948	68,713	75,322	86,186	92,758	94,157	99,649	104,325	123,961	145,397	171,550	198,026	213,455	28.6
Boston College (194) .....	6,137	6,152	8,052	9,810	10,400	10,731	10,724	13,298	14,504	14,746	17,774	21,726	27,767	30,768	31,754	32,158	28.3
Oregon Health & Science University (85) .....	37,979	43,922	50,682	52,821	61,645	75,148	84,734	96,867	101,745	118,364	130,421	140,247	150,342	155,583	158,729	197,178	27.9
Eastern Virginia Medical School (184) .....	6,614	8,125	10,496	11,112	11,238	15,818	17,873	17,823	17,730	19,109	21,672	24,096	23,299	26,250	28,572	32,801	26.4
University of Memphis (182) .....	8,201	9,892	12,073	12,000	12,169	11,740	13,305	14,642	18,429	21,271	22,486	24,280	27,381	29,445	33,625	38,728	24.8
University of Texas Medical Branch–Galveston (103) .....	33,047	38,717	40,610	45,086	57,672	67,998	72,773	72,569	73,759	77,683	86,488	93,580	97,896	102,722	129,534	153,122	24.2
Indiana University (48) .....	73,526	81,793	89,191	102,461	117,565	127,877	136,617	145,512	154,260	165,198	171,754	194,790	227,737	259,899	299,080	337,669	24.0
Duke University (25) .....	113,968	131,090	140,708	164,232	188,678	202,434	220,220	218,703	242,235	251,536	282,388	348,274	356,625	375,133	441,533	520,191	23.8
Vanderbilt University (70) .....	60,591	65,218	75,062	80,759	95,447	96,181	110,105	111,224	117,003	122,598	135,214	149,675	171,926	186,504	208,305	276,074	23.7
University of Medicine and Dentistry of New Jersey (81) .....	42,027	54,451	71,789	80,787	84,505	76,410	86,866	96,365	98,535	110,383	114,491	126,277	140,951	162,417	178,156	190,763	23.6
Loyola University of Chicago (153) .....	8,327	11,303	12,260	22,702	30,099	29,232	36,830	33,098	29,365	30,994	34,241	29,001	30,034	37,156	37,607	37,581	23.4
University of Nevada–Reno (131) .....	17,867	18,141	21,449	29,303	37,546	38,564	42,176	46,783	47,977	52,703	45,476	47,939	56,248	59,229	66,721	80,553	23.4
Thomas Jefferson University (109) .....	24,231	29,405	30,969	33,066	41,329	51,106	56,932	65,705	69,154	69,228	69,460	78,410	89,626	88,936	102,974	109,083	23.3
Rush University (127) .....	19,827	21,741	21,284	27,359	26,184	34,039	39,736	44,322	48,772	49,969	55,277	60,957	68,189	70,219	79,394	89,196	23.3
Dartmouth College (108) .....	35,563	38,452	43,737	49,384	53,668	59,920	57,845	50,525	52,945	61,619	64,964	69,522	78,874	109,096	126,839	155,795	22.5
University of New Hampshire (122) .....	22,095	23,720	25,994	29,591	33,744	39,555	43,707	42,548	45,693	45,886	52,359	57,613	72,108	87,879	93,222	96,415	22.4
Drexel University (168) .....	16,045	17,983	20,079	19,705	23,184	20,314	20,886	19,389	19,322	19,267	19,603	22,397	24,876	27,698	44,465	69,548	22.2

## R&amp;D expenditures and S&amp;E article output of top 200 U.S. academic institutions for R&amp;D, by quartile of R&amp;D growth: 1988–2003

Quartile of R&D growth, academic institution, and rank of institution	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average annual change (%)
	Total R&D (\$ thousands)																
Baylor College of Medicine (32).....	106,814	134,681	155,122	161,084	167,998	172,252	186,865	190,375	184,613	192,744	216,528	272,198	334,175	381,461	411,924	461,763	22.2
University of Maryland–Baltimore (59).....	68,787	75,854	83,689	100,163	100,312	111,772	110,866	107,874	122,207	134,808	143,321	140,903	224,346	239,007	266,822	297,271	22.1
Mount Sinai School of Medicine (83).....	49,727	56,856	63,752	66,310	75,561	75,337	86,179	92,008	92,405	94,776	109,448	127,765	149,846	176,946	185,335	214,514	22.1
Wake Forest University (106).....	30,568	37,156	39,654	44,214	49,919	57,646	52,581	68,388	75,331	75,290	76,893	82,827	86,840	98,343	111,634	130,405	21.8
Saint Louis University (160).....	9,700	14,251	17,157	19,183	19,932	20,826	20,844	22,686	25,099	26,517	26,943	27,817	31,002	32,442	35,444	41,189	21.6
Wayne State University (74).....	50,509	59,521	62,455	69,997	81,127	85,627	94,632	106,140	112,151	124,383	138,456	146,832	156,814	175,984	199,007	213,717	21.5
University of Cincinnati (68).....	60,479	69,831	74,461	80,598	90,279	92,512	93,599	91,159	127,733	141,604	159,695	153,002	171,906	192,895	217,739	255,083	21.5
Old Dominion University (189).....	7,252	9,107	10,478	10,040	10,859	14,097	14,911	14,439	17,577	18,583	20,150	23,030	25,058	24,659	29,223	30,324	21.2
University of Pittsburgh (36).....	98,609	111,265	117,716	130,322	157,250	178,778	185,377	186,457	189,826	202,533	213,842	249,477	294,809	348,792	400,200	409,684	21.0
University of California–Los Angeles (7).....	209,338	227,828	246,795	250,033	270,954	277,974	279,869	303,668	354,645	398,865	447,367	477,620	530,826	693,801	787,598	849,357	20.4
Washington University in St Louis (27).....	117,829	128,419	151,249	160,464	170,339	179,329	192,378	209,100	218,640	262,426	269,550	315,606	362,216	406,642	416,960	474,328	20.2
University of Florida (30).....	107,177	125,770	139,678	140,257	140,189	142,966	148,592	199,216	255,099	272,373	274,862	304,447	313,692	347,892	386,316	429,734	20.1
Quartile 2.....	3,375,023	3,775,681	4,156,875	4,570,786	4,967,715	5,369,681	5,668,993	6,041,415	6,294,556	6,668,076	7,230,046	7,772,269	8,556,946	9,392,265	10,441,060	11,566,161	16.2
University of Maine (142).....	17,341	19,974	23,605	27,082	23,213	24,879	29,393	31,901	34,684	33,144	33,106	41,452	54,821	64,070	62,149	68,923	19.8
University of Kentucky (61).....	69,003	69,532	74,959	81,137	92,244	102,911	105,539	111,934	118,721	124,804	161,346	174,034	202,392	211,721	236,275	272,062	19.6
Naval Postgraduate School (150).....	15,515	15,306	17,391	19,397	20,412	24,296	26,538	27,510	30,706	32,333	34,095	34,095	40,827	47,559	54,291	61,025	19.6
University of Texas Southwestern Medical Center–Dallas (58).....	70,392	79,920	85,919	94,511	102,263	114,258	118,398	125,301	130,162	140,589	153,711	165,520	189,216	222,376	263,958	276,692	19.5
George Washington University (118).....	23,522	30,284	32,372	29,791	39,335	41,177	38,429	43,488	49,263	55,158	74,481	66,757	69,300	73,805	86,288	92,454	19.5
University of Akron (190).....	7,114	9,728	10,372	13,405	14,825	17,558	16,783	15,589	15,507	17,999	16,326	16,279	19,495	22,266	28,080	27,953	19.5
University of California–Irvine (71).....	60,100	66,806	78,074	82,523	89,275	100,631	104,778	109,908	119,647	119,669	130,415	141,842	158,437	179,866	209,469	234,656	19.4
University of Texas Health Science Center–Houston (31).....	118,987	132,763	136,990	162,884	167,383	186,261	188,789	196,845	203,767	225,216	243,253	260,433	301,783	338,185	400,525	464,463	19.4
University of Louisville (143).....	22,945	14,466	15,921	16,852	17,400	19,496	20,475	22,835	29,655	33,434	39,147	57,051	64,062	72,857	80,974	88,522	19.1
University of South Carolina (102).....	31,836	40,421	47,477	55,091	54,360	57,062	74,001	79,710	78,619	77,855	92,785	105,835	105,675	111,011	124,208	122,350	19.0
University of Illinois–Chicago (57).....	75,922	83,329	85,268	90,520	102,267	106,952	113,741	119,381	121,540	139,296	151,739	175,093	195,839	233,098	259,852	291,507	18.9
Mississippi State University (89).....	45,005	53,670	58,492	64,335	65,754	70,300	76,201	72,145	84,124	84,157	100,410	110,896	132,503	146,939	158,652	165,922	17.9
Arizona State University (96).....	39,510	44,347	59,849	63,489	69,346	66,142	62,563	77,009	84,653	80,740	92,019	107,184	108,117	118,763	123,016	145,591	17.9
Boston University (73).....	61,505	66,325	73,651	74,881	83,701	91,158	90,504	103,709	110,266	120,392	130,054	141,102	154,029	172,031	192,612	224,841	17.7
Wright State University (173).....	9,551	11,043	13,451	14,646	16,793	19,791	19,388	18,661	17,381	17,291	19,676	23,131	29,092	32,033	30,962	34,860	17.7
University of North Carolina–Chapel Hill (34).....	107,039	122,097	123,113	142,681	161,549	179,157	201,622	209,118	208,529	221,380	235,296	252,767	269,072	303,576	370,806	390,542	17.7
West Virginia University (112).....	28,807	37,569	46,624	49,686	52,482	54,271	58,604	53,072	54,844	63,312	62,362	63,392	66,130	71,311	84,985	104,748	17.6
Montana State University– Bozeman (125).....	25,227	25,968	27,648	30,278	34,419	32,911	36,149	47,998	50,097	49,440	52,292	55,475	65,324	69,593	78,211	91,503	17.5
Northeastern University (166).....	11,894	13,302	14,347	15,973	15,876	18,517	19,104	19,850	17,980	19,822	26,385	30,209	35,340	34,467	38,540	42,931	17.4
University of Washington (3).....	190,735	221,712	245,313	274,423	313,514	335,329	353,945	389,160	406,472	409,959	438,191	482,659	529,342	589,626	627,273	684,814	17.3
University of Pennsylvania (15).....	159,218	173,744	189,390	198,221	222,424	233,829	251,461	272,393	288,430	296,141	333,477	383,569	430,389	469,852	522,269	564,716	17.0
University of California–Santa Cruz (126).....	22,163	23,651	26,347	31,620	36,413	37,886	42,457	44,294	51,062	49,428	56,533	52,902	56,212	64,253	70,967	78,448	16.9
University of Oklahoma (77).....	50,047	53,956	58,645	79,777	92,146	92,019	95,747	102,337	109,071	114,387	126,861	142,085	150,902	148,695	169,373	174,466	16.6
University of California–San Francisco (12).....	193,289	219,446	238,278	268,700	295,784	314,599	312,393	329,742	320,757	343,384	379,970	417,095	443,013	524,975	596,965	671,443	16.5
San Diego State University (135).....	19,370	20,124	22,524	28,570	30,683	32,493	29,309	35,287	43,201	40,586	41,915	45,579	55,002	58,332	64,302	67,053	16.4
Ohio University (176).....	10,863	11,461	12,982	12,796	14,811	15,452	16,425	19,713	18,329	21,008	21,469	21,437	23,767	27,146	36,601	37,527	16.4
Washington State University (88).....	51,319	55,173	66,856	75,244	85,080	92,434	94,819	96,810	98,641	97,700	95,422	96,943	104,796	107,937	146,862	175,181	16.1

## R&amp;D expenditures and S&amp;E article output of top 200 U.S. academic institutions for R&amp;D, by quartile of R&amp;D growth: 1988–2003

Quartile of R&D growth, academic institution, and rank of institution	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average annual change (%)
	Total R&D (\$ thousands)																
University of Colorado (22) .....	128,015	143,720	154,723	160,526	176,266	193,217	234,267	243,932	251,301	269,816	311,203	318,618	353,908	365,472	399,818	436,761	16.1
University of Texas Health Science Center—San Antonio (97) .....	39,673	42,501	45,663	51,768	65,179	75,239	83,535	87,336	83,028	86,019	82,357	87,804	103,824	115,154	129,616	133,304	15.7
University of Notre Dame (155) .....	17,845	19,385	19,373	21,302	22,679	23,745	22,833	23,332	24,556	24,116	28,873	30,483	34,524	46,096	52,371	59,803	15.7
University of Alabama—Birmingham (44) .....	85,030	100,666	110,603	113,317	117,844	133,790	141,735	158,779	170,193	203,758	227,720	232,115	233,461	231,702	255,053	284,497	15.6
University of Kansas (80) .....	51,723	57,111	61,144	65,982	75,004	85,134	95,701	100,702	100,649	108,893	117,115	132,752	148,670	156,467	172,131	173,024	15.6
University of New Mexico (79) .....	47,729	52,970	57,728	67,344	72,863	76,736	90,315	129,354	116,618	116,152	125,910	115,850	133,980	156,619	150,598	158,239	15.4
Colorado School of Mines (187) .....	8,832	9,364	10,943	12,971	12,783	13,644	13,880	16,585	19,291	19,221	20,681	21,715	21,795	23,654	26,515	29,162	15.3
Johns Hopkins University (9) .....	192,994	217,295	253,113	270,770	272,956	298,873	324,830	341,805	363,635	421,147	410,923	438,725	464,237	517,302	580,307	636,774	15.3
Medical College of Wisconsin (115) .....	33,231	34,951	34,622	40,446	43,579	48,689	49,604	44,169	47,365	51,629	56,021	61,446	70,581	83,857	96,700	108,608	15.1
Case Western Reserve University (52) .....	77,303	86,168	93,384	104,199	118,391	124,691	133,272	141,089	143,435	161,825	176,330	182,332	193,057	198,253	219,042	250,674	15.0
University of California—San Diego (8) .....	200,472	216,991	237,032	261,422	282,114	307,051	331,901	357,333	371,509	376,655	418,790	461,632	518,559	556,533	585,008	646,508	14.8
Ohio State University (20) .....	154,652	173,485	178,569	194,919	203,291	221,460	230,515	246,287	262,147	289,100	301,518	322,810	361,399	390,652	432,387	496,438	14.7
South Dakota State University (197) .....	8,622	8,472	9,511	11,511	12,692	14,050	14,083	13,448	14,925	15,671	15,631	15,599	16,784	19,717	20,085	27,652	14.7
University of California—Santa Barbara (91) .....	46,598	50,067	59,750	59,593	66,007	68,775	73,619	78,737	91,284	91,149	96,034	104,561	118,154	116,372	131,795	149,130	14.7
Colorado State University (69) .....	59,369	64,351	73,967	80,474	107,339	115,385	112,457	122,172	126,701	128,580	140,179	150,281	152,279	161,144	178,845	187,054	14.3
Texas Tech University (121) .....	29,374	33,926	34,124	34,994	36,869	38,119	39,455	40,824	43,000	46,645	53,126	58,488	66,263	69,918	82,785	92,515	14.3
University of Delaware (110) .....	32,023	37,194	40,119	44,696	48,970	52,627	50,734	53,161	54,154	65,095	69,896	73,521	74,711	77,491	85,157	100,706	14.3
University of Michigan (1) .....	250,169	280,905	310,578	363,582	393,059	425,868	430,778	443,070	468,876	483,485	496,761	508,619	551,556	600,523	673,724	780,054	14.1
University of California—Davis (19) .....	154,655	180,297	198,075	200,664	209,282	223,758	230,147	244,116	254,604	267,341	288,796	307,950	364,789	432,396	456,653	482,145	14.1
Northwestern University (39) .....	102,755	118,991	133,151	144,809	141,975	162,299	169,949	173,731	187,262	200,943	223,235	233,809	245,774	257,933	282,154	319,722	14.1
Clemson University (90) .....	49,375	56,699	66,664	70,236	77,579	78,569	76,572	82,883	84,836	84,034	90,150	99,341	114,903	123,885	134,840	152,986	14.0
University of Missouri—Columbia (66) .....	66,365	74,055	88,181	96,748	97,242	106,193	121,256	122,870	119,079	128,178	136,061	149,002	158,861	174,782	177,011	205,212	13.9
Quartile 3 .....	3,855,166	4,269,386	4,617,321	4,893,646	5,193,764	5,412,954	5,772,602	6,109,065	6,257,542	6,669,804	7,101,090	7,490,267	8,177,844	8,702,428	9,605,060	10,469,236	11.4
University of Iowa (43) .....	94,552	105,900	115,778	124,058	135,418	148,811	157,036	164,893	178,228	184,414	199,063	207,135	236,944	255,348	288,808	292,035	13.9
University of Nebraska—Lincoln (75) .....	60,788	68,281	77,598	87,529	91,427	94,959	102,746	107,721	102,460	117,100	118,857	131,046	136,023	157,520	171,431	184,652	13.6
University of Maryland Center for Environmental Science (164) .....	12,682	13,741	15,652	16,205	18,557	19,055	19,817	21,100	21,448	21,377	24,038	26,816	31,605	36,635	38,501	38,344	13.5
Brown University (107) .....	41,556	43,564	46,763	49,503	55,585	57,152	55,146	56,269	67,621	71,411	73,977	76,330	81,476	91,636	109,482	125,090	13.4
Florida State University (94) .....	50,679	55,245	62,933	53,811	50,178	62,929	76,588	86,060	78,125	95,908	94,463	97,673	105,095	113,817	134,351	152,277	13.4
University of Massachusetts (42) .....	106,043	121,886	113,103	132,060	141,127	151,090	156,385	156,883	170,524	191,243	208,685	205,981	232,791	251,013	293,039	317,387	13.3
University of Utah (62) .....	75,789	83,340	89,018	94,621	108,486	105,263	103,771	105,642	114,423	135,911	142,956	153,843	187,661	197,597	216,707	223,739	13.0
Virginia Commonwealth University (100) .....	42,951	52,193	62,730	65,608	69,189	77,097	76,597	76,529	79,018	78,948	80,538	79,785	88,220	99,180	109,619	126,451	13.0
City University of New York (124) .....	25,821	28,952	32,190	34,922	36,789	42,292	48,160	48,070	51,103	51,400	51,730	47,005	49,135	58,214	67,495	75,946	12.9
University of Wyoming (136) .....	20,429	23,310	22,831	23,009	30,181	32,556	38,464	40,470	40,553	47,753	48,500	47,197	43,094	41,632	41,632	60,054	12.9
University of Arkansas (111) .....	28,104	32,842	36,963	40,831	44,768	58,325	57,815	59,410	59,753	64,868	71,686	61,585	70,817	78,303	83,863	82,277	12.9
University of Arizona (18) .....	155,464	174,119	195,633	213,726	221,999	235,528	269,939	292,351	279,656	285,278	302,328	320,245	345,090	367,128	390,027	454,941	12.8
University of Vermont (113) .....	36,815	42,743	45,162	46,541	49,542	49,839	51,775	54,065	53,659	59,526	57,832	64,049	63,391	75,597	88,602	104,994	12.3
University of Idaho (116) .....	30,078	31,879	34,936	39,407	44,140	44,655	49,338	52,529	56,198	57,582	58,967	62,531	61,347	67,496	76,758	85,213	12.2
Pennsylvania State University (14) .....	188,444	219,930	256,926	267,816	278,305	282,659	302,997	330,881	337,938	339,955	362,643	379,402	427,575	458,066	492,739	533,427	12.2
University of Texas—Dallas (198) .....	10,936	11,265	12,075	10,571	12,995	13,371	14,492	14,027	13,562	14,561	15,211	16,028	15,684	15,684	26,198	30,748	12.1
San Jose State University (175) .....	10,104	9,488	10,086	12,100	18,326	21,005	21,005	21,005	21,005	21,005	21,005	21,005	21,005	22,709	25,003	28,323	12.0
Rockefeller University (82) .....	68,588	73,945	75,245	74,090	75,102	74,396	74,458	99,348	105,595	109,999	115,494	121,519	124,138	145,571	166,603	192,143	12.0
University of Hawaii—Manoa (76) .....	64,278	70,733	76,525	78,166	80,258	73,961	70,079	78,429	111,202	120,107	148,007	156,810	161,300	156,976	161,823	179,285	11.9

## R&amp;D expenditures and S&amp;E article output of top 200 U.S. academic institutions for R&amp;D, by quartile of R&amp;D growth: 1988–2003

Quartile of R&D growth, academic institution, and rank of institution	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average annual change (%)
	Total R&D (\$ thousands)																
Rice University (140) .....	18,851	21,563	26,267	30,577	29,424	30,403	33,309	34,446	39,696	43,601	41,067	41,069	41,840	42,675	48,169	52,367	11.9
University of Virginia (67) .....	74,572	81,281	96,815	96,733	110,103	115,786	129,504	136,679	97,334	114,085	139,135	131,138	140,416	149,547	182,340	206,199	11.8
Michigan State University (41) .....	116,320	121,456	126,987	133,249	142,308	150,861	163,285	182,009	182,589	190,178	193,611	207,912	238,436	265,946	289,787	321,410	11.8
Tulane University (95) .....	42,619	45,195	56,407	71,781	72,190	75,634	83,885	100,231	83,660	86,427	87,858	87,324	89,785	99,761	102,998	117,709	11.7
University of Southern California (26) .....	150,009	162,013	169,102	175,595	194,740	200,822	207,275	222,159	244,258	259,246	268,806	280,741	300,445	340,597	372,397	414,099	11.7
Virginia Polytech Institute and State University (47) .....	89,955	104,266	121,423	125,256	130,994	135,771	148,313	148,501	143,815	169,808	167,118	169,250	192,672	216,323	232,560	247,807	11.7
Louisiana State University, all campuses (37) ...	114,698	122,357	135,849	147,626	151,844	158,823	165,857	186,723	196,328	205,441	208,928	225,808	251,233	268,911	287,363	314,665	11.6
State University of New York–Buffalo (54) .....	87,635	100,291	109,190	113,441	128,428	128,203	141,092	143,768	137,701	135,663	151,650	166,823	187,692	186,829	226,959	240,180	11.6
University of California–Berkeley (13) .....	186,372	209,967	231,061	258,038	284,545	284,346	289,632	291,200	316,320	377,376	420,426	451,539	518,514	446,273	474,746	507,186	11.5
Columbia University in the City of New York (23) .....	160,976	172,145	182,769	194,666	199,516	204,710	236,417	244,991	236,403	244,337	267,007	279,587	319,693	354,497	405,403	437,669	11.5
University of Wisconsin–Madison (2) .....	271,418	285,982	309,841	326,489	352,706	372,362	392,718	403,541	412,570	419,810	443,695	499,688	554,361	604,143	662,101	721,248	11.0
University of North Dakota (172) .....	15,806	17,518	17,498	16,995	18,265	19,204	18,732	18,940	28,188	20,899	16,938	16,999	17,343	19,692	33,973	41,803	11.0
Rutgers–the State University of New Jersey (40) .....	105,150	124,574	137,985	151,335	162,089	161,025	173,211	192,263	185,103	183,038	197,053	213,838	225,268	236,793	258,829	274,576	10.7
Kansas State University (104) .....	43,174	47,302	50,311	53,010	57,723	62,562	65,696	71,103	71,222	76,896	81,233	85,580	91,790	94,030	106,804	112,733	10.7
Southern Illinois University–Carbondale (146) ...	20,310	23,357	25,873	28,340	28,094	26,376	30,497	29,631	28,578	30,043	30,490	33,169	36,354	43,207	53,604	53,018	10.7
Purdue University (38) .....	118,797	124,323	130,379	136,325	140,260	149,032	172,733	203,419	206,951	206,588	216,479	226,411	234,536	254,917	285,778	309,476	10.7
California Institute of Technology (46) .....	92,530	98,731	105,730	115,526	111,733	115,439	127,946	138,016	157,005	177,888	185,066	212,216	222,666	215,085	220,004	240,664	10.7
North Carolina State University (35) .....	110,286	123,441	131,133	142,606	143,008	155,624	173,407	180,191	190,748	229,292	254,254	270,621	277,946	299,259	290,018	286,025	10.6
State University of New York–Binghamton (191) .....	8,926	9,270	10,680	9,870	12,843	13,760	15,803	17,106	18,500	19,310	20,754	17,998	18,661	18,992	21,343	23,090	10.6
University of Alaska–Fairbanks (99) .....	49,856	56,701	65,571	67,432	67,881	66,796	76,093	72,216	71,381	70,943	75,606	88,825	102,500	110,195	116,279	128,916	10.6
University of North Texas (186) .....	11,499	12,751	12,508	14,084	14,621	14,744	15,585	15,997	17,749	17,936	17,734	17,176	19,239	25,259	26,120	29,378	10.4
Georgia Institute of Technology(28) .....	143,051	174,664	168,193	176,729	180,263	175,873	193,630	211,875	225,633	240,237	259,233	263,725	304,511	306,533	340,347	364,190	10.3
State University of New York–Stony Brook (65) .....	79,410	79,455	82,236	90,790	98,906	107,817	113,251	122,611	126,377	136,624	141,766	148,982	163,307	168,487	184,045	200,330	10.2
University of Miami (63) .....	70,783	90,298	94,344	96,979	104,165	120,875	121,475	128,736	130,056	135,888	136,972	139,608	145,795	153,772	171,319	177,709	10.1
University of Chicago (55) .....	98,541	109,429	117,955	113,289	118,123	111,877	121,902	126,261	135,693	150,531	151,635	162,805	170,678	194,125	225,264	247,322	10.1
University of Rochester (45) .....	114,061	123,997	129,011	131,777	139,992	161,810	167,485	158,539	144,914	155,311	174,617	177,126	197,335	234,261	261,601	285,768	10.0
University of Alabama Huntsville (141) .....	18,628	26,186	29,565	28,897	32,017	34,153	31,482	36,736	38,176	32,817	36,946	40,203	41,274	43,731	48,353	46,595	10.0
University of Illinois at Urbana-Champaign (16) .....	197,393	210,590	225,634	243,380	251,970	252,811	245,407	246,174	268,995	286,470	329,266	358,247	373,024	390,863	427,174	493,581	10.0
University of Oregon (145) .....	18,567	22,476	26,346	26,151	30,242	30,738	31,170	30,386	33,654	31,487	33,315	32,695	35,934	36,881	43,723	44,604	9.3
New York University (51) .....	100,872	104,451	108,511	112,106	122,399	129,774	139,202	148,935	145,874	153,288	156,452	167,179	182,205	190,722	222,978	241,593	9.3
Quartile 4 .....	3,612,168	3,889,003	4,184,568	4,480,338	4,651,891	4,828,371	4,938,381	5,097,429	5,244,665	5,401,294	5,504,002	5,750,523	6,070,860	6,439,318	7,008,520	7,498,686	7.2
Yale University (24) .....	162,188	171,139	180,706	193,893	211,569	226,850	224,939	231,819	234,901	245,536	262,680	274,050	296,706	321,514	354,243	387,644	9.3
University of Maryland–College Park (29) .....	135,531	149,510	166,022	206,432	219,041	229,344	198,348	209,945	216,957	215,927	223,190	257,628	252,429	267,383	324,980	321,899	9.2
University of Houston (123) .....	26,803	34,229	37,978	42,292	44,957	55,038	43,131	44,993	49,178	45,916	42,297	43,370	48,902	51,567	59,707	63,455	9.1
Auburn University (92) .....	52,737	53,814	66,795	69,913	66,773	68,151	84,769	85,566	87,358	85,460	87,768	80,544	92,612	106,347	108,775	124,103	9.0
Yeshiva University (78) .....	75,383	74,496	83,968	86,721	87,196	89,636	92,881	94,739	91,430	96,819	99,000	111,771	139,618	148,230	157,124	177,236	9.0
Texas A&M University (5) .....	236,847	259,151	280,849	296,944	317,292	336,735	373,697	381,040	389,861	390,288	420,214	427,945	454,539	483,106	527,488	556,514	9.0

Quartile of R&D growth, academic institution, and rank of institution	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average annual change (%)
Utah State University (87).....	59,273	69,944	86,450	94,167	89,776	75,835	79,085	82,468	81,709	91,292	94,228	95,364	103,161	121,359	121,621	138,862	9.0
Princeton University (72).....	76,891	82,914	91,514	92,002	93,958	95,561	99,287	104,157	112,380	114,549	115,996	124,237	134,875	149,411	164,408	179,951	8.9
Iowa State University (49).....	86,726	103,241	116,270	134,657	132,580	148,459	155,982	154,932	151,914	155,433	156,766	161,301	175,558	179,196	188,664	199,566	8.7
Georgetown University (86).....	44,783	53,597	50,867	60,454	64,937	73,785	82,661	102,421	112,582	119,114	116,611	111,426	133,211	99,228	96,450	100,181	8.2
Howard University (161).....	16,870	17,125	17,382	15,731	17,576	18,427	19,836	24,819	28,894	27,873	23,673	23,557	27,254	30,148	35,387	37,577	8.2
New York Medical College (177).....	13,817	12,958	13,244	14,633	16,799	18,491	18,725	18,424	16,372	16,890	19,159	20,436	23,348	24,283	25,222	30,492	8.0
University of Wisconsin–Milwaukee (174).....	12,424	13,428	15,639	16,865	18,567	18,245	19,180	19,684	19,679	19,995	20,807	21,325	20,010	23,492	24,933	27,259	8.0
University of Georgia (33).....	137,692	145,953	156,742	162,992	165,279	172,274	187,849	206,256	209,357	225,457	217,945	237,493	258,476	272,298	284,660	299,748	7.8
Stanford University (6).....	277,504	285,994	299,511	314,941	367,980	306,676	318,561	318,871	351,526	395,310	410,309	426,549	457,822	482,906	538,474	603,227	7.8
University of Alabama (157).....	15,836	18,395	21,488	21,248	22,573	23,149	21,960	23,479	21,806	23,671	23,935	28,909	31,847	33,133	37,130	34,187	7.7
University of Minnesota (11).....	236,115	258,614	292,046	331,471	317,026	332,033	317,865	336,524	341,179	363,095	360,323	371,384	411,380	462,011	494,265	508,557	7.7
Harvard University (17).....	190,429	209,519	220,812	229,939	253,126	257,207	278,459	276,422	282,443	299,961	306,100	326,193	341,810	372,107	401,367	408,707	7.6
Desert Research Institute (167).....	14,798	16,005	16,852	17,948	20,579	21,187	21,459	22,851	20,100	20,000	21,500	23,376	25,691	29,697	29,465	31,757	7.6
University of Connecticut (56).....	89,630	109,328	117,932	123,794	124,010	133,054	136,740	139,956	147,522	140,840	134,448	134,986	161,084	164,366	172,003	190,341	7.5
University of California–Riverside (105).....	52,983	53,213	54,892	57,244	57,536	59,065	60,995	62,539	71,495	75,486	79,775	75,821	83,580	94,455	111,936	112,468	7.5
Michigan Technological University (163).....	14,321	15,186	16,037	19,667	18,179	18,696	21,786	22,798	23,882	24,140	26,522	28,074	27,204	29,613	30,005	30,264	7.4
State University of New York Health Sciences Center–Brooklyn (152).....	18,374	20,523	22,873	32,824	24,171	27,645	27,773	30,781	30,254	29,727	27,517	28,840	31,626	31,626	34,981	38,424	7.3
University of Tennessee System (50).....	104,179	113,187	116,644	128,418	131,240	143,662	153,340	151,316	149,331	154,230	150,694	158,930	163,690	161,898	188,261	217,389	7.2
Tufts University (98).....	54,225	50,424	47,009	47,748	60,891	68,519	73,749	77,093	79,356	83,568	92,130	100,872	105,783	105,806	109,291	112,609	7.2
State University of New York College of Environmental Science and Forestry (165).....	12,917	17,221	18,671	19,049	18,456	21,856	21,839	21,904	21,969	20,540	22,036	25,385	26,663	27,854	26,337	26,783	7.2
Brigham Young University (195).....	10,967	11,544	11,608	12,682	14,469	13,587	13,859	14,102	11,791	11,502	11,963	23,985	17,237	19,171	21,228	22,557	7.0
Cornell University (10).....	271,659	286,733	300,144	309,535	299,342	310,949	312,683	343,786	339,534	351,030	363,511	395,552	410,393	443,828	496,123	554,760	6.9
Clark Atlanta University (181).....	6,378	7,137	7,896	8,655	11,483	12,057	12,709	25,245	34,566	28,893	29,637	19,467	16,891	17,173	17,194	12,760	6.7
University of Texas–Austin (21).....	172,608	193,337	228,203	237,043	228,545	249,158	260,602	228,676	241,606	239,021	244,843	258,122	272,811	295,104	320,966	343,854	6.6
Carnegie Mellon University (60).....	94,051	101,635	100,201	103,030	110,571	118,261	122,580	125,659	136,514	134,954	137,450	142,174	137,980	144,882	188,191	186,351	6.5
University of Texas–Arlington (188).....	7,670	7,064	5,729	12,887	13,896	14,834	17,453	21,135	24,010	37,509	19,075	11,450	10,723	17,486	15,097	15,102	6.5
Florida A&M University (169).....	12,079	14,171	15,847	18,552	22,230	22,777	24,691	20,797	22,474	25,415	19,066	21,622	21,612	23,865	31,147	23,503	6.3
Uniformed Services University of the Health Sciences (156).....	15,991	18,962	21,933	24,904	27,875	30,846	27,334	39,612	36,851	18,812	20,309	22,898	23,987	23,247	28,630	30,604	6.1
University of Missouri–Rolla (170).....	18,823	17,692	14,285	14,432	15,619	18,025	19,706	21,220	20,235	20,895	21,740	25,893	25,968	28,799	32,222	35,999	6.1
Brandeis University (132).....	26,618	30,596	30,881	33,837	35,229	36,213	34,835	36,451	36,760	40,145	44,589	48,305	47,658	52,818	47,122	50,841	6.1
Oregon State University (64).....	88,953	91,355	90,688	96,199	107,573	114,004	119,772	123,402	131,334	131,467	138,240	139,285	140,751	153,925	161,735	167,631	5.9
New Mexico Institute of Mining and Technology (158).....	20,357	22,289	22,911	24,059	25,208	24,040	20,945	19,584	20,580	21,974	22,791	26,061	23,636	28,392	36,309	37,186	5.5
Massachusetts Institute of Technology (4).....	270,584	287,157	311,767	323,535	333,908	377,413	374,768	370,800	380,612	410,930	413,098	420,306	426,299	435,495	446,786	485,764	5.3
New Mexico State University (93).....	61,001	60,930	71,288	78,736	83,900	85,974	80,286	81,455	76,493	81,024	77,370	79,877	79,695	86,963	103,078	108,613	5.2
Oklahoma State University (101).....	57,914	54,788	67,620	67,492	71,238	72,920	70,808	75,906	82,960	62,480	71,466	83,108	88,285	90,311	94,987	103,079	5.2
Temple University (114).....	40,941	45,482	49,449	54,921	53,921	53,686	56,308	54,742	56,533	54,500	63,024	53,940	52,466	60,182	63,850	71,327	4.9
University of Rhode Island (128).....	35,940	36,219	35,846	38,842	40,842	45,942	46,631	43,103	39,575	40,522	37,940	44,452	48,135	50,835	53,347	61,818	4.8
University of Dayton (130).....	31,483	31,984	36,177	37,925	41,009	45,052	47,768	46,084	43,188	45,437	45,000	36,937	39,345	41,343	46,554	52,943	4.5
Syracuse University (137).....	33,643	35,543	33,811	30,606	32,145	32,443	38,650	33,939	34,322	34,642	37,322	39,640	40,063	42,476	45,870	48,846	3.0
Rensselaer Polytechnic Institute (129).....	36,511	38,805	46,880	50,106	50,769	44,132	37,191	37,247	37,917	38,803	38,560	39,034	40,762	45,010	45,955	50,777	2.6
Lehigh University (147).....	27,089	26,004	27,255	27,912	31,822	30,869	29,188	35,117	34,780	26,451	26,115	27,902	25,506	29,058	22,687	29,211	0.5

**R&D expenditures and S&E article output of top 200 U.S. academic institutions for R&D, by quartile of R&D growth: 1988–2003**

Quartile of R&D growth, academic institution, and rank of institution	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average annual change (%)
Total R&D (\$ thousands)																	
State University of New York Upstate Medical University (185) .....	24,541	31,125	14,401	14,564	12,992	12,453	11,751	13,177	14,093	14,914	14,089	15,099	17,095	17,294	22,326	25,931	0.4
University of Puerto Rico–Mayaguez (139).....	27,091	29,343	30,555	27,897	25,238	23,156	22,967	40,393	44,502	48,857	51,181	55,648	34,683	18,627	19,939	20,029	-1.7
Institutions not assigned to quartiles																	
Eastern Kentucky University (193) .....	na	na	na	na	na	457	6,498	12,539	18,580	24,621	30,662	36,708	640	770	666	506	na
Florida International University (162) .....	na	na	na	na	na	11,443	13,520	16,375	16,856	17,359	17,880	25,061	34,649	44,291	47,654	52,175	na
MCP Hahnemann University (120) .....	23,828	31,700	32,238	37,814	44,038	42,752	45,218	41,237	48,790	85,748	95,984	27,516	41,670	32,462	37,945	na	na
University of Maryland Biotechnology Institute (154) .....	na	na	na	na	na	na	14,839	18,062	22,933	29,117	31,861	31,172	29,946	32,458	34,440	39,789	na
Number of articles																	
Total S&E article output.....	116,656	123,115	126,037	127,393	131,304	129,894	131,929	133,972	134,284	131,851	132,485	132,733	131,757	135,247	132,307	143,298	1.5
Quartile 1 .....	20,043	21,677	22,452	22,996	23,844	23,868	24,135	25,013	25,195	24,884	25,056	25,153	24,848	25,784	25,173	27,462	2.5
Quartile 2 .....	33,659	35,431	36,306	36,754	38,055	38,017	38,747	39,650	39,869	39,180	39,881	39,957	39,792	41,365	40,322	43,917	2.0
Quartile 3 .....	34,677	36,020	36,957	37,005	38,021	37,268	37,505	37,457	37,736	36,691	36,860	36,807	36,815	37,070	36,717	39,449	0.9
Quartile 4 .....	28,277	29,987	30,322	30,639	31,384	30,741	31,542	31,853	31,483	31,096	30,689	30,817	30,302	31,028	30,095	32,470	1.0

na = not applicable

NOTES: Top 200 R&D universities assigned to quartile based on total R&D growth between 1988 and 2003. Articles on fractional-count basis, i.e., for articles with collaborating top-200 institutions or non-top-200 institutions, credit is fractionally apportioned on basis of proportion of institutions from each top-200 institution.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation>; iplQ, Inc., and National Science Foundation, Division of Science Resources Statistics, special tabulations.

*Science and Engineering Indicators 2006*

Appendix table 5-57

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**Cross-sectoral coauthorship of S&E articles, by field and sector: 1988**

(Number of articles)

Field and sector	All sectors	Academic	Industry	Federal government	Nonprofit institutions	FFRDCs	State/local government
<b>All fields</b>							
All sectors .....	30,370	na	na	na	na	na	na
Academic .....	28,062	na	6,286	10,616	10,506	2,812	2,218
Industry .....	7,228	6,286	na	1,325	862	475	179
Federal government .....	11,175	10,616	1,325	na	1,263	385	398
Nonprofit institutions .....	10,653	10,506	862	1,263	na	134	435
FFRDCs .....	2,813	2,812	475	385	134	na	10
State/local government .....	2,429	2,218	179	398	435	10	na
<b>Clinical medicine</b>							
All sectors .....	14,326	na	na	na	na	na	na
Academic .....	13,556	na	1,637	5,492	6,878	148	1,440
Industry .....	1,894	1,637	na	392	454	27	88
Federal government .....	5,580	5,492	392	na	784	69	253
Nonprofit institutions .....	6,923	6,878	454	784	na	26	334
FFRDCs .....	191	148	27	69	26	na	4
State/local government .....	1,554	1,440	88	253	334	4	na
<b>Biomedical research</b>							
All sectors .....	4,478	na	na	na	na	na	na
Academic .....	4,142	na	913	1,707	1,921	233	243
Industry .....	1,028	913	na	201	190	45	22
Federal government .....	1,759	1,707	201	na	240	72	39
Nonprofit institutions .....	1,872	1,921	190	240	na	31	52
FFRDCs .....	265	233	45	72	31	na	1
State/local government .....	244	243	22	39	52	1	na
<b>Biology</b>							
All sectors .....	1,569	na	na	na	na	na	na
Academic .....	1,469	na	257	927	260	64	138
Industry .....	285	257	na	74	13	6	12
Federal government .....	948	927	74	na	40	9	44
Nonprofit institutions .....	261	260	13	40	na	1	7
FFRDCs .....	66	64	6	9	1	na	1
State/local government .....	161	138	12	44	7	1	na
<b>Chemistry</b>							
All sectors .....	1,123	na	na	na	na	na	na
Academic .....	1,002	na	514	280	71	267	12
Industry .....	573	514	na	87	22	40	1
Federal government .....	332	280	87	na	14	15	3
Nonprofit institutions .....	93	71	22	14	na	3	1
FFRDCs .....	268	267	40	15	3	na	0
State/local government .....	12	12	1	3	1	0	na
<b>Physics</b>							
All sectors .....	2,752	na	na	na	na	na	na
Academic .....	2,455	na	1,078	548	103	1,362	3
Industry .....	1,224	1,078	na	176	20	223	1
Federal government .....	643	548	176	na	22	93	1
Nonprofit institutions .....	117	103	20	22	na	13	0
FFRDCs .....	1,227	1,362	223	93	13	na	1
State/local government .....	4	3	1	1	0	1	na
<b>Earth/space sciences</b>							
All sectors .....	1,634	na	na	na	na	na	na
Academic .....	1,381	na	373	690	234	382	77
Industry .....	485	373	na	202	34	42	23
Federal government .....	780	690	202	na	74	100	17
Nonprofit institutions .....	246	234	34	74	na	41	6
FFRDCs .....	381	382	42	100	41	na	3
State/local government .....	99	77	23	17	6	3	na

Appendix table 5-57

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**Cross-sectoral coauthorship of S&E articles, by field and sector: 1988**

(Number of articles)

Field and sector	All sectors	Academic	Industry	Federal government	Nonprofit institutions	FFRDCs	State/local government
<b>Engineering/technology</b>							
All sectors .....	1,667	na	na	na	na	na	na
Academic .....	1,428	na	862	335	108	283	21
Industry .....	1,012	862	na	139	60	85	10
Federal government .....	439	335	139	na	16	22	2
Nonprofit institutions .....	146	108	60	16	na	16	1
FFRDCs .....	341	283	85	22	16	na	0
State/local government .....	29	21	10	2	1	0	na
<b>Mathematics</b>							
All sectors .....	198	na	na	na	na	na	na
Academic .....	187	na	90	55	23	42	3
Industry .....	91	90	na	5	9	4	0
Federal government .....	55	55	5	na	2	1	1
Nonprofit institutions .....	26	23	9	2	na	1	0
FFRDCs .....	40	42	4	1	1	na	0
State/local government .....	3	3	0	1	0	0	na
<b>Psychology</b>							
All sectors .....	834	na	na	na	na	na	na
Academic .....	798	na	119	215	302	3	107
Industry .....	134	119	na	11	12	0	5
Federal government .....	216	215	11	na	11	0	9
Nonprofit institutions .....	305	302	12	11	na	0	12
FFRDCs .....	3	3	0	0	0	na	0
State/local government .....	113	107	5	9	12	0	na
<b>Social sciences</b>							
All sectors .....	645	na	na	na	na	na	na
Academic .....	605	na	127	178	258	20	36
Industry .....	142	127	na	16	14	1	4
Federal government .....	195	178	16	na	23	3	6
Nonprofit institutions .....	266	258	14	23	na	2	3
FFRDCs .....	21	20	1	3	2	na	0
State/local government .....	42	36	4	6	3	0	na
<b>Health sciences</b>							
All sectors .....	552	na	na	na	na	na	na
Academic .....	491	na	69	116	221	2	82
Industry .....	88	69	na	8	24	0	8
Federal government .....	145	116	8	na	29	0	22
Nonprofit institutions .....	252	221	24	29	na	0	18
FFRDCs .....	2	2	0	0	0	na	0
State and local government .....	104	82	8	22	18	0	na
<b>Professional fields</b>							
All sectors .....	592	na	na	na	na	na	na
Academic .....	548	na	247	73	127	6	56
Industry .....	272	247	na	14	10	2	5
Federal government .....	83	73	14	na	8	1	1
Nonprofit institutions .....	146	127	10	8	na	0	1
FFRDCs .....	8	6	2	1	0	na	0
State/local government .....	64	56	5	1	1	0	na

na = not applicable

FFRDC = federally funded research and development center

NOTES: Articles on whole-count basis, i.e., for articles with collaborating institutions from multiple sectors, each sector receives one count for participation by its institution(s). Sum of sector counts exceeds total because multiple sectors are credited one count for collaboration on an article.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iplQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.



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**Cross-sectoral coauthorship of S&E articles, by field and sector: 2003**

(Number of articles)

Field and sector	All sectors	Academic	Industry	Federal government	Nonprofit institutions	FFRDCs	State/local government
<b>All fields</b>							
All sectors .....	41,072	na	na	na	na	na	na
Academic .....	38,082	na	12,114	15,482	17,671	5,698	2,802
Industry .....	11,607	12,114	na	2,400	2,524	868	388
Federal government .....	13,913	15,482	2,400	na	2,703	914	728
Nonprofit institutions .....	15,437	17,671	2,524	2,703	na	375	743
FFRDCs .....	4,240	5,698	868	914	375	na	23
State/local government .....	2,876	2,802	388	728	743	23	na
<b>Clinical medicine</b>							
All sectors .....	17,549	na	na	na	na	na	na
Academic .....	16,398	na	4,511	6,345	10,571	239	1,423
Industry .....	4,181	4,511	na	833	1,758	54	193
Federal government .....	5,717	6,345	833	na	1,576	103	371
Nonprofit institutions .....	9,435	10,571	1,758	1,576	na	65	519
FFRDCs .....	252	239	54	103	65	na	6
State/local government .....	1,442	1,423	193	371	519	6	na
<b>Biomedical research</b>							
All sectors .....	6,128	na	na	na	na	na	na
Academic .....	5,786	na	1,617	2,576	3,392	567	313
Industry .....	1,428	1,617	na	266	386	81	32
Federal government .....	2,119	2,576	266	na	436	103	80
Nonprofit institutions .....	2,731	3,392	386	436	na	86	72
FFRDCs .....	487	567	81	103	86	na	9
State/local government .....	284	313	32	80	72	9	na
<b>Biology</b>							
All sectors .....	2,649	na	na	na	na	na	na
Academic .....	2,451	na	518	1,584	606	88	337
Industry .....	541	518	na	142	40	14	32
Federal government .....	1,469	1,584	142	na	116	26	129
Nonprofit institutions .....	532	606	40	116	na	8	35
FFRDCs .....	85	88	14	26	8	na	2
State/local government .....	361	337	32	129	35	2	na
<b>Chemistry</b>							
All sectors .....	1,723	na	na	na	na	na	na
Academic .....	1,583	na	778	427	190	608	20
Industry .....	768	778	na	112	26	69	5
Federal government .....	432	427	112	na	20	58	3
Nonprofit institutions .....	185	190	26	20	na	11	3
FFRDCs .....	535	608	69	58	11	na	0
State/local government .....	21	20	5	3	3	0	na
<b>Physics</b>							
All sectors .....	3,053	na	na	na	na	na	na
Academic .....	2,754	na	1,229	854	177	2,320	5
Industry .....	1,205	1,229	na	280	31	306	2
Federal government .....	805	854	280	na	28	170	0
Nonprofit institutions .....	139	177	31	28	na	26	1
FFRDCs .....	1,412	2,320	306	170	26	na	0
State/local government .....	3	5	2	0	1	0	na
<b>Earth/space sciences</b>							
All sectors .....	3,119	na	na	na	na	na	na
Academic .....	2,797	na	710	1,959	807	1,216	183
Industry .....	705	710	na	388	69	130	34
Federal government .....	1,558	1,959	388	na	262	383	37
Nonprofit institutions .....	539	807	69	262	na	161	12
FFRDCs .....	819	1,216	130	383	161	na	5
State/local government .....	185	183	34	37	12	5	na

Appendix table 5-58

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**Cross-sectoral coauthorship of S&E articles, by field and sector: 2003**

(Number of articles)

Field and sector	All sectors	Academic	Industry	Federal government	Nonprofit institutions	FFRDCs	State/local government
<b>Engineering/technology</b>							
All sectors .....	2,997	na	na	na	na	na	na
Academic .....	2,689	na	1,888	695	125	597	94
Industry .....	1,876	1,888	na	280	50	205	45
Federal government .....	773	695	280	na	39	68	7
Nonprofit institutions .....	144	125	50	39	na	14	6
FFRDCs .....	594	597	205	68	14	na	0
State/local government .....	119	94	45	7	6	0	na
<b>Mathematics</b>							
All sectors .....	190	na	na	na	na	na	na
Academic .....	185	na	105	35	36	41	3
Industry .....	92	105	na	3	5	5	0
Federal government .....	33	35	3	na	0	1	0
Nonprofit institutions .....	34	36	5	0	na	1	0
FFRDCs .....	33	41	5	1	1	na	0
State/local government .....	3	3	0	0	0	0	na
<b>Psychology</b>							
All sectors .....	988	na	na	na	na	na	na
Academic .....	952	na	166	311	475	3	115
Industry .....	175	166	na	23	28	0	6
Federal government .....	286	311	23	na	37	0	11
Nonprofit institutions .....	446	475	28	37	na	0	18
FFRDCs .....	3	3	0	0	0	na	1
State/local government .....	111	115	6	11	18	1	na
<b>Social sciences</b>							
All sectors .....	749	na	na	na	na	na	na
Academic .....	708	na	115	209	439	9	50
Industry .....	129	115	na	13	21	2	4
Federal government .....	209	209	13	na	39	2	12
Nonprofit institutions .....	390	439	21	39	na	2	3
FFRDCs .....	10	9	2	2	2	na	0
State/local government .....	53	50	4	12	3	0	na
<b>Health sciences</b>							
All sectors .....	1,315	na	na	na	na	na	na
Academic .....	1,216	na	248	388	666	1	185
Industry .....	266	248	na	41	90	0	23
Federal government .....	400	388	41	na	134	0	60
Nonprofit institutions .....	667	666	90	134	na	0	62
FFRDCs .....	1	1	0	0	0	na	0
State and local government .....	212	185	23	60	62	0	na
<b>Professional fields</b>							
All sectors .....	612	na	na	na	na	na	na
Academic .....	563	na	229	99	187	9	74
Industry .....	241	229	na	19	20	2	12
Federal government .....	112	99	19	na	16	0	18
Nonprofit institutions .....	195	187	20	16	na	1	12
FFRDCs .....	9	9	2	0	1	na	0
State/local government .....	82	74	12	18	12	0	na

na = not applicable

FFRDC = federally funded research and development center

NOTES: Articles on whole-count basis, i.e., for articles with collaborating institutions from multiple sectors, each sector receives one count for participation by its institution(s). Sum of sector counts exceeds total because multiple sectors are credited one count for collaboration on an article.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iPLQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

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**Coauthorship of S&E articles, by field and sector: 1988**

Field and sector	All articles	Coauthored articles		
		Total	U.S. coauthored	Internationally coauthored
<b>All fields</b>				
All sectors .....	187,245	88,946	69,649	19,297
Academic .....	148,642	77,562	62,526	15,036
Industry.....	20,221	10,163	8,505	1,658
Federal government.....	22,044	14,889	12,700	2,189
Nonprofit institutions .....	19,473	13,944	12,179	1,765
FFRDCs .....	7,171	4,287	3,115	1,172
State/local government.....	3,670	2,783	2,586	197
<b>Clinical medicine</b>				
All sectors .....	57,388	34,925	30,117	4,808
Academic .....	46,385	30,407	26,828	3,579
Industry.....	3,890	2,570	2,196	374
Federal government .....	9,033	7,209	6,351	858
Nonprofit institutions .....	11,770	9,044	8,222	822
FFRDCs .....	367	262	219	43
State/local government .....	2,103	1,775	1,662	113
<b>Biomedical research</b>				
All sectors .....	29,201	15,094	11,523	3,571
Academic .....	23,938	13,336	10,569	2,767
Industry.....	2,306	1,429	1,166	263
Federal government .....	3,777	2,570	2,051	519
Nonprofit institutions .....	3,480	2,480	2,009	471
FFRDCs .....	627	380	298	82
State/local government .....	442	302	262	40
<b>Biology</b>				
All sectors .....	13,523	5,499	4,158	1,341
Academic .....	11,153	4,938	3,847	1,091
Industry.....	565	344	304	40
Federal government .....	2,434	1,296	1,111	185
Nonprofit institutions .....	651	393	272	121
FFRDCs .....	145	76	71	5
State/local government .....	286	192	174	18
<b>Chemistry</b>				
All sectors .....	13,898	4,339	2,933	1,406
Academic .....	10,433	3,702	2,581	1,121
Industry.....	2,690	883	713	170
Federal government .....	987	472	376	96
Nonprofit institutions .....	278	128	96	32
FFRDCs .....	702	396	308	88
State/local government .....	47	19	16	3
<b>Physics</b>				
All sectors .....	19,685	8,938	5,681	3,257
Academic .....	13,914	7,437	4,999	2,438
Industry.....	4,129	1,866	1,448	418
Federal government .....	1,439	847	691	156
Nonprofit institutions .....	252	158	118	40
FFRDCs .....	3,302	2,015	1,338	677
State/local government .....	8	4	4	0
<b>Earth/space sciences</b>				
All sectors .....	8,784	4,357	2,887	1,470
Academic .....	6,469	3,564	2,473	1,091
Industry.....	883	615	521	94
Federal government .....	1,770	1,113	872	241
Nonprofit institutions .....	575	384	253	131
FFRDCs .....	845	567	403	164
State/local government .....	179	110	102	8

Appendix table 5-59

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**Coauthorship of S&E articles, by field and sector: 1988**

Field and sector	All articles	Coauthored articles		
		Total	U.S. coauthored	Internationally coauthored
<b>Engineering/technology</b>				
All sectors .....	12,430	4,553	3,308	1,245
Academic .....	7,990	3,542	2,618	924
Industry .....	3,753	1,581	1,347	234
Federal government .....	1,034	548	484	64
Nonprofit institutions .....	352	192	156	36
FFRDCs .....	1,029	502	401	101
State/local government .....	53	34	29	5
<b>Mathematics</b>				
All sectors .....	4,302	1,710	871	839
Academic .....	4,025	1,648	849	799
Industry .....	229	131	99	32
Federal government .....	126	67	56	11
Nonprofit institutions .....	56	35	26	9
FFRDCs .....	79	50	42	8
State/local government .....	4	3	3	0
<b>Psychology</b>				
All sectors .....	7,342	2,763	2,410	353
Academic .....	6,807	2,678	2,347	331
Industry .....	234	150	138	12
Federal government .....	338	237	222	15
Nonprofit institutions .....	473	333	313	20
FFRDCs .....	3	3	3	0
State/local government .....	161	121	116	5
<b>Social sciences</b>				
All sectors .....	9,043	2,758	2,143	615
Academic .....	7,853	2,583	2,046	537
Industry .....	359	155	148	7
Federal government .....	560	248	220	28
Nonprofit institutions .....	724	349	288	61
FFRDCs .....	51	26	22	4
State/local government .....	79	45	44	1
<b>Health sciences</b>				
All sectors .....	2,979	1,287	1,183	104
Academic .....	2,392	1,159	1,072	87
Industry .....	153	94	93	1
Federal government .....	270	175	168	7
Nonprofit institutions .....	496	282	266	16
FFRDCs .....	4	2	2	0
State and local government .....	150	112	108	4
<b>Professional fields</b>				
All sectors .....	8,670	2,723	2,435	288
Academic .....	7,283	2,568	2,297	271
Industry .....	1,030	345	332	13
Federal government .....	276	107	98	9
Nonprofit institutions .....	366	166	160	6
FFRDCs .....	17	8	8	0
State/local government .....	158	66	66	0

FFRDC = federally funded research and development center

NOTES: Articles on whole-count basis, i.e., for articles with collaborating institutions from more than one country/economy, each country/economy with at least one participating institution is credited one count. Internationally coauthored articles have at least one collaborating U.S. and foreign institution.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iplQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

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**Coauthorship of S&E articles, by field and sector: 2003**

Field and sector	All articles	Coauthored articles		
		Total	U.S. coauthored	Internationally coauthored
<b>All fields</b>				
All sectors .....	242,431	155,723	95,535	60,188
Academic .....	200,727	134,182	86,379	47,803
Industry.....	25,584	19,292	13,136	6,156
Federal government.....	27,020	22,053	15,458	6,595
Nonprofit institutions .....	29,957	24,694	18,007	6,687
FFRDCs .....	10,975	8,675	4,615	4,060
State/local government.....	4,112	3,519	2,997	522
<b>Clinical medicine</b>				
All sectors .....	74,254	53,468	37,302	16,166
Academic .....	60,019	45,278	33,043	12,235
Industry.....	8,238	6,924	4,627	2,297
Federal government .....	9,789	8,564	6,348	2,216
Nonprofit institutions .....	17,879	14,855	11,385	3,470
FFRDCs .....	432	379	266	113
State/local government .....	1,962	1,739	1,495	244
<b>Biomedical research</b>				
All sectors .....	39,855	27,656	17,007	10,649
Academic.....	33,585	24,233	15,697	8,536
Industry.....	3,414	2,518	1,639	879
Federal government .....	4,663	3,795	2,425	1,370
Nonprofit institutions .....	5,540	4,708	3,115	1,593
FFRDCs.....	976	840	538	302
State/local government .....	487	418	299	119
<b>Biology</b>				
All sectors .....	15,812	9,780	5,966	3,814
Academic.....	13,184	8,562	5,494	3,068
Industry.....	926	767	577	190
Federal government .....	3,153	2,275	1,656	619
Nonprofit institutions .....	1,160	918	558	360
FFRDCs.....	149	130	88	42
State/local government .....	544	459	382	77
<b>Chemistry</b>				
All sectors .....	17,808	9,041	5,133	3,908
Academic.....	14,260	7,517	4,418	3,099
Industry.....	2,887	1,669	1,097	572
Federal government .....	1,055	720	512	208
Nonprofit institutions .....	465	354	274	80
FFRDCs.....	1,221	910	610	300
State/local government .....	40	28	22	6
<b>Physics</b>				
All sectors .....	23,585	15,511	6,395	9,116
Academic.....	18,806	13,061	5,720	7,341
Industry.....	2,940	2,148	1,393	755
Federal government .....	1,802	1,396	857	539
Nonprofit institutions .....	319	261	143	118
FFRDCs.....	4,605	3,578	1,542	2,036
State/local government .....	6	6	3	3
<b>Earth/space sciences</b>				
All sectors .....	15,762	11,514	5,338	6,176
Academic.....	12,675	9,581	4,785	4,796
Industry.....	1,253	1,093	730	363
Federal government .....	3,246	2,825	1,701	1,124
Nonprofit institutions .....	1,324	1,170	555	615
FFRDCs.....	1,978	1,680	852	828
State/local government .....	280	235	198	37

Appendix table 5-60  
**Coauthorship of S&E articles, by field and sector: 2003**

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Field and sector	All articles	Coauthored articles		
		Total	U.S. coauthored	Internationally coauthored
<b>Engineering/technology</b>				
All sectors .....	17,121	9,950	5,420	4,530
Academic .....	13,091	8,098	4,733	3,365
Industry .....	4,256	3,026	2,114	912
Federal government .....	1,476	1,124	840	284
Nonprofit institutions .....	269	208	149	59
FFRDCs .....	1,502	1,073	659	414
State/local government .....	163	128	123	5
<b>Mathematics</b>				
All sectors .....	4,651	2,726	982	1,744
Academic .....	4,474	2,639	957	1,682
Industry .....	188	144	97	47
Federal government .....	73	56	43	13
Nonprofit institutions .....	56	48	35	13
FFRDCs .....	71	57	37	20
State/local government .....	3	3	3	0
<b>Psychology</b>				
All sectors .....	8,472	4,633	3,485	1,148
Academic .....	8,022	4,476	3,417	1,059
Industry .....	247	206	179	27
Federal government .....	443	365	295	70
Nonprofit institutions .....	654	538	461	77
FFRDCs .....	3	3	3	0
State/local government .....	138	125	114	11
<b>Social sciences</b>				
All sectors .....	10,510	4,289	2,823	1,466
Academic .....	9,581	4,022	2,734	1,288
Industry .....	227	162	133	29
Federal government .....	487	286	230	56
Nonprofit institutions .....	905	595	410	185
FFRDCs .....	24	13	10	3
State/local government .....	76	57	54	3
<b>Health sciences</b>				
All sectors .....	5,415	3,225	2,637	588
Academic .....	4,645	2,938	2,444	494
Industry .....	400	325	275	50
Federal government .....	596	502	429	73
Nonprofit institutions .....	1,033	809	717	92
FFRDCs .....	2	1	1	0
State and local government .....	268	228	216	12
<b>Professional fields</b>				
All sectors .....	9,186	3,930	3,047	883
Academic .....	8,385	3,777	2,937	840
Industry .....	608	310	275	35
Federal government .....	237	145	122	23
Nonprofit institutions .....	353	230	205	25
FFRDCs .....	12	11	9	2
State/local government .....	145	93	88	5

FFRDC = federally funded research and development center

NOTES: Articles on whole-count basis, i.e., for articles with collaborating institutions from more than one country/economy, each country/economy with at least one participating institution is credited one count. Internationally coauthored articles have at least one collaborating U.S. and foreign institution.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iplQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

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## Citation of S&amp;E articles, by region and country/economy: 1992, 1997, and 2003

Region and country/economy	1992		1997		2003	
	Number	World share (%)	Number	World share (%)	Number	World share (%)
All countries.....	2,684,777	100.00	3,430,965	100.00	4,339,511	100.00
Major S&E article producers.....	2,336,128	87.01	2,974,868	86.71	3,714,578	85.60
United States.....	1,389,314	51.75	1,648,899	48.06	1,839,481	42.39
EU-15.....	754,230	28.09	1,056,629	30.80	1,412,427	32.55
Austria.....	11,023	0.41	17,684	0.52	27,950	0.64
Belgium.....	20,776	0.77	29,387	0.86	38,971	0.90
Denmark.....	20,271	0.76	27,173	0.79	37,971	0.88
Finland.....	14,704	0.55	23,869	0.70	34,503	0.80
France.....	116,453	4.34	161,199	4.70	201,941	4.65
Germany.....	157,285	5.86	220,457	6.43	305,555	7.04
Greece.....	3,359	0.13	5,606	0.16	11,996	0.28
Ireland.....	3,440	0.13	4,987	0.15	9,473	0.22
Italy.....	54,805	2.04	89,242	2.60	130,688	3.01
Netherlands.....	57,498	2.14	80,627	2.35	99,248	2.29
Portugal.....	1,460	0.05	3,341	0.10	8,539	0.20
Spain.....	22,199	0.83	46,755	1.36	82,362	1.90
Sweden.....	48,980	1.82	59,058	1.72	71,463	1.65
United Kingdom.....	221,955	8.27	287,156	8.37	351,572	8.10
Japan.....	174,471	6.50	225,335	6.57	318,665	7.34
East Asia-4.....	18,112	0.67	44,004	1.28	144,005	3.32
China.....	9,910	0.37	19,393	0.57	65,326	1.51
Singapore.....	1,179	0.04	3,116	0.09	9,930	0.23
South Korea.....	2,260	0.08	8,769	0.26	40,726	0.94
Taiwan.....	4,763	0.18	12,727	0.37	28,023	0.65
Other regions/countries						
Other Asia						
Bangladesh.....	208	0.01	314	0.01	521	0.01
India.....	14,421	0.54	18,827	0.55	31,534	0.73
Indonesia.....	164	0.01	379	0.01	665	0.02
Malaysia.....	386	0.01	587	0.02	1,277	0.03
Pakistan.....	362	0.01	494	0.01	695	0.02
Philippines.....	341	0.01	455	0.01	682	0.02
Sri Lanka.....	184	0.01	132	0.00	304	0.01
Thailand.....	787	0.03	1,126	0.03	2,456	0.06
Vietnam.....	57	0.00	173	0.01	468	0.01
All others.....	99	0.00	113	0.00	374	0.01
Other Western Europe						
Croatia.....	0	0.00	1,308	0.04	1,783	0.04
Cyprus.....	24	0.00	83	0.00	221	0.01
Iceland.....	314	0.01	747	0.02	983	0.02
Macedonia.....	0	0.00	87	0.00	171	0.00
Norway.....	10,221	0.38	13,507	0.39	19,011	0.44
Slovenia.....	0	0.00	1,309	0.04	2,946	0.07
Switzerland.....	43,605	1.62	61,507	1.79	74,094	1.71
Turkey.....	1,134	0.04	2,854	0.08	10,130	0.23
Yugoslavia.....	2,865	0.11	987	0.03	1,210	0.03
All others.....	67	0.00	137	0.00	245	0.01
Eastern Europe/former USSR.....	52,023	1.94	62,274	1.82	86,426	1.99
Armenia.....	0	0.00	165	0.00	301	0.01
Azerbaijan.....	0	0.00	72	0.00	71	0.00
Bulgaria.....	1,522	0.06	2,029	0.06	2,360	0.05
Belarus.....	0	0.00	727	0.02	1,002	0.02
Czech Republic.....	5,468	0.20	5,993	0.17	9,604	0.22
Estonia.....	0	0.00	594	0.02	1,318	0.03
Georgia.....	0	0.00	164	0.00	329	0.01
Hungary.....	4,755	0.18	6,197	0.18	9,714	0.22
Kazakhstan.....	0	0.00	110	0.00	189	0.00
Latvia.....	0	0.00	326	0.01	434	0.01
Lithuania.....	0	0.00	458	0.01	873	0.02
Moldova.....	0	0.00	156	0.00	179	0.00
Poland.....	8,671	0.32	10,925	0.32	18,672	0.43

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**Citation of S&E articles, by region and country/economy: 1992, 1997, and 2003**

Region and country/economy	1992		1997		2003	
	Number	World share (%)	Number	World share (%)	Number	World share (%)
Romania.....	571	0.02	1,013	0.03	2,063	0.05
Russia.....	0	0.00	28,562	0.83	32,176	0.74
Slovakia.....	0	0.00	1,513	0.04	2,908	0.07
USSR.....	31,036	1.16	53	0.00	0	0.00
Ukraine.....	0	0.00	2,965	0.09	3,921	0.09
Uzbekistan.....	0	0.00	213	0.01	271	0.01
All others.....	0	0.00	40	0.00	39	0.00
Near East/North Africa.....	25,478	0.95	33,994	0.99	50,629	1.17
Algeria.....	127	0.00	197	0.01	437	0.01
Egypt.....	1,455	0.05	1,800	0.05	3,319	0.08
Iran.....	143	0.01	434	0.01	3,116	0.07
Israel.....	21,192	0.79	28,707	0.84	38,447	0.89
Jordan.....	218	0.01	178	0.01	478	0.01
Kuwait.....	460	0.02	227	0.01	689	0.02
Lebanon.....	62	0.00	91	0.00	493	0.01
Morocco.....	180	0.01	362	0.01	926	0.02
Oman.....	48	0.00	64	0.00	167	0.00
Saudi Arabia.....	1,078	0.04	1,219	0.04	1,305	0.03
Tunisia.....	170	0.01	235	0.01	619	0.01
United Arab Emirates.....	33	0.00	198	0.01	330	0.01
All others.....	313	0.01	282	0.01	305	0.01
Central/South America.....	15,563	0.58	26,672	0.78	55,870	1.29
Argentina.....	3,386	0.13	5,697	0.17	10,449	0.24
Brazil.....	5,132	0.19	9,416	0.27	23,680	0.55
Chile.....	1,826	0.07	2,573	0.07	4,639	0.11
Colombia.....	256	0.01	485	0.01	948	0.02
Costa Rica.....	174	0.01	206	0.01	468	0.01
Cuba.....	136	0.01	453	0.01	883	0.02
Mexico.....	2,906	0.11	4,899	0.14	10,494	0.24
Peru.....	223	0.01	218	0.01	395	0.01
Uruguay.....	104	0.00	394	0.01	837	0.02
Venezuela.....	789	0.03	1,355	0.04	1,655	0.04
All others.....	630	0.02	977	0.03	1,421	0.03
Sub-Saharan Africa.....	10,001	0.37	10,910	0.32	13,732	0.32
Cameroon.....	87	0.00	180	0.01	256	0.01
Ethiopia.....	117	0.00	186	0.01	270	0.01
Ghana.....	50	0.00	99	0.00	272	0.01
Kenya.....	791	0.03	862	0.03	1,015	0.02
Nigeria.....	744	0.03	613	0.02	613	0.01
Senegal.....	358	0.01	385	0.01	259	0.01
South Africa.....	6,348	0.24	6,421	0.19	8,017	0.18
Tanzania.....	123	0.00	346	0.01	351	0.01
Uganda.....	68	0.00	204	0.01	386	0.01
Zimbabwe.....	274	0.01	247	0.01	286	0.01
All others.....	1,042	0.04	1,366	0.04	2,006	0.05
Other						0.00
Canada.....	111,661	4.16	141,498	4.12	161,501	3.72
Australia.....	49,989	1.86	64,657	1.88	91,420	2.11
New Zealand.....	8,498	0.32	10,738	0.31	15,342	0.35
All others.....	174	0.01	185	0.01	187	0.00

EU = European Union; USSR = Union of Soviet Socialist Republics

NOTES: Citation counts based on a 3-year period with 2-year lag, e.g., citations for 1999 are references made in articles published in 1999 to articles published in 1995–97. Citations on fractional-count basis, i.e., for cited articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on basis of proportion of its participating institutions. Detail may not add to total because of rounding. EU-15 consists of 15 EU countries before expansion of member countries on May 1, 2004 (listed countries plus Luxembourg). Germany data for 1992 include former East Germany. China data include Hong Kong. Czech Republic data for 1992 and 1996 include former Czechoslovakia.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iPLQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.



