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AUTHOR Broyles, Susan G.; And Others
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ABSTRACT

This is the 1975 National Science Foundation (NSF) annual survey of total graduate and postdoctoral enrollment in science and engineering in the United States. Data elements collected from 7,664 departments of 354 Ph.D. granting institutions include: (1) enrollment status (full and part-time); (2) level of study (first year and beyond first year); (3) citizenship; (4) sex of students; (5) type of institution (public or private); and (6) distribution among areas and fields of engineering and science. Data trends are reported for the period 1967-1975. Findings include: (1) growth in graduate science enrollment was up 8% over 1974 for full-time enrollment to 210,600, and up 14% over 1974 for part-time enrollment to 80,000; (2) increases in enrollment occurred in every science area with the largest gain in social sciences, 16%, followed by the life sciences, 9%; (3) first-year enrollment rose 8% while beyond first-year enrollment rose 10%; (4) the overall rise of 24% in master's level enrollment was four times the growth rate of doctorate-level enrollment; (5) federally supported full-time students rose for the first time since 1972, but was less than 1%; (6) women enrolled full-time increased 13%; and (7) foreign enrollment, on the decline for the previous three years, increased 4%. (SL)

GRADUATE SCIENCE EDUCATION
Student Support and Postdoctorals

FALL 1975

SURVEYS OF SCIENCE RESOURCES SERIES
NATIONAL SCIENCE FOUNDATION
NSF 77-3

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HIGHLIGHTS		
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FOREWORD

The past decade has presented higher education in the United States with a series of significant challenges. Many of them, including those confronting graduate science education, have resulted largely from uncertainty about the future. Two periods of growth in graduate science enrollment during the latter years of the sixties and midseventies were interrupted by 4 consecutive years of decline. Now, the latest statistics for academic year 1976-77 show a leveling off of recent increases.

With these cyclical patterns, what will the future bring? What complex factors—job market conditions, the economic situation, changing national priorities for fellowships and traineeships, and social attitudes—determine individual decisions and aggregative demand for graduate education?

Although no single data system can provide complete answers to these involved problems, the annual National Science Foundation (NSF) Survey of Graduate Science Student Support and Postdoctorals compiles a factual base for assessing the relationship between financial support patterns and resulting shifts in graduate enrollment. It provides the only nationally representative data bank on sources of support of graduate science students and their enrollment characteristics. Consequently, these statistics are widely used by researchers and observers of the academic scene who are in policymaking roles.

The present report, containing analytical coverage for 1975, as well as earlier trend data, represents the ninth in an annual series. Originally, the data were assembled from application forms as part of NSF's Graduate Traineeship Program. Later, in 1972, it became a national statistical survey that has grown in coverage to include all science and engineering departments in Ph.D.-granting institutions. The National Science Foundation is grateful for the cooperation of the institutional officials, including graduate deans, departmental chairmen, and their administrative staff, who were suppliers of the data.

Charles E. Falk
Director
Division of Science Resources Studies
Directorate for Scientific, Technological,
and International Affairs

May 1977

general notes

- Since 1972 the National Science Foundation has conducted the Survey of Graduate Science Student Support and Postdoctorals (GSSSP) to collect data from all institutions of higher education, including their medical school affiliates, that grant a Ph.D. in at least one science or engineering field. For convenience and brevity, the term "science" as used here is understood to include engineering, while "science and engineering" may be abbreviated to "S/E".
- "Graduate enrollment" refers to the total of both full- and part-time students enrolled for master's and doctorate degrees. Candidates for first-professional degrees (M.D., D.D.S., or D.V.M.) are excluded from the survey unless they are simultaneously enrolled in an advanced science degree program.
- Details regarding types and sources of major support of students, as well as sex and citizenship, have been obtained for full-time students only.
- "Institutional support" refers to all support that graduate students obtain directly from the institution, which may indirectly include funds from various State and local government sources.
- The 1975 survey universe, which represented the largest coverage to date, included 6,241 doctorate-level departments and 1,423 master's-level departments in 354 Ph.D.-granting institutions. Statistics for the period 1974 to 1975 are derived from the total response received in each survey year, while data for the 5-year period 1971-76 are based on an indexing methodology as described in the technical notes.
- A 99.8-percent departmental response rate was achieved in 1975, with all institutions participating in the survey.
- Early estimates of 1976 enrollment levels shown on page 2 are based on results of the Quick Response Survey (QRS) sample of approximately 1,300 departments conducted in September 1976.
- When reference is made to data for a particular year, it is understood to mean "academic year," unless otherwise specified.
- Details shown in statistical tables may not add to totals because of rounding.

acknowledgments

This report was prepared in the Universities and Nonprofit Institutions Studies Group by Susan G. Broyles and Penny D. Foster, with the assistance of Janet Schneider. Richard M. Berry, Study Director, supervised its preparation and William L. Stewart, Head, R&D Economic Studies Section, provided guidance and review. The graduate deans who coordinated the institutional responses and the department chairmen who supplied the data deserve our special thanks for their assistance.

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[1] See note p. 33.

HIGHLIGHTS

GRADUATE ENROLLMENT AND SUPPORT PATTERNS

- Growth in graduate science enrollment, which had occurred between 1971 and 1975, slowed to a virtual standstill in 1976, paralleling the pattern of enrollment in higher education as a whole.[1] Students enrolled full time increased by a modest 6 percent over the entire 1971-76 period, while part-time enrollment grew by an estimated 37 percent.

- Results of the fall 1975 survey, however, showed that full-time enrollment in all areas of science in 1975 was up nearly 8 percent over 1974 to a total of 210,600; part-time enrollment rose to 80,000—an increase of 14 percent.

- Increases in graduate enrollment occurred in every area of science between 1974 and 1975, with the largest growth rate occurring in the social sciences (up 16 percent). Other substantial rates of growth occurred in the life sciences (up 9 percent), and psychology and engineering (up 8 percent each).

- First-year graduate enrollment in the sciences rose by 8 percent in 1975, while students beyond their first year increased at an even greater rate, 10 percent.

- Significant growth in enrollment in master's-level departments occurred between 1974 and 1975 in all major disciplines. The overall 24-percent rise was at four times the growth rate of doctorate-level enrollment.

- Federally supported full-time students rose in 1975 for the first time since this statistical series was begun in 1972, but at less than 1 percent over 1974. In all likelihood, this rise is of a temporary nature, resulting from the 1974 release of impounded HEW funds, and not an indicator of future levels of Federal support to graduate science students.

- The extent of full-time students' reliance on fellowships and traineeships changed between 1971 and 1975—from 25 percent of the total to only 18 percent. A subsequent shift occurred in dependence on "other" types of support—from 29 percent in 1971 to 40 percent in 1975.

- Women enrolled full time increased 13 percent between 1974 and 1975. Although males outnumbered females more than three to one, their rate of enrollment growth was less than one-half that of women students.

- Foreign enrollment, on the decline for the previous 3 years of this series, increased 4 percent in 1975, while U.S. citizens rose at twice this rate.

POSTDOCTORALS

- Postdoctoral utilization rose to 17,100 in 1975, up almost 3 percent over 1974 levels, for an overall 1971-75 increase estimated at only about 2 percent. As in previous years, the Federal Government supported 71 percent of these appointees.

[1] See Department of Health, Education, and Welfare, National Center for Education Statistics, Survey of Opening Fall Enrollment in Higher Education, annual series, preliminary results for 1976; and National Science Foundation, *Science Resources Studies Highlights*, "Graduate Science and Engineering Enrollment Up Only 1 Percent in 1976" (NSF 77-302) (Washington, D.C. 20550, Feb. 4, 1977.)

INTRODUCTION

Until 1972, when a full-scale survey was instituted by NSF, data on the support of graduate students and postdoctorals were collected from 1967 through 1971 on applications for NSF traineeships. The 1972 survey of 302 institutions and 4,637 departments was designed to continue the collection of similar data from an expanded universe of graduate science departments in all science Ph.D.-granting institutions. Each year thereafter, the survey universe expanded: First, through the inclusion of all medical school affiliates, and then with the addition of new Ph.D.-granting institutions and departments within the scope of the survey. The tabulations for 1975 included data from 354 doctorate-granting institutions, with 7,664 science and engineering (S/E) departments responding to the survey.

The survey is designed to obtain data on the characteristics of graduate enrollment at the department level, including enrollment status (full- or part-time); level of study (first-year or beyond); types and sources of major support of full-time students; numbers of women studying full time and the primary sources of their support and level of study; the total number of foreign graduate students; and the support of postdoctoral appointees. A copy of the survey instrument (departmental data sheet) is shown in appendix IV.

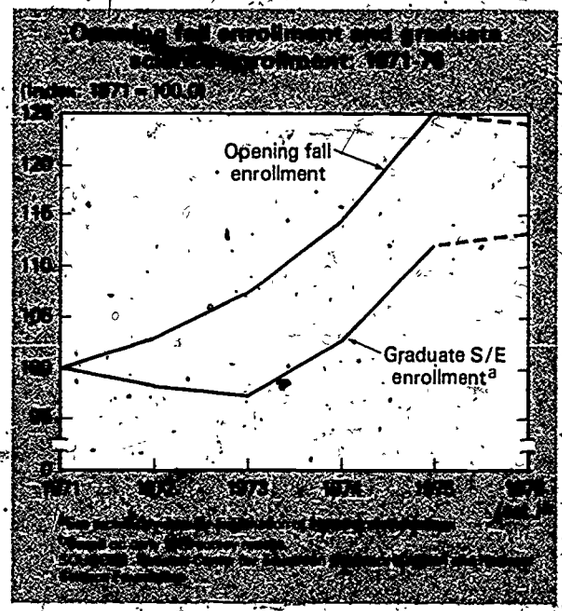
Short-term trends for the period 1974-75 were calculated using the full responding universe for each year. For longer time periods, trends were derived by providing index numbers based on "matched" departments, those departments responding to all surveys in a particular time series. The limitations of this methodology, especially in analyzing recent growth trends, are discussed in the technical notes, p. 46.

The Quick Response Survey (QRS), initiated for the first time in 1974, provides early estimates of changes in total graduate enrollment in each of the major areas of science in advance of the tabulation of the annual full-scale survey results. Summary data from the 1976 QRS have been included in this report in order to place the 1974-75 survey results in perspective.

SECTION 1. Trends in Graduate Enrollment in Science and Engineering

Patterns of Enrollment, 1971-76

Growth in enrollment in higher education as a whole reached a virtual standstill in 1976, according to early estimates released by the National Center for Education Statistics, Department of Health, Education, and Welfare.[2] The 11.2 million students enrolled at all college campuses in the United States, both for degree and nondegree credit, represented a slight downturn from the previous year, the first recorded by the Opening Fall Enrollment survey since 1951. Between 1974 and 1975, however, these same institutions recorded their highest enrollment growth to date, an increase of over 9 percent. This upsurge, followed by a downturn, was similar to fluctuations in graduate enrollment in the sciences and engineering. Early estimates from NSF's 1976 Quick Response Survey (QRS) showed an increase



of only 1 percent[3] in graduate enrollment in Ph.D.-granting institutions, following an unprecedented 9-percent rise between 1974 and 1975.

The fluctuations in graduate science enrollment levels in the early seventies appear to have stabilized in 1976. Recovery from the 1973 low point was probably symptomatic of several factors working simultaneously: An improved environment for the utilization of women and minorities in scientific and technical occupations; the movement toward continuing education at all age levels; and the students' general reaction to the recent economic recession. As the difficult job situation became more apparent, students elected to resume their education and acquire more academic credentials in order to qualify for the shrinking number of job opportunities in some fields. For example, unemployed college graduates between the ages of 16 and 24 represented 8 percent of the civilian population in 1975, compared to 5 percent in 1974, while students with only 1 to 3 years of college represented an even higher share of the unemployed population, nearly 11 percent in 1975 and 7 percent in 1974.[4]

While job prospects appear to be improving for college graduates of 1976, especially in engineering and other scientific and technical fields, heightened competition for employment in the remaining occupational categories can be expected.[5] However, the annual survey of recruiting activity for the 1976-77 academic year showed a 16-percent overall gain from the previous year in job openings for Ph.D.-holders, with a 22-percent rise in openings in engineering and a 19-percent gain in science, mathematical, and technical fields. These improvements in the number of available positions could explain in part the slowdown in the growth rate of graduate S/E enrollment; students' reactions to the improved job market could temporarily influence their decision to acquire more advanced degrees.

The estimated overall rise of 13 percent between 1971 and 1976 in total graduate science enrollment was a reflection of the steep rise in the number of part-time students. Their rate of growth in the most recent years far surpassed that of full-time students and they represented a growing share of the total during this period. The 1976 level of part-time enrollment was estimated at 37 percent higher than in the base year 1971, while the full-time enrollment gain was only 6 percent. The

[2] See Department of Health, Education, and Welfare, National Center for Education Statistics, prepublication release, preliminary data, Jan. 1977.

Opening fall enrollment in institutions of higher education: 1971-76

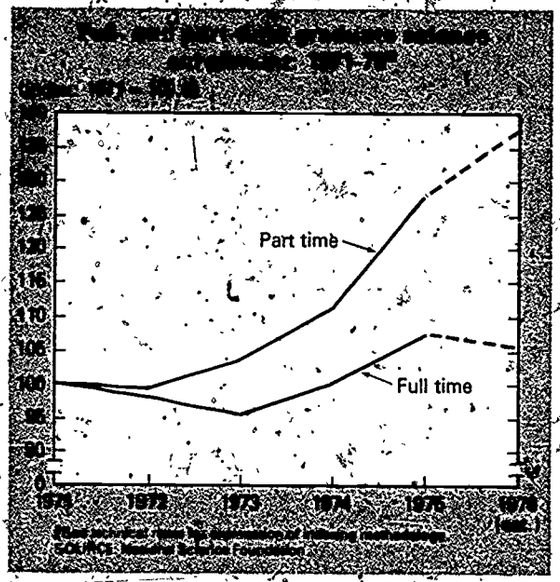
Academic year	Resident and extension enrollment	
	Number	Annual percent change
1971	9,025,032	4.3
1972	9,297,787	3.0
1973	9,694,297	4.3
1974	10,321,539	6.5
1975	11,290,719	9.4
1976[1]	11,215,111	-.7

[1] Preliminary data.
SOURCE: National Center for Education Statistics, DHEW, annual series.

[3] There is a 95-percent probability that the actual change will fall somewhere between a decrease of three-tenths of 1 percent and an increase of 2 percent. See National Science Foundation, *Science Resources Studies Highlights*, *op. cit.*

[4] Department of Labor, Bureau of Labor Statistics, "Students, Graduates, and Dropouts in the Labor Market, October 1975," *Special Labor Force Report* 191, June 1976. (Reprinted from *Monthly Labor Review.*)

[5] College Placement Council, Inc., *Recruiting 77*, Special Report, December 1976.



work and study pattern that is an emerging characteristic of today's undergraduate college student appears to be prevalent at the graduate level as well. Other factors that influence graduate enrollment growth patterns are the return to school of adults in the labor force who wish to improve their job skills; the increasing matriculation of women students into graduate S/E programs; and the rising aspiration of students to acquire better academic credentials for a more secure future.

After an examination of the national framework surrounding graduate S/E enrollment during the 1971-76 period, the remainder of this report will concentrate on an analysis of the data collected in the survey years 1974 and 1975. The overall 1-year rise of 9 percent shown earlier was characterized by an increase in the number of both new entrants and advanced graduate students—up 8 percent and 10 percent, respectively. In every major area of science except psychology, enrollment of first-year students rose. In absolute terms, the social sciences enrolled more first-year entrants than any other area—nearly 3,600 students—while engineering fields enrolled 2,100 more and the life sciences grew by 1,800 students.

Graduate science enrollment, by field and level of study: 1974-75
[Percent change]

Area and field of science	Total	First year	Beyond first year
Total, all areas	9.3	8.2	10.0
Engineering	7.7	8.2	7.4
Chemical	7.9	8.6	7.5
Civil	11.6	4.9	17.8
Electrical	.8	-.5	1.9
Industrial	15.0	34.3	-.2
Mechanical	.6	.6	.7
All other	12.7	10.4	14.2
Physical and environmental sciences	2.2	4.3	1.3
Physical sciences, total	.1	1.9	-.6
Astronomy	.7	-4.5	2.1
Chemistry	2.3	5.3	1.1
Physics	-2.9	-2.9	-2.9
Environmental sciences, total	7.5	9.3	6.6
Atmospheric	-2.0	4.5	-5.2
Geosciences	10.2	15.6	7.5
Oceanography	3.2	-11.9	9.5
Mathematical sciences	3.5	5.9	2.0
Applied mathematics	11.0	17.1	6.5
Mathematics	-1.9	-2.7	-1.7
Statistics	13.0	17.1	10.8
Life sciences	9.4	7.6	10.5
Agriculture	10.8	11.1	10.7
Biological sciences	8.6	6.1	9.8
Other life sciences	10.4	8.3	12.7
Psychology	8.3	-1.2	12.6
Social sciences	16.3	13.5	18.2
Anthropology	7.2	-5.7	12.2
Economics	9.3	9.3	9.3
Linguistics	17.1	5.2	30.9
Political sciences	29.1	23.3	33.3
Sociology	7.3	5.2	8.5
All other	19.6	23.3	16.9

NOTE: Based on full- and part-time enrollment in 7,664 graduate departments.
SOURCE: National Science Foundation

Although doctorate-level science departments increased their enrollment substantially—up more than 6 percent between 1974 and 1975—growth in master's-level departments occurred at four times this rate. While master's departments enrolled only an 18-percent share of the total in 1975—up from 16 percent a year earlier—this upward trend has particular significance when examined by area of science. The highest rate gain in master's-level students occurred in psychology, nearly seven times the rate of growth in doctorate departments of psychology. Similar steep rises occurred in the social and life sciences. The largest number of students—21,400 out of 53,500—were enrolled in master's-level programs in the social sciences, representing a growth rate of 30 percent over the 16,500 total enrolled in 1974. In contrast, doctorate departments in the social sciences enrolled 23 percent of the 237,200 students, about the same proportion as the previous year. This concentration of graduate enrollment in master's departments will be monitored more closely in the future by an expansion of the survey in fall 1976 to include institutions that grant the master's as the highest degree.

Graduate science enrollment, by area and level of department: 1974-75
[Percent change]

Area of science	Total	Master's	Doctorate
Total, all areas	9.3	24.0	6.4
Engineering	7.7	19.4	5.9
Physical and environmental sciences	2.2	9.9	1.5
Physical sciences	.1	6.0	-.2
Environmental sciences	7.5	13.5	6.5
Mathematical sciences	3.5	9.9	2.0
Life sciences	9.4	23.8	6.6
Psychology	8.3	35.6	5.4
Social sciences	16.3	30.0	11.8

SOURCE: National Science Foundation

Status of Graduate Enrollment, 1975

Graduate enrollment in the sciences and engineering reached a total of 290,700 in doctorate-granting institutions in 1975, or 23 percent of the 1.3 million graduate students enrolled in all academic fields.[6] Doctorate-level departments enrolled 82 percent of all graduate science students, and students beyond their first year in science programs made up 62 percent of the 1975 total. Students on a full-time schedule accounted for 72 percent of all graduate science students and public institutions enrolled 70 percent.

[6] See Department of Health, Education, and Welfare, National Center for Education Statistics, Post-Secondary Education, *Fall Enrollment in Higher Education, 1975. Institutional Data* (NCES 76-135) (Washington, D.C. 20402: Supt. of Documents, U.S. Government Printing Office, 1976.)

Graduate science enrollment, by institutional control, level of department and study, and enrollment status: 1975

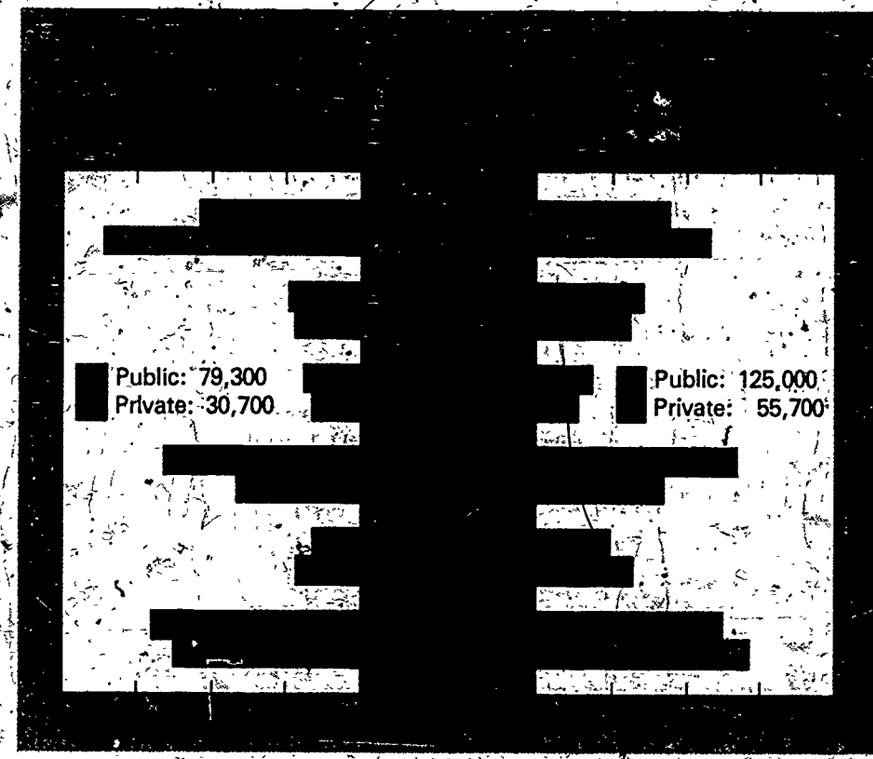
Level of department and study and institutional control	Total		Enrollment status			
			Full-time		Part time	
	Number	Percent distribution	Number	Percent distribution	Number	Percent distribution
Total	290,662	100.0	210,641	100.0	80,021	100.0
Level of department:						
Master's	53,477	18.4	30,515	14.5	22,962	28.7
Doctorate	237,185	81.6	180,126	85.5	57,059	71.3
Level of study:						
First year	110,006	37.8	79,379	37.7	30,627	38.3
Beyond first year	180,656	62.2	131,262	62.3	49,394	61.7
Public control, total	204,238	70.3	154,804	73.5	49,434	61.8
Level of department:						
Master's	41,940	20.5	24,988	16.1	16,952	34.3
Doctorate	162,298	79.5	129,816	83.9	32,482	65.7
Level of study:						
First year	79,270	38.8	59,675	38.5	19,595	39.6
Beyond first year	124,968	61.2	95,129	61.5	29,839	60.4
Private control, total	86,424	29.7	55,837	26.5	30,587	38.2
Level of department:						
Master's	11,537	13.3	5,527	9.9	6,010	19.6
Doctorate	74,887	86.7	50,310	90.1	24,577	80.4
Level of study:						
First year	30,736	35.6	19,704	35.3	11,032	36.1
Beyond first year	55,688	64.4	36,133	64.7	19,555	63.9

SOURCE: National Science Foundation

INSTITUTIONAL CONTROL

Within publicly controlled institutions, 79 percent of the graduate students were in doctorate science programs; in private institutions, 87 percent. The proportion of first-year students to the total was approximately the same for both public and private doctorate-granting institutions—39 percent and 36 percent, respectively. However, differences in distribution patterns occurred in regard to enrollment status. In public institutions, 76 percent of the students were enrolled full time; in private ones, 66 percent. Master's programs accounted for 16 percent of the full-time enrollment in public institutions but for only 10 percent in private institutions. Similarly, public master's programs accounted for 34 percent of all part-time enrollment while private institutions enrolled only 20 percent in master's departments.

When 1975 enrollment characteristics were examined in terms of level of study, only two areas of science showed a larger percentage of first-year students in private than in public institutions—engineering and psychology. In all other areas, a slightly higher proportion of first-year entrants prevailed in publicly controlled graduate schools.



GEOGRAPHIC DISTRIBUTION

The East North Central and Middle Atlantic divisions together accounted for 38 percent of all graduate science enrollment in 1975, with 55,700 and 54,800 students, respectively, the same relative positions these divisions have held for several years. New York ranked first among the States and enrolled nearly 34,000 students; California was close behind with 31,800. Together, these two States enrolled 23 percent of the graduate science students in the United States.

Graduate science enrollment by geographic division: 1975

Geographic division	Number	Percent distribution
Total	290,662	100.0
East North Central	55,653	19.1
Middle Atlantic	54,822	18.9
Pacific	41,016	14.1
South Atlantic	40,795	14.0
West South Central	23,513	8.1
West North Central	21,749	7.5
New England	21,165	7.3
Mountain	19,525	6.7
East South Central	10,760	3.7
U.S. Territories	1,664	.6

SOURCE: National Science Foundation

Institutions with the Largest Graduate Science Enrollment

Over one-half of all graduate science enrollment—or 151,700 students—was concentrated in 50 of the 354 Ph.D.-granting institutions in the country, and three-fourths of these students were on full-time status. The largest concentration of students, nearly 41,700, or 27 percent, was enrolled in the social sciences; the life sciences ranked second with 38,000 and engineering third, with 35,100.

The University of California at Berkeley ranked first in terms of total graduate enrollment; virtually all of its 5,600 students were enrolled full time. Rutgers University led in the number of part-time students, nearly 2,500 of its 4,600 graduate enrollees, and New York University followed closely with 2,400 part-timers out of the 4,300 total.

An examination of the full-time enrollment characteristics of these 50 largest institutions shows that more full-time students participated in graduate programs in the life sciences, nearly 28 percent, than in any other area, with the social sciences and engineering enrolling 26 percent and 20 percent, respectively. Part-time students were concentrated in two areas—engineering, with 33 percent, and the social sciences, with 32 percent.

Massachusetts Institute of Technology (MIT), ranking 15th in the number of graduate science students, all on a full-time basis, had a higher concentration of engineering students than any other institution—1,900 out of the 3,300 total, or about 56 percent. The University of California at Berkeley also concentrated heavily on engineering, with another 1,900 students, but they represented only 33 percent of this institution's total number of graduate students.

The University of Minnesota enrolled the highest number of life science students, nearly 2,300 of its 5,200 total, and ranked third in the national total. In the social sciences, the University of Southern California reported over 2,800 graduate students, the largest number registered in any area of science.

When analyzed in terms of institutional control, MIT ranked first in the number of full-time students in the 50 largest private institutions (3,300) and Stanford University ranked second (2,900), with Cornell University a close third. Loma Linda University with 300 full-time students was the 50th private institution.

Public institutions tended to enroll much higher numbers of full-time students, as would be expected, ranging from a high of 5,400 at the University of California at Berkeley to 1,200 at Georgia Institute of Technology.

In the 50 leading public institutions, women made up 24 percent of the full-time enrollment, about the same proportion as in the leading privately controlled institutions. The University of North Carolina at Chapel Hill and the University of Connecticut enrolled women at a percentage far above this average, at 40 percent each. In the 50 private institutions, Columbia University Teachers College enrolled the highest proportion of women, 64 percent, and the Polytechnic Institute of New York the lowest; 5 percent.

THE 50 LARGEST INSTITUTIONS IN GRADUATE SCIENCE ENROLLMENT, BY AREA AND STATUS: 1975

RANK	NAME OF INSTITUTION INCLUDING AFFILIATED MEDICAL SCHOOLS	GRADUATE ENROLLMENT 1/			ENGINEERING		PHYSICAL AND ENVIRONMENTAL SCIENCES		MATHEMATICAL SCIENCES		LIFE SCIENCES		PSYCHOLOGY		SOCIAL SCIENCES	
		TOTAL	FULL TIME	PART TIME	FULL TIME	PART TIME	FULL TIME	PART TIME	FULL TIME	PART TIME	FULL TIME	PART TIME	FULL TIME	PART TIME	FULL TIME	PART TIME
	TOTAL, ALL INSTITUTIONS	290,662	210,641	80,021	37,265	25,315	29,846	5,131	13,579	6,758	56,449	12,437	19,701	7,422	53,801	22,958
1	UNIVERSITY OF CALIF - BERKELEY	5,582	5,391	191	1,817	45	673	12	347	17	1,224	62	118	6	1,212	49
2	UNIVERSITY OF WISCONSIN - MADISON	5,346	4,808	538	605	60	642	8	382	59	1,479	109	618	134	1,082	168
3	UNIVERSITY OF MINNESOTA	5,204	4,401	803	567	215	318	23	258	35	2,007	266	321	6	930	258
4	UNIVERSITY OF ILLINOIS - URBANA	5,165	4,786	379	1,133	70	654	4	430	0	1,455	235	168	0	946	70
5	UNIVERSITY OF SOUTHERN CALIFORNIA	4,992	2,625	2,367	544	700	180	38	104	84	354	18	125	0	1,318	1,527
6	RUTGERS UNIVERSITY	4,594	2,116	2,478	184	325	243	352	170	347	608	523	206	85	705	846
7	OHIO STATE UNIVERSITY	4,512	3,767	745	540	283	432	18	284	53	1,104	120	249	53	1,152	218
8	UNIVERSITY OF MICHIGAN	4,448	4,205	243	922	107	368	12	282	9	1,139	72	316	0	1,178	43
9	UNIVERSITY OF CALIF - LOS ANGELES	4,309	4,049	260	957	101	517	9	411	79	1,074	63	210	0	880	8
10	NEW YORK UNIVERSITY	4,298	1,882	2,416	26	4	102	60	119	316	304	532	318	177	1,013	1,327
	TOTAL FIRST 10 INSTITUTIONS	48,450	38,030	10,420	7,301	1,910	4,129	536	2,787	999	10,748	2,000	2,649	461	10,416	4,514
11	CUNY GRADUATE SCHOOL AND UNIV CENTER	3,966	1,758	2,208	807	179	251	130	108	216	408	175	425	335	486	1,173
12	UNIV OF TEXAS - AUSTIN	3,820	3,259	561	590	249	588	24	218	15	771	90	355	49	737	134
13	PENNSYLVANIA STATE UNIVERSITY	3,373	2,468	905	512	341	481	72	144	62	596	166	91	33	644	231
14	MICHIGAN STATE UNIVERSITY	3,350	2,965	385	261	55	292	13	214	19	1,076	120	207	0	915	178
15	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	3,345	3,345	0	1,867	0	725	0	133	0	266	0	28	0	326	0
16	UNIVERSITY OF COLORADO	3,335	2,653	682	267	100	352	14	183	28	335	22	221	0	1,295	518
17	PURDUE UNIVERSITY	3,312	3,063	249	903	45	478	36	270	12	746	68	245	52	421	36
18	STANFORD UNIVERSITY	3,214	2,896	318	1,326	261	466	24	257	23	327	1	80	0	440	9
19	UNIVERSITY OF WASHINGTON	3,199	2,638	561	468	251	462	20	137	47	840	130	174	7	557	106
20	UNIVERSITY OF MARYLAND - COLLEGE PARK	3,158	1,970	1,188	317	384	407	116	201	184	502	188	157	0	386	316
	TOTAL FIRST 20 INSTITUTIONS	82,522	65,045	17,477	13,892	3,775	8,631	985	4,652	1,605	16,615	2,960	4,632	937	16,623	7,215
21	NORTHEASTERN UNIVERSITY	3,063	711	2,352	173	1,369	89	105	35	35	207	576	44	3	163	264
22	CORNELL UNIVERSITY	2,902	2,891	11	572	3	419	0	132	0	933	2	110	0	725	6
23	TEXAS A&M UNIVERSITY	2,820	2,233	587	586	170	399	56	73	8	825	248	111	67	239	38
24	UNIVERSITY OF TENNESSEE	2,774	2,062	712	397	370	199	47	144	85	637	90	215	31	470	89
25	UNIVERSITY OF ARIZONA	2,705	2,205	500	342	86	474	51	83	34	605	126	78	19	623	184
26	UNIVERSITY OF PITTSBURGH	2,686	1,597	1,089	174	484	356	32	104	113	637	325	151	15	275	120
27	COLUMBIA UNIVERSITY	2,606	1,988	618	345	358	317	5	67	12	397	119	73	5	809	119
28	POLYTECHNIC INSTITUTE OF BROOKLYN	2,575	477	2,098	407	1,933	60	109	10	45	0	0	0	0	0	11
29	AMERICAN UNIVERSITY	2,529	1,051	1,478	276	594	55	95	17	105	24	25	31	0	648	659
30	WAYNE STATE UNIVERSITY	2,525	1,635	890	172	195	173	28	101	86	707	288	232	0	250	293
	TOTAL FIRST 30 INSTITUTIONS	109,707	81,895	27,812	17,336	9,337	11,072	1,513	5,418	2,128	21,587	4,759	5,657	1,077	20,825	8,998
31	SAN DIEGO STATE UNIVERSITY	2,388	862	1,526	7	254	115	80	45	107	255	298	37	139	403	656
32	UNIVERSITY OF WISCONSIN - MILWAUKEE	2,349	1,400	949	217	151	117	17	42	15	94	62	222	338	708	366
33	UNIVERSITY OF CALIF - DAVIS	2,318	2,157	159	248	94	161	1	92	25	1,325	25	51	0	280	14
34	UNIV OF NORTH CAROLINA - CHAPEL HILL	2,292	2,031	261	137	12	246	4	127	24	779	55	143	20	599	146
35	UNIVERSITY OF PENNSYLVANIA	2,279	1,674	605	239	400	197	23	30	0	348	10	46	11	814	161
36	UNIVERSITY OF FLORIDA	2,252	1,936	316	510	78	225	4	79	8	641	85	121	39	360	102
37	GEORGE WASHINGTON UNIVERSITY	2,195	997	1,198	499	629	35	43	16	113	220	84	102	18	125	311
38	UNIVERSITY OF MISSOURI - COLUMBIA	2,162	1,702	460	281	144	127	4	87	1	668	108	98	0	441	203
39	VIRGINIA POLYTECHNIC INST AND STATE UNIV	2,110	1,521	589	440	254	136	9	122	28	470	29	52	4	301	65
40	IOWA STATE UNIVERSITY	2,108	1,633	475	380	120	288	15	141	28	513	162	66	29	245	121
	TOTAL FIRST 40 INSTITUTIONS	132,158	97,808	34,350	20,294	11,473	12,719	1,713	6,199	2,672	26,900	5,669	6,595	1,675	25,101	11,143
41	INDIANA UNIVERSITY - BLOOMINGTON	2,089	1,742	347	0	0	312	20	153	2	630	216	89	25	558	84
42	SUNY - BUFFALO	2,055	1,509	546	341	178	183	16	121	36	336	120	106	51	422	145
43	SYRACUSE UNIVERSITY	2,038	1,375	663	174	384	138	93	116	0	103	57	153	29	691	100
44	SUNY - STONY BROOK	1,970	1,381	589	136	48	262	53	173	218	220	38	156	48	434	184
45	UNIVERSITY OF CONNECTICUT	1,959	1,456	503	131	185	121	29	71	39	401	104	182	43	530	103
46	HARVARD UNIVERSITY	1,954	1,923	31	128	4	327	1	84	0	724	23	122	2	538	1
47	UNIVERSITY OF KANSAS	1,911	1,530	381	128	64	150	10	44	24	357	27	345	24	484	232
48	NORTH CAROLINA STATE UNIV - RALEIGH	1,872	1,515	357	460	108	145	15	99	13	544	63	71	21	174	137
49	UNIVERSITY OF CINCINNATI	1,858	1,324	534	309	249	180	36	51	0	386	86	118	43	280	115
50	COLORADO STATE UNIVERSITY	1,803	1,612	191	291	13	176	4	68	3	814	118	91	19	172	34
	TOTAL FIRST 50 INSTITUTIONS	151,667	113,175	38,492	22,392	12,706	14,213	1,990	7,201	3,017	31,437	6,521	8,028	1,980	29,404	12,278
	TOTAL, ALL OTHER INSTITUTIONS	138,995	97,466	41,529	14,873	12,609	15,133	3,141	6,378	3,741	25,012	5,916	11,673	5,442	24,397	10,680

1/ Includes affiliated medical schools

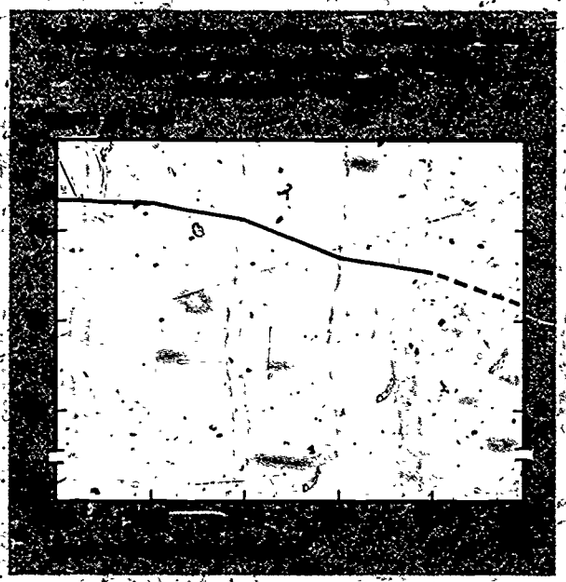
Source: National Science Foundation

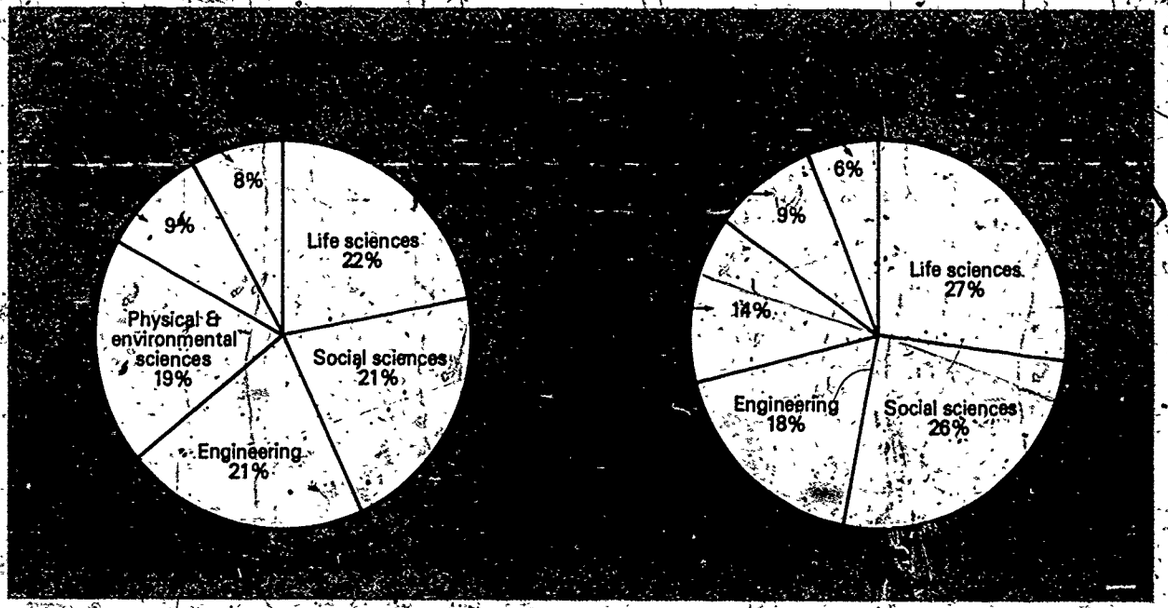
SECTION 2. Full-Time Graduate Enrollment

While full-time enrollment has shown an estimated 6-percent growth over the entire 1971-76 period, its role in relation to total graduate enrollment has been dwindling steadily. By 1976, full-time students were estimated to account for 71 percent of the total, compared with 77 percent in 1971. The reasons for this declining share are discussed in the following section dealing with rapid growth in part-time enrollment.