Appendix table 5-62

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**Relative prominence of scientific literature, by selected field and region/country/economy: 1995 and 2003**

(Relative citation index)

Field, rank, and country/economy	1995	2003	Field, rank, and country/economy	1995	2003
<b>All fields</b>			<b>Clinical medicine</b>		
1 Switzerland .....	1.189	1.152	1 United States .....	0.990	1.001
2 United States .....	1.013	1.026	2 Switzerland .....	0.955	0.954
3 Netherlands .....	0.877	0.971	3 Canada .....	0.834	0.949
4 Denmark .....	0.835	0.937	4 Netherlands .....	0.841	0.917
5 United Kingdom .....	0.830	0.864	5 Finland .....	0.756	0.861
6 Sweden .....	0.869	0.860	6 Denmark .....	0.708	0.834
7 Canada .....	0.739	0.845	7 United Kingdom .....	0.796	0.827
8 Finland .....	0.755	0.826	8 Belgium .....	0.838	0.820
9 Germany .....	0.724	0.822	9 Sweden .....	0.778	0.810
10 Belgium .....	0.819	0.822	10 Ireland .....	0.710	0.800
11 Austria .....	0.747	0.804	11 Austria .....	0.683	0.772
12 Ireland .....	0.662	0.764	12 Norway .....	0.626	0.752
13 France .....	0.730	0.760	13 Hong Kong .....	0.524	0.751
14 Israel .....	0.682	0.742	14 Italy .....	0.640	0.746
15 EU-15 .....	0.681	0.737	15 France .....	0.688	0.734
16 Norway .....	0.624	0.718	16 Germany .....	0.596	0.721
17 Australia .....	0.630	0.714	17 EU-15 .....	0.643	0.710
18 Italy .....	0.632	0.699	18 New Zealand .....	0.690	0.682
19 Hong Kong .....	0.438	0.672	19 Austria .....	0.651	0.658
20 New Zealand .....	0.566	0.615	20 Israel .....	0.519	0.635
21 Spain .....	0.464	0.604	21 Spain .....	0.513	0.623
22 Japan .....	0.551	0.575	22 Singapore .....	0.395	0.567
23 Portugal .....	0.439	0.514	23 Portugal .....	na	0.558
24 Singapore .....	0.422	0.509	24 Hungary .....	0.500	0.554
25 Hungary .....	0.443	0.491	25 Japan .....	0.527	0.553
26 Chile .....	0.343	0.478	26 South Korea .....	0.523	0.551
27 Greece .....	0.327	0.465	27 Greece .....	0.349	0.500
28 South Korea .....	0.320	0.439	28 Taiwan .....	0.447	0.484
29 Thailand .....	na	0.432	29 Thailand .....	na	0.484
30 Czech Republic .....	na	0.417	30 East Asia-4 .....	0.410	0.481
31 Argentina .....	0.304	0.411	31 Czech Republic .....	na	0.465
32 Slovenia .....	na	0.409	32 China .....	0.308	0.455
33 South Africa .....	0.325	0.404	33 Poland .....	0.391	0.451
34 Taiwan .....	0.321	0.401	34 Mexico .....	0.393	0.430
35 Mexico .....	0.349	0.385	35 South Africa .....	0.334	0.422
36 Poland .....	0.295	0.360	36 Argentina .....	0.323	0.406
37 Brazil .....	0.314	0.359	37 Brazil .....	0.336	0.392
38 Slovakia .....	na	0.339	38 Slovenia .....	na	0.361
39 East Asia-4 .....	0.274	0.335	39 Chile .....	0.200	0.358
40 Bulgaria .....	0.166	0.325	40 Egypt .....	0.220	0.344
41 China .....	0.218	0.293	41 Saudi Arabia .....	0.277	0.295
42 India .....	0.182	0.284	42 Iran .....	na	0.292
43 Croatia .....	0.257	0.281	43 Turkey .....	0.202	0.275
44 Turkey .....	0.214	0.278	44 India .....	0.197	0.272
45 Saudi Arabia .....	0.220	0.256	45 Russia .....	0.068	0.222

Appendix table 5-62

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**Relative prominence of scientific literature, by selected field and region/country/economy: 1995 and 2003**

(Relative citation index)

Field, rank, and country/economy	1995	2003	Field, rank, and country/economy	1995	2003
<b>Biomedical research</b>			<b>Biology</b>		
1 Switzerland .....	1.165	1.154	1 Switzerland .....	1.025	1.264
2 United States .....	1.140	1.122	2 Netherlands.....	0.942	1.077
3 United Kingdom.....	0.857	0.927	3 Sweden .....	0.942	1.032
4 Israel.....	0.824	0.859	4 United Kingdom.....	0.833	1.024
5 Austria .....	0.848	0.858	5 Denmark .....	0.871	0.859
6 Germany.....	0.784	0.849	6 Hong Kong.....	na	0.841
7 Netherlands .....	0.721	0.832	7 Israel.....	0.713	0.837
8 Canada .....	0.712	0.789	8 France.....	0.672	0.836
9 Denmark.....	0.620	0.770	9 United States.....	0.807	0.821
10 Belgium .....	0.669	0.732	10 Belgium.....	0.788	0.815
11 France .....	0.692	0.731	11 Austria.....	0.654	0.814
12 EU-15 .....	0.661	0.727	12 Germany .....	0.714	0.810
13 Sweden.....	0.702	0.727	13 Finland .....	0.681	0.810
14 Finland.....	0.652	0.723	14 Norway.....	0.740	0.788
15 Singapore .....	0.576	0.716	15 Estonia .....	na	0.777
16 Australia .....	0.583	0.713	16 Philippines.....	0.470	0.745
17 Ireland .....	0.568	0.659	17 EU-15.....	0.621	0.743
18 Norway .....	0.530	0.654	18 Ireland.....	0.611	0.738
19 Japan.....	0.564	0.609	19 Canada.....	0.676	0.707
20 New Zealand.....	0.493	0.586	20 Italy.....	0.584	0.678
21 Italy.....	0.470	0.557	21 Australia.....	0.645	0.675
22 Hong Kong .....	na	0.514	22 New Zealand .....	0.524	0.638
23 Spain .....	0.336	0.485	23 Portugal.....	0.649	0.620
24 Portugal.....	0.344	0.461	24 Kenya.....	0.347	0.595
25 Chile .....	0.282	0.441	25 Spain.....	0.445	0.594
26 Hungary.....	0.373	0.409	26 South Korea.....	0.640	0.570
27 South Korea .....	0.299	0.396	27 Chile.....	0.444	0.562
28 Taiwan .....	0.329	0.370	28 Hungary .....	0.612	0.558
29 Greece .....	0.277	0.365	29 Czech Republic.....	na	0.533
30 Mexico.....	0.253	0.359	30 South Africa.....	0.455	0.523
31 South Africa .....	0.201	0.328	31 Slovakia .....	na	0.521
32 Poland.....	0.219	0.327	32 Singapore.....	0.557	0.518
33 East Asia-4.....	0.323	0.324	33 Indonesia.....	na	0.517
34 Czech Republic .....	na	0.304	34 Colombia.....	0.483	0.496
35 Argentina .....	0.229	0.296	35 Malaysia.....	0.387	0.493
36 Slovenia.....	na	0.251	36 Thailand .....	0.512	0.484
37 Brazil .....	0.185	0.246	37 Greece .....	0.411	0.465
38 Turkey.....	na	0.234	38 Argentina.....	0.361	0.460
39 China .....	0.259	0.232	39 Japan .....	0.442	0.456
40 Slovakia .....	na	0.226	40 Poland.....	0.372	0.454
41 India .....	0.100	0.183	41 East Asia-4.....	0.388	0.427
42 Bulgaria .....	0.049	0.180	42 Bulgaria.....	0.247	0.425
43 Russia.....	0.109	0.158	43 Taiwan .....	0.287	0.423
44 Ukraine .....	0.057	0.134	44 Brazil.....	0.348	0.421

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**Relative prominence of scientific literature, by selected field and region/country/economy: 1995 and 2003**

(Relative citation index)

Field, rank, and country/economy	1995	2003	Field, rank, and country/economy	1995	2003
<b>Chemistry</b>			<b>Physics</b>		
1 Hong Kong .....	0.722	1.266	1 Switzerland .....	1.338	1.304
2 Netherlands .....	1.017	1.193	2 Denmark .....	1.232	1.264
3 Switzerland .....	1.104	1.128	3 United States .....	1.138	1.097
4 Denmark .....	1.050	1.127	4 Netherlands .....	1.060	1.055
5 United States .....	1.121	1.114	5 Austria .....	0.852	1.037
6 Israel .....	0.950	1.045	6 Hong Kong .....	0.439	1.015
7 Sweden .....	1.222	1.011	7 New Zealand .....	0.863	0.979
8 Canada .....	0.991	1.004	8 Germany .....	0.950	0.950
9 Ireland .....	0.819	0.996	9 Israel .....	0.884	0.877
10 United Kingdom .....	0.843	0.943	10 United Kingdom .....	0.819	0.871
11 Belgium .....	0.744	0.870	11 Sweden .....	0.834	0.870
12 Germany .....	0.723	0.846	12 Ireland .....	0.823	0.861
13 Austria .....	0.685	0.811	13 Belgium .....	0.763	0.830
14 France .....	0.678	0.791	14 France .....	0.795	0.809
15 Australia .....	0.803	0.785	15 EU-15 .....	0.778	0.794
16 EU-15 .....	0.693	0.781	16 Canada .....	0.788	0.783
17 Singapore .....	0.608	0.759	17 Finland .....	0.795	0.782
18 New Zealand .....	0.724	0.754	18 Spain .....	0.534	0.764
19 Italy .....	0.710	0.742	19 Norway .....	0.777	0.764
20 Norway .....	0.638	0.710	20 Slovenia .....	0.623	0.688
21 Spain .....	0.522	0.679	21 Australia .....	0.627	0.682
22 Finland .....	0.661	0.671	22 Italy .....	0.678	0.679
23 Japan .....	0.596	0.627	23 Portugal .....	0.594	0.649
24 Greece .....	0.459	0.600	24 Singapore .....	0.256	0.633
25 Portugal .....	0.572	0.570	25 Slovakia .....	na	0.623
26 South Korea .....	0.382	0.547	26 Hungary .....	0.570	0.620
27 Slovenia .....	0.463	0.539	27 Greece .....	0.553	0.618
28 Taiwan .....	0.472	0.537	28 Chile .....	na	0.612
29 South Africa .....	0.470	0.486	29 Japan .....	0.546	0.569
30 Venezuela .....	0.581	0.483	30 Czech Republic .....	na	0.567
31 Argentina .....	0.291	0.481	31 Argentina .....	0.414	0.495
32 Czech Republic .....	na	0.479	32 South Korea .....	0.397	0.489
33 Thailand .....	na	0.464	33 Bulgaria .....	0.274	0.487
34 Brazil .....	0.449	0.442	34 Poland .....	0.434	0.485
35 Hungary .....	0.402	0.424	35 Iran .....	na	0.484
36 Mexico .....	0.464	0.422	36 Taiwan .....	0.328	0.467
37 Bulgaria .....	0.295	0.418	37 India .....	0.285	0.411
38 East Asia-4 .....	0.377	0.409	38 Brazil .....	0.412	0.410
39 Slovakia .....	na	0.405	39 Mexico .....	0.352	0.403
40 India .....	0.253	0.373	40 South Africa .....	0.380	0.378
41 Chile .....	0.264	0.362	41 Romania .....	0.325	0.378
42 China .....	0.314	0.358	42 Lithuania .....	na	0.363
43 Malaysia .....	na	0.346	43 East Asia-4 .....	0.256	0.363
44 Poland .....	0.300	0.344	44 Turkey .....	0.375	0.344
45 Croatia .....	0.215	0.334	45 China .....	0.227	0.329

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**Relative prominence of scientific literature, by selected field and region/country/economy: 1995 and 2003**

(Relative citation index)

Field, rank, and country/economy	1995	2003	Field, rank, and country/economy	1995	2003
<b>Earth and space sciences</b>			<b>Engineering and technology</b>		
1 Netherlands .....	0.803	1.000	1 Switzerland .....	1.013	1.196
2 United States .....	0.985	0.964	2 Denmark .....	1.253	1.010
3 Chile .....	1.038	0.933	3 Netherlands .....	0.872	0.969
4 Switzerland .....	1.051	0.928	4 Ireland .....	0.652	0.918
5 Germany .....	0.843	0.927	5 United States .....	0.854	0.898
6 Denmark .....	0.712	0.857	6 Germany .....	0.587	0.885
7 United Kingdom .....	0.808	0.842	7 Hong Kong .....	0.455	0.869
8 Hong Kong .....	0.301	0.827	8 Sweden .....	0.853	0.791
9 Israel .....	0.534	0.794	9 Austria .....	0.638	0.755
10 Sweden .....	0.693	0.765	10 New Zealand .....	0.494	0.751
11 France .....	0.728	0.746	11 Belgium .....	0.711	0.745
12 Italy .....	0.638	0.735	12 Australia .....	0.712	0.738
13 Belgium .....	0.664	0.725	13 Norway .....	0.537	0.733
14 EU-15 .....	0.659	0.723	14 Czech Republic .....	na	0.725
15 Austria .....	0.516	0.696	15 France .....	0.731	0.722
16 Australia .....	0.678	0.695	16 Israel .....	0.615	0.710
17 Canada .....	0.683	0.659	17 Spain .....	0.600	0.692
18 Finland .....	0.490	0.658	18 EU-15 .....	0.598	0.684
19 Norway .....	0.566	0.632	19 United Kingdom .....	0.676	0.684
20 Japan .....	0.538	0.579	20 Portugal .....	0.514	0.674
21 Spain .....	0.463	0.578	21 Slovenia .....	0.540	0.674
22 Mexico .....	0.460	0.574	22 Canada .....	0.646	0.672
23 Portugal .....	0.261	0.557	23 Belarus .....	0.156	0.638
24 Hungary .....	0.414	0.553	24 Singapore .....	0.319	0.626
25 Ireland .....	0.570	0.545	25 Finland .....	0.547	0.604
26 Poland .....	0.402	0.536	26 Argentina .....	0.431	0.603
27 Brazil .....	0.343	0.515	27 Italy .....	0.639	0.599
28 Greece .....	0.250	0.495	28 South Korea .....	0.473	0.569
29 Ukraine .....	0.118	0.477	29 Thailand .....	na	0.556
30 New Zealand .....	0.442	0.473	30 Japan .....	0.524	0.550
31 South Korea .....	0.250	0.468	31 Brazil .....	0.427	0.521
32 Croatia .....	0.280	0.462	32 Greece .....	0.370	0.518
33 Czech Republic .....	na	0.454	33 Mexico .....	0.451	0.504
34 Argentina .....	0.278	0.447	34 China .....	0.385	0.501
35 South Africa .....	0.448	0.419	35 Bulgaria .....	0.314	0.495
36 Bulgaria .....	0.128	0.370	36 Taiwan .....	0.414	0.467
37 China .....	0.278	0.365	37 Chile .....	na	0.459
38 Taiwan .....	0.432	0.362	38 East Asia-4 .....	0.387	0.457
39 East Asia-4 .....	0.270	0.361	39 India .....	0.348	0.453
40 Venezuela .....	1.523	0.320	40 Poland .....	0.409	0.451
41 Singapore .....	na	0.313	41 South Africa .....	0.471	0.446
42 Turkey .....	0.256	0.299	42 Hungary .....	0.693	0.441
43 India .....	0.190	0.282	43 Jordan .....	na	0.436
44 Morocco .....	na	0.262	44 Iran .....	na	0.432
45 Russia .....	0.174	0.260	45 Slovakia .....	na	0.422

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**Relative prominence of scientific literature, by selected field and region/country/economy: 1995 and 2003**

(Relative citation index)

Field, rank, and country/economy	1995	2003	Field, rank, and country/economy	1995	2003
<b>Mathematics</b>			<b>Social sciences</b>		
1 Hong Kong .....	0.772	1.666	1 Switzerland .....	0.544	0.955
2 Switzerland .....	1.022	1.035	2 Sweden .....	0.791	0.903
3 Singapore .....	0.451	0.948	3 Singapore .....	0.373	0.842
4 Finland .....	0.802	0.931	4 United States .....	0.837	0.812
5 Belgium .....	0.683	0.918	5 Denmark .....	0.917	0.767
6 United States .....	0.874	0.907	6 Hong Kong .....	0.364	0.709
7 United Kingdom .....	0.869	0.897	7 United Kingdom .....	0.534	0.697
8 Denmark .....	1.759	0.881	8 Chile .....	na	0.683
9 Sweden .....	0.773	0.871	9 New Zealand .....	0.639	0.672
10 Netherlands .....	0.804	0.861	10 Belgium .....	0.476	0.667
11 Germany .....	0.602	0.797	11 Netherlands .....	0.495	0.662
12 Israel .....	0.659	0.750	12 Finland .....	0.587	0.659
13 Portugal .....	0.310	0.747	13 Italy .....	0.490	0.641
14 Australia .....	0.626	0.728	14 Spain .....	0.546	0.625
15 Austria .....	0.499	0.706	15 Ireland .....	0.458	0.622
16 EU-15 .....	0.663	0.690	16 Canada .....	0.641	0.612
17 France .....	0.610	0.659	17 South Korea .....	0.690	0.567
18 Norway .....	0.975	0.657	18 France .....	0.308	0.563
19 Canada .....	0.603	0.645	19 Norway .....	0.468	0.557
20 New Zealand .....	0.734	0.643	20 Israel .....	0.606	0.543
21 Chile .....	0.354	0.630	21 East Asia-4 .....	0.396	0.543
22 Taiwan .....	0.596	0.603	22 Mexico .....	0.535	0.543
23 Greece .....	0.337	0.592	23 EU-15 .....	0.400	0.536
24 Italy .....	0.530	0.586	24 Australia .....	0.462	0.523
25 Czech Republic .....	0.235	0.578	25 Portugal .....	0.665	0.520
26 Ireland .....	0.896	0.550	26 China .....	0.703	0.509
27 Ukraine .....	0.344	0.543	27 Hungary .....	0.520	0.487
28 Bulgaria .....	0.406	0.533	28 Austria .....	0.372	0.485
29 Venezuela .....	0.447	0.507	29 Taiwan .....	0.278	0.480
30 Romania .....	0.405	0.495	30 Germany .....	0.241	0.439
31 Slovenia .....	na	0.481	31 South Africa .....	0.284	0.401
32 Brazil .....	0.777	0.475	32 Greece .....	0.469	0.386
33 Slovakia .....	na	0.474	33 Brazil .....	0.386	0.320
34 Argentina .....	0.466	0.474	34 Argentina .....	0.145	0.317
35 Spain .....	0.457	0.465	35 Japan .....	0.291	0.309
36 Hungary .....	0.323	0.459	36 Poland .....	0.399	0.292
37 Poland .....	0.339	0.439	37 Turkey .....	0.342	0.263
38 East Asia-4 .....	0.362	0.434	38 India .....	0.135	0.259
39 South Africa .....	0.585	0.433	39 Nigeria .....	0.243	0.233
40 India .....	0.334	0.401	40 Slovenia .....	na	0.213
41 Japan .....	0.584	0.393	41 Croatia .....	0.209	0.119
42 Mexico .....	0.221	0.392	42 Ukraine .....	na	0.112
43 China .....	0.298	0.386	43 Czech Republic .....	na	0.104
44 Egypt .....	0.351	0.373	44 Russia .....	0.116	0.094
45 Lithuania .....	na	0.370	45 Slovakia .....	na	0.035

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**Relative prominence of scientific literature, by selected field and region/country/economy: 1995 and 2003**

(Relative citation index)

Field, rank, and country/economy	1995	2003	Field, rank, and country/economy	1995	2003
Psychology			Psychology (continued)		
1 Canada .....	0.830	0.847	21 Austria.....	0.644	0.554
2 United Kingdom.....	0.728	0.819	22 Norway.....	0.606	0.534
3 United States .....	0.747	0.773	23 Germany .....	0.360	0.516
4 Netherlands .....	0.727	0.752	24 Spain.....	0.319	0.512
5 Belgium .....	0.520	0.732	25 China.....	na	0.501
6 Hungary.....	0.470	0.705	26 East Asia-4.....	0.323	0.436
7 Italy.....	0.591	0.694	27 Brazil.....	0.679	0.433
8 Sweden.....	0.691	0.694	28 Poland.....	0.312	0.401
9 Israel.....	0.515	0.676	29 Portugal.....	na	0.399
10 Finland.....	0.621	0.670	30 India.....	0.172	0.380
11 New Zealand.....	0.607	0.647	31 Japan.....	0.230	0.349
12 Australia .....	0.591	0.645	32 Turkey.....	na	0.332
13 Switzerland.....	0.637	0.643	33 Singapore.....	na	0.299
14 France .....	0.478	0.638	34 Greece .....	na	0.288
15 South Korea .....	na	0.634	35 Taiwan .....	0.416	0.286
16 EU-15 .....	0.491	0.601	36 Mexico .....	0.251	0.267
17 Denmark.....	0.513	0.585	37 South Africa.....	0.283	0.261
18 Argentina .....	0.302	0.571	38 Czech Republic.....	na	0.207
19 Hong Kong .....	0.261	0.567	39 Russia.....	0.104	0.085
20 Ireland .....	0.283	0.563	40 Slovakia .....	na	0.056

na = not applicable

EU = European Union

NOTES: Relative prominence of scientific literature measured on basis of relative citation index of country/economy, i.e., country/economy's share of cited literature adjusted for its share of published literature. Country/economy's citation of own literature excluded. Index of 1.00 indicates country/economy's share of cited literature equals its world share of scientific literature. Index >1.00 or <1.00 indicates country/economy cited relatively more/less than indicated by its share of scientific literature. Countries/economies with share of world publications in cited field <0.10% during period either excluded or na. Citations on fractional-count basis, i.e., for cited articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on basis of proportion of its participating institutions. EU-15 consists of 15 EU countries before expansion of member countries on May 1, 2004. East Asia-4 consists of China (including Hong Kong), Singapore, South Korea, and Taiwan.

SOURCES: Thomson ISI, *Science Citation Index* and *Social Sciences Citation Index*, <http://www.isinet.com/products/citation/>; iplQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-63

**Share of highly cited S&E articles, by frequency of citation and region or country/economy: 1992–2003**

(Percent distribution)

Frequency of citation and region or country/economy	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
All cited S&E articles.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
United States.....	37.6	37.5	37.2	36.8	36.1	35.5	34.8	33.9	33.0	32.2	31.7	31.2
EU-15.....	29.2	29.3	29.7	30.3	31.1	31.7	32.2	32.6	32.9	33.0	33.0	32.7
Japan.....	7.4	7.6	7.8	8.0	8.1	8.2	8.3	8.4	8.6	8.7	8.8	8.8
East Asia-4.....	1.8	1.9	2.1	2.4	2.7	3.0	3.3	3.8	4.3	4.8	5.3	6.0
Other.....	24.0	23.7	23.2	22.5	22.0	21.6	21.4	21.3	21.2	21.2	21.2	21.3
Top 1%.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
United States.....	64.6	63.8	63.0	62.1	62.0	61.6	61.8	60.6	59.8	58.2	57.2	56.6
EU-15.....	23.3	23.8	24.3	24.5	24.6	25.1	24.7	25.2	25.6	27.0	27.5	27.7
Japan.....	4.2	4.5	4.5	4.6	4.5	4.4	4.3	4.6	5.0	5.1	5.1	5.3
East Asia-4.....	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.5	0.8	1.1
Other.....	7.8	7.8	8.0	8.6	8.7	8.8	8.9	9.1	9.2	9.2	9.3	9.3
Top 5%.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
United States.....	58.5	58.0	58.2	57.3	56.2	55.2	54.8	54.0	52.8	51.1	50.5	50.3
EU-15.....	26.2	26.7	26.8	27.1	28.0	28.8	29.0	29.4	29.8	30.9	31.1	30.7
Japan.....	5.3	5.3	5.2	5.2	5.2	5.2	5.2	5.4	5.7	6.0	5.9	6.0
East Asia-4.....	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.7	0.9	1.1	1.5	1.9
Other.....	9.8	9.7	9.5	10.0	10.1	10.4	10.4	10.5	10.8	10.9	11.0	11.0
Top 10%.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
United States.....	56.0	55.6	54.6	53.7	52.7	51.5	50.8	49.7	48.9	47.2	46.7	46.5
EU-15.....	27.3	27.9	28.4	29.0	29.8	30.5	30.9	31.5	31.8	32.7	32.5	32.3
Japan.....	5.7	5.6	5.8	5.7	5.7	5.9	5.9	6.1	6.4	6.6	6.6	6.6
East Asia-4.....	0.4	0.4	0.5	0.6	0.7	0.7	0.9	1.1	1.3	1.4	2.0	2.4
Other.....	10.6	10.5	10.7	11.0	11.1	11.4	11.5	11.6	11.7	12.0	12.2	12.2

EU = European Union

NOTES: Citations are references to scientific articles in journals covered by *Science Citation Index (SCI)* and *Social Sciences Citation Index (SSCI)*. Citation counts based on a 3-year period with 2-year lag (e.g., citations for 2003 are references made in articles published in 2003 to articles published in 1999–2001). Citations on fractional-count basis, i.e., for cited articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on basis of proportion of its participating institutions. EU-15 consists of 15 EU countries before expansion of member countries on May 1, 2004. East Asia-4 consists of China, Singapore, South Korea, and Taiwan. China includes Hong Kong.

SOURCES: Thomson ISI, SCI and SSCI, <http://www.isinet.com/products/citation/>; iPLQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

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Appendix table 5-64

**Share of citations in highly cited S&E journals, by frequency of citation and region or country/economy: 1992–2003**

(Percent distribution)

Frequency of citation and region or country/economy	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
All cited S&E journals.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
United States.....	37.8	37.6	37.2	36.8	36.0	35.5	34.7	34.1	33.1	32.2	31.5	31.1
EU-15.....	29.1	29.4	29.8	30.3	31.0	31.5	32.1	32.5	32.9	33.1	33.1	32.8
Japan.....	7.4	7.5	7.8	7.9	8.1	8.2	8.3	8.4	8.6	8.7	8.8	8.8
East Asia-4.....	1.8	1.9	2.1	2.4	2.6	2.9	3.3	3.7	4.2	4.8	5.3	5.9
Other.....	23.9	23.5	23.1	22.6	22.3	21.9	21.6	21.4	21.2	21.3	21.3	21.4
Top 1%.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
United States.....	68.5	68.1	67.5	66.7	65.8	65.3	64.8	64.0	62.7	61.5	60.3	59.3
EU-15.....	19.9	20.4	20.6	20.8	21.4	21.9	22.5	23.0	23.8	24.5	25.3	25.7
Japan.....	3.0	3.1	3.3	3.5	3.7	3.8	3.7	3.7	3.9	4.1	4.4	4.6
East Asia-4.....	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.8
Other.....	8.5	8.4	8.4	8.8	8.8	8.7	8.7	8.9	9.1	9.3	9.4	9.6
Top 5%.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
United States.....	61.9	61.2	60.2	59.0	57.6	56.7	55.6	54.2	52.4	50.8	49.7	49.1
EU-15.....	22.4	23.3	23.9	24.7	25.5	26.3	27.1	28.1	29.3	30.2	30.7	30.8
Japan.....	4.8	4.8	5.0	5.1	5.3	5.3	5.4	5.6	5.9	6.2	6.5	6.7
East Asia-4.....	0.4	0.4	0.4	0.5	0.6	0.6	0.7	0.8	1.0	1.2	1.5	1.8
Other.....	10.5	10.4	10.5	10.7	11.0	11.2	11.1	11.3	11.4	11.6	11.6	11.7
Top 10%.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
United States.....	55.9	55.2	54.3	53.0	51.5	50.3	49.1	47.8	46.4	45.0	44.3	43.7
EU-15.....	25.4	26.0	26.5	27.3	28.2	29.1	30.0	30.9	31.8	32.4	32.6	32.6
Japan.....	6.0	6.1	6.3	6.4	6.6	6.6	6.7	6.9	7.1	7.4	7.6	7.7
East Asia-4.....	0.7	0.7	0.8	0.9	1.1	1.2	1.4	1.6	1.8	2.1	2.4	2.8
Other.....	12.0	12.0	12.1	12.3	12.6	12.7	12.8	12.9	12.9	13.1	13.1	13.2

EU = European Union

NOTES: Journals are those covered by *Science Citation Index (SCI)* and *Social Sciences Citation Index (SSCI)*. Journals ranked by average number of citations to articles published in journal. Citation counts based on a 3-year period with 2-year lag (e.g., citations for 2003 are references made in articles published in 2003 to articles published in 1999–2001). Citations on a fractional-count basis, i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on basis of proportion of its participating institutions. EU-15 consists of 15 EU countries before expansion of member countries on May 1, 2004. East Asia-4 consists of China, Singapore, South Korea, and Taiwan. China includes Hong Kong.

SOURCES: Thomson ISI, *SCI* and *SSCI*, <http://www.isinet.com/products/citation/>; iPLQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

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Appendix table 5-65  
**Citation of S&E material in U.S. patents: 1987–2004**

Year	All citations		Average citations per patent	
	S&E material	S&E articles	S&E material	S&E articles
1987.....	33,533	17,133	0.40	0.21
1988.....	36,140	19,107	0.46	0.25
1989.....	52,139	28,658	0.55	0.30
1990.....	52,292	29,506	0.58	0.33
1991.....	60,959	35,546	0.63	0.37
1992.....	70,902	42,879	0.73	0.44
1993.....	89,680	57,338	0.91	0.58
1994.....	99,062	60,997	0.97	0.60
1995.....	122,170	72,922	1.20	0.72
1996.....	159,803	103,330	1.46	0.94
1997.....	223,439	155,686	1.99	1.39
1998.....	311,689	220,080	2.11	1.49
1999.....	308,159	219,634	2.01	1.43
2000.....	310,393	220,215	1.97	1.40
2001.....	346,145	246,668	2.08	1.48
2002.....	360,548	248,783	2.15	1.49
2003.....	379,423	263,206	2.24	1.56
2004.....	349,606	233,294	2.13	1.42

NOTES: S&E material constitutes references to articles in all scientific journals and nonarticle materials such as reports, technical notes, and conference proceedings. S&E articles are in publications referenced by *Science Citation Index (SCI)* and *Social Sciences Citation Index (SSCI)*. Citation counts based on a 12-year period with 3-year lag, e.g., citations for 2004 are references in U.S. patents issued in 2004 to articles published in 1989–2001.

SOURCES: Thomson ISI, *SCI* and *SSCI*, <http://www.isinet.com/products/citation/>; iPLQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-66

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**Citation of U.S. S&E articles in U.S. patents, by field and sector: 1995–2004**

Field and sector	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
All fields.....	16,633	23,531	32,583	44,466	42,317	39,360	42,766	39,675	37,138	31,154
Academic .....	9,399	13,557	18,665	25,824	24,983	23,728	25,557	23,348	22,193	19,074
Industry.....	4,155	5,522	7,288	9,602	8,799	8,234	8,648	8,493	7,870	6,573
Federal government.....	1,168	1,690	2,419	3,396	3,151	2,505	2,707	2,375	2,284	1,634
Nonprofit institutions .....	1,322	2,045	3,297	4,400	4,155	3,806	4,445	4,056	3,465	2,622
FFRDCs .....	432	476	604	810	830	727	990	980	957	922
State/local government.....	70	125	155	186	184	161	162	138	125	101
Other .....	86	115	155	248	215	199	256	285	244	229
Clinical medicine .....	4,461	6,679	10,063	14,133	13,240	11,805	12,961	11,776	10,748	8,322
Academic .....	2,659	3,908	5,820	8,308	7,763	6,953	7,738	6,827	6,322	4,960
Industry.....	777	1,199	1,905	2,670	2,439	2,174	2,252	2,135	1,977	1,495
Federal government.....	390	598	870	1,199	1,209	979	1,059	975	891	549
Nonprofit institutions .....	522	804	1,248	1,647	1,535	1,465	1,641	1,591	1,345	1,125
FFRDCs .....	39	51	87	110	116	69	77	68	73	78
State/local government.....	42	72	78	95	102	83	85	66	61	54
Other .....	32	47	66	115	84	83	108	115	79	62
Biomedical research.....	5,943	9,620	14,386	21,006	19,776	17,717	19,334	17,250	14,856	11,401
Academic .....	3,541	5,761	8,493	12,646	12,163	11,141	11,909	10,560	9,159	7,169
Industry.....	1,132	1,787	2,610	3,759	3,391	3,029	3,325	3,111	2,631	1,976
Federal government.....	499	780	1,168	1,697	1,449	1,092	1,186	947	857	642
Nonprofit institutions .....	648	1,078	1,815	2,469	2,350	2,117	2,427	2,116	1,780	1,260
FFRDCs .....	87	144	192	288	280	205	326	344	279	209
State/local government.....	24	44	64	81	73	67	68	57	44	36
Other .....	12	27	43	68	70	65	93	115	106	108
Biology .....	399	585	705	940	1,185	1,041	1,045	873	721	499
Academic .....	247	409	469	602	819	695	682	543	440	340
Industry.....	69	63	101	143	149	149	141	140	111	71
Federal government.....	59	76	87	129	141	128	156	137	129	55
Nonprofit institutions .....	16	24	37	53	64	63	55	44	32	25
FFRDCs .....	4	6	6	9	6	5	4	6	3	3
State/local government.....	2	1	3	2	2	1	2	0	2	2
Other .....	2	6	3	2	4	0	3	2	4	3
Chemistry.....	2,106	2,633	3,254	3,567	3,472	3,943	4,666	4,726	4,557	4,113
Academic .....	1,379	1,680	1,995	2,120	1,990	2,510	2,741	2,869	2,844	2,683
Industry.....	501	709	949	1,047	1,020	1,028	1,263	1,261	1,132	903
Federal government.....	55	80	89	134	164	113	102	77	122	123
Nonprofit institutions .....	77	84	107	140	126	107	266	247	237	148
FFRDCs .....	79	65	97	115	158	169	268	236	182	231
State/local government.....	1	6	7	4	5	2	5	9	15	5
Other .....	14	8	9	8	9	14	21	25	26	21
Physics.....	2,152	2,172	2,237	2,470	2,440	2,513	2,534	2,686	3,584	3,741
Academic .....	853	932	985	1,050	1,151	1,216	1,341	1,358	2,033	2,285
Industry.....	979	971	899	1,024	937	985	831	944	1,039	1,027
Federal government.....	111	83	144	137	113	101	117	130	172	141
Nonprofit institutions .....	34	24	51	40	42	16	21	19	30	22
FFRDCs .....	168	157	151	210	191	189	221	227	301	257
State/local government.....	0	0	0	0	0	0	0	0	0	0
Other .....	7	6	6	10	6	5	3	8	9	10
Engineering/technology .....	1,460	1,713	1,783	2,119	1,995	2,051	2,005	2,160	2,375	2,824
Academic .....	644	791	812	956	959	1,007	1,001	1,069	1,206	1,487
Industry.....	682	767	806	943	839	841	799	879	921	1,049
Federal government.....	44	64	49	72	54	69	72	85	92	101
Nonprofit institutions .....	22	21	28	38	32	25	22	28	30	33
FFRDCs .....	48	51	64	72	75	82	87	85	108	131
State/local government.....	0	0	0	1	0	5	0	0	0	1
Other .....	19	18	24	36	35	22	25	12	17	23

Appendix table 5-66

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**Citation of U.S. S&E articles in U.S. patents, by field and sector: 1995–2004**

Field and sector	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Other <sup>a</sup> .....	113	128	157	229	208	290	220	205	299	253
Academic.....	75	78	92	142	137	205	144	121	189	151
Industry.....	15	27	18	17	24	28	37	22	60	52
Federal government.....	10	10	13	29	20	23	16	23	22	23
Nonprofit institutions.....	3	9	11	12	4	13	11	11	10	9
FFRDCs.....	7	1	5	7	4	8	6	13	10	12
State/local government.....	1	2	3	3	2	3	2	5	4	3
Other.....	1	2	3	9	7	9	4	8	3	1

FFRDC = federally funded research and development center

<sup>a</sup>Fields of earth and space sciences, mathematics, social sciences, psychology, health sciences, and professional fields.

NOTES: Citations are references to U.S. S&E articles in journals referenced by *Science Citation Index (SCI)* and *Social Sciences Citation Index (SSCI)*. Citations on fractional-count basis, i.e., for cited articles with collaborating institutions from more than one sector, each sector receives fractional credit on basis of proportion of its participating institutions. Citation counts based on a 6-year window with 2-year lag, e.g., citations for 2002 are references in U.S. patents issued in 2002 to articles published in 1995–2000. Sector determined by cited paper's institutional address. Scientific field determined by iplQ's classification. Computer sciences included in engineering/technology. Detail may not add to total because of rounding.

SOURCES: U.S. Patent and Trademark Office; Thomson ISI, *SCI* and *SSCI*, <http://www.isinet.com/products/citation/>; iplQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-67

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**U.S. patenting activity of U.S. universities and colleges: 1983–93**

Variable	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Institutions awarded patents.....	85	104	115	123	129	127	153	149	160	156	163
Public.....	53	57	65	73	71	68	86	86	93	89	97
Private.....	30	47	46	48	53	53	59	58	57	57	59
Other.....	2	0	4	2	5	6	8	5	10	10	7
Patents awarded to all institutions.....	434	551	589	670	820	814	1,225	1,182	1,344	1,542	1,622
Public.....	227	259	308	353	398	406	651	672	800	907	931
Private.....	182	267	257	299	396	387	546	484	510	599	645
Top 100 R&D institutions											
Combined top 25 R&D institutions.....	228	278	294	336	430	446	668	652	750	796	865
Percent.....	53	50	50	50	52	55	55	55	56	52	53
Combined top 100 R&D institutions.....	334	404	448	513	666	666	1,003	983	1,112	1,290	1,351
Percent.....	77	73	76	77	81	82	82	83	83	84	83
Top 100 R&D institutions, 1994–2003											
Public universities											
University of California.....	48	46	42	54	67	60	81	65	84	81	115
University of Texas.....	5	8	20	25	21	21	51	56	84	73	86
University of Wisconsin.....	13	16	17	17	11	20	27	16	45	43	57
University of Michigan.....	2	1	1	10	6	14	23	27	21	21	19
University of Florida.....	6	10	7	10	13	21	33	33	38	42	34
State University of New York.....	2	11	5	11	18	10	25	20	27	34	30
Michigan State University.....	3	3	3	10	6	8	2	7	11	19	13
University of Minnesota.....	5	6	11	16	28	26	40	38	32	31	27
University of Washington.....	2	3	1	2	1	6	5	7	11	12	11
Iowa State University.....	10	14	21	9	15	15	28	30	39	23	29
Pennsylvania State University.....	0	0	0	0	1	1	1	3	6	7	10
North Carolina State University.....	0	2	3	4	6	5	10	14	11	24	27
University of Utah.....	15	9	11	7	12	9	13	14	5	13	20
University of North Carolina.....	1	0	0	3	2	2	6	8	3	11	14
Georgia Institute of Technology.....	3	6	11	9	9	7	8	18	11	16	16
University of Maryland.....	1	0	0	3	2	2	1	4	4	14	21
University of Pittsburg.....	5	8	3	8	10	6	11	11	16	10	10
University of Alabama.....	1	1	5	3	5	3	3	6	3	7	6
Rutgers University.....	0	1	1	0	2	2	7	2	15	12	15
University of Illinois.....	8	8	10	12	4	9	15	7	8	10	13
University of Nebraska.....	0	5	1	1	1	4	0	3	4	4	10
University of Iowa.....	3	4	1	8	8	6	8	12	6	7	11
Ohio State University.....	9	3	12	5	13	14	13	10	15	21	10
Louisiana State University.....	1	1	1	1	3	4	9	4	5	20	16
Texas A&M University.....	2	3	8	3	6	9	8	9	12	14	22
University of Massachusetts.....	0	1	1	0	2	1	3	3	6	5	4
University of Kentucky.....	6	7	5	7	4	7	6	4	7	7	4
Purdue University.....	11	14	18	9	4	2	11	15	11	5	6
University of Tennessee.....	0	1	5	8	8	8	12	14	10	12	4
University of Virginia.....	4	2	1	4	3	4	8	12	11	9	7
University of South Florida.....	0	0	0	1	0	0	2	2	7	5	7
Virginia Polytechnic Institute.....	0	0	0	0	0	2	7	4	11	18	12
University of Georgia.....	7	7	5	6	4	0	3	5	8	10	18
University of New Mexico.....	0	0	2	3	1	3	9	9	10	11	5
Oregon Health Sciences University.....	0	0	0	0	3	0	3	4	6	5	5
City University of New York.....	3	2	1	2	1	3	2	2	5	3	3
University of Oklahoma.....	1	1	3	2	2	6	2	4	4	7	13
University of Colorado.....	0	0	0	0	1	0	4	9	6	19	7
University of Missouri.....	5	4	0	3	8	9	5	6	7	9	8
Florida State University.....	0	1	0	2	2	1	1	1	1	2	9
University of Connecticut.....	0	0	1	1	2	1	2	8	3	9	9
Wayne State University.....	1	0	1	5	6	7	16	9	8	16	12
University of Cincinnati.....	0	2	1	8	3	8	8	9	9	7	8
Clemson University.....	0	2	2	1	3	3	6	6	2	10	4
University of Medicine and Dentistry of New Jersey.....	1	0	1	4	7	2	4	7	2	6	1
University of Kansas.....	2	2	1	0	2	0	1	3	4	7	3
Washington State University.....	2	0	2	2	2	1	5	3	3	3	2
University of Hawaii.....	1	0	2	0	1	3	2	6	2	5	8

Appendix table 5-67

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**U.S. patenting activity of U.S. universities and colleges: 1983–93**

Variable	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
University of Arizona.....	2	1	2	2	0	0	1	2	1	1	3
Indiana University.....	3	2	4	0	3	1	6	1	3	6	1
Oregon State University.....	1	0	2	3	0	2	1	1	6	9	5
Arizona State University.....	0	1	1	1	2	0	9	9	12	6	2
Colorado State University.....	0	0	1	3	4	2	0	2	4	1	4
Mississippi State University.....	0	0	0	0	0	0	0	0	0	0	1
Utah State University.....	0	1	3	2	2	1	1	2	3	2	2
University of South Carolina.....	0	2	1	1	0	4	2	0	4	6	2
Medical University of South Carolina.....	0	0	0	1	0	1	0	1	0	0	0
University of Alaska.....	0	0	0	0	0	0	0	0	1	1	1
<b>Private universities</b>											
Massachusetts Institute of Technology.....	47	47	35	45	63	64	101	109	101	125	112
California Institute of Technology.....	16	15	16	23	27	18	56	30	36	32	29
Stanford University.....	16	36	38	33	48	54	43	36	57	42	50
Johns Hopkins University.....	6	10	15	18	18	21	27	15	25	20	33
Cornell University.....	10	14	20	13	30	16	22	34	40	41	35
University of Pennsylvania.....	2	4	5	1	2	1	9	19	18	26	34
Columbia University.....	2	3	4	7	6	15	19	16	8	17	17
Duke University.....	3	6	4	6	4	9	11	7	6	9	12
Harvard University.....	10	7	1	2	9	17	15	23	9	16	17
Washington University.....	1	1	3	1	7	6	12	7	22	18	18
Princeton University.....	0	0	0	0	2	1	12	4	13	4	11
Rockefeller University.....	1	3	5	4	9	11	6	8	14	23	23
Yale University.....	2	2	5	3	12	6	11	10	4	12	14
New York University.....	3	4	5	3	5	4	10	14	8	11	19
Northwestern University.....	3	2	2	8	10	10	7	5	4	8	8
University of Chicago.....	0	2	0	0	1	6	7	2	0	0	6
Emory University.....	0	0	1	1	0	0	7	3	10	6	14
Carnegie-Mellon University.....	0	3	3	3	1	2	5	3	5	10	4
Baylor University.....	2	2	3	2	7	3	8	8	6	9	11
University of Southern California.....	1	7	5	5	4	7	8	6	5	18	13
Boston University.....	2	2	3	6	9	9	9	11	6	22	15
Case Western Reserve University.....	0	1	1	6	3	1	1	2	1	9	6
Vanderbilt University.....	1	0	0	5	4	4	4	5	7	4	7
Yeshiva University.....	0	1	4	1	6	1	5	1	0	1	4
University of Rochester.....	9	6	2	8	9	11	11	13	12	10	11
Dartmouth College.....	2	0	2	1	0	3	2	4	1	1	4
University of Miami.....	0	4	4	3	15	5	5	1	1	5	2
<b>Affiliated organizations</b>											
Mayo Foundation.....	0	0	3	1	1	0	3	4	4	8	9
Associated Universities, Inc. ....	0	0	0	0	0	1	3	7	7	5	5
Research Triangle Institute.....	3	0	2	2	4	2	3	6	8	4	7

NOTES: Data include institutions affiliated with academic institutions, such as university and alumni organizations, federally funded research and development centers, foundations, and university associations. Data for certain institutions are for entire university system and incorporate data from various campuses. Number of patents awarded to public and private institutions are estimated because data for a small number of institutions could not be reconciled. Patents awarded to public and private institutions do not sum to total because patents for other organizations are excluded. Top 100 R&D institutions ranked by sum of their patents from 1994 through 2003.

SOURCES: U.S. Patent and Trademark Office, *Technology Assessment and Forecast Report: U.S. Colleges and Universities, 1969–2003* (2005); and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-68

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**U.S. patenting activity of U.S. universities and colleges: 1994–2003**

Variable	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Institutions awarded patents.....	168	161	179	175	172	181	185	185	192	198
Public.....	97	95	100	103	95	105	109	107	118	119
Private.....	60	58	69	64	67	69	70	71	67	73
Other.....	11	8	10	8	10	7	6	7	7	6
Patents awarded to all institutions.....	1,783	1,878	2,158	2,439	3,160	3,344	3,090	3,208	3,275	3,259
Public.....	1,058	1,180	1,330	1,490	1,816	2,012	1,871	1,874	1,941	1,973
Private.....	668	648	767	872	1,262	1,248	1,163	1,255	1,247	1,191
Top 100 R&D institutions										
Combined top 25 R&D institutions.....	991	1,003	1,207	1,307	1,763	1,863	1,720	1,759	1,730	1,787
Percent.....	56	53	56	54	56	56	56	55	53	55
Combined top 100 R&D institutions.....	1,480	1,577	1,829	2,083	2,754	2,871	2,666	2,736	2,769	2,749
Percent.....	83	84	85	85	87	86	86	85	85	84
Top 100 R&D institutions, 1994–2003										
Public universities										
University of California.....	163	213	266	277	395	437	435	402	431	439
University of Texas.....	98	90	88	81	97	93	90	89	93	96
University of Wisconsin.....	48	48	64	62	83	87	64	72	80	84
University of Michigan.....	28	30	25	53	50	51	69	51	47	63
University of Florida.....	26	31	36	43	52	50	64	51	42	59
State University of New York.....	37	31	37	45	51	54	54	41	55	35
Michigan State University.....	21	15	32	41	59	53	42	39	49	49
University of Minnesota.....	28	25	31	32	43	49	46	38	41	39
University of Washington.....	14	17	26	37	47	47	59	43	41	36
Iowa State University.....	37	37	38	36	53	45	34	29	19	27
Pennsylvania State University.....	16	18	20	19	26	36	37	52	50	52
North Carolina State University.....	32	31	26	24	26	23	24	31	33	44
University of Utah.....	22	17	32	31	37	35	20	43	29	20
University of North Carolina.....	13	21	22	39	29	43	27	36	22	29
Georgia Institute of Technology.....	20	21	22	16	17	34	38	32	36	43
University of Maryland.....	15	21	20	18	24	37	25	33	31	45
University of Pittsburgh.....	10	13	12	17	32	39	38	38	22	22
University of Alabama.....	7	9	13	19	27	37	26	32	29	42
Rutgers University.....	18	20	18	21	26	31	25	21	35	24
University of Illinois.....	14	12	16	17	21	29	26	34	31	39
University of Nebraska.....	16	21	29	24	25	23	27	18	24	18
University of Iowa.....	9	17	11	14	25	30	17	38	25	31
Ohio State University.....	10	17	22	27	24	22	26	20	19	19
Louisiana State University.....	11	14	16	22	38	15	20	34	19	17
Texas A&M University.....	20	16	15	14	21	23	19	25	29	19
University of Massachusetts.....	5	12	14	15	24	52	21	18	15	17
University of Kentucky.....	3	11	14	14	21	29	25	20	32	23
Purdue University.....	11	10	12	24	22	19	11	13	23	22
University of Tennessee.....	5	14	8	13	9	12	16	22	32	8
University of Virginia.....	5	10	13	13	20	15	14	18	9	21
University of South Florida.....	4	6	13	14	18	18	20	15	19	11
Virginia Polytechnic Institute.....	16	6	14	17	16	21	14	9	11	13
University of Georgia.....	7	10	12	11	18	10	18	18	20	12
University of New Mexico.....	9	15	8	13	12	15	23	13	14	6
Oregon Health Sciences University.....	6	10	12	16	13	13	21	13	14	8
City University of New York.....	4	5	9	13	16	15	9	12	14	29
University of Oklahoma.....	7	11	9	16	9	15	17	20	8	10
University of Colorado.....	14	18	16	21	19	8	3	3	3	16
University of Missouri.....	7	10	8	16	13	16	6	12	14	17
Florida State University.....	5	10	8	6	13	9	14	7	20	18
University of Connecticut.....	2	8	9	13	11	17	13	7	13	13
Wayne State University.....	14	9	8	8	10	10	8	12	11	5
University of Cincinnati.....	7	8	7	10	5	5	16	16	12	9
Clemson University.....	10	8	7	9	8	2	4	7	21	17
University of Medicine and Dentistry of New Jersey.....	4	5	3	7	15	9	5	14	6	12
University of Kansas.....	2	2	6	3	6	11	5	9	21	9
Washington State University.....	4	4	2	5	5	10	12	13	7	7
University of Hawaii.....	6	7	6	6	6	8	10	4	6	6

Appendix table 5-68

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**U.S. patenting activity of U.S. universities and colleges: 1994–2003**

Variable	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
University of Arizona.....	6	4	4	9	8	7	5	3	6	10
Indiana University.....	7	6	8	11	12	5	6	2	2	0
Oregon State University.....	11	6	3	7	8	3	2	8	6	4
Arizona State University.....	3	6	14	8	1	4	4	6	6	5
Colorado State University.....	1	1	6	2	8	5	4	4	11	5
Mississippi State University.....	1	2	5	3	3	5	5	5	9	5
Utah State University.....	2	8	6	1	5	5	4	2	2	4
University of South Carolina.....	3	0	3	4	1	4	1	5	4	8
Medical University of South Carolina.....	1	2	1	1	5	5	6	2	5	3
University of Alaska.....	3	2	3	2	0	0	1	0	2	0
Private universities										
Massachusetts Institute of Technology.....	99	104	119	102	138	142	113	125	135	127
California Institute of Technology.....	46	38	24	46	93	99	103	124	110	139
Stanford University.....	62	54	55	64	79	83	103	84	104	85
Johns Hopkins University.....	23	28	27	48	79	97	72	80	81	70
Cornell University.....	39	36	52	50	65	64	49	61	35	59
University of Pennsylvania.....	37	25	45	55	69	59	31	52	45	29
Columbia University.....	18	18	33	35	55	55	51	58	45	61
Duke University.....	29	20	37	21	30	36	33	57	39	40
Harvard University.....	16	14	32	28	49	41	26	32	48	40
Washington University.....	19	21	18	22	41	50	36	37	20	22
Princeton University.....	7	12	13	16	24	30	28	39	36	31
Rockefeller University.....	13	9	8	20	35	34	42	25	32	13
Yale University.....	13	16	7	20	34	28	29	29	25	28
New York University.....	16	15	19	23	23	27	26	33	21	22
Northwestern University.....	12	18	10	27	35	24	17	33	27	21
University of Chicago.....	14	16	13	22	22	25	16	27	28	27
Emory University.....	5	11	12	12	35	26	20	18	28	22
Carnegie-Mellon University.....	8	10	13	9	26	27	33	12	19	25
Baylor University.....	11	7	18	18	27	22	29	15	18	16
University of Southern California.....	15	6	15	18	16	13	15	20	31	27
Boston University.....	14	14	16	20	19	15	16	18	14	15
Case Western Reserve University.....	8	8	6	9	15	28	18	18	22	14
Vanderbilt University.....	6	9	6	11	16	14	21	20	20	21
Yeshiva University.....	3	3	11	6	14	10	18	19	23	16
University of Rochester.....	10	6	3	5	15	7	12	16	19	18
Dartmouth College.....	4	3	4	2	9	8	11	7	8	9
University of Miami.....	5	5	5	14	3	2	3	3	6	8
Affiliated organizations										
Mayo Foundation.....	12	10	11	10	6	3	5	15	7	12
Associated Universities, Inc. ....	4	5	1	4	6	6	9	18	19	12
Research Triangle Institute.....	0	1	4	3	3	11	6	14	10	17

NOTES: Data include institutions affiliated with academic institutions, such as university and alumni organizations, federally funded research and development centers, foundations, and university associations. Data for certain institutions are for entire university system and incorporate data from various campuses. Number of patents awarded to public and private institutions are estimated because data for a small number of institutions could not be reconciled. Patents awarded to public and private institutions do not sum to total because patents for other organizations are excluded. Top 100 R&D institutions ranked by sum of their patents from 1994 through 2003.

SOURCES: U.S. Patent and Trademark Office, *Technology Assessment and Forecast Report: U.S. Colleges and Universities, 1969–2003* (2005); and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-69

**Academic patenting and licensing activities: 1991–2003**

Activity indicator	1991 (98)	1992 (98)	1993 (117)	1994 (120)	1995 (127)	1996 (131)	1997 (132)	1998 (132)	1999 (139)	2000 (142)	2001 (139)	2002 (156)	2003 (165)
Millions of dollars													
Net royalties .....	na	na	195.0	217.4	239.1	290.1	391.1	517.3	583.0	1,012.0	753.9	868.9	866.8
Gross royalties.....	130.0	172.4	242.3	265.9	299.1	365.2	482.8	613.6	675.5	1,108.9 <sup>a</sup>	868.3	997.8	1,033.6
Royalties paid to others .....	na	na	19.5	20.8	25.6	28.6	36.2	36.7	34.5	32.7	41.0	38.8	65.5
Unreimbursed legal fees expended .....	19.3	22.2	27.8	27.7	34.4	46.5	55.5	59.6	58.0	64.2	73.4	90.1	101.3
New research funding from licenses <sup>b</sup> .....	na	na	na	106.3	112.5	155.7	136.2	126.9	149.0	184.0	225.7	212.8	212.8
Number													
Invention disclosures received .....	4,880	5,700	6,598	6,697	7,427	8,119	9,051	9,555	10,052	10,802	11,259	12,638	13,718
New U.S. patent applications filed.....	1,335	1,608	1,993	2,015	2,373	2,734	3,644	4,140	4,871	5,623	5,784	6,509	7,203
U.S. patents granted .....	na	na	1,307	1,596	1,550	1,776	2,239	2,681	3,079	3,272	3,179	3,109	3,450
Startup companies formed.....	na	na	na	175	169	184	258	279	275	368	402	364	348
Revenue-generating licenses/options.....	2,210	2,809	3,413	3,560	4,272	4,958	5,659	6,006	6,663	7,562	7,715	8,490	11,118
New licenses/options executed.....	1,079	1,461	1,737	2,049	2,142	2,209	2,707	3,078	3,295	3,569	3,300	3,660	3,855
Equity licenses/options .....	na	na	na	na	99	113	203	210	181	296	328	373	316
Percent <sup>c</sup>													
Sponsored research funds .....	65	68	75	76	78	81	82	83	82	86	84	87	87
Federal research funds .....	79	82	85	85	85	89	90	90	90	92	92	93	94

NA = not available

<sup>a</sup>Includes one-time payments of equity cash in and funds received from settlement of patent infringement suit.<sup>b</sup>Directly related to license or option agreement.<sup>c</sup>Of national academic total represented by number of institutions reporting.

NOTE: Number of institutions reporting given in parentheses.

SOURCE: Association of University Technology Managers, AUTM Licensing Survey (various years).

Science and Engineering Indicators 2006



## Real GDP and real GDP per capita, by region and country/economy: Selected years, 1960–2003

Year	United States	Canada	Japan	South Korea	Europe	Austria	Belgium	Denmark	France	Germany	Former West Germany	Italy	Netherlands	Norway	Sweden	United Kingdom
GDP (billions of U.S. PPP dollars)																
1960	2,448.46	198.28	463.19	40.83	2,351.11	60.57	78.50	48.09	414.76	NA	590.23	387.77	113.48	31.69	80.75	545.26
1965	3,123.07	260.46	719.14	55.87	2,960.42	74.15	100.22	61.62	548.84	NA	746.75	499.60	143.88	39.61	103.93	641.81
1966	3,326.63	277.54	792.84	62.67	3,068.83	78.33	103.39	63.07	577.45	NA	767.59	529.50	147.91	41.11	106.10	654.37
1967	3,410.31	285.83	880.72	66.37	3,170.62	80.69	107.40	65.58	604.52	NA	765.23	567.51	155.75	43.68	109.68	670.58
1968	3,574.83	301.12	985.61	73.89	3,329.82	84.30	111.91	68.32	630.27	NA	806.96	604.65	166.18	44.67	113.67	698.90
1969	3,685.12	317.16	1,103.42	84.12	3,521.94	89.59	119.34	72.82	674.33	NA	867.16	641.52	177.48	46.68	119.36	713.65
1970	3,691.49	325.46	1,216.88	91.50	3,688.95	95.97	126.93	74.42	712.98	NA	910.84	675.59	187.69	47.61	127.09	729.83
1971	3,815.48	343.45	1,270.29	99.33	3,802.75	100.88	131.59	76.72	747.08	NA	938.70	688.66	196.04	50.06	128.29	744.73
1972	4,017.48	361.83	1,377.16	104.18	3,952.54	107.14	138.54	80.18	780.18	NA	978.59	710.38	202.13	52.59	131.22	771.59
1973	4,248.94	387.85	1,487.79	117.03	4,177.73	112.38	146.73	83.60	822.62	NA	1,025.22	756.90	212.33	54.89	136.43	826.63
1974	4,227.51	403.92	1,469.56	125.68	4,259.36	116.81	152.73	83.21	848.20	NA	1,027.23	796.84	220.93	57.19	140.79	815.42
1975	4,219.29	412.86	1,514.99	133.90	4,226.57	116.39	150.46	81.82	845.84	NA	1,014.36	780.51	221.27	60.52	144.39	811.02
1976	4,444.09	435.53	1,575.21	148.89	4,423.50	121.71	158.84	86.81	881.74	NA	1,068.37	831.47	231.81	64.07	145.92	832.77
1977	4,649.22	450.60	1,644.37	163.79	4,536.64	127.68	159.60	88.70	910.11	NA	1,098.76	851.08	237.22	66.77	143.59	853.13
1978	4,908.08	468.99	1,731.06	178.55	4,675.47	127.13	163.96	90.41	940.60	NA	1,131.70	882.15	243.12	69.01	146.10	881.28
1979	5,063.11	488.70	1,825.99	191.16	4,853.56	133.83	167.46	93.66	971.75	NA	1,179.51	930.95	247.58	72.05	151.71	905.06
1980	5,051.66	495.47	1,877.44	187.16	4,914.99	136.82	174.69	93.66	987.40	NA	1,191.08	963.33	251.75	75.62	154.24	886.42
1981	5,178.88	510.67	1,938.11	199.26	4,918.99	136.74	172.48	92.78	999.43	NA	1,192.26	970.85	250.46	76.34	153.99	873.65
1982	5,078.67	496.07	1,980.26	213.70	4,963.95	139.62	174.94	95.76	1,025.74	NA	1,181.04	976.97	247.24	76.48	155.79	890.36
1983	5,308.17	509.55	2,018.44	236.56	5,059.87	143.66	174.95	97.96	1,041.06	NA	1,201.82	989.05	251.59	79.19	158.72	921.88
1984	5,689.66	539.17	2,081.60	256.08	5,190.12	144.19	179.29	102.07	1,058.20	NA	1,235.64	1,016.34	259.44	83.84	165.54	945.58
1985	5,924.64	564.95	2,191.08	272.65	5,318.76	147.69	181.06	106.22	1,073.54	NA	1,260.72	1,046.57	266.33	88.21	169.15	979.27
1986	6,130.06	578.64	2,244.19	302.55	5,466.32	150.84	183.76	111.25	1,099.38	NA	1,290.29	1,073.00	274.65	91.37	173.79	1,017.98
1987	6,337.06	603.23	2,331.82	335.79	5,611.37	153.30	188.11	111.44	1,127.24	NA	1,309.36	1,105.03	279.74	93.22	179.60	1,064.33
1988	6,598.95	633.24	2,478.98	370.91	5,835.20	158.58	196.98	111.03	1,179.26	NA	1,358.11	1,148.67	288.07	93.12	184.25	1,117.13
1989	6,832.56	649.84	2,604.41	393.47	6,025.18	165.32	204.06	111.89	1,228.48	NA	1,407.33	1,181.65	301.86	93.98	189.20	1,141.40
1990	6,960.87	651.09	2,760.51	428.80	6,201.75	173.12	210.10	114.12	1,260.52	NA	1,487.61	1,204.98	314.12	95.83	191.27	1,150.07
1991	6,949.12	637.47	2,868.11	468.37	6,509.97	178.88	214.22	115.71	1,273.08	1,762.36	1,562.68	1,221.73	321.68	98.82	189.15	1,134.34
1992	7,180.19	643.04	2,890.71	493.84	6,594.60	183.00	217.64	117.87	1,292.07	1,801.81	1,590.25	1,231.02	326.47	102.28	185.85	1,136.57
1993	7,372.11	658.08	2,895.76	520.96	6,579.59	183.76	215.51	118.33	1,280.61	1,782.24	1,557.67	1,220.14	328.60	104.91	182.44	1,163.05
1994	7,668.45	689.70	2,914.93	563.94	6,767.60	188.55	222.47	125.44	1,307.07	1,824.06	1,590.07	1,247.08	338.01	110.40	190.04	1,214.49
1995	7,860.47	709.07	2,963.25	614.24	6,927.60	191.61	227.75	129.77	1,328.90	1,855.59	1,604.35	1,283.54	348.26	115.47	197.74	1,248.98
1996	8,151.33	720.55	3,064.21	657.23	7,033.26	195.44	230.43	133.04	1,343.55	1,869.80	1,621.70	1,297.57	358.85	121.71	200.29	1,282.57
1997	8,517.95	750.99	3,124.74	687.79	7,193.22	198.56	238.39	136.94	1,369.14	1,895.86	1,658.24	1,323.86	372.62	127.89	205.18	1,324.78
1998	8,873.60	781.77	3,097.11	640.65	7,384.57	206.34	243.20	140.15	1,415.71	1,932.95	1,705.22	1,347.61	388.83	131.01	212.66	1,366.11
1999	9,268.40	825.02	3,110.34	701.42	7,575.21	211.83	250.99	143.69	1,461.20	1,972.51	1,740.12	1,370.03	404.37	133.87	222.39	1,404.34
2000	9,607.71	868.18	3,190.97	760.95	7,828.99	219.08	260.64	147.43	1,516.62	2,028.85	NA	1,411.50	418.38	137.08	232.02	1,457.39
2001	9,656.25	883.80	3,188.59	790.14	7,948.39	220.72	262.29	149.33	1,548.40	2,046.06	NA	1,436.40	423.47	139.06	234.16	1,488.49
2002	9,868.04	914.24	3,185.77	845.22	8,013.37	223.73	264.13	150.71	1,566.75	2,049.66	NA	1,441.57	424.50	140.38	239.07	1,512.86
2003	10,176.32	932.73	3,265.41	871.16	8,062.37	225.41	267.06	151.18	1,574.08	2,047.60	NA	1,445.28	421.45	140.97	242.92	1,546.42

Appendix table 6-1  
**Real GDP and real GDP per capita, by region and country/economy: Selected years, 1960–2003**

Year	United States	Canada	Japan	South Korea	Europe	Austria	Belgium	Denmark	France	Germany	Former West Germany	Italy	Netherlands	Norway	Sweden	United Kingdom
Real GDP per capita (U.S. PPP dollars)																
1960	13,545	11,104	4,912	1,632	NA	8,595	8,577	10,498	8,876	NA	10,648	7,764	9,883	8,848	10,795	10,411
1965	16,070	13,275	7,249	1,946	NA	10,198	10,590	12,953	11,005	NA	12,739	9,635	11,704	10,639	13,439	11,809
1966	16,921	13,884	8,006	2,129	NA	10,698	10,851	13,148	11,484	NA	12,977	10,135	11,875	10,954	13,590	11,975
1967	17,159	14,044	8,790	2,203	NA	10,938	11,209	13,563	11,929	NA	12,907	10,770	12,364	11,543	13,940	12,201
1968	17,808	14,569	9,727	2,396	NA	11,368	11,634	14,043	12,345	NA	13,562	11,392	13,058	11,705	14,366	12,658
1969	18,177	15,127	10,761	2,667	NA	12,040	12,372	14,885	13,103	NA	14,437	12,009	13,787	12,133	14,980	12,868
1970	17,999	15,307	11,626	2,838	NA	12,853	13,152	15,099	13,730	NA	15,018	12,552	14,402	12,285	15,801	13,119
1971	18,371	15,638	11,973	3,021	NA	13,450	13,604	15,458	14,252	NA	15,317	12,736	14,858	12,826	15,841	13,316
1972	19,138	16,285	12,800	3,109	NA	14,202	14,269	16,062	14,754	NA	15,868	13,063	15,163	13,371	16,156	13,754
1973	20,048	17,244	13,636	3,432	NA	14,814	15,066	16,647	15,432	NA	16,542	13,824	15,801	13,860	16,767	14,703
1974	19,764	17,709	13,290	3,623	NA	15,372	15,636	16,493	15,808	NA	16,554	14,459	16,313	14,349	17,253	14,500
1975	19,535	17,840	13,534	3,795	NA	15,357	15,361	16,169	15,693	NA	16,406	14,078	16,198	15,103	17,624	14,424
1976	20,378	18,573	13,928	4,153	NA	16,088	16,190	17,113	16,294	NA	17,363	14,923	16,831	15,912	17,746	14,814
1977	21,105	18,992	14,403	4,498	NA	16,870	16,249	17,430	16,743	NA	17,895	15,210	17,121	16,514	17,401	15,183
1978	22,046	19,571	15,028	4,830	NA	16,811	16,680	17,711	17,229	NA	18,454	15,709	17,442	17,003	17,654	15,687
1979	22,492	20,193	15,720	5,093	NA	17,727	17,024	18,301	17,723	NA	19,223	16,530	17,642	17,691	18,292	16,093
1980	22,183	20,210	16,038	4,909	NA	18,123	17,740	18,277	17,916	NA	19,346	17,070	17,794	18,508	18,560	15,736
1981	22,516	20,575	16,438	5,146	NA	18,067	17,506	18,115	18,032	NA	19,329	17,180	17,580	18,622	18,507	15,502
1982	21,870	19,750	16,679	5,434	NA	18,434	17,750	18,710	18,400	NA	19,161	17,278	17,275	18,586	18,713	15,817
1983	22,652	20,087	16,886	5,927	NA	18,997	17,752	19,154	18,577	NA	19,566	17,486	17,510	19,181	19,056	16,370
1984	24,069	21,055	17,303	6,338	NA	19,069	18,193	19,970	18,792	NA	20,198	17,964	17,988	20,250	19,857	16,763
1985	24,841	21,861	18,101	6,682	NA	19,523	18,367	20,774	18,972	NA	20,659	18,493	18,383	21,242	20,256	17,316
1986	25,469	22,169	18,446	7,341	NA	19,927	18,633	21,730	19,334	NA	21,129	18,959	18,854	21,925	20,764	17,959
1987	26,095	22,808	19,076	8,068	NA	20,239	19,059	21,733	19,716	NA	21,438	19,523	19,076	22,265	21,387	18,737
1988	26,928	23,633	20,196	8,825	NA	20,907	19,854	21,646	20,501	NA	22,101	20,284	19,517	22,121	21,840	19,628
1989	27,619	23,819	21,139	9,269	NA	21,697	20,534	21,809	21,230	NA	22,676	20,851	20,332	22,233	22,277	19,998
1990	27,823	23,507	22,332	10,003	NA	22,548	21,079	22,213	21,669	NA	23,518	21,245	21,016	22,593	22,348	20,093
1991	27,409	22,741	23,111	10,818	NA	23,066	21,413	22,467	21,775	22,034	24,389	21,528	21,349	23,187	21,950	19,749
1992	27,947	22,669	23,206	11,288	NA	23,339	21,667	22,815	21,991	22,357	24,516	21,650	21,504	23,862	21,441	19,745
1993	28,324	22,944	23,178	11,788	NA	23,244	21,371	22,822	21,705	21,954	23,768	21,387	21,491	24,330	20,925	20,167
1994	29,107	23,784	23,270	12,633	NA	23,758	21,992	24,118	22,075	22,403	24,144	21,801	21,976	25,458	21,643	21,013
1995	29,485	24,198	23,598	13,622	NA	24,107	22,467	24,811	22,365	22,723	24,251	22,400	22,527	26,489	22,402	21,561
1996	30,222	24,334	24,345	14,437	NA	24,556	22,688	25,281	22,534	22,831	24,407	22,607	23,113	27,779	22,655	22,097
1997	31,206	25,111	24,767	14,967	NA	24,919	23,415	25,911	22,884	23,106	24,881	23,019	23,875	29,032	23,194	22,776
1998	32,133	25,923	24,486	13,841	NA	25,868	23,836	26,427	23,577	23,564	25,573	23,401	24,761	29,563	24,026	23,430
1999	33,181	27,135	24,552	15,047	NA	26,504	24,543	27,006	24,234	24,029	NA	23,766	25,578	30,003	25,107	24,014
2000	34,019	28,290	25,140	16,188	NA	27,345	25,425	27,616	25,029	24,686	NA	24,437	26,277	30,524	26,151	24,852
2001	33,839	28,490	25,050	16,690	NA	27,481	25,499	27,874	25,419	24,849	NA	24,797	26,396	30,809	26,322	25,215
2002	34,235	29,151	24,999	17,742	NA	27,786	25,563	28,036	25,585	24,850	NA	24,831	26,288	30,934	26,787	25,552
2003	34,960	29,489	25,587	18,177	NA	27,902	25,769	28,050	25,578	24,813	NA	24,894	25,938	30,882	27,118	26,039

NA = not available; PPP = purchasing power parity; GDP = gross domestic product

NOTES: Real GDP converted to U.S. dollars using 1999 PPP. Europe includes Austria, Belgium, Denmark, France, Germany, Italy, the Netherlands, Norway, Sweden, and the United Kingdom.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, special tabulations (December 2004).