Survey responses for 1974 and 1975 indicated enrollment growth in every area of science, with the highest rate, 13 percent, occurring in the social sciences and the lowest, 1 percent, in the physical and environmental sciences. Overall, full-time enrollment grew by nearly 8 percent.

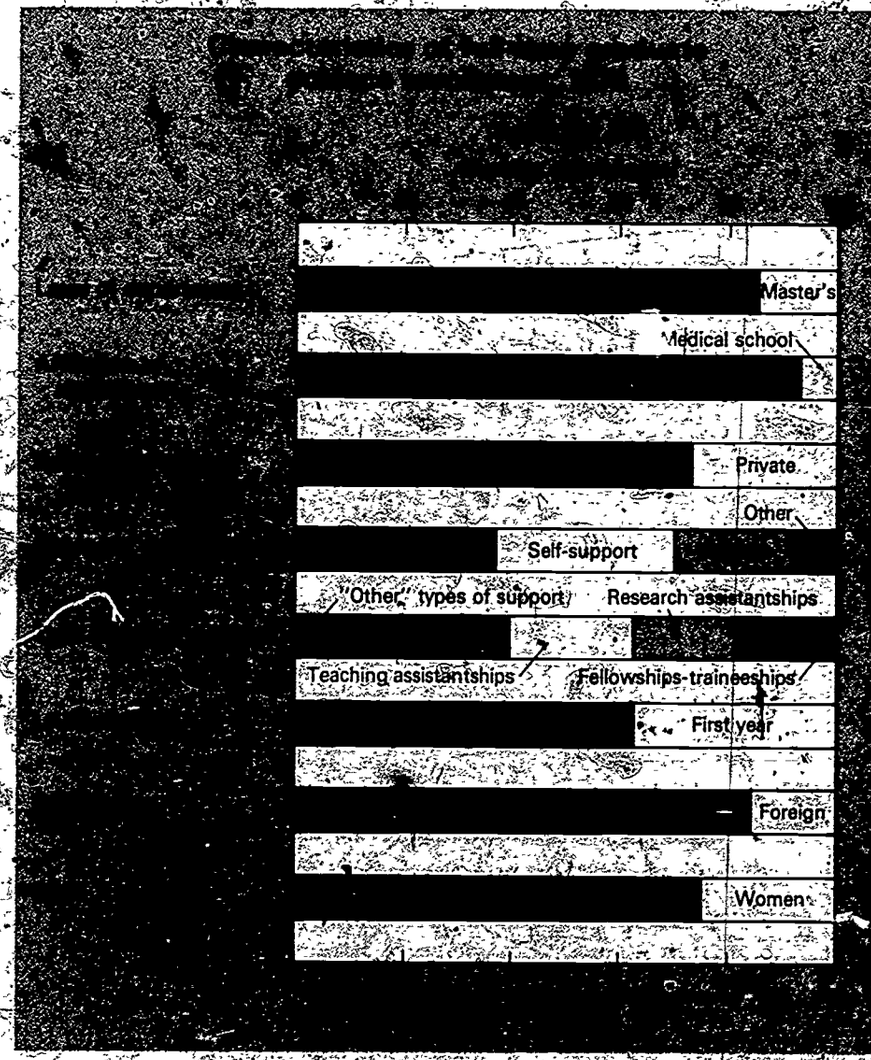
The life and social sciences together enrolled more than one-half of all full-time students in 1975, or 53 percent. Another one-third was enrolled in graduate programs emphasizing engineering and the physical and environmental sciences. This pattern represented a shift in emphasis from the 1971 enrollment distribution, when 43 percent went into life and social science programs and another 40 percent was enrolled in engineering and the physical and environmental sciences.





The 1975 full-time student population had virtually the same characteristics in 1975 as in 1974:

- Doctorate departments enrolled 86 percent of the full-time total.
- Graduate school departments enrolled 93 percent; medical schools only 7 percent.
- Public institutions attracted 73 percent.
- The institutions along with State and local governments provided 37 percent of the students with financial support. Students relying on self-support made up another 32 percent and the Federal Government supported only 23 percent.
- "Other" types of support, consisting primarily of self-supported students, was the most widely utilized mechanism.
- Students beyond their first year of graduate study constituted 62 percent.
- U.S. citizens accounted for 84 percent of the full-time total.
- Men outnumbered women three to one.



Source of Major Support

The diminishing role of the Federal Government in the support of graduate science students and the subsequent shift to dependence on family resources and institutional assistance characterized the student support picture in the early seventies. By 1975, 37 percent of the full-time students received most of their funding from their own institutions and State and local governments and 32 percent were primarily self-supporting. Only 23 percent received their major support from the Federal Government; the remaining 8 percent of the students relied on private foundations, industry, and foreign governments.

In this atmosphere of diminishing direct Federal support to science students, it is important to examine the recent history of overall Federal support of academic science in the same period. Between the fiscal years 1971 and 1975, funds for these activities fluctuated annually but dropped a total of nearly 9 percent in terms of 1972 constant dollars.[7] Obligations such as these support academic R&D activities, R&D plant, facilities and equipment, and fellowships, traineeships, and training grants.

[7] See National Science Foundation, *Federal Support to Universities, Colleges, and Selected Nonprofit Institutions, Fiscal Year 1975* (NSF 77-311) (Washington, D.C. 20402: Supt. of Documents, U.S. Government Printing Office, 1977.)

Federal obligations to universities and colleges for academic science activities: FY 1971-75
[Dollars in millions]

Fiscal year	Total in current dollars	Annual percent change	Total in constant 1972 dollars[2]	Annual percent change
1971	$2,343	7.1	$2,451	1.8
1972	2,599	10.9	2,599	6.0
1973	2,464	-5.2	2,358	-9.3
1974	2,736	11.0	2,430	3.1
1975	2,790	2.0	2,242	-7.7
Percent change, 1971-75	19.1		-8.5	

[1] Includes R&D activities, R&D plant, and other science activities.
[2] Based on GNP implicit price deflator.
SOURCE: National Science Foundation

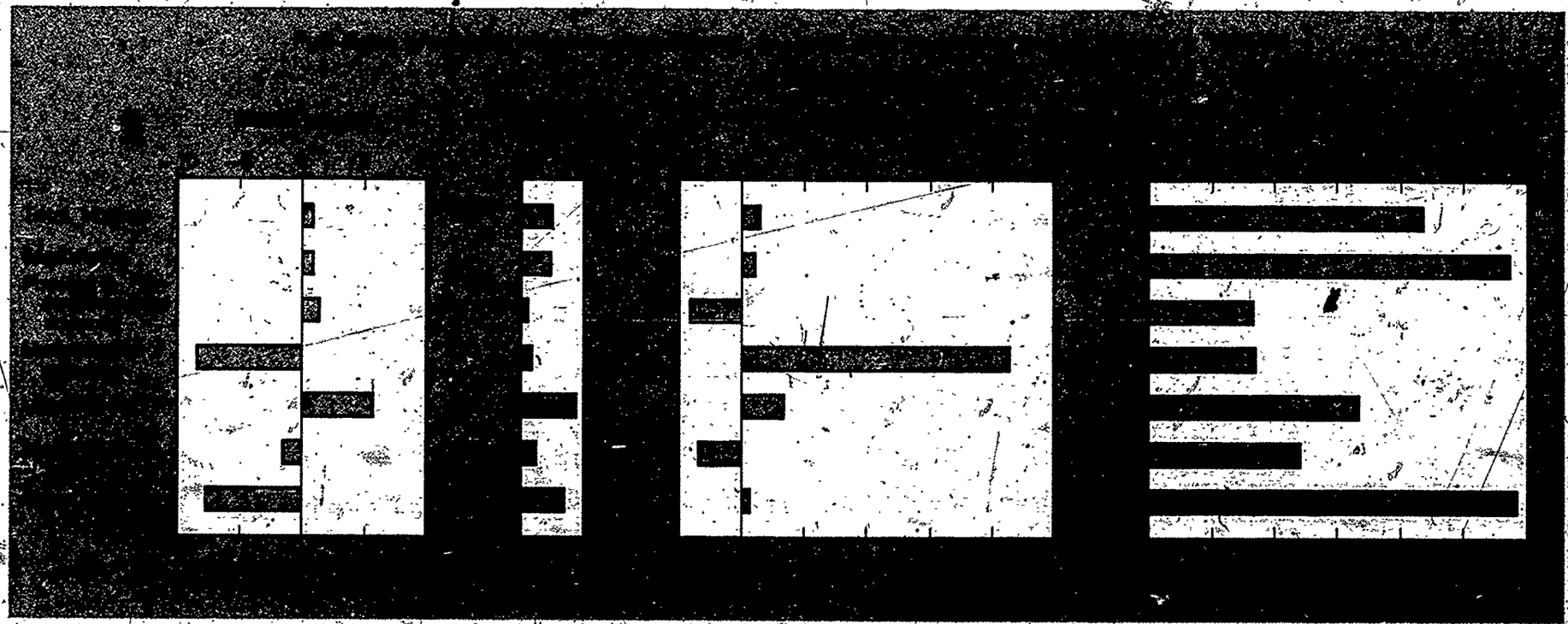
Because of the 1974 release of impounded HEW funds, there was a temporary increase in Federal obligations in 1975 and a subsequent increase in the total number of federally supported full-time students, up nearly 1 percent. Students dependent on all other forms of support were on the rise to an even greater extent, with self-supported students showing the highest growth rate, a 22-percent gain. In every area of science, the number of students receiving institutional support increased, and those dependent on self-support rose at even greater rates in every area, especially in engineering and the social sciences.

The life sciences in 1975 attracted the highest proportion of federally supported students, 35 percent, and the mathematical sciences the lowest, 3 percent. This area was also chosen by the highest proportion of institutionally supported students, as well as those receiving all other forms of outside support. Self-supported students, in contrast, were heavily concentrated in the social sciences.

Full-time graduate science enrollment, by area and source of major support: 1975
[Percent distribution]

Area of science	Total	Federal support	Institutional support[1]	Other outside support	Self-support
Total, all areas	100.0	100.0	100.0	100.0	100.0
Engineering	17.7	21.6	13.5	27.0	17.5
Physical and environmental sciences	14.2	18.4	19.5	11.5	5.8
Mathematical sciences	6.4	2.6	10.4	4.5	5.2
Life sciences	26.8	35.4	25.0	28.2	22.4
Psychology	9.4	8.9	8.9	6.5	10.8
Social sciences	25.5	13.2	22.7	22.3	38.3

[1] Includes support from State and local governments.
SOURCE: National Science Foundation



In public institutions, where 73 percent of the full-time students were enrolled in 1975, 59,800 students relied on institutional support, or 39 percent; in private institutions, however, the highest percentage were self-supported, although institutionally supported students ran a close second.

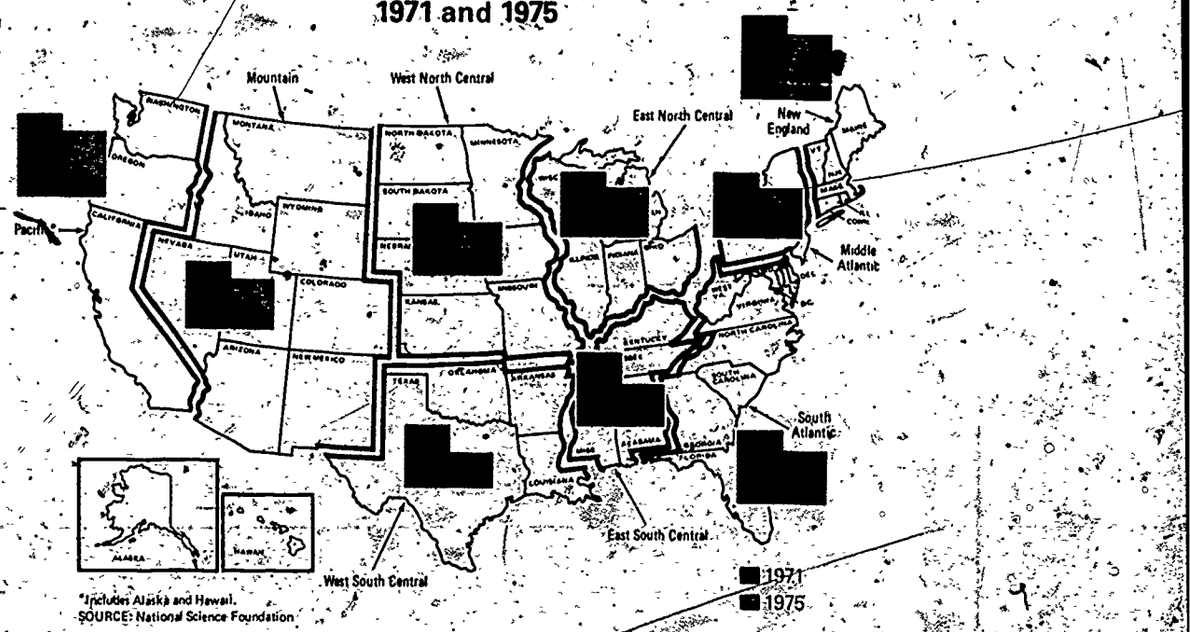
The proportion of federally supported students to the total number of full-time students was reduced in each geographic division in 1975 when compared to 1971. The largest percentage drop occurred in the East South Central division, where only 18 percent were federally funded in contrast to 32 percent in the earlier year. The West South Central division was also seriously affected, with a drop in federally assisted students from 27 percent to 15 percent.

Full-time graduate science enrollment, by source of major support and institutional control: 1975

Source of major support	Total		Public		Private	
	Number	Percent distribution	Number	Percent distribution	Number	Percent distribution
Total, all sources	210,641	100.0	154,804	100.0	55,837	100.0
Federal support	48,365	23.0	33,990	22.0	14,375	25.7
Institutional support[1]	77,351	36.7	59,750	38.6	17,601	31.5
Other outside support	16,618	7.9	11,402	7.4	5,216	9.3
Self-support	68,307	32.4	49,662	32.1	18,645	33.4

[1] Includes support from State and local governments.
SOURCE: National Science Foundation

Federally supported students as percent of all full-time graduate science students by geographic division: 1971 and 1975

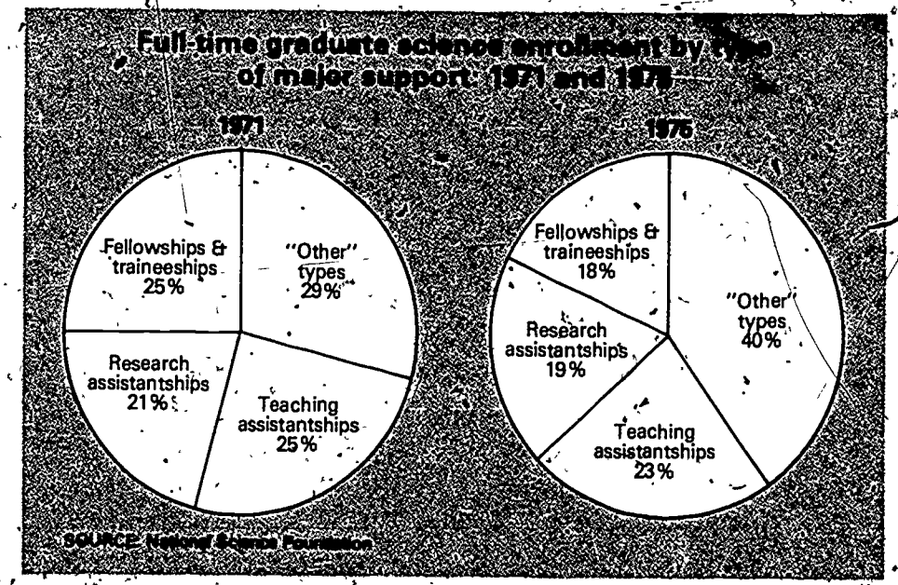


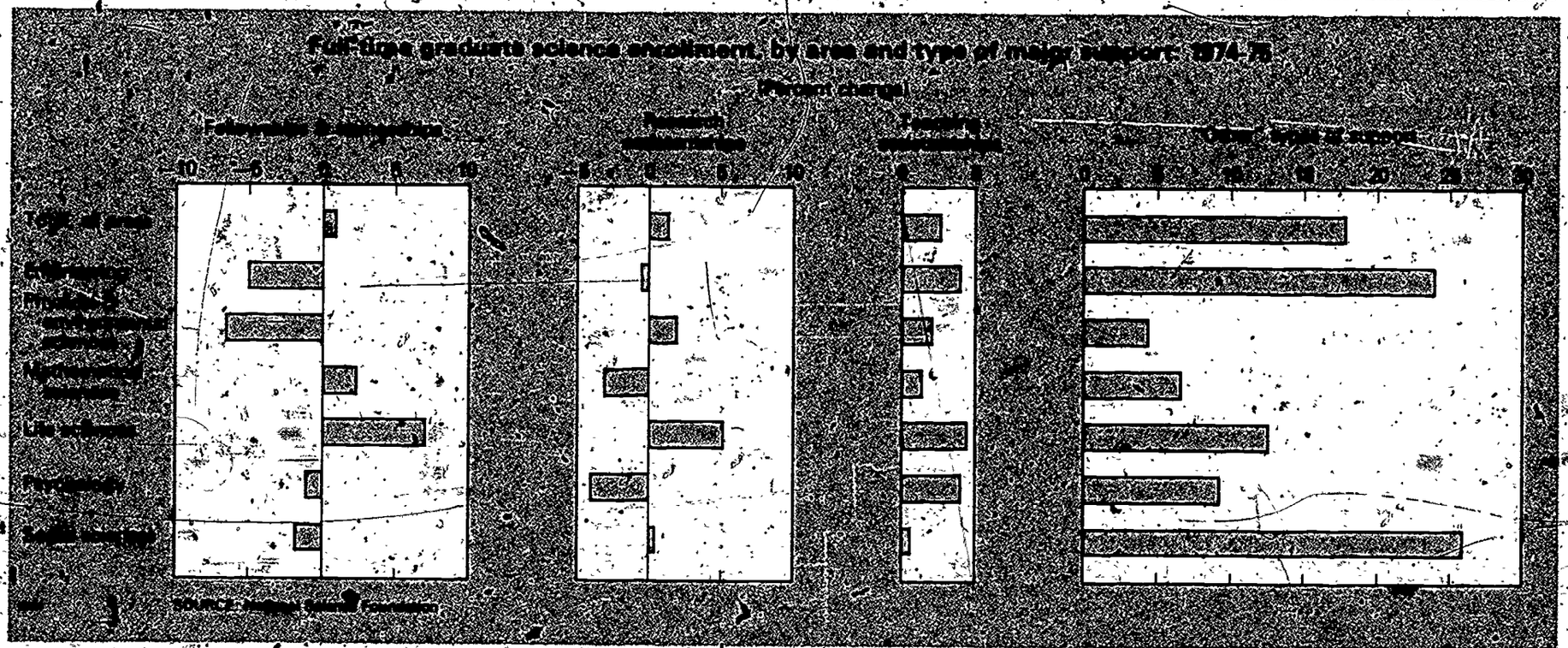
*Includes Alaska and Hawaii.
SOURCE: National Science Foundation

Type of Major Support

Student reliance on fellowships and traineeships for the major support of their graduate work has diminished markedly. By 1975 only 18 percent of the full-time total, or about 39,000 students, used this mechanism of support. This compares to 25 percent in 1971, with a concurrent shift to "other" types, made up primarily of financial aid based on self-obtained and family resources.

The slight increase in the number of fellows-trainees enrolled between 1974 and 1975 occurred simultaneously with a rise in both teaching and research assistants. In the life sciences fellows-trainees showed a 7-percent gain to 15,600 students that was nearly offset by losses in all other major areas of science except the mathematical sciences. The number of research assistants also rose slightly by 1 percent, with the life sciences again playing the major role. The 3-percent gain in teaching assistantships affected every area of science, as did the 18-percent rise in students relying on "other" mechanisms of support.





Since over one-half of all fellows-trainees, or 20,400 students, received the bulk of their support from Federal sources in 1975, it is important to examine the recent funding history of Federal obligations for this specific purpose. Funds supplied to universities and colleges for fellowships, traineeships, and training grants were cut nearly in half, from $421 million in fiscal year 1971 to $201 million in 1975, and if the effects of inflation were considered, these funds would be diminished even further. The downturn in obligations came to a temporary halt in 1974 with the release to HEW of impounded funds which raised the total obligation level from $287 to $327 million. This temporary increase had its effect on the number of federally supported fellows-trainees reported in fall 1975. A slight rise, less than 1 percent, occurred, but all indications point to another downturn in subsequent years in view of reduced levels of funding already reported for fiscal year 1975 and anticipated in future Federal budgets.

The utilization of research assistants on federally funded projects has had a more stable history. These students are more closely associated with the obligations specifically earmarked for research and development. Federal R&D funds to universities and colleges have fluctuated between $1.6 billion and $1.8 billion over the 5-year period 1971-75, reaching a high of $1.9 billion in 1974 for an overall growth rate of 10 percent in terms of 1972 constant dollars.[8] The 23,100 research assistants receiving Federal aid in 1975 represented 57 percent of the 40,200 full-time research assistants. The 3-percent growth over 1974 was due primarily to increased student support by HEW, primarily through the National Institutes of Health (NIH). All other major agencies supported fewer research assistants in 1975 than in 1974. Institutions and State and local governments supported about the same number in both years, and other outside support dropped by 4 percent.

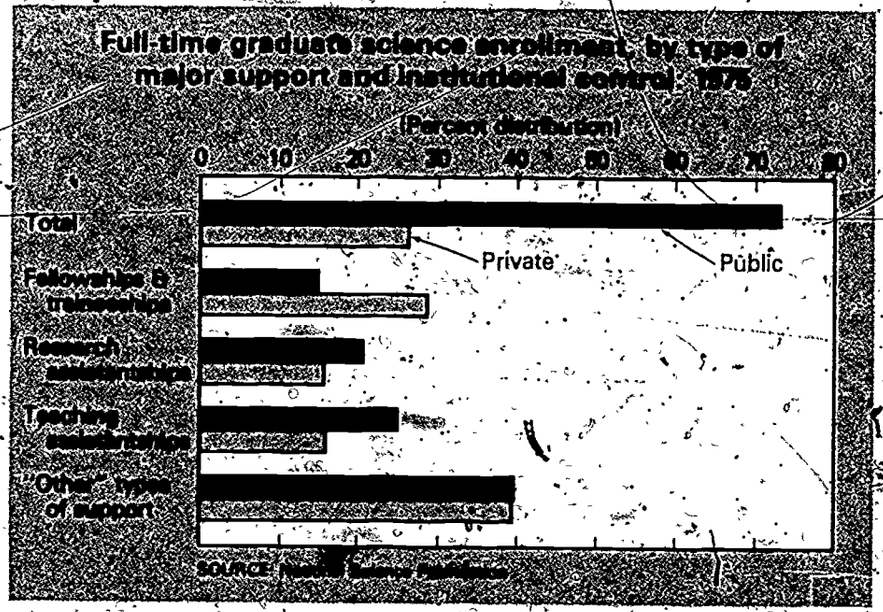
A higher proportion of fellows-trainees were enrolled in private institutions in 1975 than in those under public control. The reverse was true for both research and teaching assistants, and those relying on "other" support mechanisms were equally divided between public and private institutions.

[8] Ibid.

Full-time graduate science enrollment, by source and type of major support: 1974-75
[Percent change]

Source of major support	Total	Type of major support: Fellowships and trainee-ships	Research assistant-ships	Teaching assistant-ships	"Other" types of support
Total, all sources	7.5	0.9	1.4	2.6	17.8
Federal support, total	.8	.7	3.4	-13.2	-8.8
DOD	-8.2	-4.6	-5.9	—	-11.7
NIH	1.9	-2.8	12.1	13.8	30.3
Other HEW	10.6	11.8	-6.0	11.7	51.7
NSF	-.4	4.7	-1.4	-24.6	-5.2
All other agencies	-.5	-8.8	7.6	-40.6	-18.6
Institutional support[1]	2.6	.8	-.1	3.4	5.6
Other outside support[1]	1.3	1.6	-4.2	-58.1	11.3
Self-support	21.8	—	—	—	21.8

[1] Includes support from State and local governments
SOURCE: National Science Foundation



Level of Study

The overall rise of 14,800 full-time students between 1974 and 1975 consisted of 5,700 new entrants into graduate science programs and 9,100 students into more advanced graduate work. The number of first-year students rose in every area of science except psychology, with the highest rates of growth in engineering and the social sciences, up 11 percent each. The rising number of students beyond their first year was highest in the social sciences, up 14 percent, or twice the rate of increase of engineering and psychology majors.

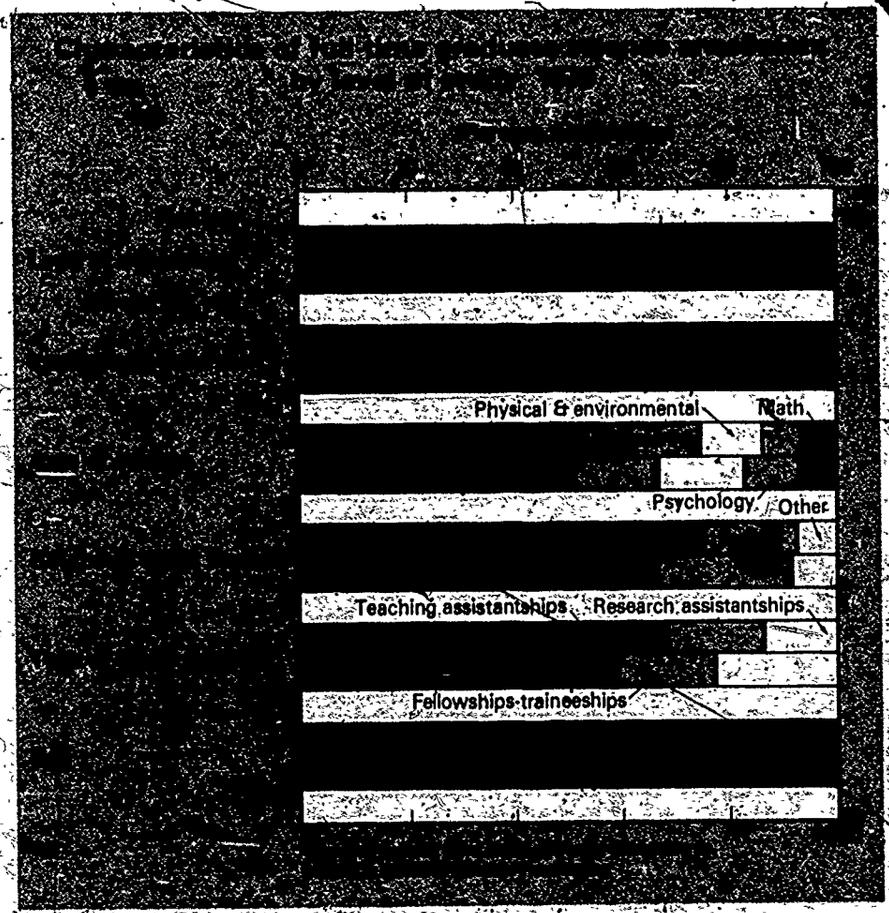
Almost one-half of the first-year graduate science majors, or 47 percent, depended upon "other" types of support in 1975, and the number of these students grew by 16 percent over the 1974 total. While a lower proportion, 35 percent, of those beyond their first year utilized these "other" mechanisms, the actual rise between 1974 and 1975 (19 percent) exceeded that of first-year students. Fellowships and traineeships were utilized by new entrants and advanced students equally, but only 13 percent of the former received research assistantships compared with 23 percent of the latter.

About the same proportion of first-year students depended upon their institutions for the major part of their support as did students beyond their first year—36 percent and 37 percent, respectively. A major difference between the two groups was evident in terms of Federal sources—only 17 percent of first-year students relied on agency assistance compared to 26 percent of the advanced students.

Full-time graduate science enrollment, by area and level of study: 1974-75
[Percent change]

Area of science	Total	First year	Beyond first year
Total, all areas	7.5	7.7	7.5
Engineering	8.9	11.1	7.2
Physical and environmental sciences	1.4	4.6	.1
Mathematical sciences	2.7	6.9	-.3
Life sciences	7.9	6.4	8.6
Psychology	4.1	-2.7	7.2
Social sciences	12.7	11.1	13.7

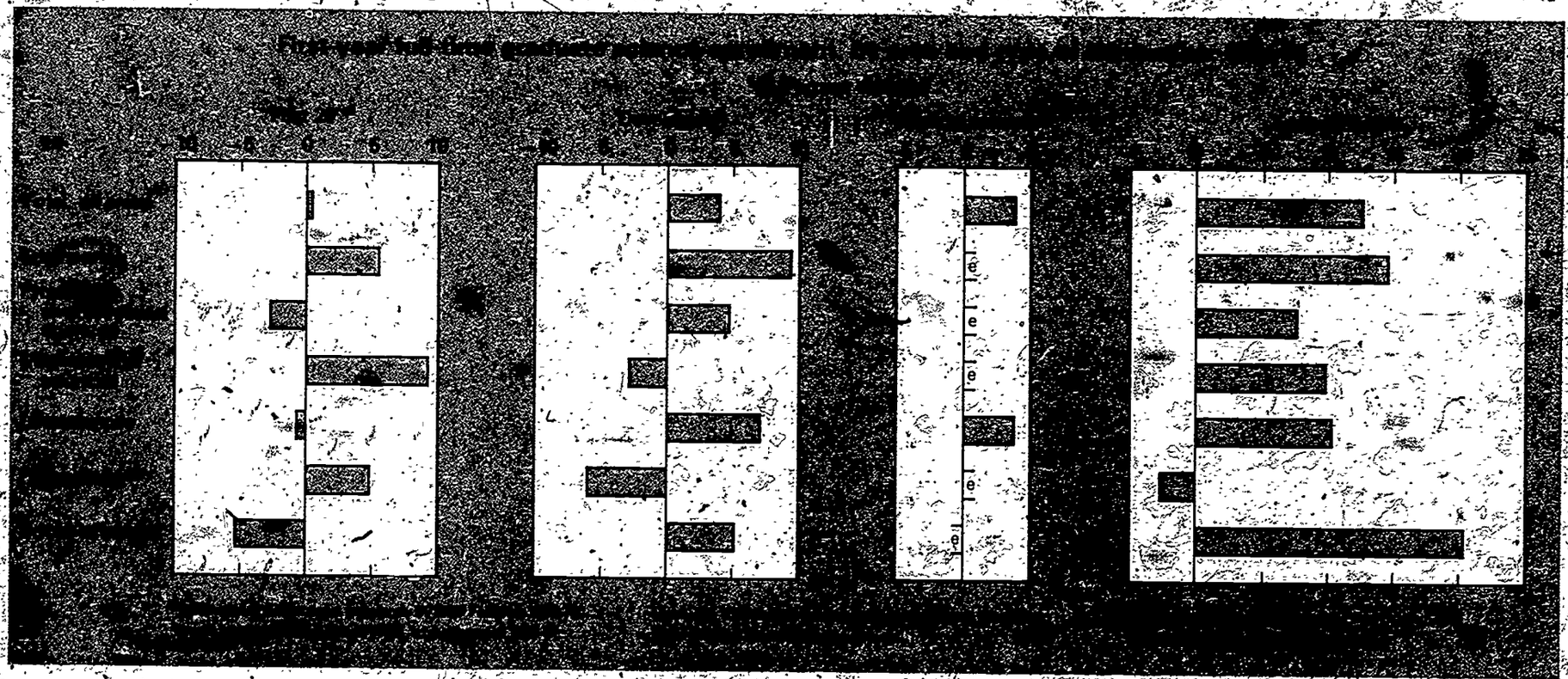
SOURCE: National Science Foundation



By looking at particular groups of institutions, additional characteristics of first-year students come to light. Students awarded NSF Fellowships have traditionally chosen prestigious high-quality institutions in which to continue their graduate work. An analysis of the 20 top ranking institutions that have been selected most often by NSF Fellows during the period 1968 through 1975 shows that the number of first-year students in these institutions (16,400) experienced little growth between 1974 and 1975.[9] The rise in new entrants in engineering was offset by the decline in the social sciences.

[9] See appendix II, p. 49, for a list of the institutions surveyed in 1975 and their classifications.

The 100 "developing" institutions were placed in this category if they granted at least one Ph.D. in science or engineering for the first time in any year during the last 15 years. The 14,500 new entrants into these developing institutions represented an increase of 4 percent over the 1974 total. Large increases in first-year enrollment were recorded in all but the mathematical sciences and psychology. First-year entrants into graduate programs affiliated with medical schools rose 4 percent, and the remaining graduate institutions recorded the highest rate of growth of all the other categories—nearly 13 percent.