**World industry production, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>All manufacturing industries</b>												
Total production.....	10,242,264.2	11,543,145.5	13,933,999.4	15,360,229.7	15,846,379.5	16,762,321.6	17,090,343.5	17,767,037.6	18,927,124.5	18,686,294.4	18,960,218.2	19,592,527.0
United States.....	2,266,543.8	2,532,227.2	2,930,602.0	3,482,405.6	3,652,539.4	3,963,208.5	4,226,603.1	4,450,771.9	4,661,545.0	4,468,193.5	4,464,973.4	4,465,452.3
Canada.....	221,166.0	252,991.0	274,842.5	308,875.8	312,251.5	332,622.9	349,239.8	377,611.0	413,151.7	392,823.6	400,462.4	400,828.2
Mexico.....	157,769.0	164,826.0	190,358.9	197,552.0	218,936.4	240,703.6	258,460.2	269,343.8	287,932.4	276,932.3	274,952.0	269,443.6
Brazil.....	414,831.0	403,548.7	401,313.7	445,537.8	450,543.8	466,814.1	451,604.2	444,321.3	471,255.8	477,646.3	480,163.3	479,231.0
Chile.....	15,802.7	13,788.0	23,829.5	34,511.3	34,265.0	35,634.8	34,815.2	32,946.1	34,825.4	36,195.9	37,127.8	39,054.7
Costa Rica.....	3,466.6	4,301.6	5,532.8	7,941.6	7,332.7	7,712.3	9,475.3	10,707.5	10,293.5	9,995.8	10,285.9	10,918.1
Argentina.....	115,107.2	102,718.7	97,887.3	120,544.3	126,425.1	137,865.0	140,828.4	131,605.2	130,285.6	120,400.4	107,699.1	125,109.3
Peru.....	22,270.2	20,416.9	19,293.1	24,810.2	25,176.6	26,515.0	25,662.6	25,523.5	26,643.2	26,333.5	27,458.1	28,120.4
Austria.....	61,038.3	65,495.1	81,427.9	91,747.0	92,259.0	98,946.0	107,884.9	114,411.6	126,200.5	128,311.7	128,248.7	131,179.2
Belgium.....	128,433.5	133,869.7	153,674.2	156,837.5	157,566.3	165,294.2	170,087.3	172,035.3	182,187.9	183,801.0	185,402.9	186,276.7
Denmark.....	42,320.2	52,688.5	56,849.6	64,450.6	65,345.1	68,563.0	70,588.1	71,094.7	74,915.4	76,332.6	77,112.9	76,763.3
France.....	605,961.0	644,368.2	737,004.7	717,674.4	708,779.6	748,771.0	778,957.2	800,318.6	841,010.4	848,224.3	830,504.8	825,882.3
Finland.....	49,882.3	58,040.9	65,754.0	75,580.3	77,696.6	84,642.1	93,349.7	99,017.9	111,883.5	111,324.1	113,598.9	113,580.2
Germany.....	967,428.6	1,006,889.5	1,190,751.3	1,186,517.5	1,183,874.4	1,224,784.8	1,283,852.1	1,304,537.2	1,379,233.2	1,383,022.6	1,366,437.4	1,369,547.2
Greece.....	36,103.6	34,853.0	37,072.4	36,213.9	36,071.6	36,912.4	39,905.5	39,555.0	41,678.1	41,621.9	41,570.0	41,403.1
Ireland.....	13,929.2	18,269.5	27,283.9	44,621.6	48,325.2	57,665.7	69,964.4	80,500.6	93,164.3	102,885.2	110,533.1	115,774.0
Italy.....	586,159.0	575,767.6	676,192.0	719,658.3	711,400.4	735,150.0	747,825.0	745,456.4	768,245.8	763,636.7	746,352.6	733,933.7
Netherlands.....	169,364.3	162,047.1	184,674.0	191,401.6	192,560.7	197,360.2	203,282.6	208,172.7	217,355.2	216,673.9	214,946.6	208,910.2
Portugal.....	36,947.7	42,480.5	57,477.0	58,568.0	61,864.6	64,005.2	66,024.4	65,556.1	64,911.5	66,442.4	66,669.5	66,263.8
Spain.....	249,857.1	252,770.7	297,807.6	310,918.8	308,749.1	331,283.0	351,926.2	359,923.1	371,918.5	364,665.5	365,967.3	371,515.6
Sweden.....	95,229.8	105,697.9	125,701.0	139,635.6	140,672.4	148,317.0	153,860.4	156,321.1	166,689.0	165,914.9	167,132.5	170,810.8
United Kingdom.....	527,540.9	540,561.7	640,259.7	655,068.0	660,118.9	672,000.0	676,534.3	681,413.1	698,058.1	688,817.2	667,580.5	670,565.1
European Union-15.....	3,570,195.4	3,693,799.9	4,331,929.3	4,448,892.9	4,445,283.8	4,633,694.7	4,814,042.2	4,898,313.5	5,137,451.4	5,141,674.1	5,082,057.8	5,082,405.2
Czech Republic.....	47,402.3	55,070.8	45,570.3	48,395.9	50,023.3	52,788.3	53,885.3	52,246.9	51,883.1	58,646.9	61,699.3	65,217.3
Hungary.....	33,389.4	36,659.2	32,045.8	27,373.8	28,286.2	32,400.6	37,544.3	41,981.3	51,208.8	53,312.3	55,364.8	58,954.4
Poland.....	91,091.5	82,107.7	67,613.4	81,994.9	90,719.9	94,403.3	100,569.2	106,209.8	114,609.0	114,521.1	116,594.0	128,830.3
Slovakia.....	14,995.7	17,517.9	18,178.7	16,368.7	16,463.2	17,173.3	18,406.6	17,804.9	19,462.4	21,570.9	23,457.1	25,280.1
Expanded European Union countries.....	186,878.9	191,355.6	163,408.2	174,133.3	185,492.6	196,765.4	210,405.4	218,242.9	237,163.4	248,051.3	257,115.1	278,282.1
Japan.....	1,800,308.3	2,135,213.2	2,664,571.8	2,549,233.0	2,606,791.3	2,701,684.7	2,516,120.3	2,521,898.3	2,666,571.9	2,484,563.2	2,454,339.5	2,532,787.7
China.....	174,234.5	288,257.2	438,771.7	959,256.1	1,085,585.1	1,205,980.1	1,318,218.3	1,456,364.0	1,654,461.2	1,817,051.0	2,048,239.6	2,389,190.2
South Korea.....	90,965.1	151,594.5	284,088.4	427,261.0	462,104.7	483,957.6	450,490.1	562,507.2	661,753.7	661,698.6	716,798.9	752,523.3
Taiwan.....	105,091.7	142,785.5	194,904.8	247,730.1	254,323.5	272,722.1	281,398.2	303,338.8	327,767.6	300,387.5	328,601.2	352,829.8
Singapore.....	19,219.8	20,766.7	37,762.8	56,025.4	57,847.0	60,453.4	60,253.3	68,294.9	78,757.5	69,610.0	75,472.9	77,746.9
Hong Kong.....	26,626.8	25,299.1	35,657.4	36,274.8	34,926.7	34,639.4	30,886.5	28,378.2	28,222.9	26,974.1	23,856.3	21,658.1
India.....	83,845.4	117,053.3	172,788.1	224,453.7	248,297.9	262,801.0	274,606.1	292,524.4	311,362.7	320,438.8	336,719.6	360,641.8
Malaysia.....	13,221.8	18,268.5	33,107.6	62,296.7	69,923.6	78,606.7	70,548.6	79,666.8	98,220.6	91,744.6	95,882.4	105,898.8
Thailand.....	33,229.5	40,534.6	74,464.9	112,546.5	121,328.0	119,972.6	107,978.1	121,445.1	125,378.0	127,046.2	137,838.5	154,800.3
Philippines.....	35,034.6	29,946.5	38,289.0	42,316.4	44,677.5	46,563.4	46,038.6	49,806.7	57,453.7	62,278.0	61,189.4	66,143.3
Indonesia.....	19,250.5	49,168.7	90,238.8	152,588.0	153,493.8	161,806.7	128,438.3	130,897.3	135,592.0	134,126.0	122,599.1	127,439.1
South Africa.....	82,585.7	82,032.8	79,314.8	85,128.8	87,916.9	90,416.1	87,700.2	87,421.0	90,553.4	93,119.7	97,323.9	95,384.1

**World industry production, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>High technology industries</b>												
Total production.....	831,516.4	1,091,922.9	1,478,901.7	1,723,297.7	1,889,615.6	2,141,130.5	2,308,467.9	2,663,934.5	3,128,829.8	3,100,920.5	3,206,425.5	3,471,644.0
United States.....	232,226.8	284,177.4	364,424.9	424,950.4	498,905.0	619,519.4	771,618.3	956,202.2	1,182,069.7	1,199,482.0	1,266,610.7	1,351,048.7
Canada.....	10,527.6	13,042.8	20,058.9	26,885.5	26,835.3	30,576.9	33,179.3	41,405.8	52,256.4	39,684.4	36,382.1	36,572.1
Mexico.....	16,117.2	14,697.6	19,870.4	21,761.2	24,574.8	33,182.6	45,409.1	52,672.9	56,593.6	53,005.4	47,468.8	45,263.0
Brazil.....	66,496.5	45,579.1	51,655.2	47,228.5	50,176.5	54,171.5	47,510.2	42,974.5	42,296.7	43,738.8	43,183.9	41,746.4
Chile.....	186.0	216.8	480.7	752.0	672.1	783.0	1,015.1	746.0	757.7	718.1	746.0	746.0
Costa Rica.....	246.0	220.2	296.3	319.4	266.4	160.8	180.7	157.4	168.2	159.4	159.1	168.0
Argentina.....	5,941.0	4,873.6	4,568.8	4,747.1	5,265.6	5,497.5	5,517.0	5,065.2	5,342.0	5,006.1	5,223.2	6,123.0
Peru.....	857.8	556.3	431.4	550.3	574.6	636.0	548.7	532.6	545.5	542.3	553.5	587.9
Austria.....	3,185.5	4,357.2	6,298.6	8,263.6	8,386.1	8,856.5	9,959.0	11,008.4	12,804.4	11,810.3	11,511.0	11,075.9
Belgium.....	7,390.9	9,925.7	10,716.6	11,150.9	10,766.7	11,828.3	12,649.4	13,666.9	16,218.3	16,262.2	15,875.8	19,808.6
Denmark.....	2,110.9	3,201.3	3,863.5	5,244.8	6,143.0	6,509.7	7,240.7	8,345.9	9,645.7	10,349.2	10,544.1	10,281.6
France.....	72,558.3	86,801.5	91,231.9	96,370.1	95,495.7	107,727.8	113,272.6	123,664.7	128,975.7	130,615.3	133,284.1	136,665.7
Finland.....	1,442.3	2,527.6	3,926.1	8,642.1	9,716.8	11,521.6	16,289.6	20,234.6	26,517.5	25,486.8	28,022.4	27,506.7
Germany.....	63,683.5	78,716.1	93,682.9	100,128.2	102,219.8	105,191.4	113,562.8	119,987.5	140,204.5	142,909.4	139,601.5	146,494.0
Greece.....	799.0	859.6	937.5	972.6	1,029.3	1,186.1	1,629.1	1,605.9	2,038.9	2,406.9	2,385.2	2,433.5
Ireland.....	1,237.3	2,351.2	4,346.0	10,416.5	11,954.7	14,655.6	17,079.3	20,836.3	30,957.1	36,023.3	34,514.1	34,516.6
Italy.....	36,424.2	50,106.2	52,576.2	52,940.9	55,067.6	54,941.9	54,584.7	53,669.3	54,817.9	52,444.1	49,904.9	47,136.8
Netherlands.....	10,085.4	10,683.9	15,623.7	17,996.4	17,770.0	19,272.1	20,005.1	21,021.6	23,696.6	23,752.9	18,777.2	18,574.9
Portugal.....	2,397.8	2,683.3	3,229.0	3,744.0	3,735.8	3,684.2	3,988.8	4,076.8	4,460.8	4,704.3	4,542.6	5,617.8
Spain.....	21,898.3	17,803.1	19,868.1	19,637.4	19,294.9	19,778.2	20,857.8	20,827.7	22,306.6	20,703.0	19,288.2	19,410.9
Sweden.....	6,266.6	9,173.3	13,042.3	20,813.2	22,862.3	24,394.3	26,962.8	29,544.4	32,951.0	33,196.0	31,537.6	30,222.4
United Kingdom.....	44,595.7	53,853.8	75,761.9	93,221.1	98,175.6	103,975.4	111,083.9	116,055.9	126,648.7	128,034.3	113,137.1	116,200.2
European Union-15.....	274,075.6	333,044.0	395,104.4	449,541.9	462,618.5	493,522.9	529,165.4	564,545.7	632,243.7	638,698.0	612,925.9	625,945.6
Czech Republic.....	943.9	1,107.0	997.2	1,922.4	2,057.6	2,386.0	3,620.7	4,390.3	3,625.5	5,682.6	7,959.1	8,240.0
Hungary.....	2,327.7	3,055.3	2,650.7	1,803.4	2,652.6	4,622.6	1,670.4	1,822.0	2,431.7	2,411.6	2,512.6	2,730.6
Poland.....	3,176.9	3,219.1	3,047.7	3,069.8	3,582.3	3,797.3	4,182.1	4,433.7	4,833.4	5,054.2	5,328.0	5,804.2
Slovakia.....	513.0	570.8	582.9	599.6	675.3	871.6	891.5	854.4	983.6	1,167.1	1,355.4	1,541.8
<b>Expanded European</b>												
Union countries.....	6,961.4	7,952.2	7,278.5	7,395.2	8,967.8	11,677.5	10,364.7	11,500.3	11,874.3	14,315.5	17,155.2	18,316.6
Japan.....	122,900.7	251,672.8	374,449.2	375,219.0	405,181.1	435,736.3	402,642.1	408,919.4	435,083.9	392,104.0	350,982.9	376,250.1
China.....	7,301.0	16,670.2	27,757.1	65,206.5	92,368.0	109,614.4	127,407.1	170,141.2	213,530.0	246,789.5	323,557.6	423,825.9
South Korea.....	6,165.8	12,622.9	37,406.0	70,656.1	80,502.8	86,175.9	78,737.5	110,665.9	148,748.1	147,695.5	166,477.1	175,393.3
Taiwan.....	9,397.3	17,324.7	33,807.9	54,014.0	56,756.9	65,317.5	71,656.4	86,744.2	98,342.6	88,826.4	104,130.2	122,806.6
Singapore.....	5,319.4	8,848.5	24,113.1	40,601.9	43,040.6	47,089.0	46,284.1	58,135.2	67,062.0	54,755.4	53,840.6	57,014.4
Hong Kong.....	4,281.2	4,284.1	7,158.2	7,818.5	7,527.8	7,013.2	6,697.7	6,503.1	5,791.0	5,276.5	4,171.6	3,274.1
India.....	1,675.9	2,334.0	6,452.1	10,814.0	11,235.4	13,097.4	12,637.7	15,562.5	15,178.4	15,795.6	16,573.9	17,592.2
Malaysia.....	1,795.6	2,521.7	9,357.2	32,306.0	32,550.9	36,033.7	32,401.9	41,887.9	57,291.9	48,527.2	52,520.4	59,552.4
Thailand.....	444.1	903.6	3,865.2	4,794.0	5,588.7	5,599.4	4,622.2	5,328.3	6,449.1	5,345.3	6,175.2	6,991.0
Philippines.....	1,113.0	1,139.5	1,782.4	3,319.0	2,863.2	5,939.2	4,866.6	5,683.8	8,461.1	9,320.2	9,969.4	11,129.6
Indonesia.....	398.1	1,201.8	3,501.5	6,029.9	5,826.5	6,944.8	4,686.7	4,915.5	6,205.4	6,514.6	5,858.3	6,059.6
South Africa.....	2,848.7	2,468.3	2,921.7	2,956.5	2,965.9	2,943.8	2,776.3	2,649.7	2,658.9	2,500.4	2,525.2	2,468.2

**World industry production, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Aircraft</b>												
Total production .....	196,719.3	202,305.7	261,346.3	201,089.1	214,314.9	246,760.6	273,912.7	273,552.4	252,248.3	280,410.1	273,896.0	273,746.7
United States.....	91,647.6	100,328.0	135,230.3	88,924.2	95,352.8	110,244.4	132,950.9	122,207.4	99,624.8	110,976.3	96,044.2	89,905.4
Canada.....	3,990.4	3,241.6	5,938.0	5,202.9	5,929.2	6,980.4	6,558.2	6,950.3	8,405.8	8,256.2	7,453.9	6,997.3
Mexico.....	29.5	54.6	89.6	295.1	243.7	172.1	179.4	257.0	227.7	288.2	323.7	411.1
Brazil.....	31,521.0	18,011.0	23,998.7	19,588.3	21,032.5	23,648.6	19,444.3	18,504.9	16,173.1	17,635.7	18,488.0	18,028.7
Chile.....	38.4	21.7	39.7	40.1	29.0	34.4	154.7	99.5	129.0	104.0	109.6	109.9
Costa Rica.....	72.5	47.8	102.3	118.7	121.8	18.5	20.6	24.3	26.5	18.2	18.1	18.6
Argentina.....	126.8	114.1	100.4	55.8	69.4	51.6	56.9	34.2	19.3	16.2	10.6	10.5
Peru.....	0.3	0.2	0.2	0.8	0.6	0.6	0.6	0.2	0.4	0.3	0.3	0.3
Austria.....	142.2	67.5	67.5	47.2	50.7	56.9	58.2	63.7	58.6	61.6	70.7	85.1
Belgium.....	837.8	974.1	1,206.1	636.3	600.1	758.9	889.6	1,146.5	1,253.7	1,319.6	1,061.5	962.3
Denmark.....	5.5	3.6	10.9	20.0	31.9	42.0	33.3	35.1	44.5	42.5	37.2	37.6
France.....	26,978.4	28,626.9	23,659.2	20,843.2	20,198.6	26,447.0	28,096.7	30,681.0	25,571.8	28,419.2	34,369.3	34,343.3
Finland.....	48.3	110.0	153.7	177.4	204.6	225.8	235.5	225.2	224.5	206.7	197.5	202.8
Germany.....	12,001.0	13,670.1	17,165.8	14,273.5	13,322.2	13,120.3	13,730.4	15,084.4	16,098.7	17,770.9	19,103.6	20,833.0
Greece.....	74.5	97.0	123.0	142.7	196.6	230.5	180.9	183.4	174.8	197.2	221.5	215.3
Ireland.....	76.5	99.4	137.0	152.2	211.1	226.1	280.8	296.7	457.5	490.7	396.8	444.2
Italy.....	4,303.8	5,621.2	7,294.3	4,285.8	4,573.2	5,331.5	5,420.6	5,379.2	5,574.8	6,471.2	5,802.3	5,584.2
Netherlands.....	1,027.2	1,088.7	1,613.3	1,194.0	1,192.7	1,713.7	1,703.1	1,654.2	1,764.5	1,733.1	1,708.5	1,684.1
Portugal.....	14.1	9.5	4.7	52.7	41.4	53.0	53.0	40.8	49.4	44.6	40.8	39.4
Spain.....	1,469.7	1,681.7	1,589.0	1,271.5	1,202.5	1,375.3	1,604.7	1,846.8	2,249.0	2,532.0	2,320.9	2,489.8
Sweden.....	1,105.2	1,715.6	1,864.6	1,597.7	1,525.0	1,686.7	1,737.5	1,364.1	1,298.8	1,314.9	1,187.1	1,062.3
United Kingdom.....	10,264.6	10,719.7	19,443.1	15,243.6	16,995.7	19,621.3	22,419.7	23,940.1	24,645.9	24,244.7	18,944.1	21,263.9
European Union-15.....	58,348.9	64,485.3	74,332.3	59,937.9	60,346.2	70,889.0	76,444.0	81,941.1	79,466.4	84,848.9	85,462.0	89,247.4
Czech Republic.....	142.2	179.6	139.2	181.2	142.8	159.4	231.5	184.4	198.7	212.1	211.1	253.7
Hungary.....	82.6	96.1	58.6	11.5	10.6	12.9	185.1	263.2	267.7	234.0	233.1	225.6
Poland.....	576.8	499.7	422.3	437.6	385.9	284.2	264.4	273.3	321.7	333.9	243.5	199.0
Slovakia.....	4.2	4.9	5.1	10.1	11.3	10.2	11.1	20.9	87.4	92.1	31.7	109.1
<b>Expanded European</b>												
Union countries.....	805.8	780.3	625.2	640.4	550.6	466.7	692.1	741.8	875.4	872.0	719.3	787.4
Japan.....	1,897.5	3,306.7	4,552.7	6,061.0	6,236.6	7,048.8	7,466.2	9,347.6	9,271.4	11,254.6	13,987.0	13,908.7
China.....	827.1	1,757.4	2,720.1	9,235.0	13,410.4	15,288.6	18,251.5	20,881.4	25,491.0	30,784.2	35,723.3	39,206.3
South Korea.....	34.5	117.6	522.5	567.3	759.7	1,136.4	2,066.4	1,959.3	2,647.4	3,085.3	2,630.5	2,192.1
Taiwan.....	354.8	384.3	390.8	494.8	527.9	859.4	764.4	849.6	952.3	1,474.0	1,840.3	2,006.5
Singapore.....	161.5	538.2	653.4	955.9	909.4	1,005.7	1,135.5	1,320.9	1,323.6	1,491.3	1,624.6	1,561.6
Hong Kong.....	158.5	237.4	317.4	283.8	341.8	371.3	349.6	493.6	571.2	639.5	722.7	559.6
India.....	68.9	118.8	151.3	266.4	209.4	288.5	296.3	314.7	298.3	277.9	299.5	321.9
Malaysia.....	3.7	4.5	9.7	8.8	7.7	14.7	3.1	12.7	16.0	18.5	17.9	18.9
Thailand.....	16.3	25.5	84.4	61.2	74.8	54.3	45.4	67.5	96.2	95.7	109.6	98.9
Philippines.....	158.1	12.7	9.0	11.7	9.2	13.7	7.3	9.4	12.9	13.7	14.7	16.9
Indonesia.....	62.0	86.6	76.1	93.4	156.6	64.3	35.1	32.0	52.9	58.2	54.0	50.3
South Africa.....	794.5	546.6	589.6	543.6	600.6	533.5	489.5	493.3	583.4	594.1	543.7	536.4

**World industry production, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Pharmaceuticals</b>												
Total production .....	160,258.7	194,791.6	267,300.4	322,967.1	337,735.3	354,851.6	369,486.8	391,446.4	415,973.7	443,204.3	466,758.2	489,500.4
United States.....	37,122.2	45,505.8	64,426.5	79,032.2	85,390.4	91,217.6	100,932.2	105,113.9	109,603.0	119,855.1	124,284.1	120,641.5
Canada.....	1,906.1	2,553.8	3,438.7	4,004.3	3,904.5	4,039.4	3,878.5	4,498.1	5,513.2	7,033.8	8,297.7	8,620.1
Mexico.....	2,574.5	2,188.2	2,940.7	3,671.9	3,849.5	4,393.3	5,008.3	5,338.7	5,793.7	6,042.2	6,309.1	6,420.5
Brazil.....	13,819.2	11,898.0	12,360.4	11,037.6	11,229.5	12,128.5	12,608.0	11,473.5	10,748.3	10,834.1	11,068.2	10,227.1
Chile.....	114.9	162.5	384.1	610.1	533.6	633.4	740.5	587.9	567.5	566.1	591.3	597.2
Costa Rica.....	65.2	117.3	93.7	114.2	79.3	83.7	87.1	90.5	103.1	102.8	101.2	104.8
Argentina.....	3,879.6	3,189.2	3,233.7	3,431.3	3,698.8	3,735.0	3,759.3	3,598.3	3,812.4	3,827.8	3,025.3	3,496.5
Peru.....	652.1	427.8	353.0	472.3	501.9	556.5	469.6	465.1	471.7	471.1	487.5	520.3
Austria.....	535.4	749.4	1,199.8	1,878.2	1,898.6	1,925.1	2,409.7	2,468.4	2,983.4	2,483.8	2,605.9	2,715.5
Belgium.....	1,931.3	3,848.9	4,806.1	5,950.8	5,633.2	6,173.0	6,136.8	7,057.6	7,883.9	8,384.1	9,233.3	13,058.6
Denmark.....	571.9	1,197.2	1,484.8	2,091.7	2,487.4	2,759.7	3,213.5	3,866.9	4,540.9	5,058.4	5,332.8	5,085.0
France.....	12,243.0	17,491.8	21,613.4	24,407.1	25,020.6	26,443.2	29,050.7	31,904.2	34,393.6	34,981.7	34,864.0	37,384.0
Finland.....	421.1	562.3	630.4	529.8	505.3	559.8	564.7	478.5	490.0	475.6	422.5	433.4
Germany.....	12,640.9	14,205.3	16,863.3	22,239.5	23,609.3	22,439.9	22,771.4	23,124.9	23,341.4	24,818.8	26,630.6	27,772.0
Greece.....	251.6	301.1	444.5	438.7	493.3	561.0	710.5	777.4	1,005.7	1,327.9	1,529.6	1,648.9
Ireland.....	208.9	421.5	730.1	2,597.7	3,056.5	4,174.1	5,367.1	6,286.3	8,093.6	10,642.0	12,853.6	12,279.8
Italy.....	7,727.3	11,082.1	14,662.3	15,797.4	16,563.9	16,997.6	17,585.1	18,494.0	17,825.4	17,075.4	18,174.1	18,031.3
Netherlands.....	2,212.0	2,667.6	3,343.4	5,001.9	4,927.1	5,507.9	5,670.2	6,200.8	6,790.8	7,371.7	8,115.7	8,456.0
Portugal.....	1,068.3	776.3	1,359.6	1,127.7	1,135.9	1,180.4	1,249.8	1,221.1	1,253.3	1,132.3	1,127.8	1,152.4
Spain.....	4,688.0	4,365.9	5,289.9	7,142.8	6,939.5	7,351.5	7,658.8	8,491.7	8,718.6	8,908.8	9,929.6	10,508.2
Sweden.....	930.8	1,231.2	1,743.2	3,564.3	3,854.6	4,093.7	4,375.1	4,754.7	5,079.7	5,762.3	6,449.3	7,389.3
United Kingdom.....	3,775.2	4,765.6	8,394.7	16,902.2	16,789.3	17,795.1	18,427.1	15,250.8	16,125.3	19,445.6	21,279.6	22,253.7
European Union-15.....	49,205.7	63,666.3	82,565.6	109,669.6	112,914.4	117,962.0	125,190.5	130,377.2	138,525.6	147,868.5	158,548.5	168,168.1
Czech Republic.....	410.6	425.0	318.5	325.9	313.4	334.9	283.6	252.7	273.4	279.9	267.7	286.2
Hungary.....	898.9	1,260.2	1,166.0	771.8	769.9	804.8	835.4	755.2	1,137.1	1,026.7	1,107.2	1,102.2
Poland.....	762.3	759.5	552.8	577.2	606.6	594.3	535.7	522.7	560.3	591.3	658.7	674.1
Slovakia.....	145.1	146.1	141.1	168.2	189.3	240.9	234.8	246.6	247.4	255.0	266.6	255.3
<b>Expanded European</b>												
Union countries.....	2,216.8	2,590.7	2,178.4	1,843.2	1,879.2	1,974.9	1,889.5	1,777.2	2,218.2	2,152.9	2,300.2	2,317.7
Japan.....	24,290.0	30,605.7	47,453.9	55,718.9	55,988.3	57,290.4	54,151.8	59,276.4	61,985.1	62,386.1	62,584.2	62,772.6
China.....	2,777.6	4,045.5	6,737.6	12,035.4	14,632.9	15,226.4	16,512.4	19,272.0	23,929.6	26,758.9	29,503.4	40,077.5
South Korea.....	1,572.3	2,929.5	6,768.3	9,717.7	11,438.8	11,836.2	10,401.4	12,862.7	14,817.1	16,209.9	17,856.8	20,402.9
Taiwan.....	370.9	557.9	1,158.6	1,568.3	1,643.6	1,763.0	1,828.2	1,929.7	2,188.3	1,922.0	1,899.0	2,154.6
Singapore.....	331.0	744.9	1,873.2	1,443.2	1,478.3	1,456.1	2,764.5	4,457.2	4,188.9	4,567.3	6,108.4	6,927.5
Hong Kong.....	140.9	73.2	107.9	226.3	264.0	214.0	193.0	206.6	212.7	222.5	171.2	177.9
India.....	1,217.5	1,445.3	2,862.2	5,506.5	5,771.2	6,012.5	5,785.5	6,286.9	5,786.8	5,940.9	6,244.9	6,487.8
Malaysia.....	15.4	64.8	96.6	152.3	166.3	177.7	160.0	199.0	231.6	208.6	209.9	240.0
Thailand.....	275.5	430.5	559.4	800.8	942.0	1,091.1	948.2	1,069.1	1,207.7	1,268.6	1,375.1	1,542.7
Philippines.....	483.0	524.9	653.5	907.9	716.3	1,275.9	938.3	1,114.8	1,383.8	1,538.1	1,388.5	1,467.5
Indonesia.....	72.1	454.5	829.0	1,432.8	1,556.2	1,330.5	884.1	910.7	1,126.8	1,145.7	1,298.9	1,460.1
South Africa.....	1,137.8	887.2	1,278.5	1,319.9	1,384.0	1,300.4	1,156.6	1,035.2	960.6	992.4	1,035.4	927.3

**World industry production, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Office and computing machinery</b>												
Total production .....	69,231.2	126,031.1	195,097.1	274,433.4	324,020.7	388,086.8	430,798.9	515,199.6	601,085.9	575,787.2	564,794.5	647,814.0
United States .....	2,487.4	9,297.2	18,852.1	54,494.8	77,428.4	110,867.1	148,982.9	187,796.4	214,370.9	204,321.9	187,325.0	211,782.0
Canada .....	41.3	227.6	770.3	3,276.9	3,147.3	3,712.3	5,188.0	5,766.4	7,897.5	6,700.6	5,683.2	5,516.1
Mexico .....	317.1	425.0	994.5	3,337.9	4,632.7	5,945.8	6,573.8	6,943.2	8,440.0	8,303.5	7,482.8	7,042.2
Brazil .....	2,034.5	1,300.1	2,062.8	2,848.2	3,038.9	3,643.1	3,883.2	3,698.8	4,430.5	4,642.2	4,472.0	4,436.4
Chile .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Costa Rica .....	0.1	0.1	0.2	0.7	0.7	1.3	1.6	1.8	2.2	2.3	2.6	3.4
Argentina .....	121.3	161.3	154.2	178.4	213.0	249.6	249.3	177.8	225.7	190.9	162.5	194.3
Peru .....	6.9	7.5	12.8	17.0	12.3	17.6	22.7	17.2	21.0	23.2	19.7	20.2
Austria .....	106.6	100.9	118.6	75.6	79.9	89.7	106.6	226.3	355.6	550.1	526.1	547.8
Belgium .....	131.2	141.1	164.4	239.4	299.5	324.2	324.4	346.4	588.0	495.7	358.9	259.3
Denmark .....	130.2	172.5	202.1	282.1	346.4	219.1	168.7	263.3	409.9	524.3	413.5	582.3
France .....	1,957.7	2,313.4	2,415.3	9,111.8	9,966.8	10,077.7	10,468.4	11,329.8	12,569.6	11,713.5	9,940.1	10,527.7
Finland .....	141.9	340.8	508.3	903.6	971.7	1,173.9	1,264.8	1,633.1	396.3	228.0	173.3	161.8
Germany .....	6,378.2	11,324.7	12,810.4	11,785.3	12,534.2	14,566.4	17,491.3	18,599.0	23,179.3	21,769.7	19,582.0	18,855.5
Greece .....	57.7	66.9	47.5	4.9	2.6	12.3	5.2	7.1	13.6	18.4	53.4	2.5
Ireland .....	394.6	521.9	977.9	2,096.7	2,253.7	2,518.2	2,711.9	3,269.0	4,849.2	4,625.6	3,653.3	4,451.0
Italy .....	6,105.5	9,954.4	4,229.6	5,236.1	5,257.9	4,338.8	4,498.1	3,343.0	3,557.8	3,413.1	2,299.6	1,634.8
Netherlands .....	1,812.4	2,428.2	1,678.5	2,168.3	2,096.3	1,958.7	2,312.4	2,143.9	2,349.0	2,290.5	1,729.7	1,515.7
Portugal .....	74.4	175.4	38.1	67.0	41.8	41.7	23.6	79.5	78.3	67.7	66.7	70.1
Spain .....	11,363.7	7,724.5	5,939.8	2,936.1	3,120.6	2,868.0	3,162.3	2,989.1	2,720.2	1,914.2	1,111.9	726.9
Sweden .....	666.8	1,017.3	1,059.5	588.1	596.6	597.1	590.9	547.0	526.3	440.0	349.5	366.1
United Kingdom .....	2,162.2	5,126.3	9,257.7	18,601.2	19,669.1	22,642.6	25,775.2	29,314.0	32,000.5	34,787.0	29,576.3	28,680.1
European Union-15 .....	31,483.1	41,408.5	39,447.8	54,096.2	57,237.1	61,428.4	68,903.7	74,090.3	83,593.6	82,837.6	69,834.4	68,381.5
Czech Republic .....	32.4	41.8	30.6	227.4	187.6	117.0	84.8	160.0	245.7	1,047.8	2,436.2	2,484.9
Hungary .....	42.5	50.6	47.6	86.2	614.1	1,802.9	49.4	103.1	133.3	94.8	56.7	62.8
Poland .....	136.5	112.9	117.6	138.2	258.5	281.1	326.8	408.7	427.0	437.6	501.5	819.2
Slovakia .....	53.2	63.0	66.5	61.0	59.5	43.9	50.4	65.5	75.9	93.5	128.4	161.8
<b>Expanded European Union countries .....</b>												
Union countries .....	264.5	268.4	262.4	512.8	1,119.7	2,244.8	511.4	737.3	881.8	1,673.7	3,122.8	3,528.7
Japan .....	24,562.3	58,537.7	97,306.9	87,361.4	95,277.4	102,111.3	88,669.7	86,989.3	88,254.4	72,550.1	57,288.8	55,241.0
China .....	793.5	817.8	1,375.5	6,059.5	13,817.5	19,809.4	31,050.6	53,344.7	73,807.8	85,371.0	114,450.9	170,531.8
South Korea .....	297.2	806.6	3,496.3	8,913.4	10,925.9	12,338.8	11,807.9	20,653.2	31,504.4	31,363.4	35,799.4	35,672.0
Taiwan .....	1,799.3	4,078.0	8,410.5	18,164.7	20,882.3	25,212.5	26,888.5	31,969.7	38,207.3	34,693.9	38,832.2	45,892.8
Singapore .....	2,011.4	4,518.6	14,815.5	23,095.4	24,522.5	27,397.7	25,246.8	28,572.6	34,172.4	27,612.1	26,056.1	25,726.0
Hong Kong .....	293.3	423.3	1,289.5	2,236.8	2,276.8	2,352.6	2,485.0	2,255.4	1,593.5	1,300.1	1,009.1	781.9
India .....	21.5	41.4	418.4	791.3	759.5	1,276.6	1,244.9	2,000.1	2,212.7	2,431.9	2,756.4	2,963.4
Malaysia .....	26.7	45.1	320.8	3,676.3	3,304.2	3,424.6	2,773.0	3,149.5	3,601.8	3,328.8	2,721.8	2,395.6
Thailand .....	6.4	12.9	39.1	8.3	9.7	11.0	10.1	11.5	17.3	20.4	27.6	31.5
Philippines .....	4.9	12.3	12.0	308.0	276.3	550.9	434.4	459.2	692.4	897.3	707.2	813.0
Indonesia .....	5.2	9.7	29.7	70.5	59.0	29.2	14.9	14.4	13.0	17.3	42.6	43.0
South Africa .....	18.5	17.3	17.5	13.0	13.7	19.8	21.0	22.7	23.2	27.9	29.7	26.9

**World industry production, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Communication equipment</b>												
Total production .....	197,550.5	315,402.6	459,427.7	620,621.9	699,371.2	822,879.4	894,823.3	1,138,085.4	1,493,039.2	1,435,250.5	1,545,315.2	1,687,592.6
United States .....	22,365.9	26,096.4	28,269.7	70,582.9	100,440.2	161,122.4	236,737.6	385,853.7	603,863.7	613,744.8	717,112.1	776,782.0
Canada .....	2,999.1	5,360.2	8,081.4	12,271.8	11,654.7	13,533.9	15,060.2	21,644.5	27,047.9	14,264.0	11,545.8	11,763.9
Mexico .....	11,179.1	10,103.2	13,454.9	11,625.7	12,776.2	19,267.1	29,776.4	35,855.0	37,100.2	32,997.2	27,825.4	26,186.9
Brazil .....	9,354.3	7,165.5	7,674.9	10,333.5	11,290.7	11,055.4	8,151.9	6,166.7	7,703.8	7,411.6	6,169.7	6,200.9
Chile .....	19.5	17.4	22.0	45.5	50.8	46.6	45.0	21.3	22.1	14.8	13.0	13.6
Costa Rica .....	84.2	44.0	82.0	39.6	38.6	50.2	65.9	35.4	29.2	30.1	31.2	34.7
Argentina .....	949.7	793.3	543.4	730.7	955.0	1,048.4	1,073.3	896.0	922.3	702.0	1,736.1	2,076.5
Peru .....	179.4	104.8	50.8	27.3	27.7	29.4	27.4	25.3	27.4	24.5	22.1	22.7
Austria .....	1,980.8	2,695.4	3,839.7	5,046.1	5,114.8	5,384.2	5,833.0	6,336.7	7,338.9	6,563.0	6,016.7	5,327.9
Belgium .....	3,360.3	3,625.3	3,582.5	3,109.8	3,132.5	3,395.7	3,938.3	3,832.3	5,158.3	4,672.1	3,725.9	3,865.3
Denmark .....	796.5	874.2	1,090.3	1,398.5	1,746.8	1,757.2	1,914.6	2,212.2	2,325.4	2,324.3	2,556.9	2,393.1
France .....	14,485.4	18,147.2	21,328.1	21,519.4	21,179.2	24,501.6	24,644.5	28,481.6	34,156.8	32,380.2	30,366.6	30,070.2
Finland .....	483.3	863.6	1,682.7	5,901.4	6,786.7	8,120.1	12,689.3	16,338.7	23,728.2	22,689.1	25,320.8	25,017.0
Germany .....	11,484.5	14,873.9	17,630.5	22,501.8	22,890.4	24,473.3	26,749.4	29,452.9	39,178.9	39,350.9	35,790.2	39,239.8
Greece .....	231.5	254.9	215.1	279.1	220.6	255.7	624.7	529.7	729.6	705.5	453.0	395.0
Ireland .....	284.3	797.0	1,757.7	4,265.7	4,790.1	5,698.7	6,432.1	8,066.1	12,757.3	13,517.8	11,343.9	9,763.6
Italy .....	8,998.5	14,488.8	17,314.9	17,192.8	18,132.2	17,641.3	16,526.7	15,912.9	16,019.4	14,073.1	11,450.5	10,896.7
Netherlands .....	3,299.4	3,672.6	8,197.0	8,889.4	8,793.8	9,234.5	9,454.9	10,061.7	11,588.7	10,587.4	5,491.5	5,202.6
Portugal .....	912.6	1,365.9	1,475.2	2,059.5	2,125.5	2,074.1	2,304.6	2,363.8	2,760.5	3,133.5	3,025.1	4,086.4
Spain .....	2,777.0	2,533.8	4,283.5	5,491.9	5,300.2	5,241.9	5,369.0	4,473.0	5,362.1	4,381.6	3,533.3	3,129.2
Sweden .....	2,261.3	3,393.0	4,913.4	10,324.9	12,626.8	13,600.6	15,323.4	17,864.3	20,419.9	19,888.9	16,936.9	14,638.5
United Kingdom .....	14,597.2	17,686.7	21,847.5	25,101.8	26,921.0	27,008.2	27,711.5	31,094.2	36,350.9	30,810.2	26,020.8	26,042.4
European Union-15 .....	65,952.7	85,272.3	109,158.2	133,082.1	139,760.6	148,387.1	159,515.8	177,020.3	217,874.8	205,077.5	182,032.0	180,068.0
Czech Republic .....	186.4	267.8	240.0	559.0	699.7	990.2	2,187.9	2,886.4	1,979.1	3,180.2	3,972.6	4,065.2
Hungary .....	707.9	831.6	480.6	533.3	835.5	1,522.0	151.5	208.7	297.2	390.9	492.6	662.6
Poland .....	1,153.9	1,222.2	1,291.3	1,044.1	1,299.2	1,441.0	1,778.0	1,898.5	2,153.3	2,240.9	2,497.8	2,555.2
Slovakia .....	152.3	171.4	178.6	163.1	155.8	265.4	284.1	259.7	308.4	481.2	655.3	714.0
<b>Expanded European</b>												
Union countries .....	2,200.5	2,493.1	2,190.5	2,299.5	2,990.1	4,218.6	4,401.4	5,253.4	4,738.1	6,293.3	7,618.4	7,997.0
Japan .....	52,496.0	127,313.5	184,457.7	195,420.8	216,244.1	234,770.1	218,839.2	221,950.4	243,705.9	217,281.5	191,521.3	218,908.9
China .....	2,307.3	8,341.7	14,968.8	32,952.9	43,834.6	52,052.7	52,883.6	67,595.8	78,559.1	90,979.6	128,337.9	155,855.1
South Korea .....	2,323.0	6,374.2	22,504.3	46,294.9	52,377.9	55,848.9	49,494.2	69,270.4	92,820.8	89,945.7	102,836.3	109,480.9
Taiwan .....	6,047.6	11,130.9	21,963.6	31,657.3	31,702.7	35,493.0	40,142.9	49,472.9	53,843.2	47,984.0	58,208.3	68,987.3
Singapore .....	2,375.3	2,762.7	6,303.7	14,102.8	15,101.1	16,058.5	15,777.7	21,963.7	25,495.0	19,199.3	18,140.9	20,898.3
Hong Kong .....	3,102.4	2,829.4	4,193.9	3,491.6	3,137.1	2,637.8	2,370.0	2,326.2	2,267.9	2,084.8	1,502.3	1,161.3
India .....	109.4	487.7	2,082.4	3,281.5	3,541.5	4,542.8	4,235.7	5,368.3	5,525.8	5,634.5	5,766.0	6,198.9
Malaysia .....	1,251.9	1,934.5	8,135.8	27,371.1	28,056.5	31,416.0	28,508.7	37,470.8	51,859.3	43,688.5	48,210.4	55,351.7
Thailand .....	114.0	180.2	3,047.5	3,627.9	4,226.3	4,103.4	3,354.1	3,863.5	4,755.8	3,583.1	4,283.2	4,884.7
Philippines .....	461.1	576.4	1,094.0	2,020.9	1,802.4	3,991.3	3,406.0	4,010.5	6,237.0	6,717.8	7,717.0	8,669.0
Indonesia .....	207.9	353.9	2,006.6	3,926.1	3,616.7	5,208.5	3,589.1	3,799.5	4,878.2	5,232.4	4,383.4	4,426.0
South Africa .....	681.7	691.9	749.8	800.2	683.3	816.1	890.5	892.7	869.4	655.5	661.0	719.5



**World industry production, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Medical, precision, and optical instruments												
Total production .....	207,756.6	253,391.9	295,730.2	304,186.3	314,173.5	328,552.2	339,446.1	345,650.7	366,482.7	366,268.3	355,661.7	372,990.4
United States .....	78,603.6	102,950.0	117,646.3	131,916.2	140,293.2	146,067.9	152,014.8	155,230.8	154,607.3	150,583.9	141,845.4	151,937.8
Canada .....	1,590.6	1,659.4	1,830.5	2,129.6	2,199.6	2,311.0	2,494.4	2,546.5	3,392.0	3,429.7	3,401.5	3,674.7
Mexico .....	2,017.1	1,926.6	2,390.7	2,830.5	3,072.7	3,404.3	3,871.2	4,279.0	5,032.1	5,374.4	5,527.8	5,202.3
Brazil .....	9,767.4	7,204.4	5,558.3	3,420.9	3,584.9	3,695.8	3,422.8	3,130.6	3,240.9	3,215.3	2,986.1	2,853.2
Chile .....	13.1	15.2	34.9	56.4	58.7	68.6	74.9	37.3	39.0	33.1	32.1	25.3
Costa Rica .....	24.0	11.1	18.1	46.2	26.0	7.1	5.4	5.4	7.2	6.1	6.1	6.5
Argentina .....	863.6	615.7	537.1	350.8	329.5	412.9	378.2	358.9	362.3	269.1	288.7	345.2
Peru .....	19.2	16.0	14.6	32.9	32.1	31.9	28.4	24.7	25.0	23.1	23.9	24.4
Austria .....	420.4	744.0	1,073.0	1,216.5	1,242.1	1,400.6	1,551.5	1,913.3	2,068.0	2,151.7	2,291.7	2,399.6
Belgium .....	1,130.3	1,336.2	957.5	1,214.6	1,101.5	1,176.5	1,360.4	1,284.1	1,334.3	1,390.7	1,496.2	1,663.2
Denmark .....	606.8	953.7	1,075.2	1,452.5	1,530.5	1,731.7	1,910.5	1,968.4	2,325.0	2,399.7	2,203.7	2,183.6
France .....	16,893.7	20,222.2	22,215.9	20,488.7	19,130.5	20,258.3	21,012.3	21,268.2	22,283.8	23,120.8	23,743.9	24,340.4
Finland .....	347.6	650.9	951.0	1,129.8	1,248.5	1,441.9	1,535.4	1,559.1	1,678.4	1,887.5	1,908.3	1,691.6
Germany .....	21,179.0	24,642.0	29,212.9	29,328.2	29,863.7	30,591.6	32,820.3	33,726.3	38,406.1	39,199.0	38,495.1	39,793.5
Greece .....	183.7	139.7	107.4	107.1	116.2	126.5	107.8	108.2	115.3	157.9	127.7	171.8
Ireland .....	272.9	511.4	743.3	1,304.2	1,643.4	2,038.5	2,287.4	2,918.2	4,799.6	6,747.2	6,266.4	7,578.0
Italy .....	9,289.1	8,959.7	9,075.1	10,428.7	10,540.3	10,632.7	10,554.2	10,540.3	11,840.6	11,411.4	12,178.4	10,989.7
Netherlands .....	1,734.5	826.8	791.5	742.8	760.2	857.3	864.5	961.0	1,203.7	1,770.2	1,731.8	1,716.5
Portugal .....	328.4	356.1	351.4	437.2	391.3	335.0	357.8	371.5	319.4	326.2	282.3	269.5
Spain .....	1,600.0	1,497.2	2,766.0	2,795.1	2,732.1	2,941.5	3,063.0	3,027.1	3,256.7	2,966.4	2,392.4	2,556.8
Sweden .....	1,302.4	1,816.2	3,461.6	4,738.2	4,259.3	4,416.2	4,935.9	5,014.3	5,626.3	5,789.9	6,614.7	6,766.2
United Kingdom .....	13,796.4	15,555.4	16,818.7	17,372.4	17,800.5	16,908.2	16,750.4	16,456.8	17,526.0	18,746.9	17,316.4	17,960.1
European Union-15 .....	69,085.3	78,211.6	89,600.5	92,756.1	92,360.2	94,856.4	99,111.4	101,116.8	112,783.3	118,065.4	117,049.0	120,080.6
Czech Republic .....	172.3	192.7	268.7	629.0	714.2	784.5	832.9	906.8	928.6	962.6	1,071.5	1,150.1
Hungary .....	595.9	816.8	897.9	400.6	422.6	480.0	449.0	491.8	596.5	665.3	622.9	677.4
Poland .....	547.5	624.8	663.7	872.7	1,032.1	1,196.7	1,277.3	1,330.5	1,371.1	1,450.5	1,426.6	1,556.6
Slovakia .....	158.2	185.3	191.6	197.1	259.3	311.2	311.2	261.6	264.5	245.2	273.4	301.6
Expanded European Union countries .....	1,473.8	1,819.6	2,022.0	2,099.3	2,428.2	2,772.5	2,870.3	2,990.6	3,160.7	3,323.7	3,394.5	3,685.8
Japan .....	19,654.9	31,909.1	40,678.1	30,656.9	31,434.6	34,515.6	33,515.3	31,355.6	31,867.0	28,631.6	25,601.6	25,419.0
China .....	595.5	1,707.9	1,955.1	4,923.6	6,672.5	7,237.2	8,709.1	9,047.4	11,742.6	12,895.9	15,542.1	18,155.1
South Korea .....	1,939.0	2,395.0	4,114.6	5,162.8	5,000.5	5,015.7	4,967.6	5,920.2	6,958.4	7,091.3	7,354.0	7,645.5
Taiwan .....	824.8	1,173.6	1,884.4	2,129.0	2,000.4	1,989.6	2,032.4	2,522.4	3,151.5	2,752.5	3,350.3	3,765.4
Singapore .....	440.1	284.1	467.3	1,004.7	1,029.2	1,170.9	1,359.5	1,820.8	1,882.0	1,885.5	1,910.5	1,900.8
Hong Kong .....	586.1	720.8	1,249.6	1,579.9	1,508.1	1,437.4	1,300.1	1,221.3	1,145.8	1,029.6	766.3	593.4
India .....	258.4	240.8	937.8	968.3	953.7	976.9	1,075.3	1,592.7	1,354.8	1,510.5	1,507.1	1,620.2
Malaysia .....	497.9	472.8	794.3	1,097.6	1,016.2	1,000.8	957.1	1,055.9	1,583.2	1,282.9	1,360.3	1,546.3
Thailand .....	31.8	254.6	134.8	295.8	335.9	339.7	264.3	316.8	372.0	377.5	379.7	433.1
Philippines .....	6.0	13.2	13.8	70.6	59.0	107.3	80.5	89.9	134.9	153.3	141.9	163.2
Indonesia .....	50.8	297.1	560.0	507.1	438.0	312.2	163.6	159.0	134.5	61.0	79.3	80.1
South Africa .....	216.1	325.4	286.3	279.8	284.2	274.1	218.8	205.8	222.1	230.5	255.5	258.1

**World industry production, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Other manufacturing industries</b>												
Total production.....	9,410,747.8	10,451,222.6	12,455,097.6	13,636,932.0	13,956,763.9	14,621,191.1	14,781,875.6	15,103,103.1	15,798,294.7	15,585,373.9	15,753,792.6	16,120,883.0
United States.....	2,034,317.1	2,248,049.8	2,566,177.1	3,057,455.2	3,153,634.4	3,343,689.1	3,454,984.8	3,494,569.7	3,479,475.3	3,268,711.4	3,198,362.6	3,114,403.5
Canada.....	210,638.4	239,948.2	254,783.6	281,990.3	285,416.2	302,046.0	316,060.5	336,205.2	360,895.2	353,139.2	364,080.3	364,256.1
Mexico.....	141,651.8	150,128.5	170,488.5	175,790.9	194,361.6	207,521.0	213,051.1	216,670.9	231,338.8	223,926.9	227,483.1	224,180.6
Brazil.....	348,334.5	357,969.6	349,658.5	398,309.3	400,367.3	412,642.6	404,094.0	401,346.8	428,959.2	433,907.6	436,979.4	437,484.6
Chile.....	15,616.7	13,571.2	23,348.9	33,759.2	33,592.9	34,851.8	33,800.1	32,200.1	34,067.7	35,477.8	36,381.8	38,308.7
Costa Rica.....	3,220.7	4,081.4	5,236.5	7,622.3	7,066.3	7,551.5	9,294.6	10,550.1	10,125.2	9,836.5	10,126.8	10,750.0
Argentina.....	109,166.2	97,845.1	93,318.6	115,797.2	121,159.4	132,367.5	135,311.4	126,540.0	124,943.6	115,394.4	102,476.0	118,986.3
Peru.....	21,412.5	19,860.7	18,861.7	24,259.9	24,602.1	25,879.0	25,113.9	24,990.9	26,097.8	25,791.2	26,904.6	27,532.5
Austria.....	57,852.8	61,137.8	75,129.3	83,483.4	83,872.9	90,089.5	97,925.9	103,403.2	113,396.1	116,501.4	116,737.7	120,103.3
Belgium.....	121,042.6	123,944.0	142,957.6	145,686.6	146,799.5	153,465.9	157,438.0	158,368.3	165,969.6	167,538.8	169,527.2	166,468.0
Denmark.....	40,209.3	49,487.2	52,986.1	59,205.8	59,202.1	62,053.2	63,347.4	62,748.8	65,269.7	65,983.4	66,568.8	66,481.7
France.....	533,402.7	557,566.7	645,772.8	621,304.2	613,283.9	641,043.2	665,684.6	676,653.9	712,034.8	717,608.9	697,220.7	689,216.7
Finland.....	48,440.0	55,513.3	61,827.9	66,938.3	67,979.8	73,120.5	77,060.1	78,783.3	85,365.9	85,837.3	85,576.5	86,073.5
Germany.....	903,745.1	928,173.4	1,097,068.3	1,086,389.2	1,081,654.5	1,119,593.4	1,170,289.3	1,184,549.7	1,239,028.7	1,240,113.3	1,226,835.9	1,223,053.2
Greece.....	35,304.6	33,993.4	36,134.9	35,241.3	35,042.2	35,726.4	38,276.4	37,949.1	39,639.2	39,215.0	39,184.8	38,969.5
Ireland.....	12,691.9	15,918.3	22,937.8	34,205.1	36,370.5	43,010.1	52,885.2	59,664.3	62,207.1	66,861.9	76,018.9	81,257.4
Italy.....	549,734.9	525,661.5	623,615.8	666,717.4	656,332.8	680,208.1	693,240.3	691,787.1	713,427.9	711,192.6	696,447.7	686,796.9
Netherlands.....	159,278.9	151,363.2	169,050.3	173,405.1	174,790.7	178,088.2	183,277.5	187,151.1	193,658.6	192,921.0	196,169.4	190,335.3
Portugal.....	34,549.8	39,797.2	54,248.0	54,824.0	58,128.8	60,321.0	62,035.6	61,479.4	60,450.7	61,738.1	62,126.9	60,646.0
Spain.....	227,958.7	234,967.6	277,939.4	291,281.4	289,454.2	311,504.9	331,068.4	339,095.5	349,612.0	343,962.5	346,679.2	352,104.7
Sweden.....	88,963.2	96,524.5	112,658.8	118,822.4	117,810.1	123,922.7	126,897.6	126,776.7	133,738.0	132,718.9	135,594.9	140,588.4
United Kingdom.....	482,945.2	486,707.9	564,497.8	561,846.9	561,943.3	568,024.6	565,450.4	565,357.2	571,409.4	560,782.9	554,443.3	554,364.8
European Union-15.....	3,296,119.8	3,360,756.0	3,936,824.9	3,999,351.1	3,982,665.3	4,140,171.7	4,284,876.8	4,333,767.8	4,505,207.7	4,502,976.0	4,469,131.9	4,456,459.6
Czech Republic.....	46,458.4	53,963.9	44,573.2	46,473.5	47,965.7	50,402.3	50,264.6	47,856.7	48,257.6	52,964.3	53,740.2	56,977.3
Hungary.....	31,061.7	33,603.9	29,395.1	25,570.4	25,633.6	27,778.0	35,873.9	40,159.3	48,777.1	50,900.7	52,852.1	56,223.8
Poland.....	87,914.6	78,888.6	64,565.6	78,925.1	87,137.5	90,606.0	96,387.1	101,776.1	109,775.6	109,466.9	111,265.9	123,026.1
Slovakia.....	14,482.8	16,947.1	17,595.8	15,769.1	15,787.9	16,301.7	17,515.1	16,950.5	18,478.8	20,403.8	22,101.7	23,738.3
<b>Expanded European Union countries</b>												
Japan.....	1,677,407.5	1,883,540.4	2,290,122.6	2,174,013.9	2,201,610.2	2,265,948.4	2,113,478.2	2,112,979.0	2,231,488.0	2,092,459.3	2,103,356.6	2,156,537.6
China.....	166,933.5	271,587.0	411,014.6	894,049.6	993,217.1	1,096,365.7	1,190,811.2	1,286,222.8	1,440,931.1	1,570,261.5	1,724,682.0	1,965,364.3
South Korea.....	84,799.2	138,971.7	246,682.4	356,605.0	381,601.8	397,781.7	371,752.6	451,841.3	513,005.6	514,003.1	550,321.8	577,129.9
Taiwan.....	95,694.4	125,460.8	161,096.9	193,716.0	197,566.6	207,404.6	209,741.8	216,594.6	229,425.0	211,561.1	224,471.0	230,023.2
Singapore.....	13,900.4	11,918.3	13,649.7	15,423.5	14,806.4	13,364.4	13,969.2	10,159.8	11,695.5	14,854.6	21,632.4	20,732.5
Hong Kong.....	22,345.6	21,014.9	28,499.2	28,456.3	27,398.9	27,626.2	24,188.8	21,875.0	22,432.0	21,697.6	19,684.7	18,384.0
India.....	82,169.5	114,719.3	166,335.9	213,639.8	237,062.6	249,703.6	261,968.4	276,961.8	296,184.3	304,643.1	320,145.7	343,049.6
Malaysia.....	11,426.3	15,746.8	23,750.4	29,990.7	37,372.7	42,573.0	38,146.7	37,778.9	40,928.7	43,217.4	43,362.0	46,346.4
Thailand.....	32,785.4	39,631.1	70,599.8	107,752.5	115,739.4	114,373.2	103,355.9	116,116.8	118,928.9	121,701.0	131,663.2	147,809.4
Philippines.....	33,921.6	28,807.1	36,506.6	38,997.3	41,814.4	40,624.2	41,172.0	44,122.9	48,992.6	52,957.7	51,220.1	55,013.7
Indonesia.....	18,852.4	47,966.9	86,737.4	146,558.1	147,667.3	154,861.9	123,751.6	125,981.8	129,386.5	127,611.4	116,740.8	121,379.5
South Africa.....	79,737.0	79,564.5	76,393.1	82,172.3	84,951.1	87,472.3	84,924.0	84,771.3	87,894.5	90,619.3	94,798.8	92,915.90

NOTES: Production is total gross output. Seventy countries or economies included in "all countries." High-technology sectors cover aerospace; computers and office machinery; communications equipment; pharmaceuticals; and medical, precision, and optical instruments.

SOURCES: Global Insight, Inc., World Industry Service database (2005). Historical data from United Nations Industrial Development Organization, United Nations System of National Accounts, Organisation for Economic Co-operation and Development, and country sources.

Appendix table 6-3

**World industry value added, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

(Page 1 of 8)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>All manufacturing industries</b>												
Total value added .....	3,346,661.5	3,914,417.7	4,836,635.3	5,225,595.8	5,370,754.1	5,608,274.3	5,681,000.7	5,862,038.6	6,105,212.3	5,970,454.8	6,092,314.1	6,272,450.7
United States.....	765,149.5	922,977.7	1,086,471.2	1,266,252.0	1,297,102.5	1,367,280.1	1,423,560.1	1,492,160.7	1,562,634.0	1,468,899.6	1,495,117.6	1,495,278.0
Canada.....	68,586.3	80,392.9	92,880.8	101,711.2	100,965.2	108,351.3	116,090.5	127,616.7	132,483.9	127,875.8	131,040.9	131,160.6
Mexico.....	52,585.3	56,707.1	65,359.3	63,945.4	70,111.3	77,618.2	82,842.7	87,359.7	92,233.2	91,524.2	91,450.5	89,618.4
Brazil.....	137,050.6	133,323.2	132,584.8	153,966.9	148,429.7	156,648.4	152,255.0	142,133.7	144,579.9	144,920.1	145,671.9	145,389.0
Chile.....	5,773.4	3,906.4	8,156.9	14,122.6	13,411.0	14,427.0	14,336.7	13,439.7	13,690.2	14,726.1	15,105.2	15,889.2
Costa Rica.....	1,169.9	1,451.7	1,867.3	2,681.1	2,514.9	2,622.0	3,199.3	4,378.2	3,893.6	3,597.5	3,557.4	3,776.0
Argentina.....	40,211.5	35,883.7	34,195.9	41,082.5	43,517.7	47,589.7	48,759.8	45,400.5	44,654.3	41,035.7	36,706.7	42,640.6
Peru.....	6,453.1	7,081.7	8,664.6	8,222.7	8,344.2	8,787.7	8,505.2	8,459.1	8,830.2	8,727.6	9,100.3	9,319.8
Austria.....	22,056.2	23,284.2	30,831.2	35,847.8	36,035.8	38,839.5	42,140.4	44,932.1	48,959.7	48,663.9	49,340.1	50,467.5
Belgium.....	35,932.6	35,386.9	43,223.0	43,836.3	44,282.0	45,668.3	46,723.4	46,730.0	44,242.4	45,231.6	46,192.5	46,410.1
Denmark.....	13,758.0	17,186.6	19,926.5	23,140.7	23,068.6	25,293.6	26,175.5	26,488.1	26,734.2	26,514.9	26,192.4	26,073.6
France.....	197,397.9	204,628.6	240,493.9	232,859.3	228,779.6	239,785.1	247,238.9	248,101.4	247,168.2	253,727.8	257,640.6	256,206.6
Finland.....	15,508.7	18,409.6	22,406.9	24,484.7	24,204.8	26,069.0	30,290.5	30,721.6	33,985.8	33,807.0	34,544.8	34,539.1
Germany.....	351,607.3	377,526.1	451,344.4	436,998.4	436,687.2	443,573.0	463,314.9	459,672.2	460,389.3	458,881.2	464,061.6	465,117.8
Greece.....	3,479.9	5,574.7	9,345.3	11,695.7	11,734.2	11,736.7	13,359.6	13,257.2	13,596.8	14,085.6	14,312.5	14,255.0
Ireland.....	5,037.5	6,607.2	9,867.3	16,137.5	17,476.9	20,854.9	25,302.7	29,113.2	33,693.0	37,208.6	39,974.4	41,869.8
Italy.....	192,968.5	183,675.8	224,918.0	222,241.4	225,881.0	229,383.1	235,360.3	231,608.0	227,538.4	230,493.7	227,783.3	223,993.1
Netherlands.....	50,326.3	46,228.7	57,402.4	64,147.3	62,097.3	62,125.8	66,471.6	67,952.9	65,597.3	66,419.2	67,361.1	65,469.4
Portugal.....	8,352.6	8,962.0	13,983.0	16,877.8	18,199.2	18,680.4	19,749.8	19,978.3	19,493.8	20,050.7	20,138.6	20,016.1
Spain.....	87,994.8	87,831.5	106,971.9	95,456.5	94,404.5	101,476.3	106,608.5	107,888.6	106,464.6	102,472.3	102,675.5	104,232.1
Sweden.....	28,916.1	32,261.2	39,867.0	46,391.1	47,121.2	48,729.6	50,413.0	50,401.1	50,998.7	48,315.7	49,120.5	50,201.5
United Kingdom.....	193,040.6	198,566.7	248,776.2	242,087.5	244,879.3	253,191.8	257,256.6	259,861.1	260,779.0	258,814.0	251,330.6	252,454.3
European Union-15.....	1,206,376.9	1,246,129.6	1,519,357.0	1,512,202.0	1,514,851.6	1,565,407.0	1,630,405.5	1,636,705.7	1,639,641.1	1,644,686.2	1,650,668.4	1,651,306.0
Czech Republic.....	15,609.2	17,987.9	15,998.6	17,022.0	19,224.0	18,873.7	18,744.5	18,637.1	16,922.3	19,063.1	19,919.4	21,577.1
Hungary.....	8,505.1	9,530.4	8,378.4	8,509.7	8,584.0	9,660.6	10,777.8	11,261.5	11,237.8	11,769.7	12,123.8	12,909.8
Poland.....	30,546.5	28,077.6	22,970.1	22,503.9	24,581.2	28,230.0	30,152.1	31,138.1	33,151.2	32,460.2	32,623.1	35,433.3
Slovakia.....	4,016.3	4,691.8	4,868.7	4,421.9	4,609.8	4,408.0	4,638.7	4,774.6	4,810.1	5,355.5	5,245.8	5,567.4
<b>Expanded European</b>												
Union countries.....	58,677.0	60,287.8	52,215.9	52,457.6	56,998.9	61,172.3	64,313.1	65,811.3	66,121.4	68,648.5	69,912.1	75,487.6
Japan.....	524,366.1	698,687.7	935,206.2	937,181.5	961,149.1	977,990.7	926,309.7	946,558.8	980,996.6	895,626.4	894,903.9	923,507.7
China.....	65,535.7	98,045.7	121,068.7	234,071.1	289,229.0	311,225.1	330,441.2	360,587.2	409,740.2	450,673.4	506,326.6	590,609.8
South Korea.....	20,546.3	37,068.6	74,144.5	120,705.4	130,152.2	137,338.3	125,482.3	157,076.5	179,496.0	180,675.1	195,879.7	205,642.1
Taiwan.....	26,191.7	39,308.2	59,277.0	69,302.6	74,984.0	80,689.2	85,546.1	90,276.3	92,066.4	88,776.7	94,308.3	101,261.9
Singapore.....	6,950.9	7,510.3	13,657.0	20,261.7	20,920.5	21,863.1	21,790.7	24,698.9	28,482.7	25,174.6	27,294.9	28,117.3
Hong Kong.....	7,264.1	7,217.4	10,254.7	10,241.7	10,242.0	10,554.2	9,541.4	8,859.5	8,782.7	8,463.0	7,484.9	6,795.1
India.....	20,790.9	29,025.3	42,845.7	56,509.8	63,734.0	63,883.2	67,667.1	67,683.8	73,201.6	75,335.4	79,163.0	84,787.1
Malaysia.....	4,781.7	6,606.8	11,973.4	22,529.7	25,288.0	28,428.2	25,514.0	28,811.6	35,521.6	33,179.6	34,676.0	38,298.5
Thailand.....	12,017.5	14,659.4	26,930.3	40,702.6	43,878.4	43,388.2	39,050.4	43,920.8	45,343.1	45,946.4	49,849.5	55,983.7
Philippines.....	11,414.3	9,756.6	12,474.5	14,074.5	10,657.4	18,333.6	14,424.6	15,605.2	21,651.9	23,424.4	23,228.0	25,108.6
Indonesia.....	6,962.0	17,781.9	32,635.0	55,183.7	55,511.2	58,517.6	46,449.9	47,339.2	49,037.0	48,506.9	44,338.1	46,088.5
South Africa.....	25,884.7	25,711.4	24,859.5	25,995.3	26,490.1	27,044.9	26,546.5	26,351.8	26,997.9	27,517.4	28,732.3	28,159.6

**World industry value added, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>High technology industries</b>												
Total value added .....	336,199.7	443,418.7	596,138.0	633,696.0	683,403.7	763,185.9	838,653.0	941,641.7	1,078,420.5	1,046,941.8	1,120,519.9	1,203,331.5
United States.....	82,575.9	114,963.4	147,061.3	161,432.2	184,461.3	224,941.3	300,532.2	349,607.3	426,802.1	433,177.9	482,835.5	511,316.4
Canada .....	4,913.8	6,536.0	9,078.1	10,444.1	10,171.4	11,572.3	11,713.0	15,686.6	17,681.9	13,763.8	12,796.9	12,887.3
Mexico .....	4,610.8	4,357.9	6,005.4	5,950.3	6,679.2	8,352.6	10,383.7	11,751.2	12,592.2	12,527.5	11,775.3	11,397.5
Brazil .....	37,068.4	26,561.0	32,982.7	28,957.4	30,644.5	33,103.3	29,522.1	26,765.3	26,198.8	27,035.4	26,783.6	25,782.0
Chile .....	111.5	138.5	253.5	455.6	400.5	453.1	541.3	412.7	413.6	396.4	411.8	412.4
Costa Rica.....	104.2	85.2	122.5	138.0	105.3	63.9	69.8	59.0	63.0	66.0	66.0	69.7
Argentina .....	3,790.4	3,354.5	2,022.0	1,675.5	1,816.7	1,962.6	1,945.4	1,784.8	1,883.1	1,753.8	1,870.1	2,194.9
Peru .....	340.6	197.5	237.9	240.2	248.6	274.7	235.4	229.6	234.4	233.0	238.9	254.0
Austria .....	1,356.1	1,915.8	2,907.6	3,704.9	3,709.9	3,691.0	4,106.6	4,516.2	5,231.3	4,572.6	4,372.5	4,221.5
Belgium .....	3,627.1	4,318.0	4,883.7	4,697.0	4,515.2	4,827.6	4,618.1	4,931.4	4,901.1	4,917.0	4,842.9	6,084.0
Denmark.....	947.3	1,361.6	1,744.0	2,385.1	2,697.3	2,985.1	3,327.2	3,780.1	4,207.8	4,393.9	4,479.2	4,354.5
France.....	22,970.4	26,631.4	28,364.7	31,350.2	28,811.5	33,605.8	33,254.1	35,464.0	34,657.4	36,252.8	37,182.5	38,409.0
Finland.....	653.6	1,333.6	1,995.3	2,882.7	3,215.0	3,867.1	5,615.2	6,541.9	8,610.5	7,967.8	10,199.6	10,016.3
Germany .....	32,928.2	40,696.3	48,464.1	40,991.9	42,185.2	42,732.1	45,528.6	47,542.8	51,323.8	50,081.9	51,863.6	54,379.6
Greece .....	292.2	301.9	349.5	382.0	406.6	500.5	608.5	578.2	729.4	780.6	777.8	772.3
Ireland.....	625.0	1,232.6	2,609.6	6,435.2	7,584.5	9,448.2	11,620.0	14,569.7	19,759.8	23,466.9	23,127.9	23,005.3
Italy.....	12,961.8	16,541.4	21,710.7	19,334.1	19,661.3	19,433.2	20,038.2	20,429.2	21,722.9	22,384.5	21,350.5	20,267.7
Netherlands.....	3,502.5	4,163.7	4,565.3	5,842.1	5,000.7	5,083.6	5,158.9	5,466.7	6,269.7	6,042.8	4,393.6	4,344.2
Portugal .....	645.7	753.5	891.2	1,188.2	1,212.2	1,228.9	1,297.7	1,326.8	1,439.0	1,513.2	1,458.2	1,789.1
Spain .....	11,156.8	7,882.6	9,340.4	7,088.0	7,020.6	7,082.5	7,165.6	7,001.2	6,966.7	6,437.5	6,089.5	6,223.7
Sweden.....	2,742.8	3,765.9	4,986.8	7,281.8	7,948.9	8,239.3	9,330.2	9,301.5	8,641.8	7,125.5	6,631.2	7,006.5
United Kingdom.....	20,629.8	23,333.7	33,820.5	35,354.6	35,589.1	37,544.3	40,128.7	41,248.3	42,262.9	43,825.5	39,626.6	41,126.3
European Union-15 .....	115,039.3	134,232.2	166,633.4	168,917.8	169,558.1	180,269.2	191,797.4	202,698.1	216,724.1	219,762.4	216,395.6	221,999.9
Czech Republic .....	389.2	444.3	443.4	869.7	1,080.4	1,029.6	1,301.8	1,272.3	985.2	1,300.5	1,614.2	1,696.0
Hungary .....	764.4	1,037.3	974.8	658.5	798.8	1,155.2	771.9	764.3	905.9	912.1	945.6	983.8
Poland.....	968.0	1,183.2	1,019.9	1,199.4	1,440.5	1,506.5	1,622.5	1,872.9	1,856.5	2,082.4	2,132.5	2,272.3
Slovakia .....	207.6	223.4	223.8	210.6	262.6	273.8	281.0	188.6	189.2	203.2	210.2	217.2
<b>Expanded European</b>												
Union countries .....	2,329.2	2,888.2	2,661.9	2,938.2	3,582.3	3,965.1	3,977.2	4,098.2	3,936.8	4,498.2	4,902.5	5,169.2
Japan.....	48,308.3	99,376.3	148,350.2	146,374.7	156,458.7	165,230.5	155,110.0	161,468.7	170,993.2	132,786.4	134,610.3	145,208.2
China .....	3,146.9	5,571.9	7,461.3	16,592.9	23,413.5	28,222.3	32,578.8	44,785.3	57,116.0	65,414.4	85,051.6	112,148.8
South Korea .....	1,971.1	3,814.2	10,959.0	21,302.4	22,576.7	23,632.0	20,375.2	29,325.6	38,406.8	36,958.0	41,651.6	44,247.7
Taiwan .....	2,541.8	4,577.7	9,417.9	13,204.4	15,180.6	16,752.6	18,873.4	22,295.4	23,566.9	21,467.7	24,524.4	28,858.7
Singapore.....	2,122.7	3,823.2	8,150.0	11,643.5	12,715.4	13,424.7	14,021.8	19,434.2	23,206.1	19,353.4	19,524.0	20,813.8
Hong Kong .....	1,252.2	979.1	1,762.5	2,329.8	2,182.0	2,197.5	1,952.9	1,710.6	1,926.4	2,181.5	1,718.4	1,348.3
India.....	460.8	597.7	1,401.1	2,423.8	2,721.8	3,055.1	3,515.9	4,168.2	3,733.8	3,885.6	4,076.0	4,310.4
Malaysia .....	555.2	838.5	2,024.5	6,010.9	7,199.9	8,574.0	7,772.0	9,152.0	11,769.4	9,876.6	10,795.2	12,328.6
Thailand.....	178.3	453.1	1,575.5	1,588.9	1,852.6	1,872.4	1,551.5	1,784.9	2,149.0	1,809.9	2,078.7	2,353.9
Philippines .....	391.3	356.5	768.4	1,350.5	1,246.4	2,537.6	2,044.6	2,395.1	3,477.9	3,831.9	4,021.7	4,463.6
Indonesia .....	131.0	347.7	1,161.3	1,626.5	1,617.1	2,278.7	1,459.6	1,871.7	2,451.0	2,399.9	1,930.6	1,997.5
South Africa .....	877.3	895.7	963.4	1,104.7	875.3	1,099.5	818.8	849.8	987.7	928.2	947.8	934.6

**World industry value added, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Aircraft</b>												
Total value added .....	68,763.9	81,089.0	105,421.0	74,495.5	81,718.0	88,491.9	97,637.8	97,760.4	93,903.7	103,165.6	99,078.4	98,420.6
United States .....	30,826.6	45,877.3	54,632.1	32,215.4	38,636.0	38,292.9	46,866.1	45,299.1	42,660.5	43,918.4	36,739.6	34,391.3
Canada .....	1,956.0	1,798.8	2,882.9	2,748.2	2,915.2	3,443.6	2,963.3	3,084.3	3,621.0	3,556.6	3,211.0	3,014.3
Mexico .....	22.5	39.5	63.4	203.9	168.1	118.8	123.7	176.0	136.4	164.2	184.7	234.6
Brazil .....	12,128.3	6,831.8	12,570.8	11,015.7	11,827.9	13,299.1	10,934.7	10,406.5	9,095.2	9,917.6	10,397.0	10,138.7
Chile .....	12.8	8.1	14.1	10.8	10.3	13.2	85.0	38.1	49.6	40.0	42.1	42.2
Costa Rica .....	48.7	30.9	65.0	62.4	48.5	7.0	9.1	9.7	10.6	7.2	7.1	7.3
Argentina .....	56.9	67.7	56.1	10.8	14.7	8.8	8.4	4.7	2.1	1.9	0.9	0.9
Peru .....	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Austria .....	28.6	9.9	24.0	19.1	25.1	40.3	21.0	24.8	23.2	22.9	28.3	34.1
Belgium .....	397.5	447.0	502.9	275.5	239.9	346.9	379.3	384.5	431.3	435.2	347.1	314.7
Denmark .....	2.8	1.7	7.5	9.0	8.4	14.5	5.6	8.9	12.8	12.4	11.0	11.1
France .....	6,261.6	5,280.9	4,459.2	5,453.1	3,270.9	6,354.7	5,640.8	5,404.2	4,352.4	5,519.2	7,230.1	7,224.6
Finland .....	19.4	77.1	84.0	108.1	131.4	139.4	148.0	115.7	94.4	86.7	91.9	94.4
Germany .....	5,202.9	5,948.8	7,457.6	4,819.5	4,672.4	4,516.6	5,140.7	5,978.1	5,277.6	6,243.5	6,798.2	7,413.7
Greece .....	58.2	69.3	86.7	116.8	154.4	196.0	148.2	134.4	127.9	150.3	171.7	166.9
Ireland .....	26.1	43.0	68.1	69.6	100.4	109.1	142.9	156.3	225.8	242.2	195.9	219.3
Italy .....	1,279.7	1,807.9	2,904.1	1,484.4	1,532.7	1,890.6	2,916.2	2,497.3	2,800.2	3,593.1	3,015.5	2,902.2
Netherlands .....	113.9	120.7	178.9	132.4	207.8	377.0	413.3	409.3	428.7	431.4	425.3	419.2
Portugal .....	1.0	0.8	2.2	22.9	8.8	17.4	24.2	6.9	8.6	7.6	6.9	6.7
Spain .....	944.4	1,110.2	936.7	676.3	661.2	730.7	848.6	865.3	944.4	826.3	759.9	815.2
Sweden .....	533.5	740.8	861.6	574.8	509.6	388.7	689.3	585.6	581.7	667.2	585.2	523.7
United Kingdom .....	4,538.7	4,533.6	10,057.8	5,604.5	5,395.6	6,349.2	7,134.4	8,048.5	8,459.3	9,015.2	7,191.9	8,072.6
European Union-15 .....	19,408.2	20,191.6	27,631.4	19,365.9	16,918.6	21,470.9	23,652.6	24,619.8	23,768.1	27,253.1	26,859.1	28,218.4
Czech Republic .....	43.0	54.4	42.1	54.8	48.8	51.0	62.7	73.4	86.2	92.0	91.6	110.1
Hungary .....	25.0	29.0	17.7	2.3	2.1	2.2	105.4	152.8	122.7	100.1	99.5	96.2
Poland .....	196.1	169.9	143.6	162.0	153.0	139.6	132.5	118.7	193.1	210.0	159.3	130.2
Slovakia .....	0.8	1.0	1.0	3.0	3.1	2.7	2.5	5.0	19.4	19.0	6.6	20.0
<b>Expanded European</b>												
Union countries .....	265.0	254.3	204.5	222.1	207.0	195.6	303.1	349.9	421.5	421.0	356.9	356.5
Japan .....	731.1	1,357.6	1,510.3	2,439.4	2,624.5	2,765.7	3,337.3	3,646.0	3,327.7	4,479.6	6,174.5	6,140.0
China .....	360.1	616.6	714.0	2,250.9	3,290.8	3,730.0	4,681.1	5,347.2	6,289.1	7,767.2	9,304.1	10,211.3
South Korea .....	16.7	52.0	260.2	211.8	231.0	294.1	566.9	557.6	724.3	804.7	686.6	572.2
Taiwan .....	109.2	106.1	136.6	160.9	204.5	332.1	295.1	321.4	356.6	593.9	713.9	778.4
Singapore .....	124.7	423.5	347.4	538.6	520.3	552.3	638.9	739.1	750.4	808.5	880.8	846.6
Hong Kong .....	122.2	153.7	236.2	219.7	254.1	276.3	234.3	234.0	241.5	260.8	294.7	228.2
India .....	14.7	23.4	31.7	84.1	69.8	97.8	111.9	107.2	83.8	78.1	84.2	90.5
Malaysia .....	3.0	3.9	6.1	6.2	5.3	6.5	1.8	7.3	10.1	11.5	11.1	11.7
Thailand .....	2.9	7.1	11.9	15.6	19.3	13.4	13.5	18.1	25.5	20.6	25.7	23.2
Philippines .....	65.3	6.0	5.9	3.4	2.9	4.4	2.3	3.0	4.1	4.4	4.7	5.4
Indonesia .....	23.0	27.1	11.7	26.6	53.0	18.8	10.7	10.0	14.6	13.8	11.8	11.0
South Africa .....	245.8	128.6	148.6	166.7	138.0	163.5	124.3	129.0	178.8	182.0	166.6	164.4

**World industry value added, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Pharmaceuticals</b>												
Total value added .....	73,815.8	90,987.1	122,906.3	149,154.4	157,081.2	162,199.0	167,104.6	182,462.1	190,265.5	211,718.2	222,397.2	229,387.5
United States .....	16,594.8	23,481.5	31,920.8	43,470.5	47,792.3	49,374.8	52,591.6	56,877.2	59,504.4	74,027.0	76,762.4	74,512.7
Canada .....	801.7	1,298.2	1,902.0	1,871.4	1,772.2	1,498.6	1,326.7	1,722.3	2,096.9	2,675.2	3,155.9	3,278.5
Mexico .....	1,152.6	1,069.9	1,488.2	1,896.1	1,986.9	2,248.2	2,570.8	2,760.9	2,963.4	3,117.6	3,329.4	3,388.2
Brazil .....	10,856.1	9,456.9	9,828.6	8,495.2	8,642.8	9,334.8	9,703.8	8,830.6	8,272.5	8,338.5	8,518.6	7,871.4
Chile .....	81.2	107.2	211.9	382.7	326.9	373.0	395.2	345.1	333.3	332.4	347.2	350.7
Costa Rica .....	23.7	39.2	30.7	39.7	29.5	32.6	31.3	31.7	36.1	42.8	42.1	43.6
Argentina .....	2,479.9	2,216.9	1,338.8	1,204.3	1,263.7	1,276.0	1,284.4	1,229.3	1,302.5	1,307.8	1,033.6	1,194.6
Peru .....	268.0	143.9	199.7	215.3	222.7	246.9	208.3	206.3	209.3	209.0	216.3	230.8
Austria .....	215.7	262.0	534.2	882.4	853.6	835.7	991.6	991.0	1,192.3	885.3	928.8	967.8
Belgium .....	800.7	1,595.3	2,146.0	2,476.5	2,352.3	2,384.2	2,348.1	2,638.5	2,461.3	2,644.4	2,930.0	4,143.9
Denmark .....	214.0	443.9	686.8	1,020.7	1,139.9	1,304.1	1,552.2	1,819.9	2,111.7	2,240.7	2,434.8	2,321.7
France .....	3,755.9	5,209.7	6,315.9	8,002.6	8,162.0	8,831.6	9,591.7	10,755.6	11,313.5	12,588.8	12,390.2	13,285.8
Finland .....	252.5	346.4	363.3	280.7	250.6	278.4	283.8	191.5	201.7	203.6	174.1	178.6
Germany .....	6,480.6	7,198.5	8,568.8	9,859.5	10,479.9	9,195.8	8,896.6	9,412.2	9,165.9	10,236.1	12,058.9	12,575.8
Greece .....	23.5	29.0	87.8	127.1	130.3	164.7	193.3	213.2	297.7	309.0	365.8	394.3
Ireland .....	133.7	279.1	544.0	2,046.1	2,460.1	3,371.6	4,525.8	5,464.1	6,489.9	8,533.4	10,306.8	9,846.7
Italy .....	2,788.7	3,459.2	5,288.2	5,709.1	6,276.9	6,358.9	6,622.3	7,130.1	7,490.1	7,454.5	7,494.5	7,435.6
Netherlands .....	832.0	1,318.9	915.7	1,758.2	1,281.4	1,460.2	1,284.4	1,485.7	1,701.6	1,712.9	1,794.0	1,869.3
Portugal .....	235.0	206.2	388.1	456.5	456.5	425.6	438.8	413.2	424.1	383.2	381.6	390.0
Spain .....	1,841.2	1,753.1	2,248.8	2,582.2	2,513.3	2,706.8	2,599.3	2,866.2	2,753.1	2,909.3	3,242.7	3,431.6
Sweden .....	426.4	559.4	842.2	1,987.9	2,138.6	2,258.4	2,467.8	2,754.8	2,893.1	3,303.3	3,691.8	4,229.9
United Kingdom .....	1,768.2	2,297.1	4,416.4	7,360.6	7,232.6	7,600.0	8,062.3	7,062.6	7,542.4	9,372.5	10,256.4	10,725.9
European Union-15 .....	19,768.3	24,958.0	33,346.2	44,550.3	45,728.0	47,175.9	49,858.1	53,198.5	56,038.5	62,776.8	68,450.4	71,796.7
Czech Republic .....	155.4	160.8	120.5	124.3	142.5	111.4	101.2	85.8	79.2	81.1	77.6	82.9
Hungary .....	336.5	485.6	467.8	272.3	250.9	271.7	428.1	348.9	496.8	497.0	535.9	533.5
Poland .....	239.4	401.8	229.1	281.2	301.4	292.8	271.3	268.1	268.0	239.7	239.6	245.2
Slovakia .....	112.6	113.4	109.5	87.8	97.9	84.2	88.4	67.8	61.6	63.8	58.6	52.7
<b>Expanded European</b>												
Union countries .....	843.8	1,161.6	926.9	765.7	792.7	760.2	889.0	770.7	905.6	881.6	911.7	914.4
Japan .....	11,790.1	14,893.4	23,095.2	27,004.1	27,296.2	27,428.0	25,580.4	29,290.9	28,926.0	26,543.7	25,444.4	25,521.0
China .....	1,096.7	1,028.7	1,774.5	3,313.8	4,537.3	4,964.0	5,207.4	6,627.2	8,515.1	9,472.2	10,353.4	14,064.1
South Korea .....	547.1	991.8	2,522.4	3,645.3	4,216.4	4,292.6	3,710.0	4,590.4	5,149.4	5,633.5	6,205.8	7,090.7
Taiwan .....	109.0	169.7	412.9	558.0	633.6	708.9	762.6	814.8	876.7	824.0	796.0	903.1
Singapore .....	215.2	546.4	1,484.6	904.5	964.7	759.4	1,711.0	3,085.6	2,754.5	2,830.9	3,806.7	4,317.1
Hong Kong .....	65.6	28.8	44.1	77.1	106.9	91.0	72.6	85.5	91.9	90.3	69.5	72.2
India .....	333.6	357.8	632.0	1,310.3	1,545.1	1,719.1	1,868.8	2,217.4	1,835.8	1,884.7	1,981.2	2,058.2
Malaysia .....	7.7	29.0	40.9	74.3	69.7	79.7	71.5	83.3	86.2	77.8	78.2	89.4
Thailand .....	98.5	161.9	186.4	332.2	390.8	452.6	393.4	443.5	501.0	526.3	570.5	640.0
Philippines .....	147.5	193.3	315.6	545.2	480.5	862.7	634.4	753.8	935.7	1,040.0	938.8	992.3
Indonesia .....	33.7	133.1	323.7	463.2	546.4	478.2	311.9	427.2	481.4	417.2	428.7	482.0
South Africa .....	171.9	369.8	410.6	415.6	409.3	409.4	286.3	282.8	302.5	312.5	326.0	292.0

**World industry value added, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Office and computing machinery</b>												
Total value added .....	26,122.1	42,241.7	65,621.4	78,133.0	92,368.5	108,737.0	129,874.3	144,079.8	159,037.5	154,521.7	153,380.7	177,160.3
United States .....	1,327.9	3,942.9	9,301.1	18,245.6	25,248.5	36,201.8	53,570.8	60,006.7	64,690.8	68,156.1	62,486.4	70,644.6
Canada .....	15.5	97.2	186.1	235.4	215.8	673.8	1,115.4	969.2	1,349.8	1,145.2	971.3	942.8
Mexico .....	127.7	173.1	410.5	1,324.6	1,855.7	2,408.4	2,628.4	2,415.7	2,739.2	2,548.8	2,296.9	2,161.6
Brazil .....	1,223.0	770.4	1,360.3	1,615.9	1,724.1	2,066.9	2,203.1	2,098.4	2,513.6	2,633.7	2,537.1	2,516.9
Chile .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Costa Rica .....	0.0	0.0	0.1	0.4	0.3	0.7	0.8	0.9	1.1	1.1	1.3	1.7
Argentina .....	68.4	90.8	65.5	53.6	68.9	90.1	90.0	60.7	77.0	65.2	55.5	66.3
Peru .....	2.4	2.4	6.3	4.9	3.4	4.8	6.2	4.7	5.8	6.4	5.4	5.6
Austria .....	39.4	39.6	46.0	29.5	28.6	39.9	41.4	85.6	48.3	75.4	61.5	64.0
Belgium .....	34.7	35.3	46.8	93.9	102.1	98.7	103.8	100.3	290.1	158.1	114.2	82.5
Denmark .....	66.3	83.8	96.0	104.1	155.4	106.4	75.4	108.2	166.1	251.0	131.6	185.3
France .....	788.0	945.5	941.3	2,724.7	3,375.1	2,987.9	3,235.8	3,130.0	3,010.1	2,908.7	2,464.9	2,610.6
Finland .....	49.3	168.0	272.8	133.6	148.5	165.1	121.2	66.1	8.4	54.2	31.1	29.0
Germany .....	2,790.7	4,968.3	5,651.6	4,010.3	4,174.2	4,953.5	5,558.9	5,666.5	5,637.5	4,457.5	4,786.1	4,608.5
Greece .....	30.8	35.7	25.3	2.6	1.5	6.4	2.6	3.5	6.7	9.2	26.5	1.2
Ireland .....	174.9	216.1	472.4	973.2	1,066.9	1,193.1	1,338.5	1,662.4	2,276.2	2,171.2	1,714.8	2,089.3
Italy .....	547.4	869.4	822.1	1,114.0	815.6	685.1	737.1	585.1	640.2	616.1	423.1	300.8
Netherlands .....	689.2	1,050.8	474.2	484.7	465.5	431.1	568.0	520.2	593.0	596.0	436.9	382.8
Portugal .....	14.4	75.9	11.7	19.2	10.3	11.6	3.5	14.8	14.6	12.6	12.4	13.0
Spain .....	5,940.7	2,939.7	2,937.6	926.6	1,091.5	860.6	1,004.3	871.0	589.6	413.9	240.4	157.2
Sweden .....	405.3	529.5	290.6	242.0	254.6	256.3	251.2	234.5	221.5	79.8	54.5	57.1
United Kingdom .....	919.5	1,712.5	2,870.7	5,184.3	5,188.8	5,704.9	6,634.3	6,759.3	6,343.5	6,530.4	5,552.2	5,384.0
European Union-15 .....	12,490.6	13,669.9	14,959.2	16,042.6	16,878.5	17,500.5	19,676.1	19,807.6	19,845.7	18,334.2	16,050.4	15,965.5
Czech Republic .....	7.1	9.2	6.7	49.8	119.6	37.1	13.8	17.0	21.3	90.8	211.2	215.4
Hungary .....	6.8	6.8	7.3	15.9	119.7	340.1	8.9	12.0	9.9	7.0	5.3	5.9
Poland .....	72.7	60.1	62.6	45.5	81.5	76.9	96.0	145.1	181.4	121.0	138.7	226.5
Slovakia .....	12.8	15.2	16.0	26.2	24.8	10.2	14.0	20.3	20.5	24.6	32.6	36.1
<b>Expanded European Union countries .....</b>												
Japan .....	7,826.1	18,531.7	28,888.7	24,935.9	26,515.6	26,400.1	24,838.9	23,428.5	21,535.8	14,486.4	13,622.2	13,135.3
China .....	355.9	294.9	397.6	1,645.1	3,690.2	5,435.2	8,158.2	14,371.1	20,027.2	23,443.1	31,334.6	46,688.6
South Korea .....	25.0	104.0	930.2	1,916.1	2,256.3	2,292.5	2,213.0	3,472.2	4,762.6	4,741.3	5,411.9	5,392.6
Taiwan .....	362.8	821.0	1,805.0	3,304.5	4,076.8	4,699.3	5,105.1	5,879.4	6,599.7	5,978.2	6,457.7	7,631.9
Singapore .....	849.5	1,811.1	4,449.7	5,557.1	6,246.6	6,715.2	6,329.6	7,517.2	10,469.7	8,319.5	7,805.4	7,706.6
Hong Kong .....	119.7	94.5	298.1	422.9	449.9	516.2	665.9	423.0	540.4	524.2	403.1	312.3
India .....	7.8	17.1	96.9	173.3	127.5	226.9	252.2	415.6	452.7	497.6	564.0	606.3
Malaysia .....	15.4	25.3	69.9	422.7	559.5	736.0	633.0	347.0	321.0	262.6	181.7	159.9
Thailand .....	2.2	4.5	25.0	2.4	2.8	3.2	2.9	3.3	5.0	5.9	8.0	9.1
Philippines .....	2.2	2.4	7.2	100.3	88.9	178.6	140.8	148.9	224.5	290.9	229.3	263.6
Indonesia .....	1.5	2.6	11.6	9.6	1.2	6.4	2.9	2.7	2.7	3.6	8.0	8.0
South Africa .....	9.1	7.5	6.7	5.7	4.3	8.6	8.4	8.6	10.1	12.1	12.9	11.7

**World industry value added, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Communication equipment</b>												
Total value added .....	79,315.8	127,058.9	182,381.5	215,527.6	231,404.8	277,346.9	312,156.0	383,681.5	492,931.6	437,596.5	508,098.7	554,720.6
United States .....	8,671.6	11,242.0	13,067.9	26,297.6	28,574.5	54,452.1	95,927.5	136,665.4	208,593.9	199,136.6	260,276.2	281,933.4
Canada .....	1,472.9	2,570.0	3,211.4	4,551.7	4,186.9	4,836.0	5,076.2	8,634.3	8,985.7	4,738.7	3,835.7	3,908.1
Mexico .....	2,393.9	2,150.9	2,965.9	1,487.1	1,541.6	2,312.5	3,616.6	4,775.6	4,823.9	4,573.5	3,856.6	3,629.5
Brazil .....	5,363.3	4,050.0	5,061.1	5,453.9	5,959.1	5,834.9	4,302.5	3,254.7	4,066.0	3,911.7	3,256.3	3,272.8
Chile .....	11.2	13.9	11.2	30.9	34.0	34.0	29.6	11.5	12.0	8.0	7.0	7.4
Costa Rica .....	23.1	9.8	18.0	15.2	15.0	19.6	25.8	13.9	11.5	11.8	12.3	13.7
Argentina .....	646.3	575.9	273.4	235.0	332.3	407.0	385.8	340.6	350.6	266.9	660.0	789.4
Peru .....	62.4	43.8	23.6	6.7	8.6	9.1	8.5	7.8	8.5	7.6	6.8	7.0
Austria .....	841.0	1,184.7	1,726.5	2,123.1	2,139.2	2,035.2	2,230.6	2,436.4	2,924.0	2,506.4	2,205.3	1,952.8
Belgium .....	1,738.8	1,619.8	1,733.2	1,316.6	1,368.6	1,554.6	1,311.7	1,335.9	1,273.9	1,216.1	953.1	988.8
Denmark .....	356.3	336.7	447.4	569.0	647.1	688.5	691.7	843.9	743.7	687.3	875.3	819.3
France .....	5,008.4	6,417.0	7,403.3	6,963.8	6,651.2	7,321.6	6,843.5	7,854.9	7,595.5	6,208.2	5,477.8	5,424.3
Finland .....	146.4	386.4	788.4	1,879.8	2,147.0	2,682.6	4,416.7	5,524.1	7,621.9	6,892.8	9,219.2	9,108.6
Germany .....	7,695.3	10,062.8	11,946.2	7,766.0	7,708.4	9,047.4	10,131.6	10,365.4	12,983.3	10,650.6	9,726.8	10,664.4
Greece .....	108.6	113.9	108.2	94.0	76.8	87.4	225.3	186.2	253.5	250.8	164.6	143.5
Ireland .....	133.2	387.9	1,022.0	2,489.0	2,853.0	3,401.8	4,007.3	5,175.8	7,560.9	8,011.6	6,723.3	5,786.6
Italy .....	3,114.0	5,357.4	7,596.7	6,499.0	6,354.6	5,709.9	5,039.9	5,429.3	5,521.3	5,541.2	4,636.4	4,412.2
Netherlands .....	913.7	1,250.2	2,597.8	3,161.6	2,760.9	2,539.1	2,602.0	2,727.9	3,139.2	2,696.4	1,124.5	1,065.4
Portugal .....	289.2	359.0	392.8	507.7	557.3	630.7	689.3	730.0	852.4	967.6	934.2	1,261.9
Spain .....	1,629.7	1,348.5	1,896.3	1,752.2	1,651.5	1,531.3	1,426.0	1,127.2	1,340.4	1,040.8	839.3	743.3
Sweden .....	993.7	1,416.2	1,743.7	2,502.4	3,188.6	3,492.7	3,880.5	3,710.4	2,855.2	1,926.0	986.7	852.8
United Kingdom .....	6,758.1	7,369.5	8,797.2	9,258.7	9,754.5	10,011.5	10,402.1	11,659.2	11,738.0	10,509.4	8,875.7	8,883.1
European Union-15 .....	29,726.5	37,609.9	48,199.7	46,882.9	47,858.9	50,734.1	53,898.3	59,106.8	66,403.4	59,105.2	52,742.1	52,106.9
Czech Republic .....	45.6	65.5	58.7	136.8	227.4	275.8	618.5	625.1	366.3	588.6	735.2	752.3
Hungary .....	139.0	163.3	94.4	181.5	222.2	317.9	27.1	30.8	38.8	51.0	64.3	86.5
Poland .....	169.3	219.8	232.5	344.8	420.7	450.3	510.9	600.1	506.2	931.0	1,027.0	1,050.6
Slovakia .....	32.4	36.4	38.0	36.5	39.1	69.2	67.8	25.4	26.2	40.0	52.5	50.3
<b>Expanded European</b>												
Union countries .....	386.3	485.1	423.5	699.5	909.5	1,113.2	1,224.3	1,281.4	937.4	1,610.6	1,879.0	1,939.7
Japan .....	19,759.6	50,981.2	77,414.0	78,708.6	85,943.4	93,728.6	87,070.4	91,072.2	102,636.0	74,234.2	77,488.5	88,569.4
China .....	991.4	2,869.4	3,859.1	7,965.8	10,073.3	12,300.4	12,414.2	16,126.4	19,384.4	21,460.1	30,229.0	36,710.5
South Korea .....	721.0	1,883.1	6,022.3	13,994.9	14,334.4	15,197.4	12,309.4	18,905.2	25,694.8	23,663.4	27,153.3	28,907.8
Taiwan .....	1,687.4	3,099.2	6,459.6	8,502.2	9,613.2	10,328.3	11,969.0	14,364.0	14,668.4	13,028.0	15,292.8	18,124.7
Singapore .....	733.6	871.1	1,651.2	4,164.8	4,474.4	4,831.4	4,642.3	7,143.7	8,205.5	6,414.3	6,036.4	6,953.9
Hong Kong .....	822.6	577.8	944.2	1,342.2	1,078.1	981.8	714.6	734.8	801.4	943.1	680.7	526.2
India .....	28.5	128.0	420.1	608.3	725.0	805.5	912.5	986.0	975.3	994.5	1,017.7	1,094.1
Malaysia .....	340.4	606.6	1,689.6	5,270.8	6,325.9	7,469.0	6,792.5	8,458.5	10,957.3	9,204.6	10,185.8	11,694.6
Thailand .....	51.6	89.4	1,263.0	1,121.7	1,306.8	1,268.8	1,037.1	1,194.6	1,470.5	1,107.9	1,324.4	1,510.4
Philippines .....	173.4	150.8	430.0	667.0	641.7	1,432.3	1,222.3	1,439.2	2,238.3	2,410.8	2,769.4	3,111.0
Indonesia .....	47.2	91.6	610.4	959.2	880.3	1,630.1	1,093.5	1,366.8	1,877.7	1,939.3	1,448.3	1,462.3
South Africa .....	328.0	250.0	216.1	307.3	225.5	311.8	305.1	332.7	329.8	248.7	250.7	273.0



Appendix table 6-3

**World industry value added, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

(Page 7 of 8)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Medical, precision, and optical instruments</b>												
Total value added .....	88,182.1	102,042.1	119,807.8	116,385.3	120,831.2	126,411.2	131,880.3	133,657.9	142,282.2	139,939.8	137,564.9	143,642.5
United States .....	25,155.0	30,419.7	38,139.3	41,203.2	44,210.0	46,619.7	51,576.2	50,759.0	51,352.5	47,939.9	46,570.8	49,834.3
Canada .....	667.8	771.8	895.8	1,037.3	1,081.2	1,120.3	1,231.4	1,276.5	1,628.5	1,648.1	1,623.0	1,743.5
Mexico .....	914.1	924.4	1,077.4	1,038.5	1,126.8	1,264.8	1,444.2	1,623.0	1,929.2	2,123.6	2,107.6	1,983.5
Brazil .....	7,497.7	5,451.9	4,162.0	2,376.7	2,490.6	2,567.7	2,378.0	2,175.0	2,251.6	2,233.9	2,074.6	1,982.3
Chile .....	6.3	9.3	16.3	31.2	29.2	33.0	31.6	18.0	18.8	16.0	15.5	12.2
Costa Rica .....	8.6	5.3	8.8	20.3	12.0	4.1	2.8	2.8	3.8	3.1	3.2	3.4
Argentina .....	539.0	403.2	288.2	171.9	137.0	180.6	176.8	149.5	150.9	112.1	120.2	143.8
Peru .....	7.7	7.3	8.3	13.2	13.9	13.8	12.3	10.7	10.8	10.0	10.3	10.6
Austria .....	231.4	419.7	576.9	650.8	663.4	740.0	822.0	978.4	1,043.5	1,082.7	1,148.7	1,202.8
Belgium .....	655.3	620.6	454.9	534.5	452.4	443.2	475.1	472.2	444.5	463.3	498.4	554.0
Denmark .....	307.9	495.5	506.2	682.3	746.5	871.6	1,002.4	999.1	1,173.5	1,202.5	1,026.4	1,017.1
France .....	7,156.5	8,778.3	9,244.9	8,206.0	7,352.2	8,109.9	7,942.2	8,319.3	8,386.0	9,027.9	9,619.5	9,863.6
Finland .....	186.1	355.7	486.8	480.5	537.4	601.7	645.5	644.5	684.1	730.5	683.3	605.7
Germany .....	10,758.6	12,517.8	14,839.8	14,536.7	15,150.3	15,018.7	15,800.6	16,120.6	18,259.5	18,494.1	18,493.5	19,117.3
Greece .....	71.2	54.1	41.6	41.4	43.6	46.1	39.0	40.8	43.7	61.3	49.4	66.4
Ireland .....	157.0	306.5	503.0	857.3	1,104.1	1,372.6	1,605.5	2,111.1	3,207.0	4,508.4	4,187.1	5,063.5
Italy .....	5,232.0	5,047.6	5,099.6	4,527.6	4,681.5	4,788.8	4,722.7	4,787.5	5,270.9	5,179.6	5,780.9	5,216.9
Netherlands .....	953.8	423.0	398.7	305.2	285.1	276.4	291.1	323.5	407.2	606.1	612.9	607.5
Portugal .....	106.0	111.7	96.4	181.8	179.3	143.8	141.9	162.0	139.3	142.2	123.1	117.5
Spain .....	800.7	731.2	1,321.0	1,150.8	1,103.0	1,253.1	1,287.3	1,271.5	1,339.2	1,247.1	1,007.1	1,076.4
Sweden .....	384.0	520.1	1,248.7	1,974.6	1,857.5	1,843.2	2,041.4	2,016.2	2,090.3	1,149.2	1,313.0	1,343.0
United Kingdom .....	6,645.2	7,421.1	7,678.3	7,946.4	8,017.7	7,878.7	7,895.7	7,718.7	8,179.7	8,398.0	7,750.3	8,060.7
European Union-15 .....	33,645.7	37,802.8	42,496.9	42,076.1	42,174.2	43,387.7	44,712.4	45,965.5	50,668.4	52,293.0	52,293.5	53,912.3
Czech Republic .....	138.0	154.4	215.3	503.9	542.1	554.2	505.6	471.0	432.2	448.0	498.7	535.3
Hungary .....	257.2	352.6	387.6	186.5	203.8	223.2	202.5	219.8	237.6	257.0	240.6	261.7
Poland .....	290.5	331.5	352.2	365.8	483.8	546.8	611.7	740.8	707.8	580.7	567.9	619.7
Slovakia .....	49.0	57.4	59.4	57.2	97.7	107.5	108.3	70.1	61.6	55.8	59.9	58.1
<b>Expanded European Union countries .....</b>												
Japan .....	8,201.4	13,612.3	17,442.0	13,286.6	14,078.9	14,908.0	14,283.1	14,031.1	14,567.6	13,042.5	11,880.6	11,842.5
China .....	342.8	762.2	716.0	1,417.4	1,821.8	1,792.7	2,118.0	2,313.5	2,900.2	3,271.9	3,830.4	4,474.4
South Korea .....	661.3	783.4	1,224.0	1,534.3	1,538.7	1,555.3	1,575.9	1,800.2	2,075.6	2,115.2	2,194.0	2,284.5
Taiwan .....	273.3	381.7	603.9	678.8	652.3	683.9	741.6	915.8	1,065.5	1,043.6	1,263.9	1,420.5
Singapore .....	199.7	170.9	217.1	478.4	509.5	566.4	700.0	948.7	1,026.0	980.2	994.7	989.6
Hong Kong .....	122.2	124.2	239.9	267.8	293.1	332.2	265.5	233.4	251.3	363.1	270.4	209.4
India .....	76.2	71.4	220.4	247.9	254.3	205.8	370.6	442.0	386.2	430.8	429.1	461.3
Malaysia .....	188.7	173.7	218.1	236.8	239.6	282.7	273.1	256.0	394.9	320.1	338.5	373.1
Thailand .....	23.1	190.1	89.3	117.0	132.8	134.4	104.6	125.4	147.0	149.2	150.1	171.2
Philippines .....	2.9	4.1	9.7	34.6	32.4	59.5	44.7	50.2	75.4	85.8	79.5	91.4
Indonesia .....	25.5	93.3	203.9	167.9	136.3	145.1	40.5	65.1	74.6	26.0	33.8	34.1
South Africa .....	122.6	139.8	181.4	209.5	98.2	206.0	94.6	96.7	166.6	172.9	191.6	193.6

**World industry value added, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Other manufacturing industries</b>												
Total value added .....	3,010,461.8	3,470,999.0	4,240,497.3	4,591,899.9	4,687,350.3	4,845,088.5	4,842,347.7	4,920,396.9	5,026,791.8	4,923,513.0	4,971,794.2	5,069,119.2
United States.....	682,573.5	808,014.3	939,409.9	1,104,819.7	1,112,641.2	1,142,338.8	1,123,028.0	1,142,553.4	1,135,831.9	1,035,721.7	1,012,282.2	983,961.6
Canada .....	63,672.5	73,856.9	83,802.7	91,267.1	90,793.8	96,779.0	104,377.6	111,930.1	114,802.0	114,111.9	118,244.0	118,273.3
Mexico .....	47,974.5	52,349.2	59,353.9	57,995.2	63,432.1	69,265.5	72,459.1	75,608.5	79,641.1	78,996.7	79,675.3	78,221.0
Brazil .....	99,982.2	106,762.2	99,602.1	125,009.5	117,785.2	123,545.0	122,732.8	115,368.4	118,381.1	117,884.6	118,888.2	119,607.0
Chile .....	5,661.9	3,767.9	7,903.4	13,667.1	13,010.6	13,973.9	13,795.3	13,026.9	13,276.6	14,329.7	14,693.4	15,476.7
Costa Rica.....	1,065.8	1,366.5	1,744.8	2,543.1	2,409.5	2,558.0	3,129.5	4,319.2	3,830.6	3,531.5	3,491.4	3,706.3
Argentina .....	36,421.1	32,529.2	32,174.0	39,407.0	41,701.0	45,627.1	46,814.4	43,615.7	42,771.2	39,281.9	34,836.6	40,445.7
Peru .....	6,112.5	6,884.3	8,426.7	7,982.6	8,095.6	8,513.0	8,269.8	8,229.5	8,595.8	8,494.5	8,861.4	9,065.8
Austria .....	20,700.1	21,368.4	27,923.6	32,142.8	32,325.9	35,148.6	38,033.8	40,415.9	43,728.4	44,091.3	44,967.5	46,245.9
Belgium .....	32,305.6	31,068.9	38,339.3	39,139.3	39,766.8	40,840.7	42,105.3	41,798.5	39,341.3	40,314.5	41,349.5	40,326.2
Denmark.....	12,810.7	15,825.0	18,182.5	20,755.5	20,371.3	22,308.5	22,848.3	22,708.0	22,526.4	22,121.0	21,713.1	21,719.1
France.....	174,427.4	177,997.2	212,129.3	201,509.1	199,968.0	206,179.4	213,984.8	212,637.4	212,510.8	217,475.0	220,458.1	217,797.6
Finland.....	14,855.1	17,076.0	20,411.6	21,602.0	20,989.9	22,201.9	24,675.2	24,179.7	25,375.3	25,839.2	24,345.2	24,522.8
Germany .....	318,679.2	336,829.8	402,880.3	396,006.5	394,502.0	400,840.9	417,786.3	412,129.4	409,065.5	408,799.4	412,198.1	410,738.1
Greece .....	3,187.7	5,272.8	8,995.8	11,313.8	11,327.6	11,236.2	12,751.1	12,679.1	12,867.4	13,305.0	13,534.6	13,482.7
Ireland.....	4,412.6	5,374.6	7,257.7	9,702.3	9,892.4	11,406.7	13,682.8	14,543.4	13,933.1	13,741.7	16,846.5	18,864.5
Italy.....	180,006.7	167,134.3	203,207.4	202,907.3	206,219.7	209,949.9	215,322.1	211,178.8	205,815.5	208,109.2	206,432.8	203,725.4
Netherlands.....	46,823.8	42,065.0	52,837.1	58,305.2	57,096.5	57,042.2	61,312.8	62,486.2	59,327.6	60,376.4	62,967.5	61,125.2
Portugal .....	7,706.9	8,208.6	13,091.7	15,689.6	16,987.0	17,451.4	18,452.1	18,651.5	18,054.8	18,537.4	18,680.4	18,227.0
Spain .....	76,838.0	79,948.8	97,631.5	88,368.5	87,383.9	94,393.8	99,442.9	100,887.4	99,497.9	96,034.8	96,586.0	98,008.4
Sweden.....	26,173.2	28,495.2	34,880.2	39,109.3	39,172.2	40,490.3	41,082.8	41,099.6	42,357.0	41,190.2	42,489.3	43,195.1
United Kingdom.....	172,410.8	175,232.9	214,955.7	206,732.9	209,290.1	215,647.5	217,127.9	218,612.7	218,516.0	214,988.6	211,704.1	211,328.0
European Union-15 .....	1,091,337.6	1,111,897.4	1,352,723.6	1,343,284.2	1,345,293.5	1,385,137.8	1,438,608.1	1,434,007.6	1,422,917.0	1,424,923.8	1,434,272.8	1,429,306.1
Czech Republic .....	15,220.0	17,543.6	15,555.2	16,152.4	18,143.6	17,844.1	17,442.7	17,364.7	15,937.1	17,762.6	18,305.1	19,881.1
Hungary .....	7,740.7	8,493.1	7,403.6	7,851.3	7,785.2	8,505.4	10,005.9	10,497.2	10,331.9	10,857.6	11,178.1	11,926.0
Poland.....	29,578.5	26,894.5	21,950.2	21,304.5	23,140.6	26,723.5	28,529.6	29,265.2	31,294.8	30,377.8	30,490.7	33,161.1
Slovakia .....	3,808.6	4,468.4	4,644.9	4,211.3	4,347.3	4,134.2	4,357.8	4,585.9	4,620.8	5,152.3	5,035.6	5,350.2
<b>Expanded European</b>												
Union countries .....	56,347.9	57,399.6	49,553.9	49,519.4	53,416.7	57,207.3	60,335.9	61,713.0	62,184.7	64,150.2	65,009.6	70,318.4
Japan.....	476,057.7	599,311.4	786,855.9	790,806.7	804,690.3	812,760.2	771,199.7	785,090.0	810,003.4	762,840.0	760,293.6	778,299.6
China .....	62,388.8	92,473.8	113,607.4	217,478.1	265,815.5	283,002.8	297,862.4	315,801.8	352,624.2	385,259.0	421,275.0	478,461.0
South Korea .....	18,575.2	33,254.4	63,185.5	99,403.0	107,575.5	113,706.3	105,107.1	127,750.9	141,089.2	143,717.1	154,228.1	161,394.3
Taiwan .....	23,650.0	34,730.5	49,859.1	56,098.2	59,803.5	63,936.6	66,672.6	67,980.9	68,499.5	67,309.0	69,783.9	72,403.2
Singapore.....	4,828.2	3,687.2	5,507.0	8,618.2	8,205.0	8,438.4	7,768.8	5,264.7	5,276.6	5,821.1	7,770.9	7,303.4
Hong Kong .....	6,011.9	6,238.3	8,492.2	7,912.0	8,060.0	8,356.7	7,588.5	7,148.9	6,856.2	6,281.5	5,766.5	5,446.8
India.....	20,330.0	28,427.6	41,444.6	54,086.0	61,012.2	60,828.1	64,151.2	63,515.6	69,467.8	71,449.7	75,087.0	80,476.8
Malaysia .....	4,226.5	5,768.3	9,948.9	16,518.8	18,088.0	19,854.2	17,742.0	19,659.6	23,752.2	23,302.9	23,880.7	25,969.8
Thailand.....	11,839.2	14,206.3	25,354.8	39,113.7	42,025.9	41,515.9	37,499.0	42,135.9	43,194.1	44,136.5	47,770.8	53,629.8
Philippines .....	11,023.0	9,400.1	11,706.1	12,723.9	9,411.0	15,796.1	12,380.1	13,210.2	18,174.0	19,592.5	19,206.4	20,644.9
Indonesia .....	6,831.0	17,434.2	31,473.7	53,557.2	53,894.1	56,238.9	44,990.3	45,467.5	46,586.0	46,106.9	42,407.5	44,091.0
South Africa .....	25,007.4	24,815.8	23,896.2	24,890.6	25,614.8	25,945.5	25,727.7	25,502.0	26,010.2	26,589.2	27,784.4	27,225.0

NOTES: Gross value added reported equal to gross output less consumption of intermediate inputs and supplies. Conceptually, value added is current income from ongoing current production available for distribution to factors of production. Seventy countries or economies included in "all countries." High-technology sectors cover aerospace; computers and office machinery; communications equipment; pharmaceuticals; and medical, precision, and optical instruments.

SOURCES: Global Insight, Inc., World Industry Service database (2005). Historical data from United Nations Industrial Development Organization, United Nations System of National Accounts, Organisation for Economic Co-operation and Development, and country sources.

**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Exports</b>												
<b>All manufacturing industries</b>												
Total exports .....	1,975,625.9	2,014,869.0	3,105,566.5	4,342,148.7	4,547,175.5	4,921,044.7	5,149,592.6	5,412,958.2	5,876,155.2	5,849,116.8	6,051,732.8	6,602,906.3
United States.....	290,067.8	242,197.6	405,050.8	563,881.7	611,112.7	684,135.1	697,466.8	721,850.6	808,384.5	763,021.0	725,461.1	803,725.7
Canada .....	68,813.2	87,640.1	114,523.1	164,764.3	172,839.6	184,554.4	194,913.9	219,497.7	234,579.3	217,788.9	221,586.0	225,518.3
Mexico .....	28,331.6	33,753.0	23,968.3	77,103.3	87,727.0	101,653.8	111,867.2	127,565.6	149,848.1	148,248.4	153,354.2	161,759.7
Brazil .....	25,420.5	31,427.7	31,993.5	44,472.6	45,221.0	47,838.9	48,222.9	47,759.0	50,840.9	53,625.5	53,722.7	58,214.9
Chile .....	3,495.2	3,204.5	6,599.8	10,826.8	11,558.0	12,528.8	11,574.3	12,398.8	13,147.4	14,355.7	14,303.9	15,039.3
Costa Rica.....	483.7	864.2	1,095.1	1,916.5	1,978.1	3,022.5	5,779.0	8,530.2	7,003.9	5,652.1	5,878.3	6,601.0
Argentina .....	6,478.7	6,089.1	10,164.9	16,033.2	17,272.0	19,877.3	19,979.6	19,166.8	19,641.0	20,047.6	20,137.3	20,796.2
Peru .....	2,433.8	2,359.4	2,511.2	4,531.7	4,777.7	5,619.6	5,298.4	5,557.6	5,816.6	6,070.6	6,375.6	6,648.6
Austria .....	23,832.6	25,293.7	43,198.7	54,009.7	54,876.7	54,739.1	60,630.4	60,150.8	59,785.9	62,972.9	66,715.5	73,173.3
Belgium .....	82,249.0	66,932.7	125,019.4	149,946.9	153,153.9	162,615.4	182,325.5	190,300.9	192,489.2	199,843.1	212,758.0	227,907.5
Denmark.....	22,631.1	23,228.8	33,563.4	41,841.7	41,556.1	44,936.8	45,707.3	47,593.1	45,706.2	48,049.0	50,290.5	53,631.9
France.....	137,709.4	114,310.8	208,244.8	263,278.7	260,783.6	276,397.5	301,908.0	309,117.1	332,619.4	322,517.2	328,879.3	351,704.4
Finland.....	17,309.9	16,683.7	25,121.5	35,328.3	36,021.9	38,684.5	43,946.9	44,408.7	48,080.4	48,561.5	50,437.7	55,208.5
Germany .....	264,092.8	269,855.9	409,621.5	466,878.5	482,970.3	499,683.7	561,805.7	579,352.9	555,197.5	615,025.5	638,144.4	694,356.5
Greece .....	5,387.0	5,158.2	7,125.9	9,404.1	9,905.8	9,485.3	9,640.9	9,904.2	9,860.5	9,341.9	9,555.1	10,354.6
Ireland.....	10,476.3	13,074.2	22,726.1	41,368.8	43,657.8	53,428.9	68,582.1	78,469.3	86,323.7	96,079.6	102,575.8	108,589.1
Italy.....	109,892.7	115,601.1	173,910.3	230,150.4	240,590.8	237,631.9	247,830.5	244,066.0	249,858.9	252,764.1	255,718.8	270,007.6
Netherlands.....	77,878.1	77,952.9	115,026.4	146,406.0	147,124.8	174,361.4	164,072.4	175,011.4	179,251.2	176,374.9	182,991.5	200,263.3
Portugal .....	6,359.7	7,898.9	16,515.0	23,144.7	22,952.6	23,588.2	24,769.9	25,013.8	24,184.7	24,276.7	25,336.7	27,476.3
Spain .....	26,126.1	30,922.0	51,252.9	82,234.0	92,102.4	100,085.6	106,096.6	111,432.9	113,383.2	115,594.9	121,633.8	136,235.5
Sweden.....	42,416.3	43,008.3	57,136.5	72,459.5	77,708.5	80,254.4	87,925.9	83,034.8	84,091.7	82,927.1	85,714.2	93,923.7
United Kingdom.....	145,712.2	118,845.1	188,747.2	231,041.5	250,341.0	273,797.9	278,286.6	272,432.9	277,211.8	294,032.1	300,073.1	319,324.1
European Union-15 .....	972,073.0	928,766.3	1,477,209.6	1,847,492.8	1,913,746.3	2,029,690.7	2,183,528.7	2,230,288.9	2,258,044.4	2,348,360.6	2,430,824.4	2,622,156.2
Czech Republic .....	13,559.3	14,904.8	11,288.3	20,688.9	20,720.7	21,845.7	27,887.5	26,725.5	28,360.6	33,060.2	34,740.8	38,722.7
Hungary .....	6,647.1	6,382.7	7,527.0	11,346.3	11,759.6	17,591.1	22,590.5	26,576.0	30,457.2	32,648.2	33,843.1	37,923.3
Poland .....	10,807.1	7,357.5	10,238.1	20,478.2	22,063.3	23,785.3	27,047.1	27,344.7	32,049.2	36,311.7	39,046.2	45,107.4
Slovakia .....	5,138.1	5,522.9	4,274.6	8,298.0	8,463.9	9,309.6	10,745.1	10,115.3	11,033.5	11,722.5	12,286.4	13,809.8
<b>Expanded European</b>												
Union countries .....	36,151.6	34,168.0	33,328.0	60,811.3	63,007.5	72,531.7	88,270.1	90,761.4	101,900.4	113,742.8	119,916.5	135,563.3
Japan.....	215,904.8	262,050.6	324,795.7	409,053.6	400,779.7	430,462.6	422,724.7	456,324.9	510,347.0	452,609.9	473,807.8	517,837.7
China .....	24,662.5	21,076.8	63,744.3	130,467.1	144,240.4	176,291.3	190,728.7	215,714.9	278,294.7	312,806.4	351,250.0	421,171.6
South Korea .....	23,636.7	37,571.2	62,119.0	112,298.8	125,000.6	137,867.6	153,325.0	169,004.2	200,441.7	188,554.2	205,522.9	230,557.2
Taiwan .....	25,336.7	37,548.1	72,754.5	117,248.9	122,361.9	128,940.9	126,273.4	144,761.1	176,770.1	160,373.2	173,442.4	193,152.7
Singapore.....	17,339.2	21,118.1	47,248.1	104,077.5	113,791.4	121,168.3	120,499.8	130,806.1	150,391.0	144,242.0	151,380.1	169,057.2
Hong Kong .....	26,810.3	38,760.8	85,424.8	165,070.4	171,985.3	185,261.3	173,221.2	171,712.6	201,251.4	196,897.7	206,077.7	225,731.9
India.....	8,346.6	8,555.6	14,315.3	28,683.3	31,141.4	32,132.9	32,028.1	37,641.6	45,116.2	44,429.9	48,415.8	52,652.0
Malaysia .....	6,870.8	9,101.0	21,690.4	58,896.8	66,588.8	71,389.5	75,443.8	90,773.9	104,652.5	98,204.9	104,232.2	116,132.9
Thailand .....	5,429.3	7,461.3	21,705.3	49,446.9	48,560.1	53,071.6	54,671.4	62,200.9	74,768.2	74,208.1	78,255.0	86,685.8
Philippines .....	4,477.6	4,907.1	7,732.0	15,685.6	18,633.7	24,813.3	34,114.0	40,089.1	47,462.1	45,383.2	48,217.9	52,224.6
Indonesia .....	5,126.8	7,718.7	17,172.3	30,163.9	33,721.2	38,168.2	41,396.3	42,913.1	49,345.5	46,995.2	48,390.8	48,977.4
South Africa .....	8,334.0	11,017.9	11,371.1	16,035.5	13,666.5	15,628.1	16,155.1	21,089.8	26,049.8	26,555.6	28,708.7	29,948.9

**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>High technology industries</b>												
Total exports .....	190,068.1	267,379.6	474,124.3	809,423.3	905,865.0	1,075,940.4	1,181,548.8	1,344,778.5	1,635,454.4	1,581,228.4	1,646,296.6	1,901,561.3
United States.....	57,362.8	58,897.7	109,174.5	159,369.5	181,208.6	214,424.1	231,869.6	253,318.6	291,783.0	268,902.1	247,544.9	303,541.0
Canada.....	3,898.9	6,072.8	9,515.7	16,295.5	18,690.0	21,566.2	23,939.9	26,682.6	36,683.2	28,742.8	29,012.8	31,241.7
Mexico.....	2,216.2	5,619.4	1,457.5	14,663.9	17,350.7	22,380.1	28,272.3	34,389.3	44,486.5	48,054.4	49,722.1	53,146.9
Brazil.....	915.8	995.5	1,784.6	1,410.6	1,825.9	2,327.8	3,238.7	4,326.9	7,135.9	7,187.8	7,190.5	8,170.5
Chile.....	4.4	4.3	55.5	45.3	54.3	67.7	94.2	108.8	141.2	149.1	156.6	176.5
Costa Rica.....	30.8	31.0	40.8	57.7	60.2	294.3	1,534.4	844.9	953.4	1,257.4	1,247.0	1,539.5
Argentina.....	190.6	169.7	189.3	394.6	435.0	537.0	535.7	592.3	680.4	762.5	735.8	803.0
Peru.....	9.6	8.4	7.1	19.9	33.5	31.8	50.3	38.2	44.7	28.4	30.7	33.5
Austria.....	1,407.7	2,132.4	4,344.7	4,347.0	5,524.1	5,479.2	6,070.3	6,267.9	7,441.7	8,357.0	9,135.5	10,557.6
Belgium.....	3,511.9	3,098.8	6,918.6	11,465.1	13,641.0	15,774.5	18,317.4	21,033.0	24,078.1	28,429.7	30,975.9	35,268.1
Denmark.....	1,578.0	2,289.2	4,034.8	5,389.7	5,863.7	7,124.1	7,534.5	8,866.7	9,448.0	9,721.6	10,493.2	11,723.6
France.....	10,927.2	13,264.0	27,848.1	44,898.7	44,821.9	54,605.6	63,103.0	68,531.5	83,040.3	79,422.8	82,490.8	91,897.9
Finland.....	507.9	843.5	1,706.2	4,986.2	5,735.0	7,416.6	9,933.3	11,405.2	14,848.6	13,578.0	14,599.9	17,293.0
Germany.....	19,251.4	30,070.0	45,788.5	60,922.2	64,905.0	76,497.5	89,736.3	100,130.3	111,772.7	122,518.7	128,768.6	145,235.9
Greece.....	61.9	86.8	139.7	296.8	305.5	363.2	516.4	639.3	998.0	874.0	907.5	1,037.0
Ireland.....	1,168.3	3,114.7	5,206.2	12,031.1	14,439.6	19,451.8	25,285.8	30,485.3	36,666.5	42,446.1	44,802.3	49,349.7
Italy.....	5,650.1	8,762.9	14,237.4	18,919.8	20,205.6	21,021.5	23,832.3	25,340.6	28,997.7	29,147.3	30,340.8	33,351.5
Netherlands.....	7,539.4	9,229.3	14,186.2	25,460.8	28,804.5	42,747.4	44,149.6	53,289.0	62,183.3	57,310.6	59,301.0	65,812.5
Portugal.....	323.8	457.2	798.8	1,601.7	1,547.3	1,612.5	1,822.4	2,198.1	2,382.3	2,751.3	2,905.6	3,235.4
Spain.....	823.9	1,498.8	3,654.5	6,327.3	7,574.8	8,334.4	9,565.6	11,201.1	11,780.6	12,115.1	12,839.2	14,866.9
Sweden.....	2,773.7	4,756.1	7,144.1	13,276.3	15,817.9	18,329.3	20,844.6	21,853.3	23,524.8	18,405.6	19,442.4	22,302.1
United Kingdom.....	19,338.8	24,369.4	39,388.3	56,693.0	64,651.8	73,533.7	79,279.1	80,819.0	91,778.7	95,302.9	99,345.8	110,004.8
European Union-15.....	74,863.9	103,973.1	175,396.1	266,615.7	293,837.7	352,291.3	399,990.6	442,060.4	508,941.6	520,380.8	546,348.4	611,935.9
Czech Republic.....	545.3	718.4	484.1	906.6	1,069.8	1,250.5	1,960.3	1,810.5	2,165.1	4,027.3	4,267.2	4,948.6
Hungary.....	608.1	754.5	833.1	945.2	837.8	3,691.0	5,421.5	7,552.4	10,375.3	10,045.1	10,469.2	12,266.7
Poland.....	441.6	334.7	434.4	708.0	955.1	1,323.7	1,661.0	1,662.7	2,082.1	2,458.6	2,600.0	3,002.7
Slovakia.....	211.8	305.7	162.9	360.9	323.0	495.6	568.3	580.3	579.8	709.6	753.4	873.9
<b>Expanded European</b>												
Union countries.....	1,806.8	2,113.3	1,914.5	2,920.7	3,185.6	6,760.8	9,611.1	11,606.0	15,202.4	17,240.6	18,089.9	21,091.9
Japan.....	25,095.8	54,095.8	78,636.5	108,762.6	109,130.6	124,694.3	124,127.3	137,651.8	162,736.3	138,721.7	145,552.5	164,234.6
China.....	998.1	918.8	6,023.0	16,954.3	22,362.3	29,325.8	37,570.6	48,155.8	70,612.2	88,500.1	103,993.1	133,924.4
South Korea.....	1,909.5	4,118.0	11,684.9	27,007.8	30,216.2	37,779.2	43,038.4	60,854.0	83,002.0	70,028.7	79,123.4	94,113.1
Taiwan.....	2,613.8	4,106.0	13,385.1	32,472.1	38,091.2	45,858.2	49,471.8	63,202.7	86,374.9	75,394.5	82,653.3	97,294.4
Singapore.....	2,997.3	4,907.5	17,288.0	53,898.5	62,108.9	70,288.0	71,672.0	81,156.4	99,146.5	91,084.3	95,491.3	107,765.5
Hong Kong.....	4,657.0	7,283.1	17,159.5	38,907.7	40,938.0	47,153.8	48,454.8	52,629.6	70,282.3	73,128.8	78,138.3	90,467.1
India.....	209.4	186.9	571.8	1,233.3	1,538.5	1,627.3	1,455.7	1,803.8	2,372.5	2,691.2	3,103.9	3,708.9
Malaysia.....	1,092.8	2,380.6	8,482.4	28,095.9	33,047.3	37,120.1	37,164.3	45,659.0	57,638.4	53,922.6	56,083.6	62,542.7
Thailand.....	91.0	169.6	3,041.8	9,554.9	11,044.7	12,587.9	12,274.0	15,016.2	21,537.8	20,093.8	22,531.2	26,495.0
Philippines.....	98.4	212.2	577.9	2,392.4	8,649.0	13,730.0	18,467.4	21,381.7	24,888.4	24,637.0	25,647.8	29,120.8
Indonesia.....	93.9	156.5	228.2	2,097.8	2,818.4	2,792.4	2,288.1	3,227.8	6,254.4	4,427.7	5,440.2	6,415.6
South Africa.....	50.0	189.1	88.1	426.4	492.4	758.8	823.0	945.3	1,114.8	1,142.6	1,245.1	1,374.2

**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Aircraft</b>												
Total exports .....	48,657.8	43,272.0	86,775.8	76,924.5	81,630.8	95,946.5	114,757.9	111,479.1	104,734.1	110,128.1	106,218.3	113,040.4
United States.....	26,525.5	19,487.2	40,015.3	28,746.1	35,653.8	43,578.6	55,508.9	52,135.5	41,025.1	43,545.9	39,910.1	40,406.8
Canada.....	1,719.4	1,697.3	3,615.0	3,460.5	3,898.5	4,040.3	5,179.2	5,585.5	6,229.3	7,583.8	7,393.4	8,083.6
Mexico.....	368.2	218.2	161.9	442.3	246.0	195.1	853.7	361.5	254.4	316.0	283.2	281.8
Brazil.....	230.7	107.8	840.2	332.0	532.7	830.7	1,505.9	2,056.7	3,530.2	3,400.6	3,307.3	3,616.6
Chile.....	1.4	0.6	38.5	5.8	11.3	10.8	28.6	34.5	49.4	37.3	37.9	42.0
Costa Rica.....	0.0	0.0	0.0	0.1	0.0	6.7	3.8	8.1	25.7	29.0	34.3	33.3
Argentina.....	19.8	1.4	21.4	26.8	80.8	45.1	35.2	77.8	150.1	183.7	152.6	187.3
Peru.....	0.0	0.3	0.3	1.4	0.1	0.7	0.1	0.4	0.4	0.7	0.8	0.8
Austria.....	30.0	63.1	62.8	104.9	101.4	597.5	503.5	274.4	264.5	283.4	290.4	325.9
Belgium.....	501.9	222.3	721.1	374.8	432.4	514.4	575.5	742.6	543.5	690.3	701.4	799.1
Denmark.....	151.4	71.0	541.5	112.8	247.5	241.1	299.8	518.5	338.3	206.3	208.5	238.6
France.....	3,142.8	3,113.1	8,408.7	14,599.4	11,215.8	13,200.4	13,425.4	16,161.2	17,929.0	18,280.5	18,475.0	20,457.0
Finland.....	14.4	14.3	39.6	122.9	66.5	116.1	88.6	30.7	102.6	210.1	201.0	218.2
Germany.....	2,359.9	5,010.8	8,918.1	9,141.6	8,153.8	10,754.3	12,763.9	14,556.9	14,802.5	16,554.4	16,418.6	17,642.9
Greece.....	0.1	1.9	10.3	78.3	44.4	37.4	85.2	92.8	109.5	38.9	38.7	43.1
Ireland.....	27.1	29.5	70.9	117.0	173.7	230.6	355.1	298.0	250.9	179.4	170.4	185.7
Italy.....	897.5	1,644.2	3,567.1	1,792.7	1,975.9	1,739.1	2,811.4	2,871.2	3,448.8	2,503.1	2,454.7	2,618.5
Netherlands.....	1,186.6	1,044.8	2,228.7	2,064.2	910.6	474.4	557.5	405.2	638.2	581.2	575.9	632.5
Portugal.....	4.5	21.8	60.9	97.5	63.7	59.3	68.8	82.6	186.3	193.9	199.1	218.7
Spain.....	122.3	162.4	1,185.4	1,047.1	1,343.6	1,169.1	1,028.0	1,431.9	1,404.8	1,213.5	1,246.7	1,436.8
Sweden.....	50.1	338.1	653.8	1,401.4	1,272.2	967.0	1,154.2	516.0	362.6	430.3	421.1	468.5
United Kingdom.....	8,972.6	7,735.6	12,032.4	7,028.5	9,073.9	10,032.8	9,126.7	5,313.1	5,753.3	5,876.2	5,852.2	6,423.9
European Union-15.....	17,461.3	19,472.8	38,501.3	38,083.2	35,075.3	40,133.5	42,843.8	43,295.0	46,135.0	47,241.5	47,253.7	51,709.4
Czech Republic.....	46.7	26.7	107.9	4.2	123.0	248.9	363.0	483.9	59.3	121.3	111.4	112.8
Hungary.....	0.0	0.6	1.0	3.4	4.2	3.6	2.3	1.9	1.0	1.7	1.7	1.8
Poland.....	72.7	35.0	51.5	43.8	85.7	49.4	92.1	75.4	198.6	135.3	133.5	147.4
Slovakia.....	2.7	1.4	11.0	4.3	3.8	18.6	16.7	24.2	4.5	15.4	16.4	17.8
Expanded European Union countries.....	122.1	63.7	171.4	55.6	216.6	320.4	474.2	585.4	263.4	273.7	263.0	279.9
Japan.....	203.3	197.6	617.9	636.5	920.1	1,411.3	1,846.4	1,839.4	1,368.3	1,596.0	1,538.2	1,633.1
China.....	2.9	41.4	38.1	180.7	227.3	332.9	500.4	604.4	614.6	491.2	530.5	634.9
South Korea.....	243.8	323.6	218.1	280.5	245.5	751.0	1,089.2	486.8	645.7	498.6	499.1	546.2
Taiwan.....	1.3	2.0	3.9	12.6	29.5	34.9	58.9	47.8	44.9	69.7	69.7	76.8
Singapore.....	366.6	549.7	458.2	422.8	460.9	633.9	536.4	426.1	471.7	637.8	631.9	705.2
Hong Kong.....	70.8	48.9	78.7	94.8	102.5	112.5	114.9	101.1	97.7	109.7	117.1	141.3
India.....	6.6	10.8	9.5	8.3	20.9	55.9	16.5	31.4	58.6	68.8	70.5	80.7
Malaysia.....	236.5	119.6	385.7	1,379.0	1,044.5	896.4	1,239.1	721.1	351.6	221.6	227.1	255.3
Thailand.....	8.0	0.5	0.3	19.6	25.2	23.2	20.0	16.4	58.0	46.7	44.9	47.5
Philippines.....	0.7	0.4	1.7	1.9	20.7	53.9	35.6	17.1	15.4	120.1	114.2	131.5
Indonesia.....	5.1	0.7	2.5	19.3	25.0	21.8	20.7	50.1	22.4	24.0	26.0	29.9
South Africa.....	3.5	6.1	10.1	114.9	77.4	203.5	171.6	184.7	319.3	248.7	247.7	268.9

**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Pharmaceuticals												
Total exports .....	22,858.7	24,327.3	42,959.5	67,786.6	73,264.9	84,225.9	96,758.4	104,203.3	103,813.9	127,394.6	134,515.1	149,634.5
United States.....	2,623.6	3,555.4	4,658.3	6,924.6	7,818.9	8,806.4	10,572.5	12,224.3	14,103.1	16,875.5	17,048.2	19,927.6
Canada.....	173.7	218.6	333.2	645.2	717.5	1,029.9	1,127.8	1,148.8	1,136.6	1,323.9	1,431.6	1,607.3
Mexico.....	1,196.4	256.0	214.6	466.0	591.8	676.0	719.1	723.1	747.1	926.4	975.1	1,021.0
Brazil.....	80.4	97.5	111.2	181.4	201.4	230.3	272.3	292.1	260.1	272.2	291.0	331.8
Chile.....	0.2	2.5	13.4	23.2	24.2	33.0	35.8	32.8	39.0	47.1	50.1	55.8
Costa Rica.....	27.1	30.7	33.9	52.5	52.3	73.4	133.7	135.6	177.6	215.3	196.4	240.2
Argentina.....	66.9	32.6	47.4	144.4	204.7	303.6	319.4	339.1	299.4	321.0	316.6	328.7
Peru.....	9.0	4.4	5.4	16.4	22.0	23.8	30.7	23.0	15.2	9.4	10.2	10.8
Austria.....	344.5	441.5	879.5	1,300.7	1,337.2	1,347.3	1,374.8	1,541.9	1,543.9	1,753.7	1,928.0	2,174.0
Belgium.....	1,006.4	897.2	2,059.0	3,755.2	4,138.3	5,077.7	5,721.4	6,389.8	6,490.0	8,799.1	9,658.1	10,553.7
Denmark.....	480.1	712.8	1,295.4	2,007.6	2,102.0	2,329.2	2,315.6	2,852.2	2,748.5	3,233.4	3,580.4	3,991.7
France.....	2,161.6	2,017.9	4,475.4	6,600.8	6,949.8	8,276.7	9,844.3	10,343.6	11,104.1	13,569.4	14,262.3	15,696.7
Finland.....	63.1	51.5	141.4	200.0	187.9	220.0	240.8	229.3	245.3	321.5	337.8	370.4
Germany.....	3,356.5	3,700.9	6,783.7	9,473.6	10,102.2	12,154.1	15,056.4	15,496.2	13,052.2	17,924.1	18,985.8	21,389.8
Greece.....	36.1	56.9	80.5	75.2	81.7	91.1	140.6	176.4	253.4	313.5	323.3	355.8
Ireland.....	251.1	305.7	1,170.3	2,148.8	2,797.7	3,526.8	5,012.9	5,097.6	4,707.8	7,602.6	7,921.6	7,978.8
Italy.....	1,069.3	1,341.9	1,787.2	3,688.3	4,116.0	4,618.6	5,163.4	5,764.1	6,332.6	7,120.2	7,482.5	8,006.1
Netherlands.....	1,298.3	1,324.1	1,646.6	3,818.2	3,365.7	3,947.2	3,616.2	3,939.1	4,096.8	4,632.9	4,912.2	5,489.7
Portugal.....	80.5	73.9	116.9	139.4	165.4	176.8	212.3	236.2	253.3	267.3	292.6	325.6
Spain.....	277.5	360.8	712.1	1,119.2	1,351.9	1,586.2	1,864.8	2,025.8	2,068.7	2,403.7	2,570.9	2,925.6
Sweden.....	456.9	634.7	1,531.1	2,491.3	2,824.7	3,206.7	3,829.2	4,229.4	3,948.1	4,295.6	4,691.2	5,465.3
United Kingdom.....	2,562.9	2,848.5	5,059.2	7,873.9	8,376.1	9,334.2	10,260.0	10,311.9	10,466.0	12,562.3	13,149.3	14,084.7
European Union-15.....	13,444.8	14,768.2	27,738.2	44,692.2	47,896.6	55,892.6	64,652.6	68,633.6	67,310.7	84,799.4	90,095.8	98,807.8
Czech Republic.....	125.9	155.7	99.0	192.7	219.3	216.9	210.7	187.7	175.9	223.5	237.9	262.8
Hungary.....	374.3	406.0	558.7	279.5	273.2	376.6	328.5	298.8	337.0	400.9	419.2	459.7
Poland.....	195.1	140.0	213.1	214.1	241.9	301.9	202.6	144.6	151.5	169.5	181.9	207.2
Slovakia.....	73.6	94.2	51.2	142.6	131.4	151.1	122.1	102.3	82.5	92.5	96.5	108.1
Expanded European												
Union countries.....	769.0	796.0	922.1	828.8	865.8	1,046.5	863.9	733.5	746.9	886.5	935.6	1,037.7
Japan.....	509.5	609.2	1,185.8	1,705.8	1,828.4	2,001.1	2,051.4	2,396.0	2,463.9	2,581.0	2,798.6	3,201.2
China.....	638.2	559.3	1,029.0	1,394.5	1,514.5	1,588.7	1,827.6	1,810.1	1,822.8	2,061.1	2,360.6	2,865.8
South Korea.....	28.0	50.7	122.3	231.6	265.3	295.1	331.0	325.6	341.0	354.2	385.8	429.6
Taiwan.....	38.1	37.5	80.4	92.0	94.9	102.7	78.3	81.8	76.2	69.7	71.0	75.2
Singapore.....	233.7	176.4	238.1	580.9	596.4	616.3	618.7	1,168.3	903.2	1,053.7	1,079.5	1,146.3
Hong Kong.....	223.2	247.7	610.3	920.6	962.1	940.0	859.2	770.3	623.2	632.2	683.8	791.6
India.....	150.8	128.6	450.7	726.4	855.4	969.6	1,005.6	1,137.2	1,267.6	1,027.5	1,169.5	1,327.6
Malaysia.....	21.1	23.4	52.7	76.3	81.6	72.9	75.1	75.0	73.0	73.2	75.8	84.8
Thailand.....	34.0	16.2	37.5	128.2	103.5	109.0	103.9	107.9	116.3	123.5	128.7	136.8
Philippines.....	11.4	8.7	9.4	18.5	36.5	30.7	28.6	21.8	19.8	28.7	28.6	29.9
Indonesia.....	23.6	25.3	36.2	39.4	47.3	41.8	58.1	90.2	74.5	88.2	91.4	92.8
South Africa.....	16.1	23.1	19.7	47.7	59.4	74.4	92.2	80.1	106.2	84.8	95.2	104.0

**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Office and computing machinery</b>												
Total exports .....	19,290.4	43,308.8	86,112.9	192,714.8	231,238.2	293,341.5	333,033.5	400,259.0	493,571.4	488,495.8	511,506.0	607,620.3
United States.....	5,634.4	10,360.4	18,761.9	37,574.9	44,518.9	54,261.0	54,794.1	60,110.7	74,737.5	67,098.1	57,925.2	77,242.7
Canada.....	611.0	1,129.0	1,928.7	5,136.7	4,843.2	5,343.1	6,130.6	6,393.6	7,567.0	6,512.1	6,659.4	7,198.2
Mexico .....	282.8	933.0	577.8	2,609.3	3,867.1	6,135.0	8,392.7	11,991.7	15,086.4	18,356.2	19,404.9	21,181.0
Brazil.....	263.5	231.6	136.1	226.7	330.3	349.6	428.9	644.2	700.5	617.2	632.4	798.3
Chile.....	0.2	0.3	0.6	5.9	7.4	10.8	14.3	18.2	24.1	29.9	32.2	37.9
Costa Rica.....	0.0	0.0	0.0	0.2	0.8	1.2	302.5	419.3	467.1	622.0	618.4	808.8
Argentina .....	58.2	112.1	86.3	57.5	41.1	31.7	41.9	38.7	57.7	56.9	59.2	64.7
Peru .....	0.1	1.0	0.0	0.7	1.6	2.2	3.8	3.9	5.0	9.2	10.0	11.1
Austria .....	69.6	171.4	385.2	521.6	470.6	624.1	782.6	1,035.0	1,354.1	1,640.5	1,880.1	2,381.0
Belgium.....	229.3	403.8	831.2	1,614.4	2,236.9	2,776.1	3,395.4	4,400.6	5,822.6	6,464.5	7,328.1	8,856.3
Denmark.....	58.8	138.3	276.3	657.1	754.8	1,051.6	1,060.2	1,289.5	1,422.8	1,376.9	1,497.9	1,732.7
France.....	1,295.0	1,960.2	3,639.1	6,651.7	8,004.2	10,152.8	12,425.1	13,311.9	15,599.3	13,908.8	14,757.7	17,027.5
Finland.....	46.0	119.0	230.2	774.2	776.5	1,077.1	1,252.8	1,210.8	629.4	586.7	661.1	800.0
Germany .....	2,184.5	4,246.1	5,581.6	8,846.5	9,777.8	11,957.8	15,803.6	18,745.8	23,421.8	24,187.8	25,991.8	30,690.8
Greece .....	0.5	1.0	4.8	15.9	24.7	35.9	46.3	90.5	125.9	117.2	126.2	159.1
Ireland.....	415.3	1,645.2	2,473.0	6,473.3	7,262.9	10,239.9	13,245.9	15,538.7	20,440.8	21,578.9	22,732.5	26,111.6
Italy.....	1,329.8	1,938.4	2,780.6	4,270.8	3,991.9	3,785.1	4,161.7	4,520.5	4,603.7	4,445.2	4,715.2	5,392.7
Netherlands.....	645.9	1,834.7	3,720.0	9,385.7	12,335.9	17,969.8	23,779.8	29,658.1	32,470.0	34,632.1	35,588.3	39,464.6
Portugal.....	36.5	70.4	66.8	37.8	53.0	106.4	102.3	123.7	104.6	361.4	381.9	434.6
Spain.....	135.6	549.1	618.8	1,170.1	1,387.2	1,509.2	1,984.8	2,465.7	2,694.7	2,538.9	2,715.0	3,235.9
Sweden.....	529.4	851.2	891.8	683.7	789.1	870.8	909.8	932.8	965.8	1,288.2	1,345.1	1,550.8
United Kingdom.....	1,958.9	4,268.9	7,357.8	14,846.4	16,449.6	21,212.6	23,996.5	28,065.6	30,429.0	29,247.4	30,965.7	35,133.3
European Union-15.....	8,935.0	18,197.6	28,857.2	55,949.3	64,315.2	83,369.3	102,946.9	121,389.2	140,084.5	142,374.5	150,686.6	172,970.9
Czech Republic.....	70.4	120.7	47.2	167.3	191.4	205.2	400.5	369.2	675.1	1,488.6	1,624.0	2,000.1
Hungary .....	27.0	13.5	11.2	58.0	36.9	1,765.7	2,935.6	4,616.6	5,793.8	4,010.2	4,234.7	5,286.9
Poland.....	24.4	20.7	7.2	25.0	54.8	46.2	87.7	107.5	135.4	141.1	161.3	209.1
Slovakia .....	13.9	24.4	5.6	14.4	10.0	34.0	107.7	185.6	151.5	127.5	137.0	164.1
<b>Expanded European Union countries ....</b>												
Japan.....	2,099.5	7,915.1	16,568.5	26,365.9	28,031.4	35,232.8	37,081.4	39,674.0	43,562.7	40,238.4	41,580.7	46,991.7
China .....	13.5	15.2	285.8	3,243.7	5,527.9	8,745.2	13,673.4	18,240.7	27,464.8	38,619.1	45,784.1	60,307.8
South Korea.....	70.1	466.8	1,713.2	3,689.7	4,840.9	6,424.6	6,808.6	15,224.2	29,650.9	23,633.6	27,306.9	33,081.3
Taiwan.....	172.0	972.2	5,583.1	16,427.8	20,513.5	24,673.1	27,943.9	36,021.4	45,134.4	38,502.9	42,293.1	50,405.8
Singapore.....	149.0	1,040.2	6,487.0	23,644.6	29,336.0	34,535.9	36,991.9	40,883.0	43,493.1	42,529.5	43,793.0	48,562.3
Hong Kong.....	420.7	953.0	2,247.7	7,113.3	8,558.4	11,047.8	13,089.6	15,111.9	20,511.4	24,260.8	26,581.1	31,180.2
India.....	2.9	13.5	31.2	185.3	272.8	265.8	99.4	180.6	402.4	793.0	945.4	1,190.8
Malaysia.....	2.9	26.0	526.1	4,023.4	6,378.2	8,940.9	8,110.9	12,273.9	18,152.0	17,291.4	17,365.9	19,636.0
Thailand.....	3.9	51.8	852.8	2,979.9	3,878.4	4,361.8	3,966.2	5,369.4	7,556.9	7,800.1	9,407.6	11,701.5
Philippines.....	1.3	0.3	47.1	360.7	1,725.2	2,927.1	3,700.7	4,388.2	5,534.9	6,698.3	6,861.6	8,053.5
Indonesia .....	1.5	8.4	5.1	193.6	290.7	405.8	251.9	409.7	822.3	911.9	1,073.6	1,234.6
South Africa.....	6.4	18.4	17.4	60.1	101.1	148.2	160.5	264.8	203.6	228.2	255.2	288.6