Citizenship

The 33,000 foreign students enrolled full time in graduate S/E programs in the United States represented about 56 percent of the 58,800 total recorded in the 1975 periodic survey conducted by NCES of foreign graduate students in all fields at all graduate schools.[10] Although this concentration in science programs seems high, the number of foreign students enrolled in Ph.D.-granting institutions in 1975 represented a diminishing share of all full-time students when compared to 1971 patterns. They represented less than 16 percent of the full-time total in 1975, in contrast to the 20-percent share 5 years earlier.

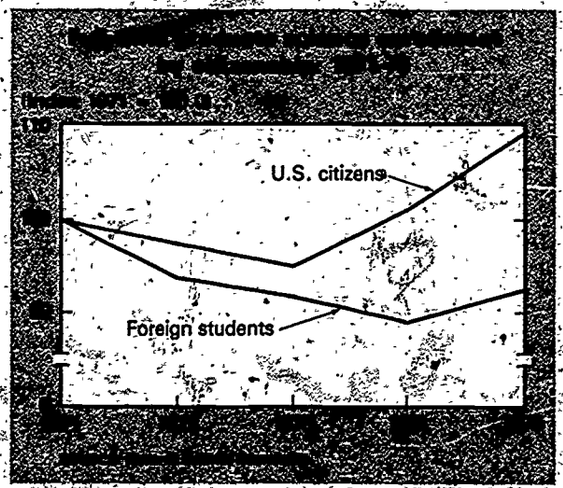
In spite of the smaller role played by foreign graduate students in terms of the full-time total, the number actually increased 4 percent between 1974 and 1975, the first such upturn in the period studied.

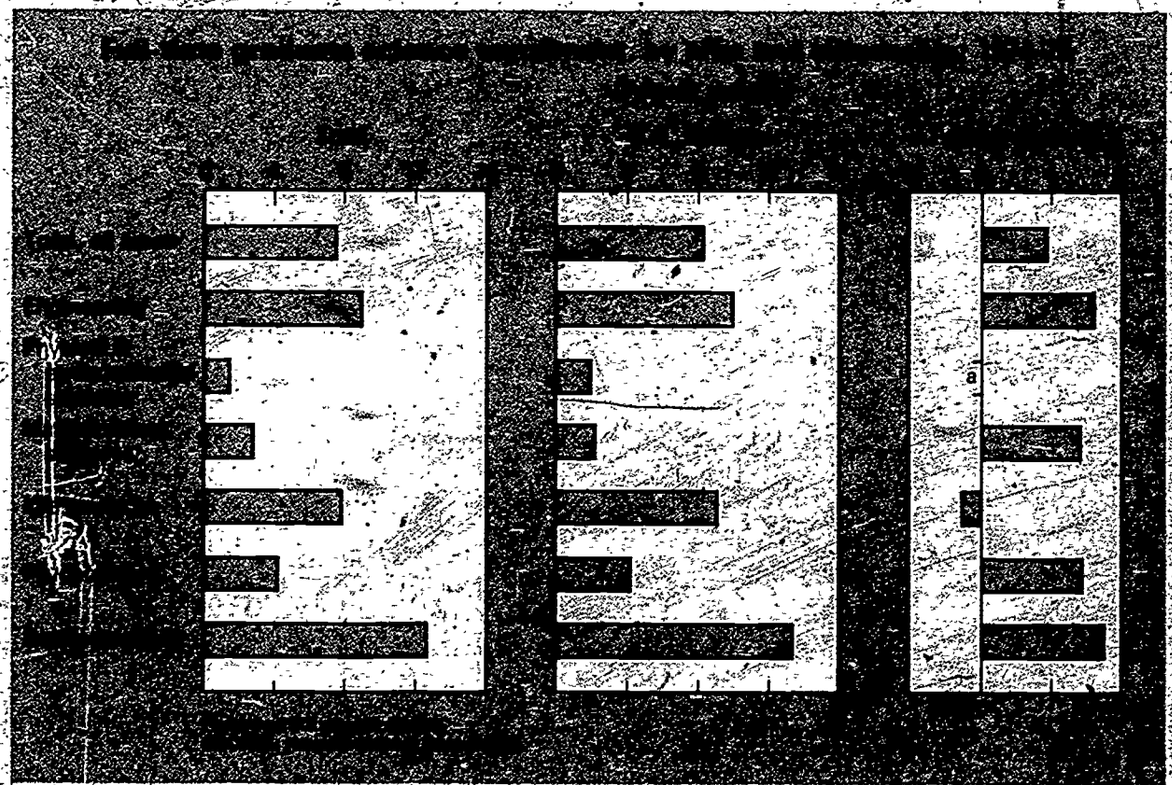
[10] Department of Health, Education, and Welfare, National Center for Education Statistics, Residence and Migration of College Students, Fall 1975 (unpublished data).

The number of U.S. citizens rose at an even faster rate between 1974 and 1975 than did foreign students and every area of science felt the impact. Substantial increases occurred in the social sciences, where 5,600 more U.S. citizens were enrolled in 1975 than in 1974, up more than 13 percent. This area also showed the highest growth rate in foreign enrollment, 7 percent, with the addition of 400 new students. Foreign enrollment showed a minor dropoff in the physical and environmental sciences together, as well as in the life sciences; all other areas showed significant growth rates. In the mathematical sciences and psychology, these rates were higher than for U.S. citizens.

In 1975 U.S. citizens were clustered primarily in life and social science graduate programs, while foreign students tended to concentrate on engineering.

Master's programs attracted only 8 percent of the foreign students but a higher proportion of U.S. citizens, 16 percent. The majority of U.S. citizens, 74 percent, were enrolled in publicly controlled institutions, while a slightly lower percentage, 69 percent, of foreign students chose similar institutions.





Sex

The number of women selecting graduate programs in science and engineering and the share they represented of the total continued to rise during the period studied. By 1975 women represented 25 percent of the full-time graduate enrollment total, compared to 18 percent in 1972, the first year for which data on enrollment of women were collected in this survey. Enrollment in all institutions of higher education showed a similar rise in women's share of the total—from 42 percent in 1971 to an estimated 45 percent in 1975.

The proportion of women doctorate-holders has also risen during this period. In all academic fields, women earned 22 percent of the 32,900 doctorates awarded in 1975, compared to 14 percent of the 31,800 total earned in 1971. S/E doctorates awarded to women also rose—from a 10-percent share of the total in 1971 to over 15 percent in 1975. In nonscience fields women earned an even higher proportion of doctorates than in science programs, 30 percent in 1975 and 21 percent in 1971. Despite the emphasis in recent years on affirmative action programs and equal employment opportunity legislation, men far outnumber women in both graduate education and in doctorates granted. "In American higher education as a whole, women received 9 percent of the doctorates issued in 1900 . . . and . . . 18 percent in 1920."[11] Fifty-five years later, the most recent data from the National Research Council indicate that less than 22 percent of all 1975 doctorate recipients were women. Of these, 44 percent received their degree in either engineering or one of the sciences, including the social sciences. On the whole, women received less than 16 percent of all Ph.D.'s granted in the sciences and engineering in 1975.[12]

[11] Saul D. Feldman, *Escape from the Doll's House: Women in Graduate and Professional School Education*, (New York: McGraw-Hill, 1975), p. 32.

[12] See National Academy of Sciences, *Summary Report, 1975 Doctorate Recipients from United States Universities*, (Washington, D.C., May 1976).

Women students as percent of enrollment in all institutions of higher education: 1971-75

Academic year	As percent of opening fall enrollment, all fields[1]	As percent of full-time graduate science enrollment[2]
1971	41.9	NA
1972	43.9	18.1
1973	44.2	19.3
1974	45.1	23.9
1975	45.1	25.0

[1] Survey of Opening Fall Enrollment in Higher Education, annual series.
[2] Survey of Graduate Science Student Support and Postdoctorals. (Data not available for 1971.)
SOURCE: National Center for Education Statistics (DHEW) and National Science Foundation

Doctorate recipients, by field and sex: 1971 and 1975

Field	June 1971 Number	June 1971 Percent women	June 1975 Number	June 1975 Percent women
Total, all fields	31,772	14.4	32,913	21.9
Science and engineering	18,880	10.2	18,352	15.5
Nonscience	12,892	20.6	14,561	29.9

SOURCE: National Research Council, Survey of Earned Doctorates Awarded in U.S. Universities, annual series

For the survey period 1974-75, the number of women graduate science students rose nearly 13 percent—from 46,700 to 52,600—while the number of men rose at less than one-half this rate, 6 percent (from 149,200 to 158,100). Increased female enrollment occurred in every area of science, at rates of growth considerably higher than those of male graduate students.

Full-time graduate science enrollment, by area and sex: 1974-75
[Percent change]

Area of science	Total	Men	Women
Total, all areas	7.5	6.0	12.6
Engineering	8.9	7.9	30.2
Physical and environmental sciences	1.4	.5	8.5
Mathematical sciences	2.7	1.5	7.8
Life sciences	7.9	5.8	13.0
Psychology	4.1	-.3	10.7
Social sciences	12.7	12.5	13.1

SOURCE: National Science Foundation

The increase in growth rate of women students was highest in private institutions, 17 percent, although their number totaled only 14,300. In publicly controlled institutions, where the rise in enrollment of women was at 11 percent between 1974 and 1975, the total reached 38,300.

The increase of 5,900 women S/E graduate students in 1975 occurred simultaneously with an increase in the number of women employed full time in these fields in universities and colleges. By January 1976, the number of academic women employed as scientists and engineers reached 35,900, up 5 percent in each of the previous 2 years. Although men far outnumbered women, totaling 194,600 in early 1976, their rate of increase was at only 2 percent annually for the 1974-76 period. Little change in women's share of the full-time employment total was noted, however—up from 15 percent to 16 percent.[13]

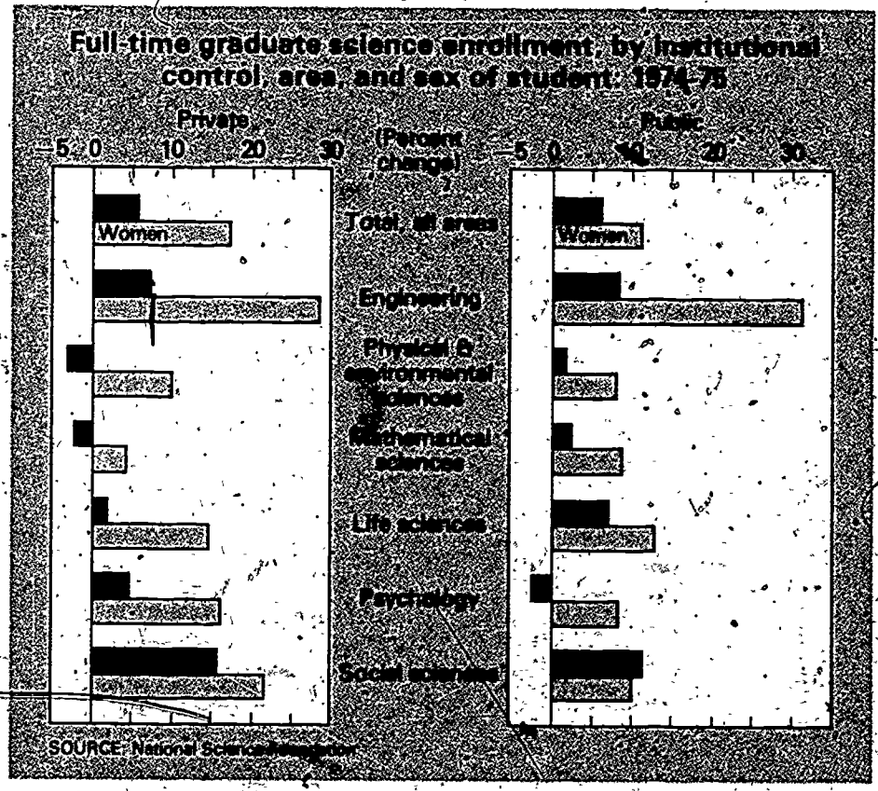
[13] See National Science Foundation, *Manpower Resources for Scientific Activities at Universities and Colleges, January 1976* (NSF 77-308) (Washington, D.C. 20402; Supt. of Documents, U.S. Government Printing Office, 1977.)

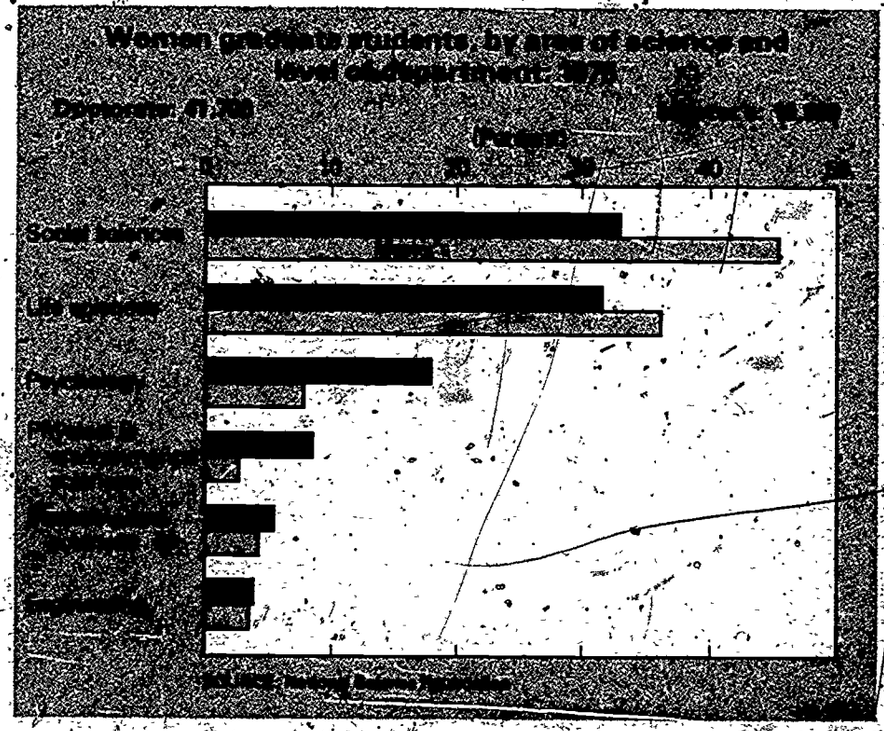
Employment opportunities outside of academia for women and minorities are expected to continue to improve, according to employers responding to the annual survey of the College Placement Council, Inc.[14] Also, the unemployment rate reported by the Bureau of Labor Statistics for 1975 for women college graduates in all fields, 7 percent, was considerably lower than that of men, nearly 10 percent.[15]

The distribution of women graduate students among the areas of science did not vary significantly between master's- and doctorate-level departments except in the social sciences and psychology. Within master's departments nearly 46 percent of the women students were enrolled in the social sciences, while in doctorate departments only 33 percent of the women chose this field. Women in psychology accounted for only 8 percent of master's-level enrollment compared to 18 percent in doctorate programs.

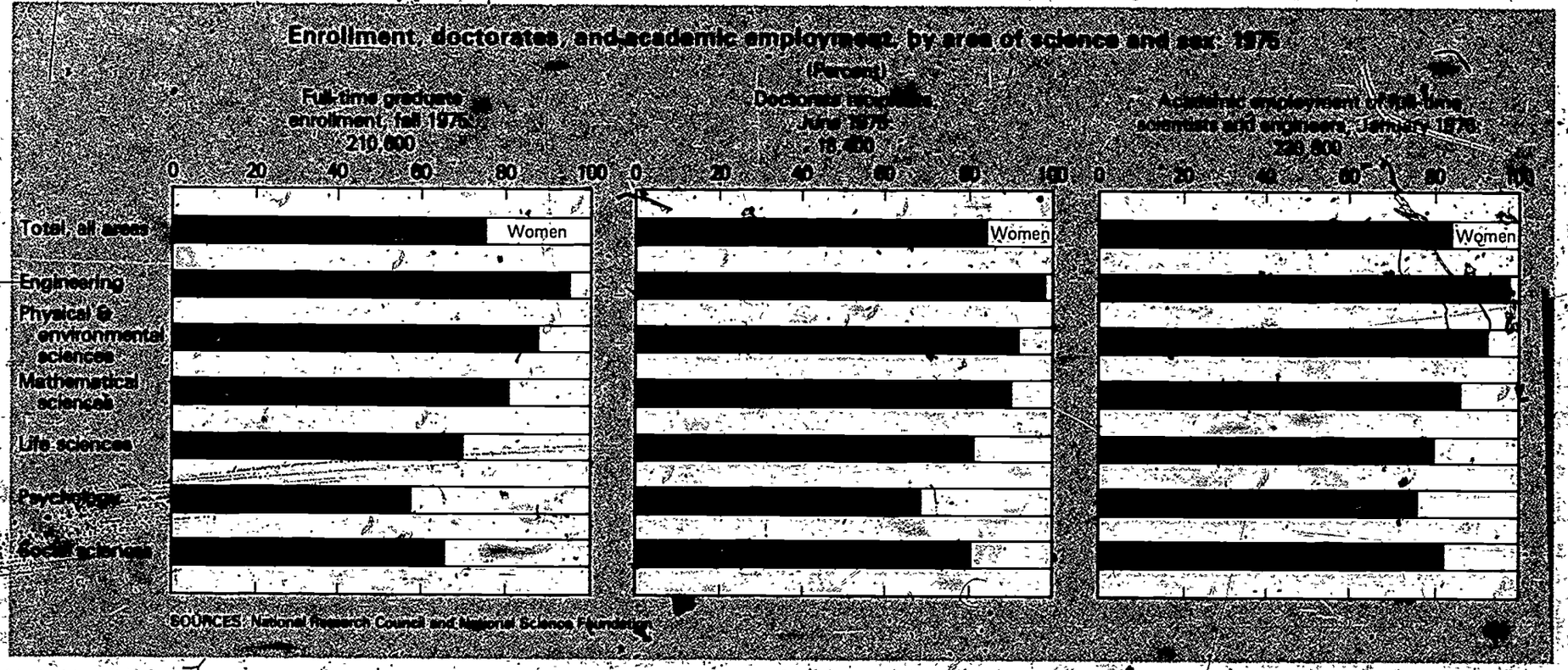
[14] College Placement Council, Inc., *op. cit.*

[15] Department of Labor, Bureau of Labor Statistics, *op. cit.*





The fall 1975 full-time enrollment picture for men and women corresponded closely with the distribution of both science doctorate recipients and academic science employment. Men accounted for 75 percent of all full-time S/E graduate enrollment, 85 percent of the science doctorates, and 84 percent of full-time academic employment. Engineering accounted for the highest proportion of men in all three categories; psychology attracted the highest proportion of women.



Men receiving Federal support for full-time study in 1975 numbered 36,200, or three times the number of women; this represented a 2-percent decrease from the number reported in 1974. Women depending on the Federal Government for their major support, however, reached over 12,100—up nearly 10 percent. Institutional and State and local government support rose only slightly for men—up less than 1 percent to 58,900—accounting for 37 percent of the total number of men. The number of women utilizing these sources rose by 9 percent to 18,500, or 35 percent of the women. Both men and women relying on self-support increased significantly, by 23 percent and 19 percent, respectively.

Full-time graduate science enrollment, by source of major support and sex of student: 1974-75

[Percent change]

Source of major support	Total	Men	Women
Total, all sources	7.5	6.0	12.6
Federal support	.8	-1.8	9.5
Institutional support[1]	2.6	.8	8.6
Other outside support	1.3	-.6	11.6
Self-support	21.8	22.9	19.0

[1] Includes support from State and local governments.
SOURCE: National Science Foundation

The Department of Defense (DOD) supported almost 11 percent of the 48,400 students receiving Federal aid, and 95 percent of these students were men, the highest proportion supporting male students of any of the agencies. The National Institutes of Health (NIH) provided major support to 13,800 students (or 29 percent of the total), 66 percent of whom were men. The remaining agencies within HEW supported the highest ratio of women, 56 percent. While NSF supported 18 percent of the full-time students, nearly 8,800, it was ranked second to DOD in terms of proportion of awards to men—87 percent of the total.

Full-time graduate science enrollment, by source of major support and sex: 1975

Source of major support	Number			Percent distribution			Percent of total		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Total, all sources	210,641	158,061	52,580	100.0	100.0	100.0	100.0	75.0	25.0
Federal support, total	48,365	36,245	12,120	23.0	22.9	23.1	100.0	74.9	25.1
DOD	5,091	4,844	247	2.4	3.1	.5	100.0	95.1	4.9
NIH	13,806	9,161	4,645	6.6	5.8	8.8	100.0	66.4	33.6
Other HEW	7,292	3,197	4,095	3.5	2.0	7.8	100.0	43.8	56.2
NSF	8,790	7,672	1,118	4.2	4.9	2.1	100.0	87.3	12.7
All other agencies	13,386	11,371	2,015	6.4	7.2	3.8	100.0	84.9	15.1
Institutional support[1]	77,351	58,852	18,499	36.7	37.2	35.2	100.0	76.1	23.9
Other outside support	16,681	13,752	2,866	7.9	8.7	5.5	100.0	82.8	17.2
Self-support	68,307	49,212	19,095	32.4	31.1	36.3	100.0	72.0	28.0

[1] Includes support from State and local governments.
SOURCE: National Science Foundation

Graduate Departments in Medical Schools

Medical schools were surveyed separately so that the unique characteristics of their graduate departments could be examined and compared with those of the graduate schools themselves. The 105 medical schools surveyed in 1975 reported a total of over 13,800 full-time graduate students in their 2,848 master's and doctorate departments, an enrollment gain of 6 percent over 1974. An additional 1,800 students (or 12 percent of the total) were enrolled part time; this share, considerably lower than the 28-percent share enrolled part time in all other graduate departments, does not warrant analysis here.

For the first time in 9 years the number of applicants to medical school M.D. programs declined between 1974 and 1975.[16] Applications to dental schools and law schools were down also in 1975.[17] While medical school applications were down slightly—1 percent—enrollment for the M.D. degree actually increased by 3 percent, but this was at only one-half the rate of increase of the previous year. Although women represented only 20 percent of the M.D. enrollment in 1975, this accounted for the bulk of the expansion. The rise in full-time enrollment from 13,000 to 13,800 in graduate science programs was also attributed almost totally to an increase in women graduate students—19 percent above 1974.

[16] *Journal of Medical Education*, Vol. 51, Oct. 1976.

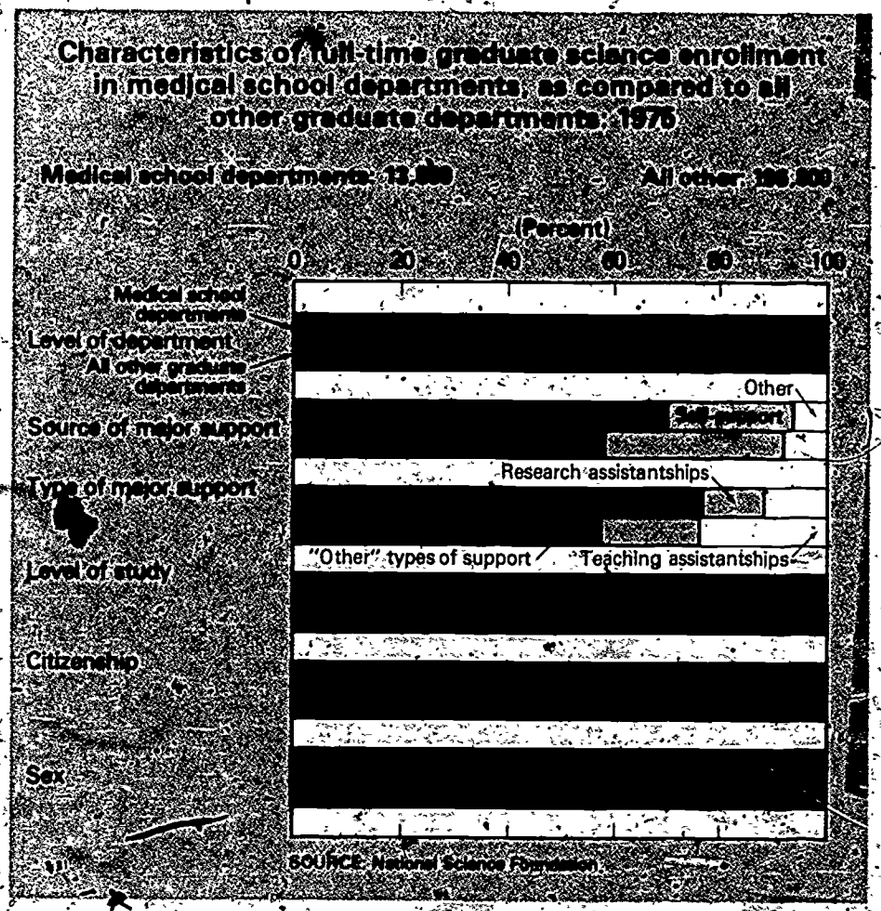
[17] "Professional Schools: The Boom is Over," *Chronicle of Higher Education*, Sept. 13, 1976, p. 4.

Characteristics of M.D. and graduate science enrollment in medical schools: 1974 and 1975

Item	Academic year 1974	Academic year 1975	Percent change
Medical school applicants	42,624	42,303	-0.8
Medical school acceptances	15,066	15,365	2.0
Men	11,674	11,726	.4
Women	3,392	3,639	7.3
M.D. enrollment	54,074	55,818	3.2
Men	44,288	44,401	.3
Women	9,786	11,417	16.7
Full-time graduate science enrollment	13,036	13,825	6.1
Men	9,083	9,130	.5
Women	3,953	4,695	18.8

SOURCE: National Science Foundation and *Journal of Medical Education* Vol 51, No 10, October 1976

Graduate students in medical school departments had many features in common with their counterparts in other graduate school departments. Only minor differences were observed between the two categories in the distribution of students between master's and doctorate departments, in level of study, in citizenship, and in sex. The major differences occurred in the sources of principal support and the mechanisms of such support. In medical schools, the Federal Government supported 43 percent of all full-time graduate students; in the remaining departments, only 23 percent. In graduate school departments, institutional support predominated, supporting 37 percent, while in medical schools, only 27 percent were dependent on such support.



The mechanisms of support also differed between medical and graduate school students. While fellowships and traineeships accounted for the bulk (47 percent) of the students supported in medical schools, this form of support was awarded to only 18 percent of students in all other graduate departments.

The overall enrollment rise of 6 percent between 1974 and 1975 was reflected in increased support from every source and via every mechanism. The number of self-supported students rose at the highest rate, 14 percent, and Federal sources at the lowest, less than 2 percent.

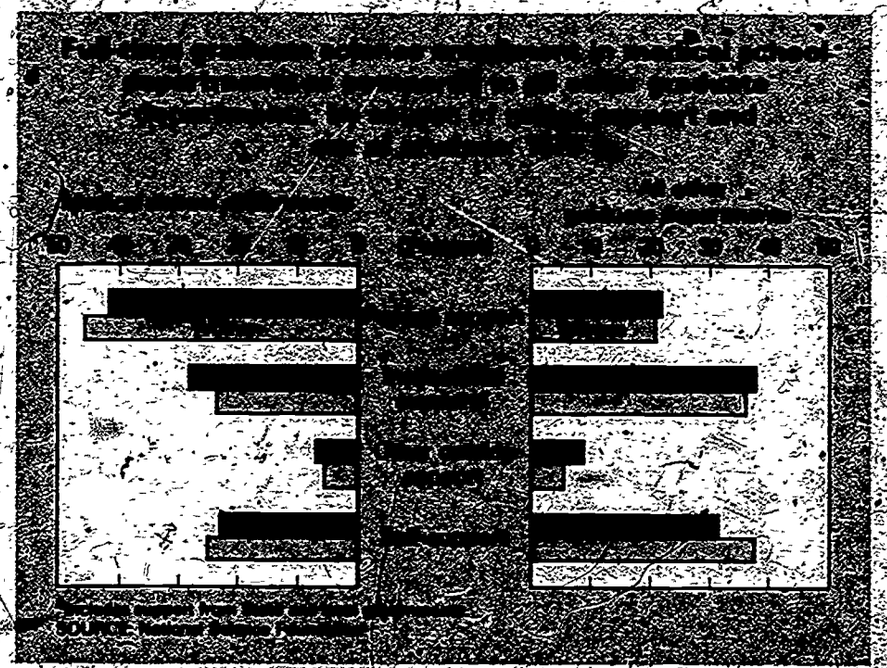
Full-time graduate science enrollment in medical school departments, by source and type of major support: 1974-75

[Percent change]

Source of major support	Total	Fellowships and trainee-ships	Research assistant-ships	Teaching assistant-ships	"Other" types of support
Total, all sources	6.1	4.8	15.0	8.1	9.1
Federal support	1.5	1.3	16.2	-35.7	-27.4
Institutional support[1]	8.4	7.6	10.3	13.0	-5.5
Other outside support	0	-8.6	19.6	(2)	11.7
Self-support	14.4	—	—	—	14.4

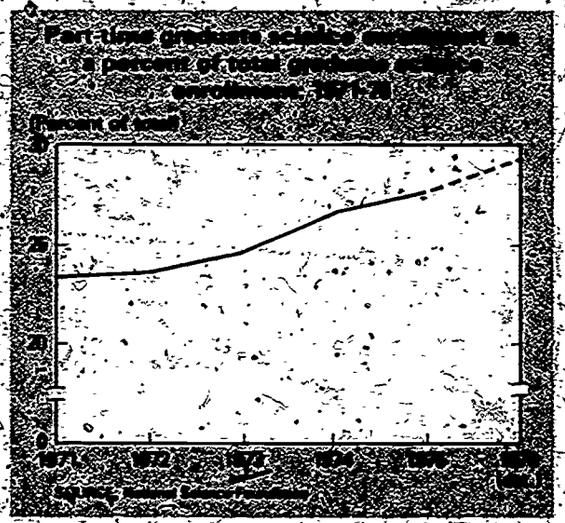
[1] Includes support from institutions and State and local governments.
[2] Based on less than 50 students.
SOURCE: National Science Foundation

A higher proportion of women graduate students received Federal support in medical schools than did men, 46 percent compared to 42 percent, while men's share of institutional support was greater than women's. Both men and women in other graduate departments received a higher share of institutional and outside support than their counterparts in medical schools. They received a lower share of Federal support, with a concurrent rise in the level of self-support.



SECTION 3. Part-Time Graduate Enrollment

Since 1971 the proportion of part-time graduate science students to the total number has been growing. In that year part-timers accounted for 23 percent of total graduate science enrollment; in 1975, almost 28 percent. Estimates made through responses to the 1976 QRS indicate an even higher proportion, 29 percent.



The following are some of the factors contributing to this increased emphasis on part-time study: (1) Economic conditions have made it necessary for more students to work while going to school in order to meet the rising costs of education; (2) the limited means of support from government and institutional sources have necessitated an increase in self-help through full-time employment; (3) the increase in the number of women returning to college campuses, some with child-rearing responsibilities, has also added to part-time expansion; and, finally, (4) the unemployment situation, in many cases, has motivated already employed persons to further secure or upgrade their own jobs by acquiring additional training necessary to qualify for advancement and job security.

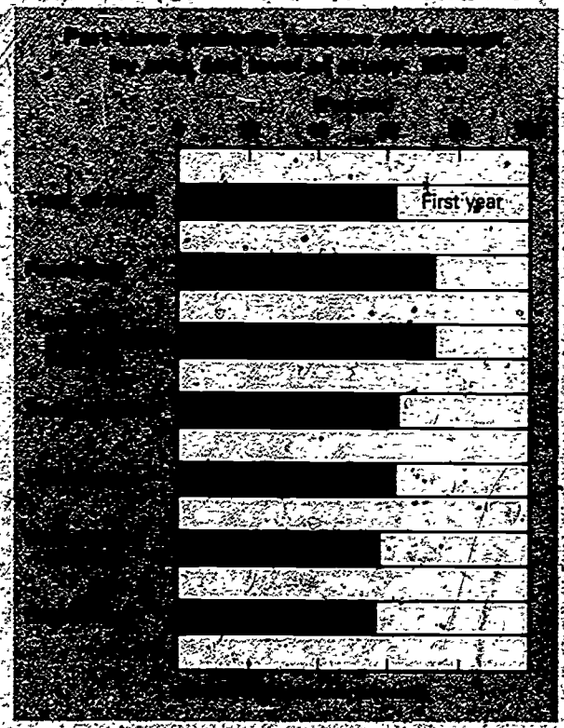
The number of part-time science students reached over 80,000 in 1975—14 percent greater than in 1974—or nearly twice the rate of the full-time enrollment increase. Every area of science reflected this growth, ranging from a high of 26 percent in the social sciences to a low of 5 percent in the mathematical sciences. Part-time students in their first year of graduate work rose by 9 percent; in advanced programs by nearly twice this rate, 17 percent. The increase in first-year part-timers was greatest in the social sciences, where enrollment rose 20 percent above the 1974 level. The life sciences also showed a significant rise, up 13 percent.

Engineering attracted the highest proportion of new entrants on a part-time basis, 44 percent, and the mathematical sciences were a close second with 43 percent. The physical and environmental sciences enrolled the smallest share of first-year part-timers.

Part-time graduate science enrollment, by area and level of study: 1974-75
[Percent change]

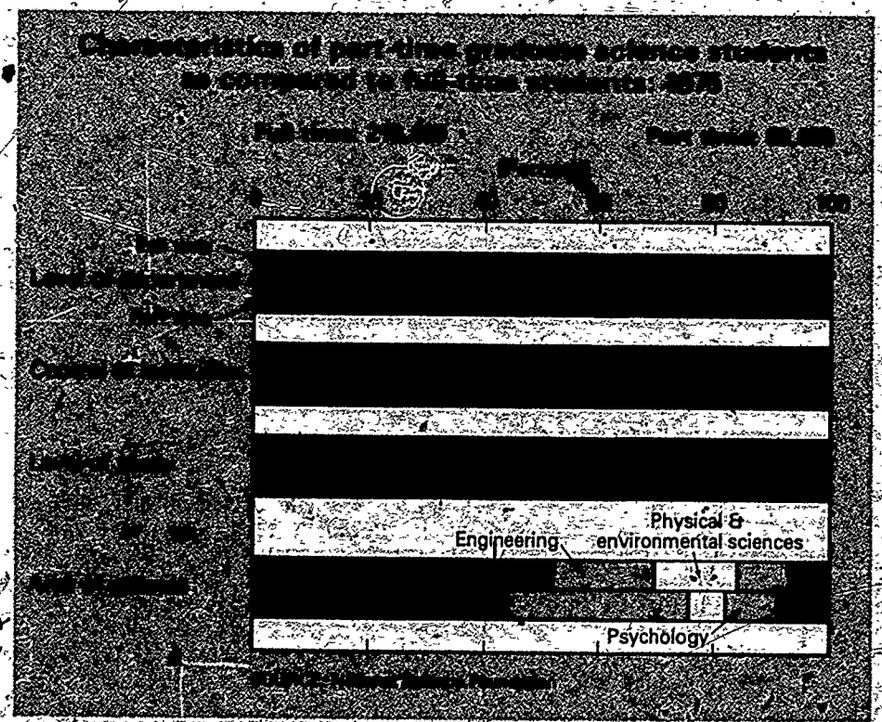
Area of science	Total	First year	Beyond first year
Total, all areas	14.1	9.4	17.2
Engineering	6.1	4.2	7.6
Physical and environmental sciences	6.8	2.1	8.7
Mathematical sciences	5.1	4.2	5.9
Life sciences	16.7	13.4	18.8
Psychology	21.1	3.4	29.1
Social sciences	25.9	20.1	29.5

SOURCE: National Science Foundation



There were no significant differences between the patterns of full- and part-time student distribution in 1975 in terms of level of study. However, master's-level departments enrolled a considerably higher proportion of part-time students, 29 percent, than of full-time students, 14 percent, and the proportion of part-time students in specific areas of science differed significantly from that of full-time enrollees. For instance, nearly 27 percent of full-time students were enrolled in the life sciences, the highest percentage, but only 16 percent of those enrolled part time chose this field. Engineering enrolled the greatest share of part-timers, 32 percent, but only 18 percent of those enrolled full time chose engineering.

While the vast majority of both full- and part-time students were enrolled in public institutions, the percentage varied considerably—73 percent for the former and 62 percent for the latter.



SECTION 4. Postdoctoral Employment

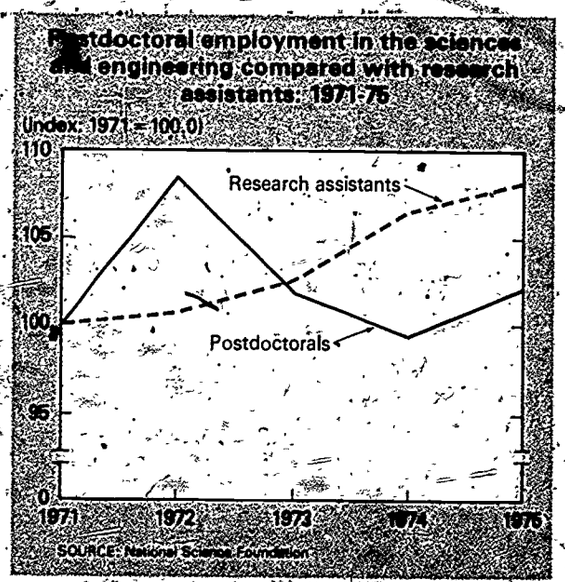
Postdoctoral appointments have been relied upon traditionally by Ph.D.-holders as stepping-stones to permanent research appointments in academic institutions; however, the situation may be changing. Survey data collected and indexed during 1971-75 indicated periods of marked fluctuation in utilization of postdoctorals, with a return in 1975 to approximately the same level of allocation as 5 years earlier. The 9-percent rise that was reported between 1971 and 1972 was followed by declines in postdoctoral employment in each of the next 2 years, returning to the level of the 1971 base year. A slight rise was then recorded between 1974 and 1975 for an overall 1971-75 increase estimated at only about 2 percent. During this same period, the utilization of graduate research assistants rose steadily for an overall growth of 8 percent.

The apparent "substitution effect"—research assistants for postdoctorals—that became evident in 1973 occurred in a "tight money" period, when university administrators tried to attain economy by such measures as hiring graduate students for research assistance rather than the more highly paid postdoctorals. Part of the financial exigencies resulted from the relatively slow growth in academic R&D expenditures. Although total R&D expenditures at universities and colleges increased nearly threefold between fiscal years 1964 and 1976 in current-dollar terms, the steep annual rates of growth in real terms during the first 4 years of this period were followed by a leveling off cycle. Beginning in 1970, a modest growth of 3 percent per year began that continued through 1973, when a downturn was recorded through 1975. Preliminary estimates for 1976 indicate a slight rise, almost to the 1973 peak, or more than 2 percent in real terms, which parallels the beginning of a slight upswing in postdoctoral utilization.[18]

The early years of growth in academic R&D spending followed by a leveling off period were similar to the characteristics of S/E employment in universities and colleges. From January 1965 to January 1971, the number of academic S/E employees rose at the rate of 6 percent per year.[19] Between 1971 and 1976, however, the annual rate of growth slowed to 2 percent. The resultant tightening up of the academic job market for Ph.D.-holders, especially those looking for research appointments, has had a significant impact on the concurrent demand for postdoctorals. Also, the 25-percent increase from 9.0 million to 11.3 million in postsecondary students between fall 1971 and fall 1975 as shown earlier

[18] See National Science Foundation, *Expenditures for Scientific Activities at Universities and Colleges, Fiscal Year 1975* (NSF 77-307) (Washington, D.C. 20402: Supt. of Documents, U.S. Government Printing Office, 1977) and unpublished estimates from the 1976 survey.

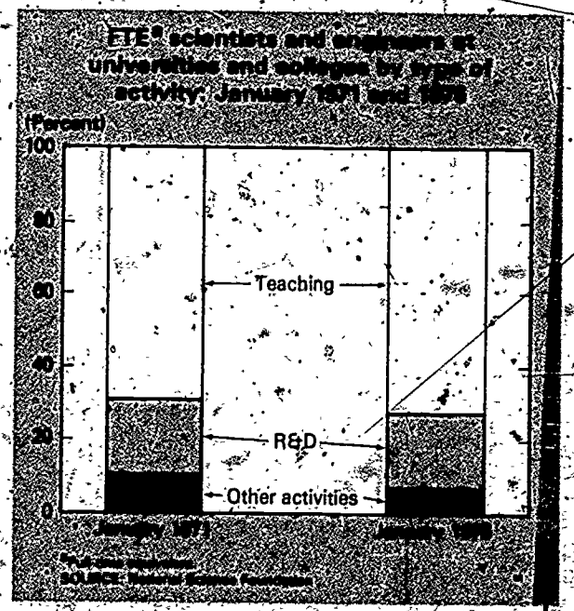
[19] See National Science Foundation, *Manpower Resources for Scientific Activities at Universities and Colleges, January 1976*, (NSF 77-308) *op. cit.*



Scientists and engineers employed in universities and colleges by type of activity: January 1971 and January 1976

Type of activity	January 1971 Number	January 1971 Percent distribution	January 1976 Number	January 1976 Percent distribution
Total	257,904	100.0	289,204	100.0
Teaching	184,966	71.7	223,216	77.2
Research and development	48,268	18.7	50,994	17.6
Other activities	24,670	9.6	14,994	5.2

SOURCE: National Science Foundation



created a gradual shift in the types of activities performed by these scientists and engineers. By January 1976, the share of those primarily employed in teaching functions rose to 77 percent of the total, with a subsequent drop to an 18-percent share for those primarily involved in R&D activities. By comparison, in 1971 teaching activity accounted for 72 percent of all academic S/E employees, and R&D performers for 19 percent. In full-time-equivalent (FTE) terms, R&D scientists and engineers maintained virtually their same relative share of the workload in 1976 as in 1971, while teaching activity grew from 69 percent to 72 percent.

The Federal share in the support of postdoctoral appointees did not change perceptibly over the 3 years for which such support data were available. In 1975 federally funded postdoctorals accounted for 71 percent of the total, and in 1973, 69 percent. Areas in which postdoctorals received the greatest percentage of Federal support in 1975 were in the physical and environmental sciences, the same as in 1973. The lowest share of such support occurred in the mathematical sciences.

In the short run, the slight upturn in postdoctoral employment did not match the extensive growth pattern of graduate science enrollment. In the life sciences, graduate enrollment grew at three times the rate of postdoctoral appointments and in the physical and environmental sciences at nearly twice the rate. In engineering, mathematical sciences, and psychology, postdoctoral utilization rates far exceeded that of graduate enrollment. Only in the social sciences was there a drop in postdoctorals.

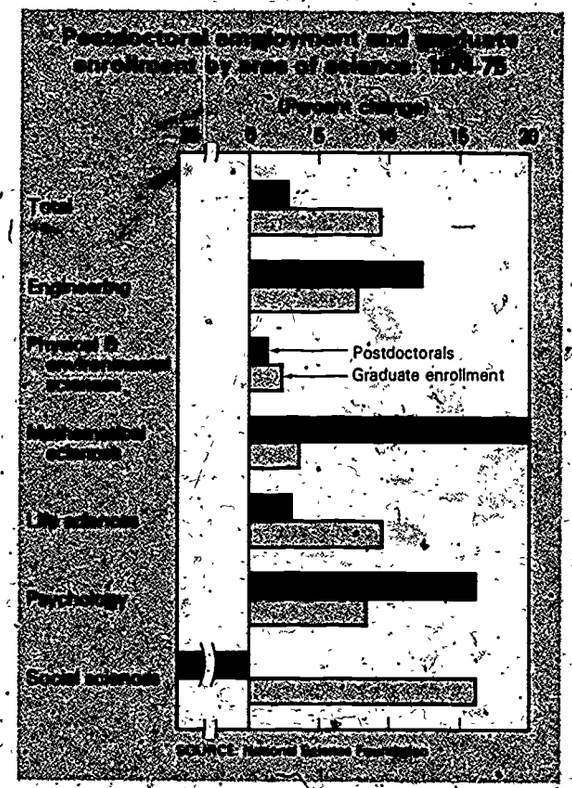
The 17,100 postdoctorals reported in 1975 were highly concentrated in the life sciences, with nearly 11,000 appointees. The physical and environmental sciences employed another 4,200, and the remaining 2,000 postdoctorals were distributed in departments of engineering, psychology, and the social and mathematical sciences. Virtually all postdoctorals (16,800) were in doctorate departments. This distribution of postdoctorals in doctorate-granting institutions paralleled closely the concentration of R&D expenditures in these areas, as well as the employment of scientists and engineers in R&D activities at doctorate institutions. The life sciences accounted for 64 percent of the postdoctorals, 62 percent of the R&D employment, and 56 percent of academic R&D expenditures.[20]

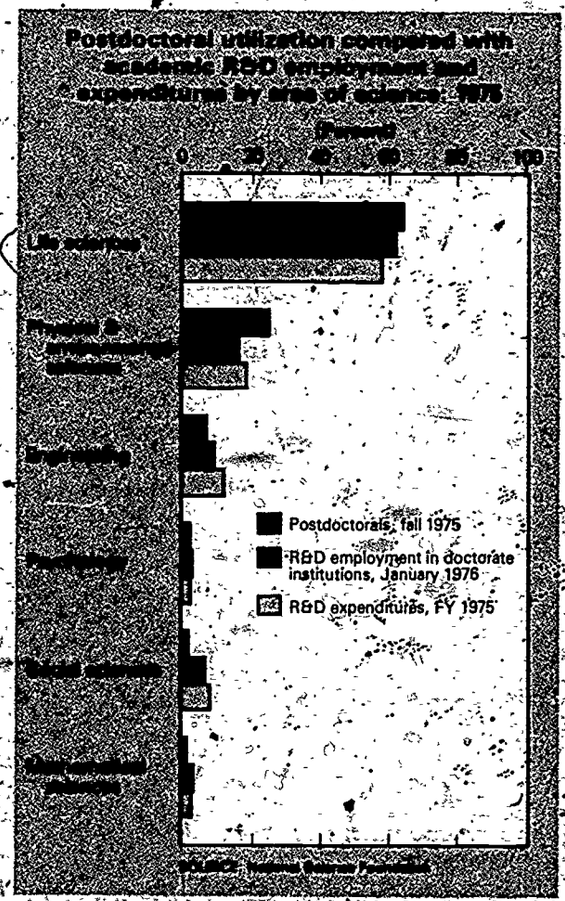
[20] See National Science Foundation, *Expenditures for Scientific Activities at Universities and Colleges, Fiscal Year 1975* (NSF 77-307), *op. cit.*

Postdoctorals receiving Federal support by area of science: 1973 and 1975
[Percent of total]

Area of science	Fall 1973	Fall 1975
Total, all areas	69.0	70.7
Engineering	73.9	68.2
Physical and environmental sciences	77.1	79.4
Mathematical sciences	64.8	42.9
Life sciences	66.5	69.0
Psychology	68.4	56.4
Social sciences	40.8	51.2

SOURCE: National Science Foundation





Utilization of postdoctorals, by source of support and institutional control: 1975

Source of support	Total		Public		Private	
	Number	Percent distribution	Number	Percent distribution	Number	Percent distribution
Total, all sources	17,122	100.0	9,454	100.0	7,668	100.0
Federal support, total	12,098	70.7	6,723	71.1	5,375	70.1
Fellowships and traineeships	4,928	28.8	2,364	25.0	2,564	33.4
Research associates	7,170	41.9	4,359	46.1	2,811	36.7
Non-Federal support	5,024	29.3	2,731	28.9	2,293	29.9

SOURCE: National Science Foundation

Publicly controlled institutions utilized over 9,400 postdoctorals, and private institutions, 7,700—about the same distribution as in 1974. Those receiving Federal support constituted about the same proportion in public as in private institutions, 71 percent and 70 percent, respectively. A shift was recorded, however, in fellowship and traineeship utilization—only 25 percent received this form of Federal support in public institutions compared to 33 percent in private ones. Conversely, research associates on Federal research projects accounted for 46 percent of the postdoctorals in public institutions and only 37 percent in private ones.

The 50 leading institutions in graduate enrollment employed over one-half of the postdoctorals, or nearly 8,800, and over one-half of the 151,700 students.[21] The first 10 universities enrolled 48,500, or 17 percent of the students, and employed 2,600 postdoctorals, or 15 percent of the total.

When the institutions were ranked in terms of the number of postdoctorals employed, the 50 leading universities accounted for nearly 12,300, or 72 percent of the total. The first 10 institutions employed over 4,500, or 27 percent of the postdoctoral total and accounted for 18 percent of the 1975 academic R&D expenditures.

[21] See table 6 for names of institutions.

Postdoctorals in the 10 institutions with the largest graduate science enrollment: 1975

Institutions, including medical school affiliates	Graduate science enrollment		Postdoctorals	
	Number	Rank	Number	Rank
Total, all institutions	290,662	—	17,122	—
University of California—Berkeley	5,582	1	346	7
University of Wisconsin—Madison	5,346	2	435	3
University of Minnesota	5,204	3	331	8
University of Illinois—Urbana	5,165	4	243	13
University of Southern California	4,992	5	258	12
Rutgers University	4,594	6	109	27
Ohio State University	4,512	7	207	15
University of Michigan	4,448	8	233	14
University of California—Los Angeles	4,309	9	305	10
New York University	4,298	10	142	20
Total, first 10	48,450	—	2,609	—
Total, first 50	151,667	—	8,776	—
All other institutions	138,995	—	8,346	—

SOURCE: National Science Foundation

Academic R&D expenditures in the 10 institutions utilizing the largest number of postdoctorals: 1975

[Dollars in millions]

Institutions, including medical school affiliates	Postdoctorals		Academic R&D expenditures, FY 1975	
	Number	Rank	Amount	Rank
Total, all institutions	17,122	—	$3,393	—
Harvard University	679	1	64	10
University of California—San Francisco School of Medicine	564	2	43	16
University of Texas—Austin	473	3	70	17
Yale University	452	4	41	18
Massachusetts Institute of Technology	435	5	85	2
University of Wisconsin—Madison	435	6	95	1
Stanford University	424	7	67	7
Cornell University	379	8	62	11
University of Chicago	393	9	59	12
University of Pennsylvania	353	10	41	19
Total, first 10	4,547	—	599	—
Total, first 50	12,271	—	2,102	—
All other institutions	4,851	—	1,291	—

SOURCE: National Science Foundation

SECTION 5. Graduate Enrollment and Postdoctoral Employment in the Biomedical Sciences

With the passage of the National Research Service Award Act of 1974, the supply and utilization of biomedical and behavioral research personnel has been the subject of study by a number of national commissions. A committee under this legislation was established under the aegis of the National Academy of Sciences to explore the Nation's demand for such personnel so that adequate training could be assured in disciplines that required additional manpower. The GSSSP survey provided selected data items on types and sources of support of full-time biomedical students for 1972 and 1974 for inclusion in the committee's 1976 report.[22]

Because of this heightened interest in the supply of biomedical manpower, this section has been added to the current report to provide additional analytical treatment of graduate enrollment and postdoctoral utilization in these fields for the years 1974 and 1975.

[22] See National Academy of Sciences-National Research Council, Commission on Human Resources, *Personnel Needs and Training for Biomedical and Behavioral Research: 1976 Report* (Washington, D.C. 20418, May 1976).

Number of graduate departments in the life sciences by level: 1975

Life sciences	Number	Level of department	
		Doctorate	Master's
Total	4,109	3,658	451
Agriculture	313	229	84
Biomedical sciences, total	3,796	3,429	367
Biological sciences	1,529	1,382	147
Health sciences	2,267	2,047	220

SOURCE: National Science Foundation

Of the 7,664 graduate departments surveyed in 1975, over one-half, or 4,109, were classified in the life sciences; of these, 3,796 were in biomedical subfields. These master's and doctorate departments in both medical and graduate schools enrolled 46,700 full-time students and 10,800 part-time students, a total of 57,500, or 20 percent of the 290,700 total. The biological sciences enrolled three-fourths of the full-time biomedical students and nearly three-fifths of the part-time students.

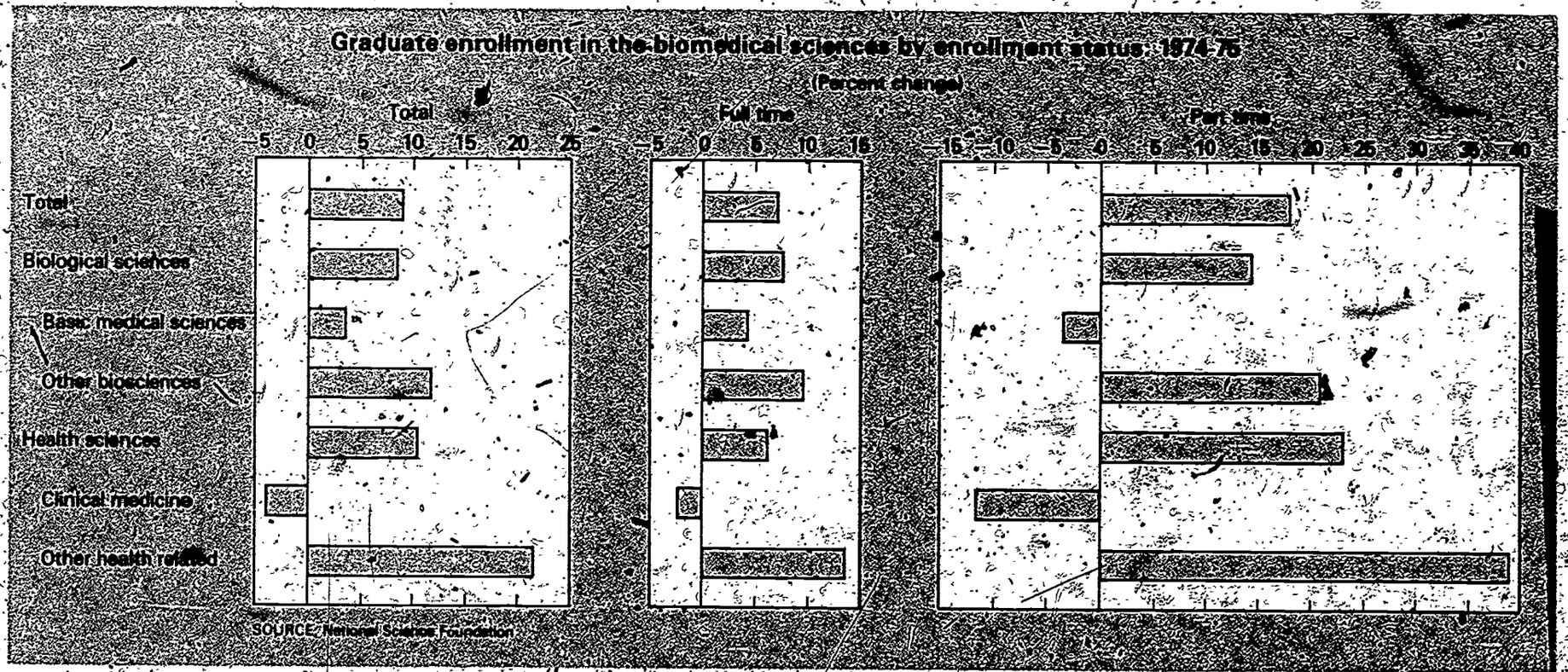
Both full- and part-time enrollment in biomedical fields increased between 1974 and 1975. Gains in enrollment were shown in all biomedical disciplines except the clinical fields, where graduate enrollment dropped 4 percent, heavily affected by a reduction in part-time study.

Graduate enrollment in the biomedical sciences by enrollment status: 1975

Biomedical sciences	Total	Full time		Part time	
		Number	Percent distribution	Number	Percent distribution
Total	57,451	46,686	100.0	10,765	100.0
Biological sciences	41,070	34,934	74.8	6,136	57.0
Basic medical sciences	14,805	13,427	28.8	1,378	12.8
Other biosciences	26,265	21,507	46.1	4,758	44.2
Health sciences	16,381	11,752	25.2	4,629	43.0
Clinical medicine	6,221	5,191	11.1	1,030	9.6
Other health related	10,160	6,561	14.1	3,599	33.4

SOURCE: National Science Foundation

While overall Federal support to full-time students rose only slightly, the number of federally assisted students in the biomedical sciences rose 6 percent in the 1974-75 period. Federal support went to 3 percent more students in the biological sciences and 11 percent more in the health sciences. Meanwhile, as discussed earlier, Federal support was reduced to students enrolled in psychology and the mathematical and social sciences.



The 9,200 students supported by NIH represented slightly over 1 percent more than were supported in 1974. NIH increased its support to students in "other" biosciences but reduced its support to students in the basic medical sciences and in all other health-related sciences, including clinical fields. Other agencies within HEW accounted for 2,900 students in 1975, an increase of 38 percent over those supported in 1974. The number of students receiving institutional support rose by 3 percent to 16,100 in 1975 and students dependent upon private resources rose by 17 percent.

A comparison of sources of funding of full-time students in biomedical fields with those in other science fields showed that the institutions themselves provided support to the largest share of both categories, 34 percent to the former and 37 percent to the latter. The Federal role, however, was stronger for biomedical than for other students, and self-support played a lesser role. The mechanisms of support also differed in emphasis between biomedical and other science students. Fellowships and traineeships were the primary methods of support to 31 percent of biomedical students but to only 15 percent of other science students. Teaching assistantships were utilized by both categories to about the same degree, but research assistantships went to a lower proportion of biomedical than to other science students.

The 17,200 first-year students in the biomedical sciences represented 37 percent of the full-time total, about the same proportion as first-year students in other fields. In contrast, the distribution of full-time students in terms of sex and citizenship differed considerably—in biomedical departments the 15,800 women students made up over one-third of the full-time total; in all other fields they accounted for less than one-fourth. Also, a higher proportion of students in biomedical programs were U.S. citizens, 90 percent, than were in other science programs, where they constituted about 83 percent of the total.

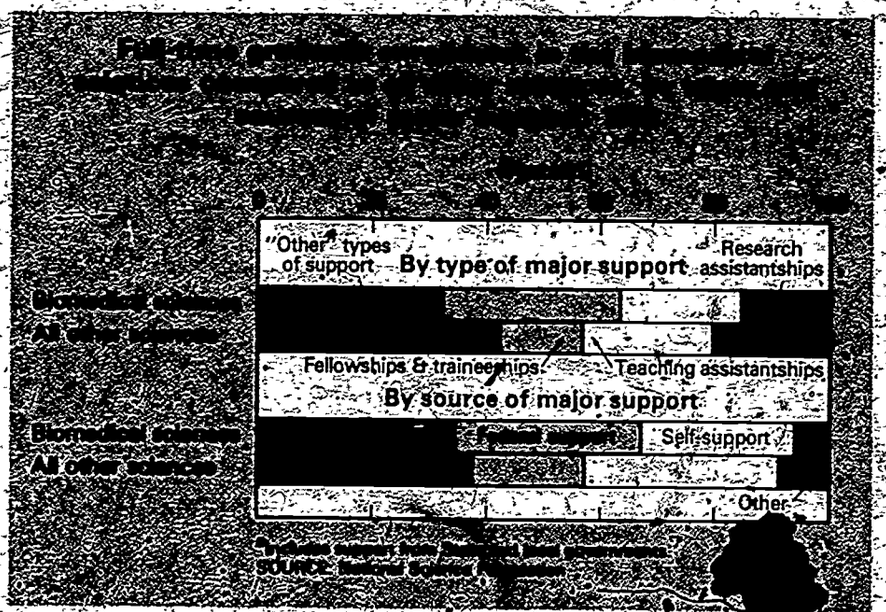
Full-time graduate enrollment in the biomedical sciences by source of major support: 1974-75

[Percent change]

Source of major support	Total	Biological sciences			Health sciences		
		Total	Basic medical sciences	Other bio-sciences	Total	Clinical medicine	Other health related
Total, all sources	7.2	7.6	4.4	9.7	6.1	2.3	13.7
Federal support, total	5.8	3.3	-.8	8.9	11.1	-7.2	30.7
NIH	1.4	3.9	-.9	14.5	-6.0	-9.7	-.4
Other HEW	37.8	5.4	14.7	-1.1	46.7	14.3	66.9
All other agencies	-3.0	1.3	-4.4	3.8	-20.6	-35.5	0.0
Institutional support[1]	-3.4	3.8	6.6	2.6	.8	-15.7	12.9
Other outside support	-2.1	.3	2.6	-1.2	-7.7	-3.1	-12.5
Self-support	17.2	22.5	13.8	26.4	6.1	-13.5	-.2

[1] Includes support from State and local governments.

SOURCE: National Science Foundation.



Full-time graduate students in the life sciences, by field of science and source of major support: 1975

Life sciences	Total	Federal support						Institutional support[1]	Other outside support		Self-support
		Total	DOD	DHEW Total	DHEW NIH	DHEW Other DHEW	NSF	Other		Other U.S.	Foreign	
Total	56,449	17,108	295	12,251	9,282	2,969	1,134	3,428	19,337	2,964	1,716	15,324
Agriculture	9,763	1,881	15	121	93	28	156	1,589	3,261	895	874	2,852
Biomedical sciences, total	46,686	15,227	280	12,130	9,189	2,941	978	1,839	16,076	2,069	842	12,472
Biological sciences, total	34,934	10,089	147	7,498	7,013	485	947	1,497	13,889	1,534	573	8,849
Basic medical sciences, total	13,427	5,553	83	4,813	4,595	218	281	376	4,467	663	158	2,586
Anatomy	1,031	311	3	279	272	7	8	21	427	31	7	255
Biochemistry	3,370	1,575	9	1,372	1,363	9	112	82	1,123	206	34	432
Biophysics	818	475	8	372	344	28	33	62	202	41	5	95
Microbiology	3,547	1,301	34	1,041	985	56	87	139	1,317	137	45	747
Pathology	905	396	2	363	339	24	11	20	188	54	24	243
Pharmacology	1,630	762	11	716	649	67	13	28	499	97	22	250
Physiology	2,126	733	16	676	643	33	17	24	711	97	21	564
Other biosciences, total	21,507	4,536	64	2,685	2,418	267	666	1,121	9,422	871	415	6,263
Biology	8,989	1,486	15	999	944	55	272	200	4,101	246	53	3,103
Biometry, biostatistics	467	215	1	195	108	87	3	16	102	11	13	126
Botany	2,430	352	2	33	31	2	98	219	1,371	114	108	485
Cell Biology	558	272	0	251	244	7	17	4	215	3	6	62
Ecology	600	114	0	14	14	0	39	61	213	23	15	235
Entomology, parasitology	1,303	322	11	82	76	6	44	185	489	137	74	281
Genetics	753	393	1	349	344	5	17	28	177	36	9	138
Nutrition	2,303	576	21	312	233	79	12	231	716	164	116	731
Zoology	3,094	496	12	197	185	12	127	160	1,718	110	19	751
Biosciences, n.e.c.	1,010	310	1	253	239	14	37	19	320	27	2	351
Health sciences, total	11,752	5,138	133	4,632	2,176	2,456	81	342	2,187	535	269	3,623
Clinical medicine, total	5,191	2,219	57	1,981	1,247	734	29	152	773	296	138	1,765
Anesthesiology	55	5	0	5	5	0	0	0	49	0	1	0
Cardiology	43	29	0	27	27	0	0	2	8	6	0	0
Clinical pharmacology	3	2	0	2	2	0	0	0	0	1	0	0
Endocrinology	45	20	0	20	19	1	0	0	13	1	0	11
Gastroenterology	12	8	0	4	2	2	0	4	3	1	0	0
Hematology	5	2	0	2	2	0	0	0	0	0	0	3
Neurology	307	193	0	171	111	60	17	5	74	17	2	21
Obstetrics and gynecology	50	21	0	9	6	3	0	12	21	2	1	5
Ophthalmology	23	10	1	9	9	0	0	0	11	2	0	0
Otorhinolaryngology	81	35	1	29	25	4	0	5	17	14	0	15
Pediatrics	136	78	2	65	42	23	2	9	27	4	3	24
Preventive medicine	3,083	1,467	40	1,333	814	519	3	87	202	190	109	1,119
Psychiatry	358	142	6	118	50	68	7	11	84	20	1	111
Pulmonary disease	9	7	1	2	2	0	0	4	1	1	0	0
Radiology	183	63	3	56	50	6	0	4	41	9	1	69
Surgery	116	34	0	33	31	2	0	1	76	2	2	2
Clinical medicine, n.e.c.	682	107	3	96	50	46	0	8	146	26	18	385
Other health related, total	6,561	2,919	76	2,651	929	1,722	2	190	1,414	239	131	1,858
Dentistry	1,019	147	28	94	65	29	0	25	324	44	22	482
Nursing	2,769	1,933	22	1,836	502	1,334	0	75	173	27	17	619
Pharmacy	1,247	278	3	232	203	29	2	41	613	102	31	223
Veterinary sciences	498	127	9	88	70	18	0	30	201	32	39	99
Health related, n.e.c.	1,028	434	14	401	89	312	0	19	103	34	22	435

des support from State and local governments.
E: National Science Foundation

The 10,600 postdoctorals in biomedical fields represented 62 percent of the 17,100 total, an increase of 3 percent over 1974. The number employed in the biological sciences rose 10 percent but decreased 4 percent in the other health disciplines. Federal aid went to nearly 70 percent of all biomedical postdoctoral appointees, about the same share received by postdoctorals in other fields, but in the basic medical sciences, the Federal share was higher than the national average—80 percent. The 3,100 postdoctorals in these fields represented almost a 13-percent gain over 1974 appointments.

"Recent" postdoctorals—those that received their Ph.D.'s in the preceding 5 years—accounted for 60 percent of the biomedical total in 1975 and 56 percent in 1974. In all other fields, these new postdoctoral appointees accounted for a slightly higher share—64 percent in 1975 and 63 percent in 1974. The number of biomedical postdoctorals in this "recent" category rose 11 percent between 1974 and 1975, while in all other science disciplines the increase was only 3 percent. The rise was even higher in biological science programs, up 14 percent. These new Ph.D.-holders found more research opportunities in the academic setting in 1975 than were available in other sectors of the job market.

The release in 1974 of $150 million in impounded funds by the National Institutes of Health could partially explain this upsurge in utilization of new Ph.D.-holders on biomedical research projects in universities. An 18-percent rise in current-dollar terms in all biological and medical science expenditures was recorded between fiscal years 1974 and 1975.[23] Another 11-percent increase has been reported for 1976, indicating that after inflation factors are considered, the R&D expenditures in biomedical fields have actually tapered off considerably, with an obvious impact on postdoctoral utilization in subsequent years.

[23] See National Science Foundation, *Expenditures for Scientific Activities at Universities and Colleges, FY 1975* (NSF 77-307); *op. cit.*

Academic R&D expenditures in the biomedical sciences: FY 1974-76

(Dollars in millions)

Biomedical sciences	Fiscal year		
	1974	1975	1976
Total	$1,281	$1,518	$1,681
Biological sciences	510	605	709
Medical sciences	714	841	891
Other life sciences	57	72	81

SOURCE: National Science Foundation

Postdoctorals in the biomedical sciences by source of support: 1974-75

Biomedical sciences	Total			Source of support						Recent postdoctorals[1]		
				Federal			All other sources					
	Number		Percent change	Number		Percent change	Number		Percent change	Number		Percent change
	1974	1975		1974	1975		1974	1975		1974	1975	
Total	10,311	10,632	3.1	7,169	7,409	3.3	3,142	3,223	2.6	5,797	6,417	10.7
Biological sciences	5,315	5,840	9.9	4,015	4,476	11.5	1,300	1,364	4.9	3,534	4,018	13.7
Basic medical sciences	3,587	3,870	7.9	2,755	3,099	12.5	832	771	-7.3	2,408	2,684	11.5
Other biosciences	1,728	1,970	14.0	1,260	1,377	9.3	468	593	26.7	1,126	1,334	18.5
Health sciences	4,996	4,792	-4.1	3,154	2,933	-7.0	1,842	1,859	.9	2,263	2,399	6.0
Clinical medicine	4,750	4,496	-5.3	2,973	2,696	-9.3	1,777	1,800	1.3	2,105	2,245	6.7
Other health related	246	296	20.3	181	237	30.9	65	59	-9.2	158	154	-2.5

[1] Postdoctorals included in the total who received their Ph.D. in the preceding 5 years.
SOURCE: National Science Foundation

Appendixes

I. Technical Notes

Survey Background—Establishing the Universe
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Response Rates
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IV. Instructions and Departmental Data Sheet

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Note

The statistical tables on which this report is based have been published under separate cover (NSF 76-318); the complete listing of the tables appears on p. 58. The detailed statistical tables may be obtained gratis from the National Science Foundation, Washington, D.C. 20550.

Data tapes for this and prior surveys can be purchased at the following address:

Moshman Associates, Inc.
6400 Goldsboro Road
Washington, D.C. 20034

Appendix I
Technical Notes

Survey Background—Establishing the Universe

The National Science Foundation (NSF) has collected data on graduate science enrollment since 1967 when applications to its Graduate Traineeship Program required information on the types and sources of major support of graduate science students and postdoctorals. In 1972 a full-scale survey was introduced to include all institutions known to grant at least one doctoral degree in a science or engineering program. The survey was expanded again in 1973 as a result of NIH's special interest in responses from the biomedical and clinical departments. A thorough search of all graduate school catalogs and institution directories added 14 doctorate-granting institutions and approximately 1,500 departments to the 1973 universe. At the conclusion of the 1975 survey, the universe consisted of 7,664 master's and doctorate departments in 354 institutions.

Table I-1 shows the number of institutions and departments surveyed under the Graduate Traineeship Program from 1967 to 1971 and those covered by the Survey of Graduate Science Student Support and Postdoctorals (GSSSP) from 1972 to 1975.

Table I-1.—Institutions and graduate departments participating in NSF data collection series: 1967-75

Year of series	Number of institutions	Number of departments		
		Total	Master's	Doctorate
A. Graduate Traineeship Program				
1967	209	3,016	436	2,580
1968	219	3,190	454	2,736
1969	224	3,354	460	2,894
1970	227	3,544	473	3,071
1971	224	3,397	407	2,990
B. Survey of Graduate Science Student Support and Postdoctorals				
1972[1]	302	4,593	778	3,815
1973	339	6,577	873	5,704
1974	355	7,501	1,363	6,138
1975	354	7,664	1,423	6,241

[1] Survey in 1972 included selected data items for 1971.
SOURCE: National Science Foundation

The 1975 survey universe included 249 graduate schools with 4,816 departments and 105 medical schools with 2,848 departments. Table I-2 indicates the extent of the expansion in both department and enrollment coverage since the survey series began. The addition to the universe of over 3,000 departments and nearly 46,000 full-time students over the period 1971-75 resulted from several factors: (1) The universe for the first survey year 1972 was derived from the data base already in existence—the NSF Graduate Traineeship Program with the addition of 78 institutions that were known to grant at least one Ph.D. in science or engineering; (2) it was expanded again in 1973 to include all clinical and medical science departments in medical schools; (3) a special study of this 1973 universe through a review of graduate school catalogs revealed the names of additional science departments that had not been surveyed; these were added to the universe on a computer-generated Form 811 for review by Survey Coordinators in response to the 1974 survey; and (4) Coordinators corrected the department lists by deleting those no longer in existence or by adding new ones and returned responses in 1974 that became the basis for the 1975 computer-generated Form 811's.

Between 1974 and 1975, only 163 new departments were added; thus, the statistics reported for these two survey years constitute a representative population of S/E graduate departments while in the earlier survey years the population was relatively unstable.

A list of all master's and doctorate departments included in 1975 appears in table I-3, aggregated into fields and areas of science. Titles of individual departments change slightly over the years, but their classification into subfields remains fairly constant. NSF and NIH, as part of the annual survey, examine these classifications in an effort to assure that they meet the needs of our data users.