**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Communication equipment												
Total exports .....	43,368.9	78,636.2	153,786.2	334,307.1	373,364.3	439,758.0	470,454.2	551,370.4	733,139.9	654,935.0	689,237.5	806,099.6
United States .....	7,660.5	11,436.2	25,412.3	58,371.8	62,596.9	73,669.6	76,199.3	92,531.9	118,959.5	100,221.6	94,336.7	122,882.1
Canada .....	706.9	1,873.2	2,567.7	5,306.2	7,184.8	8,836.4	8,918.1	10,572.0	17,384.8	9,890.8	10,085.6	10,806.6
Mexico .....	142.6	3,077.2	142.0	9,518.6	10,632.9	12,760.1	15,148.4	17,836.1	24,179.1	23,413.7	23,998.1	25,389.0
Brazil .....	182.1	342.9	526.6	461.4	573.3	690.8	745.8	980.6	2,250.6	2,477.9	2,533.2	2,946.5
Chile .....	1.6	0.1	0.6	4.5	3.8	5.2	6.8	14.8	16.5	20.9	22.0	24.9
Costa Rica .....	3.1	0.1	0.1	1.6	3.8	159.7	965.9	147.1	100.0	126.2	135.3	150.0
Argentina .....	7.3	5.9	5.2	87.4	62.5	88.9	67.9	61.6	68.0	71.8	72.7	76.8
Peru .....	0.1	0.8	1.0	0.6	1.4	1.3	2.2	6.9	22.0	5.5	6.1	7.0
Austria .....	431.6	718.4	1,969.8	1,183.2	2,482.4	1,713.7	2,166.8	2,212.5	2,946.1	3,175.5	3,454.4	3,969.5
Belgium .....	1,136.6	837.7	2,074.5	3,576.9	4,346.4	4,958.7	5,915.8	6,293.0	8,018.6	9,127.2	9,706.7	11,150.3
Denmark .....	258.3	364.5	742.2	1,348.7	1,465.1	2,034.9	2,338.8	2,579.0	2,879.1	2,907.8	3,094.0	3,459.1
France .....	1,440.9	2,280.3	5,625.9	10,744.6	12,382.8	16,096.3	20,363.3	21,623.5	30,022.3	24,771.1	25,908.0	29,027.8
Finland .....	208.1	315.3	856.8	3,284.7	4,071.8	5,195.0	7,421.2	8,912.0	12,816.7	11,197.4	12,075.9	14,473.6
Germany .....	3,917.4	5,661.5	10,156.6	17,322.9	19,779.6	23,368.6	25,509.1	29,636.1	38,074.9	39,377.3	41,817.4	47,823.0
Greece .....	15.6	15.8	23.7	70.9	82.7	122.7	177.5	209.9	433.5	326.3	338.7	390.1
Ireland .....	133.7	300.7	472.3	2,055.1	2,602.3	3,712.5	4,659.6	7,418.2	8,980.1	10,598.1	11,369.0	12,386.1
Italy .....	900.1	1,613.2	2,858.9	4,833.3	5,348.1	5,960.4	6,641.8	7,064.9	9,043.1	9,210.3	9,627.3	10,837.7
Netherlands .....	2,540.2	2,518.9	3,084.5	5,340.8	7,026.5	13,684.5	9,809.8	11,987.7	16,985.9	9,626.5	10,016.6	11,234.4
Portugal .....	127.7	230.5	451.2	1,056.1	1,030.6	1,010.4	1,171.1	1,538.3	1,624.9	1,678.9	1,777.8	1,988.4
Spain .....	123.9	146.5	630.3	2,147.8	2,444.5	2,986.2	3,448.6	3,929.8	4,197.2	4,401.2	4,668.3	5,402.8
Sweden .....	953.9	1,566.0	2,413.3	6,787.0	8,964.3	11,125.9	12,563.2	13,790.2	15,705.5	9,666.9	10,159.0	11,673.2
United Kingdom .....	1,673.1	3,030.5	6,992.9	18,046.6	21,057.4	21,400.4	24,164.4	25,491.1	33,021.6	34,948.2	36,474.8	40,572.3
European Union-15 .....	13,861.2	19,600.0	38,352.9	77,798.6	93,084.6	113,370.3	126,351.0	142,686.1	184,749.6	171,012.8	180,488.0	204,388.3
Czech Republic .....	138.1	212.8	103.4	264.7	277.1	309.1	568.5	430.8	876.6	1,720.7	1,795.2	2,014.4
Hungary .....	73.9	127.7	136.5	450.3	351.3	1,351.6	1,957.5	2,393.1	3,858.0	5,110.9	5,271.4	5,927.8
Poland .....	49.5	53.8	66.5	311.9	452.1	783.8	1,122.2	1,186.1	1,414.1	1,818.9	1,917.8	2,204.8
Slovakia .....	66.2	97.4	42.2	88.1	83.0	186.6	239.4	200.9	262.6	377.8	403.4	471.7
Expanded European Union countries .....	327.7	491.6	348.6	1,115.0	1,163.6	2,631.2	3,887.7	4,210.8	6,411.3	9,028.2	9,387.8	10,618.8
Japan .....	12,282.7	27,666.3	39,771.6	55,707.2	53,980.0	59,469.9	58,781.8	66,733.4	83,968.4	67,109.4	71,140.7	80,524.7
China .....	83.2	132.2	2,918.2	8,281.4	10,366.2	12,754.8	15,119.4	20,323.2	31,603.9	38,187.2	44,898.8	57,474.8
South Korea .....	1,139.2	2,711.2	8,700.0	21,253.9	23,202.2	28,002.9	31,649.8	40,328.6	49,894.9	42,987.6	48,126.7	56,817.3
Taiwan .....	1,862.3	2,328.2	5,772.0	13,034.1	14,634.0	18,201.4	18,800.2	24,237.2	37,683.4	33,334.1	36,544.2	42,626.1
Singapore .....	1,831.9	2,532.8	8,751.6	26,147.7	28,435.5	30,787.8	30,097.5	34,944.5	50,002.8	42,512.1	45,522.8	52,616.0
Hong Kong .....	1,340.7	2,656.7	8,282.6	21,541.8	22,262.1	25,337.0	25,173.1	27,439.0	38,067.8	37,294.2	39,440.5	46,049.5
India .....	11.2	9.1	31.5	207.0	255.3	193.3	180.4	251.1	341.8	447.7	503.3	607.2
Malaysia .....	749.7	2,048.1	7,023.1	21,474.3	24,281.6	25,765.2	26,417.7	31,245.6	37,137.4	34,051.0	36,024.3	40,030.3
Thailand .....	9.0	6.2	1,823.9	5,326.8	5,827.4	6,918.0	7,149.4	8,438.3	12,436.6	10,706.4	11,480.4	13,025.4
Philippines .....	46.2	193.3	505.1	1,958.2	6,511.2	10,337.5	14,262.4	16,586.7	18,787.6	17,137.1	17,974.7	20,198.7
Indonesia .....	58.0	72.0	113.3	1,632.7	2,195.1	2,048.5	1,837.6	2,429.9	5,070.4	3,145.8	3,952.7	4,744.2
South Africa .....	3.7	103.5	12.4	109.7	135.5	173.1	253.9	267.6	332.7	419.8	473.2	529.1



**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Medical, precision, and optical instruments												
Total exports .....	55,892.3	77,835.3	104,490.0	137,690.3	146,366.8	162,668.4	166,544.9	177,466.8	200,195.1	200,274.9	204,819.7	225,166.5
United States.....	14,918.8	14,058.5	20,326.7	27,752.2	30,620.1	34,108.5	34,794.8	36,316.2	42,957.8	41,161.0	38,324.6	43,082.0
Canada.....	687.9	1,154.7	1,071.1	1,747.0	2,045.9	2,316.6	2,584.3	2,982.7	4,365.5	3,432.2	3,442.7	3,546.0
Mexico .....	226.1	1,135.0	361.2	1,627.7	2,013.0	2,613.9	3,158.4	3,477.0	4,219.4	5,042.1	5,060.8	5,274.1
Brazil.....	159.1	215.6	170.5	209.1	188.2	226.5	285.8	353.4	394.5	419.8	426.7	477.3
Chile.....	0.9	0.8	2.4	5.9	7.5	7.9	8.7	8.5	12.1	13.8	14.5	15.8
Costa Rica.....	0.6	0.2	6.8	3.4	3.3	53.3	128.5	134.7	182.8	264.9	262.6	307.1
Argentina .....	38.3	17.7	29.1	78.4	46.0	67.7	71.4	75.1	105.2	129.1	134.7	145.5
Peru .....	0.4	1.8	0.3	1.0	8.4	3.8	13.6	3.9	2.1	3.5	3.7	3.7
Austria .....	532.0	738.0	1,047.4	1,236.6	1,132.7	1,196.5	1,242.6	1,204.1	1,333.1	1,503.9	1,582.6	1,707.3
Belgium.....	637.6	737.7	1,232.8	2,143.7	2,487.0	2,447.5	2,709.3	3,207.1	3,203.4	3,348.5	3,581.5	3,908.6
Denmark .....	629.4	1,002.7	1,179.4	1,263.4	1,294.3	1,467.4	1,520.0	1,627.5	2,059.3	1,997.2	2,112.5	2,301.4
France.....	2,886.9	3,892.4	5,699.0	6,302.1	6,269.2	6,879.5	7,044.8	7,091.3	8,385.6	8,892.9	9,087.7	9,688.8
Finland.....	176.3	343.5	438.1	604.5	632.4	808.4	929.9	1,022.4	1,054.6	1,262.3	1,324.2	1,430.8
Germany .....	7,433.0	11,450.7	14,348.5	16,137.6	17,091.7	18,262.7	20,603.3	21,695.3	22,421.3	24,475.0	25,555.1	27,689.4
Greece .....	9.6	11.3	20.5	56.5	71.9	76.0	66.8	69.6	75.6	78.2	80.5	88.8
Ireland.....	341.1	833.5	1,019.6	1,237.0	1,603.0	1,742.0	2,012.2	2,133.0	2,286.9	2,487.0	2,608.8	2,687.5
Italy.....	1,453.5	2,225.3	3,243.6	4,334.6	4,773.6	4,918.3	5,054.2	5,120.0	5,569.5	5,868.5	6,061.1	6,496.5
Netherlands.....	1,868.5	2,506.8	3,506.4	4,851.9	5,165.8	6,671.5	6,386.2	7,299.0	7,992.4	7,838.0	8,208.0	8,991.4
Portugal.....	74.5	60.6	103.1	270.9	234.5	259.6	267.9	217.3	213.3	249.8	254.1	268.2
Spain.....	164.5	280.0	508.0	843.0	1,047.5	1,083.8	1,239.5	1,347.9	1,415.2	1,557.8	1,638.2	1,865.9
Sweden.....	783.6	1,366.1	1,654.1	1,912.9	1,967.6	2,158.8	2,388.0	2,384.8	2,542.8	2,724.6	2,826.0	3,144.3
United Kingdom.....	4,171.3	6,486.0	7,946.0	8,897.6	9,694.8	11,553.7	11,731.5	11,637.3	12,108.9	12,668.8	12,903.8	13,790.7
European Union-15...	21,161.8	31,934.6	41,946.5	50,092.4	53,465.9	59,525.8	63,196.3	66,056.4	70,661.8	74,952.6	77,824.3	84,059.6
Czech Republic.....	164.3	202.5	126.6	277.7	259.0	270.5	417.7	338.9	378.2	473.2	498.7	558.6
Hungary .....	132.9	206.7	125.8	154.1	172.2	193.5	197.7	242.1	385.5	521.4	542.2	590.5
Poland.....	99.8	85.1	96.0	113.2	120.6	142.4	156.3	149.1	182.7	193.7	205.5	234.1
Slovakia .....	55.4	88.3	52.8	111.6	94.8	105.3	82.3	67.3	78.7	96.4	100.1	112.1
Expanded European Union countries ....	452.3	582.6	401.2	656.6	646.6	711.7	853.9	797.4	1,025.0	1,284.7	1,346.6	1,495.4
Japan.....	10,000.7	17,707.6	20,492.7	24,347.1	24,370.7	26,579.1	24,366.2	27,008.9	31,373.1	27,196.9	28,494.4	31,883.9
China .....	260.3	170.6	1,751.8	3,854.0	4,726.5	5,904.2	6,449.8	7,177.4	9,106.2	9,141.4	10,419.0	12,641.2
South Korea.....	428.4	565.7	931.3	1,552.1	1,662.3	2,305.6	3,159.8	4,488.8	2,469.5	2,554.7	2,804.8	3,238.9
Taiwan.....	540.0	766.0	1,945.7	2,905.6	2,819.5	2,846.2	2,590.6	2,814.5	3,435.9	3,418.0	3,675.5	4,110.6
Singapore.....	416.0	608.4	1,353.1	3,102.4	3,280.1	3,714.1	3,427.5	3,734.4	4,275.7	4,351.2	4,464.0	4,735.8
Hong Kong.....	2,601.5	3,376.9	5,940.1	9,237.1	9,052.9	9,716.5	9,218.1	9,207.3	10,982.2	10,832.0	11,315.7	12,304.5
India.....	37.8	25.0	48.9	106.3	134.1	142.7	153.8	203.6	302.1	354.4	415.1	502.6
Malaysia.....	82.6	163.5	494.9	1,142.9	1,261.3	1,444.7	1,321.4	1,343.5	1,924.5	2,285.4	2,390.5	2,536.4
Thailand.....	36.1	94.9	327.2	1,100.4	1,210.2	1,175.8	1,034.4	1,084.2	1,370.1	1,417.1	1,469.6	1,583.7
Philippines.....	38.8	9.6	14.6	53.1	355.5	380.9	440.1	367.9	530.7	652.8	668.6	707.2
Indonesia .....	5.7	50.0	71.1	212.7	260.2	274.5	119.8	247.9	264.8	257.7	296.5	314.1
South Africa.....	20.3	38.0	28.5	94.0	119.0	159.7	144.9	148.2	152.9	161.3	173.8	183.6

**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Other manufacturing industries												
Total exports .....	1,785,557.8	1,747,489.5	2,631,442.2	3,532,725.5	3,641,310.5	3,845,104.4	3,968,043.7	4,068,179.7	4,240,700.9	4,267,888.4	4,405,436.2	4,701,345.1
United States .....	232,705.1	183,299.9	295,876.2	404,512.2	429,904.1	469,711.0	465,597.2	468,531.9	516,601.5	494,118.9	477,916.2	500,184.7
Canada .....	64,914.2	81,567.4	105,007.4	148,468.8	154,149.6	162,988.2	170,974.0	192,815.1	197,896.1	189,046.1	192,573.2	194,276.7
Mexico .....	26,115.4	28,133.6	22,510.8	62,439.4	70,376.2	79,273.7	83,594.9	93,176.3	105,361.6	100,194.1	103,632.1	108,612.8
Brazil .....	24,504.7	30,432.2	30,208.9	43,062.0	43,395.1	45,511.0	44,984.2	43,432.1	43,705.0	46,437.7	46,532.1	50,044.3
Chile .....	3,490.8	3,200.2	6,544.3	10,781.5	11,503.7	12,461.1	11,480.1	12,290.1	13,006.2	14,206.6	14,147.3	14,862.8
Costa Rica .....	452.9	833.2	1,054.3	1,858.7	1,917.9	2,728.2	4,244.6	7,685.2	6,050.5	4,394.7	4,631.3	5,061.5
Argentina .....	6,288.1	5,919.4	9,975.6	15,638.5	16,837.0	19,340.3	19,443.9	18,574.5	18,960.6	19,285.1	19,401.5	19,993.3
Peru .....	2,424.3	2,351.0	2,504.2	4,511.7	4,744.2	5,587.8	5,248.1	5,519.5	5,771.8	6,042.2	6,344.9	6,615.1
Austria .....	22,425.0	23,161.3	38,854.0	49,662.7	49,352.6	49,259.9	54,560.1	53,883.0	52,344.1	54,615.9	57,580.0	62,615.7
Belgium .....	78,737.1	63,833.9	118,100.8	138,481.9	139,513.0	146,841.0	164,008.1	169,267.9	168,411.0	171,413.4	181,782.1	192,639.4
Denmark .....	21,053.1	20,939.6	29,528.6	36,452.0	35,692.4	37,812.7	38,172.8	38,726.4	36,258.2	38,327.4	39,797.2	41,908.3
France .....	126,782.2	101,046.8	180,396.7	218,380.0	215,961.8	221,791.9	238,805.0	240,585.6	249,579.2	243,094.4	246,388.5	259,806.5
Finland .....	16,802.0	15,840.2	23,415.4	30,342.1	30,287.0	31,267.9	34,013.5	33,003.5	33,231.8	34,983.5	35,837.8	37,915.5
Germany .....	244,841.3	239,785.9	363,833.0	405,956.4	418,065.2	423,186.3	472,069.4	479,222.6	443,424.8	492,506.8	509,375.8	549,120.6
Greece .....	5,325.1	5,071.4	6,986.2	9,107.4	9,600.3	9,122.1	9,124.6	9,264.9	8,862.5	8,467.9	8,647.6	9,317.6
Ireland .....	9,308.0	9,959.5	17,519.9	29,337.7	29,218.2	33,977.1	43,296.3	47,984.0	49,657.3	53,633.5	57,773.6	59,239.4
Italy .....	104,242.6	106,838.2	159,672.8	211,230.6	220,385.2	216,610.4	223,998.2	218,725.4	220,861.2	223,616.8	225,378.0	236,656.1
Netherlands .....	70,338.7	68,723.6	100,840.1	120,945.1	118,320.3	131,613.9	119,922.8	121,722.4	117,067.8	119,064.3	123,690.5	134,450.8
Portugal .....	6,035.9	7,441.6	15,716.2	21,543.0	21,405.3	21,975.7	22,947.4	22,815.7	21,802.3	21,525.4	22,431.1	24,240.9
Spain .....	25,302.2	29,423.2	47,598.4	75,906.7	84,527.6	91,751.1	96,531.0	100,231.8	101,602.6	103,479.7	108,794.7	121,368.6
Sweden .....	39,642.6	38,252.2	49,992.4	59,183.2	61,890.5	61,925.1	67,081.4	61,181.6	60,566.9	64,521.5	66,271.8	71,621.7
United Kingdom .....	126,373.4	94,475.7	149,358.9	174,348.5	185,689.2	200,264.3	199,007.5	191,613.9	185,433.1	198,729.2	200,727.3	209,319.3
European Union-15 .....	897,209.0	824,793.1	1,301,813.5	1,580,877.1	1,619,908.7	1,677,399.4	1,783,538.2	1,788,228.5	1,749,102.8	1,827,979.7	1,884,476.0	2,010,220.2
Czech Republic .....	13,013.9	14,186.4	10,804.2	19,782.3	19,651.0	20,595.2	25,927.2	24,914.9	26,195.5	29,033.0	30,473.6	33,774.1
Hungary .....	6,039.0	5,628.2	6,693.8	10,401.1	10,921.7	13,900.1	17,169.0	19,023.5	20,081.9	22,603.1	23,373.9	25,656.6
Poland .....	10,365.5	7,022.8	9,803.7	19,770.2	21,108.2	22,461.6	25,386.1	25,682.0	29,967.0	33,853.2	36,446.2	42,104.7
Slovakia .....	4,926.3	5,217.3	4,111.8	7,937.1	8,140.9	8,814.0	10,176.8	9,535.0	10,453.6	11,012.9	11,532.9	12,935.9
Expanded European Union countries .....												
Japan .....	190,809.1	207,954.8	246,159.2	300,291.0	291,649.1	305,768.3	298,597.4	318,673.1	347,610.8	313,888.2	328,255.3	353,603.2
China .....	23,664.4	20,158.0	57,721.3	113,512.8	121,878.1	146,965.5	153,158.0	167,559.1	207,682.5	224,306.4	247,257.0	287,247.2
South Korea .....	21,727.2	33,453.1	50,434.1	85,291.0	94,784.4	100,088.4	110,286.6	108,150.2	117,439.7	118,525.4	126,399.5	136,444.1
Taiwan .....	22,722.9	33,442.1	59,369.4	84,776.8	84,270.7	83,082.7	76,801.5	81,558.4	90,395.2	84,978.7	90,789.0	95,858.4
Singapore .....	14,342.0	16,210.6	29,960.1	50,179.0	51,682.5	50,880.3	48,827.8	49,649.8	51,244.5	53,157.7	55,888.8	61,291.7
Hong Kong .....	22,153.3	31,477.7	68,265.3	126,162.6	131,047.4	138,107.5	124,766.4	119,083.0	130,969.1	123,768.9	127,939.4	135,264.9
India .....	8,137.2	8,368.7	13,743.6	27,450.1	29,602.9	30,505.6	30,572.3	35,837.7	42,743.7	41,738.7	45,312.0	48,943.1
Malaysia .....	5,778.1	6,720.3	13,208.1	30,800.9	33,541.6	34,269.4	38,279.5	45,114.9	47,014.1	44,282.3	48,148.6	53,590.1
Thailand .....	5,338.3	7,291.7	18,663.6	39,891.9	37,515.4	40,483.7	42,397.4	47,184.6	53,230.4	54,114.3	55,723.8	60,190.8
Philippines .....	4,379.2	4,694.9	7,154.0	13,293.2	9,984.7	11,083.3	15,646.6	18,707.4	22,573.7	20,746.2	22,570.1	23,103.8
Indonesia .....	5,032.9	7,562.2	16,944.1	28,066.1	30,902.8	35,375.8	39,108.1	39,685.3	43,091.0	42,567.4	42,950.6	42,561.9
South Africa .....	8,284.0	10,828.8	11,283.0	15,609.1	13,174.1	14,869.2	15,332.1	20,144.5	24,935.0	25,413.0	27,463.6	28,574.6

**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Imports</b>												
<b>All manufacturing industries</b>												
Total imports .....	1,833,585.5	1,921,488.1	3,016,676.0	4,238,117.5	4,439,281.5	4,803,448.6	5,032,184.4	5,317,696.3	5,776,497.7	5,733,385.9	5,937,321.6	6,485,990.8
United States.....	255,210.6	420,643.4	474,203.6	676,936.6	712,863.5	799,855.2	896,024.2	1,000,453.5	1,124,027.7	1,077,822.3	1,101,352.7	1,142,499.9
Canada .....	72,742.1	89,376.9	121,529.1	156,652.8	162,014.0	186,592.1	195,191.5	209,435.6	224,102.2	212,265.5	221,227.8	235,065.7
Mexico .....	27,472.1	19,066.6	39,382.2	67,255.1	82,478.6	103,169.4	120,683.4	139,351.8	178,465.4	175,322.7	177,557.6	180,130.1
Brazil .....	18,558.8	8,884.3	17,510.2	46,917.4	47,586.3	57,984.0	57,931.2	48,582.1	52,703.4	55,279.0	50,855.9	50,084.0
Chile .....	6,314.4	3,096.6	7,227.9	14,193.1	15,782.8	17,342.4	16,979.7	13,151.4	15,104.4	14,492.6	13,884.5	14,530.6
Costa Rica.....	1,703.9	1,445.6	2,331.7	3,342.5	3,638.6	4,352.9	6,193.3	5,242.3	5,791.2	6,279.5	6,279.1	6,757.0
Argentina .....	14,092.0	4,222.6	4,519.1	19,687.0	23,331.8	29,192.9	31,407.3	25,199.3	24,125.9	20,177.1	10,058.3	14,571.2
Peru .....	3,797.1	2,164.3	2,588.5	6,753.1	6,728.0	7,460.9	7,587.7	6,253.1	6,453.8	6,493.1	6,933.2	7,017.5
Austria .....	28,008.9	25,058.6	47,026.0	59,081.7	60,327.5	61,045.2	67,992.3	69,582.2	65,582.0	69,793.3	72,879.2	82,716.4
Belgium .....	78,898.6	61,697.6	111,501.9	134,672.4	137,656.5	145,968.3	160,105.7	166,150.4	165,576.3	176,959.1	187,686.2	207,834.1
Denmark.....	20,598.3	21,269.6	30,653.1	38,597.4	38,817.7	43,436.0	46,188.5	46,558.1	44,661.1	46,315.7	48,842.1	53,768.3
France.....	131,659.3	116,118.1	220,588.2	249,384.9	252,135.6	258,450.2	292,721.3	306,980.7	313,388.0	313,294.8	320,637.0	352,490.0
Finland.....	14,998.4	13,846.4	23,977.8	25,247.5	27,488.0	29,121.0	31,590.0	32,080.4	33,405.2	33,666.1	34,744.4	39,611.8
Germany .....	184,224.9	162,850.8	309,739.0	404,091.7	398,033.3	401,751.9	443,186.5	451,275.6	449,850.1	465,655.5	463,736.3	512,859.3
Greece .....	12,705.6	11,083.9	19,137.7	24,014.9	25,388.0	26,447.2	29,277.8	30,871.4	29,573.0	28,764.0	29,699.4	34,439.6
Ireland.....	13,189.6	11,406.0	19,695.3	28,770.5	31,656.7	39,410.7	45,280.6	49,556.8	55,431.9	58,050.2	62,481.7	67,684.4
Italy.....	89,659.7	80,894.8	150,673.9	163,983.6	163,712.3	173,935.8	192,018.9	199,367.1	204,250.9	207,819.7	215,895.5	235,905.8
Netherlands.....	77,699.1	69,838.9	117,307.9	145,355.5	149,968.0	163,622.6	173,705.9	185,885.6	182,043.0	185,878.5	190,730.4	204,413.9
Portugal .....	8,497.6	6,689.1	22,067.6	29,567.4	31,170.5	33,903.1	37,846.1	41,358.5	39,529.6	40,610.3	40,933.2	43,192.2
Spain .....	24,024.9	23,954.3	77,143.5	97,821.4	105,202.9	110,835.6	130,502.7	146,371.3	146,302.4	150,531.3	159,782.0	185,965.8
Sweden.....	35,151.6	31,648.3	51,141.1	55,613.2	58,256.9	61,872.1	67,212.2	66,353.2	67,077.3	63,567.3	65,518.1	72,960.4
United Kingdom.....	128,699.6	125,670.9	204,218.7	241,527.3	258,188.0	288,532.3	316,470.9	328,031.7	341,063.2	346,409.6	359,474.7	385,979.5
European Union-15 .....	848,016.1	762,027.2	1,404,871.7	1,697,729.4	1,738,001.7	1,838,332.0	2,034,099.3	2,120,423.1	2,137,733.8	2,187,315.5	2,253,040.3	2,479,821.4
Czech Republic .....	10,691.4	10,900.3	11,910.3	21,629.1	23,951.2	24,786.1	28,948.9	28,353.4	31,248.9	36,289.3	39,380.8	44,927.4
Hungary .....	8,907.0	7,375.7	7,815.8	15,273.4	15,689.4	20,503.1	27,383.4	29,465.3	32,054.1	35,607.4	40,038.7	46,353.5
Poland.....	11,565.3	7,720.4	7,605.0	26,368.0	32,629.8	38,871.5	45,932.9	44,900.8	45,406.5	47,593.7	48,542.3	53,212.5
Slovakia .....	4,502.3	4,773.5	4,321.4	8,259.8	8,825.6	9,977.0	11,906.2	10,243.3	10,929.8	13,200.6	14,314.6	16,425.4
<b>Expanded European</b>												
Union countries .....	35,665.9	30,769.9	31,652.5	71,530.3	81,096.0	94,137.8	114,171.3	112,962.8	119,639.4	132,691.0	142,276.4	160,918.7
Japan.....	63,217.0	73,081.4	158,234.1	228,997.3	239,837.8	237,498.0	215,167.7	241,499.6	282,597.0	271,377.5	260,805.5	290,083.3
China .....	24,227.1	55,174.7	57,603.4	148,533.7	159,513.0	171,412.6	173,638.1	192,312.4	238,103.5	261,879.2	309,666.8	400,714.1
South Korea .....	16,451.2	24,943.2	55,048.2	98,879.8	106,438.5	102,872.8	67,911.8	94,386.1	123,067.2	111,322.8	123,974.3	134,024.8
Taiwan .....	17,338.0	18,655.8	46,774.3	81,500.3	80,926.2	93,978.6	94,667.9	114,860.7	136,049.9	108,082.6	111,014.5	115,379.8
Singapore.....	23,241.5	23,922.2	52,104.4	104,077.3	111,074.3	117,529.3	100,281.7	110,903.5	131,920.4	116,918.1	118,508.9	124,311.5
Hong Kong .....	30,143.9	35,623.4	85,340.4	148,568.0	153,994.9	173,312.3	161,673.2	161,897.5	193,460.7	193,642.4	205,190.0	223,455.0
India.....	13,784.9	16,916.2	17,305.9	25,844.0	25,563.9	28,150.0	30,265.8	33,819.1	31,655.6	36,043.0	39,085.5	45,633.8
Malaysia .....	14,729.8	14,985.9	28,626.1	71,941.9	73,884.6	79,342.1	63,367.5	73,195.9	91,617.4	83,962.1	92,140.8	103,483.3
Thailand.....	9,896.8	9,638.8	31,647.7	62,036.8	60,907.5	55,286.8	40,052.8	46,546.9	56,257.0	56,680.6	62,099.9	70,213.6
Philippines .....	8,823.2	4,248.3	10,138.1	20,601.5	28,883.9	34,970.0	31,072.5	33,603.1	34,926.5	32,877.2	32,708.6	35,563.3
Indonesia .....	14,504.4	11,537.8	20,432.8	30,412.6	32,200.5	34,028.7	19,938.6	17,932.4	24,794.0	24,000.0	25,213.5	26,318.7
South Africa .....	19,548.7	10,871.6	13,556.9	23,279.7	23,260.7	23,245.0	24,008.5	22,531.8	24,806.5	24,863.6	25,068.7	30,031.1

**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>High-technology industries</b>												
Total imports .....	181,029.1	260,140.5	466,825.2	806,756.8	908,783.8	1,083,825.6	1,206,348.3	1,387,862.8	1,680,966.0	1,633,302.8	1,726,994.6	2,007,885.7
United States.....	23,406.9	60,747.8	81,842.6	152,102.4	166,313.1	201,578.3	234,769.7	273,725.4	332,198.2	302,620.1	308,477.7	338,014.5
Canada.....	8,387.4	10,763.2	17,688.9	28,157.6	30,750.2	36,855.7	39,091.6	45,209.8	53,115.9	48,034.3	51,053.3	58,385.2
Mexico.....	2,776.6	2,693.4	6,404.3	12,080.0	15,118.8	19,741.1	24,927.0	31,012.1	42,548.1	43,343.1	46,163.9	50,758.5
Brazil.....	2,544.0	1,753.6	4,226.3	8,762.9	10,666.7	13,352.1	13,495.2	13,283.5	15,898.6	15,428.1	14,333.6	14,747.6
Chile.....	563.5	295.6	1,016.7	1,973.1	2,185.1	2,565.2	3,011.8	2,554.9	3,034.4	2,634.1	2,569.2	2,802.4
Costa Rica.....	264.9	111.7	198.3	390.4	375.0	561.4	1,578.6	1,407.4	1,759.3	2,356.3	2,148.0	2,487.9
Argentina.....	2,077.2	710.2	797.2	3,216.9	3,731.2	4,935.8	5,565.6	5,507.5	6,089.7	4,230.7	1,951.2	2,993.8
Peru.....	289.0	234.6	276.1	1,000.2	1,063.1	1,241.0	1,244.6	1,047.1	1,156.7	1,191.6	1,309.3	1,405.2
Austria.....	2,269.8	2,777.9	5,637.5	7,919.8	8,405.4	10,135.9	11,760.0	12,999.5	13,302.2	13,453.8	14,010.1	16,585.7
Belgium.....	5,312.6	4,521.2	8,762.9	12,626.7	14,690.3	17,262.4	20,876.6	25,100.4	27,784.0	31,806.6	33,555.3	39,097.6
Denmark.....	1,725.3	2,329.8	4,078.9	5,969.4	6,423.9	7,997.8	8,515.8	9,133.4	9,486.4	9,937.6	10,747.1	12,589.2
France.....	12,727.5	16,193.1	33,406.7	41,986.8	46,067.4	54,199.0	65,070.5	70,853.6	78,946.2	76,779.2	78,967.5	89,983.6
Finland.....	1,343.8	1,871.7	3,197.5	5,132.2	6,299.5	6,788.1	7,887.7	8,991.6	10,753.6	10,030.6	10,421.3	12,403.4
Germany.....	16,841.4	21,885.7	46,299.5	64,408.2	68,296.1	77,435.6	89,721.1	101,962.1	115,905.0	121,939.6	120,613.7	138,887.8
Greece.....	735.3	860.6	1,596.1	2,740.0	3,102.4	3,856.6	4,837.1	5,809.8	5,314.3	5,250.3	5,373.7	6,930.3
Ireland.....	1,102.9	2,134.9	3,897.1	9,381.7	10,341.0	14,754.6	19,539.0	23,325.3	28,430.4	32,539.8	35,963.9	39,820.1
Italy.....	7,770.1	10,244.0	21,024.5	23,145.9	25,464.1	28,558.2	33,910.1	37,483.5	42,182.3	41,954.8	43,984.1	50,182.9
Netherlands.....	6,857.7	8,577.7	18,015.9	28,716.8	32,714.6	44,477.4	49,592.8	59,444.4	63,611.0	66,822.5	69,195.3	78,021.5
Portugal.....	776.1	768.1	2,299.2	3,615.1	3,780.8	4,781.0	5,597.1	6,899.8	7,099.7	7,639.6	7,698.2	8,261.2
Spain.....	3,274.1	3,687.7	12,435.0	13,152.0	16,350.7	17,253.1	20,699.1	25,791.5	28,287.4	27,988.5	29,566.9	35,501.5
Sweden.....	3,144.3	4,271.2	7,547.6	10,397.8	11,788.9	13,196.2	15,811.2	15,596.8	17,717.3	15,149.0	15,795.8	18,556.1
United Kingdom.....	16,692.2	19,844.1	34,196.4	47,822.3	56,076.8	68,231.8	77,247.9	86,630.4	104,680.7	100,246.9	105,304.1	117,363.0
European Union-15.....	80,573.0	99,967.7	202,394.7	277,014.7	309,801.9	368,927.6	431,066.0	490,022.2	553,500.7	561,538.9	581,197.0	664,183.7
Czech Republic.....	808.3	1,119.1	1,361.4	2,766.3	3,411.4	3,563.8	4,330.8	4,614.6	6,110.3	7,390.2	8,370.8	10,287.6
Hungary.....	438.7	485.6	881.7	1,766.8	2,278.6	3,778.0	5,297.1	6,469.6	9,273.6	9,610.7	11,795.0	15,100.3
Poland.....	592.2	585.7	973.2	3,100.0	4,131.7	5,545.8	6,741.6	7,313.3	9,029.9	8,966.8	9,423.1	10,869.2
Slovakia.....	320.6	434.0	423.4	916.1	994.2	1,397.2	1,607.6	1,464.5	1,634.1	2,016.6	2,252.1	2,720.6
<b>Expanded European</b>												
Union countries.....	2,159.7	2,624.4	3,639.7	8,549.2	10,815.9	14,284.9	17,977.1	19,862.0	26,047.9	27,984.3	31,841.0	38,977.7
Japan.....	8,072.0	10,340.6	23,321.3	49,130.8	56,995.7	62,290.8	61,440.6	76,317.0	99,023.3	92,577.7	90,149.3	106,714.5
China.....	1,621.3	7,931.1	7,989.4	24,307.3	26,829.1	34,514.8	43,594.0	53,669.6	76,103.2	90,902.7	118,108.6	176,415.9
South Korea.....	2,361.1	4,496.2	10,334.9	21,941.4	25,635.6	28,335.3	22,435.0	34,995.5	49,978.6	41,799.5	48,871.5	56,590.7
Taiwan.....	2,334.9	3,356.5	9,602.3	22,113.7	24,450.8	32,931.0	35,989.1	44,848.0	58,744.0	47,838.0	50,865.9	55,660.5
Singapore.....	3,841.3	5,716.4	14,424.5	38,799.2	45,430.6	50,581.5	46,782.9	54,407.8	69,540.2	61,395.0	63,741.2	71,221.9
Hong Kong.....	4,291.2	6,474.7	17,072.9	37,302.5	41,245.4	49,304.1	49,371.7	53,277.2	72,999.7	79,361.2	85,857.2	98,596.6
India.....	1,997.9	1,648.4	2,587.3	3,381.9	3,625.5	4,038.6	4,489.9	4,694.0	6,114.7	7,549.7	8,634.4	11,384.7
Malaysia.....	1,575.2	2,823.4	7,820.2	26,812.6	28,509.9	33,169.0	33,964.8	39,822.6	51,942.2	47,060.3	53,889.1	64,440.6
Thailand.....	1,163.1	1,281.3	5,166.2	13,557.0	14,721.9	16,599.1	14,488.2	17,238.7	22,905.7	22,697.7	25,961.6	31,719.9
Philippines.....	1,210.7	599.3	1,621.5	4,202.6	10,136.4	14,890.9	17,228.5	19,745.0	20,414.6	18,845.7	19,281.8	21,886.0
Indonesia.....	1,396.1	1,091.0	2,034.6	2,507.0	3,823.1	4,452.0	1,941.9	1,499.1	2,490.8	2,672.1	2,750.3	2,964.9
South Africa.....	2,066.6	1,769.5	1,924.4	4,274.1	4,387.0	4,879.0	6,546.2	6,154.4	6,823.2	6,405.2	6,555.7	8,127.5

**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Aircraft</b>												
Total imports .....	46,619.1	41,728.8	82,771.2	72,064.2	78,155.1	93,308.3	112,063.6	107,654.3	101,344.9	106,345.7	102,367.7	108,782.3
United States.....	6,083.0	7,805.9	12,305.5	11,863.5	11,940.0	13,501.5	18,130.8	19,180.4	21,610.4	24,082.4	20,204.5	19,506.9
Canada.....	2,555.1	2,232.0	2,890.8	2,259.5	2,652.7	4,024.7	4,225.6	4,140.7	4,138.5	5,233.5	5,535.6	6,130.7
Mexico.....	742.6	74.5	618.8	190.3	169.6	227.3	862.5	457.2	472.4	705.5	722.0	741.9
Brazil.....	973.5	342.1	1,302.9	874.3	861.5	1,375.1	1,714.2	1,865.4	1,825.1	1,958.7	1,885.9	1,965.0
Chile.....	126.2	25.7	318.0	293.5	340.7	237.5	455.4	145.4	439.6	159.9	159.5	171.8
Costa Rica.....	29.8	0.4	10.9	90.0	10.0	10.4	14.1	30.7	17.0	44.9	23.2	28.6
Argentina.....	353.1	8.5	139.3	259.0	233.6	369.7	438.6	565.6	435.7	211.8	150.2	170.2
Peru.....	27.9	36.3	72.1	69.0	29.0	16.2	42.5	29.9	32.1	16.0	16.6	18.4
Austria.....	166.3	143.3	270.9	624.8	543.4	797.4	884.0	798.1	855.7	468.1	453.8	492.2
Belgium.....	1,298.7	462.9	1,140.9	761.6	735.9	992.2	1,161.6	2,342.7	1,605.9	1,419.6	1,479.9	1,704.5
Denmark.....	276.3	271.5	881.9	409.1	403.8	337.2	623.8	600.2	350.3	491.4	505.0	549.8
France.....	3,621.2	4,684.0	11,159.4	8,009.7	8,763.8	9,964.3	12,096.5	13,209.9	11,903.3	12,516.3	12,316.3	12,976.9
Finland.....	151.4	206.9	456.0	419.5	1,186.0	532.7	713.8	767.4	525.5	378.1	396.2	449.2
Germany.....	2,652.4	3,585.9	9,071.4	5,068.3	5,379.6	7,045.7	7,278.0	8,745.8	8,676.2	9,645.1	8,949.1	9,814.7
Greece.....	92.2	139.8	141.3	107.1	108.9	108.7	682.9	883.7	310.8	366.9	374.1	418.4
Ireland.....	121.5	110.9	389.4	329.9	354.8	648.7	1,105.8	2,003.0	1,199.6	1,116.0	1,285.9	1,474.4
Italy.....	1,367.2	1,608.8	2,389.8	1,683.0	1,868.3	1,712.4	2,584.8	2,630.7	3,214.3	3,087.0	3,101.2	3,227.3
Netherlands.....	1,151.9	1,068.7	2,580.2	2,014.8	1,502.6	1,426.1	1,326.1	1,706.2	1,628.7	1,253.0	1,296.7	1,404.0
Portugal.....	73.6	37.8	199.2	334.8	104.1	258.7	440.1	750.9	694.2	469.3	342.6	383.1
Spain.....	658.3	215.9	2,676.9	1,219.8	1,640.9	1,162.7	1,375.7	2,783.1	2,907.4	1,819.6	1,888.0	2,231.3
Sweden.....	212.4	297.7	1,514.8	716.4	908.4	582.9	878.4	1,277.3	1,049.5	736.4	730.6	871.2
United Kingdom.....	7,471.3	4,782.7	7,367.6	4,947.3	6,014.7	8,890.2	9,016.9	7,397.4	8,167.1	8,216.9	8,557.2	9,067.4
European Union-15.....	19,314.6	17,616.7	40,239.7	26,645.9	29,515.2	34,459.9	40,168.3	45,896.4	43,088.3	41,983.8	41,676.5	45,064.3
Czech Republic.....	34.3	21.0	39.4	10.0	106.8	169.5	394.0	410.8	266.2	172.5	180.1	200.9
Hungary.....	13.6	4.2	4.3	62.0	58.4	6.7	49.4	8.2	10.2	39.3	44.0	49.2
Poland.....	71.5	2.6	10.8	68.2	92.5	270.2	76.8	117.0	712.5	235.8	226.0	235.9
Slovakia.....	9.0	4.0	9.8	23.7	30.6	28.7	72.3	64.6	23.0	20.1	21.1	23.1
Expanded European Union countries.....	128.6	31.8	64.4	163.9	288.2	475.1	592.5	600.6	1,012.0	467.7	471.2	509.1
Japan.....	2,470.4	2,687.1	4,717.6	3,166.6	2,935.2	5,016.1	6,230.9	5,702.3	4,484.0	3,172.6	3,080.9	3,580.4
China.....	480.3	1,234.2	1,181.7	1,629.1	2,449.5	3,970.6	5,045.7	3,229.0	2,706.0	3,601.6	3,122.0	3,663.4
South Korea.....	722.5	832.7	1,480.8	2,686.5	2,793.7	2,517.5	2,098.3	1,329.7	2,468.4	2,876.8	3,121.7	3,367.2
Taiwan.....	525.4	564.5	749.4	2,395.7	1,535.5	2,577.1	3,271.2	2,333.5	1,511.7	1,860.0	1,876.4	1,955.6
Singapore.....	1,334.2	1,216.8	1,309.4	1,879.3	3,137.7	3,367.6	2,862.4	2,336.6	1,253.5	3,916.7	3,732.6	3,790.9
Hong Kong.....	465.6	337.5	766.8	2,031.0	1,913.8	708.7	2,071.4	963.1	549.2	1,805.5	1,805.7	1,876.6
India.....	1,467.3	353.6	919.7	719.0	931.2	578.0	783.0	301.1	450.0	554.9	587.9	664.0
Malaysia.....	412.2	193.3	1,694.1	2,769.1	1,552.2	1,851.7	1,981.5	1,198.9	460.9	754.2	824.9	909.0
Thailand.....	539.6	195.6	1,149.5	1,420.8	993.0	1,502.6	1,682.5	1,399.9	742.2	825.2	906.1	1,009.5
Philippines.....	625.7	63.2	350.7	492.6	902.9	1,292.4	470.0	73.1	207.3	134.6	117.9	127.2
Indonesia.....	802.3	198.8	678.4	317.8	869.8	1,112.7	412.1	182.5	207.2	183.1	188.9	202.4
South Africa.....	554.1	238.3	291.6	527.4	348.3	444.8	850.1	687.2	852.9	850.3	917.2	1,077.3

**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Pharmaceuticals												
Total imports .....	20,523.1	22,440.0	41,695.7	66,581.1	73,254.7	83,086.3	95,410.0	103,403.6	102,145.7	126,647.5	134,096.1	148,248.8
United States.....	1,180.0	1,788.0	3,041.8	5,757.3	6,605.0	8,939.7	12,148.4	13,404.9	13,450.0	17,190.0	21,889.4	26,495.4
Canada.....	438.5	525.7	999.1	1,789.6	1,955.7	2,282.0	2,841.3	3,413.8	3,647.2	4,323.1	4,663.6	5,056.1
Mexico.....	201.9	182.0	334.5	544.9	713.8	828.9	1,012.7	1,115.8	1,278.7	1,526.4	1,570.1	1,616.6
Brazil.....	209.3	184.3	439.8	891.8	1,182.6	1,405.2	1,536.9	1,759.1	1,628.9	1,700.5	1,616.6	1,587.4
Chile.....	57.6	44.4	70.5	174.4	201.1	232.2	249.4	252.9	236.3	281.9	266.8	279.0
Costa Rica.....	146.8	56.9	60.1	77.6	90.9	100.9	128.2	137.7	162.9	196.5	207.5	215.6
Argentina.....	207.4	132.9	122.4	433.0	510.2	609.5	747.3	715.3	687.6	684.2	412.8	555.3
Peru.....	67.2	48.5	57.8	153.5	140.3	169.5	206.4	186.9	171.2	190.7	206.5	211.6
Austria.....	508.5	503.8	1,048.0	1,583.7	1,744.0	1,913.9	2,303.6	2,396.8	1,941.0	2,301.9	2,409.6	2,786.3
Belgium.....	1,108.5	842.3	1,783.6	2,913.7	3,187.3	3,552.2	4,413.2	4,763.8	5,290.6	8,604.9	8,842.2	9,446.9
Denmark.....	319.9	343.3	600.0	825.3	854.4	870.7	972.6	927.1	861.2	1,089.8	1,111.1	1,249.9
France.....	1,059.9	1,196.8	3,009.7	5,126.1	5,538.5	6,051.1	7,273.6	8,046.0	7,735.0	9,082.3	9,292.9	10,178.5
Finland.....	206.8	238.2	479.7	541.8	593.7	635.7	701.6	712.6	630.8	747.5	784.0	877.3
Germany.....	2,072.8	2,130.8	4,050.5	6,209.1	6,831.9	6,966.5	8,537.9	9,074.7	8,322.8	12,285.5	12,330.5	13,643.9
Greece.....	237.8	170.3	400.5	765.5	888.1	993.6	1,072.1	1,135.3	1,094.9	1,260.7	1,303.2	1,509.5
Ireland.....	234.5	341.7	573.8	745.6	808.8	959.2	1,051.5	1,233.5	1,436.0	1,679.0	1,887.6	2,154.7
Italy.....	932.2	1,313.0	3,172.4	3,621.3	4,190.2	4,770.3	5,554.0	6,109.5	5,938.4	7,008.3	6,991.1	7,481.2
Netherlands.....	885.4	940.4	1,841.1	3,476.1	3,390.5	3,748.7	3,938.2	4,455.3	4,079.8	4,916.0	5,110.2	5,400.7
Portugal.....	253.6	182.6	342.6	589.9	718.9	748.1	832.5	967.7	896.8	1,037.2	1,059.2	1,124.8
Spain.....	370.2	362.6	1,150.6	2,081.1	2,419.4	2,818.7	3,303.8	3,562.5	3,550.7	4,536.8	4,847.3	5,567.4
Sweden.....	491.6	489.0	851.9	1,120.3	1,280.7	1,260.2	1,432.9	1,535.8	1,337.0	1,496.3	1,539.3	1,715.1
United Kingdom.....	799.3	1,170.3	2,296.9	4,024.4	4,558.8	5,195.7	5,809.4	6,887.3	7,153.4	9,222.1	9,245.5	9,677.1
European Union-15.....	9,481.1	10,225.3	21,601.5	33,623.9	37,005.2	40,484.6	47,196.8	51,808.1	50,268.3	65,268.3	66,733.7	72,813.3
Czech Republic.....	177.8	216.6	216.8	558.6	623.8	670.2	734.1	720.9	689.8	827.1	887.4	996.3
Hungary.....	153.0	149.1	198.3	413.3	441.7	494.2	573.7	603.4	569.0	710.2	756.9	851.8
Poland.....	267.4	274.5	209.0	770.6	922.5	1,202.5	1,432.7	1,368.0	1,409.5	1,705.1	1,791.4	1,958.8
Slovakia.....	101.4	124.8	98.9	253.5	297.3	348.8	329.6	326.6	319.6	373.8	405.0	451.1
Expanded European												
Union countries.....	699.6	765.0	723.0	1,995.9	2,285.4	2,715.6	3,070.0	3,018.9	2,988.1	3,616.2	3,840.8	4,258.0
Japan.....	1,501.2	1,703.0	3,077.2	4,265.9	4,015.5	4,115.1	3,731.4	4,370.1	4,244.3	4,610.4	4,392.8	4,640.4
China.....	28.8	133.4	546.3	937.3	1,040.6	1,069.2	1,193.5	1,138.7	1,109.2	1,264.0	1,362.1	1,475.0
South Korea.....	130.6	162.5	346.1	648.7	752.0	741.0	584.4	704.4	764.0	935.2	1,000.6	1,025.7
Taiwan.....	146.6	212.0	352.5	625.0	698.2	719.5	757.5	851.2	846.7	917.6	930.3	952.1
Singapore.....	173.4	162.2	258.1	520.1	550.6	628.5	527.3	593.0	607.4	720.4	733.5	749.2
Hong Kong.....	375.8	386.2	783.1	1,146.4	1,156.8	1,185.0	1,185.9	1,009.1	869.9	819.0	884.1	963.8
India.....	120.5	162.4	243.7	385.3	340.5	419.7	437.9	424.1	415.5	497.1	510.8	587.8
Malaysia.....	117.0	157.5	220.5	333.0	355.0	406.3	304.5	352.0	351.1	418.5	450.2	491.1
Thailand.....	165.1	168.6	260.7	515.5	530.0	561.8	389.4	489.4	497.7	573.1	595.2	630.8
Philippines.....	108.5	82.5	178.7	301.3	332.2	372.3	349.9	379.9	357.1	362.1	395.0	438.0
Indonesia.....	130.0	132.2	200.8	238.4	230.4	275.1	204.7	162.2	182.3	168.3	175.7	187.4
South Africa.....	192.7	164.9	290.9	490.9	526.8	602.7	637.4	669.5	690.4	716.2	726.9	832.1

**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Office and computing machinery</b>												
Total imports .....	18,676.2	43,356.1	86,600.1	198,351.0	239,662.5	306,169.3	357,296.3	439,403.6	533,650.3	536,211.1	584,567.5	707,549.8
United States.....	2,337.4	9,865.7	19,590.4	46,983.4	54,445.3	69,835.6	81,357.0	99,654.7	115,869.5	107,362.3	112,532.3	126,334.0
Canada.....	897.3	2,050.0	3,838.4	8,176.6	9,624.6	11,618.6	12,594.5	14,320.6	17,178.5	15,661.8	16,931.0	20,340.8
Mexico .....	235.1	370.6	732.6	2,051.9	2,998.2	4,345.8	4,761.0	6,176.8	8,309.1	10,573.9	11,985.3	13,791.1
Brazil.....	194.5	243.2	349.3	1,548.1	2,177.6	2,813.9	2,951.7	2,576.6	3,584.9	3,483.2	3,280.7	3,431.9
Chile.....	43.9	54.4	96.0	383.9	468.7	664.3	663.3	714.0	822.4	796.6	777.3	888.2
Costa Rica.....	0.9	11.4	31.1	60.8	82.5	119.8	297.5	354.3	389.6	465.7	445.8	528.4
Argentina .....	227.1	158.3	132.0	660.6	884.2	1,162.9	1,483.5	1,526.5	1,709.1	1,292.6	515.8	845.9
Peru .....	21.5	36.2	30.0	171.0	237.6	313.6	346.1	300.4	366.3	352.7	389.3	431.3
Austria .....	265.7	481.1	977.1	1,646.9	1,848.0	2,302.8	2,702.9	3,362.6	3,758.9	4,019.9	4,299.2	5,261.7
Belgium.....	488.2	901.3	1,599.1	2,631.4	3,459.4	4,123.9	5,212.1	6,396.9	7,523.0	8,216.4	8,811.3	10,751.6
Denmark .....	256.8	490.0	862.7	1,872.9	2,082.3	2,637.0	2,606.6	3,163.2	3,297.9	3,242.4	3,625.9	4,511.3
France.....	1,855.9	3,272.9	5,650.4	10,513.0	12,040.9	15,221.1	18,379.1	19,561.8	22,718.5	22,447.1	24,023.4	29,165.9
Finland.....	219.9	381.9	599.9	1,310.1	1,428.7	1,807.1	2,230.6	2,651.3	2,346.0	2,643.2	2,770.7	3,471.9
Germany .....	2,361.2	4,398.1	9,692.0	18,280.8	20,464.3	26,006.2	31,227.0	38,132.7	41,670.2	44,328.5	43,613.8	51,566.9
Greece.....	27.9	60.4	171.5	357.7	425.6	532.8	743.1	1,137.9	1,148.6	1,081.5	1,131.2	1,624.5
Ireland.....	257.1	944.9	1,593.0	5,013.4	5,802.0	8,726.9	11,845.5	13,265.7	16,052.6	17,852.8	20,018.6	22,347.0
Italy.....	1,118.8	1,975.7	3,492.8	5,123.9	6,288.4	6,949.2	8,410.6	10,195.3	11,368.0	11,109.8	11,973.9	14,397.3
Netherlands.....	845.5	2,077.6	5,301.7	11,432.3	14,618.7	20,435.1	26,439.6	32,025.9	33,594.3	35,526.6	36,876.0	42,133.9
Portugal.....	59.3	114.6	375.7	635.3	784.5	931.0	1,150.5	1,636.2	1,551.9	1,920.9	1,941.5	1,988.7
Spain.....	421.0	1,011.4	2,039.0	2,819.1	3,340.0	4,199.7	5,008.9	6,024.1	6,842.2	7,605.6	8,232.7	10,342.1
Sweden.....	532.2	970.7	1,491.8	2,728.5	3,051.9	3,544.6	4,826.7	4,284.2	4,607.8	4,581.9	4,860.0	5,970.5
United Kingdom.....	2,062.5	4,215.2	8,600.3	15,350.4	17,606.2	22,678.4	28,363.8	34,377.8	41,454.2	38,550.4	41,524.8	47,821.9
European Union-15.....	10,771.8	21,295.8	42,447.1	79,715.8	93,240.7	120,095.8	149,146.8	176,215.6	197,934.1	203,127.0	213,703.1	251,355.2
Czech Republic.....	118.7	217.2	303.1	692.9	815.2	873.3	1,191.9	1,273.9	1,729.1	2,490.2	2,930.4	3,789.1
Hungary .....	50.2	45.2	164.5	328.0	428.6	1,293.9	1,862.7	2,500.8	3,431.0	3,358.3	4,349.7	5,844.4
Poland.....	33.9	35.2	108.8	626.8	886.3	1,173.5	1,655.6	2,006.0	2,390.2	2,600.0	2,794.2	3,373.0
Slovakia .....	39.8	70.4	75.2	202.7	130.2	291.7	392.7	412.5	473.1	561.8	659.4	852.6
Expanded European Union countries .....	242.6	367.9	651.6	1,850.3	2,260.3	3,632.5	5,102.9	6,193.2	8,023.5	9,010.4	10,733.7	13,859.2
Japan.....	722.9	1,267.5	3,356.8	12,605.9	16,339.7	18,123.5	17,787.5	25,717.5	36,119.0	33,818.9	32,744.6	39,043.7
China .....	102.6	745.1	605.9	3,472.0	4,504.2	6,536.3	9,360.7	12,831.6	18,557.2	25,137.4	40,343.4	69,661.2
South Korea.....	109.5	387.6	1,162.9	2,763.3	3,468.9	3,590.6	2,126.8	5,316.7	10,053.2	7,914.6	10,146.0	12,507.2
Taiwan.....	99.7	300.5	1,217.5	2,918.1	4,092.3	5,488.4	6,197.1	9,993.8	14,791.7	13,304.0	14,805.4	15,918.7
Singapore.....	157.3	693.4	2,813.4	8,878.2	11,894.1	14,562.4	14,358.7	17,925.3	22,011.9	20,312.0	22,058.5	25,683.1
Hong Kong.....	317.4	703.1	1,428.1	5,214.3	6,877.4	9,849.8	11,668.1	14,367.9	21,679.0	26,337.2	28,875.0	33,386.3
India.....	19.7	74.8	173.3	441.3	534.3	878.2	1,039.4	1,482.9	2,327.5	2,554.3	3,059.1	4,487.8
Malaysia.....	53.5	138.5	482.2	3,300.2	4,531.7	6,378.4	6,782.8	8,371.9	10,232.9	10,840.8	12,933.9	15,926.7
Thailand.....	27.9	135.6	835.5	3,106.0	4,202.7	4,682.9	4,188.8	5,479.6	7,632.6	7,986.5	9,566.8	11,888.6
Philippines.....	44.9	40.7	131.2	457.2	1,737.2	2,796.6	3,423.8	4,277.5	5,041.2	5,810.9	6,287.0	7,234.0
Indonesia .....	36.0	86.3	141.3	179.0	267.9	405.5	245.3	348.6	858.2	871.6	962.5	1,119.4
South Africa.....	271.8	372.1	290.0	917.1	1,004.6	1,066.9	1,438.8	1,720.8	1,888.8	1,789.8	1,814.3	2,447.2

**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Communication equipment												
Total imports .....	40,425.2	76,208.3	149,852.4	328,354.9	367,052.9	432,744.2	467,750.9	550,779.1	730,784.1	651,545.6	686,825.6	801,664.2
United States.....	7,182.8	24,864.4	29,792.3	64,748.8	69,123.4	80,682.7	90,904.3	106,214.7	139,556.9	113,378.4	113,301.7	121,242.5
Canada.....	1,657.7	2,677.8	5,621.5	10,656.5	11,273.6	12,869.3	12,935.2	16,002.9	19,961.8	14,718.5	15,571.6	18,079.1
Mexico .....	673.2	1,259.1	3,211.4	7,338.0	8,746.9	11,276.2	14,800.6	19,270.5	27,603.5	25,598.1	26,889.2	29,539.6
Brazil.....	439.1	498.4	1,260.3	3,782.5	4,608.2	5,667.1	5,180.1	5,291.3	6,798.0	6,037.1	5,531.1	5,726.4
Chile.....	190.8	59.5	333.0	770.5	804.6	1,008.0	1,215.3	1,067.6	1,184.6	1,040.2	1,017.8	1,092.4
Costa Rica.....	52.9	15.7	43.3	89.9	112.9	215.0	985.0	739.6	1,008.6	1,426.0	1,255.8	1,480.2
Argentina .....	684.5	213.6	230.2	1,276.9	1,434.7	2,003.4	2,067.8	1,942.1	2,578.1	1,453.8	614.3	1,018.0
Peru .....	100.5	56.7	66.7	427.6	489.5	560.0	468.9	376.8	443.9	499.9	555.5	596.6
Austria .....	531.1	635.1	1,805.1	2,295.4	2,493.6	3,319.0	3,925.1	4,439.1	4,740.6	4,517.7	4,617.9	5,514.8
Belgium.....	1,140.3	959.4	2,166.2	3,421.1	4,217.4	5,060.6	6,204.2	7,389.1	9,136.3	9,189.7	9,923.0	12,274.1
Denmark .....	377.2	544.1	923.2	1,830.8	2,041.2	2,965.6	3,081.1	3,189.3	3,702.7	3,735.1	4,042.6	4,671.6
France.....	2,059.2	2,540.2	6,903.6	10,743.7	11,984.2	14,792.6	18,382.1	20,421.8	26,529.7	22,541.1	23,098.5	26,817.7
Finland.....	308.2	476.3	849.5	2,107.0	2,297.5	2,944.0	3,230.3	3,790.6	6,156.3	5,165.0	5,380.3	6,357.2
Germany .....	4,004.7	5,274.7	13,320.3	22,257.3	22,776.8	24,239.4	28,238.9	31,010.3	41,216.3	38,989.2	38,815.1	44,948.2
Greece.....	189.1	230.5	439.9	836.4	1,012.2	1,350.4	1,579.5	1,825.7	1,999.1	1,821.7	1,803.0	2,394.8
Ireland.....	219.5	333.3	765.9	2,458.1	2,503.2	3,262.9	4,248.6	5,516.5	8,286.4	10,539.8	11,347.9	12,422.9
Italy.....	1,651.2	2,178.0	6,344.8	7,474.7	7,803.8	9,136.3	11,056.1	11,728.2	14,439.6	13,325.1	14,208.1	16,579.2
Netherlands.....	1,840.6	1,883.9	4,037.7	6,562.4	7,398.3	12,061.0	11,231.8	13,945.8	16,415.4	17,361.4	17,998.3	20,398.5
Portugal.....	153.7	222.2	829.3	1,362.2	1,416.2	2,037.1	2,220.0	2,519.5	2,898.3	3,182.0	3,288.1	3,626.8
Spain.....	635.6	716.4	3,109.5	3,964.7	5,486.0	5,335.6	6,977.8	9,139.8	10,658.2	9,522.7	9,880.6	11,788.3
Sweden.....	739.0	1,099.8	1,871.2	3,838.3	4,478.0	5,621.0	6,258.5	6,159.3	8,264.0	5,889.4	6,157.7	7,255.9
United Kingdom.....	2,267.3	4,267.9	9,008.9	15,684.1	19,536.6	21,984.9	24,295.9	28,036.5	37,099.8	32,977.4	34,559.5	38,779.3
European Union-15...	16,116.5	21,361.9	52,374.9	84,835.9	95,445.1	114,110.5	130,929.9	149,111.4	191,542.7	178,757.2	185,120.6	213,829.5
Czech Republic.....	189.4	284.2	365.0	768.5	1,105.0	1,137.2	1,230.1	1,438.9	2,581.5	2,941.9	3,342.4	4,127.8
Hungary .....	71.3	108.3	277.0	613.9	956.8	1,489.2	2,204.1	2,732.8	4,481.4	4,705.3	5,776.2	7,378.7
Poland.....	78.1	91.3	439.3	1,000.1	1,458.7	1,965.3	2,566.7	2,856.2	3,435.0	3,358.9	3,492.8	4,033.3
Slovakia .....	69.4	104.0	109.8	235.5	307.6	466.7	514.1	406.2	534.5	706.6	782.5	948.1
Expanded European Union countries ....	408.1	587.8	1,191.1	2,618.0	3,828.2	5,058.4	6,514.9	7,434.2	11,032.5	11,712.7	13,393.9	16,487.8
Japan.....	910.5	1,684.9	6,465.6	19,676.4	22,687.1	23,115.6	22,261.7	27,992.2	39,642.7	36,396.6	35,513.5	43,438.1
China .....	386.4	3,310.2	3,472.6	13,711.0	13,980.6	17,678.5	22,207.4	29,487.8	44,027.3	48,421.9	58,535.3	82,822.9
South Korea.....	799.7	1,780.9	4,699.5	10,429.8	12,794.4	15,721.2	14,118.8	22,622.6	29,894.5	24,388.3	28,071.8	32,393.4
Taiwan.....	862.4	1,430.0	5,522.7	12,702.2	14,013.4	18,885.1	19,996.8	24,249.2	31,762.5	25,145.0	26,392.3	29,590.8
Singapore.....	1,247.7	2,400.2	7,863.0	23,628.4	25,729.1	27,298.1	25,168.6	29,115.3	40,273.8	31,929.6	32,705.2	36,382.4
Hong Kong.....	1,162.4	2,370.2	8,491.6	21,188.5	23,035.7	28,336.2	25,775.1	28,072.0	39,262.9	39,234.8	42,520.2	49,771.7
India.....	105.8	399.0	505.3	1,020.6	1,068.5	1,240.0	1,216.7	1,437.7	1,819.1	2,507.6	2,847.3	3,678.7
Malaysia.....	682.0	1,776.5	4,468.9	18,240.3	20,071.0	22,268.2	23,110.2	27,935.9	38,293.1	32,498.5	36,983.3	44,251.7
Thailand.....	222.4	416.5	2,138.6	6,771.0	7,202.2	8,146.8	7,016.6	8,622.8	12,412.3	11,690.2	13,155.6	16,271.5
Philippines.....	240.7	303.8	777.7	2,513.6	6,506.0	9,701.4	12,297.4	14,350.0	14,077.7	11,752.1	11,696.5	13,278.9
Indonesia .....	213.0	295.1	564.0	1,252.5	1,947.3	2,057.1	708.2	541.2	793.1	1,096.9	1,064.0	1,078.3
South Africa.....	338.3	431.7	445.1	1,516.8	1,655.0	1,911.4	2,760.5	2,222.9	2,449.3	2,134.0	2,173.2	2,734.4



**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Medical, precision, and optical instruments												
Total imports .....	54,785.4	76,407.3	105,905.8	141,405.5	150,658.6	168,517.5	173,827.4	186,622.2	213,041.0	212,552.9	219,137.7	241,640.6
United States.....	6,623.6	16,423.8	17,112.7	22,749.5	24,199.5	28,618.7	32,229.2	35,270.7	41,711.5	40,607.0	40,549.9	44,435.8
Canada.....	2,838.8	3,277.7	4,339.0	5,275.4	5,243.6	6,061.1	6,495.0	7,331.8	8,190.0	8,097.3	8,351.6	8,778.5
Mexico .....	923.8	807.1	1,507.1	1,954.9	2,490.3	3,062.9	3,490.1	3,991.7	4,884.4	4,939.3	4,997.2	5,069.4
Brazil.....	727.5	485.6	873.9	1,666.1	1,836.8	2,090.8	2,112.2	1,791.1	2,061.6	2,248.6	2,019.3	2,036.8
Chile.....	145.0	111.6	199.1	350.7	370.0	423.3	428.5	374.9	351.6	355.4	347.8	371.1
Costa Rica.....	34.5	27.2	52.8	72.1	78.8	115.3	153.8	145.1	181.2	223.2	215.8	235.2
Argentina .....	605.1	196.9	173.3	587.5	668.5	790.4	828.4	758.2	679.2	588.4	258.1	404.5
Peru .....	72.0	56.9	49.5	179.2	166.8	181.8	180.7	153.1	143.3	132.3	141.3	147.4
Austria .....	798.2	1,014.7	1,536.4	1,769.1	1,776.4	1,802.7	1,944.4	2,002.8	2,006.0	2,146.2	2,229.7	2,530.7
Belgium.....	1,276.9	1,355.4	2,073.1	2,898.9	3,090.3	3,533.5	3,885.5	4,208.0	4,228.3	4,376.0	4,498.9	4,920.4
Denmark .....	495.0	680.9	811.1	1,031.3	1,042.2	1,187.3	1,231.7	1,253.6	1,274.4	1,379.0	1,462.5	1,606.5
France.....	4,131.4	4,499.2	6,683.6	7,594.4	7,740.0	8,169.9	8,939.3	9,614.2	10,059.8	10,192.4	10,236.4	10,844.5
Finland.....	457.5	568.4	812.4	753.9	793.7	868.5	1,011.4	1,069.7	1,095.0	1,096.9	1,110.1	1,247.8
Germany .....	5,750.4	6,496.0	10,165.2	12,592.7	12,843.5	13,177.8	14,439.2	14,998.6	16,019.5	16,691.3	16,905.2	18,914.1
Greece .....	188.3	259.5	442.9	673.4	667.6	871.1	759.7	827.2	760.8	719.5	762.3	983.0
Ireland.....	270.4	404.0	575.0	834.7	872.2	1,156.9	1,287.6	1,306.6	1,455.8	1,352.2	1,423.9	1,421.1
Italy.....	2,700.8	3,168.5	5,624.7	5,242.9	5,313.4	5,990.0	6,304.7	6,819.8	7,222.1	7,424.5	7,709.8	8,498.0
Netherlands.....	2,134.4	2,607.1	4,255.2	5,231.3	5,804.5	6,806.5	6,657.2	7,311.2	7,892.9	7,765.3	7,914.1	8,684.3
Portugal.....	235.8	210.9	552.4	692.8	757.2	806.1	954.0	1,025.4	1,058.5	1,030.3	1,066.8	1,137.8
Spain.....	1,189.1	1,381.3	3,459.1	3,067.2	3,464.4	3,736.5	4,032.9	4,281.9	4,328.9	4,503.8	4,718.4	5,572.4
Sweden.....	1,169.0	1,414.0	1,817.8	1,994.4	2,069.9	2,187.4	2,414.7	2,340.2	2,459.1	2,445.0	2,508.1	2,743.4
United Kingdom.....	4,091.8	5,408.0	6,922.6	7,816.1	8,360.5	9,482.6	9,761.9	9,931.4	10,806.2	11,280.0	11,417.0	12,017.3
European Union-15...	24,889.0	29,468.1	45,731.4	52,193.2	54,595.7	59,776.8	63,624.2	66,990.6	70,667.3	72,402.6	73,963.2	81,121.3
Czech Republic.....	288.0	380.0	437.0	736.3	760.7	713.7	780.8	770.1	843.6	958.5	1,030.5	1,173.4
Hungary .....	150.6	178.8	237.6	349.6	393.0	494.0	607.2	624.4	781.9	797.7	868.2	976.2
Poland.....	141.3	182.1	205.2	634.4	771.7	934.3	1,009.8	966.1	1,082.6	1,066.9	1,118.7	1,268.3
Slovakia .....	100.8	130.8	129.7	200.7	228.5	261.3	299.0	254.6	283.8	354.3	384.0	445.7
Expanded European Union countries ....	680.7	871.8	1,009.5	1,921.0	2,153.8	2,403.3	2,696.8	2,615.2	2,991.9	3,177.4	3,401.4	3,863.6
Japan.....	2,467.1	2,998.1	5,704.2	9,415.9	11,018.2	11,920.6	11,429.1	12,534.8	14,533.3	14,579.3	14,417.5	16,011.8
China .....	623.2	2,508.2	2,183.0	4,558.0	4,854.2	5,260.2	5,786.7	6,982.6	9,703.5	12,477.8	14,745.8	18,793.4
South Korea.....	598.8	1,332.5	2,645.6	5,413.1	5,826.6	5,765.0	3,506.6	5,022.0	6,798.4	5,684.6	6,531.3	7,297.1
Taiwan.....	700.8	849.5	1,760.2	3,472.7	4,111.3	5,261.0	5,766.4	7,420.2	9,831.4	6,611.5	6,861.5	7,243.3
Singapore.....	928.7	1,243.7	2,180.6	3,893.2	4,119.1	4,725.0	3,866.0	4,437.6	5,393.7	4,516.4	4,511.4	4,616.3
Hong Kong.....	1,970.0	2,677.7	5,603.2	7,722.3	8,261.7	9,224.5	8,671.1	8,865.1	10,638.7	11,164.7	11,772.3	12,598.1
India.....	284.5	658.7	745.2	815.7	750.9	922.8	1,012.9	1,048.1	1,102.6	1,435.8	1,629.3	1,966.3
Malaysia.....	310.5	557.6	954.5	2,170.0	2,000.0	2,264.5	1,785.8	1,963.9	2,604.3	2,548.2	2,696.8	2,862.1
Thailand.....	208.1	365.1	782.0	1,743.7	1,794.1	1,704.9	1,210.8	1,247.1	1,620.9	1,622.7	1,737.9	1,919.5
Philippines.....	190.9	109.0	183.3	438.0	658.1	728.2	687.4	664.5	731.3	786.0	785.3	807.8
Indonesia .....	214.8	378.6	450.1	519.2	507.7	601.6	371.5	264.5	450.0	352.3	359.1	377.4
South Africa.....	709.7	562.6	606.9	821.9	852.4	853.2	859.3	854.0	941.8	914.9	924.1	1,036.5

**World industry exports and imports, by selected country/economy and industry: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Industry and country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Other manufacturing industries												
Total imports .....	1,652,556.4	1,661,347.6	2,549,850.8	3,431,360.7	3,530,497.7	3,719,623.0	3,825,836.2	3,929,833.5	4,095,531.7	4,100,083.1	4,210,327.0	4,478,105.1
United States.....	231,803.7	359,895.6	392,360.9	524,834.1	546,550.4	598,276.9	661,254.4	726,728.1	791,829.4	775,202.2	792,875.0	804,485.4
Canada.....	64,354.7	78,613.8	103,840.2	128,495.2	131,263.8	149,736.4	156,099.9	164,225.8	170,986.3	164,231.2	170,174.5	176,680.5
Mexico.....	24,695.5	16,373.2	32,977.9	55,175.1	67,359.9	83,428.3	95,756.4	108,339.7	135,917.2	131,979.6	131,393.7	129,371.5
Brazil.....	16,014.8	7,130.7	13,284.0	38,154.6	36,919.7	44,631.9	44,436.0	35,298.6	36,804.8	39,850.9	36,522.3	35,336.5
Chile.....	5,750.9	2,800.9	6,211.2	12,220.0	13,597.7	14,777.2	13,967.9	10,596.5	12,070.0	11,858.6	11,315.2	11,728.3
Costa Rica.....	1,439.0	1,334.0	2,133.4	2,952.0	3,263.6	3,791.5	4,614.7	3,835.0	4,031.9	3,923.2	4,131.1	4,269.1
Argentina.....	12,014.8	3,512.4	3,721.9	16,470.1	19,600.6	24,257.1	25,841.7	19,691.8	18,036.2	15,946.3	8,107.1	11,577.4
Peru.....	3,508.1	1,929.7	2,312.4	5,752.8	5,664.9	6,219.9	6,343.0	5,206.0	5,297.1	5,301.5	5,623.9	5,612.3
Austria.....	25,739.2	22,280.7	41,388.5	51,161.9	51,922.1	50,909.3	56,232.3	56,582.7	52,279.7	56,339.5	58,869.1	66,130.7
Belgium.....	73,586.0	57,176.3	102,739.0	122,045.6	122,966.2	128,705.9	139,229.1	141,050.0	137,792.2	145,152.5	154,130.9	168,736.5
Denmark.....	18,873.0	18,939.7	26,574.2	32,627.9	32,393.8	35,438.1	37,672.7	37,424.7	35,174.6	36,378.1	38,095.0	41,179.1
France.....	118,931.9	99,925.0	187,181.5	207,398.1	206,068.1	204,251.3	227,650.8	236,127.2	234,441.9	236,515.6	241,669.5	262,506.4
Finland.....	13,654.7	11,974.7	20,780.3	20,115.3	21,188.5	22,332.9	23,702.2	23,088.8	22,651.6	23,635.5	24,323.2	27,208.4
Germany.....	167,383.5	140,965.1	263,439.5	339,683.5	329,737.2	324,316.3	353,465.4	349,313.4	333,945.1	343,716.0	343,122.6	373,971.4
Greece.....	11,970.3	10,223.3	17,541.7	21,274.9	22,285.5	22,590.6	24,440.7	25,061.7	24,258.8	23,513.7	24,325.7	27,509.3
Ireland.....	12,086.7	9,271.1	15,798.2	19,388.8	21,315.7	24,656.1	25,741.6	26,231.5	27,001.5	25,510.5	26,517.8	27,864.3
Italy.....	81,889.6	70,650.8	129,649.4	140,837.7	138,248.2	145,377.6	158,108.8	161,883.5	162,068.6	165,864.9	171,911.3	185,722.9
Netherlands.....	70,841.4	61,261.2	99,292.0	116,638.7	117,253.4	119,145.2	124,113.1	126,441.1	118,431.9	119,056.1	121,535.0	126,392.4
Portugal.....	7,721.5	5,921.1	19,768.4	25,952.2	27,389.7	29,122.0	32,249.0	34,458.7	32,429.9	32,970.7	33,235.0	34,931.1
Spain.....	20,750.8	20,266.6	64,708.5	84,669.4	88,852.3	93,582.5	109,803.6	120,579.7	118,015.0	122,542.8	130,215.1	150,464.4
Sweden.....	32,007.3	27,377.1	43,593.5	45,215.4	46,468.0	48,676.0	51,401.0	50,756.4	49,359.9	48,418.3	49,722.3	54,404.3
United Kingdom.....	112,007.4	105,826.8	170,022.4	193,705.0	202,111.2	220,300.5	239,222.9	241,401.4	236,382.4	246,162.7	254,170.7	268,616.5
European Union-15.....	767,443.1	662,059.5	1,202,477.0	1,420,714.7	1,428,199.8	1,469,404.4	1,603,033.2	1,630,400.9	1,584,233.1	1,625,776.7	1,671,843.2	1,815,637.7
Czech Republic.....	9,883.1	9,781.2	10,549.0	18,862.8	20,539.8	21,222.3	24,618.0	23,738.8	25,138.6	28,899.1	31,010.0	34,639.8
Hungary.....	8,468.3	6,890.1	6,934.1	13,506.5	13,410.8	16,725.2	22,086.3	22,995.7	22,780.5	25,996.7	28,243.7	31,253.2
Poland.....	10,973.1	7,134.7	6,631.8	23,267.9	28,498.1	33,325.7	39,191.3	37,587.5	36,376.6	38,626.8	39,119.2	42,343.3
Slovakia.....	4,181.7	4,339.5	3,897.9	7,343.7	7,831.4	8,579.8	10,298.6	8,778.7	9,295.8	11,183.9	12,062.5	13,704.8
Expanded European Union countries .....												
Japan.....	55,145.0	62,740.8	134,912.7	179,866.5	182,842.1	175,207.2	153,727.1	165,182.6	183,573.8	178,799.7	170,656.2	183,368.8
China.....	22,605.8	47,243.6	49,614.0	124,226.4	132,683.9	136,897.8	130,044.1	138,642.9	162,000.3	170,976.5	191,558.1	224,298.3
South Korea.....	14,090.2	20,447.0	44,713.4	76,938.4	80,802.8	74,537.5	45,476.8	59,390.6	73,088.5	69,523.3	75,102.8	77,434.1
Taiwan.....	15,003.2	15,299.3	37,172.0	59,386.6	56,475.4	61,047.6	58,678.8	70,012.7	77,305.9	60,244.6	60,148.6	59,719.3
Singapore.....	19,400.3	18,205.8	37,679.8	65,278.1	65,643.7	66,947.8	53,498.9	56,495.6	62,380.2	55,523.1	54,767.7	53,089.6
Hong Kong.....	25,852.7	29,148.7	68,267.5	111,265.5	112,749.5	124,008.1	112,301.5	108,620.3	120,461.0	114,281.2	119,332.7	124,858.5
India.....	11,787.0	15,267.8	14,718.6	22,462.1	21,938.4	24,111.4	25,775.9	29,125.2	25,540.8	28,493.3	30,451.1	34,249.1
Malaysia.....	13,154.6	12,162.5	20,805.9	45,129.3	45,374.6	46,173.1	29,402.8	33,373.3	39,675.2	36,901.8	38,251.7	39,042.7
Thailand.....	8,733.7	8,357.5	26,481.5	48,479.8	46,185.5	38,687.7	25,564.7	29,308.1	33,351.3	33,982.9	36,138.3	38,293.7
Philippines.....	7,612.5	3,649.0	8,516.6	16,398.9	18,747.5	20,079.1	13,844.0	13,858.1	14,512.0	14,031.5	13,426.7	13,677.3
Indonesia.....	13,108.2	10,446.9	18,398.2	27,905.6	28,377.4	29,576.7	17,996.7	16,433.3	22,303.2	21,327.8	22,463.2	23,353.8
South Africa.....	17,482.1	9,102.1	11,632.5	19,005.6	18,873.7	18,366.0	17,462.3	16,377.5	17,983.3	18,458.4	18,513.0	21,903.6

NOTES: Industry exports include all products shipped to other countries. Industry imports include all products received from other countries. Value of industry shipments classified according to industry classification of reporting firm and may include products produced by firm but not necessarily related to industry classification. Seventy countries or economies included in "all countries." High-technology sectors cover aerospace; computers and office machinery; communications equipment; pharmaceuticals; and medical, precision, and optical instruments.