Table I-2. Number of graduate departments and full-time enrollment by area of science: 1971-75

Area of science	1971		1972		1973		1974		1975	
	Number of departments	Full-time enrollment	Number of departments	Full-time enrollment	Number of departments	Full-time enrollment	Number of departments	Full-time enrollment	Number of departments	Full-time enrollment
Total, all areas	4,637	164,764	4,637	161,329	6,559	164,318	7,501	195,859	7,664	210,641
Engineering	880	34,430	880	32,913	926	31,702	1,007	34,217	1,014	37,265
Physical and environmental sciences	683	30,405	683	28,948	713	28,465	749	29,430	765	29,846
Mathematical sciences	320	13,493	320	12,978	339	12,762	364	13,224	376	13,579
Life sciences	1,681	36,189	1,681	36,473	3,422	41,021	4,010	52,319	4,109	56,449
Psychology	219	14,995	219	15,157	215	14,802	273	18,923	280	19,701
Social sciences	854	35,252	854	34,860	928	35,433	1,098	47,746	1,120	53,801

SOURCE: National Science Foundation

Table I-3.—Number of graduate departments in the 354 doctorate-granting institutions covered in the GSSSP survey, by area and field of science: 1975

Area, field of science, and departmental title	Total	Doctorate departments	Master's departments
Total	7,664	6,241	1,423
Engineering	1,014	780	234
Aeronautical, total	32	29	3
Aeronautical and astronautical engineering	2	2	0
Aeronautical engineering	1	1	0
Aeronautics	2	2	0
Aeronautics and Astronautics	6	6	0
Aerospace engineering	20	18	2
Aerospace engineering and engineering physics	1	0	1
Agricultural, total	50	29	21
Agricultural and irrigation engineering	1	1	0
Agricultural engineering	42	24	18
Paper technology	3	1	2
Wood products engineering	1	1	0
Wood technology	3	2	1
Chemical, total	115	98	17
Chemical and metallurgical engineering	4	3	1
Chemical and nuclear engineering	3	3	0
Chemical and paper engineering	1	0	1
Chemical engineering	96	85	11
Chemical engineering and materials science	4	4	0
Plastics	1	0	1
Textiles	6	3	3
Civil, total	143	110	33
Civil and environmental engineering	9	8	1
Civil and geological engineering	1	1	0
Civil engineering	111	85	26
Civil engineering and engineering mechanics	4	3	1
Environmental engineering	13	8	5
Environmental sciences and engineering	5	5	0
Electrical, total	140	118	22
Electrical computer science	5	5	0
Electrical engineering	133	111	22
Electrical power engineering	1	1	0
Electronics and instrumental	1	1	0
Engineering science, total	57	46	11
Applied mechanics	7	7	0
Applied science	5	1	4
Engineering acoustics	2	1	1
Engineering and applied physics	1	1	0
Engineering and applied science	3	3	0
Engineering mechanics	15	14	1
Engineering science	15	10	5
Fluid dynamics	3	3	0
Mechanics	3	3	0
Mechanics and hydraulics	1	1	0
Theoretical and applied mechanics	2	2	0
Industrial, total	110	71	39
Administrative science	1	0	1
Applied analysis	1	1	0
Energy management and power	3	2	1
Engineering management	4	1	3
Industrial and systems engineering	3	3	0
Industrial engineering	44	30	14
Industrial engineering and management science	5	4	1
Industrial engineering and operations research	4	3	1
Industrial management	4	2	2
Management	1	1	0
Management engineering	1	0	1
Management science	10	5	5
Manufacturing engineering	1	0	1
Operations research	11	10	1
Systems engineering	16	9	7
Systems management	1	0	1
Mechanical, total	142	110	32
Aerospace and mechanical engineering	15	15	0
Architectural engineering	2	0	2

Table I-3. - Con.

Area, field of science, and departmental title	Total	Doctorate departments	Master's departments
Mechanical and aeronautical engineering and materials science	5	5	0
Mechanical and industrial engineering	2	1	1
Mechanical engineering	108	81	27
Mechanical engineering and applied mechanics	4	4	0
Naval architecture	2	2	0
Transportation	3	2	1
Welding engineering	1	0	1
Metallurgical/materials, total	**67**	**59**	**8**
Ceramic engineering	8	6	2
Ceramics	2	2	0
Material science	13	12	1
Materials engineering	12	11	1
Metallurgical and materials engineering	12	12	0
Metallurgical engineering	13	9	4
Metallurgy	6	6	0
Solid state science and technology	1	1	0
Mining, total	**19**	**10**	**9**
Geological engineering	2	1	1
Mineral engineering	4	1	3
Mineral preparation	1	1	0
Mining	2	1	1
Mining and metallurgy	1	1	0
Mining engineering	9	5	4
Nuclear, total	**33**	**28**	**5**
Nuclear engineering	28	24	4
Nuclear science and engineering	5	4	1
Petroleum, total	**16**	**13**	**3**
Fuel technology	2	2	0
Petroleum and chemical engineering	2	2	0
Petroleum engineering	12	9	3
Engineering, n.e.c., total	**90**	**59**	**31**
Architecture	14	3	11
Bioengineering	11	11	0
Biomedical engineering	19	18	1
Biomedical engineering and math	1	1	0
Clinical engineering	1	1	0
Economics of engineering	1	1	0
Energy engineering	3	2	1
Engineering	24	15	9
Engineering administration	2	0	2
Engineering design	3	0	3
Engineering graphics	1	0	1
Engineering mathematics	1	1	0
General engineering	1	1	0
Information engineering	2	2	0
Polymer science and engineering	1	1	0
Sanitary engineering	1	0	1
Technology	3	1	2
Textile engineering	1	1	0
Physical and environmental sciences	**765**	**602**	**163**
Physical sciences	**513**	**415**	**98**
Astronomy, total	**33**	**29**	**4**
Astronomy	31	27	4
Astrophysics	2	2	0
Chemistry, total	**239**	**198**	**41**
Chemistry	234	193	41
Crystallography	1	1	0
Physical chemistry	1	1	0
Polymer science	3	3	0
Physics, total	**241**	**188**	**53**
Applied physics	5	5	0
Astronomy and space science	1	1	0
Chemical physics	5	5	0
Electronics	1	0	1
Mathematical physics	1	0	1
Molecular science (emphasis on physics)	1	1	0
Optical science	1	1	0
Optics	1	1	0
Physical sciences	3	1	2
Physics	194	148	46
Physics and astronomy	20	17	3
Physics and astrophysics	1	1	0
Physics and geophysics	1	1	0
Physics and mathematics	1	1	0
Planetary and space science	2	2	0
Plasma physics	1	1	0
Solid state physics	1	1	0
Space science	1	1	0

Table I-3. Con.

Area, field of science, and departmental title	Total	Doctorate departments	Master's departments
Environmental sciences	252	187	65
Atmospheric sciences, total	25	23	2
Astrogeophysics	1	1	0
Atmospheric sciences	10	10	0
Meteorology	13	11	2
Meteorology and oceanography	1	1	0
Geosciences, total	192	133	59
Earth and planetary science	5	4	1
Earth sciences	19	9	10
Environmental sciences	11	6	5
Environmental studies	3	2	1
Geochemistry	4	4	0
Geodetic science	1	1	0
Geological science	18	15	3
Geology	87	54	33
Geology and geography	8	5	3
Geology and geological engineering	3	3	0
Geology and geophysics	9	8	1
Geophysics	11	10	1
Geosciences	7	6	1
Hydrogeology	1	1	0
Hydrology	2	2	0
Mineralogy	1	1	0
Paleontology	1	1	0
Petroleum geology	1	1	0
Oceanography, total	35	31	4
Marine science	11	9	2
Ocean engineering	6	5	1
Oceanography	16	15	1
Physical oceanography	1	1	0
Water chemistry	1	1	0
Mathematical sciences	376	266	110
Applied mathematics, total	95	65	30
Applied mathematics	9	7	2
Computer science	73	47	26
Information science	12	10	2
Quantitative studies	1	1	0
Mathematics, total	231	157	74
Mathematical science	10	6	4
Mathematics	215	146	69
Mathematics and statistics	6	5	1
Statistics, total	50	44	6
Applied statistics	2	1	1
Mathematical statistics	1	1	0
Statistics	44	41	3
Statistics and computer science	3	1	2
Life sciences	4,109	3,658	451
Agriculture, total	313	229	84
Agricultural chemistry	2		
Agricultural education	2	0	2
Agricultural science	1	1	0
Agriculture	4	0	4
Agronomy	31	28	3
Agronomy and genetics	2	2	0
Animal breeding	1	1	0
Animal diseases	1	1	0
Animal husbandry	2	2	0
Animal industry	5	1	4
Animal nutrition	3	3	0
Animal science	45	35	10
Avian science	1	0	1
Crop and soil science	1	1	0
Dairy husbandry	1	1	0
Dairy science	15	13	2
Farm crops	3	3	0
Fish and wildlife	5	4	1
Fisheries	3	3	0
Floriculture	1	1	0
Forest botany	1	1	0
Forest chemistry	1	1	0
Forest entomology	1	1	0
Forest management	3	2	1
Forest products	1	1	0
Forest resources	6	5	1
Forestry	31	22	9
Forestry and horticulture	3	1	2
Horticulture	33	23	10

Table I-3. — Con.

Area, field of science, and departmental title	Total	Doctorate departments	Master's departments
International agriculture development	1	0	1
Landscape architecture	5	0	5
Natural resources	6	3	3
Plant and soil science	8	6	2
Plant breeding	1	1	0
Plant industry	1	0	1
Plant science	12	11	1
Pomology	1	1	0
Poultry husbandry	1	1	0
Poultry science	15	12	3
Range management	4	2	2
Range science	3	3	0
Recreation and parks	7	2	5
Resource development – agriculture	1	1	0
Resource sciences – agriculture	3	2	1
Silviculture	1	1	0
Soil science	9	9	0
Soils	4	4	0
Soils and meteorology	1	1	0
Vegetable crops	3	2	1
Water resources	5	2	3
Water resources administration	3	1	2
Water sciences	1	0	1
Wildlife	4	3	1
Wildlife management	4	2	2
Biological sciences, total	**1,529**	**1,382**	**147**
Anatomy, total	**106**	**103**	**3**
Anatomy	103	101	2
Histology	2	1	1
Human anatomy	1	1	0
Biochemistry, total	**155**	**152**	**3**
Agricultural biochemistry	2	2	0
Agricultural biochemistry/nutrition	1	1	0
Biochemical science	1	1	0
Biochemistry	123	120	3
Biochemistry/biophysics	7	7	0
Biochemistry/molecular biology	5	5	0
Biochemistry/nutrition	3	3	0
Biochemistry/pharmacology	1	1	0
Biological chemistry	7	7	0
Comparative biochemistry	1	1	0
Hormone research laboratory	1	1	0
Lipid research	1	1	0
Physiological chemistry	2	2	0
Biology, total	**190**	**137**	**53**
Behavioral biology	1	1	0
Biological sciences	48	38	10
Biology	130	87	43
Developmental biology	6	6	0
Environmental biology	1	1	0
Evolutionary biology	2	2	0
Population biology	1	1	0
Population/environmental biology	1	1	0
Biometry/biostatistics, total	**30**	**25**	**5**
Biomathematics	6	6	0
Biomathematics and computer science	1	1	0
Biometry	12	9	3
Biostatistics	11	9	2
Biophysics, total	**46**	**43**	**3**
Biophysical sciences	3	3	0
Biophysics	22	22	0
Biophysics and physical biochemistry	1	1	0
Biophysics/human genetics	1	1	0
Biophysics/microbiology	1	1	0
Cell biophysics	1	1	0
Engineering biophysics	1	0	1
Macromolecular science	2	2	0
Medical physics	3	3	0
Molecular biophysics	2	2	0
Molecular biophysics and biochemistry	1	1	0
Radiation biology	4	3	1
Radiation biology and biophysics	2	1	1
Radiation biophysics	1	1	0
Radiological physics	1	1	0
Biosciences, n.e.c., total	**41**	**27**	**14**
Biomedical science	5	5	0
Comparative medicine	4	3	1
General science	6	3	3
Health sciences	8	3	5
Laboratory	5	5	0
Life science	9	6	3
Natural science	3	1	2
Research (health)	1	1	0

Table I-3. - Con.

Area, field of science, and departmental title	Total	Doctorate departments	Master's departments
Botany, total	88	83	5
Botanical science	1	1	0
Botany	45	42	3
Botany and Microbiology	3	2	1
Botany and plant pathology	6	5	1
Plant pathology	28	28	0
Plant physiology	5	5	0
Cell biology, total	27	27	0
Biological structure	2	2	0
Cell biology, molecular biology, and pharmacology	1	1	0
Cellular biology	14	14	0
Molecular biology	10	10	0
Ecology, total	13	12	1
Ecology	11	11	0
Human ecology	2	1	1
Entomology/parasitology, total	44	40	4
Entomology	37	34	3
Entology/parasitology	2	2	0
Parasitology	5	4	1
Genetics, total	50	49	1
Genetics	37	36	1
Human genetics	7	7	0
Medical genetics	6	6	0
Microbiology, total	178	167	11
Bacteriology	7	6	1
Bacteriology and public health	1	1	0
Immunology	12	12	0
Medical microbiology	9	7	2
Medical microbiology/immunology	8	8	0
Microbiology	138	130	8
Microbiology/medical genetics	1	1	0
Virology	1	1	0
Virology and epidemiology	1	1	0

Area, field of science, and departmental title	Total	Doctorate departments	Master's departments
Nutrition, total	76	58	18
Food and nutrition	18	13	5
Food economics	2	1	1
Food science	16	13	3
Food science/technology	5	4	1
Food technology	3	1	2
Foods	1	1	0
Nutrition	31	25	6
Pathology, total	144	132	12
Anatomical pathology	1	1	0
Cancer program/lab/center	5	5	0
Clinical pathology	6	4	2
Clinical pathology/laboratory medicine	2	0	2
Forensic medicine	3	3	0
Oncology	14	14	0
Pathobiology	1	1	0
Pathology	112	104	8
Pharmacology, total	142	135	7
Biochemical pharmacology	1	1	0
Medicinal chemistry	10	9	1
Pharmacognosy	7	6	1
Pharmacology	101	99	2
Pharmacology/therapeutics	7	7	0
Pharmacology/toxicology	8	6	2
Psychopharmacology	1	1	0
Toxicology	7	6	1
Physiology, total	137	136	1
Animal psysiology	3	3	0
Exocrine physiology	1	1	0
Human physiology	1	1	0
Membrane biology	1	1	0
Neurophysiology	2	2	0
Physiological optics	3	3	0
Physiological science	1	1	0
Physiology	87	86	1
Physiology and anatomy	3	3	0
Physiology and biophysics	27	27	0
Physiology/pharmacology	8	8	0
Zoology, total	62	56	6
Forest zoology	1	1	0
Ornithology	1	0	1
Wildlife biology	2	0	2
Zoology	50	47	3
Zoology and entomology	4	4	0
Zoology and physiology	4	4	0

Table I-3. - Con.

Area, field of science, and departmental title	Total	Doctorate departments	Master's departments
Other health sciences	2,267	2,047	220
Anesthesiology, total	96	92	4
Anesthesiology	96	92	4
Cardiology, total	96	93	3
Cardiology	82	79	3
Cardiopulmonary/biophysics	1	1	0
Cardiorespiratory/pulmonary	1	1	0
Cardiovascular medicine	11	11	0
Cardiovascular research center	1	1	0
Clinical medicine, n.e.c., total	280	262	18
Alcohol studies	1	0	1
Allergy	1	1	0
Allergy and immunology	3	3	0
Ambulatory medicine	1	1	0
Clinical laboratory science	6	4	2
Connective tissue disease	2	2	0
Dermatology	43	42	1
Dermatology/syphilology	1	1	0
Emergency medicine	8	8	0
Experimental medicine	3	3	0
Hypertension	2	1	1
Infectious diseases	14	14	0
Internal medicine	18	18	0
Medical education research and develop	3	3	0
Medical research	1	1	0
Medical sciences	1	1	0
Medicine	92	89	3
Nephrology	17	17	0
Physical diagnosis	1	1	0
Physical medicine	22	22	0
Physical medicine and rehabilitation	6	6	0
Physical therapy	1	1	0
Postgraduate medical education	23	21	2
Rehabilitation medicine	4	4	0
Rheumatology	1	1	0
Tropical medicine	1	1	0
Tropical med/medical micro/parasitology	2	2	0
Clinical pharmacology, total	22	22	0
Clinical pharmacology	22	22	0

Area, field of science, and departmental title	Total	Doctorate departments	Master's departments
Dentistry, total	58	20	38
Dental hygiene	2	1	1
Dentistry	20	9	11
Endodontics	1	0	1
Oral biology	5	2	3
Oral pathology	5	2	3
Oral radiology	1	0	1
Oral surgery	8	3	5
Orthodontics	6	1	5
Pedodontics	4	1	3
Peridontology	2	0	2
Prosthodontics	3	0	3
Stomatology	1	1	0
Endocrinology, total	97	95	2
Endocrinology	56	55	1
Endocrinology and metabolism	35	34	1
Experimental endocrinology	1	1	0
Metabolism	4	4	0
Metabolism, endocrinology, and diabetes	1	1	0
Gastroenterology, total	85	82	3
Gastroenterology	85	82	3
Hematology, total	91	89	2
Hematology	86	85	1
Hematology and immunology	1	1	0
Hematology and oncology	4	3	1
Neurology, total	110	108	2
Brain Research	1	1	0
Neurobiology	5	5	0
Neurology	90	88	2
Neurology/neuropathology	3	3	0
Neurosciences	11	11	0

Table I-3. - Con.

Area, field of science, and departmental title	Total	Doctorate departments	Master's departments
Nursing, total	44	8	36
Nursing	43	7	36
Nursing education	1	1	0
Obstetrics/gynecology, total	107	104	3
Human reproduction	3	3	0
Obstetrics	1	1	0
Obstetrics/gynecology	103	100	3
Ophthalmology, total	97	92	5
Ophthalmology	97	92	5
Otorhinolaryngology, total	94	91	3
Audiology	1	1	0
Laryngology and bronchoesophagology	1	1	0
Otorhinolaryngology	92	89	3
Pediatrics, total	109	106	3
Child studies	2	2	0
Maternal and child health	4	4	0
Pediatrics	103	100	3
Pharmaceutical sciences, total	61	49	12
Biopharmaceutical science	1	1	0
Hospital pharmacy	3	0	3
Industrial pharmacy	1	1	0
Pharmaceutical chemistry	6	6	0
Pharmaceutical sciences	5	4	1
Pharmaceutics	12	11	1
Pharmacy	33	26	7
Preventive medicine and community health, total	160	140	20
Community and environmental medicine	3	3	0
Community and preventive medicine	12	8	4
Community and public health	3	3	0
Community medicine	26	23	3
Dental public health	1	1	0
Disease control	1	1	0
Environmental health	9	8	1
Environmental medicine	3	3	0
Epidemiology	6	6	0
Epidemiology and environmental health	2	1	1
Family and community medicine	11	11	0
Family practice - medicine	42	42	0
Health education - public health	1	1	0
Preventive and social medicine	3	2	1
Preventive medicine	11	9	2
Preventive medicine and public health	8	6	2
Public health	10	6	4
Public health administration	2	1	1
Public health and epidemiology	3	2	1
Public health social work	1	1	0
Sanitation science	1	1	0
Urban health	1	1	0
Psychiatry, total	109	101	8
Biopsychology	1	1	0
Psychiatry	101	93	8
Psychiatry and behavioral science	3	3	0
Psychiatry and neurology	3	3	0
Psychobiology	1	1	0
Pulmonary disease, total	86	83	3
Chest diseases	6	6	0
Pulmonary disease	80	77	3
Radiology, total	119	111	8
Diagnostic radiology	7	7	0
Nuclear medicine	4	4	0
Radiation oncology	2	2	0
Radiology	94	86	8
Therapeutic radiology	12	12	0

Table I-3. - Con.

Area, field of science, and departmental title	Total	Doctorate departments	Master's departments
Surgery, total	236	225	11
Cardiovascular surgery	4	4	0
Cranio-facial anomalies	1	1	0
Neurological surgery	21	21	0
Neurosurgery	9	9	0
Orthopedic surgery	36	34	2
Orthopedic surgery and rehabilitation	3	3	0
Orthopedics	11	11	0
Plastic surgery	5	5	0
Surgery	110	104	6
Surgical research laboratory	1	1	0
Urology	35	32	3
Veterinary sciences, total	53	40	13
Laboratory animal medicine	2	2	0
Large animal surgery	2	0	2
Small animal surgery	2	0	2
Veterinary anatomy	6	4	2
Veterinary clinical science	2	2	0
Veterinary medicine	7	5	2
Veterinary microbiology	2	2	0
Veterinary parasitology	4	4	0
Veterinary pathobiology	1	1	0
Veterinary pathology	7	7	0
Veterinary physiology	4	4	0
Veterinary preventive medicine	1	1	0
Veterinary science	11	7	4
Veterinary surgery	1	1	0
Vivarial medicine	1	0	1
Health related, n.e.c., total	57	34	23
Administration - health related	1	1	0
Administrative medicine	2	2	0
Allied health sciences	6	2	4
General practice	1	1	0
Health planning	1	1	0
Health sciences administration	1	1	0
Health services	3	2	1
Health services administration	6	5	1
Health services education and research	1	1	0
Hospital and health administration	4	2	2
International health	2	2	0
Legal medicine	2	2	0
Library - medical	2	2	0
Medical and education administration	1	1	0
Medical and public affairs	1	1	0
Medical care organization	1	1	0
Medical technology	10	1	9
Occupational health	3	2	1
Occupational therapy	6	1	5
Pharmacy administration	1	1	0
Physiological hygiene	1	1	0
Primary health care	1	1	0
Psychology, total	280	224	56
Behavioral sciences	11	10	1
Biobehavioral sciences	1	1	0
Child development	16	10	6
Clinical psychology	3	2	1
Counseling psychology	3	2	1
Educational psychology	18	13	5
Experimental psychology	6	4	2
Guidance	2	2	0
Human behavior	2	2	0
Human development	8	6	2
Industrial/organizational psychology	2	1	1
Medical psychology	2	2	0
Mental health	1	1	0
Physiological psychology	2	2	0
Psychology	197	163	34
Psychology and education	1	1	0
Social psychology	5	2	3
Social sciences	1,120	711	409
Agricultural economics, total	44	32	12
Agricultural economics	37	28	9
Agricultural economics and economics	3	2	1
Agricultural economics and sociology	4	2	2
Anthropology, total	102	72	30
Anthropology	99	70	29
Archeology	1	0	1
Biocultural anthropology	1	1	0
Folklore	1	1	0

Table 1-3. - Con.

Area, field of science, and departmental title	Total	Doctorate departments	Master's departments
Economics (except agriculture), total	185	128	57
Business economics	1	1	0
Consumer sciences	2	0	2
Economics	164	113	51
Economics and business administration	2	2	0
Industrial relations	6	3	3
Labor and industrial relations	2	2	0
Medical economics	1	1	0
Mineral economics	2	2	0
Pharmeceutical economics	2	1	1
Political economy	2	2	0
Resource economics	1	1	0
Geography, total	84	49	35
Geography	83	48	35
Geography and anthropology	1	1	0
History and philosophy of science, total	28	27	1
History and philosophy of science	6	6	0
History of health sciences	1	1	0
History of medicine	6	6	0
History of science	9	8	1
Logic and methodology of science	1	1	0
Philosophy of science	5	5	0
Linguistics, total	160	99	61
Biocommunications	4	4	0
Communication	15	7	8
Communication disorders	6	3	3
Communicative disorders	6	2	4
Linguistics	51	43	8
Mass communication	3	0	3
Psycholinguistics	1	1	0
Sensory communication	1	1	0
Speech	24	12	12
Speech and hearing science	26	17	9
Speech pathology	23	9	14
Political science, total	210	123	87
African affairs	2	0	2
Government	23	13	10
Government and foreign affairs	2	1	1
International affairs	2	1	1
International relations	5	3	2
International studies	1	1	0
Political science	141	92	49
Politics	5	3	2
Public administration	22	5	17
Public affairs	2	0	2
Public policy	5	4	1
Sociology, total	218	132	86
Afro-American studies	1	0	1
Asian studies	4	1	3
City planning	5	2	3
Community studies	3	1	2
Demography	1	0	1
Developmental sociology	1	1	0
East Asian studies	1	0	1
Family life	4	4	0
International service	1	1	0
Latin American studies	3	1	2
Planning and development	1	0	1
Population studies	3	3	0
Regional planning	7	3	4
Regional science	3	2	1
Rural sociology	2	2	0
Social relations	2	1	1
Sociology	142	96	46
Urban affairs	4	1	3
Urban planning	16	6	10
Urban studies	14	7	7
Sociology and anthropology, total	28	14	14
Sociology and anthropology	28	14	14
Social sciences, n.e.c., total	61	35	26
Criminology	9	4	5
Forensic sciences	3	1	2
Organizational behavior	1	0	1
Police science and administration	2	0	2
Science education	3	3	0
Social sciences	8	6	2
Social studies	2	2	0
Social welfare	3	1	2
Social work	28	16	12
Socio-medical sciences	2	2	0

Source: National Science Foundation

Conduct of the 1975 Survey

For the second straight year, the National Science Foundation conducted its GSSSP survey in two phases. The first phase, a Quick Response Survey (QRS), was mailed to 1,296 departments on September 10, 1975, in order to produce national estimates of graduate enrollment by broad field of science early enough in the academic year to meet the planning needs of science educators, administrators, and other policymakers. The department chairmen selected in the survey were asked to estimate the number of full- and part-time students, indicating how many of each were first-year students. For those departments reflecting large variances between actual fall 1974 data from the full-scale GSSSP survey and estimated 1975 data, followup telephone calls were made to clarify the differences or to make changes where necessary.

The main survey, or phase two, was mailed on November 10, 1975. A computer-produced listing of all known S/E graduate departments, Form 811, was mailed to each Survey Coordinator in the graduate and medical schools in the universe along with the appropriate number of departmental data sheets. (See example of Form 812 on page 75). The Coordinators were requested to update each Form 811 with any newly formed departments or to add those departments inadvertently omitted the previous year; to delete any departments no longer in existence; and to make note of any departmental name changes, merges, or splits. This updated Form 811 thus became the basis for the 1975 universe.

A Form 812 was distributed by the Coordinators to each department in the new universe. Once completed, the forms were returned to a contractor for screening, computer processing, editing, and tabulation. The 1975 data were compared to the 1974 responses; errors in addition were flagged for correction; unusual growth patterns or omissions of self-supported students were marked "possible error," and Form 812 facsimiles were returned to many departments for error resolution. Tabulations of the final results, including any changes resulting from the second departmental review, were published in the *Detailed Statistical Tables, Appendix III*, (NSF 76-318) in October 1976.

Response Rates

Mailout of the 1975 survey package to 7,658 departments in 355 institutions took place on November 10, 1975.[1] All responses were scheduled to be returned by January 31, 1976; however, less than 30 percent had responded at that time. By June 15, 1976, intensive followup procedures resulted in a 100-percent institutional response rate; i.e., at least one department from each institution responded.

Only 7 departments in 4 graduate schools and 30 departments in 3 medical schools failed to respond, or less than one-half of 1 percent. Of the 30 nonrespondent medical school departments, 12 responses were received after closeout and were added to the 1976 data base.

The chart indicates the level of departmental response at the critical stages of the survey. Early closeout was tentatively scheduled for April 15, 1976, but with less than an 80-percent response rate, an extension was clearly indicated. Intensive telephone followup was initiated, and by June 15, 1976, total departmental response (including imputed departments) reached 99.8 percent and the survey was considered complete.

Imputation and Its Effects

Of the 37 departments not responding to the 1975 survey, only 12, or 0.2 percent of the total, were also nonrespondents in 1974 and, thus, were not included in the imputed data. For the remaining 25 departments, 1975 data were imputed based on their 1974 responses. When 90 percent of the departments had been edited, early tabulations were produced to indicate rates of change in each field of science for full- and part-time enrollment and the number of postdoctorals. These rates were

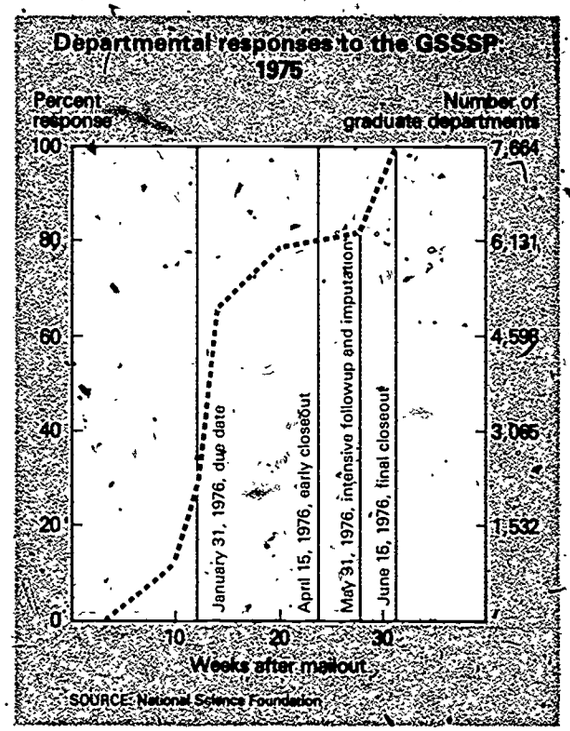


Table I-4. Imputation for total departmental nonresponse, by area of science and enrollment status: 1975

Area of science	Number of graduate departments		Total in survey			Number imputed			Imputation rate		
	In universe	Imputed	Full time	Part time	Postdoctorals	Full time	Part time	Postdoctorals	Full time	Part time	Postdoctorals
Total, all areas	7,664	25	210,641	80,021	17,122	454	24	36	0.22	0.03	0.21
Engineering	1,014	1	37,265	25,315	1,168	20	23	3	.05	.09	.26
Physical and environmental sciences	765	0	29,846	5,131	4,171	0	0	0	.00	.00	.00
Mathematical sciences	376	0	13,579	6,758	168	0	0	0	.00	.00	.00
Life sciences	4,109	23	56,449	12,437	10,947	311	1	33	.55	.01	.30
Psychology	280	1	19,701	7,422	385	123	0	0	.62	.00	.00
Social sciences	1,120	0	53,801	22,958	283	0	0	0	.00	.00	.00

SOURCE: National Science Foundation

[1] The final universe size of 354 institutions was established as follows: 3 new institutions were added after mailout—Creighton University, University of Texas at El Paso, and University of South Florida School of Medicine, 2 institutions—University of Portland and New England Institute—were deleted from the survey as their Ph D programs had been phased out, and finally, the CUNY schools, Brooklyn College and City College, were organized under the Graduate Center for more centralized reporting.

then applied to each nonrespondent department's actual 1974 response to impute a 1975 response, according to the following formula:

1974 response	X	Rate of change experienced by 90 percent of departments in each field of science	=	1975 imputed response

Table I-4 shows the relatively insignificant impact of imputation on the survey results.

Calculation of Trends—A Change in Concept

Index, 1967-74

Previous reports in this series have presented long-term trend data using 1967 as the base year, calculated on the concept of "matched" departments in several succeeding time periods and linked together through indexing. As described in the previous report, a "matched" department is one which has supplied survey data for each of the years in a particular time series.[2] By linking these series together, a chain, or index, was created to illustrate the changes in student support and postdoctoral characteristics relative to 1967. This technique proved to be the most viable way of determining long-term trends from this data series; however, because of limited coverage in certain disciplines in the earlier years, notably health science fields and the social sciences, a certain amount of statistical bias was inherent in the trend data.

Index, 1971-76

The same indexing methodology developed by NSF for long-term trends has been applied in this report to calculate trends for selected features of enrollment and postdoctoral appointments for the period 1971-76 to give a continuous 5-year indicator.

Although the GSSSP survey was not begun until 1972, the form in that year requested selected data items for 1971; namely, full-time enrollment in terms of Federal and non-Federal support; level of study; i.e., first-year and beyond, for both full- and part-time students; and postdoctoral employment. Thus trends for these items can be traced back to 1971 for all departments responding to the 1972 survey. At several points in this report, however, the data provided for 1971 were extracted from the tabulations of applications to NSF's Graduate Traineeship Program. The earlier series provided a more detailed breakdown of sources and types of major support than was available from the present survey series.

In order to construct the current index, the first time series to be considered is 1971-72, shown on table I-5 as time series number 1. Departments in 1971 and 1972 were automatically matched by the collection process inherent on the form itself. With 1971 as the base year, the formula for calculating the full-time enrollment index for 1972 is

$$\frac{\text{(Full-time enrollment in 1972 = 161,329)}}{\text{(Full-time enrollment in 1971 = 164,764)}} \times 100.0$$

$$= \text{INDEX 1972 or 97.9}$$

In series 2, enrollment data in matched departments represented 90 percent of the 1973 enrollment total and in series 3, 81 percent of the 1974 total. While coverage in these 2 years is adequate for constructing an index on certain key items for analysis, it is not representative enough as an indicator of change for examining the smaller components that make up the total, such as trends by area of science or by sources and types of major support. As stated earlier, the expansion of survey coverage each year during 1971 to 1974 precluded the utilization of total enrollment data reported in each year. As a substitute, only matched departments reporting consistently in each series of years could be used as the basis for analyzing trends. By 1974, coverage had stabilized to the extent that the enrollment data in series 4 represented 100 percent of the reported enrollment. To construct the index for 1976, the early estimates of enrollment provided by the QRS were utilized. In later reports, the actual enrollment data reported by the GSSSP will be substituted for the estimates.

G.I. Benefits

An item was included in the GSSSP survey in 1974 and again in 1975 to obtain information on the number of full- and part-time graduate students receiving G.I. benefits (item 7). After 2 years of collection efforts, this item was eliminated from the 1976 survey form because the data, when compared with the benchmark statistics from the Veterans Administration (VA), appeared to grossly understate the number of G.I. beneficiaries in graduate science programs. Although data were relatively comparable for the 2 years, the total number of S/E graduate students reported as having received G.I. benefits in 1975 was only 10,942, which is less than 4 percent of the total graduate enrollment covered by the GSSSP survey. According to statistics published by the VA,

Table I-5. Calculation of index numbers for full-time graduate enrollment: 1971-76

Year	Index number	Enrollment in matched departments in time series number					As percent of all full-time S/E enrollment in each year
		1	2	3	4	5	
1971	100.0	164,764					100.0
1972	97.9	161,329	151,052				100.0
1973	95.5		147,305	152,214			89.6
1974	99.8			159,161	195,859		81.3
1975	107.4				210,641	210,641	100.0
1976 est.	105.9					207,799	NA
Number of matched departments		[1]4,637	[2]4,112	[3]5,939	[4]7,664	[5]	

[1] *Graduate Science Education: Student Support and Postdoctorals, Fall 1972* (NSF 73-315), table A-13.
[2] *Graduate Science Education: Student Support and Postdoctorals, Fall 1973, Detailed Statistical Tables, Appendix III* (NSF 74-318A), table D-1.
[3] Ibid, *Fall 1974 Detailed Statistical Tables, Appendix III* (NSF 75-322), table F-1.
[4] Ibid, *Fall 1975 Detailed Statistical Tables, Appendixes III and IV*, (NSF 76-318), table E-1.
[5] Estimates made from 1976 QRS survey
SOURCE: National Science Foundation

[2] For further description of methodology, see National Science Foundation, *Graduate Science Education: Student Support and Postdoctorals, Fall 1974* (NSF 76-313), technical notes, pp. 39 and 40 (Washington, D.C. 20402: Supt. of Documents, U.S. Government Printing Office, 1976).

nearly 200,000 veterans received education benefits at the graduate level in all fields of study in fiscal year 1976.[3] This total included service personnel and veterans at all levels of graduate education, while figures from the GSSSP are limited to graduate enrollment in the sciences and engineering at Ph.D.-granting institutions.

Additional factors affected this underrepresentation. Of the 7,664 departments surveyed in 1975, 130, or less than 2 percent, stated that the number of students receiving G.I. benefits was "unknown," and many departments left the question blank, not indicating whether the number was "zero" or "unknown." Thus, no tabulations on this item have been published or analyzed for 1975, and it has been dropped from the survey form. The extremely low representation of S/E graduate students receiving educational benefits under the G.I. bill seems to indicate that reliable data can only be gathered through the cooperation of the registrars or from the various university offices of Veterans Affairs rather than at the department level.

The GSSSP Compared to Other Surveys of Graduate Enrollment

The National Center for Education Statistics (NCES) in the Department of Health, Education, and Welfare (HEW), conducts an annual survey of advanced degree enrollment which was expanded for the first time in 1975 to include Upper Division and Post-Baccalaureate Enrollment (UDPBE), as part of the Higher Education General Information Survey (HEGIS). That survey covers all universities and other 4-year institutions with enrollment at the upper level of undergraduate study and beyond, including first-professional students, whereas the GSSSP covers only those 354 institutions offering a Ph.D. in a science or engineering field.

NSF data are collected at the department level at Ph.D.-granting institutions only, whereas the UDPBE is completed by registrars according to enrollment in major fields of study. Also, there are definitional differences regarding full- and part-time enrollment as discussed in the 1974 report.[4] Because of these technical disparities, graduate enrollment data from the two surveys cannot be meaningfully compared.

[3] See Veterans Administration, *Information Bulletin* DVB, IB 04-77-1, table 4 (Washington, D.C., June 1976).

[4] National Science Foundation, *Graduate Science Education: Student Support and Postdoctorals, Fall 1974* (NSF 76-313), technical notes, p. 44, *op. cit.*

Another annual survey conducted by the Council of Graduate Schools (CGS) covered all 334 Council members in 1975. Members include graduate institutions that grant either the master's or doctorate as the highest degree. For a detailed description of the differences in definitions and taxonomy between the GSSSP and the CGS survey, please refer to the earlier report on Fall 1973 survey results.[5] Results of these two surveys, as they apply to Ph.D.-granting institutions, are compared in table I-6.

[5] See National Science Foundation, *Graduate Science Education Student Support and Postdoctorals, Fall 1973* (NSF 74-318), technical notes, pp. 32 and 33 (Washington, D.C. 20402. Supt. of Documents, U.S. Government Printing Office, 1975.)

Table I-6. Graduate enrollment as reported by the Council of Graduate Schools (CGS) compared with NSF's GSSSP survey in selected areas of science: 1974-75

[Percent change]

Area of science	Total graduate enrollment		First-year graduate enrollment	
	CGS	GSSSP	CGS	GSSSP
Engineering	2.0	7.7	-0.8	8.2
Physical sciences[1]	1.4	2.7	-1.2	5.0
Biological sciences[2]	[3]5.5	9.1	[3]4.4	5.5
Social sciences	[4]1.2	16.3	[4]-2.4	13.5

[1] Includes mathematical sciences.
[2] Includes psychology.
[3] Includes home economics (CGS only).
[4] Includes business and history (CGS only).
NOTE: Percent changes shown for CGS are for graduate departments reporting in both 1974 and 1975.
SOURCE: National Science Foundation and Council of Graduate Schools, *Communicator Special Report #6*, April 1976.

The GSSSP Compared to the QRS

Results from the Quick Response Survey (QRS), conducted at the beginning of the 1975-76 school year, were published by NSF in December 1975 and were based on a national sample of approximately 1,300 departments.[6] A comparison of the estimated changes in full-time enrollment based on the sample survey with the actual changes from the full-scale survey shows that only in the total for the life sciences did the final results come within the range predicted by the QRS at the 95-percent confidence interval (table I-7). In all other areas of science and in the total for full-time enrollment, the estimated percent change was outside the predicted range.

Table I-7. Full-time graduate science enrollment reported by the GSSSP as compared with the QRS: 1974-75

[Percent change]

Area of science	GSSSP 1974-75	QRS estimates	
		1974-75	Range of percent change at 95-percent confidence level
Total, all areas	7.5	4.1	3.4 to 4.7
Engineering	8.9	6.3	5.1 to 7.5
Physical, environmental, and mathematical sciences	1.8	.1	-.7 to .8
Life sciences	7.9	7.7	6.4 to 9.0
Psychology	4.1	-3.3	-6.9 to .2
Social sciences	12.7	4.9	3.8 to 6.0

SOURCE: National Science Foundation

Estimates for part-time enrollment provided by the QRS predicted very small increases for most areas of science and actual declines in the life sciences and in psychology, even though substantial growth had been recorded in these areas between 1973 and 1974. When the 1975 GSSSP results were tabulated, part-time enrollment showed a 14-percent increase rather than less than 1 percent, as predicted, with significant differences in the life sciences, psychology, and the social sciences, as indicated by table I-8.

First-year graduate enrollment actually rose 8 percent rather than by the 1 percent estimated in the QRS. The majority of this unexpected increase was in the social sciences. Psychology, rather than losing popularity as indicated by the QRS estimates, actually gained 13 percent more students above the 1974 level. Thus, total graduate enrollment increased in each area of science far beyond the expected growth rates as depicted by the QRS.

In an effort to determine the reasons for these large variances in enrollment, a postenumeration quality check of 100 departmental responses to the QRS was conducted through telephone calls to various department chairmen as well as reference to edit memos sent during actual 1975 survey editing. In general, many department chairmen felt that the QRS requested data so early in the academic year (within two weeks of the opening of the fall term) that the data were relatively unreliable in their opinion, especially for part-time enrollment. In cases where 1975 data were not available at all from department records, some adjustments were made by the chairmen by utilizing the 1974 pre-entered data. Increases or decreases were estimated on the basis of the previous year's level. For many departments, 1974 data did not include self-supported students; thus, 1975 estimates based on 1974 totals were also incorrect.

Modifications were made in the design and selection of the following year's sample for greater accuracy. The 1976 QRS consisted of a stratified random sample of approximately 1,300 departments based on the departmental and institutional population of the 1975 GSSSP. Between 1974 and 1975 the departmental population expanded by over 2 percent to 7,664. Since some departments ceased to exist or changed in composition, only 95 percent of the departments were matched between the 2 survey years. Changes were made, therefore, to the stratification methodology and the selection of the sample. The 1976 QRS provided enrollment estimates for nine areas of science, rather than the six covered in 1975, treating physical, environmental, and mathematical sciences, and biological, agricultural, and health sciences separately.

Results of the 1976 QRS have been published, reporting a slowdown in the growth rate in graduate science and engineering enrollment from 1975 to 1976.[7]

[6] See National Science Foundation, *Science Resources Studies Highlights*, "Graduate Science Enrollment in Fall 1975 is Up Again for Second Straight Year" (NSF 75-335) (Washington, D.C. 20550, Dec. 31, 1975.)

Table I-8. Part-time graduate enrollment reported by the GSSSP as compared with the QRS: 1974-75
[Percent change]

Area of science	GSSSP 1974-75	QRS estimates	
		1974-75	Range of percent change at 95-percent confidence level
Total, all areas	14.1	0.8	-0.8 to 2.5
Engineering	6.1	.2	-1.4 to 1.7
Physical, environmental, and mathematical sciences	5.9	.8	-1.0 to 2.7
Life sciences	16.7	-.3	-4.5 to 3.8
Psychology	21.1	-1.6	-9.8 to 6.5
Social sciences	25.9	2.9	-1.2 to 7.0

SOURCE: National Science Foundation

[7] See National Science Foundation *Science Resources Studies Highlights*, "Graduate Science and Engineering Enrollment Up Only One Percent in 1976" (NSF 77-302) (Washington, D.C. 20550, Feb. 4, 1977.)

APPENDIX II
Classification of Institutions in the Survey

Institutions participating in the survey were classified in the following manner:

(1) *First 20.* These are the 20 institutions chosen most frequently by NSF Fellows during the period 1968-75. The NSF Graduate Fellowship Program awards stipends to individuals who may then select the graduate institutions they wish to attend. On the basis of these selections, the number of Fellows attending each institution during the period 1968-75 is tallied, placed in rank order, and the top 20 are identified.

(2) *Developing.* The 100 institutions that began awarding science Ph.D.'s in academic year 1960-61 were considered to be developing graduate institutions for this report. Data for this comparison were provided by the NCES.

(3) *Medical.* The 105 medical schools that awarded science Ph.D.'s were tabulated separately from their parent institutions in 1975 so that their characteristics could be examined as a group. Separate data from medical schools have been collected since 1973, and trends may now be more meaningfully analyzed.

(4) *Intermediate.* The remaining 129 schools supplying data for the 1975 survey are termed "intermediate."

The 354 doctorate-granting institutions listed here may differ from similar listings published for the following reasons:

(1) Differences in classifying branches, affiliates, or other organizational components of university systems; (2) variations in definitions of science and engineering fields; (3) differences in the time period covered by the classification (e.g., single year or longer period); and (4) differences in classifications based on level of degree offered or level of degree granted, respectively, in a particular period. Symbols behind each name refer to the following classifications: (1) *First 20* refer to institutions chosen most frequently by NSF Fellows from 1968 through 1975; (2) D—*Developing* institutions, those which granted science Ph.D.'s beginning in 1960-61; (3) M—*Medical Schools;* and (4) I—*Intermediate,* all remaining institutions granting doctorates in science and/or engineering.

ALABAMA

AUBURN UNIVERSITY (I)
UNIVERSITY OF ALABAMA - BIRMINGHAM (O)
UNIVERSITY OF ALABAMA - HUNTSVILLE (O)
UNIVERSITY OF ALABAMA - TUSCALOOSA (I)
UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE (M)

ALASKA

UNIVERSITY OF ALASKA (I)

ARIZONA

ARIZONA STATE UNIVERSITY (O)
NORTHERN ARIZONA UNIVERSITY (O)
UNIVERSITY OF ARIZONA (I)
UNIVERSITY OF ARIZONA COLLEGE OF MEDICINE (M)

ARKANSAS

UNIVERSITY OF ARKANSAS (I)
UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE (M)

CALIFORNIA

CALIFORNIA INSTITUTE OF TECHNOLOGY (FIRST 20)
CLAREMONT GRADUATE SCHOOL (I)
LOMA LINDA UNIVERSITY (O)
LOMA LINDA UNIVERSITY SCHOOL OF MEDICINE (M)
NAVAL POSTGRADUATE SCHOOL (I)
RAND GRADUATE INSTITUTE (O)
ROSEMEAD GRADUATE SCHOOL OF PSYCHOLOGY (O)
SAN DIEGO STATE UNIVERSITY (O)
STANFORD UNIVERSITY (FIRST 20)
STANFORD UNIVERSITY SCHOOL OF MEDICINE (M)
UNIVERSITY OF CALIFORNIA - BERKELEY (FIRST 20)
UNIVERSITY OF CALIFORNIA - DAVIS (I)
UNIVERSITY OF CALIFORNIA - DAVIS SCHOOL OF MEDICINE (M)
UNIVERSITY OF CALIFORNIA - IRVINE (O)
UNIVERSITY OF CALIFORNIA - IRVINE CALIFORNIA COLLEGE OF MEDICINE (M)
UNIVERSITY OF CALIFORNIA - LOS ANGELES (FIRST 20)
UNIVERSITY OF CALIFORNIA - LOS ANGELES SCHOOL OF MEDICINE (M)
UNIVERSITY OF CALIFORNIA - RIVERSIDE (O)
UNIVERSITY OF CALIFORNIA - SAN DIEGO (FIRST 20)
UNIVERSITY OF CALIFORNIA - SAN DIEGO SCHOOL OF MEDICINE (M)
UNIVERSITY OF CALIFORNIA - SAN FRANCISCO SCHOOL OF MEDICINE (M)
UNIVERSITY OF CALIFORNIA - SANTA BARBARA (O)
UNIVERSITY OF CALIFORNIA - SANTA CRUZ (O)
UNIVERSITY OF SANTA CLARA (O)
UNIVERSITY OF SOUTHERN CALIFORNIA (I)
UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE (M)
UNIVERSITY OF THE PACIFIC (O)
US INTERNATIONAL UNIVERSITY (O)

COLORADO

COLORADO SCHOOL OF MINES (I)
COLORADO STATE UNIVERSITY (I)
UNIVERSITY OF COLORADO (I)
UNIVERSITY OF COLORADO SCHOOL OF MEDICINE (M)
UNIVERSITY OF DENVER (I)
UNIVERSITY OF NORTHERN COLORADO (O)

CONNECTICUT

UNIVERSITY OF CONNECTICUT (I)
UNIVERSITY OF CONNECTICUT SCHOOL OF MEDICINE (M)
WESLEYAN UNIVERSITY (O)
YALE UNIVERSITY (FIRST 20)
YALE UNIVERSITY SCHOOL OF MEDICINE (M)

DELAWARE

UNIVERSITY OF DELAWARE (I)

DISTRICT OF COLUMBIA

AMERICAN UNIVERSITY (I)
CATHOLIC UNIVERSITY OF AMERICA (I)
GEORGE WASHINGTON UNIVERSITY (I)
GEORGE WASHINGTON UNIVERSITY SCHOOL OF MEDICINE (M)
GEORGETOWN UNIVERSITY (I)
GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE (M)
HOWARD UNIVERSITY (I)
HOWARD UNIVERSITY COLLEGE OF MEDICINE (M)

FLORIDA

FLORIDA INSTITUTE OF TECHNOLOGY (O)
FLORIDA STATE UNIVERSITY (I)
NOVA UNIVERSITY (O)
UNIVERSITY OF FLORIDA (I)
UNIVERSITY OF FLORIDA COLLEGE OF MEDICINE (M)
UNIVERSITY OF MIAMI (I)
UNIVERSITY OF MIAMI SCHOOL OF MEDICINE (M)
UNIVERSITY OF SOUTH FLORIDA (O)
UNIVERSITY OF SOUTH FLORIDA COLLEGE OF MEDICINE (M)

GEORGIA

ATLANTA UNIVERSITY (O)
EMORY UNIVERSITY (I)
EMORY UNIVERSITY SCHOOL OF MEDICINE (M)
GEORGIA INSTITUTE OF TECHNOLOGY (I)
GEORGIA STATE UNIVERSITY (O)
MEDICAL COLLEGE OF GEORGIA (M)
UNIVERSITY OF GEORGIA (I)

HAWAII

UNIVERSITY OF HAWAII (I)
UNIVERSITY OF HAWAII SCHOOL OF MEDICINE (M)

IDAHO

IDAHO STATE UNIVERSITY (O)
UNIVERSITY OF IDAHO (O)

ILLINOIS

DEPAUL UNIVERSITY (O)
ILLINOIS INSTITUTE OF TECHNOLOGY (I)
ILLINOIS STATE UNIVERSITY (O)
LOYOLA UNIVERSITY - CHICAGO (I)
LOYOLA UNIVERSITY STRITCH SCHOOL OF MEDICINE - CHICAGO (M)
NORTHERN ILLINOIS UNIVERSITY (O)
NORTHWESTERN UNIVERSITY (I)
NORTHWESTERN UNIVERSITY MEDICAL SCHOOL (M)
RUSH MEDICAL COLLEGE (M)
SOUTHERN ILLINOIS UNIVERSITY (I)
UNIVERSITY OF CHICAGO (FIRST 20)
UNIVERSITY OF CHICAGO PRITZKER SCHOOL OF MEDICINE (M)
UNIVERSITY OF HEALTH SCIENCES CHICAGO MEDICAL SCHOOL (M)
UNIVERSITY OF ILLINOIS - CHICAGO CIRCLE (O)
UNIVERSITY OF ILLINOIS - URBANA (FIRST 20)
UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE (M)

INDIANA

BALL STATE UNIVERSITY (O)
INDIANA STATE UNIVERSITY (O)
INDIANA UNIVERSITY (I)
INDIANA UNIVERSITY SCHOOL OF MEDICINE (M)
PURDUE UNIVERSITY (FIRST 20)
UNIVERSITY OF NOTRE DAME (I)

IOWA

IOWA STATE UNIVERSITY (I)
UNIVERSITY OF IOWA (I)
UNIVERSITY OF IOWA COLLEGE OF MEDICINE (M)

KANSAS

KANSAS STATE UNIVERSITY (I)
UNIVERSITY OF KANSAS (I)
UNIVERSITY OF KANSAS SCHOOL OF MEDICINE (M)
WICHITA STATE UNIVERSITY (O)

KENTUCKY

UNIVERSITY OF KENTUCKY (I)
UNIVERSITY OF KENTUCKY COLLEGE OF MEDICINE (M)
UNIVERSITY OF LOUISVILLE (I)
UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE (M)

LOUISIANA

LOUISIANA STATE UNIVERSITY - BATON ROUGE (I)
LOUISIANA STATE UNIVERSITY - NEW ORLEANS (O)
LOUISIANA STATE UNIVERSITY - NEW ORLEANS SCHOOL OF MEDICINE (M)
LOUISIANA STATE UNIVERSITY - SHREVEPORT SCHOOL OF MEDICINE (M)
LOUISIANA TECH UNIVERSITY (O)
LOYOLA UNIVERSITY - NEW ORLEANS (O)
NORTHEAST LOUISIANA UNIVERSITY (O)
TULANE UNIVERSITY (I)
TULANE UNIVERSITY SCHOOL OF MEDICINE (M)
UNIVERSITY OF SOUTHWESTERN LOUISIANA (O)

MAINE

UNIVERSITY OF MAINE (I)

MARYLAND

JOHNS HOPKINS UNIVERSITY (FIRST 20)
JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE (M)
UNIVERSITY OF MARYLAND - BALTIMORE CITY (O)
UNIVERSITY OF MARYLAND - BALTIMORE COUNTY (O)
UNIVERSITY OF MARYLAND - COLLEGE PARK (I)
UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE (M)

MASSACHUSETTS

BOSTON COLLEGE (I)
BOSTON UNIVERSITY (I)
BOSTON UNIVERSITY SCHOOL OF MEDICINE (M)
BRANDEIS UNIVERSITY (I)
CLARK UNIVERSITY (I)
HARVARD MEDICAL SCHOOL (M)
HARVARD UNIVERSITY (FIRST 20)
MASSACHUSETTS COLLEGE OF PHARMACY (I)
MASSACHUSETTS INSTITUTE OF TECHNOLOGY (FIRST 20)
NORTHEASTERN UNIVERSITY (O)
SMITH COLLEGE (O)
TUFTS UNIVERSITY (I)
TUFTS UNIVERSITY SCHOOL OF MEDICINE (M)
UNIVERSITY OF LOWELL (O)
UNIVERSITY OF MASSACHUSETTS (I)
UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL (M)
WOODS HOLE OCEANOGRAPHIC INSTITUTE (O)
WORCESTER POLYTECHNIC INSTITUTE (O)

MICHIGAN

MICHIGAN STATE UNIVERSITY (FIRST 20)
MICHIGAN TECHNOLOGICAL UNIVERSITY (D)
OAKLAND UNIVERSITY (D)
UNIVERSITY OF DETROIT (D)
UNIVERSITY OF MICHIGAN (FIRST 20)
UNIVERSITY OF MICHIGAN MEDICAL SCHOOL (M)
WAYNE STATE UNIVERSITY (I)
WAYNE STATE UNIVERSITY SCHOOL OF MEDICINE (M)
WESTERN MICHIGAN UNIVERSITY (D)

MINNESOTA

UNIVERSITY OF MINNESOTA (I)
UNIVERSITY OF MINNESOTA - MAYO GRADUATE SCHOOL OF MEDICINE (M)
UNIVERSITY OF MINNESOTA - MINNEAPOLIS MEDICAL SCHOOL (M)

MISSISSIPPI

MISSISSIPPI STATE UNIVERSITY (I)
UNIVERSITY OF MISSISSIPPI (I)
UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE (M)
UNIVERSITY OF SOUTHERN MISSISSIPPI (D)

MISSOURI

ST LOUIS UNIVERSITY (I)
ST LOUIS UNIVERSITY SCHOOL OF MEDICINE (M)
UNIVERSITY OF MISSOURI - COLUMBIA (I)
UNIVERSITY OF MISSOURI - KANSAS CITY (D)
UNIVERSITY OF MISSOURI - ROLLA (I)
UNIVERSITY OF MISSOURI - ST LOUIS (D)
UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE (M)
WASHINGTON UNIVERSITY (I)
WASHINGTON UNIVERSITY SCHOOL OF MEDICINE (M)

MONTANA

MONTANA STATE UNIVERSITY (I)
UNIVERSITY OF MONTANA (D)

NEBRASKA

CREIGHTON UNIVERSITY (B)
CREIGHTON UNIVERSITY SCHOOL OF MEDICINE (M)
UNIVERSITY OF NEBRASKA (I)
UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE (M)

NEVADA

UNIVERSITY OF NEVADA (D)

NEW HAMPSHIRE

DARTMOUTH COLLEGE (D)
DARTMOUTH MEDICAL SCHOOL (M)
UNIVERSITY OF NEW HAMPSHIRE (I)

NEW JERSEY

COLLEGE OF MEDICINE AND DENTISTRY OF NEW JERSEY, NEW JERSEY MEDICAL SCHOOL (M)
COLLEGE OF MEDICINE AND DENTISTRY OF NEW JERSEY, RUTGERS MEDICAL SCHOOL (M)
NEWARK COLLEGE OF ENGINEERING (D)
PRINCETON UNIVERSITY (FIRST 20)
RUTGERS UNIVERSITY (I)
SETON HALL UNIVERSITY (D)
STEVENS INSTITUTE OF TECHNOLOGY (I)

NEW MEXICO

NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY (D)
NEW MEXICO STATE UNIVERSITY (I)
UNIVERSITY OF NEW MEXICO (I)
UNIVERSITY OF NEW MEXICO SCHOOL OF MEDICINE (M)

NEW YORK

ADELPHI UNIVERSITY (I)
ALFRED UNIVERSITY (I)
CLARKSON COLLEGE OF TECHNOLOGY (D)
COLUMBIA UNIVERSITY (FIRST 20)
COLUMBIA UNIVERSITY COLLEGE OF PHARMACEUTICAL SCIENCES (I)
COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS (M)
COLUMBIA UNIVERSITY TEACHERS COLLEGE (D)
COOPER UNION (D)
CORNELL UNIVERSITY (FIRST 20)
CORNELL UNIVERSITY MEDICAL COLLEGE (M)
CUNY - MOUNT SINAI SCHOOL OF MEDICINE (M)
CUNY GRADUATE SCHOOL AND UNIVERSITY CENTER (D)
FORDHAM UNIVERSITY (I)
HOFSTRA UNIVERSITY (D)
NEW SCHOOL FOR SOCIAL RESEARCH (I)
NEW YORK MEDICAL COLLEGE (M)
NEW YORK UNIVERSITY (I)
NEW YORK UNIVERSITY SCHOOL OF MEDICINE (M)
POLYTECNIC INSTITUTE OF BROOKLYN (I)
RENSSELAER POLYTECHNIC INSTITUTE (I)
ROCKEFELLER UNIVERSITY (I)
ST BONAVENTURE UNIVERSITY (I)
ST JOHNS UNIVERSITY (I)
SUNY - ALBANY (D)
SUNY - BINGHAMPTON (D)

NEW YORK - CONTINUED

SUNY - BUFFALO (I)
SUNY - BUFFALO SCHOOL OF MEDICINE (M)
SUNY - DOWNSTATE MEDICAL CENTER (M)
SUNY - STONY BROOK (D)
SUNY - STONY BROOK SCHOOL OF MEDICINE (M)
SUNY - UPSTATE MEDICAL CENTER (M)
SUNY COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY (I)
SYRACUSE UNIVERSITY (I)
UNION COLLEGE (I)
UNION UNIVERSITY - ALBANY MEDICAL COLLEGE (M)
UNIVERSITY OF ROCHESTER (I)
UNIVERSITY OF ROCHESTER SCHOOL OF MEDICINE AND DENTISTRY (M)
YESHIVA UNIVERSITY (I)
YESHIVA UNIVERSITY - ALBERT EINSTEIN COLLEGE OF MEDICINE (M)

NORTH CAROLINA

DUKE UNIVERSITY (M)
DUKE UNIVERSITY SCHOOL OF MEDICINE (M)
NORTH CAROLINA STATE UNIVERSITY - RALEIGH (I)
UNIVERSITY OF NORTH CAROLINA - CHAPEL HILL (I)
UNIVERSITY OF NORTH CAROLINA - GREENSBORO (D)
UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE (M)
WAKE FOREST UNIVERSITY (D)
WAKE FOREST UNIVERSITY - BOWMAN GRAY SCHOOL OF MEDICINE (M)

NORTH DAKOTA

NORTH DAKOTA STATE UNIVERSITY (D)
UNIVERSITY OF NORTH DAKOTA (I)
UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE (M)

OHIO

AIR FORCE INSTITUTE OF TECHNOLOGY (D)
BOWLING GREEN STATE UNIVERSITY (D)
CASE WESTERN RESERVE UNIVERSITY (I)
CASE WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE (M)
CLEVELAND STATE UNIVERSITY (D)
KENT STATE UNIVERSITY (D)
MIAMI UNIVERSITY (D)
OHIO STATE UNIVERSITY (I)
OHIO STATE UNIVERSITY COLLEGE OF MEDICINE (M)
OHIO UNIVERSITY (I)
UNIVERSITY OF AKRON (I)
UNIVERSITY OF CINCINNATI (I)
UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE (M)
UNIVERSITY OF DAYTON (D)
UNIVERSITY OF TOLEDO (D)

OKLAHOMA

OKLAHOMA STATE UNIVERSITY (I)
UNIVERSITY OF OKLAHOMA (I)
UNIVERSITY OF OKLAHOMA COLLEGE OF MEDICINE (M)
UNIVERSITY OF TULSA (D)

OREGON

OREGON GRADUATE CENTER (D)
OREGON STATE UNIVERSITY (I)
PORTLAND STATE UNIVERSITY (D)
UNIVERSITY OF OREGON (I)
UNIVERSITY OF OREGON MEDICAL SCHOOL (M)

PENNSYLVANIA

BRYN MAWR COLLEGE (I)
CARNEGIE-MELLON UNIVERSITY (I)
DREXEL UNIVERSITY (D)
DUQUESNE UNIVERSITY (I)
HAHNEMANN MEDICAL COLLEGE AND HOSPITAL (M)
LEHIGH UNIVERSITY (I)
MEDICAL COLLEGE OF PENNSYLVANIA (M)
PENNSYLVANIA STATE UNIVERSITY (I)
PENNSYLVANIA STATE UNIVERSITY COLLEGE OF MEDICINE (M)
PHILADELPHIA COLLEGE OF PHARMACY AND SCIENCE (I)
TEMPLE UNIVERSITY (I)
TEMPLE UNIVERSITY SCHOOL OF MEDICINE (M)
THOMAS JEFFERSON UNIVERSITY - JEFFERSON MEDICAL COLLEGE (M)
UNIVERSITY OF PENNSYLVANIA (FIRST 20)
UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE (M)
UNIVERSITY OF PITTSBURGH (I)
UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE (M)
VILLANOVA UNIVERSITY (D)

RHODE ISLAND

BROWN UNIVERSITY (I)
PROVIDENCE COLLEGE (D)
UNIVERSITY OF RHODE ISLAND (I)

SOUTH CAROLINA

CLEMSON UNIVERSITY (D)
MEDICAL UNIVERSITY OF SOUTH CAROLINA (M)
UNIVERSITY OF SOUTH CAROLINA (I)

SOUTH DAKOTA

SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY (O)
SOUTH DAKOTA STATE UNIVERSITY (I)
UNIVERSITY OF SOUTH DAKOTA (I)
UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICINE (M)

TENNESSEE

GEORGE PEABODY COLLEGE FOR TEACHERS (I)
MEHARRY MEDICAL COLLEGE (M)
MEMPHIS STATE UNIVERSITY (D)
TENNESSEE TECHNOLOGIC, UNIVERSITY (O)
UNIVERSITY OF TENNESS (I)
UNIVERSITY OF TENNESS - COLLEGE OF MEDICINE (M)
VANDERBILT UNIVERSITY (I)
VANDERBILT UNIVERSITY MEDICAL SCHOOL (M)

TEXAS

BAYLOR COLLEGE OF MEDICINE (M)
BAYLOR UNIVERSITY (I)
EAST TEXAS STATE UNIVERSITY (O)
LAMAR UNIVERSITY (O)
NORTH TEXAS STATE UNIVERSITY (O)
RICE UNIVERSITY (I)
SAM HOUSTON STATE UNIVERSITY (O)
SOUTHERN METHODIST UNIVERSITY (O)
TEXAS A&M UNIVERSITY (I)
TEXAS CHRISTIAN UNIVERSITY (O)
TEXAS TECH UNIVERSITY (I)
TEXAS TECH UNIVERSITY SCHOOL OF MEDICINE (M)
TEXAS WOMAN'S UNIVERSITY (O)
UNIVERSITY OF HOUSTON (I)
UNIVERSITY OF TEXAS - ARLINGTON (O)
UNIVERSITY OF TEXAS - AUSTIN (I)
UNIVERSITY OF TEXAS - DALLAS (O)
UNIVERSITY OF TEXAS - EL PASO (O)
UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER - DALLAS (M)
UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER - HOUSTON (M)
UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER - SAN ANTONIO (M)
UNIVERSITY OF TEXAS MEDICAL BRANCH - GALVESTON (M)

UTAH

BRIGHAM YOUNG UNIVERSITY (I)
UNIVERSITY OF UTAH (I)
UNIVERSITY OF UTAH COLLEGE OF MEDICINE (M)
UTAH STATE UNIVERSITY (I)

VERMONT

UNIVERSITY OF VERMONT (O)
UNIVERSITY OF VERMONT COLLEGE OF MEDICINE (M)

VIRGINIA

COLLEGE OF WILLIAM AND MARY (O)
INSTITUTE OF TEXTILE TECHNOLOGY (O)
OLD DOMINION UNIVERSITY (O)
UNIVERSITY OF VIRGINIA (I)
UNIVERSITY OF VIRGINIA SCHOOL OF MEDICINE (M)
VIRGINIA COMMONWEALTH UNIVERSITY (I)
VIRGINIA COMMONWEALTH UNIVERSITY SCHOOL OF MEDICINE (M)
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY (I)

WASHINGTON

UNIVERSITY OF WASHINGTON (FIRST 20)
UNIVERSITY OF WASHINGTON SCHOOL OF MEDICINE (M)
WASHINGTON STATE UNIVERSITY (I)

WEST VIRGINIA

WEST VIRGINIA UNIVERSITY (I)
WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE (M)

WISCONSIN

INSTITUTE OF PAPER CHEMISTRY (I)
MARQUETTE UNIVERSITY (I)
MEDICAL COLLEGE OF WISCONSIN (M)
UNIVERSITY OF WISCONSIN - MADISON (FIRST 20)
UNIVERSITY OF WISCONSIN - MILWAUKEE (I)
UNIVERSITY OF WISCONSIN MEDICAL SCHOOL (M)

WYOMING

UNIVERSITY OF WYOMING (I)

PUERTO RICO

UNIVERSITY OF PUERTO RICO (O)
UNIVERSITY OF PUERTO RICO SCHOOL OF MEDICINE (M)

Ranking of 100 Leading Institutions in Graduate Science Enrollment

Each year NSF ranks the 100 leading Ph.D.-granting institutions based on the total graduate enrollment they reported in the sciences and engineering. Medical school graduate enrollment is included with that of the parent institution for purposes of ranking.

For the third straight year the University of California at Berkeley retained its first place position, while all other positions in the top 10 shifted somewhat. The University of Illinois and the University of Michigan, occupying second and third place last year, dropped to fourth and eighth, respectively. They were replaced by the University of Wisconsin and the University of Minnesota. The most significant change in rank occurred when New York University (NYU) moved from 44th to 10th place, a change which was traced to the increased efficiency in reporting techniques utilized by NYU in 1975.

The top 100 Ph.D.-granting institutions accounted for 75 percent of the total of all graduate science enrollment in 1975, the same as in 1974. Seventy-seven percent of the full-time students were enrolled in the top 100, as were 70 percent of the part-timers, basically the same percentages as in 1974. More detailed data on each institution's response can be obtained by contacting Mrs. Susan G. Broyles, Division of Science Resources Studies (202) 634-4673.

Ranking of 100 institutions leading in graduate science enrollment: 1975
[Includes medical school affiliates]

Institution name	Graduate enrollment			
	Rank	Total	Full time	Part time
University of California, Berkeley		5,582	5,391	191
Total	1	5,582	5,391	191
University of Wisconsin, Madison		5,002	4,472	530
University of Wisconsin Medical School		344	336	8
Total	2	5,346	4,808	538
University of Minnesota		4,271	3,600	671
University of Minnesota, Minneapolis Medical School		749	617	132
University of Minnesota, Mayo Graduate School of Medicine		184	184	0
Total	3	5,204	4,401	803
University of Illinois, Urbana		4,386	4,200	186
University of Illinois College of Medicine		779	586	193
Total	4	5,165	4,786	379
University of Southern California		4,899	2,532	2,367
University of Southern California School of Medicine		93	93	0
Total	5	4,992	2,625	2,367
Rutgers University		4,499	2,029	2,470
College of Medicine and Dentistry of New Jersey, Rutgers Medical School		95	87	8
Total	6	4,594	2,116	2,478
Ohio State University		4,280	3,550	730
Ohio State University College of Medicine		232	217	15
Total	7	4,512	3,767	745
University of Michigan		4,224	4,005	219
University of Michigan Medical School		224	200	24
Total	8	4,448	4,205	243
University of California, Los Angeles		4,082	3,830	252
University of California, Los Angeles School of Medicine		227	219	8
Total	9	4,309	4,049	260
New York University		4,065	1,721	2,344
New York University School of Medicine		233	161	72
Total	10	4,298	1,882	2,416
CUNY Graduate School and University Center		3,906	1,702	2,204
CUNY, Mount Sinai School of Medicine		60	56	4
Total	11	3,966	1,758	2,208
University of Texas, Austin		3,246	2,780	466
University of Texas Health Science Center, Houston		169	129	40
University of Texas Health Science Center, San Antonio		81	75	6
University of Texas Health Science Center, Dallas		210	193	17
University of Texas Medical Branch, Galveston		114	82	32
Total	12	3,820	3,259	561
Pennsylvania State University		3,292	2,392	900
Pennsylvania State University College of Medicine		81	76	5
Total	13	3,373	2,468	905

Ranking of 100 institutions leading in graduate science enrollment: 1975—Con.

Institution name	Graduate enrollment			
	Rank	Total	Full time	Part time
Michigan State University		3,350	2,965	385
Total	14	3,350	2,965	385
Massachusetts Institute of Technology		3,345	3,345	0
Total	15	3,345	3,345	0
University of Colorado		3,154	2,494	660
University of Colorado School of Medicine		181	159	22
Total	16	3,335	2,653	682
Purdue University		3,312	3,063	249
Total	17	3,312	3,063	249
Stanford University		3,010	2,694	316
Stanford University School of Medicine		204	202	2
Total	18	3,214	2,896	318
University of Washington		2,937	2,380	557
University of Washington School of Medicine		262	258	4
Total	19	3,199	2,638	561
University of Maryland, College Park		3,042	1,881	1,161
University of Maryland School of Medicine		116	89	27
Total	20	3,158	1,970	1,188
Northeastern University		3,063	711	2,352
Total	21	3,063	711	2,352
Cornell University		2,789	2,778	11
Cornell University Medical College		113	113	0
Total	22	2,902	2,891	11
Texas A&M University		2,820	2,233	587
Total	23	2,820	2,233	587
University of Tennessee		2,650	1,964	686
University of Tennessee College of Medicine		124	98	26
Total	24	2,774	2,062	712
University of Arizona		2,626	2,132	494
University of Arizona College of Medicine		79	73	6
Total	25	2,705	2,205	500

Institution name	Graduate enrollment			
	Rank	Total	Full time	Part time
University of Pittsburgh		2,609	1,528	1,081
University of Pittsburgh School of Medicine		77	69	8
Total	26	2,686	1,597	1,089
Columbia University		2,165	1,664	501
Columbia University College of Physicians and Surgeons		441	324	117
Total	27	2,606	1,988	618
Polytechnic Institute of New York		2,575	477	2,098
Total	28	2,575	477	2,098
American University		2,529	1,051	1,478
Total	29	2,529	1,051	1,478
Wayne State University		2,247	1,404	843
Wayne State University School of Medicine		278	231	47
Total	30	2,525	1,635	890
San Diego State University		2,388	862	1,526
Total	31	2,388	862	1,526
University of Wisconsin, Milwaukee		2,349	1,400	949
Total	32	2,349	1,400	949
University of California, Davis		2,285	2,126	159
University of California, Davis School of Medicine		31	31	0
Total	33	2,316	2,157	159
University of North Carolina, Chapel Hill		2,081	1,827	254
University of North Carolina School of Medicine		211	204	7
Total	34	2,292	2,031	261
University of Pennsylvania		2,053	1,453	600
University of Pennsylvania School of Medicine		226	221	5
Total	35	2,279	1,674	605
University of Florida		2,126	1,818	308
University of Florida College of Medicine		126	118	8
Total	36	2,252	1,936	316

Ranking of 100 institutions leading in graduate science enrollment: 1975—Con.