SOURCES: Global Insight, Inc., World Industry Service database (2005). Historical data from United Nations Industrial Development Organization, United Nations System of National Accounts, Organisation for Economic Co-operation and Development, and country sources.

**World service industry data, by selected country/economy: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Service industries</b>												
Total production .....	16,792,201.8	19,335,853.8	23,492,306.3	26,970,481.4	28,070,162.9	29,002,623.6	29,960,041.4	31,222,662.3	32,787,112.4	33,695,853.1	34,472,892.9	35,236,587.1
United States.....	5,968,042.5	6,722,079.8	8,069,233.4	8,987,111.7	9,388,732.8	9,771,439.6	10,230,808.9	10,816,175.1	11,439,556.3	11,659,181.1	12,083,574.2	12,389,423.0
Canada.....	359,752.4	423,671.9	506,029.3	571,646.4	590,245.6	616,144.2	649,191.1	693,450.7	736,142.1	759,592.8	791,083.9	810,448.5
Mexico.....	231,365.0	258,047.7	273,538.3	297,188.6	306,169.5	326,507.7	341,756.0	355,573.4	382,029.3	386,683.9	392,424.4	403,480.2
Brazil.....	381,553.1	423,074.1	482,574.9	582,351.7	618,742.6	640,872.6	648,638.8	648,200.6	668,585.0	686,970.7	700,942.6	706,667.5
Chile.....	31,970.9	31,195.9	40,535.1	59,212.0	66,418.0	70,048.3	72,844.3	73,427.6	76,864.8	79,618.5	81,682.8	84,221.5
Costa Rica.....	6,812.3	6,466.1	7,851.9	9,466.4	10,025.9	10,549.1	10,768.0	11,335.3	12,127.9	12,776.1	13,398.2	14,176.7
Argentina.....	176,523.5	151,423.7	154,134.1	217,836.9	232,048.5	252,935.9	267,150.2	259,995.2	260,455.5	246,965.1	219,883.6	228,625.5
Peru.....	40,518.7	41,149.1	38,013.7	46,219.7	47,471.2	50,044.4	49,577.6	50,184.8	51,296.4	51,627.7	53,863.0	55,950.3
Austria.....	134,791.6	144,647.8	174,205.9	192,059.3	197,971.7	199,198.1	204,542.3	210,774.6	216,680.9	220,575.5	223,436.4	224,040.1
Belgium.....	188,393.9	214,913.7	250,811.1	272,841.5	280,558.0	288,390.3	300,190.3	316,637.4	336,710.8	348,433.2	347,760.5	353,914.5
Denmark.....	117,306.5	131,955.7	146,685.6	158,260.1	163,974.7	169,333.7	175,435.6	185,163.5	193,400.1	202,256.7	209,207.9	212,964.2
France.....	948,297.0	1,081,805.7	1,296,604.0	1,339,262.1	1,379,143.3	1,387,374.0	1,427,304.1	1,497,585.8	1,590,685.6	1,623,208.1	1,655,276.4	1,676,121.7
Finland.....	81,399.2	90,147.0	112,140.2	102,288.5	108,131.1	111,337.7	116,238.3	123,237.9	126,832.9	128,883.6	132,544.0	136,869.5
Germany.....	1,023,796.4	1,165,186.9	1,428,585.8	1,941,875.3	1,998,266.8	2,035,740.0	2,090,922.3	2,180,310.8	2,265,041.1	2,321,808.4	2,349,397.9	2,351,302.2
Greece.....	56,376.0	63,972.2	76,946.0	93,975.0	96,131.5	98,722.5	102,661.8	106,329.6	108,872.0	114,436.2	120,177.4	126,634.9
Ireland.....	29,723.5	31,813.1	41,952.9	49,118.2	53,392.0	55,437.9	57,797.6	65,622.8	70,661.5	75,075.6	81,919.9	83,767.0
Italy.....	737,252.1	859,776.1	1,007,534.9	1,137,801.8	1,147,965.8	1,174,580.7	1,198,558.9	1,228,547.3	1,285,362.4	1,324,351.0	1,341,299.4	1,352,810.8
Netherlands.....	255,946.7	271,644.0	319,221.6	353,783.3	375,266.8	390,308.5	409,650.7	433,600.2	454,882.8	463,524.8	468,595.4	473,894.9
Portugal.....	54,863.9	61,183.6	87,750.9	97,943.9	102,187.4	104,220.8	110,411.2	119,038.4	125,089.4	128,325.4	131,003.7	131,240.1
Spain.....	291,405.4	338,507.8	420,219.1	493,913.4	508,633.0	516,628.7	535,412.9	564,391.4	588,786.1	612,834.8	622,551.5	641,653.5
Sweden.....	186,925.5	213,585.0	252,219.7	253,483.7	254,593.7	261,862.3	271,941.8	283,752.7	297,239.5	302,690.9	307,421.8	315,176.4
United Kingdom.....	918,558.7	1,024,346.0	1,236,407.6	1,427,731.9	1,494,115.0	1,561,650.8	1,663,844.0	1,723,863.2	1,802,163.8	1,865,214.1	1,915,059.8	1,975,913.4
European Union-15.....	5,025,036.3	5,693,484.4	6,851,285.4	7,914,338.0	8,160,330.8	8,354,786.0	8,664,911.7	9,038,855.6	9,462,408.9	9,731,618.2	9,905,652.1	10,056,303.2
Czech Republic.....	37,530.8	36,246.2	43,110.2	51,779.9	54,655.8	52,961.3	52,511.8	54,744.9	56,729.2	56,119.9	58,035.8	60,320.0
Hungary.....	23,613.9	26,785.3	37,083.4	40,877.7	41,264.9	42,362.8	44,228.0	45,726.3	44,341.2	45,608.3	46,812.1	47,719.9
Poland.....	107,537.4	101,699.3	105,024.5	119,003.2	125,426.4	133,232.7	138,016.5	149,090.7	154,277.2	156,761.0	163,526.9	170,018.8
Slovakia.....	20,433.8	21,159.1	22,374.3	19,602.0	20,838.8	22,677.0	23,931.0	25,466.9	25,276.9	24,525.7	26,124.1	26,675.7
<b>Expanded European</b>												
Union countries.....	189,115.9	185,889.8	207,592.4	231,262.9	242,185.9	251,233.8	258,687.3	275,028.9	280,624.4	283,014.8	294,498.8	304,734.4
Japan.....	2,448,388.0	2,941,211.6	3,715,102.7	4,186,972.2	4,319,894.3	4,372,042.9	4,401,347.7	4,489,454.8	4,638,659.1	4,827,604.5	4,753,451.6	4,812,672.7
China.....	86,862.0	145,488.0	216,625.4	316,596.2	342,483.4	369,067.6	406,315.5	448,019.9	496,210.4	540,199.6	539,513.4	568,814.8
South Korea.....	101,476.6	154,336.0	240,382.8	364,112.4	388,946.4	410,919.9	388,387.4	397,009.1	413,055.8	437,629.6	478,059.9	484,024.8
Taiwan.....	59,374.6	86,798.8	153,278.7	224,471.4	250,667.1	272,120.0	290,359.3	302,144.8	318,534.0	324,479.3	335,444.6	345,585.3
Singapore.....	25,435.7	38,005.2	56,107.9	87,469.8	94,654.3	104,055.4	103,596.1	109,520.1	118,609.6	121,987.8	124,153.0	125,804.3
Hong Kong.....	66,799.2	96,968.5	146,517.8	206,609.2	221,203.1	236,115.4	227,315.2	237,444.0	265,216.0	269,126.6	275,404.3	278,691.3
India.....	87,464.3	116,287.5	166,978.8	235,814.4	252,145.9	254,505.4	280,923.9	304,948.9	327,365.9	347,911.8	372,037.5	401,313.2
Malaysia.....	22,598.3	27,196.0	34,665.1	60,231.0	66,715.3	73,741.3	72,683.0	75,792.8	77,445.0	83,240.5	89,310.0	91,795.2
Thailand.....	38,557.2	48,069.2	74,894.3	112,964.7	118,337.1	115,548.6	101,985.0	103,475.2	106,719.9	107,806.4	114,897.4	116,874.4
Philippines.....	30,707.8	33,749.6	45,371.0	51,515.9	55,151.3	58,804.6	61,342.1	63,229.5	63,621.6	65,652.9	70,436.0	74,617.3
Indonesia.....	48,867.7	65,709.2	81,730.5	115,096.6	128,158.0	131,501.6	110,080.8	111,164.1	115,531.2	121,651.2	134,700.8	144,267.9
South Africa.....	84,180.4	94,551.4	112,855.1	123,835.6	130,657.8	135,649.3	139,299.5	143,797.0	149,533.8	156,187.2	160,277.6	165,666.6

**World service industry data, by selected country/economy: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>High-technology service industries</b>												
Total production .....	5,706,116.1	6,727,578.3	8,477,934.6	9,901,728.4	10,463,948.0	10,957,267.1	11,509,241.3	12,178,583.7	13,006,296.8	13,478,975.2	13,733,722.7	14,118,835.8
United States.....	2,096,202.9	2,433,420.5	3,004,534.6	3,383,215.5	3,583,611.8	3,787,944.0	4,050,020.0	4,340,840.5	4,692,625.5	4,813,892.5	4,907,762.2	5,087,137.0
Canada .....	126,724.3	158,388.7	191,954.2	216,692.8	224,512.6	235,898.8	249,740.5	267,808.5	284,547.3	292,429.6	302,418.6	308,895.7
Mexico .....	53,263.4	65,228.3	67,466.4	81,304.3	83,288.4	87,528.2	92,390.0	98,089.2	104,419.4	109,129.0	109,616.2	112,771.6
Brazil .....	162,234.3	183,532.2	200,986.6	260,431.2	281,380.9	289,409.2	294,747.1	289,736.5	300,832.0	310,304.1	319,561.9	321,853.4
Chile .....	9,637.2	12,519.4	16,280.2	22,962.1	26,211.0	27,342.0	28,709.5	29,644.8	31,136.9	32,620.6	33,377.1	34,475.3
Costa Rica.....	1,498.6	1,644.3	2,047.0	3,797.7	4,101.7	4,291.0	4,381.1	4,712.8	5,161.2	5,524.0	5,875.9	6,280.3
Argentina .....	60,330.7	50,690.7	50,240.9	76,647.1	82,404.1	91,411.8	100,152.7	99,988.6	101,364.6	96,996.3	86,232.7	86,842.6
Peru .....	13,194.5	14,006.7	13,706.5	16,280.1	16,754.8	17,692.2	17,700.1	18,106.3	18,409.2	18,700.3	19,411.8	19,993.0
Austria .....	43,501.7	46,892.0	58,721.5	68,396.3	71,479.9	72,201.6	75,329.4	81,103.6	86,013.7	89,051.8	90,032.1	90,627.9
Belgium .....	68,665.9	82,640.5	102,096.7	113,429.1	118,474.8	123,667.1	126,188.0	131,852.4	136,414.0	142,083.0	141,683.6	144,480.6
Denmark.....	40,441.6	47,530.8	57,079.6	59,222.4	60,839.2	64,149.1	68,113.8	72,401.5	74,889.4	78,865.6	81,464.3	82,753.9
France.....	403,869.2	478,427.8	584,382.4	599,504.9	620,541.1	618,295.4	641,075.7	683,354.0	739,331.0	762,410.2	782,257.9	799,211.3
Finland.....	29,869.8	34,289.3	42,101.0	37,253.4	39,219.9	40,244.2	42,044.5	45,272.9	47,469.5	48,423.6	49,857.9	52,006.1
Germany.....	386,780.5	436,117.3	545,049.7	793,840.9	824,195.2	857,187.6	890,377.5	955,124.5	997,486.2	1,045,013.6	1,066,189.8	1,069,077.9
Greece.....	13,498.7	15,046.6	18,401.6	24,431.0	25,535.0	26,523.9	28,045.9	29,623.3	30,505.0	31,380.9	33,844.6	35,940.1
Ireland.....	10,382.2	10,905.9	18,704.6	23,501.5	25,307.9	26,081.0	27,710.0	31,909.5	34,759.0	37,673.9	40,965.1	42,027.2
Italy.....	297,072.8	347,413.6	411,595.5	419,504.9	444,480.0	462,125.2	474,330.4	493,243.0	524,071.9	543,071.8	556,408.6	546,263.9
Netherlands.....	102,599.9	108,524.1	124,103.9	144,424.7	154,888.6	162,400.3	173,207.6	186,142.4	197,201.3	201,851.5	204,617.1	208,566.1
Portugal.....	15,266.1	19,812.4	30,281.8	37,593.6	39,206.4	39,883.2	43,006.6	47,700.0	50,065.5	51,892.5	52,333.6	52,164.8
Spain.....	74,516.0	98,839.5	133,581.2	166,141.1	172,744.7	177,179.3	185,380.6	198,229.8	211,744.7	223,944.3	226,714.4	234,065.3
Sweden.....	76,881.5	88,021.5	110,650.4	103,318.3	103,339.5	107,490.9	112,658.9	120,449.7	129,651.6	134,220.1	135,643.0	139,068.2
United Kingdom.....	377,092.4	426,588.5	546,334.0	641,946.2	676,241.2	715,962.3	769,131.4	807,078.3	857,459.1	898,310.8	918,048.4	958,662.8
European Union-15 .....	1,940,438.4	2,241,049.8	2,783,084.1	3,232,508.4	3,376,493.3	3,493,391.0	3,656,600.3	3,883,484.8	4,117,062.1	4,288,193.5	4,380,060.4	4,454,916.1
Czech Republic .....	12,266.8	10,821.7	15,730.1	18,724.7	19,374.9	19,717.5	19,604.3	21,162.6	22,319.9	22,183.9	22,039.1	22,741.8
Hungary.....	5,864.2	6,612.1	9,194.3	14,731.3	15,506.8	15,651.3	16,204.8	16,669.4	16,848.3	17,642.8	17,949.7	17,791.4
Poland.....	23,982.9	22,623.5	23,050.1	34,728.6	36,283.1	37,999.6	39,362.3	41,757.7	43,122.2	43,257.9	43,253.8	44,114.7
Slovakia.....	6,940.1	6,569.9	6,633.3	5,927.5	5,890.0	6,855.8	7,417.8	7,812.1	7,778.5	7,258.3	8,082.8	8,661.8
<b>Expanded European Union countries .....</b>												
Japan.....	462,392.3	611,608.7	933,154.4	1,114,189.3	1,199,854.6	1,247,466.0	1,294,622.5	1,358,017.0	1,444,621.7	1,521,145.0	1,482,073.1	1,516,605.3
China .....	31,398.9	47,054.9	76,380.8	114,580.4	128,413.4	139,982.4	151,683.2	168,074.5	199,928.5	217,268.7	220,448.5	234,642.4
South Korea .....	22,532.3	40,336.6	68,865.6	126,548.2	136,081.6	145,992.2	140,580.8	142,467.3	148,783.5	159,382.2	184,078.5	190,253.8
Taiwan.....	12,058.0	17,093.1	36,836.5	54,648.1	61,402.0	70,710.8	77,885.7	84,444.4	90,264.5	95,124.8	101,988.7	105,356.1
Singapore.....	11,190.7	16,572.5	25,791.6	41,922.5	46,017.0	51,850.1	51,395.5	54,068.8	57,630.5	59,867.0	60,360.4	60,653.5
Hong Kong .....	28,723.9	38,024.0	52,213.8	79,464.9	86,554.6	93,297.8	89,508.8	91,397.1	101,226.7	103,422.6	104,930.9	107,625.8
India.....	24,332.3	31,008.0	46,060.9	71,633.1	77,822.2	86,000.5	97,171.5	110,052.9	113,718.5	122,051.4	130,772.2	139,228.6
Malaysia .....	9,559.4	10,997.5	13,491.5	23,588.5	26,686.6	30,035.7	29,399.7	30,932.7	32,062.1	35,352.6	38,665.5	39,976.2
Thailand.....	11,361.8	13,315.4	21,286.6	38,155.6	40,277.9	38,636.0	33,082.0	31,022.4	31,255.5	31,635.7	33,270.6	34,701.1
Philippines .....	6,987.8	6,888.7	10,326.0	11,945.1	13,361.0	15,076.2	16,347.8	16,824.2	17,264.4	18,249.4	19,981.4	21,648.6
Indonesia .....	14,303.5	20,963.1	25,670.9	38,945.9	44,037.7	44,574.6	37,874.6	39,066.6	40,309.4	42,795.0	48,302.6	53,154.9
South Africa .....	30,285.8	35,219.3	42,827.7	49,502.7	52,507.8	54,744.3	57,769.5	61,320.2	64,402.6	68,543.0	70,859.6	73,336.9

Country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Communication services												
Total production .....	493,308.2	589,260.8	767,131.3	933,030.6	1,044,563.3	1,138,761.6	1,259,942.4	1,455,976.4	1,671,421.1	1,829,823.6	1,868,869.2	1,954,346.3
United States.....	177,496.0	197,367.5	248,977.0	307,800.9	354,887.0	377,161.0	422,457.1	488,848.5	569,699.9	611,427.2	595,543.1	630,347.6
Canada.....	10,315.9	12,910.6	19,323.1	22,138.6	23,166.3	24,917.0	26,205.5	30,210.2	34,371.8	36,991.7	39,614.7	40,219.2
Mexico.....	1,547.3	1,714.6	2,673.8	5,453.3	6,306.7	7,120.2	7,787.7	8,917.0	10,269.5	11,604.2	12,209.4	12,673.3
Brazil.....	17,876.7	12,531.7	14,146.5	21,989.8	24,112.5	26,039.7	30,030.2	34,635.7	42,359.1	46,943.1	48,785.6	49,670.8
Chile.....	573.2	586.9	836.3	1,928.0	2,105.5	2,440.2	2,757.4	2,865.7	3,186.4	3,657.2	3,900.8	4,129.2
Costa Rica.....	364.7	390.7	532.3	783.5	854.0	913.4	956.9	1,046.9	1,148.2	1,285.6	1,389.8	1,555.2
Argentina.....	3,192.7	442.4	4,852.2	8,856.5	9,796.3	11,802.2	14,126.7	14,499.8	14,663.0	14,387.6	13,495.9	13,606.4
Peru.....	1,302.5	1,339.8	1,185.7	1,454.6	1,479.4	1,608.5	1,584.8	1,591.3	1,725.9	1,715.0	1,763.5	1,871.1
Austria.....	2,763.1	3,270.8	3,838.7	4,813.9	6,079.3	6,400.4	7,081.2	8,800.0	10,620.0	11,462.7	11,357.8	11,453.2
Belgium.....	6,474.7	7,306.3	8,788.7	9,245.4	9,457.5	9,373.2	8,904.5	10,773.6	12,197.4	12,947.5	12,299.6	12,655.1
Denmark.....	1,772.6	2,468.9	3,405.2	4,105.2	4,777.4	5,258.9	5,692.9	6,583.1	8,085.9	8,274.4	8,430.4	8,685.0
France.....	12,585.5	18,378.2	28,636.5	33,559.5	36,262.0	40,228.3	47,126.3	59,363.0	75,636.9	82,025.0	87,015.0	92,286.9
Finland.....	1,733.9	2,008.8	2,740.7	3,008.4	3,425.5	3,970.7	4,652.3	5,262.6	6,226.0	6,663.0	7,073.7	7,256.6
Germany.....	29,326.0	32,345.5	40,426.2	55,449.6	58,514.3	62,359.4	67,820.2	90,179.1	97,761.9	119,077.5	132,988.3	134,717.0
Greece.....	1,884.1	2,134.7	2,476.4	3,034.8	3,248.5	3,870.7	4,178.6	5,218.8	5,809.5	6,432.8	7,525.2	8,067.3
Ireland.....	1,086.6	1,508.5	2,349.5	2,935.6	3,181.4	3,233.4	3,196.2	3,492.5	3,882.5	4,225.5	4,307.1	4,484.5
Italy.....	11,702.1	18,055.9	21,516.6	25,466.0	28,756.1	30,329.7	32,468.0	38,522.7	41,616.8	46,318.8	48,529.9	49,411.8
Netherlands.....	6,553.3	7,470.1	9,020.2	10,565.3	11,167.7	13,149.3	16,615.7	21,179.5	27,031.0	29,507.3	31,143.7	32,227.5
Portugal.....	1,070.7	1,474.7	2,336.1	3,414.7	3,577.8	3,571.4	3,860.5	4,198.0	4,752.0	5,045.8	5,158.0	5,204.7
Spain.....	6,182.5	8,074.1	10,194.3	14,431.3	17,635.3	19,317.4	21,184.6	24,270.5	27,247.6	29,446.9	30,349.3	31,772.7
Sweden.....	5,586.3	6,025.0	8,123.7	8,982.3	9,355.5	10,185.9	11,022.6	12,076.1	14,795.2	16,123.3	16,866.0	17,415.8
United Kingdom.....	21,410.8	26,357.6	35,547.9	44,938.5	51,287.0	58,457.4	63,677.0	75,167.6	86,575.1	93,243.2	94,357.4	98,880.6
European Union-15.....	110,132.2	136,879.0	179,400.8	223,950.6	246,725.4	269,706.0	298,480.5	365,087.0	422,238.0	470,793.5	497,401.5	514,518.6
Czech Republic.....	2,007.7	1,969.4	1,523.3	1,968.6	1,956.4	2,220.8	2,141.2	2,664.0	3,366.6	3,533.8	3,678.3	3,896.5
Hungary.....	1,496.1	1,537.5	1,618.5	1,769.0	1,950.6	2,254.4	2,382.6	2,521.5	2,611.9	2,755.2	2,758.6	2,772.9
Poland.....	1,722.6	1,818.1	2,136.6	3,297.6	3,637.3	4,246.0	5,002.7	5,946.1	6,542.6	6,965.9	7,538.1	7,881.2
Slovakia.....	210.0	230.2	270.4	543.7	629.6	841.3	824.2	687.0	753.7	831.7	764.7	742.5
Expanded European												
Union countries.....	5,436.4	5,555.3	5,548.9	7,578.9	8,173.9	9,562.6	10,350.7	11,818.6	13,274.8	14,086.7	14,739.8	15,293.1
Japan.....	45,020.3	55,080.9	65,532.3	89,254.2	107,614.4	129,530.8	150,410.1	175,785.9	201,483.3	231,826.2	225,741.1	230,660.4
China.....	712.3	1,474.7	4,237.6	12,114.8	14,626.1	17,727.1	19,806.0	23,249.5	33,414.6	39,659.7	41,030.3	44,969.2
South Korea.....	1,783.4	3,852.6	6,746.2	10,968.3	13,438.4	17,171.7	19,185.1	22,620.0	28,302.6	33,293.3	40,987.1	43,011.6
Taiwan.....	980.5	1,899.2	3,477.9	5,558.3	6,388.3	6,893.1	9,387.5	12,842.9	16,305.8	18,357.3	19,636.7	20,759.9
Singapore.....	2,511.3	3,645.6	5,659.2	8,626.4	9,274.1	9,943.6	10,627.6	11,417.4	12,289.2	12,782.0	13,437.3	13,289.5
Hong Kong.....	1,475.3	1,901.5	3,422.4	6,488.0	7,584.7	7,668.2	6,799.8	6,428.1	8,305.8	9,426.7	10,522.4	11,295.6
India.....	2,724.1	3,583.1	5,166.6	9,177.9	10,448.7	11,087.4	12,939.4	14,397.0	13,905.6	15,265.8	16,930.6	16,931.8
Malaysia.....	1,749.6	2,200.7	3,014.3	5,406.0	5,749.5	6,253.7	6,258.9	6,554.4	7,040.7	7,677.2	7,948.5	8,009.6
Thailand.....	553.1	831.3	1,923.7	4,316.5	5,048.7	5,194.4	4,707.2	5,006.2	5,367.8	5,756.5	6,144.3	6,174.1
Philippines.....	658.2	803.0	1,356.0	1,868.1	2,124.0	2,472.4	2,922.2	3,129.3	3,631.7	4,322.5	5,096.1	5,782.3
Indonesia.....	3,389.1	4,728.5	5,847.8	9,199.5	11,075.7	12,571.4	12,417.8	12,969.2	14,339.8	15,844.9	18,721.5	21,784.2
South Africa.....	5,176.0	6,370.5	7,738.8	9,034.3	9,684.3	10,731.5	12,096.1	13,721.1	15,467.8	17,567.2	19,078.1	19,863.9

**World service industry data, by selected country/economy: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Finance and insurance</b>												
Total production .....	1,424,610.5	1,690,624.8	2,160,477.9	2,437,616.9	2,565,595.3	2,687,105.6	2,857,051.2	2,998,025.0	3,206,111.7	3,295,837.5	3,360,150.6	3,514,256.7
United States.....	697,240.3	770,129.6	877,422.6	930,002.7	975,263.4	1,022,384.1	1,135,853.7	1,205,764.9	1,327,975.5	1,367,059.5	1,406,855.1	1,509,290.0
Canada.....	33,458.9	42,945.3	51,082.6	63,267.2	68,058.0	74,082.9	77,525.6	81,834.3	86,156.5	88,992.1	91,397.2	92,629.9
Mexico.....	6,786.0	9,251.5	11,527.7	14,203.7	13,609.3	14,756.2	16,475.5	17,272.9	19,396.2	21,275.7	23,232.4	24,226.2
Brazil.....	28,462.7	32,703.6	36,463.0	49,871.4	54,749.1	55,996.6	55,575.7	50,549.3	55,057.6	58,897.2	63,663.3	64,425.5
Chile.....	1,681.0	1,938.1	2,812.3	4,388.4	5,609.6	5,971.9	6,375.6	6,347.7	6,722.8	7,031.4	7,186.8	7,401.9
Costa Rica.....	307.2	341.3	403.0	518.3	554.4	572.2	564.2	612.3	710.8	789.9	844.6	880.6
Argentina.....	9,683.9	8,632.0	7,930.3	13,416.7	15,181.8	17,172.0	20,250.6	20,411.2	20,894.9	19,130.9	15,571.7	13,118.6
Peru.....	1,616.8	1,802.6	1,831.3	2,286.9	2,590.8	3,113.8	3,067.2	2,754.6	2,778.8	2,833.6	2,941.4	3,020.3
Austria.....	11,355.1	11,775.2	14,699.9	17,552.9	18,122.6	19,469.4	19,998.9	21,190.0	22,235.3	22,263.1	22,309.0	22,420.4
Belgium.....	11,473.0	15,206.8	19,537.9	20,881.5	22,430.6	25,355.3	26,027.2	26,535.4	25,890.8	24,371.2	24,157.3	24,708.4
Denmark.....	6,561.8	7,808.2	11,278.7	9,937.0	10,422.3	11,035.5	12,195.9	12,237.2	12,545.9	13,248.6	13,726.2	14,070.5
France.....	84,799.2	114,482.5	138,952.4	121,664.8	124,261.4	120,807.0	118,169.8	121,842.8	132,094.5	130,602.9	133,216.7	137,964.3
Finland.....	7,671.3	8,022.2	8,608.5	5,607.1	6,026.8	6,072.2	6,163.7	6,989.8	7,229.0	6,397.5	6,233.2	7,387.1
Germany.....	72,143.2	85,310.1	112,935.8	167,913.5	174,484.7	183,628.9	185,621.6	202,030.3	196,363.0	202,486.9	209,554.3	211,891.6
Greece.....	2,815.1	3,181.0	4,047.0	5,424.8	5,788.3	6,011.6	6,814.0	7,661.8	8,245.8	8,452.1	8,515.6	9,084.3
Ireland.....	989.8	1,085.9	3,139.4	4,381.4	4,844.3	5,123.0	5,557.7	6,400.8	6,934.8	7,599.0	8,315.4	8,523.7
Italy.....	70,230.3	74,820.3	92,429.0	91,226.5	100,911.1	109,703.1	117,982.3	114,989.3	125,715.2	125,723.1	125,024.9	125,917.2
Netherlands.....	21,782.7	24,310.7	25,335.8	28,802.5	31,808.6	33,743.5	35,343.6	37,470.8	37,157.8	37,024.4	36,254.2	36,620.6
Portugal.....	2,385.4	3,221.2	6,399.9	7,157.4	7,726.4	8,921.9	10,970.1	12,354.7	13,353.9	14,851.9	14,920.5	14,750.3
Spain.....	17,308.8	25,177.9	33,035.7	40,396.2	39,874.1	41,458.7	42,635.6	41,037.1	44,915.5	50,122.8	49,645.6	50,907.7
Sweden.....	15,843.0	17,691.2	26,723.9	11,417.4	11,763.5	13,804.7	13,535.8	15,585.5	15,631.8	14,639.9	14,804.3	14,999.0
United Kingdom.....	78,271.3	112,861.6	142,883.9	147,662.1	152,121.7	158,986.9	168,208.4	169,814.7	180,285.9	190,486.7	193,691.2	205,584.0
European Union-15.....	403,629.9	504,954.8	640,007.9	680,025.1	710,586.4	744,121.8	769,224.3	796,140.2	828,599.3	848,270.1	860,368.4	884,828.9
Czech Republic.....	1,040.7	871.1	3,114.2	2,699.3	3,480.9	3,799.5	4,792.4	4,763.8	4,255.3	4,380.4	4,681.2	4,407.8
Hungary.....	1,626.4	1,884.4	2,779.9	2,894.5	2,827.8	2,756.1	2,627.1	2,702.7	2,678.5	2,794.2	3,032.7	3,071.5
Poland.....	409.2	375.3	404.1	4,288.6	4,993.8	5,295.4	5,620.1	7,565.7	8,401.9	8,504.4	7,240.1	7,130.9
Slovakia.....	1,234.2	1,127.6	1,178.3	1,274.3	1,091.7	1,379.7	1,400.5	1,534.6	1,436.5	1,365.9	1,454.6	1,471.5
<b>Expanded European</b>												
Union countries.....	4,310.5	4,258.5	7,476.5	11,156.8	12,394.2	13,230.8	14,440.2	16,566.9	16,772.2	17,044.9	16,408.6	16,081.7
Japan.....	97,574.9	150,167.3	274,780.3	318,057.2	333,370.8	342,444.1	362,499.8	391,831.4	414,883.0	412,976.6	394,078.1	397,981.6
China.....	9,213.2	15,388.3	39,669.4	56,761.7	63,053.6	66,521.7	68,726.5	74,137.0	79,842.1	88,235.9	89,187.5	95,815.9
South Korea.....	6,152.0	9,185.6	20,021.8	43,445.8	45,781.4	47,839.8	46,983.0	44,515.3	43,021.2	46,615.1	57,521.5	59,299.3
Taiwan.....	6,320.9	7,843.0	20,630.6	27,742.4	30,754.2	37,012.2	39,169.5	40,142.6	40,725.3	41,640.6	45,413.8	46,985.0
Singapore.....	1,966.8	3,709.2	5,635.9	10,343.2	11,419.4	13,743.8	12,207.4	12,674.9	13,209.5	13,446.8	12,507.8	12,971.5
Hong Kong.....	7,312.4	8,405.9	9,187.5	14,179.4	15,723.3	16,075.3	14,765.9	15,075.3	16,998.8	16,339.3	16,749.9	18,421.0
India.....	3,734.8	6,718.4	13,483.3	22,781.5	24,980.0	27,981.0	30,076.8	35,178.2	35,582.3	40,874.1	44,130.3	47,012.3
Malaysia.....	1,791.6	2,147.8	2,917.0	5,301.4	6,272.0	7,242.7	7,192.9	7,788.3	8,096.2	9,116.1	10,309.4	10,861.7
Thailand.....	2,888.8	3,830.0	9,254.3	18,158.6	18,927.1	17,321.3	12,580.3	8,806.4	8,303.7	8,466.6	9,024.5	10,426.4
Philippines.....	1,528.2	1,105.9	2,674.4	3,052.3	3,663.6	4,331.3	4,556.3	4,515.4	4,270.1	4,165.3	4,309.3	4,615.1
Indonesia.....	1,517.9	2,526.4	4,030.8	6,863.2	7,375.7	7,768.7	5,152.7	4,646.6	4,869.9	5,232.6	5,675.5	6,066.2
South Africa.....	6,198.7	6,928.1	8,089.0	9,093.6	9,669.9	9,972.7	10,739.7	11,452.3	11,902.7	12,724.6	13,156.0	13,478.4

Country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
Business services												
Total production .....	1,707,966.8	2,108,820.9	2,871,294.2	3,467,572.9	3,674,203.9	3,910,879.3	4,114,642.8	4,394,661.6	4,669,703.9	4,767,525.8	4,790,645.9	4,858,457.7
United States.....	619,717.7	801,146.7	1,106,239.6	1,313,647.3	1,393,736.1	1,527,436.9	1,624,492.3	1,767,373.5	1,856,192.6	1,832,514.1	1,848,990.5	1,868,052.0
Canada.....	21,132.7	28,739.8	41,474.9	48,178.3	50,961.4	55,536.7	62,645.4	71,252.6	78,792.4	80,265.9	83,192.7	85,767.1
Mexico.....	14,387.8	19,195.0	18,266.5	25,851.0	27,562.9	28,919.7	30,209.4	32,915.6	35,773.8	37,170.2	35,328.9	36,840.1
Brazil.....	33,660.9	38,306.8	43,023.6	78,337.3	90,805.2	94,817.2	96,641.2	91,317.3	86,516.8	88,574.5	91,118.9	91,584.3
Chile.....	2,560.1	3,054.6	4,478.9	6,999.5	8,945.2	9,401.0	10,034.8	10,360.6	10,947.8	11,475.6	11,645.6	12,102.3
Costa Rica.....	429.4	481.3	569.0	676.7	723.2	764.8	769.6	836.8	907.4	975.6	1,017.7	1,068.9
Argentina.....	21,514.5	19,508.1	17,996.5	27,064.6	28,383.2	30,284.8	31,563.1	31,159.2	31,382.2	30,278.0	27,883.7	29,053.0
Peru.....	3,479.7	3,859.9	3,879.6	4,575.5	4,710.6	4,901.7	4,976.3	5,100.4	5,058.9	5,184.7	5,389.2	5,533.8
Austria.....	8,496.3	9,351.6	14,801.7	18,538.4	19,228.3	20,089.5	21,512.6	22,872.0	25,075.0	26,901.7	27,687.2	27,921.8
Belgium.....	22,525.0	28,393.6	36,807.0	44,507.1	46,699.8	49,910.6	51,457.3	53,783.4	57,735.5	62,617.4	62,292.5	63,143.2
Denmark.....	9,314.7	12,455.7	15,890.0	16,534.1	15,995.4	17,710.3	19,375.8	22,086.1	22,984.7	25,154.0	25,229.9	25,367.7
France.....	164,085.6	183,634.1	238,348.5	247,943.7	257,151.4	257,039.9	274,535.4	297,585.0	321,413.4	333,610.2	335,830.5	338,944.3
Finland.....	4,519.6	6,571.5	10,047.4	9,747.8	10,314.1	10,683.7	11,524.0	12,774.6	13,806.4	14,541.0	15,099.8	15,795.9
Germany.....	137,397.0	164,189.1	221,080.1	303,745.7	317,608.6	331,780.6	356,379.9	377,102.8	413,282.0	429,766.6	417,205.8	416,659.3
Greece.....	2,152.4	2,426.1	3,124.5	4,231.5	4,231.7	4,429.9	4,735.8	4,823.3	4,795.2	4,979.5	5,345.8	5,746.3
Ireland.....	1,462.2	1,621.8	5,356.2	6,478.7	7,080.9	7,848.6	8,851.4	10,134.3	10,966.9	11,831.2	12,991.1	13,213.7
Italy.....	83,756.5	114,321.7	142,742.0	156,381.3	158,854.2	163,820.8	165,349.8	181,160.5	194,772.8	204,877.5	213,568.9	198,758.6
Netherlands.....	30,353.1	32,524.3	43,505.3	54,448.1	59,888.1	63,671.3	68,039.6	73,394.5	78,688.9	79,699.7	79,141.1	80,879.7
Portugal.....	4,469.1	4,888.6	8,032.7	10,625.2	11,118.3	10,929.2	11,443.1	13,249.8	13,412.3	13,072.5	13,146.6	13,252.4
Spain.....	19,002.3	26,268.5	38,124.8	43,276.2	45,572.2	46,650.8	50,218.0	56,964.8	60,828.6	63,678.8	63,988.2	66,499.6
Sweden.....	19,094.8	22,046.7	27,660.9	34,052.4	34,533.3	35,979.0	38,804.1	43,200.3	49,160.5	51,981.4	51,543.8	53,118.7
United Kingdom.....	111,163.6	110,959.4	161,806.4	196,558.2	208,701.5	228,386.9	249,163.0	266,570.7	283,702.1	297,237.3	303,471.8	319,070.3
European Union-15.....	617,792.2	719,652.8	967,327.5	1,147,068.4	1,196,977.7	1,248,931.1	1,331,389.7	1,435,702.1	1,550,624.4	1,619,948.8	1,626,543.1	1,638,371.5
Czech Republic.....	2,074.8	1,752.4	6,223.8	8,024.5	7,795.2	8,165.4	7,688.6	8,386.2	9,273.0	8,681.1	8,078.4	8,747.5
Hungary.....	2,588.0	3,034.2	4,547.3	5,343.0	5,831.8	5,447.6	5,842.1	5,916.0	5,936.9	6,416.0	6,550.2	6,482.6
Poland.....	5,421.2	5,064.9	5,380.6	12,129.9	12,290.4	12,953.5	12,576.1	12,770.0	12,926.5	13,088.0	13,810.8	14,460.4
Slovakia.....	2,491.7	2,322.9	2,398.8	2,047.7	2,061.0	2,559.7	2,633.8	3,110.5	3,169.2	2,761.2	3,431.7	3,862.2
Expanded European												
Union countries.....	12,575.8	12,174.3	18,550.5	27,545.2	27,978.4	29,126.2	28,740.6	30,182.7	31,305.6	30,946.3	31,871.2	33,552.7
Japan.....	177,866.8	248,042.5	390,250.7	450,608.8	486,184.7	498,352.5	505,920.3	515,634.7	551,225.0	584,788.6	567,531.2	580,790.8
China.....	4,784.7	5,469.3	4,585.3	10,867.7	12,201.1	14,056.6	15,582.4	17,394.0	19,917.8	23,368.9	23,597.6	25,955.3
South Korea.....	8,216.1	13,360.4	21,592.1	32,119.9	34,927.4	36,619.2	32,548.1	32,886.9	35,336.6	35,954.0	37,255.7	38,077.9
Taiwan.....	2,462.0	3,550.2	5,518.5	10,401.7	11,834.3	12,993.4	13,877.2	14,896.4	16,106.4	16,795.0	16,783.4	17,196.4
Singapore.....	4,141.7	5,824.4	8,417.3	14,017.5	15,443.2	17,300.4	17,094.1	17,711.4	18,840.7	19,197.6	19,282.3	18,943.5
Hong Kong.....	11,131.1	12,237.3	13,665.6	20,549.2	22,458.3	25,305.8	22,884.6	22,602.4	25,539.7	26,048.8	26,116.5	26,352.1
India.....	5,051.1	5,769.7	7,374.7	11,854.1	12,450.0	14,068.0	15,702.7	16,887.1	18,191.1	16,784.3	18,043.8	19,222.2
Malaysia.....	2,692.3	3,249.5	4,441.4	8,296.9	9,649.5	11,401.5	11,147.7	11,677.0	11,953.9	13,193.8	14,884.7	15,682.2
Thailand.....	1,242.8	1,437.7	2,187.4	3,043.8	3,203.0	3,039.5	3,210.9	3,596.4	3,718.0	3,754.0	4,066.1	4,236.6
Philippines.....	2,850.1	2,176.0	3,102.6	3,541.8	3,942.6	4,389.8	4,619.7	4,767.3	4,779.4	4,961.3	5,365.6	5,762.7
Indonesia.....	2,676.5	4,416.0	5,902.5	9,927.1	11,359.4	12,229.5	9,813.8	9,317.1	9,807.7	10,324.5	11,542.7	12,370.6
South Africa.....	9,306.6	10,562.2	12,356.1	13,967.2	14,871.5	15,699.2	16,905.0	17,979.4	18,635.0	19,803.2	20,379.9	21,159.0

**World service industry data, by selected country/economy: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Educational services</b>												
Total production .....	727,115.9	824,495.8	949,702.6	1,100,139.5	1,136,129.1	1,151,218.9	1,172,328.2	1,188,279.0	1,217,348.2	1,238,458.2	1,266,938.3	1,285,099.5
United States.....	65,878.6	75,980.1	90,955.9	106,239.8	110,429.2	111,493.1	116,631.4	118,776.7	127,096.0	131,670.0	133,667.5	130,600.5
Canada.....	32,904.6	37,893.3	38,245.6	39,908.4	39,967.8	38,604.0	39,481.2	39,904.6	39,670.0	39,659.9	40,020.8	40,222.1
Mexico.....	18,880.7	20,720.3	20,427.6	21,308.9	21,635.8	21,941.6	22,403.3	23,063.2	22,891.3	23,025.6	22,921.7	23,031.8
Brazil.....	30,711.6	38,925.8	45,438.7	47,786.3	47,914.5	47,963.4	47,712.7	47,531.1	48,764.9	48,093.1	48,463.6	48,538.2
Chile.....	2,366.4	3,396.7	3,999.5	4,719.7	4,651.7	4,495.9	4,538.0	4,922.7	5,156.0	5,274.7	5,392.2	5,492.5
Costa Rica.....	147.9	167.8	229.7	788.6	845.0	869.6	886.6	935.6	999.0	1,026.3	1,096.3	1,157.1
Argentina.....	14,085.9	12,176.7	10,784.8	15,229.0	16,056.8	17,621.9	18,777.7	19,024.6	19,152.4	18,308.4	16,231.5	17,220.0
Peru.....	2,704.4	2,857.4	2,813.8	3,474.3	3,436.3	3,388.8	3,369.4	3,385.6	3,435.6	3,463.8	3,625.0	3,722.3
Austria.....	10,608.2	11,250.5	11,700.6	11,723.0	11,870.1	11,688.2	11,573.3	11,785.5	11,744.0	11,610.6	12,020.6	12,078.3
Belgium.....	13,784.9	15,249.5	16,005.4	16,556.1	17,170.1	16,774.4	16,796.5	17,172.5	16,727.3	17,068.1	17,371.1	17,789.8
Denmark.....	8,209.3	8,695.9	8,962.0	9,911.2	10,354.9	10,287.6	10,284.5	10,575.6	10,471.9	10,814.9	11,498.2	11,564.3
France.....	61,108.0	66,205.1	69,733.1	76,946.7	78,590.1	78,318.9	79,385.7	81,616.4	84,028.6	85,063.8	87,654.5	88,678.9
Finland.....	6,615.9	6,505.0	7,645.2	7,418.3	7,530.4	7,482.2	7,678.1	7,913.9	7,831.7	7,924.6	8,092.3	8,147.2
Germany.....	54,160.2	59,911.5	68,736.9	99,560.4	99,981.9	100,856.2	99,975.5	99,718.6	99,850.1	99,872.6	100,807.2	100,025.2
Greece.....	2,848.8	3,139.3	3,789.9	5,151.3	5,440.1	5,350.8	5,381.4	5,125.2	5,103.4	4,951.3	5,485.1	5,712.1
Ireland.....	3,048.8	3,037.5	3,844.5	4,615.6	4,726.7	4,449.8	4,484.0	5,075.4	5,180.1	5,418.0	6,115.9	6,296.7
Italy.....	56,177.0	58,511.1	61,266.4	57,267.4	61,677.2	62,077.1	61,274.8	60,303.8	59,343.2	59,418.0	58,915.1	60,818.4
Netherlands.....	16,670.1	16,112.6	16,512.3	17,409.9	17,720.8	18,161.6	18,674.2	18,905.5	18,914.5	19,023.7	19,418.5	19,568.0
Portugal.....	3,519.7	4,532.0	5,846.7	7,370.9	7,679.2	7,693.7	7,817.6	8,082.8	8,291.4	8,311.0	8,402.4	8,326.8
Spain.....	13,659.6	17,360.7	22,209.8	28,853.7	29,546.3	29,608.9	30,480.2	32,499.7	33,514.7	34,626.0	35,310.1	35,984.6
Sweden.....	13,545.6	15,754.0	17,990.7	17,917.5	17,769.6	17,518.3	17,736.1	19,122.2	18,705.8	18,989.6	19,481.8	19,698.0
United Kingdom.....	64,130.3	65,481.6	74,771.1	86,384.0	88,401.7	89,683.6	94,539.8	97,459.2	99,133.2	100,376.0	101,514.1	101,438.9
European Union-15.....	328,086.4	351,746.3	389,014.6	447,086.0	458,459.0	459,951.2	466,081.6	475,356.0	478,839.8	483,468.2	492,087.0	496,127.2
Czech Republic.....	2,968.7	2,660.9	2,142.5	2,586.1	2,791.4	2,372.8	2,064.8	2,317.5	2,327.3	2,414.3	2,419.4	2,457.9
Hungary.....	71.1	72.7	118.0	2,225.5	2,269.0	2,398.1	2,499.9	2,572.1	2,608.3	2,683.8	2,647.0	2,562.2
Poland.....	6,983.7	6,623.9	6,689.0	6,945.7	7,071.6	7,131.5	7,606.9	7,712.5	7,615.3	7,227.5	7,343.9	7,364.5
Slovakia.....	1,572.4	1,546.5	1,515.0	1,010.7	1,019.1	827.4	960.9	1,029.5	1,007.8	985.1	1,019.5	1,175.4
<b>Expanded European</b>												
Union countries.....	11,595.9	10,904.0	10,464.5	12,767.9	13,151.1	12,729.9	13,132.4	13,631.6	13,558.8	13,310.6	13,429.9	13,560.0
Japan.....	85,227.3	92,813.7	125,073.7	160,427.8	165,881.4	167,182.9	164,343.2	163,799.4	161,423.9	171,217.0	175,680.5	184,421.7
China.....	9,811.2	15,927.8	17,550.3	22,625.2	25,208.0	27,260.1	31,573.2	35,711.6	47,978.2	44,204.4	45,232.7	45,748.4
South Korea.....	5,766.3	11,288.4	15,740.6	26,547.0	27,842.0	29,058.0	27,797.5	27,825.2	27,966.2	29,811.4	32,969.7	33,913.0
Taiwan.....	1,281.5	2,200.5	4,085.3	6,305.0	7,327.3	8,185.9	9,081.3	9,708.0	9,401.2	10,095.1	11,169.8	11,313.9
Singapore.....	1,080.3	1,423.6	2,598.9	3,852.3	4,237.7	4,628.7	4,891.0	5,228.3	5,656.9	6,145.4	6,412.2	6,546.1
Hong Kong.....	3,601.2	6,496.7	11,152.3	16,580.8	17,494.2	18,855.7	19,109.9	19,850.9	21,142.0	21,416.8	21,534.8	21,541.1
India.....	5,176.9	6,160.3	8,534.5	12,059.9	12,842.9	14,004.4	16,308.3	18,297.5	19,205.6	20,387.4	21,587.2	23,423.4
Malaysia.....	1,220.9	1,323.4	1,320.1	1,987.3	2,151.2	2,189.4	2,035.9	2,062.3	2,073.8	2,226.7	2,307.5	2,265.7
Thailand.....	2,746.5	3,048.4	3,443.2	5,490.8	5,636.8	5,574.1	5,486.7	5,746.3	5,824.6	5,548.0	5,751.1	5,860.9
Philippines.....	1,381.3	1,822.9	1,959.7	2,067.8	2,154.3	2,325.4	2,550.4	2,646.4	2,708.1	2,820.1	3,020.4	3,149.9
Indonesia.....	2,833.8	3,975.9	4,277.1	5,586.6	6,101.9	5,115.7	4,498.8	5,196.5	4,838.2	4,906.6	5,322.4	5,568.1
South Africa.....	3,753.2	4,531.6	6,255.2	7,500.4	7,841.2	7,815.6	7,646.2	7,626.0	7,674.5	7,655.8	7,623.2	7,881.9



**World service industry data, by selected country/economy: Selected years, 1980–2003**

(Millions of 1997 U.S. dollars)

Country/economy	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Health services</b>												
Total production .....	1,353,114.7	1,514,375.9	1,729,328.5	1,963,368.5	2,043,456.4	2,069,301.7	2,105,276.7	2,141,641.7	2,241,711.9	2,347,330.1	2,447,118.7	2,506,675.6
United States.....	535,870.3	588,796.6	680,939.5	725,524.8	749,296.1	749,468.9	750,585.5	760,076.9	811,661.4	871,221.8	922,706.1	948,846.8
Canada.....	28,912.2	35,899.6	41,828.1	43,200.3	42,359.1	42,758.3	43,882.8	44,606.7	45,556.6	46,520.0	48,193.3	50,057.3
Mexico.....	11,661.5	14,346.9	14,570.7	14,487.3	14,173.7	14,790.5	15,514.1	15,920.6	16,088.6	16,053.5	15,923.7	16,000.1
Brazil.....	51,522.3	61,064.2	61,914.8	62,446.4	63,799.7	64,592.3	64,787.2	65,703.1	68,133.6	67,796.2	67,530.6	67,634.6
Chile.....	2,456.5	3,543.2	4,153.2	4,926.5	4,899.0	5,033.0	5,003.7	5,148.1	5,123.9	5,181.7	5,251.8	5,349.4
Costa Rica.....	249.3	263.2	313.0	1,030.6	1,125.1	1,171.1	1,203.8	1,281.2	1,395.8	1,446.7	1,527.6	1,618.5
Argentina.....	11,853.7	9,931.4	8,677.2	12,080.4	12,985.9	14,530.9	15,434.6	14,893.9	15,272.2	14,891.4	13,049.9	13,844.7
Peru.....	4,091.2	4,147.0	3,996.0	4,488.7	4,537.7	4,679.3	4,702.3	5,274.4	5,410.0	5,503.2	5,692.8	5,845.6
Austria.....	10,278.9	11,243.9	13,680.7	15,768.1	16,179.6	14,554.1	15,163.5	16,456.1	16,339.3	16,813.6	16,657.6	16,754.2
Belgium.....	14,408.3	16,484.2	20,957.7	22,239.0	22,716.9	22,253.5	22,002.5	23,587.6	23,862.9	25,078.8	25,563.0	26,184.2
Denmark.....	14,583.3	16,102.2	17,543.6	18,734.9	19,289.3	19,856.8	20,564.8	20,919.5	20,801.0	21,373.7	22,579.7	23,066.4
France.....	81,290.9	95,728.0	108,711.9	119,390.2	124,276.2	121,901.4	121,858.6	122,946.8	126,157.6	131,108.3	138,541.2	141,337.0
Finland.....	9,329.1	11,181.8	13,059.3	11,471.8	11,923.2	12,035.3	12,026.4	12,332.0	12,376.4	12,897.6	13,359.0	13,419.3
Germany.....	93,754.1	94,361.2	101,870.7	167,171.7	173,605.6	178,562.4	180,580.4	186,093.6	190,229.1	193,810.0	205,634.2	205,784.7
Greece.....	3,798.3	4,165.4	4,963.8	6,588.5	6,826.5	6,861.0	6,936.1	6,794.2	6,551.1	6,565.2	6,972.9	7,330.1
Ireland.....	3,794.9	3,652.2	4,015.0	5,090.2	5,474.6	5,426.2	5,620.7	6,806.5	7,794.6	8,600.2	9,235.6	9,508.6
Italy.....	75,207.0	81,704.5	93,641.5	89,163.7	94,281.3	96,194.6	97,255.6	98,266.7	102,624.0	106,734.3	110,369.8	111,358.0
Netherlands.....	27,240.7	28,106.4	29,730.3	33,198.9	34,303.5	33,674.5	34,534.5	35,192.1	35,409.1	36,596.4	38,659.5	39,270.3
Portugal.....	3,821.2	5,695.9	7,666.4	9,025.5	9,104.6	8,767.0	8,915.3	9,814.8	10,256.0	10,611.4	10,706.0	10,630.6
Spain.....	18,362.9	21,958.4	30,016.6	39,183.7	40,116.8	40,143.5	40,862.2	43,457.7	45,238.4	46,069.7	47,421.1	48,900.7
Sweden.....	22,811.9	26,504.6	30,151.3	30,948.7	29,917.5	30,003.1	31,560.4	30,465.7	31,358.3	32,486.0	32,947.2	33,836.8
United Kingdom.....	102,116.5	110,928.3	131,324.6	166,403.4	175,729.3	180,447.5	193,543.2	198,066.1	207,762.9	216,967.7	225,013.8	233,689.1
European Union-15.....	480,797.8	527,816.9	607,333.4	734,378.3	763,744.8	770,680.9	791,424.3	811,199.5	836,760.6	865,712.9	903,660.5	921,069.9
Czech Republic.....	4,174.9	3,567.9	2,726.3	3,446.2	3,351.1	3,158.9	2,917.3	3,031.1	3,097.8	3,174.3	3,181.6	3,232.2
Hungary.....	82.5	83.3	130.5	2,499.3	2,627.6	2,794.9	2,853.1	2,957.1	3,012.6	2,993.6	2,961.2	2,902.2
Poland.....	9,446.0	8,741.2	8,439.9	8,066.8	8,290.0	8,373.1	8,556.6	7,763.4	7,635.9	7,472.1	7,320.8	7,277.7
Slovakia.....	1,431.9	1,342.7	1,270.8	1,051.1	1,088.5	1,247.7	1,598.4	1,450.4	1,411.4	1,314.5	1,412.4	1,410.2
<b>Expanded European</b>												
Union countries.....	15,135.4	13,735.1	12,567.5	15,063.4	15,357.2	15,574.6	15,925.3	15,202.0	15,157.7	14,954.5	14,876.0	14,822.3
Japan.....	56,702.9	65,504.3	77,517.4	95,841.3	106,803.4	109,955.8	111,449.1	110,965.6	115,606.4	120,336.5	119,042.3	122,750.8
China.....	6,877.4	8,794.9	10,338.3	12,211.1	13,324.6	14,416.9	15,995.1	17,582.3	18,775.7	21,799.8	21,400.4	22,153.7
South Korea.....	614.4	2,649.6	4,764.8	13,467.2	14,092.4	15,303.5	14,067.1	14,619.9	14,156.9	13,708.4	15,344.6	15,952.0
Taiwan.....	1,013.0	1,600.1	3,124.2	4,640.8	5,097.8	5,626.1	6,370.3	6,854.7	7,725.9	8,236.7	8,985.1	9,101.0
Singapore.....	1,490.5	1,969.7	3,480.3	5,083.1	5,642.6	6,233.5	6,575.3	7,036.8	7,634.2	8,295.1	8,720.8	8,903.0
Hong Kong.....	5,204.0	8,982.6	14,786.1	21,667.5	23,294.1	25,392.9	25,948.5	27,440.3	29,240.4	30,191.0	30,007.3	30,016.0
India.....	7,645.3	8,776.5	11,501.7	15,759.6	17,100.7	18,859.6	22,144.3	25,293.0	26,833.8	28,739.8	30,080.3	32,638.9
Malaysia.....	2,105.1	2,076.1	1,798.7	2,597.0	2,864.4	2,948.4	2,764.4	2,850.7	2,897.5	3,138.9	3,215.4	3,157.0
Thailand.....	3,930.7	4,168.0	4,478.0	7,145.9	7,462.5	7,506.7	7,096.9	7,867.1	8,041.5	8,110.6	8,284.6	8,003.1
Philippines.....	570.1	981.0	1,233.2	1,415.1	1,476.6	1,557.3	1,699.2	1,765.8	1,874.9	1,980.1	2,190.0	2,338.6
Indonesia.....	3,886.2	5,316.3	5,612.7	7,369.6	8,124.9	6,889.4	5,991.5	6,937.2	6,453.9	6,486.3	7,040.7	7,365.7
South Africa.....	5,851.3	6,827.0	8,388.7	9,907.1	10,440.9	10,525.3	10,382.5	10,541.5	10,722.6	10,792.2	10,622.3	10,953.6

NOTES: Production is total gross output. Seventy countries or economies included in "all countries." High-technology sectors cover communication services, finance and insurance, business services, education, and medical and health care.

SOURCES: Global Insight, Inc., World Industry Service database (2005). Historical data from United Nations Industrial Development Organization, United Nations System of National Accounts, Organisation for Economic Co-operation and Development, and country sources.

**U.S. trade in advanced technology products: 2000-04**

(Millions of U.S. dollars)

Country/economy	Exports					Imports					Balance				
	2000	2001	2002	2003	2004	2000	2001	2002	2003	2004	2000	2001	2002	2003	2004
Total .....	225,415.3	202,107.8	180,629.3	181,789.5	201,454.0	195,660.3	195,265.2	196,100.1	207,196.2	238,478.3	29,755.0	6,842.6	-15,470.8	-25,406.7	-37,024.2
Argentina.....	1,395.3	1,015.2	223.5	441.7	605.7	10.7	14.4	18.1	9.7	17.1	1,384.6	1,000.8	205.4	432.0	588.7
Australia.....	3,743.0	3,043.0	4,711.2	4,046.1	3,345.0	390.0	427.9	381.9	374.2	416.4	3,352.9	2,615.1	4,329.2	3,671.9	2,928.6
Austria.....	624.4	563.8	708.9	423.6	532.0	314.0	289.6	443.4	402.8	498.9	310.4	274.2	265.5	20.7	33.1
Belgium.....	2,122.0	1,945.4	1,659.0	1,655.4	1,860.3	973.6	1,367.6	1,296.2	986.9	1,519.9	1,148.4	577.8	362.8	668.5	340.4
Brazil.....	5,793.0	5,703.3	3,947.5	3,281.0	4,352.3	1,929.7	2,927.2	2,961.3	2,685.9	2,809.4	3,863.3	2,776.1	986.1	595.1	1,543.0
Canada.....	25,601.5	21,417.5	17,420.3	18,027.7	20,438.5	20,293.5	17,302.0	13,769.3	13,722.6	13,844.2	5,308.0	4,115.5	3,651.0	4,305.1	6,594.2
Chile.....	926.9	858.3	600.0	585.1	615.5	2.0	2.6	4.4	3.3	6.1	924.9	855.7	595.6	581.8	609.4
China.....	5,499.5	7,243.4	8,303.6	8,290.1	9,401.2	10,699.9	13,364.5	20,093.6	29,345.2	45,698.2	-5,200.3	-6,121.1	-11,790.0	-21,055.1	-36,297.0
Costa Rica.....	437.8	485.4	1,075.4	1,286.7	1,124.0	395.5	725.9	918.5	1,206.5	1,104.7	42.2	-240.5	156.9	80.2	19.3
Czech Republic.....	354.9	321.7	333.9	268.6	336.5	97.3	163.7	220.5	287.7	339.7	257.6	158.1	113.5	-19.1	-3.2
Denmark.....	516.0	555.5	524.1	492.4	912.4	456.1	494.3	493.6	602.4	756.0	59.9	61.2	30.5	-110.1	156.5
Dominican Republic.....	267.8	363.0	258.3	198.2	203.1	356.6	355.5	353.6	456.4	469.8	-88.8	7.5	-95.3	-258.3	-266.6
Federal Republic of Germany.....	12,407.9	12,376.9	9,341.8	9,306.8	9,340.1	8,804.5	9,536.6	8,074.9	8,007.9	9,595.4	3,603.3	2,840.3	1,266.9	1,298.9	-255.2
Finland.....	725.4	602.4	595.2	422.0	477.5	273.0	463.3	639.6	607.9	414.0	452.3	139.1	-44.4	-185.9	63.5
France.....	9,221.6	8,677.0	8,508.6	6,672.3	9,165.7	9,443.6	10,434.0	9,617.5	9,206.0	8,836.6	-222.0	-1,757.0	-1,108.9	-2,533.7	329.1
Greece.....	593.2	606.2	548.9	456.8	1,066.4	12.2	7.5	17.3	20.0	16.6	581.0	598.6	531.6	436.8	1,049.9
Hong Kong.....	5,726.4	5,773.3	4,749.4	5,141.5	6,370.7	1,630.6	1,056.8	1,192.9	1,028.7	1,122.9	4,095.8	4,716.5	3,556.6	4,112.8	5,247.8
Hungary.....	145.7	244.9	235.5	460.5	644.2	1,240.6	886.4	1,085.1	1,288.0	1,247.6	-1,094.8	-641.5	-849.6	-827.5	-603.3
India.....	1,056.4	1,150.9	1,254.8	1,328.4	1,505.1	143.1	199.7	198.8	253.0	318.5	913.3	951.2	1,056.0	1,075.4	1,186.6
Indonesia.....	255.6	215.9	198.2	208.1	220.7	1,144.9	1,399.1	1,265.0	1,076.0	1,123.3	-889.3	-1,183.2	-1,066.9	-867.9	-902.6
Ireland.....	3,901.4	3,578.3	2,823.3	3,285.8	3,735.2	6,630.4	8,924.4	13,233.2	14,573.9	13,433.0	-2,729.0	-5,346.1	-10,409.9	-11,288.1	-9,697.8
Israel.....	2,738.2	2,603.8	2,025.8	1,851.5	2,773.8	2,543.9	2,229.3	2,100.0	2,013.7	2,280.8	194.3	374.4	-74.2	-162.2	493.0
Italy.....	3,136.3	2,744.1	3,131.3	3,147.0	2,902.8	1,579.6	1,674.4	1,899.9	1,734.5	1,972.1	1,556.8	1,069.7	1,231.4	1,412.6	930.6
Japan.....	22,116.8	18,525.0	16,849.3	16,945.1	18,163.5	34,816.3	27,879.6	23,744.4	22,386.0	23,876.9	-12,699.5	-9,354.6	-6,895.1	-5,440.9	-5,713.4
Luxembourg.....	144.3	358.3	253.9	84.0	437.8	3.1	3.0	2.7	4.4	2.6	141.1	355.3	251.2	79.6	435.1
Malaysia.....	7,226.2	6,051.1	7,234.8	7,806.3	7,554.7	12,776.9	14,051.9	15,150.4	16,384.4	18,204.0	-5,550.7	-8,000.7	-7,915.6	-8,578.2	-10,649.2
Malta.....	229.3	211.8	160.3	147.5	145.8	368.4	280.8	217.0	272.6	281.5	-139.0	-69.0	-56.7	-125.1	-135.7
Mexico.....	15,071.8	13,924.3	12,584.6	13,604.7	16,508.5	12,931.9	16,422.5	16,271.5	17,954.6	22,143.8	2,139.9	-2,498.2	-3,687.0	-4,350.0	-5,635.3
Netherlands.....	9,547.4	7,805.1	7,261.5	8,413.3	9,152.1	1,643.4	1,514.6	1,762.8	2,043.0	2,191.0	7,904.1	6,290.5	5,498.7	6,370.3	6,961.1
Norway.....	587.6	551.4	457.1	407.6	379.8	257.3	332.9	313.8	279.6	372.3	330.3	218.6	143.3	128.0	7.5
Peru.....	318.4	279.1	289.4	301.7	323.8	0.7	2.3	2.3	1.0	2.0	317.7	276.9	287.2	300.7	321.8
Philippines.....	5,537.3	4,934.6	4,965.5	5,851.5	4,836.0	7,344.3	5,907.9	5,843.2	4,917.2	3,809.1	-1,807.0	-973.2	-877.7	934.3	1,026.9
Poland.....	264.0	215.3	179.8	189.0	224.7	48.7	38.2	41.2	46.1	74.0	215.3	177.1	138.6	142.9	150.7
Portugal.....	350.2	583.5	229.3	195.2	366.5	33.9	253.7	312.2	427.9	542.9	316.4	329.8	-82.9	-232.7	-176.5
Russia.....	445.0	390.4	430.3	367.5	411.2	1,045.4	1,011.6	831.5	1,052.7	921.1	-600.4	-621.2	-401.2	-685.2	-509.9
Singapore.....	8,862.5	9,693.3	8,139.4	8,430.7	10,158.4	11,045.6	10,081.4	10,042.5	10,407.8	10,804.6	-2,183.1	-388.0	-1,903.1	-1,977.1	-646.2
Slovakia.....	46.0	24.1	21.8	29.2	25.6	2.5	4.2	6.7	8.7	9.0	43.5	20.0	15.1	20.5	16.6
Slovenia.....	33.9	25.5	39.7	36.2	33.0	5.4	5.0	15.4	21.5	25.2	28.4	20.5	24.3	14.7	7.7
South Africa.....	908.8	931.2	570.0	642.1	535.7	27.7	22.6	27.9	31.8	29.6	881.1	908.6	542.1	610.3	506.1
South Korea.....	13,485.5	9,927.6	9,598.7	9,569.5	10,341.4	13,706.3	13,756.0	13,827.4	14,412.9	17,977.8	-220.8	-3,828.4	-4,228.8	-4,843.4	-7,636.4
Spain.....	2,252.5	1,471.9	1,069.1	1,465.3	1,605.9	231.1	255.6	368.4	751.9	700.7	2,021.4	1,216.3	700.7	713.4	905.2

Appendix table 6-6

**U.S. trade in advanced technology products: 2000–04**

(Millions of U.S. dollars)

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Country/economy	Exports					Imports					Balance				
	2000	2001	2002	2003	2004	2000	2001	2002	2003	2004	2000	2001	2002	2003	2004
Sweden .....	2,284.6	1,399.4	1,212.8	1,205.6	1,048.0	1,226.0	1,126.8	1,510.1	1,343.8	1,464.5	1,058.6	272.7	-297.3	-138.2	-416.4
Switzerland .....	1,810.0	1,436.8	1,141.7	1,028.1	1,162.6	1,399.7	1,565.6	1,420.5	1,795.2	1,785.6	410.3	-128.9	-278.8	-767.2	-623.0
Taiwan.....	12,645.1	9,032.5	9,171.5	8,225.9	9,952.2	14,773.5	13,815.8	13,378.7	12,044.6	12,810.4	-2,128.4	-4,783.2	-4,207.2	-3,818.7	-2,858.3
Thailand .....	3,472.8	2,841.4	1,719.2	2,324.4	2,531.3	3,538.3	2,898.6	3,041.6	3,290.3	4,598.0	-65.5	-57.1	-1,322.4	-965.9	-2,066.7
Turkey .....	1,595.7	1,007.8	1,247.4	610.8	514.0	99.2	106.8	82.7	83.2	107.0	1,496.4	900.9	1,164.8	527.6	407.1
United Kingdom .....	16,693.4	15,476.9	10,590.2	10,833.7	12,073.3	8,527.4	9,256.2	7,172.8	6,847.1	7,411.5	8,166.0	6,220.7	3,417.4	3,986.7	4,661.8
Venezuela.....	758.3	690.6	580.9	376.0	854.5	4.9	1.5	2.9	1.8	2.9	753.4	689.0	578.0	374.2	851.6
Vietnam .....	63.9	49.6	57.7	796.0	474.9	0.0	0.0	8.0	10.2	12.3	63.9	49.6	49.7	785.8	462.6
Subtotal .....	213,941.5	189,928.0	169,234.2	171,164.0	191,743.7	195,223.2	194,841.7	195,677.2	206,713.6	238,001.3	18,718.2	-4,913.7	-26,443.0	-35,549.6	-46,257.5
All other countries .....	11,473.8	12,179.8	11,395.1	10,625.5	9,710.3	437.1	423.5	422.9	482.6	477.0	11,036.8	11,756.3	10,972.2	10,143.0	9,233.3

SOURCE: U.S. Census Bureau, Foreign Trade Division, special tabulations (March 2005).

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Appendix table 6-7

**U.S. receipts and payments of royalties and fees associated with affiliated and unaffiliated foreign companies: 1987–2003**

(Millions of U.S. dollars)

Year	Receipts			Payments			Balance		
	All	Affiliated	Unaffiliated	All	Affiliated	Unaffiliated	All	Affiliated	Unaffiliated
1987.....	9,914	7,629	2,285	1,844	1,296	547	8,070	6,333	1,738
1988.....	11,802	9,156	2,646	2,585	1,410	1,175	9,217	7,746	1,471
1989.....	13,064	10,207	2,857	2,602	1,778	824	10,462	8,429	2,033
1990.....	16,634	13,251	3,384	3,135	2,206	929	13,499	11,045	2,455
1991.....	18,107	14,395	3,712	4,076	2,996	1,080	14,031	11,399	2,632
1992.....	19,715	15,718	3,997	5,074	3,381	1,694	14,641	12,337	2,303
1993.....	20,323	15,707	4,616	4,765	3,364	1,401	15,558	12,343	3,215
1994.....	26,712	20,275	6,437	5,852	3,934	1,919	20,860	16,341	4,518
1995.....	30,289	22,859	7,430	6,919	5,257	1,663	23,370	17,602	5,767
1996.....	32,470	24,556	7,914	7,837	5,406	2,431	24,633	19,150	5,483
1997.....	33,639	24,876	8,763	9,614	7,202	2,412	24,025	17,674	6,351
1998.....	35,626	26,313	9,314	11,235	8,547	2,688	24,391	17,766	6,626
1999.....	39,670	29,275	10,395	13,107	10,374	2,733	26,563	18,901	7,662
2000.....	43,233	30,479	12,754	16,468	12,536	3,932	26,765	17,943	8,822
2001.....	40,696	29,164	11,532	16,538	13,241	3,297	24,158	15,923	8,235
2002.....	44,219	32,658	11,561	19,235	15,084	4,151	24,984	17,574	7,410
2003.....	48,277	35,924	12,303	20,049	16,407	3,642	28,228	19,517	8,661

NOTES: Detail may not add to total because of rounding. Affiliate refers to business enterprise located in one country that is directly or indirectly owned or controlled by entity in another country. Controlling interest must be  $\geq 10\%$  of its voting stock or its equivalent.

SOURCE: U.S. Bureau of Economic Analysis, *Survey of Current Business* 84(10):25–76 (2004).

Science and Engineering Indicators 2006

**U.S. receipts and payments of royalties and license fees generated from exchange and use of industrial processes with unaffiliated foreign companies, by region or country/economy: 1990–2003**

(Millions of U.S. dollars)

Region or country/economy	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Receipts</b>														
All countries/economies.....	2,333	2,434	2,525	2,820	3,026	3,513	3,566	3,544	3,499	3,900	4,705	4,174	4,021	4,775
Canada.....	79	62	47	41	54	55	82	92	82	118	159	152	135	116
Europe.....	630	575	637	642	768	829	1,042	979	1,170	1,416	1,446	1,429	1,375	1,717
Eastern Europe <sup>a</sup> .....	15	8	D	16	30	21	11	7	14	34	5	11	6	12
European Union <sup>b</sup> .....	500	475	498	496	598	756	937	885	1,071	1,283	1,314	1,297	1,257	1,452
Belgium-Luxembourg.....	22	34	25	49	88	83	90	57	72	102	126	91	48	51
France.....	78	91	64	89	107	84	123	92	142	226	153	198	224	241
Germany <sup>c</sup> .....	107	97	108	109	142	171	219	184	243	297	373	332	388	506
Italy.....	105	70	99	69	71	66	66	77	53	117	106	79	101	90
Netherlands.....	59	35	60	27	30	36	80	71	59	45	54	31	24	37
Spain.....	21	29	20	23	18	31	28	29	27	18	14	13	11	13
Sweden <sup>b</sup> .....	44	35	48	53	55	106	137	115	148	100	85	52	39	46
United Kingdom.....	91	106	103	103	113	115	129	147	154	216	156	192	230	250
Norway.....	10	14	5	3	15	5	3	4	3	2	2	2	3	4
Switzerland.....	24	15	50	45	44	41	84	76	77	94	122	114	104	244
All others.....	37	28	36	29	26	6	7	7	5	3	5	2	203	235
South/Central America.....	59	85	73	D	83	D	D	81	109	96	85	80	61	49
Brazil.....	8	8	6	7	8	9	14	17	17	10	D	D	9	9
Mexico.....	23	31	29	28	33	24	26	32	40	36	22	27	39	28
All others.....	28	46	38	D	42	D	D	11	D	50	17	D	—	—
Africa.....	22	34	27	36	26	35	28	15	17	19	14	16	15	29
Middle East.....	22	25	21	33	20	35	25	41	20	50	81	30	31	55
Asia.....	1,465	1,638	1,704	1,966	2,063	2,462	2,299	2,299	2,094	2,188	2,910	2,454	2,366	2,763
China.....	NA	NA	NA	NA	33	31	43	52	47	32	44	43	69	100
Hong Kong.....	6	6	11	12	15	22	19	21	23	12	12	14	18	26
India.....	21	14	34	D	28	27	37	29	20	17	23	20	13	22
Indonesia.....	11	20	13	20	20	15	13	26	11	21	15	10	19	21
Japan.....	1,028	1,219	1,268	1,434	1,372	1,548	1,429	1,508	1,172	1,161	1,636	1,567	1,245	1,341
Malaysia.....	2	2	7	18	19	D	D	12	43	12	10	11	10	9
Philippines.....	4	2	3	D	1	2	2	7	8	7	7	4	3	5
Singapore.....	19	21	20	20	73	34	37	39	37	37	20	D	27	31
South Korea.....	249	225	220	278	396	607	478	389	483	650	896	506	611	786
Taiwan.....	55	57	42	34	39	80	130	144	192	187	196	190	299	347
All others <sup>d</sup> .....	70	72	86	D	67	96	D	1	58	52	3	60	—	—
All other countries.....	56	15	16	102	12	97	90	37	7	13	34	11	—	—
<b>Payments</b>														
All countries/economies.....	665	796	818	1,054	1,034	948	1,319	1,417	1,319	1,568	1,695	1,720	2,000	2,188
Canada.....	16	11	10	8	11	13	66	89	82	136	117	130	116	162
Europe.....	482	637	635	820	712	572	782	729	705	766	908	1,098	1,389	1,425
Eastern Europe <sup>a</sup> .....	D	1	3	9	D	1	4	2	—	D	1	8	5	14
European Union <sup>b</sup> .....	360	426	417	472	395	461	649	558	555	578	695	816	1076	1012
Belgium-Luxembourg.....	15	14	21	22	27	30	D	30	29	31	29	30	31	35

**U.S. receipts and payments of royalties and license fees generated from exchange and use of industrial processes with unaffiliated foreign companies,  
by region or country/economy: 1990–2003: 1990–2003**

(Millions of U.S. dollars)

Region or country/economy	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
France.....	54	73	D	92	92	121	192	D	D	D	133	D	D	235
Germany <sup>c</sup> .....	133	182	D	187	113	110	148	149	124	148	211	263	223	248
Italy.....	29	34	24	9	7	9	49	35	18	6	12	11	20	6
Netherlands.....	9	14	14	15	22	27	24	30	33	37	33	28	25	25
Spain.....	1	—	1	1	—	1	1	1	3	D	D	2	2	5
Sweden <sup>b</sup> .....	62	122	D	198	D	3	49	61	55	57	69	70	109	112
United Kingdom.....	111	106	125	123	104	126	135	118	146	147	162	172	210	182
Norway.....	D	D	D	D	D	D	5	9	6	9	5	8	D	7
Switzerland.....	19	26	45	60	114	79	72	86	76	112	135	153	D	253
All others.....	41	62	170	81	203	31	52	74	68	67	72	119	308	139
South/Central America.....	—	1	D	D	D	D	D	28	45	29	120	7	6	D
Brazil.....	—	—	—	2	2	—	—	4	D	D	D	D	—	—
Mexico.....	—	—	1	—	1	D	5	D	2	7	14	6	D	—
All others.....	NA	1	D	D	D	D	D	D	D	D	D	D	—	—
Africa.....	0	—	—	—	1	—	4	5	—	—	D	—	2	—
Middle East.....	3	4	5	9	9	13	12	9	5	14	26	9	3	—
Asia.....	160	140	152	200	283	333	401	530	480	614	515	468	478	—
China.....	NA	NA	NA	NA	7	—	D	D	D	13	6	2	6	3
Hong Kong.....	0	—	—	2	3	D	2	2	—	2	2	1	—	—
India.....	—	—	—	0	—	—	D	D	—	1	D	2	D	1
Indonesia.....	0	0	—	0	0	—	—	—	—	—	D	D	0	0
Japan.....	141	138	145	191	262	307	308	360	374	550	460	411	455	524
Malaysia.....	0	0	0	—	0	—	3	3	—	—	—	D	0	—
Philippines.....	0	0	—	—	—	—	1	—	—	—	—	—	—	—
Singapore.....	0	—	D	—	—	—	—	2	—	—	—	D	1	D
South Korea.....	D	—	1	1	6	D	D	D	D	22	19	18	5	D
Taiwan.....	1	—	2	2	2	—	2	4	—	7	D	2	1	D
All others <sup>d</sup> .....	D	2	D	4	3	26	—	D	D	D	D	D	—	—
All other countries.....	4	3	16	17	18	17	54	27	47	112	9	6	—	—
Balance.....														
All countries/economies.....	1,668	1,638	1,707	1,766	1,992	2,565	2,247	2,127	2,180	2,332	3,010	2,454	2,021	2,587
Canada.....	63	51	37	33	43	42	16	3	0	-18	42	33	19	-46
Europe.....	148	-62	2	-178	56	257	260	250	465	650	538	378	-14	292
Eastern Europe <sup>a</sup> .....	—	7	—	7	—	20	7	5	—	—	4	1	1	-2
European Union <sup>b</sup> .....	140	49	81	24	203	295	288	327	516	705	619	521	181	440
Belgium-Luxembourg.....	7	20	4	27	61	53	—	27	43	71	97	70	17	16
France.....	24	18	—	-3	15	-37	-69	—	—	—	20	—	—	6
Germany <sup>c</sup> .....	-26	-85	—	-78	29	61	71	35	119	149	162	105	165	258
Italy.....	76	36	75	60	64	57	17	42	35	111	94	95	81	84
Netherlands.....	50	21	46	12	8	9	56	41	26	8	21	19	-1	12
Spain.....	20	—	19	22	—	30	27	28	24	—	—	—	9	8
Sweden <sup>b</sup> .....	-18	-87	—	-145	—	103	88	54	93	43	16	-2	-70	-66

**U.S. receipts and payments of royalties and license fees generated from exchange and use of industrial processes with unaffiliated foreign companies, by region or country/economy: 1990–2003: 1990–2003**

(Millions of U.S. dollars)

Region or country/economy	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
United Kingdom .....	-20	0	-22	-20	9	-11	-6	29	8	69	-6	18	20	68
Norway .....	—	—	—	—	—	—	-2	-5	-3	-7	-3	—	—	-3
Switzerland .....	5	-11	5	-15	-70	-38	12	-10	1	-18	-13	-30	—	-9
All others.....	-4	-34	-134	-52	-177	-25	-45	-67	-63	-64	-67	-117	-252	235
South/Central America.....	—	84	—	—	—	—	—	53	64	67	-35	17	55	—
Brazil .....	—	—	—	5	6	—	—	13	—	—	—	—	—	—
Mexico .....	—	—	28	—	32	—	21	—	38	29	8	24	—	—
All other .....	—	45	—	—	—	—	—	—	—	—	—	—	—	—
Africa .....	22	—	—	—	25	—	24	10	—	—	—	—	13	—
Middle East .....	19	21	16	24	11	22	13	32	15	36	55	30	28	—
Asia.....	1,305	1,498	1,552	1,766	1,780	2,129	1,898	1,769	1,614	1,574	2,395	2,557	1,888	—
China .....	—	—	—	—	26	—	—	—	—	19	38	43	63	97
Hong Kong .....	6	—	—	10	12	—	17	19	—	10	10	13	—	—
India.....	—	—	—	—	—	—	—	—	—	16	—	—	—	21
Indonesia .....	11	20	—	20	20	—	—	—	—	—	—	—	19	21
Japan.....	887	1,081	1,123	1,243	1,110	1,241	1,121	1,148	798	611	1,176	1,467	790	817
Malaysia .....	2	2	7	—	19	—	—	9	—	—	—	—	10	—
Philippines .....	4	2	—	—	—	—	1	—	—	—	—	—	—	—
Singapore.....	19	—	—	—	—	—	—	37	—	—	—	—	26	—
South Korea .....	—	—	219	277	390	—	—	—	—	628	877	724	606	—
Taiwan .....	54	—	40	32	37	—	128	140	—	180	—	227	496	—
All others <sup>d</sup> .....	—	70	—	—	64	70	—	—	—	—	—	—	—	—
All other countries .....	52	12	0	85	-6	80	36	10	-40	-99	25	5	—	—

D = withheld to avoid disclosing operations of individual companies; NA = not available; — = &lt;\$500,000

<sup>a</sup>Albania, Azerbaijan, Belarus, Bulgaria, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.<sup>b</sup>Austria, Finland, and Sweden joined European Union in 1995. European Union countries not listed separately are Denmark, Greece, Ireland, and Portugal.<sup>c</sup>Data before 1990 for former West Germany only. Beginning in 1990, data include former East Germany.<sup>d</sup>Includes data before 1994.

NOTES: Industrial processes (or manufacturing know-how) include patents and other proprietary inventions and technology. Affiliate refers to business enterprise located in one country directly or indirectly owned or controlled by an entity in another country. Controlling interest must equal ≥10% or more of its voting stock or its equivalent.

SOURCE: U.S. Bureau of Economic Analysis, *Survey of Current Business* 84 (10):25–76 (2004).

Appendix table 6-9  
**Leading indicators of technological competitiveness: 2005**  
 (Index)

Region or country/economy	National orientation	Socioeconomic infrastructure	Technological infrastructure	Productive capacity	Total
Argentina.....	47.7	53.3	30.1	42.6	173.7
Australia.....	76.2	78.4	53.5	57.4	265.5
Brazil.....	59.6	51.3	36.9	49.3	197.1
Canada.....	76.2	73.1	54.5	52.7	256.6
China.....	74.3	60.4	64.7	72.4	271.9
Czech Republic.....	74.4	59.1	43.6	55.0	232.2
France.....	66.8	67.3	55.1	65.0	254.2
Germany.....	71.6	75.5	64.5	74.6	286.3
Hungary.....	61.7	66.2	40.5	51.4	219.7
India.....	61.6	52.8	43.2	59.9	217.5
Indonesia.....	44.2	40.8	24.1	41.1	150.2
Ireland.....	74.1	74.2	41.9	55.7	245.9
Israel.....	78.4	85.8	54.0	56.6	274.9
Italy.....	67.0	63.5	46.4	57.3	234.2
Japan.....	70.3	65.5	71.1	88.9	295.9
Malaysia.....	75.4	70.4	31.4	51.5	228.7
Mexico.....	55.1	48.7	30.4	45.8	179.9
Netherlands.....	69.6	77.2	52.5	57.8	257.1
New Zealand.....	70.0	75.7	47.0	47.5	240.2
Philippines.....	53.2	52.9	31.1	52.2	189.4
Poland.....	61.8	65.6	34.1	54.5	216.0
Russia.....	42.0	59.2	43.9	45.1	190.2
Singapore.....	78.5	79.5	50.3	59.2	267.6
South Africa.....	50.6	52.8	36.5	41.3	181.2
South Korea.....	74.7	72.7	48.0	63.8	259.3
Spain.....	56.9	69.0	33.5	45.8	205.1
Sweden.....	80.1	82.0	54.5	60.8	277.4
Switzerland.....	64.6	62.8	51.5	58.2	237.1
Taiwan.....	73.6	77.2	43.7	60.3	254.9
Thailand.....	58.7	53.2	25.0	42.5	179.5
United Kingdom.....	77.7	82.9	58.0	60.1	278.7
United States.....	79.2	84.2	91.9	88.7	344.1
Venezuela.....	36.5	47.8	27.2	38.5	150.0

NOTES: In past, High Tech Indicators (HTI) was labeled based on most recent full year of statistical data. HTI now named by year of data generation and year in which panel of experts rated countries.

For score and indicator calculations, raw data were transformed into scales of 0–100 for each indicator component and then averaged to generate comparable indicators with a 0–100 range. For survey items, 100 represents highest response category for each question; for statistical data, 100 typically represents value attained by country with the largest value among 33 countries included in study. In indicator formulations cited below, each term carries equal weight.

National orientation (NO) provides evidence that a nation is taking directed action to achieve technological competitiveness. Actions could take place in the business, government, or cultural sector or any combination of the three.

Indicator formulation:  $NO = [(Q1 + (Q2 + Q3)/2 + Q4 + F1V 2005)/4]$ .

Data used: Published data from PRS Group, Political and Economic Forecast table, Political Risk Letter for January 1, 2005, rating each country's investment risk (F1V2005) rescaled from D=–1 to A+=12, <http://www.prsgroup.com>; and survey data assessing each country's national strategy to promote high-technology development (Q1), social influences favoring technological change (Q2 and Q3), and entrepreneurial spirit (Q4).

Socioeconomic infrastructure (SE) assesses social and economic institutions that support and maintain physical, human, organizational, and economic resources essential to functioning of a modern, technology-based industrial nation.

Indicator formulation:  $SE = (Q5 + Q10 + HMHS/3)$ .

Data used: Published data on percentage of students enrolled in secondary (net percentage; W4) and tertiary (gross percentage; W6) education (HMHS) from Harbison-Myers Human Skills Index (formula for index is  $W4+4*W6$ ). Percentage based on number of individuals in school versus total number who could be enrolled as defined by United Nations Educational, Scientific, and Cultural Organization (UNESCO) and adjusted for local practice, Institute for Statistics, UNESCO, *Gross and Net Enrollment Ratios* and Gender Parity Index, secondary, for school years 1998/99 to 2004/05 (May 2005); and survey data assessing each country's efforts to attract foreign investment (Q10) and mobility of capital (Q5).

Technological infrastructure (TI) assesses institutions and resources that contribute to a nation's capacity to develop, produce, and market new technology.

Indicator formulation:  $TI = [(Q7 + Q8)/2 + Q9 + Q11 + EDP 2005 + S\&E]/5$ .

Data used: Data on electronic data processing equipment (EDP 2005) from Reed Electronics Research, Full Statistical Database 1985–2005, <http://www.rer.co.uk>; published data from Institute for Statistics, UNESCO, Science and Technology, Personnel Engaged in R&D by Category of Personnel (available data for 1996–2002) (May 2005), on number of scientists and engineers involved in research in most recent available year (S&E); and survey data assessing linkages of R&D to industry (Q9), output of indigenous academic S&E (Q7 and Q8), and ability to make effective use of technological knowledge (Q11).

Productive capacity (PC) assesses physical and human resources devoted to manufacturing products and efficiency employing those resources.

Indicator formulation:  $PC = (Q6 + Q12 + Q13 + A26 2005)/4$ .

Data used: Data for electronics production (A262005) from Reed Electronics Research, Full Statistical Database 1985–2005, <http://www.rer.co.uk>; and survey data assessing supply and quality of skilled labor (Q6), capability of indigenous management (Q13), and existence of indigenous suppliers of components for technology-intensive products (Q12).

INPUT: Sum is the sum of NO + SE + TI + PC.

SOURCE: Georgia Institute of Technology, Technology Policy and Assessment Center, *High Tech Indicators: Preliminary Report*, report to National Science Foundation, Division of Science Resources Statistics (2005).



Appendix table 6-10  
**Leading indicators of technological competitiveness: 2003**  
 (Index)

Region or country/economy	National orientation	Socioeconomic infrastructure	Technological infrastructure	Productive capacity	Total
Argentina.....	44.9	52.4	31.0	32.5	160.7
Brazil.....	52.5	50.5	35.4	35.8	174.2
China.....	63.0	55.0	55.2	49.6	222.7
Czech Republic.....	64.6	64.4	34.7	44.6	208.3
Germany.....	75.6	78.2	65.5	65.0	284.3
Hungary.....	66.7	67.9	40.0	42.2	216.7
India.....	62.5	49.3	37.0	47.8	196.6
Indonesia.....	45.1	39.1	20.7	27.7	132.6
Ireland.....	84.1	80.7	44.2	53.0	262.0
Israel.....	79.5	85.0	52.3	49.4	266.2
Japan.....	76.4	67.6	73.8	80.3	298.1
Malaysia.....	73.0	64.9	28.8	39.1	205.9
Mexico.....	55.2	49.0	28.7	35.4	168.2
Philippines.....	59.3	55.0	24.0	45.0	183.3
Poland.....	63.7	68.3	36.6	42.5	211.1
South Korea.....	80.4	81.1	45.2	52.3	259.0
Taiwan.....	83.0	84.4	45.3	59.6	272.2
United States.....	79.8	86.4	92.7	82.8	341.2
Thailand.....	47.7	54.2	23.9	30.9	156.7
Venezuela.....	37.2	46.0	19.5	20.3	123.0

NOTES: In *Science and Engineering Indicators 2004*, latest table was labeled "2002." Table is now labeled "2003" to reflect change in data provider's labeling convention. In past, High Tech Indicators (HTI) was labeled based on most recent full year of statistical data. HTI is now named by year of data generation and year in which panel of experts rated countries. Value of socioeconomic infrastructure for United States has been revised from 85.9 shown in last publication to 86.4 shown here.

For score and indicator calculations, raw data were transformed into scales of 0–100 for each indicator component and then averaged to generate comparable indicators with a 0–100 range. For survey items, 100 represents the highest response category for each question; for statistical data, 100 typically represents the value attained by the country with the largest value among the 33 countries included in the study. In the indicator formulations cited below, each term carries equal weight.

National orientation (NO) provides evidence that a nation is taking directed action to achieve technological competitiveness. These actions could take place in the business, government, or cultural sector or any combination of the three.

Indicator formulation:  $NO = (Q1 + (Q2 + Q3)/2 + Q4 + F1V2002)/4$ .

Data used: Published data from the PRS Group, Political and Economic Forecast table, Political Risk Letter for 2002 rating each country's investment risk (F1V2002); and survey data assessing each country's national strategy to promote high-technology development (Q1), social influences favoring technological change (Q2 and Q3), and entrepreneurial spirit (Q4).

Socioeconomic infrastructure (SE) assesses the social and economic institutions that support and maintain the physical, human, organizational, and economic resources essential to functioning of a modern, technology-based industrial nation.

Indicator formulation:  $SE = (Q5 + Q10 + HMHS2000)/3$ .

Data used: Published data on the percentage of students enrolled in secondary (net percentage) and tertiary (gross percentage) education (HMHS2000) from the Harbison-Myers Skills Index for 2000, Gross and Net Enrollment Ratio at Secondary Level by Country and by Gender for the School Years 1998/1999 and 1999/2000, Institute for Statistics, United Nations Educational, Scientific, and Cultural Organization (UNESCO), October 2002 and Gross Enrollment Ratio at Tertiary Level by Country and Gender for the Academic Years 1998/1999 and 1999/2000, Institute for Statistics, UNESCO, October 2002; and survey data assessing each country's efforts to attract foreign investment (Q10) and the mobility of capital (Q5).

Technological infrastructure (TI) assesses the institutions and resources that contribute to a nation's capacity to develop, produce, and market new technology.

Indicator formulation:  $TI = [(Q7 + Q8)/2 + Q9 + Q11 + EDP2002 + S\&E2000]/5$ .

Data used: Published data from Science and Technology, Personnel Engaged in R&D by Category of Personnel (new available data for 1996-2000), Institute for Statistics, UNESCO, November 2002, on the number of scientists and engineers involved in research in 2000 (S&E 2000), national purchases of electronic data-processing equipment (EDP2002) from Reed Electronics Research, *Yearbook of World Electronics Data 2002/2003*, Reed Business Information Ltd. (2002); and survey data assessing linkages of R&D to industry (Q9), output of indigenous academic S&E (Q7 and Q8), and the ability to make effective use of technological knowledge (Q11).

Productive capacity (PC) assesses the physical and human resources devoted to manufacturing products and efficiency employing those resources.

Indicator formulation:  $PC = (Q6 + Q12 + Q13 + A262002)/4$ .

Data used: Published data on electronics production (A262002) from Reed Electronics Research, *Yearbook of World Electronics Data 2002/2003*, Reed Business Information Ltd., (2002); and survey data assessing the supply and quality of skilled labor (Q6), capability of the indigenous management (Q13), and the existence of indigenous suppliers of components for technology-intensive products (Q12).

INPUT: Sum is the sum of NO + SE + TI + PC.

SOURCE: Georgia Institute of Technology, Technology Policy and Assessment Center, *High Technology Indicators: Preliminary Report*, report to National Science Foundation, Division of Science Resources Statistics (2005).

Appendix table 6-11

**Leading indicators of technological competitiveness: 1999**

(Index)

Region or country/economy	National orientation	Socioeconomic infrastructure	Technological infrastructure	Productive capacity	Total
Argentina.....	41.3	53.3	27.5	31.0	153.1
Brazil.....	61.5	49.1	40.4	39.6	190.6
China.....	65.3	52.4	46.4	41.9	206.0
Czech Republic.....	68.2	58.9	41.5	44.6	213.2
Hungary.....	73.7	60.9	43.0	42.2	219.8
India.....	67.7	48.4	46.8	51.3	214.2
Indonesia.....	53.9	43.8	19.2	23.7	140.6
Ireland.....	92.2	75.6	48.0	55.9	271.7
Israel.....	92.0	74.1	58.2	50.6	274.9
Malaysia.....	69.5	58.9	31.9	44.1	204.4
Mexico.....	41.8	40.4	21.8	24.8	128.8
Philippines.....	60.9	63.7	24.4	42.6	191.6
Poland.....	69.6	58.4	38.2	44.3	210.5
South Korea.....	74.9	73.5	44.6	48.8	241.8
Taiwan.....	90.7	74.2	43.6	53.7	262.2
Thailand.....	50.7	46.5	20.5	30.6	148.3
Venezuela.....	39.8	49.4	21.3	24.3	134.8

NOTES: For score and indicator calculations, raw data were transformed into scales of 0–100 for each indicator component and then averaged to generate comparable indicators with a 0–100 range. For survey items, 100 represents highest response category for each question; for statistical data, 100 typically represents value attained by country with largest value among the 30 countries included in study. In indicator formulations cited below, each term carries equal weight.

National orientation (NO) provides evidence that a nation is taking directed action to achieve technological competitiveness. These actions could take place in business, government, or cultural sector or any combination of the three.

Indicator formulation:  $NO = [Q1 + (Q2 + Q3)/2 + Q4 + F1V99]/4$ .

Data used: Published data from the PRS Group, Political and Economic Forecast table, Political Risk Letter for 1999 rating each country's investment risk (F1V99); and survey data assessing each country's national strategy to promote high-technology development (Q1), social influences favoring technological change (Q2 and Q3), and entrepreneurial spirit (Q4).

Socioeconomic infrastructure (SE) assesses social and economic institutions that support and maintain physical, human, organizational, and economic resources essential to functioning of a modern, technology-based industrial nation.

Indicator formulation:  $SE = (Q5 + Q10 + HMHS99)/3$ .

Data used: Published data on the percentage of students enrolled in secondary and tertiary education (HMHS99) from Harbison-Myers Human Skills Index for 1999, World Bank, *World Development Indicators* (1999); and survey data assessing each country's efforts to attract foreign investment (Q10) and mobility of capital (Q5).

Technological infrastructure (TI) assesses institutions and resources that contribute to a nation's capacity to develop, produce, and market new technology.

Indicator formulation:  $TI = [(Q7 + Q8)/2 + Q9 + Q11 + EDP99 + S\&E96]/5$ .

Data used: Published data from *Statistical Yearbook 1998*, United Nations Educational, Scientific, and Cultural Organization (1998), on the number of scientists and engineers involved in research in 1996 (S&E 96); national purchases of electronic data-processing equipment (EDP99) from Reed Business Information Ltd., Reed Electronics Research, *Yearbook of World Electronics Data 1999/2000* (1999); and survey data assessing linkages of R&D to industry (Q9), output of indigenous academic S&E (Q7 and Q8), and ability to make effective use of technological knowledge (Q11).

Productive capacity (PC) assesses physical and human resources devoted to manufacturing products and efficiency employing those resources.

Indicator formulation:  $PC = (Q6 + Q12 + Q13 + A2699)/4$ .

Data used: Published data on electronics production (A2699) from Reed Business Information Ltd., Reed Electronics Research, *Yearbook of World Electronics Data 1999/2000* (1999); and survey data assessing supply and quality of skilled labor (Q6), capability of indigenous management (Q13), and existence of indigenous suppliers of components for technology-intensive products (Q12).

SOURCE: A.L. Porter, J.D. Roessner, N. Newman, and X.Y. Jin, 1999 *Indicators of Technology-Based Competitiveness of 33 Nations: Summary Report* (2000).

## U.S. patents granted, by country/economy of origin of first-named inventor and type of ownership: Pre-1990 and 1990–2003

Variable	Total	Pre-1990	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
All residence countries/economies	3,583,813	1,815,531	90,365	96,511	97,444	98,342	101,676	101,419	109,645	111,984	147,518	153,486	157,494	166,037	167,333	169,028
U.S. origin.....	2,132,534	1,182,124	47,391	51,177	52,253	53,231	56,066	55,739	61,104	61,708	80,289	83,906	85,068	87,605	86,972	87,901
Foreign origin .....	1,451,279	633,407	42,974	45,334	45,191	45,111	45,610	45,680	48,541	50,276	67,229	69,580	72,426	78,432	80,361	81,127
Japan.....	556,335	184,348	19,525	21,025	21,925	22,293	22,384	21,764	23,053	23,179	30,840	31,104	31,295	33,224	34,859	35,517
Germany .....	265,313	146,010	7,614	7,680	7,309	6,893	6,731	6,600	6,818	7,008	9,095	9,337	10,235	11,259	11,280	11,444
United Kingdom.....	113,109	70,825	2,789	2,800	2,425	2,295	2,234	2,478	2,453	2,678	3,464	3,572	3,667	3,965	3,837	3,627
France.....	101,163	54,725	2,866	3,030	3,029	2,909	2,779	2,821	2,788	2,958	3,674	3,820	3,819	4,041	4,035	3,869
Canada.....	67,753	31,144	1,859	2,037	1,964	1,944	2,008	2,104	2,232	2,379	2,974	3,226	3,419	3,606	3,431	3,426
Switzerland .....	48,728	31,386	1,284	1,335	1,197	1,127	1,169	1,056	1,112	1,090	1,279	1,279	1,322	1,420	1,364	1,308
Taiwan .....	40,746	2,341	732	906	1,001	1,189	1,443	1,620	1,897	2,057	3,100	3,693	4,667	5,371	5,431	5,298
Italy.....	39,328	19,600	1,259	1,209	1,271	1,285	1,215	1,078	1,200	1,239	1,584	1,492	1,714	1,709	1,751	1,722
Sweden.....	34,800	19,681	768	716	626	636	706	806	854	867	1,225	1,401	1,577	1,741	1,675	1,521
Netherlands.....	31,978	17,353	960	992	855	800	852	799	797	808	1,226	1,247	1,241	1,332	1,391	1,325
South Korea.....	29,437	599	225	405	538	779	943	1,161	1,493	1,891	3,259	3,562	3,314	3,538	3,786	3,944
Australia .....	14,725	6,402	432	463	409	378	467	459	471	478	720	707	705	875	859	900
Belgium.....	13,728	6,567	313	324	325	350	352	397	488	515	693	648	694	718	722	622
Austria .....	12,476	6,595	393	359	371	312	289	337	362	376	387	479	505	589	530	592
Israel.....	11,364	2,877	299	304	335	314	350	384	484	534	754	743	783	970	1,040	1,193
Finland.....	10,008	2,885	304	331	361	293	312	358	444	452	595	649	618	732	809	865
Denmark .....	8,349	3,862	158	210	193	197	207	199	241	333	392	487	436	479	426	529
Former Soviet Union.....	6,995	6,415	174	178	66	65	53	12	16	4	6	3	1	NA	1	1
Spain.....	4,752	1,934	130	153	133	158	141	148	157	177	248	222	270	269	303	309
Norway.....	4,610	2,186	112	111	108	117	126	130	139	142	198	224	248	265	242	262
South Africa.....	3,507	1,981	114	105	97	93	101	123	111	101	115	110	111	120	113	112
Hungary .....	2,615	1,819	93	85	88	61	46	50	43	25	50	39	36	60	48	72
Hong Kong.....	2,254	480	52	50	60	60	57	86	88	81	160	155	179	237	233	276
Mexico .....	2,166	1,385	32	29	39	45	44	40	39	45	57	76	76	81	94	84
Czech Republic.....	2,140	1,960	39	27	17	13	19	15	8	9	9	5	9	7	2	1
Singapore.....	2,098	100	12	15	32	38	51	53	88	94	120	144	218	296	410	427
New Zealand .....	1,977	850	51	41	44	39	37	44	52	85	114	114	107	124	140	135
Ireland.....	1,745	543	54	56	55	53	50	50	78	73	74	94	123	143	133	166
China .....	1,711	240	47	50	41	53	48	62	46	62	72	90	119	195	289	297
India.....	1,669	329	23	22	24	30	27	37	35	47	85	112	131	177	249	341
Brazil.....	1,599	552	41	62	40	57	60	63	63	62	74	91	98	110	96	130
Russian Federation.....	1,555	NA	NA	NA	NA	3	38	98	116	111	189	181	183	234	200	202
Argentina .....	1,072	558	17	16	20	24	32	31	30	35	43	44	54	51	54	63
Luxembourg.....	794	423	17	27	26	28	22	24	18	22	20	22	40	33	37	35
Poland.....	743	572	17	8	5	8	8	8	15	11	15	19	13	16	11	17
Venezuela.....	632	264	20	25	22	31	23	29	25	25	27	39	27	26	30	19
Other countries (132).....	7,305	3,616	149	148	140	141	186	156	187	223	292	350	372	419	450	476
Ownership																
United States																
Corporations .....	1,675,007	900,473	36,094	39,132	40,308	41,825	44,036	44,035	48,741	50,221	66,052	69,391	70,884	74,325	74,161	75,329
Government .....	51,995	37,665	983	1,183	1,161	1,167	1,258	1,028	923	944	1,027	983	928	957	907	881
Individuals.....	484,304	289,097	12,542	13,207	12,751	12,281	12,805	12,885	13,729	12,914	16,407	16,698	16,129	15,205	14,116	13,538

**U.S. patents granted, by country/economy of origin of first-named inventor and type of ownership: Pre-1990 and 1990–2003**

Variable	Total	Pre-1990	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Foreign .....																
Corporations .....	1,190,355	483,992	35,548	37,593	38,239	38,401	38,788	38,688	41,477	42,907	57,667	60,168	63,182	68,943	71,663	73,099
Government .....	10,981	7,305	423	472	463	434	296	245	259	273	256	162	104	92	112	85
Individuals.....	171,171	96,999	4,775	4,924	4,522	4,234	4,493	4,538	4,516	4,725	6,109	6,084	6,267	6,515	6,374	6,096

NA = not available

NOTE: Country of origin determined by residence of first-named inventor.

SOURCE: U.S. Patent and Trademark Office, Office of Electronic Information Products, Patent Technology Monitoring Division, special tabulations (December 2004).

*Science and Engineering Indicators 2006*

## U.S. patent applications, by country/economy of origin of first-named inventor: 1990–2003

Country/economy	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
All applications .....	164,558	164,306	173,075	174,743	189,857	212,377	195,187	215,257	243,062	270,187	295,926	326,508	334,445	342,441
U.S. origin.....	90,643	87,955	92,425	99,955	107,233	123,958	106,892	120,445	135,483	149,825	164,795	177,511	184,245	188,941
Foreign origin .....	73,915	76,351	80,650	74,788	82,624	88,419	88,295	94,812	107,579	120,362	131,131	148,997	150,200	153,500
Japan.....	34,113	36,846	38,633	34,816	37,768	39,872	39,510	41,767	45,260	47,821	52,891	61,238	58,739	60,350
Germany .....	NA	10,874	11,652	10,500	11,324	11,853	11,550	12,333	13,885	16,978	17,715	19,900	20,418	18,890
Taiwan .....	2,035	2,252	2,667	2,874	3,560	4,054	4,766	5,492	7,412	9,411	9,046	11,086	12,488	13,786
South Korea.....	775	1,321	1,471	1,624	2,354	2,820	4,248	4,920	5,452	5,033	5,705	6,719	7,937	10,411
Canada.....	3,511	3,641	3,761	3,910	4,255	4,745	4,443	4,694	5,689	6,149	6,809	7,221	7,375	7,750
United Kingdom.....	4,959	4,557	4,587	4,414	4,856	5,202	4,791	5,147	6,110	6,948	7,523	8,362	8,391	7,700
France.....	4,771	4,723	4,828	4,320	4,528	5,001	4,486	4,759	5,249	6,216	6,623	6,852	6,825	6,603
Italy.....	2,093	2,123	2,288	1,906	1,998	2,128	2,062	2,119	2,313	2,577	2,704	2,967	2,980	3,011
Israel.....	608	633	780	803	1,040	1,072	1,042	1,198	1,442	2,009	2,509	2,710	2,645	2,539
Sweden.....	1,057	1,086	1,072	1,157	1,405	1,500	1,481	1,980	2,359	2,570	2,825	2,827	2,410	2,314
Australia.....	811	783	863	781	921	1,007	1,057	1,006	1,420	1,462	1,800	1,995	2,160	2,310
Switzerland.....	1,931	1,902	1,922	1,759	1,852	1,917	1,609	1,637	1,875	2,144	2,233	2,337	2,338	2,275
Netherlands.....	1,588	1,397	1,547	1,472	1,455	1,570	1,559	1,726	1,816	2,058	2,289	2,712	2,602	2,257
Finland.....	595	592	576	568	707	745	836	891	970	1,376	1,530	1,840	1,811	1,935
Belgium.....	592	614	692	685	862	1,001	930	894	1,059	1,204	1,245	1,286	1,293	1,395
India.....	58	51	64	54	70	91	115	137	180	271	438	643	919	1,164
China (People's Republic) .....	111	126	129	135	100	144	142	117	181	257	469	626	888	1,034
Denmark.....	370	358	378	376	445	618	496	634	748	863	859	1,113	1,065	1,002
Austria.....	560	516	566	526	599	619	543	552	710	823	881	961	1,115	933
Singapore.....	36	63	89	104	134	144	176	213	336	460	632	786	807	771
China, Hong Kong SAR.....	86	132	150	155	219	163	222	207	274	403	473	626	681	729
Spain.....	289	258	313	269	315	357	359	370	409	464	549	601	564	606
Norway.....	164	169	212	190	203	243	227	303	337	415	447	475	531	449
New Zealand.....	105	91	107	85	130	137	174	174	187	240	279	318	375	387
Ireland.....	130	116	103	104	149	131	114	138	228	252	362	366	440	368
Russian Federation.....	NA	NA	183	153	206	221	254	249	273	388	382	433	377	341
Brazil.....	88	124	112	105	156	115	145	134	165	186	220	219	243	259
Malaysia.....	11	22	16	20	37	30	30	61	41	76	104	116	142	237
South Africa.....	185	186	207	246	238	187	189	174	211	179	209	231	241	224
Mexico.....	76	106	105	82	105	99	97	110	141	147	190	196	157	185
Argentina.....	56	59	59	56	75	65	78	77	119	96	137	137	95	125
Hungary.....	138	103	76	69	76	70	59	40	73	120	107	103	128	118
Czech Republic.....	NA	NA	NA	1	15	14	17	30	34	30	52	77	58	61
Luxembourg.....	32	36	39	35	39	20	31	32	36	59	57	61	69	60
Thailand.....	8	4	11	15	19	21	20	21	26	41	92	70	61	60
Poland.....	13	21	16	27	20	19	22	19	19	31	33	39	46	59
Iceland.....	3	10	16	3	6	6	13	8	25	31	30	51	41	56
Greece.....	27	20	28	19	27	29	23	30	45	50	44	49	58	50
Ukraine.....	NA	NA	4	16	14	17	18	24	28	22	40	32	43	45
Philippines.....	9	10	10	9	7	12	9	15	13	20	32	51	58	42
Slovenia.....	NA	NA	8	19	11	13	19	24	29	21	27	20	36	38
Chile.....	13	12	12	11	11	10	23	17	17	16	24	23	38	33

## U.S. patent applications, by country/economy of origin of first-named inventor: 1990–2003

Country/economy	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Liechtenstein.....	13	14	19	13	15	13	17	19	24	26	28	29	34	32
Saudi Arabia.....	8	12	11	17	23	24	19	17	26	11	28	26	37	32
Venezuela.....	48	43	47	38	43	32	38	40	35	42	45	53	36	29
Turkey.....	6	3	2	3	5	6	7	10	16	29	28	28	36	28
Croatia.....	NA	NA	NA	6	9	15	16	20	20	12	21	21	16	24
Colombia.....	10	5	13	3	18	19	10	6	12	20	21	29	16	20
Portugal.....	6	3	11	9	14	10	16	12	17	28	17	28	27	20
Kenya.....	4	2	3	1	3	2	0	1	1	5	5	10	10	15
Panama.....	4	1	1	4	4	8	4	2	7	5	6	6	2	14
Egypt.....	3	4	10	4	6	2	2	10	11	16	20	16	11	12
United Arab Emirates.....	3	1	2	NA	2	2	2	3	3	4	7	2	6	12
Costa Rica.....	4	2	1	8	12	7	4	6	13	8	16	3	8	11
Ecuador.....	4	2	1	6	NA	2	3	5	4	4	6	5	8	11
Romania.....	1	1	2	5	4	7	5	12	11	8	12	14	8	11
Uruguay.....	5	2	3	8	6	6	1	4	1	3	4	7	8	11
Yugoslavia.....	34	30	28	10	6	8	3	7	7	4	6	2	7	11
Bulgaria.....	31	11	7	3	4	6	5	4	3	11	18	13	8	10
Lithuania.....	NA	NA	NA	1	2	3	NA	3	2	4	4	5	1	10
Belarus.....	NA	NA	4	8	5	7	9	3	5	10	7	10	5	8
Indonesia.....	4	11	11	7	5	4	11	3	9	12	9	5	27	8
Peru.....	7	1	4	5	6	5	4	3	6	5	5	8	8	8
Slovakia.....	NA	NA	NA	NA	13	7	2	3	6	5	10	6	8	5

NA = not available

NOTE: Country of origin determined by residence of first-named inventor.

SOURCE: U.S. Patent and Trademark Office, Office of Electronic Information Products, Patent Technology Monitoring Division, special tabulations (December 2004).

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Appendix table 6-14

## Patent classes most emphasized (top 50) by UK inventors patenting in United States: 1993 and 2003

Title (partial)	Class	Patents granted to inventors				Activity index	
		All countries		United Kingdom		1993	2003
		1993	2003	1993	2003		
All classes .....	na	80,226	148,427	2,040	3,321	1.000	1.000
Wells (shafts or deep borings in the earth) .....	166	340	515	21	48	2.429	4.166
Cleaning compositions for solid surfaces .....	510	225	514	13	35	2.272	3.043
Rotary kinetic fluid motors or pumps .....	415	213	344	19	21	3.508	2.728
Food or edible material .....	426	521	576	13	32	0.981	2.483
Compositions: coating or plastic .....	106	339	442	14	24	1.624	2.427
Drug, bioaffecting and body treating (includes class 514).....	424	3,512	6,353	239	336	2.676	2.364
Brushing, scrubbing, and general cleaning.....	015	167	325	4	17	0.942	2.338
Boring or penetrating the earth.....	175	122	223	7	11	2.256	2.205
Bleaching and dyeing of textiles and fibers .....	008	183	230	8	11	1.719	2.138
Communications: directive radio wave systems and devices.....	342	238	531	12	25	1.983	2.104
Data processing: artificial intelligence (data processing) .....	706	157	213	2	10	0.501	2.098
Electrical audio signal processing systems and devices .....	381	179	330	3	15	0.659	2.032
Registers (e.g., cash registers, calculators) .....	235	288	685	2	31	0.273	2.023
Geometrical instruments.....	033	128	231	13	10	3.994	1.935
Electrolysis: processes, methods, preparing the compositions.....	205	273	325	10	14	1.441	1.925
Dispensing (apparatus and process) .....	222	337	334	10	14	1.167	1.873
Seal for a joint or juncture.....	277	169	241	10	10	2.327	1.855
Photography .....	396	464	435	2	18	0.170	1.849
Optical communications .....	398	105	376	6	15	2.247	1.783
Fluent material handling .....	141	161	226	2	9	0.489	1.780
Aeronautics .....	244	173	327	8	12	1.819	1.640
Chemistry: natural resins; peptides or proteins .....	530	336	491	8	18	0.936	1.638
Organic compounds (includes classes 532-570) .....	532	3,141	2,715	116	99	1.452	1.630
Processing architectures and instruction processing.....	712	139	303	1	11	0.283	1.623
Gas separation: processes .....	095	131	250	2	9	0.600	1.609
Chemistry: analytical and immunological testing.....	436	293	421	6	15	0.805	1.592
Multicellular living organisms and unmodified parts.....	800	29	423	1	15	1.356	1.585
Power plants .....	060	517	845	13	29	0.989	1.534
Refrigeration.....	062	557	845	12	29	0.847	1.534
Communications: radio wave antennas.....	343	195	559	9	19	1.815	1.519
Multiplex communications .....	370	505	2,563	14	86	1.090	1.500
Static structures (e.g., buildings).....	052	331	458	11	15	1.307	1.464
Arithmetic processing and calculating (electrical computers) .....	708	267	245	6	8	0.884	1.459
Chemical apparatus and process disinfecting, deodorizing.....	422	502	620	12	20	0.940	1.442
Package making.....	053	255	379	9	12	1.388	1.415
Chemistry of inorganic compounds.....	423	500	451	10	14	0.787	1.387
Telecommunications.....	455	385	1,584	10	49	1.021	1.383
Compositions.....	252	517	518	16	16	1.217	1.380
Electronic digital logic circuitry .....	326	230	488	1	15	0.171	1.374
Fluid sprinkling, spraying, and diffusing .....	239	280	391	15	12	2.107	1.372
Chemistry: molecular biology and microbiology .....	435	1,349	2,938	30	89	0.875	1.354
Special receptacle or package .....	206	356	364	2	11	0.221	1.351
Data processing: software development, installation, and management .....	717	51	333	0	10	0.000	1.342
Data processing: speech signal processing, linguistics, language translation .....	704	177	406	3	12	0.667	1.321
Radiant energy .....	250	969	1,631	41	48	1.664	1.315
Optical waveguides .....	385	559	1,816	28	52	1.970	1.280
Measuring and testing .....	073	918	1,790	23	51	0.985	1.273
Error detection/correction and fault detection/recovery .....	714	367	1,240	2	35	0.214	1.262
Fluid handling.....	285	191	240	11	7	1.809	1.164
Oscillators .....	702	205	518	6	15	0.920	1.156

na = not applicable

NOTES: Activity index is percentage of patents in class granted to inventors from one country divided by percentage of all patents having inventors from that country in that year. Listing limited to Patent and Trademark Office classes that received at least 200 patents from all countries in 2003.

SOURCE: U.S. Patent and Trademark Office, Office of Electronic Information Products, Patent Technology Monitoring Division, special tabulations (2004).

Appendix table 6-15  
**Patent classes most emphasized (top 50) by French inventors patenting in United States: 1993 and 2003**

Title (partial)	Class	Patents granted to inventors				Activity index	
		All countries		France		1993	2003
		1993	2003	1993	2003		
All classes .....	na	76,726	143,268	2,489	3,672	1.000	1.000
Resilient tires and wheels .....	152	134	201	9	38	2.165	7.642
Bleaching and dyeing: fluid treatment and chemical modification of textiles and fibers .....	008	183	230	21	33	3.699	5.800
Dispensing (apparatus and process) .....	222	337	334	26	43	2.487	5.204
Aeronautics .....	244	173	327	14	33	2.608	4.079
Pipe joints or couplings.....	285	184	243	13	24	2.277	3.992
Heat exchange.....	165	258	310	18	29	2.249	3.781
Optics: eye examining, vision testing and correcting .....	351	107	221	3	14	0.904	2.561
Drug, bioaffecting and body treating compositions (includes class 514) .....	424	3,512	6,353	213	372	1.955	2.367
Chemistry of inorganic compounds.....	423	500	451	28	26	1.805	2.330
Arithmetic processing and calculating (electrical computers) .....	708	267	245	6	14	0.724	2.310
Chairs and seats.....	297	149	457	7	25	1.514	2.211
Land vehicles: bodies and tops .....	296	188	617	5	33	0.857	2.162
Catalyst, solid sorbent, or support therefore: product or process of making .....	502	417	395	17	20	1.314	2.047
Land vehicles .....	280	469	764	21	38	1.443	2.010
Joints and connections .....	403	118	210	2	10	0.546	1.925
Gas separation: processes .....	095	131	250	8	11	1.968	1.779
Prosthesis (i.e., artificial body members), parts thereof, or aids and accessories therefore .....	623	132	617	4	27	0.977	1.769
Food or edible material: processes, compositions, and products .....	426	521	576	17	25	1.052	1.754
Compositions: ceramic .....	501	306	208	6	9	0.632	1.749
Organic compounds (includes classes 532-570) .....	532	3,141	2,715	118	116	1.211	1.727
Data processing: artificial intelligence (data processing) .....	706	157	213	0	9	0.000	1.708
Metal deforming .....	072	266	308	6	13	0.727	1.706
Specialized metallurgical processes, compositions for use therein, consolidated metal powder compositions, and loose metal particulate mixtures .....	075	205	218	6	9	0.943	1.669
Electricity: circuit makers and breakers .....	200	200	354	7	14	1.128	1.599
Printing.....	101	257	498	7	19	0.878	1.542
Liquid purification or separation.....	210	910	792	37	30	1.311	1.531
Seal for a joint or juncture.....	277	169	241	4	9	0.763	1.510
Chemistry: molecular biology and microbiology .....	435	1,349	2,938	21	109	0.502	1.500
Package making.....	053	255	379	12	14	1.517	1.493
Registers (e.g., cash registers, calculators) .....	235	288	685	12	25	1.343	1.475
Typewriting machines.....	400	209	247	1	9	0.154	1.473
Electric heating.....	219	587	928	37	33	2.032	1.437
Compositions: coating or plastic .....	106	339	442	7	15	0.666	1.372
Fluid sprinkling, spraying, and diffusing .....	239	280	391	11	13	1.266	1.344
Valves and valve actuation.....	251	193	242	8	8	1.336	1.336
Pulse or digital communications .....	375	485	1,532	23	50	1.529	1.319
Metal treatment.....	148	359	432	15	14	1.347	1.310
Bearings.....	384	192	279	8	9	1.343	1.304
Communications: radio wave antennas.....	343	195	559	16	18	2.645	1.302
Electrical transmission or interconnection systems .....	307	146	287	9	9	1.987	1.268
Cleaning compositions for solid surfaces, auxiliary compositions therefore, or processes of preparing the compositions.....	510	225	514	5	16	0.716	1.258
Electricity: conductors and insulators.....	174	283	709	8	22	0.911	1.254
Fluent material handling, with receiver or receiver coating means.....	141	161	226	7	7	1.401	1.252
Conveyors: power driven .....	198	329	430	7	13	0.686	1.222
Communications: electrical.....	340	489	894	18	27	1.186	1.221
Electricity: motive power systems .....	318	429	504	9	15	0.676	1.203
Optical waveguides .....	385	559	1,816	22	54	1.269	1.202
Chemical apparatus and process disinfecting, deodorizing, preserving, or sterilizing.....	422	502	620	14	18	0.899	1.174
Clutches and power-stop control .....	192	168	311	2	9	0.384	1.170
X-ray or gamma-ray systems or devices.....	378	216	422	13	12	1.940	1.149

na = not applicable

NOTES: Activity index is percentage of patents in class granted to inventors from one country divided by percentage of all patents having inventors from that country in that year. Listing limited to Patent and Trademark Office classes that received at least 200 patents from all countries in 2003.

SOURCE: U.S. Patent and Trademark Office, Office of Electronic Information Products, Patent Technology Monitoring Division, special tabulations (2004).



## U.S. biotechnology patents granted, by residence of inventor/type of ownership: Pre-1990 and 1990–2003

Variable	Total	Pre-1990	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
All residence countries/economies...	98,869	18,630	2,251	2,631	3,137	3,604	3,402	3,516	4,514	6,133	8,758	8,779	7,932	8,769	8,746	8,067
U.S. origin.....	62,903	11,164	1,284	1,650	1,919	2,229	2,129	2,193	2,960	4,200	5,862	5,845	5,201	5,751	5,523	4,993
Foreign origin .....	35,966	7,466	967	981	1,218	1,375	1,273	1,323	1,554	1,933	2,896	2,934	2,731	3,018	3,223	3,074
Japan.....	9,033	2,401	309	308	445	456	418	399	423	436	670	603	524	593	530	518
Germany.....	5,418	1,419	165	161	175	194	163	200	217	256	348	374	359	384	477	526
United Kingdom.....	3,407	698	84	76	78	94	114	105	136	218	303	317	299	315	311	259
France.....	3,100	646	107	107	99	112	92	100	134	202	262	250	226	257	242	264
Canada.....	2,638	302	51	59	64	77	68	89	115	169	237	290	280	301	286	250
Netherlands.....	2,212	340	58	48	74	98	96	59	73	104	170	174	218	152	310	238
Denmark.....	1,235	134	12	16	20	23	36	43	62	78	136	118	131	135	162	129
Australia.....	1,023	80	14	37	25	26	36	44	50	65	111	104	86	134	116	95
Switzerland.....	1,008	276	18	26	34	54	34	39	45	67	69	62	66	87	70	61
Israel.....	975	136	21	16	38	54	33	45	47	34	89	96	70	85	99	112
Italy.....	918	224	38	32	45	52	36	37	39	53	64	77	52	52	61	56
Sweden.....	850	182	14	14	22	26	20	31	34	48	73	78	67	85	77	79
Belgium.....	809	118	10	13	13	17	26	20	41	41	87	86	85	71	85	96
South Korea.....	387	6	4	3	5	12	8	11	21	19	28	50	34	70	57	59
Austria.....	371	67	9	4	11	12	16	10	18	32	44	33	27	30	29	29
Finland.....	291	48	9	8	11	7	8	13	14	18	28	38	25	28	17	19
India.....	279	9	1	2	3	5	1	7	8	9	15	16	20	38	63	82
New Zealand.....	246	46	4	5	10	8	10	6	6	8	12	27	22	16	33	33
Taiwan.....	207	7	1	2	3	3	9	6	5	8	20	20	17	38	39	29
Hungary.....	160	82	5	8	8	6	5	4	6	2	7	2	4	8	9	4
Spain.....	155	14	3	3	8	4	6	9	10	11	12	17	11	15	18	14
Norway.....	142	20	3	10	2	6	5	5	10	8	14	19	14	9	7	10
Russian Federation.....	118	NA	NA	NA	NA	NA	1	2	10	8	22	14	17	12	21	11
China.....	104	5	2	1	1	1	2	5	2	4	9	5	10	18	19	20
USSR.....	87	61	4	7	7	NA	NA	1	2	1	1	2	NA	NA	1	NA
Costa Rica.....	80	33	NA	3	NA	4	4	6	5	NA	4	2	1	9	5	4
South Africa.....	62	16	3	NA	1	2	1	2	NA	2	6	5	4	8	6	6
Ireland.....	56	3	NA	2	3	3	1	4	3	4	3	5	7	6	8	4
Mexico.....	53	7	4	2	2	3	1	5	NA	3	3	4	7	5	4	3
Czechoslovakia.....	50	31	3	2	1	2	2	1	1	1	NA	1	3	2	NA	NA
Brazil.....	47	5	1	1	NA	3	1	2	2	2	3	1	8	3	7	8
Hong Kong.....	39	NA	NA	NA	NA	1	1	5	1	1	2	3	4	6	9	6
Singapore.....	39	NA	NA	NA	NA	NA	2	NA	2	1	8	7	5	5	2	7
Cuba.....	31	1	NA	NA	NA	1	2	NA	NA	3	5	2	3	2	7	5
Greece.....	27	1	1	NA	NA	1	2	NA	3	NA	2	1	3	4	4	5
Argentina.....	21	5	1	NA	1	NA	1	1	1	3	2	1	1	2	2	NA
Other countries (57).....	288	43	8	5	9	8	12	7	8	14	27	30	21	33	30	33
Ownership																
United States																
Corporations.....	57,634	9,855	1,181	1,473	1,740	2,049	1,903	1,964	2,669	3,862	5,486	5,385	4,940	5,347	5,170	4,610
Government.....	1,934	311	50	52	80	97	95	95	113	140	190	189	134	145	129	114
Individuals.....	6,071	1,861	153	198	188	201	217	220	247	336	422	409	339	453	425	402

**U.S. biotechnology patents granted, by residence of inventor/type of ownership: Pre-1990 and 1990–2003**

Variable	Total	Pre-1990	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Foreign																
Corporations .....	29,356	5,621	735	771	995	1,094	1,077	1,112	1,343	1,626	2,388	2,504	2,269	2,551	2,678	2,592
Government .....	525	163	29	28	31	33	19	18	21	24	41	42	23	20	20	13
Individuals.....	3,349	819	103	109	103	130	91	107	121	145	231	250	227	253	324	336

NA = not available

SOURCE: U.S. Patent and Trademark Office, Office of Electronic Information Products, Patent Technology Monitoring Division, special tabulations (2004).

*Science and Engineering Indicators 2006*

## U.S. biotechnology patents granted, by organization: Pre-1990 and 1990–2003

Organization	Total	Pre-1990	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
All patents .....	89,448	15,950	1,995	2,324	2,846	3,273	3,094	3,189	4,146	5,652	8,104	8,120	7,366	8,063	7,997	7,329
University of California .....	1,585	215	12	25	20	35	43	44	84	114	162	151	171	185	166	158
U.S. Department of Health and Human Services.....	1,021	110	19	18	32	53	63	52	72	92	126	107	74	81	67	55
Merck.....	943	344	25	43	36	71	51	33	33	43	52	57	33	46	39	37
Genentech .....	792	64	18	21	32	36	27	26	39	76	129	53	75	63	64	69
Yoder Brothers.....	729	204	14	47	18	38	53	22	29	35	28	22	14	77	87	41
Pioneer Hi-Bred International.....	693	8	1	3	13	4	19	20	51	26	106	92	109	110	61	70
Eli Lilly.....	674	243	19	20	15	21	15	26	58	51	42	51	35	30	24	24
Abbott .....	654	113	15	25	39	37	39	32	42	69	59	61	39	44	26	14
Smithkline Beecham .....	636	0	1	2	1	7	1	4	3	13	46	126	130	183	94	25
University of Texas.....	576	52	22	30	25	37	34	28	34	40	49	46	47	47	42	43
Incyte Pharmaceuticals .....	572	0	0	0	4	5	4	3	5	18	106	245	146	30	4	2
Boehringer Mannheim .....	549	190	26	29	33	36	34	38	32	40	43	30	11	5	0	2
Isis Pharmaceuticals.....	512	0	0	0	2	2	2	3	21	38	32	70	100	90	98	54
Novo Nordisk .....	490	0	1	4	10	15	23	18	31	64	79	92	80	49	14	10
Chiron .....	484	17	2	5	16	11	7	10	16	66	79	62	62	50	48	33
Du Pont De Nemours and Company .....	461	88	16	15	22	24	25	21	21	21	25	18	22	41	49	53
Becton, Dickinson .....	427	104	16	16	17	15	19	17	30	54	43	30	21	19	13	13
Hoffmann-La Roche .....	426	194	9	13	17	20	20	31	35	34	22	6	7	6	6	6
U.S. Department of Agriculture.....	418	73	15	20	17	23	14	24	16	26	35	41	27	32	26	29
General Hospital Corporation .....	414	33	7	4	11	13	16	8	23	33	46	56	40	49	35	40
Johns Hopkins University.....	412	18	3	9	5	14	12	12	15	27	58	68	51	45	49	26
Hoechst Aktiengesellschaft .....	402	123	13	17	32	24	20	21	21	36	35	28	24	3	3	2
Institut Pasteur .....	395	47	6	14	8	12	12	5	14	30	42	50	43	47	29	36
Miles .....	387	267	20	10	29	30	21	7	1	2	0	0	0	0	0	0
Takeda Chemical Industries.....	387	138	14	7	22	24	14	21	23	25	17	23	21	18	11	9
Human Genome Sciences.....	355	0	0	0	0	0	0	0	4	12	28	63	47	31	86	84
Ajinomoto Company.....	349	115	5	11	9	17	15	10	20	15	25	23	22	28	18	16
Wisconsin Alumni Research Foundation.....	342	59	6	10	10	13	14	9	13	17	35	39	29	34	25	29
Bristol-Myers Squibb .....	339	70	10	17	15	8	11	14	22	26	39	33	21	12	18	23
Monsanto Company.....	332	74	10	20	30	17	16	13	16	17	21	31	31	29	2	5
Massachusetts Institute of Technology.....	318	95	14	12	14	18	7	4	18	22	25	22	12	22	17	16
Schering .....	318	60	11	16	11	9	6	12	6	20	35	32	18	31	22	29
Cornell Research Foundation .....	316	51	9	8	15	6	11	8	12	19	29	34	28	35	18	33
Harvard College, President and Fellows .....	312	51	17	6	9	9	7	9	20	19	34	27	18	22	36	28
Stanford University, Leland Junior, Board of Trustees.....	311	47	3	11	3	4	10	12	13	24	33	28	31	30	39	23
The Scripps Research Institute .....	310	0	0	0	8	22	19	24	18	20	48	32	30	44	24	21
Salk Institute for Biological Studies.....	308	85	5	15	11	13	10	9	18	29	25	19	17	22	17	13
American Cyanamid Company.....	307	71	5	9	17	17	21	12	21	30	30	40	15	8	8	3
Kyowa Hakko Kogyo .....	302	90	17	15	14	12	10	11	13	18	19	23	14	15	15	16
Millennium Pharmaceuticals.....	286	0	0	0	0	0	0	0	0	4	14	29	46	64	76	53
Ludwig Institute for Cancer Research.....	284	0	0	1	4	6	6	3	19	20	43	34	39	50	38	21
Genetics Institute.....	280	21	8	13	8	12	13	15	14	27	39	32	19	25	15	19
Amgen.....	276	15	6	4	12	4	9	10	13	25	36	37	32	39	17	17
Columbia University.....	271	24	4	2	7	10	6	9	13	16	29	33	23	33	29	33

## U.S. biotechnology patents granted, by organization: Pre-1990 and 1990–2003

Organization	Total	Pre-1990	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Eastman Kodak.....	271	120	10	20	30	27	23	23	1	3	5	2	4	2	0	1
University of Pennsylvania.....	271	5	1	3	7	8	15	10	18	34	42	32	16	34	28	18
Behringwerke Aktiengesellschaft.....	270	95	11	13	10	20	11	12	26	47	10	10	4	1	0	0
Pfizer.....	265	84	15	5	10	6	3	9	11	21	13	10	11	16	26	25
Bear Creek Gardens.....	263	9	2	15	14	13	61	29	17	4	15	29	53	2	0	0
Rockefeller University.....	251	28	1	4	7	7	9	3	6	19	34	31	40	22	30	10
Washington University.....	244	17	4	9	11	6	9	13	12	17	23	37	27	31	14	14
Zymogenetics.....	241	9	4	4	6	7	5	8	16	18	28	24	20	30	33	29
Immunex.....	240	18	4	5	6	13	10	14	15	12	21	17	22	22	24	37
Paul Ecke Ranch.....	233	9	14	7	11	25	12	16	1	14	26	12	24	31	23	8
University of Minnesota.....	233	37	7	3	13	6	8	12	12	14	21	23	25	19	17	16
Conard-Pyle.....	216	89	21	12	9	24	13	10	16	14	7	1	0	0	0	0
Thomas Jefferson University.....	214	9	3	6	3	5	6	5	11	21	20	23	23	33	26	20
Bayer Aktiengesellschaft.....	212	82	5	7	9	5	3	5	13	12	16	15	14	9	9	8
Genencor International.....	201	0	0	3	4	10	12	9	3	11	20	16	17	34	26	36
Ciba-Geigy Corporation.....	198	69	6	10	10	20	11	14	24	19	10	1	2	0	2	0
Syntex (U.S.A.).....	197	94	11	13	15	16	7	12	5	3	13	4	1	2	1	0
Akzo Nobel.....	195	0	0	0	0	0	0	5	12	38	35	30	27	18	20	10
Dana-Farber Cancer Institute.....	195	19	5	8	5	11	8	8	13	16	31	20	13	13	16	9
University of Michigan.....	195	4	1	1	1	3	4	8	6	31	20	27	31	20	20	18
Baxter International.....	190	62	8	8	4	6	7	5	9	8	17	15	12	15	5	9
Bayer Corporation.....	187	0	0	0	0	0	0	3	17	21	28	32	27	28	21	10
Yeda Research and Development.....	187	32	5	5	4	10	4	6	14	9	18	23	14	14	12	17
Hayashibara Biochemical Laboratories.....	184	36	3	5	5	3	5	7	14	12	23	31	14	13	7	6
Michigan State University.....	184	6	2	5	3	4	7	4	9	20	25	32	20	15	17	15
Cetus Corporation.....	182	100	36	18	21	3	1	0	0	3	0	0	0	0	0	0
Suntory.....	181	27	2	5	13	5	12	14	5	10	19	24	13	15	2	15
California Institute of Technology.....	178	26	3	3	4	1	7	3	4	10	27	15	15	26	10	24
Basf Aktiengesellschaft.....	177	27	5	4	6	4	5	5	8	10	19	20	14	17	16	17
Dekalb Genetics Corporation.....	176	0	0	0	0	0	0	4	10	1	8	43	39	31	31	9
Zeneca.....	175	0	0	0	0	0	4	15	27	14	27	32	22	23	8	3
Mycogen Corporation.....	174	12	5	10	14	21	18	10	7	11	11	13	15	9	4	14
Smithkline Beckman.....	173	122	2	2	3	3	3	12	9	6	7	3	0	0	1	0
American Home Products Corporation.....	172	115	2	6	0	2	4	1	1	5	8	5	7	8	7	1
Duke University.....	172	10	0	2	1	6	11	6	18	10	16	21	13	24	16	18
Novartis (Formerly Sandoz).....	171	0	0	0	0	0	0	0	0	3	10	29	40	41	30	18
Yale University.....	169	12	2	0	3	6	4	9	0	11	24	17	20	21	19	21
Gen-Probe.....	165	0	2	0	1	2	8	6	11	31	38	22	14	10	5	15
G.D. Searle.....	164	57	9	1	8	9	4	0	6	9	13	9	17	6	7	9
Upjohn Company.....	163	124	1	3	10	4	9	3	3	5	1	0	0	0	0	0
Brigham and Women's Hospital.....	162	8	2	4	5	7	11	6	6	13	17	17	13	26	14	13
Fujisawa Pharmaceutical.....	161	46	9	7	5	7	9	7	11	12	7	5	4	12	12	8
Affymetrix.....	160	0	0	0	0	0	0	0	1	2	9	12	21	44	36	35
Floris.....	160	0	6	3	0	8	15	14	11	5	7	6	3	7	57	18
New York University.....	160	17	9	2	2	8	4	6	9	16	14	19	11	17	15	11

**U.S. biotechnology patents granted, by organization: Pre-1990 and 1990–2003**

Organization	Total	Pre-1990	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Mikkelsen	159	107	12	0	15	6	12	2	3	2	0	0	0	0	0	0
Sloan-Kettering Institute for Cancer Research	159	52	6	6	9	2	1	3	6	13	16	8	10	7	8	12
Council of Scientific and Industrial Research	158	0	0	0	1	0	0	1	1	3	4	5	7	20	53	63
Baylor College of Medicine	157	12	4	2	1	5	8	3	13	11	22	16	20	12	15	13
Fuji Photo Film	157	69	13	10	6	12	5	3	5	2	3	4	4	5	9	7
Jackson & Perkins	157	146	10	1	0	0	0	0	0	0	0	0	0	0	0	0
Roche Diagnostics	156	0	0	0	0	0	0	0	0	0	0	15	29	55	30	27
Incyte Genomics	154	0	0	0	0	0	0	0	0	0	0	0	4	58	67	25
Research Foundation of State University of New York	153	6	2	3	5	7	13	7	10	17	15	18	14	16	13	7
Max-Planck-Gesellschaft zur Forderung der Wissenschaften E.V.	151	39	1	3	1	4	3	5	4	7	16	21	13	9	7	18
Procter & Gamble	151	24	1	4	11	10	11	8	9	6	6	4	3	14	23	17

SOURCE: U.S. Patent and Trademark Office, Office of Electronic Information Products, Patent Technology Monitoring Division, special tabulations (2004).

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Appendix table 6-18  
**U.S. venture capital total disbursements, by industry category: Selected years, 1980–2004**

Industry	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<b>Disbursements (\$ millions)</b>																	
All industries.....	574.4	2,838.5	2,796.7	2,269.7	3,586.7	3,794.0	4,148.2	7,638.1	11,610.5	15,080.1	21,447.9	54,793.9	106,270.2	40,825.2	21,279.4	19,218.1	21,007.2
Biotechnology.....	44.0	141.8	285.0	268.0	517.5	458.4	539.3	737.6	1,064.4	1,256.9	1,251.7	1,698.0	3,270.6	2,074.4	1,750.3	2,135.7	2,331.3
Communications.....	53.0	473.2	346.3	270.8	507.8	790.4	701.0	1,272.9	2,128.5	2,512.2	3,812.2	7,743.6	16,353.4	7,006.0	3,334.3	2,566.4	2,621.7
Computer hardware.....	128.3	649.6	286.9	222.9	230.3	186.4	193.1	410.1	419.3	450.4	521.7	1,182.9	2,876.7	1,142.0	723.3	609.6	866.7
Consumer related.....	29.4	142.5	328.2	242.6	260.6	475.8	445.4	950.8	784.6	999.4	1,050.7	1,843.8	1,759.1	739.5	216.5	453.3	359.7
Industrial/energy.....	141.5	199.9	166.2	114.1	96.1	190.3	196.3	364.7	375.8	561.3	886.0	800.7	1,126.1	707.2	534.7	620.4	486.9
Medical/health.....	52.8	277.7	442.6	339.4	766.8	640.0	670.7	1,202.4	1,467.2	1,985.4	2,282.8	2,555.1	4,213.4	3,568.4	3,280.3	3,154.5	3,770.5
Semiconductors/other electronics.....	60.5	356.5	242.4	149.9	226.5	185.5	238.0	409.2	524.5	936.4	1,033.3	2,069.8	7,106.2	4,175.6	1,975.3	2,310.9	2,568.3
Software and services.....	17.6	423.0	464.2	436.1	580.4	472.3	721.7	1,103.6	2,246.6	2,939.7	4,007.7	8,396.3	18,313.1	8,449.1	4,237.7	3,965.5	4,504.1
Other products/services.....	47.2	172.8	204.7	199.9	343.6	326.1	279.0	663.1	810.1	988.5	1,545.3	2,821.5	3,512.6	1,479.5	719.6	885.6	765.8
Internet specific.....	0.1	1.5	30.1	26.0	57.2	68.8	163.7	523.7	1,789.4	2,449.9	5,056.5	25,682.3	47,739.0	11,483.6	4,507.5	2,516.1	2,732.2
<b>Disbursements (percent)</b>																	
All industries.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Biotechnology.....	7.7	5.0	10.2	11.8	14.4	12.1	13.0	9.7	9.2	8.3	5.8	3.1	3.1	5.1	8.2	11.1	11.1
Communications.....	9.2	16.7	12.4	11.9	14.2	20.8	16.9	16.7	18.3	16.7	17.8	14.1	15.4	17.2	15.7	13.4	12.5
Computer hardware.....	22.3	22.9	10.3	9.8	6.4	4.9	4.7	5.4	3.6	3.0	2.4	2.2	2.7	2.8	3.4	3.2	4.1
Consumer related.....	5.1	5.0	11.7	10.7	7.3	12.5	10.7	12.4	6.8	6.6	4.9	3.4	1.7	1.8	1.0	2.4	1.7
Industrial/energy.....	24.6	7.0	5.9	5.0	2.7	5.0	4.7	4.8	3.2	3.7	4.1	1.5	1.1	1.7	2.5	3.2	2.3
Medical/health.....	9.2	9.8	15.8	15.0	21.4	16.9	16.2	15.7	12.6	13.2	10.6	4.7	4.0	8.7	15.4	16.4	17.9
Semiconductors/other electronics.....	10.5	12.6	8.7	6.6	6.3	4.9	5.7	5.4	4.5	6.2	4.8	3.8	6.7	10.2	9.3	12.0	12.2
Software and services.....	3.1	14.9	16.6	19.2	16.2	12.4	17.4	14.4	19.3	19.5	18.7	15.3	17.2	20.7	19.9	20.6	21.4
Other products/services.....	8.2	6.1	7.3	8.8	9.6	8.6	6.7	8.7	7.0	6.6	7.2	5.1	3.3	3.6	3.4	4.6	3.7
Internet specific.....	0.0	0.1	1.1	1.1	1.6	1.8	3.9	6.9	15.4	16.2	23.6	46.9	44.9	28.1	21.2	13.1	13.0
<b>Companies (number)</b>																	
All industries.....	430	1,215	1,069	929	1,050	936	979	1,573	2,117	2,588	3,460	4,478	6,429	3,829	2,539	2,355	2,425
Biotechnology.....	17	65	92	91	103	94	97	129	159	164	190	181	202	186	173	183	176
Communications.....	34	166	113	107	140	125	137	192	254	291	385	413	661	476	306	263	256
Computer hardware.....	83	212	89	77	85	66	56	97	94	110	115	120	176	125	72	88	103
Consumer related.....	35	85	103	78	89	89	92	162	164	200	258	173	190	131	60	55	65
Industrial/energy.....	84	110	95	74	70	53	61	78	102	114	152	74	100	98	68	67	73
Medical/health.....	41	143	182	149	184	159	154	227	292	338	398	357	390	333	297	320	352
Semiconductors/other electronics.....	60	141	90	68	80	61	59	94	106	146	193	181	336	255	192	239	274
Software and services.....	19	204	208	203	209	181	216	338	511	617	721	909	1335	875	650	653	664
Other products/services.....	56	85	85	67	68	86	68	130	151	217	408	257	360	221	131	112	126
Internet specific.....	1	4	12	15	22	22	39	126	284	391	640	1813	2679	1129	590	375	336

SOURCE: Thomson Financial Services, special tabulations (May 2005).