Institution name	Graduate enrollment			
	Rank	Total	Full time	Part time
George Washington University		2,042	874	1,168
George Washington University School of Medicine		153	123	30
Total	37	2,195	997	1,198
University of Missouri, Columbia		1,960	1,529	431
University of Missouri School of Medicine		202	173	29
Total	38	2,162	1,702	460
Virginia Polytechnic Institute and State University		2,110	1,521	589
Total	39	2,110	1,521	589
Iowa State University		2,108	1,633	475
Total	40	2,108	1,633	475
Indiana University		1,847	1,512	335
Indiana University School of Medicine		242	230	12
Total	41	2,089	1,742	347
SUNY, Buffalo		1,856	1,342	514
SUNY, Buffalo School of Medicine		199	167	32
Total	42	2,055	1,509	546
Syracuse University		2,038	1,375	663
Total	43	2,038	1,375	663
SUNY, Stony Brook		1,929	1,344	585
SUNY, Stony Brook School of Medicine		41	37	4
Total	44	1,970	1,381	589
University of Connecticut		1,887	1,384	503
University of Connecticut School of Medicine		72	72	0
Total	45	1,959	1,456	503
Harvard University		1,637	1,607	30
Harvard Medical School		317	316	1
Total	46	1,954	1,923	31
University of Kansas		1,815	1,442	373
University of Kansas School of Medicine		96	88	8
Total	47	1,911	1,530	381

Institution name	Graduate enrollment			
	Rank	Total	Full time	Part time
North Carolina State University, Raleigh		1,872	1,515	357
Total	48	1,872	1,515	357
University of Cincinnati		1,627	1,139	488
University of Cincinnati College of Medicine		231	185	46
Total	49	1,858	1,324	534
Colorado State University		1,803	1,612	191
Total	50	1,803	1,612	191
University of Massachusetts		1,775	1,616	159
University of Massachusetts Medical School		3	3	0
Total	51	1,778	1,619	159
University of Houston		1,743	1,007	736
Total	52	1,743	1,007	736
Oklahoma State University		1,697	1,247	450
Total	53	1,697	1,247	450
University of Oklahoma		1,560	1,084	476
University of Oklahoma College of Medicine		125	116	9
Total	54	1,685	1,200	485
Georgia Institute of Technology		1,675	1,164	511
Total	55	1,675	1,164	511
University of Puerto Rico		1,299	949	350
University of Puerto Rico School of Medicine		365	326	39
Total	56	1,664	1,275	389
Florida State University		1,655	1,465	190
Total	57	1,655	1,465	190
Arizona State University		1,621	1,039	582
Total	58	1,621	1,039	582
University of South Carolina		1,603	1,046	557
Total	59	1,603	1,046	557

Ranking of 100 institutions leading in graduate science enrollment: 1975—Con.

Institution name	Rank	Graduate enrollment		
		Total	Full time	Part time
University of Chicago		1,582	1,522	60
University of Chicago Pritzker School of Medicine		0	0	0
Total	60	1,582	1,522	60
Columbia University Teachers College		1,560	760	800
Total	61	1,560	760	800
University of Iowa		1,101	924	177
University of Iowa College of Medicine		444	385	59
Total	62	1,545	1,309	236
West Virginia University		1,434	1,180	254
West Virginia University School of Medicine		93	85	8
Total	63	1,527	1,265	262
New School for Social Research		1,508	261	1,247
Total	64	1,508	261	1,247
Oregon State University		1,507	1,330	177
Total	65	1,507	1,330	177
University of Georgia		1,494	1,396	98
Total	66	1,494	1,396	98
University of Hawaii		1,378	1,228	150
University of Hawaii School of Medicine		115	110	5
Total	67	1,493	1,338	155
University of Kentucky		1,397	1,131	266
University of Kentucky College of Medicine		90	86	4
Total	68	1,487	1,217	270
St. John's University		1,466	971	495
Total	69	1,466	971	495
University of Nebraska		1,227	869	358
University of Nebraska College of Medicine		191	99	92
Total	70	1,418	968	450
University of Utah		1,276	1,087	189
University of Utah College of Medicine		113	108	5
Total	71	1,389	1,195	194
Washington State University		1,387	1,221	166
Total	72	1,387	1,221	166
Washington University		1,127	890	237
Washington University School of Medicine		202	200	2
Total	73	1,329	1,090	239
Kansas State University		1,295	1,062	233
Total	74	1,295	1,062	233
Yale University		997	979	18
Yale University School of Medicine		296	296	0
Total	75	1,293	1,275	18
University of Illinois, Chicago Circle		1,289	1,060	229
Total	76	1,289	1,060	229
Johns Hopkins University		1,185	1,053	132
Johns Hopkins University School of Medicine		101	99	2
Total	77	1,286	1,152	134
Northwestern University		1,144	1,015	129
Northwestern University Medical School		138	134	4
Total	78	1,282	1,149	133
University of California, Santa Barbara		1,148	998	150
Total	79	1,148	998	150
University of Virginia		1,003	888	115
University of Virginia School of Medicine		138	136	2
Total	80	1,141	1,024	117
Virginia Commonwealth University		771	478	293
Virginia Commonwealth University School of Medicine		364	305	59
Total	81	1,135	783	352
University of Texas, Arlington		1,132	666	466
Total	82	1,132	666	466
University of Rhode Island		1,131	750	381
Total	83	1,131	750	381

Ranking of 100 institutions leading in graduate science enrollment: 1975—Con.

Institution name	Rank	Graduate enrollment Total	Full time	Part time
Boston University		886	669	217
Boston University School of Medicine		230	207	23
Total	84	1,116	876	240
University of Akron		1,115	499	616
Total	85	1,115	499	616
Louisiana State University, Baton Rouge		1,019	850	169
Louisiana State University, New Orleans School of Medicine		79	61	18
Louisiana State University, Shreveport School of Medicine		10	10	0
Total	86	1,108	921	187
Rensselaer Polytechnic Institute		1,079	816	263
Total	87	1,079	816	263
University of New Mexico		1,039	601	438
University of New Mexico School of Medicine		38	34	4
Total	88	1,077	635	442
Case Western Reserve University		942	671	271
Case Western Reserve University School of Medicine		133	127	6
Total	89	1,075	798	277
University of South Florida		1,052	696	356
University of South Florida College of Medicine		14	13	1
Total	90	1,066	709	357
Northern Illinois University		1,066	617	449
Total	91	1,066	617	449

Institution name	Rank	Graduate enrollment Total	Full time	Part time
Howard University		975	793	182
Howard University College of Medicine		87	78	9
Total	92	1,062	871	191
Florida Institute of Technology		1,043	191	852
Total	93	1,043	191	852
University of Maryland, Baltimore City		1,040	761	279
Total	94	1,040	761	279
University of California, San Diego		967	918	49
University of California, San Diego School of Medicine		72	71	1
Total	95	1,039	989	50
Cleveland State University		1,039	205	834
Total	96	1,039	205	834
Illinois Institute of Technology		1,038	453	585
Total	97	1,038	453	585
Texas Tech University		1,019	863	156
Texas Tech University School of Medicine		16	14	2
Total	98	1,035	877	158
Newark College of Engineering		1,032	169	863
Total	99	1,032	169	863
Duke University		818	757	61
Duke University School of Medicine		211	201	10
Total	100	1,029	958	71
Total, first 100		217,671	161,344	56,327
All other institutions		72,991	49,297	23,694
Grand total		290,662	210,641	80,021

Tables in the "A" and "B" series in appendix III represent detailed statistical data compiled from the responses to the 1975 survey, with "A" representing all graduate science and engineering departments and "B," doctorate departments only.

Series "C" presents matched data from the 6,167 graduate departments that responded in each of the years 1973, 1974, and 1975, with "D" representing doctorate departments only.

In Series "E", data are shown for the entire universe responding in both 1974 and 1975, with "F" presenting similar data for doctorate departments only.

Appendix IV presents summary data for each of the six major areas of science and engineering for both master's and doctorate departments, as shown in tables IV-1 through IV-21. A summary of medical school responses appears in table IV-22, while data from public and private institutions are shown separately in tables IV-23 and IV-24, respectively.

APPENDIX III
Listing of Statistical Tables

NOTE

Selected tables which present summary data are included in this section for ready reference. These include: E-1, E-4, E-13, A-9a, E-24, E-16, E-19, A-20, E-29, plus a previously unpublished table on part-time enrollment.

ALL GRADUATE DEPARTMENTS, 1975

DOCTORATE DEPARTMENTS, 1975

ALL GRADUATE DEPARTMENTS, 1973-75

(Based on 6,167 matched departments)

DOCTORATE DEPARTMENTS, 1973-75
(Based on 6,167 matched departments)

ALL GRADUATE DEPARTMENTS, 1974-75

DOCTORATE DEPARTMENTS, 1974-75

TABLE E-1. GRADUATE STUDENTS IN ALL GRADUATE DEPARTMENTS, BY FIELD OF SCIENCE AND ENROLLMENT STATUS: 1974-75

AREA AND FIELD OF SCIENCE	TOTAL			FULL TIME			PART TIME		
	1974	1975	PERCENT CHANGE	1974	1975	PERCENT CHANGE	1974	1975	PERCENT CHANGE
TOTAL, ALL FIELDS OF SCIENCE	265,982	290,662	9.3	195,859	210,641	7.5	70,123	80,021	14.1
ENGINEERING	58,082	62,580	7.7	34,217	37,265	8.9	23,865	25,315	6.1
AERONAUTICAL	1,342	1,329	-1.0	1,023	1,010	-1.3	319	319	.0
AGRICULTURAL	640	741	15.8	539	640	18.7	101	101	.0
CHEMICAL	4,559	4,920	7.9	3,179	3,363	5.8	1,380	1,557	12.8
CIVIL	9,954	11,113	11.6	5,879	6,544	11.3	4,075	4,569	12.1
ELECTRICAL	15,105	15,229	.8	7,549	7,932	5.1	7,556	7,297	-3.4
ENGINEERING SCIENCE	2,323	2,420	4.2	1,528	1,630	6.7	795	790	-.6
INDUSTRIAL	7,981	9,176	15.0	4,018	4,502	12.0	3,963	4,674	17.9
MECHANICAL	7,789	7,839	.6	4,493	4,699	4.6	3,296	3,140	-4.7
METALLURGICAL/MATERIALS	2,194	2,343	6.8	1,675	1,802	7.6	519	541	4.2
MINING	340	426	25.3	291	359	23.4	49	67	36.7
NUCLEAR	1,491	1,637	9.8	1,061	1,267	19.4	430	370	-14.0
PETROLEUM	333	361	8.4	287	293	2.1	46	68	47.8
ENGINEERING, NEC	4,031	5,046	25.2	2,695	3,224	19.6	1,336	1,822	36.4
PHYSICAL AND ENVIRONMENTAL SCIENCES, TOTAL	34,233	34,977	2.2	29,430	29,846	1.4	4,803	5,131	6.8
PHYSICAL SCIENCES	24,534	24,549	.1	21,305	21,322	.1	3,229	3,227	-.1
ASTRONOMY	602	606	.7	543	548	.9	59	58	-1.7
CHEMISTRY	13,605	13,917	2.3	11,664	11,901	2.0	1,941	2,016	3.9
PHYSICS	10,327	10,026	-2.9	9,098	8,873	-2.5	1,229	1,153	-6.2
ENVIRONMENTAL SCIENCES	9,699	10,428	7.5	8,125	8,524	4.9	1,574	1,904	21.0
ATMOSPHERIC SCIENCES	1,008	988	-2.0	840	883	5.1	168	105	-37.5
GEOSCIENCES	6,708	7,394	10.2	5,587	5,999	7.4	1,121	1,395	24.4
OCEANOGRAPHY	1,983	2,046	3.2	1,698	1,642	-3.3	285	404	41.8
MATHEMATICAL SCIENCES	19,652	20,337	3.5	13,224	13,579	2.7	6,428	6,758	5.1
APPLIED MATHEMATICS	6,089	6,760	11.0	3,791	4,199	10.8	2,298	2,561	11.4
MATHEMATICS	11,744	11,522	-1.9	8,084	7,844	-3.0	3,660	3,678	.5
STATISTICS	1,819	2,055	13.0	1,349	1,536	13.9	470	519	10.4
LIFE SCIENCES	62,980	68,886	9.4	52,319	56,449	7.9	10,661	12,437	16.7
AGRICULTURE	10,316	11,435	10.8	8,772	9,763	11.3	1,544	1,672	8.3
ANATOMY	1,066	1,131	6.3	963	1,031	7.4	104	100	-3.8
BIOCHEMISTRY	3,678	3,653	-.7	3,432	3,370	-1.8	246	283	15.0
BIOLOGY	10,004	11,783	17.8	7,846	8,989	14.6	2,158	2,794	29.5
BIOMETRY/BIOSTATISTICS	508	546	7.5	413	467	13.1	95	79	-16.8
BIOPHYSICS	815	929	14.0	765	818	6.9	50	111	122.0
BIOSCIENCES, NEC	1,083	1,399	29.2	740	1,010	36.5	343	389	13.4
BOTANY	2,642	2,730	3.3	2,402	2,430	1.2	240	300	25.0
CELL BIOLOGY	506	578	14.2	484	558	15.3	22	20	-9.1
ECOLOGY	503	677	34.6	466	600	28.8	37	77	108.1
ENTOMOLOGY/PARASITOLOGY	1,284	1,468	14.3	1,124	1,303	15.9	160	165	3.1
GENETICS	784	813	3.7	736	753	2.3	48	60	25.0
MICROBIOLOGY	3,845	3,953	2.7	3,406	3,547	4.2	445	406	-8.8
NUTRITION	2,651	2,697	1.7	2,268	2,303	1.5	383	394	2.9
PATHOLOGY	984	1,065	8.2	854	905	6.0	130	160	23.1
PHARMACOLOGY	1,580	1,736	9.9	1,445	1,630	12.8	135	106	-21.5
PHYSIOLOGY	2,320	2,338	.8	2,003	2,126	6.1	317	212	-33.1
ZOOLOGY	3,574	3,574	.0	3,124	3,094	-1.0	450	480	6.7
OTHER HEALTH SCIENCES (INCLUDES CLINICAL)	14,835	16,381	10.4	11,081	11,752	6.1	3,754	4,629	23.3
PSYCHOLOGY	25,052	27,123	8.3	18,923	19,701	4.1	6,129	7,422	21.1
SOCIAL SCIENCES	65,983	76,759	16.3	47,746	53,801	12.7	18,237	22,958	25.9
AGRICULTURAL ECONOMICS	1,705	2,083	22.2	1,553	1,867	20.2	152	216	42.1
ANTHROPOLOGY	5,675	6,086	7.2	4,568	4,750	4.0	1,107	1,336	20.7
ECONOMICS (EXCEPT AGRICULTURE)	10,550	11,528	9.3	7,245	8,581	18.4	3,305	2,947	-10.8
GEOGRAPHY	2,742	2,898	5.7	1,987	2,133	7.3	755	765	1.3
HISTORY AND PHILOSOPHY OF SCIENCE	289	303	4.8	249	259	4.0	40	44	10.0
LINGUISTICS	7,227	8,464	17.1	5,676	6,355	12.0	1,551	2,109	36.0
POLITICAL SCIENCE	15,228	19,657	29.1	9,725	11,715	20.5	5,503	7,942	44.3
SOCIOLOGY	13,224	14,191	7.3	9,384	9,965	6.2	3,840	4,226	10.1
SOCIOLOGY/ANTHROPOLOGY	1,416	1,629	15.0	979	1,061	8.4	437	568	30.0
SOCIAL SCIENCES, NEC	7,927	9,920	25.1	6,380	7,115	11.5	1,547	2,805	81.3

SOURCE: NATIONAL SCIENCE FOUNDATION.

TABLE E-4. GRADUATE STUDENTS IN ALL GRADUATE DEPARTMENTS, BY FIELD OF SCIENCE AND LEVEL OF STUDY: 1974-75

AREA AND FIELD OF SCIENCE	TOTAL			FIRST YEAR			BEYOND FIRST YEAR		
	1974	1975	PERCENT CHANGE	1974	1975	PERCENT CHANGE	1974	1975	PERCENT CHANGE
TOTAL, ALL FIELDS OF SCIENCE	265,982	290,662	9.3	101,699	110,006	8.2	164,283	180,656	10.0
ENGINEERING	58,082	62,580	7.7	25,642	27,750	8.2	32,440	34,830	7.4
AERONAUTICAL	1,342	1,329	-1.0	446	523	17.3	896	806	-10.0
AGRICULTURAL	640	741	15.8	242	301	24.4	398	440	10.6
CHEMICAL	4,559	4,920	7.9	1,814	1,970	8.6	2,745	2,950	7.5
CIVIL	9,954	11,113	11.6	4,727	4,958	4.9	5,227	6,155	17.8
ELECTRICAL	15,105	15,229	.8	6,958	6,924	-.5	8,147	8,305	1.9
ENGINEERING SCIENCE	2,323	2,420	4.2	856	797	-6.9	1,467	1,623	10.6
INDUSTRIAL	7,981	9,176	15.0	3,501	4,703	34.3	4,480	4,473	-.2
MECHANICAL	7,789	7,839	.6	3,519	3,539	.6	4,270	4,300	.7
METALLURGICAL/MATERIALS	2,194	2,343	6.8	688	696	1.2	1,506	1,647	9.4
MINING	340	426	25.3	142	181	27.5	198	245	23.7
NUCLEAR	1,491	1,637	9.8	676	721	6.7	815	916	12.4
PETROLEUM	333	361	8.4	118	120	1.7	215	241	12.1
ENGINEERING, NEC	4,031	5,046	25.2	1,955	2,317	18.5	2,076	2,729	31.5
PHYSICAL AND ENVIRONMENTAL SCIENCES, TOTAL	34,283	34,977	2.2	9,914	10,336	4.3	24,319	24,641	1.3
PHYSICAL SCIENCES	24,534	24,549	.1	6,733	6,858	1.9	17,801	17,691	-.6
ASTRONOMY	602	606	.7	133	127	-4.5	469	479	2.1
CHEMISTRY	13,605	13,917	2.3	3,920	4,128	5.3	9,685	9,789	1.1
PHYSICS	10,327	10,026	-2.9	2,680	2,603	-2.9	7,647	7,423	-2.9
ENVIRONMENTAL SCIENCES	9,699	10,428	7.5	3,181	3,478	9.3	6,518	6,950	6.6
ATMOSPHERIC SCIENCES	1,008	988	-2.0	335	350	4.5	673	638	-5.2
GEOSCIENCES	6,708	7,394	10.2	2,260	2,612	15.6	4,448	4,782	7.5
OCEANOGRAPHY	1,983	2,046	3.2	586	516	-11.9	1,397	1,530	9.5
MATHEMATICAL SCIENCES	19,652	20,337	3.5	7,667	8,117	5.9	11,985	12,220	2.0
APPLIED MATHEMATICS	6,089	6,760	11.0	2,575	3,016	17.1	3,514	3,744	6.5
MATHEMATICS	11,744	11,522	-1.9	4,466	4,368	-2.2	7,278	7,154	-1.7
STATISTICS	1,819	2,055	13.0	626	733	17.1	1,193	1,322	10.8
LIFE SCIENCES	62,980	68,886	9.4	24,217	26,060	7.6	38,763	42,826	10.5
AGRICULTURE	10,316	11,435	10.8	4,028	4,474	11.1	6,288	6,961	10.7
ANATOMY	1,064	1,131	6.3	341	339	-.6	723	792	9.5
BIOCHEMISTRY	3,678	3,653	-.7	1,041	1,030	-1.1	2,637	2,623	-.5
BIOLOGY	10,004	11,783	17.8	3,555	4,176	17.5	6,449	7,607	18.0
BIOMETRY/BIOSTATISTICS	508	546	7.5	203	179	-11.8	305	367	20.3
BIOPHYSICS	815	929	14.0	218	249	14.2	597	680	13.9
BIOSCIENCES, NEC	1,083	1,399	29.2	416	553	32.9	667	846	26.8
BOTANY	2,642	2,730	3.3	798	796	-.3	1,844	1,934	4.9
CELL BIOLOGY	506	578	14.2	116	187	61.2	390	391	.3
ECOLOGY	303	677	34.6	161	216	34.2	342	461	34.8
ENTOMOLOGY/PARASITOLOGY	1,284	1,468	14.3	322	494	53.4	962	974	1.2
GENETICS	784	813	3.7	226	242	7.1	558	571	2.3
MICROBIOLOGY	3,849	3,953	2.7	1,311	1,231	-6.1	2,538	2,722	7.2
NUTRITION	2,651	2,697	1.7	1,150	1,119	-2.7	1,501	1,578	5.1
PATHOLOGY	984	1,065	8.2	356	335	-5.4	630	730	15.9
PHARMACOLOGY	1,580	1,736	9.9	535	515	-3.7	1,045	1,221	16.8
PHYSIOLOGY	2,320	2,338	.8	782	692	-11.5	1,538	1,646	7.0
ZOOLOGY	3,574	3,574	.0	1,049	994	-5.2	2,525	2,580	2.2
OTHER HEALTH SCIENCES (INCLUDES CLINICAL)	14,835	16,381	10.4	7,611	8,239	8.3	7,224	8,142	12.7
PSYCHOLOGY	25,052	27,123	8.3	7,832	7,738	-1.2	17,220	19,385	12.6
SOCIAL SCIENCES	65,983	76,759	16.3	26,427	30,005	13.5	39,556	46,754	18.2
AGRICULTURAL ECONOMICS	1,705	2,083	22.2	626	749	19.6	1,079	1,334	23.6
ANTHROPOLOGY	5,675	6,086	7.2	1,568	1,479	-5.7	4,107	4,607	12.2
ECONOMICS (EXCEPT AGRICULTURE)	10,550	11,528	9.3	3,913	4,276	9.3	6,637	7,252	9.3
GEOGRAPHY	2,742	2,898	5.7	870	963	10.7	1,872	1,935	3.4
HISTORY AND PHILOSOPHY OF SCIENCE	289	303	4.8	84	66	-21.4	205	237	15.6
LINGUISTICS	7,227	8,464	17.1	3,869	4,070	5.2	3,358	4,394	30.9
POLITICAL SCIENCE	15,228	19,657	29.1	6,353	7,831	23.3	8,875	11,826	33.3
SOCIOLOGY	13,224	14,191	7.3	4,820	5,070	5.2	8,404	9,121	8.5
SOCIOLOGY/ANTHROPOLOGY	1,416	1,629	15.0	536	610	13.8	880	1,019	15.8
SOCIAL SCIENCES, NEC	7,927	9,920	25.1	3,788	4,891	29.1	4,139	5,029	21.5

SOURCE: NATIONAL SCIENCE FOUNDATION

TABLE E-13. FULL-TIME GRADUATE STUDENTS IN ALL GRADUATE DEPARTMENTS, BY FIELD OF SCIENCE AND CITIZENSHIP: 1974-75

AREA AND FIELD OF SCIENCE	TOTAL			U.S. CITIZENS			FOREIGN STUDENTS		
	1974	1975	PERCENT CHANGE	1974	1975	PERCENT CHANGE	1974	1975	PERCENT CHANGE
TOTAL, ALL FIELDS OF SCIENCE	155,859	210,641	7.5	164,078	177,636	8.3	31,781	33,005	3.9
ENGINEERING	34,217	37,265	8.9	23,102	25,427	10.1	11,115	11,838	6.5
AERONAUTICAL	1,023	1,010	-1.3	686	670	-2.3	337	340	.9
AGRICULTURAL	539	640	18.7	323	376	17.5	219	264	20.5
CHEMICAL	3,179	3,363	5.8	1,883	2,064	9.6	1,296	1,299	.2
CIVIL	5,879	6,544	11.3	4,061	4,600	13.3	1,818	1,944	6.9
ELECTRICAL	7,549	7,932	5.1	5,158	5,404	4.8	2,391	2,528	5.7
ENGINEERING SCIENCE	1,528	1,630	6.7	1,005	1,101	9.6	523	529	1.1
INDUSTRIAL	4,018	4,502	12.0	2,933	3,259	11.1	1,085	1,243	14.6
MECHANICAL	4,493	4,699	4.6	2,984	3,086	3.4	1,509	1,613	6.9
METALLURGICAL/MATERIALS	1,675	1,802	7.6	990	1,108	11.9	685	694	1.3
MINING	291	359	23.4	153	209	36.6	138	150	8.7
NUCLEAR	1,061	1,267	19.4	757	865	14.3	304	402	32.2
PETROLEUM	287	293	2.1	111	118	6.3	176	175	-.6
ENGINEERING, NEC	2,695	3,224	19.6	2,061	2,567	24.6	634	657	3.6
PHYSICAL AND ENVIRONMENTAL SCIENCES, TOTAL	29,430	29,846	1.4	24,091	24,528	1.8	5,336	5,318	-.3
PHYSICAL SCIENCES	21,305	21,322	.1	16,837	16,924	.5	4,468	4,398	-1.6
ASTRONOMY	543	548	.9	499	489	-2.0	44	59	34.1
CHEMISTRY	11,664	11,901	2.0	9,361	9,568	2.0	2,263	2,333	2.2
PHYSICS	9,098	8,873	-2.5	6,957	6,867	-1.3	2,141	2,006	-6.3
ENVIRONMENTAL SCIENCES	8,125	8,524	4.9	7,257	7,604	4.8	868	920	6.0
ATMOSPHERIC SCIENCES	840	883	5.1	724	756	4.4	116	127	9.5
GEOSCIENCES	5,587	5,999	7.4	5,027	5,419	7.8	560	580	3.6
OCEANOGRAPHY	1,698	1,642	-3.3	1,506	1,429	-5.1	192	213	10.9
MATHEMATICAL SCIENCES	13,224	13,579	2.7	10,760	10,975	2.0	2,464	2,604	5.7
APPLIED MATHEMATICS	3,791	4,199	10.8	2,995	3,298	10.1	796	903	13.4
MATHEMATICS	8,084	7,844	-3.0	6,834	6,603	-3.4	1,250	1,241	-.7
STATISTICS	1,349	1,536	13.9	931	1,076	15.6	418	460	10.0
LIFE SCIENCES	52,319	56,449	7.9	45,809	50,004	9.2	6,510	6,445	-1.0
AGRICULTURE	8,772	9,763	11.3	7,042	7,879	11.9	1,730	1,884	8.9
ANATOMY	960	1,031	7.4	897	974	8.6	63	57	-9.5
BIOCHEMISTRY	3,432	3,370	-1.8	2,976	2,967	-.2	458	403	-12.0
BIOLOGY	7,846	8,989	14.6	7,336	8,428	14.9	510	561	10.0
BIOMETRY/BIOSTATISTICS	413	467	13.1	363	410	13.9	53	57	7.5
BIOPHYSICS	765	818	6.9	640	694	8.4	125	124	-.8
BIOSCIENCES, NEC	740	1,010	36.5	661	916	38.6	79	94	19.0
BOTANY	2,402	2,430	1.2	2,089	2,109	1.0	313	321	2.6
CELL BIOLOGY	484	558	15.3	426	505	18.5	58	53	-8.6
ECOLOGY	466	600	28.8	436	560	28.4	30	40	33.3
ENTOMOLOGY/PARASITOLOGY	1,124	1,303	15.9	933	1,076	15.3	191	227	18.8
GENETICS	736	753	2.3	636	667	4.9	100	86	-14.0
MICROBIOLOGY	3,404	3,547	4.2	3,084	3,245	5.2	320	302	-5.6
NUTRITION	2,268	2,303	1.5	1,626	1,704	4.8	642	599	-6.7
PATHOLOGY	854	905	6.0	745	806	8.2	109	99	-9.2
PHARMACOLOGY	1,445	1,630	12.8	1,248	1,431	14.7	197	199	1.0
PHYSIOLOGY	2,003	2,126	6.1	1,838	2,006	9.1	165	120	-27.3
ZOOLOGY	3,124	3,094	-1.0	3,010	2,985	-.8	114	109	-4.4
OTHER HEALTH SCIENCES (INCLUDES CLINICAL)	11,081	11,752	6.1	9,828	10,642	8.3	1,253	1,110	-11.4
PSYCHOLOGY	18,923	19,701	4.1	18,374	19,120	4.1	549	581	5.8
SOCIAL SCIENCES	47,766	53,801	12.7	41,939	47,582	13.5	5,807	6,219	7.1
AGRICULTURAL ECONOMICS	1,553	1,867	20.2	970	1,237	27.5	583	630	8.1
ANTHROPOLOGY	4,568	4,750	4.0	4,299	4,550	4.7	269	250	-7.1
ECONOMICS (EXCEPT AGRICULTURE)	7,245	8,581	18.4	5,145	6,311	22.7	2,100	2,270	8.1
GEOGRAPHY	1,987	2,133	7.3	1,769	1,896	7.2	218	237	8.7
HISTORY AND PHILOSOPHY OF SCIENCE	249	259	4.0	229	234	2.2	20	25	25.0
LINGUISTICS	5,676	6,355	12.0	5,202	5,845	12.4	474	510	7.6
POLITICAL SCIENCE	9,725	11,715	20.5	8,762	10,606	21.0	963	1,109	15.2
SOCIOLOGY	9,384	9,965	6.2	8,411	8,985	6.8	973	980	.7
SOCIOLOGY/ANTHROPOLOGY	979	1,061	8.4	905	996	9.6	70	65	-7.1
SOCIAL SCIENCES, NEC	6,380	7,115	11.5	6,243	6,972	11.7	137	143	4.4

SOURCE: NATIONAL SCIENCE FOUNDATION.

TABLE A-9A. FULL-TIME GRADUATE STUDENTS IN ALL GRADUATE DEPARTMENTS, BY FIELD OF SCIENCE, SEX OF STUDENT, AND SOURCE OF MAJOR SUPPORT: 1975

AREA AND FIELD OF SCIENCE	FULL-TIME GRADUATE STUDENTS			MEN			WOMEN		
	TOTAL	FEDERAL SUPPORT	NON-FEDERAL SUPPORT	TOTAL	FEDERAL SUPPORT	NON-FEDERAL SUPPORT	TOTAL	FEDERAL SUPPORT	NON-FEDERAL SUPPORT
TOTAL, ALL FIELDS OF SCIENCE	210,641	48,365	162,276	158,061	36,245	121,816	52,580	12,120	40,460
ENGINEERING	37,265	10,427	26,838	35,325	10,015	25,310	1,940	412	1,528
AERONAUTICAL	1,010	504	506	992	495	497	18	9	9
AGRICULTURAL	640	136	504	624	135	489	16	1	15
CHEMICAL	3,363	941	2,422	3,140	891	2,249	223	50	173
CIVIL	6,544	1,630	4,914	6,208	1,535	4,673	336	95	241
ELECTRICAL	7,932	2,194	5,738	7,712	2,145	5,567	220	49	171
ENGINEERING SCIENCE	1,630	642	988	1,557	618	939	73	24	49
INDUSTRIAL	4,502	1,010	3,492	4,026	949	3,077	476	61	415
MECHANICAL	4,699	1,319	3,380	4,589	1,298	3,291	110	21	89
METALLURGICAL/MATERIALS	1,802	854	948	1,707	808	899	95	46	49
MINING	359	137	222	338	130	208	21	7	14
NUCLEAR	1,267	349	918	1,220	334	886	47	15	32
PETROLEUM	293	59	234	288	58	230	5	1	4
ENGINEERING, NEC	3,224	652	2,572	2,924	619	2,305	300	33	267
PHYSICAL AND ENVIRONMENTAL SCIENCES, TOTAL	29,846	8,909	20,937	26,074	8,048	18,026	3,772	861	2,911
PHYSICAL SCIENCES	21,322	6,277	15,045	18,673	5,686	12,987	2,649	591	2,058
ASTRONOMY	548	190	358	491	176	315	57	14	43
CHEMISTRY	11,901	3,049	8,852	9,907	2,618	7,289	1,994	431	1,563
PHYSICS	8,873	3,038	5,835	8,275	2,892	5,383	598	146	452
ENVIRONMENTAL SCIENCES	8,524	2,632	5,892	7,401	2,362	5,039	1,123	270	853
ATMOSPHERIC SCIENCES	883	519	364	827	488	339	56	31	25
GEOSCIENCES	5,999	1,303	4,696	5,111	1,150	3,961	888	153	735
OCEANOGRAPHY	1,642	810	832	1,463	724	739	179	86	93
MATHEMATICAL SCIENCES	13,579	1,252	12,327	10,899	1,105	9,794	2,680	147	2,533
APPLIED MATHEMATICS	4,199	764	3,435	3,604	690	2,914	595	74	521
MATHEMATICS	7,844	312	7,532	6,118	280	5,838	1,726	32	1,694
STATISTICS	1,536	176	1,360	1,177	135	1,042	359	41	318
LIFE SCIENCES	56,449	17,108	39,341	39,338	10,872	28,466	17,111	6,236	10,875
AGRICULTURE	9,763	1,881	7,882	8,411	1,659	6,752	1,352	222	1,130
ANATOMY	1,031	311	720	725	205	521	305	106	199
BIOCHEMISTRY	3,370	1,575	1,795	2,540	1,187	1,353	830	388	442
BIOLOGY	8,989	1,486	7,503	6,322	1,020	5,302	2,667	466	2,201
BIOMETRY/BIOSTATISTICS	467	215	252	305	132	173	162	83	79
BIOPHYSICS	818	475	343	670	393	277	148	82	66
BIOSCIENCES, NEC	1,010	310	700	640	179	461	370	131	239
BOTANY	2,430	352	2,078	1,747	260	1,487	683	92	591
CELL BIOLOGY	558	272	286	383	184	199	175	88	87
ECOLOGY	600	114	486	435	95	340	165	19	146
ENTOMOLOGY/PARASITOLOGY	1,303	322	981	1,125	278	847	178	44	134
GENETICS	753	393	360	458	226	232	295	167	128
MICROBIOLOGY	3,547	1,301	2,246	2,368	892	1,476	1,179	409	770
NUTRITION	2,303	576	1,727	1,158	274	884	1,145	302	843
PATHOLOGY	905	396	509	661	276	385	244	120	124
PHARMACOLOGY	1,630	762	868	1,251	584	667	379	178	201
PHYSIOLOGY	2,126	733	1,393	1,622	558	1,064	504	175	329
ZOOLOGY	3,094	496	2,598	2,278	370	1,908	816	126	690
OTHER HEALTH SCIENCES (INCLUDES CLINICAL)	11,752	5,138	6,614	6,238	2,100	4,138	5,514	3,038	2,476
PSYCHOLOGY	19,701	4,296	15,405	11,336	2,442	8,894	8,365	1,854	6,511
SOCIAL SCIENCES	53,801	6,373	47,428	35,089	3,763	31,326	18,712	2,610	16,102
AGRICULTURAL ECONOMICS	1,867	435	1,432	1,701	402	1,299	166	33	133
ANTHROPOLOGY	4,750	621	4,129	2,648	367	2,281	2,102	254	1,848
ECONOMICS (EXCEPT AGRICULTURE)	8,581	664	7,917	7,354	575	6,779	1,227	89	1,138
GEOGRAPHY	2,133	149	1,984	1,637	119	1,518	496	30	466
HISTORY AND PHILOSOPHY OF SCIENCE	259	15	244	185	11	174	74	4	70
LINGUISTICS	6,355	1,014	5,341	2,402	354	2,068	3,953	680	3,273
POLITICAL SCIENCE	11,715	616	11,099	8,978	467	8,511	2,737	149	2,588
SOCIOLOGY	9,565	1,418	8,547	6,378	848	5,530	3,587	570	3,017
SOCIOLOGY/ANTHROPOLOGY	1,061	99	962	597	57	540	464	42	422
SOCIAL SCIENCES, NEC	7,115	1,342	5,773	3,209	583	2,626	3,906	759	3,147

SOURCE: NATIONAL SCIENCE FOUNDATION.