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## U.S. venture capital total disbursements, by financing stage: Selected years, 1980–2004

Industry	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Disbursements (\$ millions)																	
All stages .....	574.3	2,838.5	2,796.8	2,269.8	3,586.8	3,793.9	4,148.2	7,635.2	11,610.5	15,080.2	21,448.0	54,785.2	106,269.8	40,825.2	21,278.8	19,218.1	21,007.3
Early stage .....	286.6	1,033.2	1,100.9	804.9	1,139.3	1,347.3	1,618.1	3,114.2	4,358.6	4,837.5	7,306.5	15,444.5	29,285.8	9,934.5	4,416.9	3,753.2	4,293.0
Seed .....	11.7	104.5	124.2	87.9	166.1	319.9	223.7	360.3	569.9	790.0	908.1	1,222.1	1,927.1	429.9	203.7	252.2	157.8
Start-up .....	164.9	424.3	278.3	162.5	395.7	382.2	570.4	964.6	953.6	545.3	941.1	2,095.2	1,143.0	377.9	117.0	2,560.7	2,796.6
Other early stage.....	110.0	504.4	698.4	554.5	577.5	645.2	824.0	1,789.3	2,835.1	3,502.2	5,457.3	12,127.2	26,215.7	9,126.7	4,096.2	940.3	1,338.7
Later stage.....	287.7	1,805.3	1,695.9	1,464.9	2,447.5	2,446.6	2,530.1	4,521.0	7,251.9	10,242.7	14,141.5	39,340.7	76,984.0	30,890.7	16,861.9	15,464.9	16,714.2
Expansion .....	181.8	1,241.5	1,332.5	1,104.9	1,843.7	1,964.6	1,587.7	3,240.7	5,470.5	7,879.2	10,772.5	30,081.2	60,582.3	23,087.6	13,195.6	10,052.0	9,548.5
Later stage.....	53.6	542.1	363.4	360.0	603.8	472.6	942.4	1,277.5	1,779.1	2,363.4	3,362.2	9,256.4	16,401.6	7,803.1	3,666.3	5,412.7	7,165.7
Other later stage .....	52.3	21.7	0.0	0.0	283.2	9.4	277.3	2.8	2.3	0.1	6.8	3.1	0.1	0.0	0.0	0.3	0.0
Disbursements (percent)																	
All stages .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Early stage .....	49.9	36.4	39.4	35.5	31.8	35.5	39.0	40.8	37.5	32.1	34.1	28.2	27.6	24.3	20.8	19.5	20.4
Seed .....	2.0	3.7	4.4	3.9	4.6	8.4	5.4	4.7	4.9	5.2	4.2	2.2	1.8	1.1	1.0	1.3	0.8
Start-up .....	28.7	14.9	10.0	7.2	11.0	10.1	13.8	12.6	8.2	3.6	4.4	3.8	1.1	0.9	0.5	13.3	13.3
Other early stage.....	19.2	17.8	25.0	24.4	16.1	17.0	19.9	23.4	24.4	23.2	25.4	22.1	24.7	22.4	19.3	4.9	6.4
Later stage.....	50.1	63.6	60.6	64.5	68.2	64.5	61.0	59.2	62.5	67.9	65.9	71.8	72.4	75.7	79.2	80.5	79.6
Expansion .....	31.7	43.7	47.6	48.7	51.4	51.8	38.3	42.4	47.1	52.2	50.2	54.9	57.0	56.6	62.0	52.3	45.5
Later stage.....	9.3	19.1	13.0	15.9	16.8	12.5	22.7	16.7	15.3	15.7	15.7	16.9	15.4	19.1	17.2	28.2	34.1
Other later stage .....	9.1	0.8	0.0	0.0	7.9	0.2	6.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Companies (number)																	
All stages .....	430	1,215	1,069	929	1,050	936	979	1,573	2,117	2,588	3,460	4,478	6,429	3,829	2,539	2,482	2,578
Early stage .....	34	166	113	107	140	125	137	192	254	291	385	413	661	476	306	861	935
Seed .....	17	101	87	64	95	111	99	161	265	329	410	430	451	168	109	144	113
Start-up .....	93	234	133	95	118	126	178	216	196	138	237	357	187	71	29	483	499
Other early stage.....	87	269	298	235	237	152	216	457	676	793	910	1,596	2,638	1,168	740	234	323
Later stage.....	41	143	182	149	184	159	154	227	292	338	398	357	390	333	297	1,621	1,643
Expansion .....	123	488	460	429	492	425	378	624	923	1,246	1,734	2,155	3,253	2,128	1,436	1,154	1,059
Later stage.....	27	157	173	199	184	153	170	197	257	303	366	540	709	570	364	466	584
Other later stage .....	104	25	0	0	1	2	0	1	3	2	40	2	2	0	0	1	0
Disbursements/company (\$ millions)																	
All stages .....	1.3	2.3	2.6	2.4	3.4	4.1	4.2	4.9	5.5	5.8	6.2	12.2	16.5	10.7	8.4	7.7	8.2
Early stage .....	8.4	6.2	9.7	7.5	8.1	10.8	11.8	16.2	17.2	16.6	19.0	37.4	44.3	20.9	14.4	4.4	4.6
Seed .....	0.7	1.0	1.4	1.4	1.7	2.9	2.3	2.2	2.2	2.4	2.2	2.8	4.3	2.6	1.9	1.8	1.4
Start-up .....	1.8	1.8	2.1	1.7	3.4	3.0	3.2	4.5	4.9	4.0	4.0	5.9	6.1	5.3	4.0	5.3	5.6
Other early stage.....	1.3	1.9	2.3	2.4	2.4	4.2	3.8	3.9	4.2	4.4	6.0	7.6	9.9	7.8	5.5	4.0	4.1
Later stage.....	7.0	12.6	9.3	9.8	13.3	15.4	16.4	19.9	24.8	30.3	35.5	110.2	197.4	92.8	56.8	9.5	10.2
Expansion .....	1.5	2.5	2.9	2.6	3.7	4.6	4.2	5.2	5.9	6.3	6.2	14.0	18.6	10.8	9.2	8.7	9.0
Later stage.....	2.0	3.5	2.1	1.8	3.3	3.1	5.5	6.5	6.9	7.8	9.2	17.1	23.1	13.7	10.1	11.6	12.3
Other later stage .....	0.5	0.9	0.0	0.0	283.2	4.7	0.0	2.8	0.8	0.1	0.2	1.6	0.1	0.0	0.0	0.3	0.0

**U.S. venture capital total disbursements, by financing stage: Selected years, 1980–2004**

Stage	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Disbursements (number)																	
All stages .....	451	1,274	1,151	1,022	1,127	969	1,041	1,656	2,320	2,811	3,697	5,080	7,240	4,105	2,678	2,832	2,885
Early stage .....	197	604	518	394	450	389	493	834	1,137	1,260	1,557	2,383	3,276	1,407	878	960	1,007
Seed .....	17	101	87	64	95	111	99	161	265	329	410	430	451	168	109	155	125
Start-up .....	93	234	133	95	118	126	178	216	196	138	237	357	187	71	29	549	541
Other early stage.....	87	269	298	235	237	152	216	457	676	793	910	1,596	2,638	1,168	740	256	341
Later stage.....	254	670	633	628	677	580	548	822	1,183	1,551	2,140	2,697	3,964	2,698	1,800	1,872	1,878
Expansion .....	123	488	460	429	492	425	378	624	923	1,246	1,734	2,155	3,253	2,128	1,436	1,328	1,213
Later stage.....	27	157	173	199	184	153	170	197	257	303	366	540	709	570	364	543	665
Other later stage .....	104	25	0	0	1	2	0	1	3	2	40	2	2	0	0	1	0

SOURCE: Thomson Financial Services, special tabulations (May 2005).

*Science and Engineering Indicators 2006*



Appendix table 6-20

## U.S. venture capital seed disbursements, by industry category: Selected years, 1980–2004

Industry	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Disbursements (\$ millions)																	
All industries.....	11.7	104.5	124.2	87.8	166.1	319.9	223.7	360.3	569.9	790.0	908.1	1,222.1	1,927.1	429.9	203.7	252.2	157.8
Biotechnology.....	1.1	3.5	7.4	6.3	49.9	40.6	25.2	7.4	48.8	50.9	90.5	69.4	40.6	20.6	31.4	37.4	15.3
Communications.....	1.5	3.5	13.2	4.1	24.1	83.1	20.6	50.3	43.9	115.7	123.4	71.1	395.2	135.0	26.9	25.8	9.9
Computer hardware.....	6.0	10.9	14.0	11.3	3.8	18.2	2.6	35.8	23.9	15.0	42.2	12.5	48.0	5.2	1.6	2.4	0.9
Consumer related.....	0.0	3.0	26.0	3.1	9.7	15.8	45.1	57.5	7.8	43.6	14.4	26.2	20.1	3.5	1.5	4.5	0.3
Industrial/energy.....	0.5	16.9	1.0	0.0	4.0	25.3	45.4	7.9	24.7	17.9	4.2	3.0	9.3	4.6	3.9	8.1	0.6
Medical/health.....	1.2	17.6	28.7	31.7	36.2	57.7	38.4	60.1	113.7	127.7	159.6	64.4	78.5	42.2	41.1	64.6	39.2
Semiconductors/other electronics.....	0.0	14.7	2.7	1.5	7.3	10.6	10.6	38.0	34.0	63.2	40.3	48.1	170.2	36.2	29.9	24.5	35.5
Software and services.....	1.5	17.8	26.2	19.5	23.2	42.8	29.4	65.4	138.0	183.3	176.7	181.6	283.2	66.7	47.4	49.4	35.2
Other products/services.....	0.0	15.9	1.1	9.3	0.2	18.0	0.6	9.0	7.2	45.5	33.3	34.4	51.1	24.6	5.0	15.1	0.1
Internet specific.....	0.0	0.7	3.9	1.1	7.8	7.9	5.8	28.9	128.0	127.3	223.6	711.4	830.9	91.3	15.1	20.5	20.8
Disbursements (percent)																	
All industries.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Biotechnology.....	9.4	3.4	6.0	7.2	30.1	12.7	11.3	2.1	8.6	6.4	10.0	5.7	2.1	4.8	15.4	14.8	9.7
Communications.....	12.8	3.4	10.6	4.7	14.5	26.0	9.2	14.0	7.7	14.6	13.6	5.8	20.5	31.4	13.2	10.2	6.3
Computer hardware.....	50.7	10.5	11.3	12.9	2.3	5.7	1.2	9.9	4.2	1.9	4.6	1.0	2.5	1.2	0.8	1.0	0.6
Consumer related.....	0.0	2.9	20.9	3.5	5.8	4.9	20.2	16.0	1.4	5.5	1.6	2.1	1.0	0.8	0.7	1.8	0.2
Industrial/energy.....	4.3	16.1	0.8	0.0	2.4	7.9	20.3	2.2	4.3	2.3	0.5	0.2	0.5	1.1	1.9	3.2	0.4
Medical/health.....	10.1	16.8	23.1	36.0	21.8	18.0	17.2	16.7	20.0	16.2	17.6	5.3	4.1	9.8	20.2	25.6	24.8
Semiconductors/other electronics.....	0.0	14.0	2.2	1.8	4.4	3.3	4.7	10.5	6.0	8.0	4.4	3.9	8.8	8.4	14.7	9.7	22.5
Software and services.....	12.8	17.0	21.1	22.2	14.0	13.4	13.2	18.2	24.2	23.2	19.5	14.9	14.7	15.5	23.3	19.6	22.3
Other products/services.....	0.0	15.2	0.9	10.6	0.1	5.6	0.3	2.5	1.3	5.8	3.7	2.8	2.6	5.7	2.5	6.0	0.1
Internet specific.....	0.0	0.7	3.1	1.3	4.7	2.5	2.6	8.0	22.5	16.1	24.6	58.2	43.1	21.2	7.4	8.1	13.2
Companies (number)																	
All industries.....	17	101	87	64	95	111	99	161	265	329	410	430	451	168	109	144	113
Biotechnology.....	3	11	13	8	20	17	13	7	20	22	43	22	18	12	18	20	18
Communications.....	2	7	5	9	16	17	16	17	27	39	46	27	58	34	13	13	13
Computer hardware.....	7	11	9	5	6	9	2	10	12	7	12	9	11	4	2	5	3
Consumer related.....	0	6	8	2	6	5	4	12	6	29	15	7	8	3	3	5	1
Industrial/energy.....	1	9	2	0	2	5	3	6	9	8	15	1	4	3	3	5	2
Medical/health.....	2	16	24	15	15	23	25	24	48	58	64	32	27	19	24	33	29
Semiconductors/other electronics.....	0	15	3	2	7	5	5	16	12	18	21	13	29	14	9	20	11
Software and services.....	2	19	17	15	15	19	25	42	68	84	77	69	88	36	27	29	21
Other products/services.....	0	6	3	6	4	7	1	7	6	14	23	25	25	7	4	3	1
Internet specific.....	0	1	3	2	4	4	5	20	57	50	94	225	183	36	6	11	14

SOURCE: Thomson Financial Services, special tabulations (May 2005).

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Appendix table 7-1  
**Leading source of current news, by respondent characteristic: 2004**  
 (Percent)

Characteristic	Newspaper	Magazine	Internet	Books/ other print	Television	Radio	Government agency	Family	Friend/ colleague	Other	Do not know	Sample (n)
All adults .....	22	3	12	1	51	8	—	1	2	—	—	2,009
Male .....	25	2	16	1	44	10	—	1	1	—	—	897
Female .....	20	3	9	1	56	6	—	2	2	—	—	1,112
Formal education												
<High school .....	11	3	2	1	73	4	—	1	4	1	—	138
High school graduate .....	21	2	9	1	56	7	—	2	2	—	—	1,152
Baccalaureate .....	25	3	18	1	38	11	—	1	1	—	1	446
Graduate/professional degree .....	31	9	25	2	26	7	—	1	0	—	—	260
Science/mathematics education <sup>a</sup>												
Low .....	19	2	6	1	61	6	—	2	2	—	—	753
Middle .....	22	3	8	1	52	7	1	2	3	—	1	480
High .....	25	3	21	1	38	10	—	1	1	—	—	774
Family income (quartile)												
Top .....	24	4	20	2	37	11	—	1	1	—	—	509
Second .....	24	3	12	1	46	9	—	3	1	—	—	491
Third .....	18	3	12	0	55	7	—	1	4	—	1	453
Bottom .....	19	2	7	1	61	6	—	1	2	1	—	411
Age (years)												
18–24 .....	23	1	14	1	49	3	1	4	4	—	—	115
25–34 .....	18	1	20	0	44	11	—	3	2	—	—	275
35–44 .....	18	2	17	1	47	9	—	2	2	—	—	427
45–54 .....	25	2	12	2	48	9	—	0	2	—	—	436
55–64 .....	23	4	6	1	57	7	—	0	1	—	5	350
65+ .....	26	5	1	1	60	5	—	0	1	—	1	399
Minor children at home												
Yes .....	21	2	15	1	46	9	—	3	3	—	—	714
No .....	23	3	10	1	54	7	—	1	1	—	—	1,294

— = ≤0.5% responded

<sup>a</sup>Low = ≤5 high school and college science/math courses; middle = 6–8 courses; high = ≥9 courses.

NOTES: Responses to: *We are interested in how people get information about events in the news. Thinking about the kind of issues we have been talking about, where do you get most of your information about current news events?* Some respondents did not provide information about highest level of education. Detail may not add to total because of rounding.

SOURCE: University of Michigan, Survey of Consumer Attitudes (2004).

Appendix table 7-2

**Leading source of information about science and technology, by respondent characteristic: 2004**

(Percent)

Characteristic	Newspaper	Magazine	Internet	Books/ other print	Television	Radio	Government agency	Family	Friend/ colleague	Other	Do not know	Sample (n)
All adults .....	14	14	18	5	41	2	—	2	2	1	1	2,003
Male .....	14	16	22	4	38	2	—	1	2	1	1	897
Female .....	14	13	14	6	44	2	—	3	3	1	1	1,106
Formal education												
<High school .....	7	8	8	3	62	1	—	2	4	—	4	135
High school graduate .....	15	13	15	4	46	2	—	2	2	1	—	1,149
Baccalaureate .....	13	17	28	6	28	3	—	2	2	1	—	446
Graduate/professional degree .....	14	26	27	10	16	2	—	2	2	1	1	261
Science/mathematics education <sup>a</sup>												
Low .....	14	9	11	4	52	2	—	3	2	1	1	744
Middle .....	14	17	16	4	42	1	—	2	2	1	—	480
High .....	14	19	26	7	26	2	—	1	2	2	—	777
Family income (quartile)												
Top .....	13	20	25	6	29	3	—	1	2	1	—	510
Second .....	16	14	20	5	37	1	—	3	2	1	—	489
Third .....	14	14	18	4	42	2	—	1	2	1	1	454
Bottom .....	12	11	11	7	51	2	—	2	2	1	1	406
Age (years)												
18–24 .....	12	9	25	6	37	—	1	4	2	4	—	115
25–34 .....	11	8	28	4	43	1	—	3	2	—	1	275
35–44 .....	9	15	23	4	39	3	—	2	4	2	—	426
45–54 .....	17	15	19	6	34	2	—	2	2	1	1	436
55–64 .....	14	22	10	8	41	3	—	1	2	—	—	347
65+ .....	20	17	4	5	48	2	—	2	2	—	2	397
Minor children at home												
Yes .....	11	14	22	5	39	1	—	2	3	1	1	715
No .....	16	15	15	5	42	2	—	2	2	1	1	1,287

— = ≤0.5% responded

<sup>a</sup>Low = ≤5 high school and college science/math courses; middle = 6–8 courses; high = ≥9 courses.NOTES: Responses to: *We are interested in how people get information about events in the news. Thinking about the kind of issues we have been talking about, where do you get most of your information about current news events?* Some respondents did not provide information about highest level of education. Detail may not add to total because of rounding.

SOURCE: University of Michigan, Survey of Consumer Attitudes (2004).

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Appendix table 7-3

**Leading source of information about specific scientific issue, by respondent characteristic: 2004**

(Percent)

Characteristic	Newspaper	Magazine	Internet	Books/ other print	Television	Radio	Government agency	Family	Friend/ colleague	Other	Do not know	Sample (n)
All adults .....	6	9	52	12	13	—	1	1	1	3	1	2,007
Male .....	6	9	54	11	13	—	1	1	1	3	1	897
Female .....	5	8	51	13	13	—	—	1	2	4	2	1,110
Formal education												
<High school .....	7	6	29	9	33	—	2	1	3	4	6	136
High school graduate .....	6	8	50	13	15	—	—	1	1	4	1	1,151
Baccalaureate .....	3	11	66	9	5	1	—	1	1	2	—	449
Graduate/professional degree .....	5	12	62	14	1	—	1	1	—	2	1	259
Science/mathematics education <sup>a</sup>												
Low .....	8	6	42	12	21	1	1	1	2	4	2	748
Middle .....	6	10	53	12	11	—	1	1	—	3	1	480
High .....	4	11	63	11	5	—	—	1	1	2	1	777
Family income (quartile)												
Top .....	4	10	71	7	6	—	—	—	1	1	1	511
Second .....	3	9	59	11	11	—	—	2	1	2	1	489
Third .....	9	10	52	10	12	—	—	1	1	4	1	454
Bottom .....	6	8	34	17	23	1	2	1	1	5	2	409
Age (years)												
18–24 .....	2	5	63	16	8	—	—	1	2	3	—	115
25–34 .....	4	5	71	10	7	—	—	—	—	2	—	275
35–44 .....	3	8	64	9	9	1	—	1	3	2	1	428
45–54 .....	4	9	56	11	15	—	—	1	1	2	1	436
55–64 .....	6	12	46	13	12	1	—	1	2	5	2	349
65+ .....	13	12	19	15	24	1	2	2	1	6	4	397
Minor children at home												
Yes .....	3	8	66	10	9	—	—	—	1	2	—	716
No .....	8	10	43	13	16	1	1	2	1	4	2	1,290

— = ≤0.5% responded

<sup>a</sup>Low = ≤5 high school and college science/math courses; middle = 6–8 courses; high = ≥9 courses.

NOTES: Responses to: *We are interested in how people get information about events in the news. Thinking about the kind of issues we have been talking about, where do you get most of your information about current news events?* Some respondents did not provide information about highest level of education. Detail may not add to total because of rounding.

SOURCE: University of Michigan, Survey of Consumer Attitudes (2004).

Appendix table 7-4  
**Access to the Internet at home, by respondent characteristic: 2001 and 2004**  
 (Percent)

Characteristic	2001			2004		
	No	Yes	Sample (n)	No	Yes	Sample (n)
All adults .....	41	59	1,574	30	70	2,005
Male .....	37	63	751	26	74	898
Female .....	45	55	823	34	66	1,107
Formal education						
<High school .....	68	32	116	71	29	137
High school graduate .....	42	58	834	35	65	1,155
Baccalaureate degree .....	19	81	393	11	89	448
Graduate/professional degree .....	19	81	221	8	92	261
Science/mathematics education <sup>a</sup>						
Low .....	55	45	674	48	52	744
Middle .....	31	69	469	30	70	481
High .....	18	82	431	11	89	780
Family income (quartile)						
Top .....	NA	NA	NA	5	95	509
Second .....	NA	NA	NA	14	86	486
Third .....	NA	NA	NA	35	65	455
Bottom .....	NA	NA	NA	59	41	409

NA = not available

<sup>a</sup>Low = ≤5 high school and college science/math courses; middle = 6–8 courses; high = ≥9 courses.

NOTES: Some respondents did not provide information about highest level of education. Detail may not add to total because of rounding.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (2001); and University of Michigan, Survey of Consumer Attitudes (2004).

Appendix table 7-5  
**Level of public interest in science and technology issues: Most recent year**  
 (Percent)

Issue	United States (2001) (n = 1,574)				Europe (2005) (n = 24,895)				China (2001) (n = 8,350)					South Korea (2004) (n = 1,007)				Japan (2001) (n = 2,146)			Malaysia (2000) (n = 5,000)				
	VI	MI	NI	Index score	VI	MI	NI	Index score	GI	FI	NMI	NI	Index score	VI	MI	NI	Index score	VI	Index score	NI	I	MI	SI	NI	Index score
Agriculture and farming .....	29	46	25	53	—	—	—		38	37	18	7	69	33	39	28	53	—	42	—	—	—	—	—	—
Economy and business conditions .....	45	45	10	67	—	—	—		17	36	32	15	52	57	35	8	75	—	73	—	21	30	27	22	50
Environmental pollution .....	48	43	8	70	38	49	12	63	30	42	20	9	64	58	36	7	76	—	75	—	32	36	21	11	63
International and foreign policy .....	28	49	23	52	—	—	—		25	36	25	14	58	19	49	32	44	—	52	—	8	21	30	41	32
Local schools.....	59	31	10	74	—	—	—		—	—	—	—	—	49	36	15	67	—	52	—	16	27	28	29	43
Military and defense policy .....	38	44	18	60	—	—	—		32	34	22	11	62	24	42	35	45	—	44	—	—	—	—	—	—
New inventions and technologies.....	43	47	10	66	30	48	21	54	30	43	20	7	66	27	45	28	49	—	48	—	23	28	28	21	51
New medical discoveries .....	65	32	4	80	33	50	16	58	27	41	24	8	62	27	48	25	51	—	61	—	18	26	29	27	45
New scientific discoveries.....	47	45	9	69	30	48	20	54	37	41	17	5	70	27	45	28	50	—	44	—	18	24	27	31	43
Space exploration .....	26	47	27	50	—	—	—		15	26	36	23	44	—	—	—	—	—	40	—	18	20	26	37	39

— = not asked

VI = very interested; MI = moderately interested; NI = not interested; GI = great interest; FI = fair interest; NMI = not much interest; I = interested; SI = slightly interested

NOTES: Responses to: *There are a lot of issues in the news, and it is hard to keep up with every area. I'm going to read you a short list of issues, and for each one—as I read it—I would like you to tell me if you are very interested, moderately interested, or not at all interested.* "Don't know" responses not included. Responses converted to 0–100 scale with 100 for VI, 50 for MI, and 0 for NI. In China, values were 100 for GI, 67 for FI, 33 for NMI, and 0 for NI. Values for Malaysia were 100 for I, 67 for MI, 33 for SI, and 0 for NI. Indices were obtained by adding all values for each policy issue and computing average. Detail may not add to total because of rounding.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (2001); Chinese Ministry of Science and Technology, *China Science and Technology Indicators 2002* (2002); Korea Science Foundation, Survey on Public Attitude of Science & Technology 2004 (2004); National Institute of Science and Technology Policy, Ministry of Education, Culture, Sports, Science and Technology, The 2001 Survey of Public Attitudes Toward and Understanding of Science & Technology in Japan (2002); Malaysian Science and Technology Information Centre, Ministry of Science, Technology and the Environment, *Public Awareness of Science and Technology Malaysia 2000* (2001); and European Commission, Research Directorate-General, Eurobarometer 224/Wave 63.1: *Europeans, Science and Technology* (2005).

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Appendix table 7-6  
**Types of establishments visited during the past 12 months: Most recent year**  
 (Percent)

	Public library	Zoo or aquarium	Art gallery	Science and technology museum
United States (2001) .....	75	58	32	30
Europe (2005).....	34	27	23	16
Belgium.....	39	28	26	16
Denmark.....	67	45	42	16
Germany.....	31	37	26	20
Greece.....	14	12	14	12
Spain.....	23	19	20	16
France.....	30	30	24	15
Ireland.....	41	24	19	10
Italy.....	17	11	19	11
Luxembourg.....	23	30	26	24
Netherlands.....	60	53	42	16
Austria.....	23	25	19	11
Portugal.....	17	17	11	6
Finland.....	75	29	32	16
Sweden.....	75	34	39	36
United Kingdom.....	52	30	25	19
Republic of Cyprus.....	11	28	10	8
Czech Republic.....	38	37	25	18
Estonia.....	52	28	20	11
Hungary.....	26	27	16	11
Latvia.....	34	31	18	8
Lithuania.....	33	19	18	10
Malta.....	27	12	22	9
Poland.....	38	22	11	12
Slovakia.....	34	26	13	11
Slovenia.....	51	23	18	16
Bulgaria.....	16	13	7	7
Romania.....	19	17	12	8
Croatia.....	34	17	14	7
Turkey.....	18	20	11	7
Iceland.....	80	36	57	24
Switzerland.....	40	45	36	26
Norway.....	58	36	34	27
Russia (2003).....	16	9	7	1
China (2001).....	27	32	NA	14
Japan (2001).....	47	43	35	13

NA = not available

NOTE: Percentages for respondents within respective country.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (2001); and other surveys.

Appendix table 7-7

**Feeling informed about selected policy issues: Selected years, 1979–2004**

(Percent)

Issue	1979 (n = 1,635)			1981 (n = 3,195)			1983 (n = 1,631)			1985 (n = 2,005)			1988 (n = 2,041)			1990 (n = 2,033)			1992 (n = 2,001)			1995 (n = 2,006)			1997 (n = 2,000)			1999 (n = 1,882)			2001 (n = 1,574)			2004 (n = 2,025)		
	VI	MI	NI	VI	MI	NI	VI	MI	NI	VI	MI	NI	VI	MI	NI	VI	MI	NI	VI	MI	NI	VI	MI	NI	VI	MI	NI	VI	MI	NI	VI	MI	NI	VI	MI	NI
Agriculture and farming .....	10	44	45	14	42	44	—	—	—	17	47	35	20	52	27	13	46	42	—	—	—	11	47	42	13	49	38	11	43	45	14	44	43	10	43	47
Economic and business conditions.....	14	55	31	29	51	20	28	52	20	22	51	26	22	55	22	25	55	20	29	54	17	25	53	22	25	51	24	23	53	24	23	56	22	22	58	19
Environmental pollution .....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	32	55	13	29	56	15	24	56	20	23	55	21	21	54	25	18	58	24	17	54	29
International and foreign policy .....	8	54	37	17	54	28	14	51	35	15	53	32	14	55	31	22	57	22	19	54	26	10	52	37	10	52	38	14	52	34	12	46	43	13	50	37
Local schools.....	20	48	32	32	45	22	34	41	25	30	47	22	33	44	23	32	46	21	32	46	22	36	46	18	38	44	17	35	47	18	35	48	17	33	47	20
Military and defense policy .....	—	—	—	—	—	—	21	50	29	21	48	31	17	51	32	26	51	23	24	51	25	17	47	36	18	42	40	21	46	33	15	48	37	21	48	31
New inventions and technologies.....	10	50	39	11	48	40	14	55	32	12	54	34	12	51	36	11	53	35	10	56	33	12	55	33	16	56	28	17	53	30	12	52	36	14	53	33
New medical discoveries .....	—	—	—	—	—	—	—	—	—	24	57	18	22	59	19	24	57	20	22	58	21	23	57	20	28	56	16	25	56	19	21	59	20	19	55	26
New scientific discoveries.....	10	52	37	13	49	38	13	53	34	13	59	27	14	55	31	14	55	31	12	54	34	13	58	29	19	58	23	17	56	28	14	57	29	16	52	32
Space exploration .....	—	—	—	14	46	40	13	52	34	16	52	32	13	52	34	11	51	38	9	48	44	9	48	43	16	50	34	13	48	40	10	45	46	14	43	43

— = not asked

VI = very well informed; MI = moderately well informed; NI = poorly informed

NOTES: Responses to: *Now I'd like to go through this list with you again, and for each issue, I'd like you to tell me if you are very well informed, moderately well informed, or poorly informed.* "Don't know" responses not included. Detail may not add to total because of rounding.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (various years); and University of Michigan, Survey of Consumer Attitudes (2004).

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Appendix table 7-8

**Feeling informed about selected policy issues: Selected years, 1979–2004**

(Mean index score)

Issue	1979 (n = 1,635)	1981 (n = 3,195)	1983 (n = 1,631)	1985 (n = 2,005)	1988 (n = 2,041)	1990 (n = 2,033)	1992 (n = 2,001)	1995 (n = 2,006)	1997 (n = 2,000)	1999 (n = 1,882)	2001 (n = 1,574)	2004 (n = 2,025)
Agriculture and farming .....	33	35	—	41	46	36	—	35	38	33	35	31
Economy and business conditions .....	42	55	54	48	50	53	56	52	51	50	51	51
Environmental pollution .....	—	—	—	—	—	60	57	52	51	48	47	44
International and foreign policy .....	35	44	40	42	42	51	46	36	36	40	35	38
Local schools.....	44	55	54	54	55	55	55	59	61	58	59	56
Military and defense policy .....	—	—	46	45	43	51	49	40	39	44	39	45
New inventions and technologies.....	35	35	42	39	38	38	38	40	44	43	38	40
New medical discoveries .....	—	—	—	53	52	53	51	52	56	53	51	46
New scientific discoveries.....	36	38	40	43	42	42	39	42	48	44	42	42
Space exploration .....	—	37	39	42	39	37	33	33	41	37	32	36

— = not asked

NOTES: Responses to: *Now, I'd like to go through this list with you again, and for each issue, I'd like you to tell me if you are very well informed, moderately well informed, or poorly informed.* Responses converted to 0–100 scale, with 100 for very well informed, 50 for moderately well informed, and 0 for poorly informed. Indices obtained by adding all values for each policy issue and computing average.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (various years); and University of Michigan, Survey of Consumer Attitudes (2004).

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Appendix table 7-9

**Feeling informed about selected policy issues, by respondent characteristic: 2004**

(Mean index score)

Sex and education level	Agriculture and farming	Economy and business conditions	Environmental pollution	International and foreign policy	Local schools	Military and defense policy	New inventions and technologies	New medical discoveries	New scientific discoveries	Space exploration	Sample (n)
All adults .....	31	51	44	38	56	45	40	46	42	36	2,025
Male .....	34	56	46	45	54	52	46	44	45	43	903
Female .....	29	47	43	31	58	40	36	48	40	29	1,122
<b>Formal education</b>											
<High school .....	30	35	34	25	41	36	27	39	31	27	139
High school graduate .....	33	49	43	35	57	45	39	46	39	34	1,156
Baccalaureate degree .....	29	59	48	42	59	48	45	47	49	41	449
Graduate/professional degree .....	26	61	56	55	62	52	53	53	57	43	261
<b>Science/mathematics education<sup>a</sup></b>											
Low .....	32	44	41	31	51	40	32	44	35	32	761
Middle .....	31	52	44	37	58	45	39	43	40	33	481
High .....	31	60	48	46	61	51	51	51	52	42	780
<b>Family income (quartile)</b>											
Top .....	27	62	48	47	58	52	49	47	49	39	513
Second .....	32	52	42	36	60	45	39	46	41	35	493
Third .....	32	50	41	35	57	46	37	44	38	35	459
Bottom .....	34	43	47	33	53	41	38	47	42	35	414
<b>Age (years)</b>											
18–24 .....	31	54	41	39	59	53	52	47	49	44	116
25–34 .....	27	52	41	33	54	46	42	41	39	34	276
35–44 .....	30	53	44	38	63	48	41	45	44	38	430
45–54 .....	30	51	44	43	56	43	38	47	42	32	441
55–64 .....	35	54	47	39	55	42	40	47	44	39	351
65+ .....	38	46	47	35	52	42	35	50	39	32	403
<b>Minor children at home</b>											
Yes .....	28	51	41	36	64	47	40	43	40	34	721
No .....	33	52	46	38	51	44	41	48	43	37	1,303

<sup>a</sup>Low = ≤5 high school and college science/math courses; middle = 6–8 courses; high = ≥9 courses.

NOTES: Responses to: *Now, I'd like to go through this list with you again, and for each issue, I'd like you to tell me if you are very well informed, moderately well informed, or poorly informed.* Responses converted to 0–100 scale, with 100 for very well informed, 50 for moderately well informed, and 0 for poorly informed. Indices obtained by adding all values for each policy issue and computing average.

SOURCE: University of Michigan, Survey of Consumer Attitudes (2004).

Appendix table 7-10

**Correct answers to specific science literacy questions, by country/region: Most recent year**

(Percent)

Questions	United States (2004) (n = 2,010)	United States (2001) (n = 1,574)	EU-25 (2005) (n = 24,895)	EU-15 (2001) (n = 16,029)	China (2001) (n = 8,350)	South Korea (2004) (n = 1,007)	Japan (2001) (n = 2,146)	Malaysia (2000) (n = 5,000)	Russia (2003) (n = 2,107)
<i>The center of the Earth is very hot. (True)</i> .....	78	80	86	88	39	87	77	74	—
<i>All radioactivity is man-made. (False)</i> .....	73	76	59	53	46	48	56	33	35
<i>It is the father's gene that decides whether the baby is a boy or a girl. (True)</i> .....	62	65	64	48	39	59	25	46	22
<i>Lasers work by focusing sound waves. (False)</i> .....	42	45	47	35	16	31	28	34	24
<i>Electrons are smaller than atoms. (True)</i> .....	45	48	46	41	24	46	30	42	44
<i>Antibiotics kill viruses as well as bacteria. (False)</i> .....	54	51	46	40	18	30	23	21	18
<i>The universe began with a huge explosion. (True)</i> .....	35 <sup>a</sup>	33	—	—	17	67	63	41	35
<i>The continents have been moving their location for millions of years and will continue to move. (True)</i> .....	77	79	87	82	45	87	83	62	40
<i>Human beings are developed from earlier species of animals. (True)</i> .....	44 <sup>a</sup>	53	70	69	70	64 <sup>b</sup>	78	61	44
<i>Does the Earth go around the Sun, or does the Sun go around the Earth? (Earth around the Sun)</i> .....	71	75	66	67	59	86	—	81	—

— = question not asked

EU = European Union

<sup>a</sup>This question asked of slightly >75% of survey respondents.<sup>b</sup>Did not include question about evolution. Answer came from South Korea 2002 survey.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (2001); University of Michigan, Survey of Consumer Attitudes (2004); Chinese Ministry of Science and Technology, *China Science and Technology Indicators 2002* (2002); Korea Science Foundation, Survey on Public Attitude of Science & Technology 2004 (2004); National Institute of Science and Technology Policy, Ministry of Education, Culture, Sports, Science and Technology, The 2001 Survey of Public Attitudes Toward and Understanding of Science & Technology in Japan (2002); Malaysian Science and Technology Information Centre, Ministry of Science, Technology and the Environment, *The Public Awareness of Science and Technology Malaysia 2000* (2001); L. Gokhberg and O. Shuvalova, *Russian Public Opinion of the Knowledge Economy: Science, Innovation, Information Technology and Education*, British Council, Russia (2004); European Commission, Research Directorate-General, Eurobarometer 55.2: *Europeans, Science and Technology* (2001); and Eurobarometer 224/Wave 63.1: *Europeans, Science and Technology* (2005).

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Appendix table 7-11

**Correct answers to scientific terms and concept questions: Selected years, 1995–2004**

(Percent)

Characteristic	1995	1997	1999	2001	2004
All adults .....	63	61	62	64	59
Male .....	69	67	67	70	65
Female .....	58	56	58	59	55
Formal education					
<High school .....	45	48	48	50	41
High school graduate .....	60	61	62	63	56
Baccalaureate .....	72	73	75	77	70
Graduate/professional .....	81	79	80	80	76
Science/mathematics education <sup>a</sup>					
Low .....	53	53	54	56	48
Middle .....	67	65	68	68	60
High .....	78	79	79	81	73
Family income (quartile)					
Top .....	NA	NA	NA	NA	71
Second .....	NA	NA	NA	NA	64
Third .....	NA	NA	NA	NA	57
Bottom .....	NA	NA	NA	NA	50
Age (years)					
18–24 .....	NA	NA	NA	NA	65
25–34 .....	NA	NA	NA	NA	63
35–44 .....	NA	NA	NA	NA	63
45–54 .....	NA	NA	NA	NA	61
55–64 .....	NA	NA	NA	NA	58
65+ .....	NA	NA	NA	NA	48
Minor children at home					
Yes .....	NA	NA	NA	NA	57
No .....	NA	NA	NA	NA	62

NA = not available

<sup>a</sup>Low = ≤5 high school and college science/math courses; middle = 6–8 courses; high = ≥9 courses.

NOTES: Measure includes responses (true/false) to:

- *The center of the Earth is very hot.* (True)
- *All radioactivity is man-made.* (False)
- *It is the father's gene that decides whether the baby is a boy or a girl.* (True)
- *Lasers work by focusing sound waves.* (False)
- *Electrons are smaller than atoms.* (True)
- *Antibiotics kill viruses as well as bacteria.* (False)
- *The universe began with a huge explosion.* (True)
- *The continents on which we live have been moving their location for millions of years and will continue to move in the future.* (True)
- *Human beings, as we know them today, developed from earlier species of animals.* (True)

The following short-answer item was also included:

- *Does the Earth go around the Sun, or does the Sun go around the Earth?* (Earth around the Sun)

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (various years); and University of Michigan, Survey of Consumer Attitudes (2004).

Appendix table 7-12  
**Correct answers to science literacy questions, by respondent characteristic: 2004**  
 (Percent)

Characteristic	<i>The center of the Earth is very hot.</i> (True)	<i>All radioactivity is man-made.</i> (False)	<i>It is the father's gene that decides whether the baby is a boy or a girl.</i> (True)	<i>Lasers work by focusing sound waves.</i> (False)	<i>Electrons are smaller than atoms.</i> (True)	<i>Antibiotics kill viruses as well as bacteria.</i> (False)
All adults (n = 2,025)	78	73	62	42	45	54
Male (n = 903)	86	82	51	59	52	49
Female (n = 1,122)	72	66	70	28	39	58
Formal education						
<High school (n = 139)	65	47	49	18	27	17
High school graduate (n = 1,156)	77	72	61	39	40	50
Baccalaureate (n = 449)	85	85	69	53	60	72
Graduate/professional (n = 261)	89	87	67	62	64	82
Science/mathematics education <sup>a</sup>						
Low (n = 761)	68	63	56	28	29	39
Middle (n = 481)	80	73	62	42	44	54
High (n = 780)	89	86	69	59	65	74
Family income (quartile)						
Top (n = 513)	86	84	70	58	56	71
Second (n = 493)	84	78	69	45	46	66
Third (n = 459)	76	71	61	39	41	51
Bottom (n = 414)	70	64	50	32	41	35
Age (years)						
18–24 (n = 116)	91	64	61	46	63	47
25–34 (n = 276)	81	74	67	42	52	56
35–44 (n = 430)	78	78	68	53	47	63
45–54 (n = 441)	81	77	64	48	46	58
55–64 (n = 352)	76	74	60	40	39	55
65+ (n = 403)	69	67	48	26	32	42
Minor children at home						
Yes (n = 721)	81	73	71	47	48	60
No (n = 1,303)	76	74	55	39	43	51

Characteristic	<i>The universe began with a huge explosion.</i> (True)	<i>The continents on which we live have been moving their location for millions of years and will continue to move in the future.</i> (True)	<i>Human beings, as we know them today, developed from earlier species of animals.</i> (True)	<i>Does the Earth go around the Sun, or does the Sun go around the Earth?</i> (Earth around the Sun)	<i>Please tell me in your own words, what is DNA?</i>
All adults (n = 2,025)	40	77	50	71	33
Male (n = 903)	47	85	54	82	35
Female (n = 1,122)	34	71	47	63	32
Formal education					
<High school (n = 139)	30	71	43	48	9
High school graduate (n = 1,156)	36	75	46	68	29
Baccalaureate (n = 449)	49	84	57	83	47
Graduate/professional (n = 261)	58	91	71	93	54
Science/mathematics education <sup>a</sup>					
Low (n = 761)	31	69	40	57	20
Middle (n = 481)	41	79	49	73	35
High (n = 780)	49	86	63	87	49
Family income (quartile)					
Top (n = 513)	51	87	61	83	48
Second (n = 493)	42	80	51	76	40
Third (n = 459)	38	76	47	72	29
Bottom (n = 414)	33	71	44	60	22
Age (years)					
18–24 (n = 116)	42	84	68	86	49
25–34 (n = 276)	42	78	58	80	44
35–44 (n = 430)	42	79	51	76	38
45–54 (n = 441)	40	76	49	71	34
55–64 (n = 352)	45	77	47	66	26
65+ (n = 403)	31	73	36	57	17
Minor children at home					
Yes (n = 721)	37	76	50	77	38
No (n = 1,303)	41	78	50	68	30

<sup>a</sup>Low = ≤5 high school and college science/math courses; middle = 6–8 courses; high = ≥9 courses.

NOTES: Correct responses to questions. Some respondents did not provide information about highest level of education.

SOURCE: University of Michigan, Survey of Consumer Attitudes (2004).

Appendix table 7-13

**Public understanding of nature of scientific inquiry, by respondent characteristic: 2004**

(Percent)

Characteristic	Inquiry	Scientific study	Experiment	Probability
All adults .....	39	23	46	64
Male .....	43	25	49	67
Female .....	36	22	43	62
Formal education				
<High school .....	10	3	15	35
High school graduate .....	32	16	39	63
Baccalaureate .....	61	39	67	77
Graduate/professional .....	70	51	75	79
Science/mathematics education <sup>a</sup>				
Low .....	19	8	27	52
Middle .....	40	23	46	68
High .....	62	41	67	77
Family income (quartile)				
Top .....	62	39	66	77
Second .....	48	28	54	73
Third .....	34	19	41	62
Bottom .....	22	11	30	51
Age (years)				
18–24 .....	43	29	55	66
25–34 .....	47	27	50	71
35–44 .....	49	33	53	73
45–54 .....	43	26	46	69
55–64 .....	34	20	44	58
65+ .....	20	6	30	48
With minor children at home				
Yes .....	46	28	48	73
No .....	35	20	43	59

<sup>a</sup>Low = ≤5 high school and college science/math courses; middle = 6–8 courses; high = ≥9 courses.

NOTES: Level of understanding of nature of scientific inquiry estimated by combining each survey participant's responses to three questions. To be classified as understanding nature of scientific inquiry, respondent had to answer all probability questions correctly and either provide "theory-testing" response to question about what it means to study something scientifically or correct response to open-ended questions about experiment, i.e., explain why it was better to test a drug using a control group. Responses to:

- *When you read news stories, you see certain sets of words and terms. We are interested in how many people recognize certain kinds of terms, and I would like to ask you a few brief questions in that regard. First, some articles refer to the results of a scientific study. When you read or hear the term scientific study, do you have a clear understanding of what it means, a general sense of what it means, or little understanding of what it means? If the response is "clear understanding" or "general sense," in your own words, could you tell me what it means to study something scientifically?*

- *Now, please think of this situation: Two scientists want to know if a certain drug is effective in treating high blood pressure. The first scientist wants to give the drug to 1,000 people with high blood pressure and see how many experience lower blood pressure levels. The second scientist wants to give the drug to 500 people with high blood pressure and not give the drug to another 500 people with high blood pressure and see how many in both groups experience lower blood pressure levels. Which is the better way to test this drug? Why is it better to test the drug this way?*

- *Now think about this situation: A doctor tells a couple that their "genetic makeup" means that they've got one in four chances of having a child with an inherited illness. Does this mean that if their first child has the illness, the next three will not? Does this mean that each of the couple's children will have the same risk of suffering from the illness?*

SOURCE: University of Michigan, Survey of Consumer Attitudes (2004).

Appendix table 7-14  
**Public assessment of astrology, by respondent characteristic: Selected years, 1979–2004**  
 (Percent)

Characteristic	1979 (n = 1,635)	1981 (n = 1,631)	1985 (n = 2,005)	1988 (n = 2,041)	1990 (n = 2,033)	1992 (n = 1,004)	1995 (n = 2,006)	1997 (n = 2,000)	1999 (n = 1,882)	2001 (n = 1,574)	2004 (n = 2,010)
<b>All adults</b>											
Very scientific.....	7	10	8	6	6	6	7	7	7	9	6
Sort of scientific.....	34	35	31	31	29	29	28	29	29	31	26
Not at all scientific.....	50	51	57	60	60	62	60	59	59	56	66
Do not know.....	9	4	4	3	5	3	5	5	5	4	2
<b>Male</b>											
Very scientific.....	7	9	7	5	5	6	7	7	7	9	5
Sort of scientific.....	30	29	29	25	23	25	24	27	25	27	21
Not at all scientific.....	54	58	60	67	67	67	65	63	63	60	72
Do not know.....	9	4	4	3	5	2	4	3	5	3	1
<b>Female</b>											
Very scientific.....	8	10	9	7	6	7	7	7	7	8	6
Sort of scientific.....	37	41	32	37	35	32	32	31	32	36	31
Not at all scientific.....	46	44	55	53	55	58	55	55	56	52	62
Do not know.....	9	5	4	3	4	3	6	7	5	4	1.7
<b>Formal Education</b>											
<b>&lt;High school</b>											
Very scientific.....	11	13	14	11	7	12	11	11	13	14	10
Sort of scientific.....	34	37	38	35	31	33	28	37	34	35	39
Not at all scientific.....	39	40	43	50	50	49	48	42	41	45	51
Do not know.....	16	10	5	4	12	6	13	10	12	6	1
<b>High school graduate</b>											
Very scientific.....	7	10	8	6	6	6	8	7	7	9	7
Sort of scientific.....	37	38	29	32	32	31	30	30	30	35	29
Not at all scientific.....	50	50	60	59	60	61	59	59	60	52	62
Do not know.....	6	2	3	3	2	2	3	4	3	4	2
<b>Baccalaureate or higher</b>											
Very scientific.....	2	3	3	2	3	3	2	3	2	4	1
Sort of scientific.....	20	25	25	23	18	17	22	19	19	21	17
Not at all scientific.....	71	69	70	74	77	78	74	76	76	74	81
Do not know.....	7	3	2	1	2	2	2	2	3	2	1
<b>Family income (quartile)</b>											
<b>Top</b>											
Very scientific.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2
Sort of scientific.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	18
Not at all scientific.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	82
Do not know.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1
<b>Second</b>											
Very scientific.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5
Sort of scientific.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	25
Not at all scientific.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	68
Do not know.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1
<b>Third</b>											
Very scientific.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7
Sort of scientific.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29
Not at all scientific.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	62
Do not know.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1
<b>Bottom</b>											
Very scientific.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8
Sort of scientific.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	35
Not at all scientific.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	57
Do not know.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1

NA = not available

NOTES: Responses to: *Would you say that astrology is very scientific, sort of scientific, or not at all scientific?* Some respondents did not provide information about highest level of education.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (various years); and University of Michigan, Survey of Consumer Attitudes (2004).

Appendix table 7-15

**Public assessment of astrology or fortune telling, by country/region: 2001 or 2004**

(Percent)

	Astrology U.S. (2004)	Astrology EU-15 (2001)	Fortune telling China (2001)	Fortune telling and Sa-Ju South Korea (2004)
Very scientific .....	6	na	1	3
Sort of scientific.....	26	53	10	34
Scientific subtotal .....	32	53	11	37
Not at all scientific .....	66	39	74	63
Do not know .....	2	8	15	na

na = not applicable

EU = European Union

NOTES: Responses to: *Would you say that astrology is very scientific, sort of scientific, or not at all scientific?* For United States, China, and South Korea, "scientific subtotal" is a sum of "very scientific" and "sort of scientific." EU-15 questions said, *rather scientific* and *not very scientific*.

SOURCES: University of Michigan, Survey of Consumer Attitudes (2004); Chinese Ministry of Science and Technology, *Science and Technology Indicators 2002* (2002); Korea Science Foundation, *Survey on Public Attitude of Science & Technology 2004* (2004); and European Commission, Directorate-General for Research, Eurobarometer 55.2: *Europeans, Science and Technology* (2001).

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Appendix table 7-16

**Attitudes toward science and technology, by country/region: Most recent year**

(Percent)

(Page 1 of 2)

Statement	United States (2004)						United States (2001)						EU-25 (2005)				China (2001)				
	Total agree	Strongly agree	Agree	Don't know	Disagree	Strongly disagree	Total agree	Strongly agree	Agree	Don't know	Disagree	Strongly disagree	Total agree	Agree	Don't know	Disagree	Total agree	Agree	Basically agree	Don't know	Don't agree
Promise of science																					
<i>Science and technology are making our lives healthier, easier, and more comfortable.....</i>	91	28	63	0	7	2	86	14	72	3	10	1	78	78	14	6	94	65	30	4	1
<i>Most scientists want to work on things that will make life better for the average person....</i>	—	—	—	—	—	—	89	11	78	3	8	1	—	—	—	—	85	50	35	10	5
<i>With the application of science and new technology, work will become more interesting ...</i>	77	13	64	1	19	2	72	9	63	5	21	2	69	69	18	10	81	46	35	14	5
<i>Because of science and technology, there will be more opportunities for the next generation.....</i>	86	24	62	1	12	1	85	21	64	2	12	2	77	77	12	8	78	45	32	16	6
Benefit versus harm																					
<i>Have the benefits of scientific research outweighed the harmful results?.....</i>	84	56	28	3	10	3	72	47	25	19	7	3	52	52	29	14	76	—	76	7	0
Reservations about science																					
<i>We depend too much on science and not enough on faith.....</i>	56	17	39	1	33	10	51	11	40	4	41	5	40	40	26	30	—	—	—	—	—
<i>It is not important for me to know about science in my daily life.....</i>	15	2	13	0	55	30	16	2	14	1	61	22	—	—	—	—	17	6	12	9	74
<i>Science makes our way of life change too fast.....</i>	33	5	28	1	55	11	38	4	34	2	54	5	60	60	18	21	73	37	35	11	16

**Attitudes toward science and technology, by country/region: Most recent year**

(Percent)

Statement	South Korea (2004) <sup>a</sup>						Japan (2001)						Malaysia (2000)			Russia (1996 or 2003) <sup>b</sup>					
	Total agree	Strongly agree	Agree	Don't know	Disagree	Strongly disagree	Total agree	Strongly agree	Agree	Don't know	Disagree	Strongly disagree	Total agree	Agree	Don't know	Disagree	Total agree	Agree	Basically agree	Don't know	Don't agree
Promise of science																					
<i>Science and technology are making our lives healthier, easier, and more comfortable.....</i>	93	39	54	1	5	1	73	6	67	13	13	1	87	87	—	—	53	—	53	34	13
<i>Most scientists want to work on things that will make life better for the average person.....</i>	77	20	57	2	18	4	60	4	56	18	20	2	83	83	—	—	—	—	—	—	—
<i>With the application of science and new technology, work will become more interesting...</i>	82	28	54	3	14	2	54	4	50	20	25	2	86	86	—	—	—	—	—	—	—
<i>Because of science and technology, there will be more opportunities for the next generation.....</i>	83	31	52	3	12	2	66	6	60	18	16	1	—	—	—	—	—	—	—	—	—
Benefit versus harm																					
<i>Have the benefits of scientific research outweighed the harmful results?.....</i>	61	26	35	30	7	1	40	13	27	28	15	6	44	44	48	8	59	—	59	30	5
Reservations about science																					
<i>We depend too much on science and not enough on faith.....</i>	58	17	41	3	34	5	—	—	—	—	—	—	25	25	—	—	19	—	19	55	26
<i>It is not important for me to know about science in my daily life.....</i>	34	6	28	2	41	23	25	2	23	8	57	11	—	—	—	—	—	—	—	—	—
<i>Science makes our way of life change too fast.....</i>	84	32	51	2	13	2	62	8	54	13	24	1	70	70	—	—	30	—	30	22	48

— = not asked or different response categories were offered.

EU = European Union; B&gt;&gt;H = benefits strongly outweigh harmful results; B&gt;H = benefits slightly outweigh harmful results; B=H = benefits equal harmful results; H&gt;B = harmful results slightly outweigh benefits; H&gt;&gt;B = harmful results strongly outweigh benefits

<sup>a</sup>South Korea survey 2004 changed question from “will eventually destroy the Earth” to “will cause the global crisis,” so result of 2002 South Korean survey, which was comparable to U.S. survey, was used.<sup>b</sup>Russian responses for “Science and technology are making our lives healthier . . .” and “We depend too much . . .” are from the 1996 survey. Responses for “Have the benefits . . .” and “Science makes our way of life change . . .” are from 2003.SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (2001); University of Michigan, Survey of Consumer Attitudes (2004); Chinese Ministry of Science and Technology, *China Science and Technology Indicators 2002* (2002); Korea Science Foundation, Survey on Public Attitude of Science & Technology 2004 (2004); National Institute of Science and Technology Policy, Ministry of Education, Culture, Sports, Science and Technology, The 2001 Survey of Public Attitudes Toward and Understanding of Science & Technology in Japan (2002); Malaysian Science and Technology Information Centre, Ministry of Science, Technology and the Environment, *The Public Awareness of Science and Technology Malaysia 2000* (2001); L. Gokhberg and O. Shuvalova, *Russian Public Opinion of the Knowledge Economy: Science, Innovation, Information Technology and Education as Drivers of Economic Growth and Quality of Life*, British Council, Russia (2004); and European Commission, Research Directorate-General, Eurobarometer 224/Wave 63.1: *Europeans, Science and Technology* (2005).

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**Public assessment of general scientific research, by respondent characteristic: Selected years, 1979–2004**

(Percent)

Characteristic	1979 (n = 1,635)	1981 (n = 1,536)	1985 (n = 2,005)	1988 (n = 975)	1990 (n = 2,033)	1992 (n = 997)	1995 (n = 2,006)	1997 (n = 2,000)	1999 (n = 1,882)	2001 (n = 1,574)	2004 (n = 1,912)
<b>All adults</b>											
Benefits strongly outweigh harmful results .....	46	42	44	57	47	42	43	47	47	47	56
Benefits slightly outweigh harmful results.....	24	28	24	25	25	31	29	28	27	25	28
Benefits equal harmful results .....	19	13	13	5	15	11	16	13	11	19	3
Harmful results slightly outweigh benefits.....	7	12	13	9	10	12	10	8	10	7	10
Harmful results strongly outweigh benefits .....	4	5	6	4	3	4	3	4	5	3	3
<b>Male</b>											
Benefits strongly outweigh harmful results .....	51	48	48	59	54	45	47	52	50	49	60
Benefits slightly outweigh harmful results.....	23	27	23	25	24	30	28	27	27	27	27
Benefits equal harmful results .....	16	11	10	5	9	9	13	10	9	15	3
Harmful results slightly outweigh benefits .....	7	10	13	7	9	11	9	7	10	7	7
Harmful results strongly outweigh benefits .....	3	5	6	4	4	5	4	4	4	2	2
<b>Female</b>											
Benefits strongly outweigh harmful results .....	42	37	40	55	40	40	39	42	45	44	52
Benefits slightly outweigh harmful results.....	25	28	26	25	26	31	30	29	28	23	29
Benefits equal harmful results .....	23	16	14	6	20	13	19	15	12	22	3
Harmful results slightly outweigh benefits .....	6	14	14	10	11	12	10	10	10	8	13
Harmful results strongly outweigh benefits .....	4	5	6	4	3	4	3	4	5	3	3
<b>Formal education</b>											
<b>&lt;High school graduate</b>											
Benefits strongly outweigh harmful results .....	26	26	20	37	24	24	18	30	25	28	31
Benefits slightly outweigh harmful results .....	25	23	21	30	25	33	30	28	25	27	37
Benefits equal harmful results .....	32	25	26	9	30	17	34	21	18	26	4
Harmful results slightly outweigh benefits .....	12	18	20	17	17	20	14	18	22	13	23
Harmful results strongly outweigh benefits.....	5	9	13	7	4	7	3	3	10	6	5
<b>High school graduate</b>											
Benefits strongly outweigh harmful results .....	50	43	47	59	49	41	44	46	47	45	51
Benefits slightly outweigh harmful results .....	26	31	26	25	27	32	30	30	31	25	31
Benefits equal harmful results .....	16	10	10	5	11	10	13	13	10	20	3
Harmful results slightly outweigh benefits .....	5	12	13	7	10	12	10	6	8	8	12
Harmful results strongly outweigh benefits.....	3	4	4	4	3	5	3	5	4	2	3
<b>Baccalaureate and higher</b>											
Benefits strongly outweigh harmful results .....	69	64	67	80	72	66	67	67	71	64	72
Benefits slightly outweigh harmful results .....	18	22	23	16	18	22	23	23	19	23	20
Benefits equal harmful results .....	8	7	2	1	6	8	6	6	5	9	3
Harmful results slightly outweigh benefits .....	2	4	6	2	2	3	3	3	4	2	3
Harmful results strongly outweigh benefits.....	3	2	2	1	2	2	1	1	1	2	2
<b>Family income (quartile)</b>											
<b>Top</b>											
Benefits strongly outweigh harmful results .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	72
Benefits slightly outweigh harmful results .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21
Benefits equal harmful results .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
Harmful results slightly outweigh benefits .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
Harmful results strongly outweigh benefits.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1

**Public assessment of general scientific research, by respondent characteristic: Selected years, 1979–2004**

(Percent)

Characteristic	1979 (n = 1,635)	1981 (n = 1,536)	1985 (n = 2,005)	1988 (n = 975)	1990 (n = 2,033)	1992 (n = 997)	1995 (n = 2,006)	1997 (n = 2,000)	1999 (n = 1,882)	2001 (n = 1,574)	2004 (n = 1,912)
<b>Second</b>											
Benefits strongly outweigh harmful results .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	58
Benefits slightly outweigh harmful results .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29
Benefits equal harmful results .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
Harmful results slightly outweigh benefits .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8
Harmful results strongly outweigh benefits .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2
<b>Third</b>											
Benefits strongly outweigh harmful results .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	53
Benefits slightly outweigh harmful results .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29
Benefits equal harmful results .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4
Harmful results slightly outweigh benefits .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11
Harmful results strongly outweigh benefits .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
<b>Bottom</b>											
Benefits strongly outweigh harmful results .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	43
Benefits slightly outweigh harmful results .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	33
Benefits equal harmful results .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
Harmful results slightly outweigh benefits .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	18
Harmful results strongly outweigh benefits .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4

NA = not available

NOTES: Responses to: *People have frequently noted that scientific research has produced both beneficial and harmful consequences. Would you say that, on balance, the benefits of scientific research have outweighed the harmful results, or have the harmful results of scientific research been greater than its benefits?* If respondents answered benefits outweighed results, they were asked: *Would you say that the balance has been strongly in favor of beneficial results or only slightly?* If respondents answered harmful results outweighed benefits, they were asked: *Would you say that the balance has been strongly in favor of harmful results or only slightly?* Some respondents did not provide information about highest level of education. Detail may not add to total because of rounding.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (various years); and University of Michigan, Survey of Consumer Attitudes (2004).

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Appendix table 7-18

(Page 1 of 2)

**Public opinion on whether federal government should fund basic research, by respondent characteristic:  
Selected years, 1985–2004**

(Percent)

Characteristic	1985	1988	1990	1992	1995	1997	1999	2001	2004
<b>All adults</b>									
Strongly agree.....	9	16	17	14	19	22	21	19	30
Agree.....	70	65	62	63	61	57	61	62	53
Do not know.....	5	4	4	3	3	3	3	3	1
Disagree.....	16	14	15	18	17	15	13	15	15
Strongly disagree.....	0	1	2	2	2	3	2	1	2
<b>Male</b>									
Strongly agree.....	11	20	23	17	19	24	24	23	33
Agree.....	71	63	60	62	60	54	60	63	52
Do not know.....	2	2	2	2	2	3	2	2	0
Disagree.....	15	13	13	17	18	16	12	11	13
Strongly disagree.....	1	2	2	2	1	3	2	2	2
<b>Female</b>									
Strongly agree.....	8	11	13	11	15	20	18	16	26
Agree.....	68	68	65	64	62	59	62	61	54
Do not know.....	8	6	5	4	5	4	4	5	1
Disagree.....	16	14	16	19	16	15	14	18	16
Strongly disagree.....	0	1	1	2	2	2	2	1	2
<b>Formal education</b>									
<b>&lt;High school graduate</b>									
Strongly agree.....	5	6	10	10	8	20	17	13	14
Agree.....	65	66	59	61	59	50	55	66	58
Do not know.....	9	7	8	5	7	5	7	5	1
Disagree.....	21	18	20	21	24	22	18	16	25
Strongly disagree.....	0	3	3	3	2	3	3	0	2
<b>High school graduate</b>									
Strongly agree.....	8	17	18	12	16	19	18	18	28
Agree.....	72	66	65	64	63	60	66	60	54
Do not know.....	4	3	2	3	3	3	2	3	1
Disagree.....	15	13	14	19	17	15	12	17	16
Strongly disagree.....	1	1	1	2	1	3	2	1	2
<b>Baccalaureate</b>									
Strongly agree.....	19	26	27	22	24	31	34	23	32
Agree.....	68	62	60	64	62	56	53	68	54
Do not know.....	2	3	2	2	2	2	1	1	1
Disagree.....	10	8	10	12	11	10	10	8	12
Strongly disagree.....	1	1	1	0	1	1	2	1	1
<b>Graduate degree</b>									
Strongly agree.....	20	29	31	26	43	40	40	32	52
Agree.....	70	61	58	53	46	51	51	56	39
Do not know.....	2	2	4	5	2	2	1	3	0
Disagree.....	8	7	6	14	8	5	8	8	7
Strongly disagree.....	0	1	1	2	1	2	0	1	2

Appendix table 7-18

(Page 2 of 2)

**Public opinion on whether federal government should fund basic research, by respondent characteristic:  
Selected years, 1985–2004**

(Percent)

Characteristic	1985	1988	1990	1992	1995	1997	1999	2001	2004
Family income (quartile)									
Top									
Strongly agree.....	NA	NA	NA	NA	NA	NA	NA	NA	37
Agree .....	NA	NA	NA	NA	NA	NA	NA	NA	51
Do not know.....	NA	NA	NA	NA	NA	NA	NA	NA	0
Disagree .....	NA	NA	NA	NA	NA	NA	NA	NA	11
Strongly disagree .....	NA	NA	NA	NA	NA	NA	NA	NA	1
Second									
Strongly agree.....	NA	NA	NA	NA	NA	NA	NA	NA	29
Agree .....	NA	NA	NA	NA	NA	NA	NA	NA	56
Do not know.....	NA	NA	NA	NA	NA	NA	NA	NA	0
Disagree .....	NA	NA	NA	NA	NA	NA	NA	NA	13
Strongly disagree .....	NA	NA	NA	NA	NA	NA	NA	NA	1
Third									
Strongly agree.....	NA	NA	NA	NA	NA	NA	NA	NA	31
Agree .....	NA	NA	NA	NA	NA	NA	NA	NA	55
Do not know.....	NA	NA	NA	NA	NA	NA	NA	NA	0
Disagree .....	NA	NA	NA	NA	NA	NA	NA	NA	11
Strongly disagree .....	NA	NA	NA	NA	NA	NA	NA	NA	2
Bottom									
Strongly agree.....	NA	NA	NA	NA	NA	NA	NA	NA	23
Agree .....	NA	NA	NA	NA	NA	NA	NA	NA	52
Do not know.....	NA	NA	NA	NA	NA	NA	NA	NA	1
Disagree .....	NA	NA	NA	NA	NA	NA	NA	NA	20
Strongly disagree .....	NA	NA	NA	NA	NA	NA	NA	NA	3

NA = not available

NOTE: Responses to: *Even if it brings no immediate benefits, scientific research that advances the frontiers of knowledge is necessary and should be supported by the federal government—do you strongly agree, agree, disagree, or strongly disagree?*

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (various years); and University of Michigan, Survey of Consumer Attitudes (2004).

Appendix table 7-19

**Public assessment of funding of scientific research by government: Selected years, 1996–2005**

(Percent)

Response	United States (2004)	EU-25 (2005)	China (2001)	South Korea (2004)	Japan (2001)	Malaysia (2000)	Russia (1996)
Strongly agree .....	30	—	—	39	19	—	—
Agree.....	53	—	65	52	61	82	—
Basically agree .....	—	76	24	—	—	—	71
Do not know .....	1	13	9	2	12	—	24
Disagree.....	15	7	1	6	7	—	5
Strongly disagree.....	2	—	—	1	1	—	—
Sum of agreed.....	83	76	89	91	80	82	71

— = different response categories were offered

EU = European Union

NOTE: Responses to: *Even if it brings no immediate benefits, scientific research that advances the frontiers of knowledge is necessary and should be supported by the federal government. Do you strongly agree, agree, disagree, or strongly disagree?*

SOURCES: University of Michigan, Survey of Consumer Attitudes (2004); Chinese Ministry of Science and Technology, *Science and Technology Indicators 2002* (2002); South Korea Science Foundation, Survey on Public Attitude of Science & Technology 2004 (2004); National Institute of Science and Technology Policy, Ministry of Education, Culture, Sports, Science and Technology, The 2001 Survey of Public Attitudes Toward and Understanding of Science & Technology in Japan (2002); Malaysian Science and Technology Information Centre, Ministry of Science, Technology and the Environment, *The Public Awareness of Science and Technology Malaysia 2000* (2001); L. Gokhberg and O. Shuvalova, *Russian Public Opinion of the Knowledge Economy: Science, Innovation, Information Technology and Education as Drivers of Economic Growth and Quality of Life*, British Council, Russia (2004); and European Commission, Research Directorate-General, Eurobarometer 224/Wave 63.1: *Europeans, Science and Technology* (2005).

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Appendix table 7-20

**Public assessment of federal government spending, by policy area: Selected years, 1981–2004**

(Percent)

Policy area	1981 (n = 1,659)	1983 (n = 1,631)	1985 (n = 2,005)	1988 (n = 2,041)	1990 (n = 2,033)	1992 (n = 2,001)	1997 (n = 2,000)	1999 (n = 1,882)	2001 (n = 1,574)	2002 (n = 1,322)	2004 (n = 1,364)
Exploring space											
Too little.....	18	17	9	17	9	12	14	15	11	12	15
Too much .....	43	39	45	42	52	50	45	46	48	38	39
Reducing pollution											
Too little.....	52	54	69	76	76	72	65	65	63	60	64
Too much .....	14	11	6	4	5	7	8	7	6	7	6
Improving health care											
Too little.....	61	—	68	68	75	79	68	71	70	75	79
Too much .....	6	—	3	2	3	5	7	5	4	4	4
Supporting scientific research											
Too little.....	31	—	29	34	30	34	34	37	36	36	40
Too much .....	18	—	18	15	16	19	14	14	14	14	13
Improving education											
Too little.....	62	71	73	76	77	81	76	75	76	74	74
Too much .....	6	5	3	4	4	4	6	6	5	5	5
Helping older people											
Too little.....	73	—	72	76	75	73	66	71	73	—	—
Too much .....	3	—	3	2	2	4	5	4	3	—	—
Spending for Social Security											
Too little.....	—	—	54	55	52	—	—	—	—	61	66
Too much .....	—	—	7	6	6	—	—	—	—	5	5
Improving national defense <sup>a</sup>											
Too little.....	33	19	11	11	15	15	23	31	29	31	39
Too much .....	26	47	50	53	40	40	32	25	25	22	26
Helping low-income people											
Too little.....	45	—	54	55	57	56	44	49	53	—	—
Too much .....	24	—	13	12	15	17	23	19	15	—	—
Assistance to the poor											
Too little.....	—	—	65	69	68	—	—	—	—	67	70
Too much .....	—	—	10	7	7	—	—	—	—	8	6

— = not asked

<sup>a</sup>Only 1,013 responses in 1988 because question asked on split ballot.

NOTES: Responses to: *We are faced with many problems in this country. I'm going to name some of these problems, and for each one, I'd like you to tell me if you think that the Government is spending too little money on it, about the right amount, or too much.* Detail does not add to total because "about the right amount" and "do not know" responses not shown.

SOURCES: National Science Foundation, Division of Science Resources Statistics, Survey of Public Attitudes Toward and Understanding of Science and Technology (various years); and J.A. Davis, T.W. Smith, and P.V. Marsden, General Social Survey 1972–2004 Cumulative Codebook, University of Chicago, National Opinion Research Center (2005) for 2002 and 2004; and Spending for Social Security and Assistance to the Poor (selected years).

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Appendix table 7-21

**Public confidence in leadership of various institutions: 1973–2004**

(Percent)

Institution	1973 (n = 1,504)	1974 (n = 1,484)	1975 (n = 1,490)	1976 (n = 1,499)	1977 (n = 1,530)	1978 (n = 1,532)	1980 (n = 1,468)	1982 (n = 1,506)	1983 (n = 1,599)	1984 (n = 989)	1986 (n = 1,470)	1987 (n = 1,466)	1988 (n = 997)	1989 (n = 1,035)	1990 (n = 899)	1991 (n = 1,017)	1993 (n = 1,057)	1994 (n = 2,011)	1996 (n = 1,925)	1998 (n = 1,911)	2000 (n = 1,887)	2002 (n = 912)	2004 (n = 877)
Medicine	54	60	50	54	51	46	52	45	51	50	46	52	51	46	46	48	39	41	45	44	44	37	38
Scientific community	37	45	39	43	41	36	41	38	41	44	39	45	39	40	37	41	37	38	39	40	41	39	43
Military	32	40	35	39	36	29	28	31	29	36	31	34	34	32	33	60	42	37	37	36	39	55	59
U.S. Supreme Court	31	33	31	35	35	28	25	30	27	33	30	36	35	34	35	37	31	30	28	37	32	37	32
Banks and financial institutions	—	—	32	39	42	33	32	27	24	31	21	27	27	19	18	12	15	18	25	26	29	22	30
Major companies	29	31	19	22	27	22	27	23	24	30	24	30	25	24	25	20	21	25	23	26	28	18	19
Organized religion	35	44	24	30	40	31	35	32	28	31	25	29	20	22	23	25	23	24	25	27	28	19	24
Education	37	49	31	37	41	28	30	33	29	28	28	35	29	30	27	30	22	25	23	27	27	25	29
Executive branch of federal government	29	14	13	13	28	12	12	19	13	18	21	18	16	20	23	26	12	11	10	14	13	27	22
Organized labor	15	18	10	12	15	11	15	12	8	8	8	10	10	9	11	11	8	10	11	11	13	12	15
Congress	23	17	13	14	19	13	9	13	10	12	16	16	15	17	15	18	7	8	8	11	12	13	14
Press	23	26	24	28	25	20	22	18	13	17	18	18	18	17	15	16	11	8	11	9	10	10	9
Television	18	23	18	19	17	14	16	14	12	13	15	12	14	14	14	14	12	9	10	10	10	10	10
Average <sup>a</sup>	30	33	26	29	31	24	26	26	24	27	25	28	26	25	25	29	22	22	23	24	25	25	26

— = not asked

<sup>a</sup>Excluding banks and financial institutions.

NOTES: Data represent respondents expressing "great deal of confidence" when asked: *As far as the people running these institutions are concerned, would you say that you have a great deal of confidence, only some confidence, or hardly any confidence at all in them?* Survey not conducted in 1979 and 1981 and every other year from 1994 through 2004; question not asked in 1985. Sample size not exact for all variables.

SOURCE: J.A. Davis, T.W. Smith, and P.V. Marsden, General Social Survey 1972–2004 Cumulative Codebook, University of Chicago, National Opinion Research Center (2005).

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