TABLE E-24. FULL-TIME GRADUATE STUDENTS IN ALL GRADUATE DEPARTMENTS, BY SOURCE OF MAJOR SUPPORT AND SEX OF STUDENT: 1974-75

SOURCE OF MAJOR SUPPORT	TOTAL			MEN			WOMEN		
	1974	1975	PERCENT CHANGE	1974	1975	PERCENT CHANGE	1974	1975	PERCENT CHANGE
TOTAL, ALL SOURCES OF SUPPORT	195,859	210,641	7.5	149,159	158,061	6.0	46,700	52,580	12.6
U.S. GOVERNMENT, TOTAL	47,963	48,365	.8	36,899	36,245	-1.8	11,064	12,120	9.5
DEPARTMENT OF DEFENSE	5,548	5,091	-8.2	5,243	4,844	-7.6	305	247	-19.0
DEPARTMENT OF HEW TOTAL	20,137	21,098	4.8	12,347	12,358	.1	7,790	8,740	12.2
NATIONAL INST OF HEALTH	13,545	13,806	1.9	9,043	9,161	1.3	4,502	4,645	3.2
OTHER HEW	6,592	7,292	10.6	3,304	3,197	-3.2	3,288	4,095	24.5
NATIONAL SCIENCE FOUNDATION	8,827	8,790	-.4	7,801	7,672	-1.7	1,026	1,118	9.0
ALL OTHER U.S. GOVERNMENT	13,451	13,386	-.5	11,508	11,371	-1.2	1,943	2,015	3.7
INSTITUTIONAL SUPPORT	75,418	77,351	2.6	58,390	58,852	.8	17,028	18,499	8.6
OTHER OUTSIDE SUPPORT, TOTAL	16,399	16,618	1.3	13,831	13,752	-.6	2,568	2,866	11.6
ALL OTHER U.S. SOURCES	11,866	11,284	-4.9	9,757	8,955	-8.2	2,109	2,329	10.4
FOREIGN SOURCES	4,533	5,334	17.7	4,074	4,797	17.7	459	537	17
SELF-SUPPORT	56,079	68,307	21.8	40,039	49,212	22.9	16,040	19,095	19.0

SOURCE: NATIONAL SCIENCE FOUNDATION.

TABLE E-16. FULL-TIME GRADUATE STUDENTS IN ALL GRADUATE DEPARTMENTS, BY FIELD OF SCIENCE AND TYPE OF MAJOR SUPPORT: 1974-75

AREA AND FIELD OF SCIENCE	TOTAL			FELLOWSHIPS AND TRAINEESHIPS			RESEARCH ASSISTANTSHIPS			TEACHING ASSISTANTSHIPS			OTHER TYPES OF SUPPORT		
	1974	1975	PER-CENT CHANGE	1974	1975	PER-CENT CHANGE	1974	1975	PER-CENT CHANGE	1974	1975	PER-CENT CHANGE	1974	1975	PER-CENT CHANGE
TOTAL, ALL FIELDS OF SCIENCE	195859	210641	7.5	38,606	38,966	0.9	39,689	40,247	1.4	46,426	47,637	2.6	71,138	83,791	17.8
ENGINEERING	34,217	37,265	8.9	4,873	4,631	-5.0	11,082	11,029	-.5	5,213	5,428	4.1	13,049	16,177	24.0
AERONAUTICAL	1,023	1,010	-1.3	91	94	3.3	494	479	-3.0	131	122	-6.9	307	315	2.6
AGRICULTURAL	539	640	18.7	115	84	-27.0	268	364	35.8	36	41	13.9	120	151	25.8
CHEMICAL	3,179	3,363	5.8	649	665	2.6	1,191	1,236	3.8	587	630	7.3	752	831	10.5
CIVIL	5,879	6,544	11.3	1,063	988	-7.1	1,831	1,728	-5.6	741	776	4.7	2,244	3,052	36.0
ELECTRICAL	7,549	7,932	5.1	880	758	-13.9	2,152	2,142	-.5	1,526	1,581	3.6	2,991	3,451	15.4
ENGINEERING SCIENCE	1,528	1,630	6.7	248	152	-38.7	636	630	-.9	228	248	8.8	416	600	44.2
INDUSTRIAL	4,018	4,502	12.0	389	334	-14.1	698	584	-16.3	418	440	5.3	2,513	3,144	25.1
MECHANICAL	4,493	4,699	4.6	551	495	-10.2	1,531	1,478	-3.5	808	811	.4	1,603	1,915	19.5
METALLURGICAL/MATERIALS	1,675	1,802	7.6	207	218	5.3	1,047	1,095	4.6	184	202	9.8	237	287	21.1
MINING	291	359	23.4	44	82	86.4	137	114	-16.8	34	39	14.7	76	124	63.2
NUCLEAR	1,061	1,267	19.4	166	299	80.1	407	473	16.2	127	117	-7.9	361	378	4.7
PETROLEUM	287	293	2.1	61	75	23.0	79	94	19.0	26	23	-11.5	121	101	-16.5
ENGINEERING, NEC	2,695	3,224	19.6	409	386	-5.6	611	612	.2	367	398	8.4	1,308	1,828	39.8
PHYSICAL AND ENVIRONMENTAL SCIENCES, TOTAL	29,430	29,846	1.4	3,370	3,147	-6.6	9,006	9,183	2.0	11,978	12,219	2.0	5,076	5,297	4.4
PHYSICAL SCIENCES	21,305	21,322	.1	2,518	2,284	-9.3	6,410	6,435	.4	10,041	10,172	1.3	2,336	2,431	4.1
ASTRONOMY	543	548	.9	90	92	2.2	212	199	-6.1	151	161	6.6	90	96	6.7
CHEMISTRY	11,664	11,901	2.0	1,462	1,311	-10.3	3,047	3,174	4.2	6,187	6,332	2.3	968	1,084	12.0
PHYSICS	9,098	8,873	-2.5	966	881	-8.8	3,151	3,062	-2.8	3,703	3,679	-.6	1,278	1,251	-2.1
ENVIRONMENTAL SCIENCES	8,125	8,524	4.9	852	863	1.3	2,596	2,748	5.9	1,937	2,047	5.7	2,740	2,866	4.6
ATMOSPHERIC SCIENCES	840	883	5.1	104	76	-26.9	397	457	15.1	84	84	.0	255	266	4.3
GEOSCIENCES	5,587	5,999	7.4	594	646	8.8	1,378	1,441	4.6	1,725	1,841	6.7	1,890	2,071	9.6
OCEANOGRAPHY	1,698	1,642	-3.3	154	141	-8.4	821	850	3.5	128	122	-4.7	595	529	-11.1
MATHEMATICAL SCIENCES	13,224	13,579	2.7	1,239	1,269	2.4	1,367	1,325	-3.1	6,352	6,442	1.4	4,266	4,543	6.5
APPLIED MATHEMATICS	3,791	4,199	10.8	265	354	33.6	732	748	2.2	838	932	11.2	1,956	2,165	10.7
MATHEMATICS	8,084	7,844	-3.0	756	733	-3.0	343	307	-10.5	5,031	4,959	-1.4	1,954	1,845	-5.6
STATISTICS	1,349	1,536	13.9	218	182	-16.5	292	270	-7.5	483	551	14.1	356	533	49.7
LIFE SCIENCES	52,319	56,449	7.9	14,576	15,606	7.1	10,818	11,366	5.1	10,322	10,784	4.5	16,603	18,693	12.6
AGRICULTURE	8,772	9,763	11.3	895	1,055	17.9	3,839	4,125	7.4	780	881	12.9	3,258	3,702	13.6
ANATOMY	960	1,031	7.4	395	369	-6.6	55	64	16.4	241	267	10.8	269	331	23.0
BIOCHEMISTRY	3,432	3,370	-1.8	1,327	1,227	-7.5	1,042	1,033	-.9	550	562	2.2	513	548	6.8
BIOLOGY	7,846	8,989	14.6	1,412	1,492	5.7	773	850	10.0	3,051	3,300	8.2	2,610	3,347	28.2
BIOMETRY/BIOSTATISTICS	413	467	13.1	214	216	.9	53	56	5.7	16	27	68.8	130	168	29.2
BIOPHYSICS	765	818	6.9	425	418	-1.6	158	217	37.3	49	58	18.4	133	125	-6.0
BIOSCIENCES, NEC	740	1,010	36.5	191	317	66.0	57	72	26.3	159	173	8.8	333	448	34.5
BOTANY	2,402	2,430	1.2	209	206	-1.4	710	737	3.8	841	829	-1.4	642	658	2.5
CELL BIOLOGY	484	558	15.3	229	265	15.7	97	84	-13.4	109	139	27.5	49	70	42.9
ECOLOGY	466	600	28.8	71	72	1.4	142	139	-2.1	114	126	10.5	139	263	89.2
ENTOMOLOGY/PARASITOLOGY	1,124	1,303	15.9	131	122	-6.9	578	618	6.9	123	135	9.8	292	428	46.6
GENETICS	736	753	2.3	321	339	5.6	137	137	.0	103	97	-5.8	175	180	2.9
MICROBIOLOGY	3,404	3,547	4.2	1,042	1,090	4.6	605	657	8.6	863	877	1.6	894	923	3.2
NUTRITION	2,268	2,303	1.5	425	418	-1.6	838	756	-9.8	217	216	-.5	788	913	15.9
PATHOLOGY	854	905	6.0	435	439	.9	102	91	-10.8	28	34	21.4	289	341	18.0
PHARMACOLOGY	1,445	1,630	12.8	648	735	13.4	264	305	15.5	271	253	-6.6	262	337	28.6
PHYSIOLOGY	2,003	2,126	6.1	716	736	2.8	272	326	19.9	384	398	3.6	631	666	5.5
ZOOLOGY	3,124	3,094	-1.0	262	325	24.0	502	492	-2.0	1,511	1,429	-5.4	849	848	-.1
OTHER HEALTH SCIENCES (INCLUDES CLINICAL)	11,081	11,752	6.1	5,228	5,765	10.3	596	607	2.2	912	983	7.8	4,347	4,397	1.2
PSYCHOLOGY	18,923	19,701	4.1	4,453	4,403	-1.1	2,284	2,193	-4.0	3,912	4,071	4.1	8,274	9,034	9.2
SOCIAL SCIENCES	47,746	53,801	12.7	10,095	9,910	-1.8	5,132	5,151	.4	8,649	8,693	.5	23,870	30,047	25.9
AGRICULTURAL ECONOMICS	1,553	1,867	20.2	233	248	6.4	799	875	10.3	68	58	-14.7	459	686	49.5
ANTHROPOLOGY	4,568	4,750	4.0	943	892	-5.4	349	378	8.3	948	889	-6.2	2,328	2,591	11.3
ECONOMICS (EXCEPT AGRICULTURE)	7,245	8,581	18.4	1,497	1,611	7.6	1,222	1,194	-2.3	1,806	1,908	5.6	2,720	3,868	42.2
GEOGRAPHY	1,967	2,133	7.3	241	250	3.7	217	218	.5	761	722	-5.1	768	943	22.8
HISTORY AND PHILOSOPHY OF SCIENCE	249	259	4.0	84	91	8.3	9	2	-77.8	45	59	31.1	111	107	-3.6
LINGUISTICS	5,676	6,359	12.0	1,176	1,288	9.5	338	268	-20.7	1,188	1,244	4.7	2,974	3,555	19.5
POLITICAL SCIENCE	9,725	11,715	20.5	1,791	1,917	7.0	743	766	3.1	1,508	1,535	1.8	5,683	7,497	31.9
SOCIOLOGY	9,384	9,965	6.2	2,134	1,935	-9.3	1,208	1,106	-8.4	1,821	1,773	-2.6	4,221	5,151	22.0
SOCIOLOGY/ANTHROPOLOGY	979	1,061	8.4	136	136	.0	92	130	41.3	228	225	-1.3	523	570	9.0
SOCIAL SCIENCES, NEC	6,380	7,115	11.5	1,860	1,542	-17.1	161	214	32.9	276	280	1.4	4,083	5,079	24.4

SOURCE: NATIONAL SCIENCE FOUNDATION.

TABLE E-19. FIRST-YEAR FULL-TIME GRADUATE STUDENTS IN ALL GRADUATE DEPARTMENTS, BY FIELD OF SCIENCE AND TYPE OF MAJOR SUPPORT: 1974-75

AREA AND FIELD OF SCIENCE	TOTAL			FELLOWSHIPS AND TRAINEESHIPS			RESEARCH ASSISTANTSHIPS			TEACHING ASSISTANTSHIPS			OTHER TYPES OF SUPPORT		
	1974	1975	PER-CENT CHANGE	1974	1975	PER-CENT CHANGE	1974	1975	PER-CENT CHANGE	1974	1975	PER-CENT CHANGE	1974	1975	PER-CENT CHANGE
TOTAL, ALL FIELDS OF SCIENCE	73,716	79,379	7.7	14,444	14,613	1.2	10,639	10,434	-1.6	16,306	16,680	2.3	32,357	37,652	16.4
ENGINEERING	15,014	16,675	11.1	2,587	2,460	-4.9	3,575	3,410	-4.6	2,244	2,391	6.6	6,608	8,414	27.3
AERONAUTICAL	343	395	15.2	43	43	.0	147	148	.7	54	48	-11.1	99	156	57.6
AGRICULTURAL	220	273	24.1	35	38	8.6	102	159	55.9	22	18	-18.2	61	58	-4.9
CHEMICAL	1,232	1,363	10.6	299	303	1.3	336	376	11.9	256	268	4.7	341	416	22.0
CIVIL	3,100	3,257	5.1	722	665	-7.9	719	654	-9.0	373	366	-1.9	1,286	1,572	22.2
ELECTRICAL	3,280	3,508	7.0	505	369	-26.9	600	542	-9.7	638	725	13.6	1,537	1,872	21.8
ENGINEERING SCIENCE	516	492	-4.7	119	75	-37.0	165	139	-15.8	73	86	17.8	159	192	20.8
INDUSTRIAL	1,851	2,391	29.2	173	190	9.8	254	217	-14.6	168	195	16.1	1,256	1,789	42.4
MECHANICAL	1,970	2,173	10.3	296	272	-8.1	531	527	-.8	355	367	3.4	788	1,007	27.8
METALLURGICAL/MATERIALS	526	570	8.4	79	73	-7.6	285	280	-1.8	72	87	20.8	90	130	44.4
MINING	128	165	28.9	23	50	117.4	53	43	-18.9	12	16	33.3	40	56	40.0
NUCLEAR	469	565	20.5	110	192	74.5	115	123	7.0	47	52	10.6	197	198	.5
PETROLEUM	112	107	-4.5	31	40	29.0	34	24	-29.4	12	7	-41.7	35	36	2.9
ENGINEERING, NEC	1,267	1,416	11.8	152	150	-1.3	234	178	-23.9	162	156	-3.7	719	932	29.6
PHYSICAL AND ENVIRONMENTAL SCIENCES, TOTAL	8,561	8,954	4.6	1,124	1,018	-9.4	1,067	1,095	2.6	4,545	4,826	6.2	1,825	2,015	10.4
PHYSICAL SCIENCES	5,778	5,958	3.1	764	669	-12.4	452	399	-11.7	3,841	4,066	5.9	721	824	14.3
ASTRONOMY	123	115	-6.5	39	34	-12.8	34	25	-26.5	29	32	10.3	21	24	14.3
CHEMISTRY	3,297	3,535	7.2	395	361	-8.6	155	145	-6.5	2,475	2,672	8.0	272	357	31.3
PHYSICS	2,358	2,308	-2.1	330	274	-17.0	263	229	-12.9	1,337	1,362	1.9	428	443	3.5
ENVIRONMENTAL SCIENCES	2,783	2,996	7.7	360	349	-3.1	615	696	13.2	704	760	8.0	1,104	1,191	7.9
ATMOSPHERIC SCIENCES	300	321	7.0	50	33	-34.0	105	127	21.0	351	341	-2.9	110	127	15.5
GEOSCIENCES	1,969	2,235	13.5	258	274	6.2	320	385	18.1	636	703	10.5	749	873	16.6
OCEANOGRAPHY	514	440	-14.4	52	42	-19.2	184	184	.0	331	231	-30.3	245	191	-22.0
MATHEMATICAL SCIENCES	4,851	5,184	6.9	490	543	10.8	349	308	-11.7	2,164	2,222	2.7	1,848	2,111	14.2
APPLIED MATHEMATICS	1,498	1,841	22.9	134	173	29.1	174	168	-3.4	337	379	12.5	853	1,121	31.4
MATHEMATICS	2,876	2,776	-3.5	282	294	4.3	100	71	-29.0	1,642	1,641	-.1	852	770	-9.6
STATISTICS	477	567	18.9	74	76	2.7	75	69	-8.0	185	202	9.2	143	220	53.8
LIFE SCIENCES	20,007	21,286	6.4	5,249	5,571	6.1	3,062	3,208	4.8	3,626	3,654	.8	8,070	8,853	9.7
AGRICULTURE	3,597	4,038	12.3	352	429	21.9	1,291	1,418	9.8	324	368	13.6	1,630	1,823	11.8
ANATOMY	303	306	1.0	99	88	-11.1	131	101	-23.1	66	46	-30.3	125	162	29.6
BIOCHEMISTRY	953	950	-.3	317	300	-5.4	216	217	.5	170	198	16.5	250	235	-6.0
BIOLOGY	2,742	3,227	17.7	320	333	4.1	179	213	19.0	1,131	1,135	.4	1,112	1,546	39.0
BIOMETRY/BIOSTATISTICS	165	160	-3.0	93	78	-16.1	16	7	-56.3	6	9	50.0	50	66	32.0
BIOPHYSICS	208	204	-1.9	99	103	4.0	42	46	9.5	15	19	26.7	52	36	-30.8
BIOSCIENCES, NEC	271	398	46.9	84	113	34.5	8	31	287.5	56	60	7.1	123	194	57.7
BOTANY	749	738	-1.5	61	65	6.6	204	197	-3.4	251	242	-3.6	233	234	.4
CELL BIOLOGY	108	177	63.9	41	63	53.7	19	25	31.6	34	56	64.7	14	33	135.7
ECOLOGY	147	196	33.3	19	22	15.8	43	31	-27.9	34	34	.0	51	109	113.7
ENTOMOLOGY/PARASITOLOGY	299	463	54.8	38	36	-5.3	128	180	40.6	37	51	37.8	96	196	104.2
GENETICS	202	220	8.9	63	83	31.7	26	31	19.2	37	31	-16.2	76	75	-1.3
MICROBIOLOGY	1,156	1,115	-3.5	284	268	-5.6	126	159	26.2	310	275	-11.3	436	413	-5.3
NUTRITION	955	957	.2	191	156	-18.3	246	223	-9.3	91	76	-16.5	427	502	17.6
PATHOLOGY	288	276	-4.2	126	121	-4.0	28	22	-21.4	7	8	14.3	127	125	-1.6
PHARMACOLOGY	488	488	.0	162	205	26.5	86	65	-24.4	101	70	-30.7	139	148	6.5
PHYSIOLOGY	673	634	-5.8	152	150	-1.3	77	84	9.1	137	134	-2.2	307	266	-13.4
ZOOLOGY	975	901	-7.6	59	93	57.6	126	96	-23.8	464	459	-1.1	326	253	-22.4
OTHER HEALTH SCIENCES (INCLUDES CLINICAL)	5,728	5,838	1.9	2,689	2,865	6.5	188	153	-18.6	355	383	7.9	2,496	2,437	-2.4
PSYCHOLOGY	5,923	5,764	-2.7	1,246	1,145	-8.1	684	624	-8.8	1,139	1,127	-1.1	2,854	2,868	.5
SOCIAL SCIENCES	19,360	21,516	11.1	3,748	3,876	3.4	1,872	1,789	-4.4	2,588	2,460	-4.9	11,152	13,391	20.1
AGRICULTURAL ECONOMICS	604	699	15.7	95	101	6.3	283	260	-8.1	34	31	-8.8	192	307	59.9
ANTHROPOLOGY	1,356	1,235	-8.9	196	195	-.5	102	96	-5.9	158	125	-20.9	900	819	-9.0
ECONOMICS (EXCEPT AGRICULTURE)	2,778	3,281	18.1	570	651	14.2	464	454	-2.2	464	484	4.3	1,280	1,692	32.2
GEOGRAPHY	725	811	11.9	65	90	38.5	65	76	16.9	272	292	7.4	323	353	9.3
HISTORY AND PHILOSOPHY OF SCIENCE	74	62	-16.2	27	23	-14.8	1	0	-100	8	10	25.0	38	29	-23.7
LINGUISTICS	3,167	3,295	4.0	593	645	8.8	108	81	-25.0	545	499	-8.4	1,921	2,070	7.8
POLITICAL SCIENCE	4,024	4,834	20.1	681	790	16.0	288	303	5.2	404	370	-8.4	2,651	3,371	27.2
SOCIOLOGY	3,474	3,647	5.0	759	700	-7.8	434	366	-15.7	506	488	-3.6	1,775	2,093	17.9
SOCIOLOGY/ANTHROPOLOGY	375	408	8.8	49	50	2.0	50	68	36.0	99	82	-17.2	177	208	17.5
SOCIAL SCIENCES, NEC	2,783	3,244	16.6	713	631	-11.5	77	85	10.4	98	79	-19.4	1,895	2,449	29.2

SOURCE: NATIONAL SCIENCE FOUNDATION.

TABLE A-20. FULL-TIME GRADUATE STUDENTS IN ALL GRADUATE DEPARTMENTS, BY SOURCE AND TYPE OF MAJOR SUPPORT: 1975

SOURCE OF MAJOR SUPPORT	TOTAL	FELLOWSHIPS AND TRAINEESHIPS	RESEARCH ASSISTANTSHIPS	TEACHING ASSISTANTSHIPS	OTHER TYPES OF SUPPORT
TOTAL, ALL SOURCES OF SUPPORT	210,641	38,966	40,247	47,637	83,791
U.S. GOVERNMENT, TOTAL	48,365	20,355	23,116	554	4,340
DEPARTMENT OF DEFENSE	5,091	513	2,500	0	2,078
DEPARTMENT OF HEW, TOTAL	21,098	15,276	4,788	347	687
NATIONAL INST OF HEALTH	13,806	9,345	3,926	165	370
OTHER HEW	7,292	5,931	862	182	317
NATIONAL SCIENCE FOUNDATION	8,790	1,799	6,812	52	127
ALL OTHER U.S. GOVERNMENT	13,386	2,767	9,016	155	1,448
INSTITUTIONAL SUPPORT	77,351	11,574	12,958	46,902	5,917
OTHER OUTSIDE SUPPORT, TOTAL	16,618	7,037	4,173	181	5,227
ALL OTHER U.S. SOURCES	11,284	4,067	3,933	181	3,103
FOREIGN SOURCES	5,334	2,970	240	0	2,124
SELF-SUPPORT	68,307	0	0	0	68,307
PERCENT DISTRIBUTION					
TOTAL, ALL SOURCES OF SUPPORT	100.0	100.0	100.0	100.0	100.0
U.S. GOVERNMENT, TOTAL	23.0	52.2	57.4	1.2	5.2
DEPARTMENT OF DEFENSE	2.4	1.3	6.2	.0	2.5
DEPARTMENT OF HEW, TOTAL	10.0	39.2	11.9	.7	.8
NATIONAL INST OF HEALTH	6.6	24.0	9.8	.3	.4
OTHER HEW	3.5	15.2	2.1	.4	.4
NATIONAL SCIENCE FOUNDATION	4.2	4.6	16.9	.1	.2
ALL OTHER U.S. GOVERNMENT	6.4	7.1	22.4	.3	1.7
INSTITUTIONAL SUPPORT	36.7	29.7	32.2	98.5	7.1
OTHER OUTSIDE SUPPORT, TOTAL	7.9	18.1	10.4	.4	6.2
ALL OTHER U.S. SOURCES	5.4	10.4	9.8	.4	3.7
FOREIGN SOURCES	2.5	7.6	.6	.0	2.5
SELF-SUPPORT	32.4	.0	.0	.0	81.5
PERCENT OF TOTAL					
TOTAL, ALL SOURCES OF SUPPORT	100.0	18.5	19.1	22.6	39.8
U.S. GOVERNMENT, TOTAL	100.0	42.1	47.8	1.1	9.0
DEPARTMENT OF DEFENSE	100.0	10.1	49.1	.0	40.8
DEPARTMENT OF HEW, TOTAL	100.0	72.4	22.7	1.6	3.3
NATIONAL INST OF HEALTH	100.0	67.7	28.4	1.2	2.7
OTHER HEW	100.0	81.3	11.8	2.5	4.3
NATIONAL SCIENCE FOUNDATION	100.0	20.5	77.5	.6	1.4
ALL OTHER U.S. GOVERNMENT	100.0	20.7	67.4	1.2	10.8
INSTITUTIONAL SUPPORT	100.0	15.0	16.8	60.6	7.6
OTHER OUTSIDE SUPPORT, TOTAL	100.0	42.3	25.1	1.1	31.5
ALL OTHER U.S. SOURCES	100.0	36.0	34.9	1.6	27.5
FOREIGN SOURCES	100.0	55.7	4.5	.0	39.8
SELF-SUPPORT	100.0	.0	.0	.0	100.0

SOURCE: NATIONAL SCIENCE FOUNDATION.

TABLE E-29. POSTDOCTORALS IN ALL GRADUATE DEPARTMENTS, BY FIELD OF SCIENCE AND SOURCE OF SUPPORT: 1974-75

AREA AND FIELD OF SCIENCE	TOTAL POSTDOCTORALS			SOURCE OF SUPPORT: U.S. GOVERNMENT: FELLOWSHIPS AND TRAINEESHIPS			SOURCE OF SUPPORT: U.S. GOVERNMENT: RESEARCH ASSOCIATES			SOURCE OF SUPPORT: NON-U.S. GOVERNMENT			RECEIVED DOCTORATE WITHIN PREVIOUS FIVE YEARS		
	1974	1975	PER-CENT CHANGE	1974	1975	PER-CENT CHANGE	1974	1975	PER-CENT CHANGE	1974	1975	PER-CENT CHANGE	1974	1975	PER-CENT CHANGE
TOTAL, ALL FIELDS OF SCIENCE	16,695	17,122	2.6	4,584	4,928	7.5	7,239	7,170	-1.0	4,872	5,024	3.1	9,808	10,561	7.7
ENGINEERING	1,039	1,168	12.4	94	93	-1.1	624	704	12.8	321	371	15.6	560	612	9.3
AERONAUTICAL	27	30	11.1	3	1	-66.7	14	24	71.4	10	5	-50.0	13	21	61.5
AGRICULTURAL	30	40	33.3	0	1		8	19	137.5	22	20	-9.1	16	24	50.0
CHEMICAL	161	189	17.4	7	12	71.4	95	96	1.1	59	81	37.3	89	103	15.7
CIVIL	85	104	22.4	4	6	50.0	52	54	3.8	29	44	51.7	45	56	24.4
ELECTRICAL	175	168	-4.0	9	12	33.3	112	101	-9.8	54	55	1.9	84	91	8.3
ENGINEERING SCIENCE	153	131	-14.4	16	16	.0	126	95	-24.6	11	20	81.8	84	68	-19.0
INDUSTRIAL	54	43	-20.4	9	8	-11.1	5	16	220.0	40	19	-52.5	9	7	-22.2
MECHANICAL	81	101	24.7	5	5	.0	44	62	40.9	32	34	6.3	44	45	2.3
METALLURGICAL/MATERIALS	172	210	22.1	22	17	-22.7	113	142	25.7	37	51	37.8	112	135	20.5
MINING	10	13	30.0	0	0		10	11	10.0	0	2		7	9	28.6
NUCLEAR	20	41	105.0	0	0		9	27	200.0	11	14	27.3	5	18	260.0
PETROLEUM	12	11	-8.3	1	0	-100	8	9	12.5	3	2	-33.3	11	10	-9.1
ENGINEERING, NEC	59	87	47.5	18	15	-16.7	28	48	71.4	13	24	84.6	41	25	-39.0
PHYSICAL AND ENVIRONMENTAL SCIENCES, TOTAL	4,119	4,171	1.3	360	503	39.7	2,904	2,809	-3.3	855	859	.5	2,894	2,952	2.0
PHYSICAL SCIENCES	3,845	3,904	1.5	339	471	38.9	2,714	2,632	-3.0	792	801	1.1	2,748	2,789	1.5
ASTRONOMY	142	103	-27.5	14	12	-14.3	100	64	-36.0	28	27	-3.6	92	71	-22.8
CHEMISTRY	2,350	2,483	5.7	219	344	57.1	1,548	1,520	-1.8	583	619	6.2	1,774	1,866	5.2
PHYSICS	1,353	1,318	-2.6	106	115	8.5	1,066	1,048	-1.7	181	155	-14.4	882	852	-3.4
ENVIRONMENTAL SCIENCES	274	267	-2.6	21	32	52.4	190	177	-6.8	63	58	-7.9	146	163	11.6
ATMOSPHERIC SCIENCES	50	40	-20.0	0	2		45	35	-22.2	5	3	-40.0	24	16	-33.3
GEOSCIENCES	156	174	11.5	14	16	14.3	103	113	9.7	39	45	15.4	91	118	24.2
OCEANOGRAPHY	68	53	-22.1	7	14	100.0	42	29	-31.0	19	10	-47.4	31	34	9.7
MATHEMATICAL SCIENCES	140	168	20.0	20	17	-15.0	74	55	-25.7	46	96	108.7	86	92	7.0
APPLIED MATHEMATICS	48	41	-14.6	7	6	-14.3	32	24	-25.0	9	11	22.2	24	19	-20.8
MATHEMATICS	76	99	30.3	9	5	-44.4	37	25	-32.4	30	69	130.0	55	55	.0
STATISTICS	16	28	75.0	4	6	50.0	5	6	20.0	7	16	128.6	7	18	157.1
LIFE SCIENCES	10,631	10,947	3.0	3,947	4,138	4.8	3,402	3,417	.4	3,282	3,392	3.4	5,952	6,596	10.8
AGRICULTURE	320	315	-1.6	21	17	-19.0	159	129	-18.9	140	169	20.7	155	179	15.5
ANATOMY	217	200	-7.8	91	95	4.4	56	57	1.8	70	48	-31.4	133	113	-15.0
BIOCHEMISTRY	1,352	1,323	-2.1	256	332	29.7	794	752	-5.3	302	239	-20.9	943	933	-1.1
BIOLOGY	737	809	9.8	222	279	25.7	300	272	-9.3	215	258	20.0	459	592	29.0
BIOMETRY/BIOSTATISTICS	7	11	57.1	3	7	133.3	1	1	.0	3	3	.0	4	5	25.0
BIOPHYSICS	205	252	22.9	60	117	95.0	110	101	-8.2	35	34	-2.9	118	172	45.8
BIOSCIENCES, NEC	65	71	9.2	17	27	58.8	20	20	.0	28	24	-14.3	54	61	13.0
BOTANY	135	144	6.7	19	8	-57.9	74	61	-17.6	42	75	78.6	92	91	-1.1
CELL BIOLOGY	213	222	4.2	62	94	51.6	112	94	-16.1	39	34	-12.8	147	181	23.1
ECOLOGY	2	31	1450	1	11	1000	0	16		1	4	300.0	2	2	.0
ENTOMOLOGY/PARASITOLOGY	125	130	4.0	15	5	-66.7	68	61	-10.3	42	64	52.4	87	78	-10.3
GENETICS	193	195	1.0	90	90	.0	62	61	-1.6	41	44	7.3	132	138	4.5
MICROBIOLOGY	603	678	12.4	186	246	32.3	263	259	-1.5	154	173	12.3	409	495	21.0
NUTRITION	96	161	67.7	22	39	77.3	45	63	40.0	29	59	103.4	59	74	25.4
PATHOLOGY	339	413	21.8	158	188	19.0	97	127	30.9	84	98	16.7	227	269	18.5
PHARMACOLOGY	393	442	12.5	133	154	15.8	184	222	20.7	76	66	-13.2	240	320	33.3
PHYSIOLOGY	478	562	17.6	191	248	29.8	176	201	14.2	111	113	1.8	338	382	13.0
ZOOLOGY	155	196	26.5	33	41	24.2	94	127	35.1	28	28	.0	90	112	24.4
OTHER HEALTH SCIENCES (INCLUDES CLINICAL)	4,996	4,792	-4.1	2,367	2,140	-9.6	787	793	.8	1,842	1,859	.9	2,263	2,399	6.0
PSYCHOLOGY	331	385	16.3	100	124	24.0	75	93	24.0	156	168	7.7	169	189	11.8
SOCIAL SCIENCES	435	283	-34.9	63	53	-15.9	160	92	-42.5	212	138	-34.9	147	120	-18.4
AGRICULTURAL ECONOMICS	50	26	-48.0	2	0	-100	32	19	-40.6	16	7	-56.3	18	13	-27.8
ANTHROPOLOGY	26	33	26.9	2	7	250.0	15	12	-20.0	9	14	55.6	11	12	9.1
ECONOMICS (EXCEPT AGRICULTURE)	69	45	-34.8	4	5	25.0	35	11	-68.6	30	29	-3.3	36	19	-47.2
GEOGRAPHY	22	7	-68.2	6	1	-83.3	1	1	.0	15	5	-66.7	8	5	-37.5
HISTORY AND PHILOSOPHY OF SCIENCE	6	6	.0	0	1		1	0	-100	5	5	.0	2	1	-50.0
LINGUISTICS	62	38	-38.7	8	10	25.0	18	11	-38.9	36	17	-52.8	29	23	-20.7
POLITICAL SCIENCE	98	18	-52.6	1	0	-100	9	3	-66.7	28	15	-46.4	10	10	.0
SOCIOLOGY	132	89	-32.6	30	20	-33.3	44	32	-27.3	58	37	-36.2	29	29	.0
SOCIOLOGY/ANTHROPOLOGY	5	1	-80.0	1	0	-100	0	0		4	1	-75.0	0	1	
SOCIAL SCIENCES, NEC	25	20	-20.0	9	9	.0	5	3	-40.0	11	8	-27.3	4	7	75.0

SOURCE: NATIONAL SCIENCE FOUNDATION.

APPENDIX IV

Instructions and Departmental Data Sheet

NOTE

Consolidated departmental data sheets for fall 1975 can be found as part of the Detailed Statistical Tables published under separate cover (NSF 76-318).

Definitions of Types of Major Support

Four types of major support were defined as follows: Fellowships and traineeships, teaching assistantships, research assistantships, and all other mechanisms of support. The Federal Interagency Committee on Education (FICE) differentiates between the two *fellowship and traineeship* stipends as follows: (1) A fellowship is an "award made directly to or on behalf of a student selected in a national competition, to enable him to pursue postbaccalaureate training," and (2) a traineeship is "an educational award to a student selected by his university." Except for the student selection process, the terms and conditions of the two types of awards are generally identical.[1] Both fellowships and traineeships allow the graduate student a wide degree of freedom while pursuing his training without requiring any specific services to the institution in exchange.

A *graduate research assistant* is usually required to perform specific duties under the direction or supervision of a faculty member or other departmental professional staff member. These appointments are usually associated with research grants or contracts administered by faculty or other principal investigators from earmarked funds. This type of program may impose a considerable workload on the student. However, participation in such projects often affords the graduate student the opportunity to apply the research to his dissertation requirements, thus expediting the completion of his academic work.

Of the several mechanisms available for supporting graduate students, the *teaching assistantship* is often the most demanding in terms of time and effort required. Teaching assistantships tend to entail rigorous and time-consuming duty assignments which sometimes lengthen the time required for completion of graduate work. On the other hand, such work experience is valuable to students preparing for careers in science, particularly those planning to join university faculties. Moreover, graduate teaching assistants render important services to universities.

The last category of support, known as *other* mechanisms, represents the group of students who are primarily self-supporting, or whose support cannot be described as one of the three types mentioned above. This would include support from savings, loans, families, part-time nonacademic work, etc.

[1] Federal Interagency Committee on Education, Student Support Study Group, *Report on Federal Predoctoral Student Support, Part 1 - Fellowships and Traineeships* (Washington, D.C., Apr. 1970).

INSTRUCTIONS FOR COMPLETING THE DEPARTMENTAL DATA SHEET, FALL 1975

General

Information supplied by your department on a Departmental Data Sheet (NSF Form 812) should reflect enrollment and postdoctoral appointments in fall 1975. A Form 812 is to be completed by each science and engineering department that supplied similar data in our 1974 survey, and by any newly formed departments or any departments that were inadvertently omitted last year. A list of departments for which data were submitted in 1974 has been provided to your Survey Coordinator on NSF Form 811.

A graduate student is defined as a student enrolled for credit in an advanced degree program leading to a master's or Ph.D. degree. M.D. or D.D.S. candidates, interns, and residents should NOT be reported UNLESS they are concurrently working for a master's or Ph.D. Individuals who already hold an M.D., D.D.S., master's, or Ph.D. degree but who are working on ANOTHER master's or Ph.D. degree are to be counted as graduate students, either full- or part-time. DO NOT report such individuals as postdoctorals in item 8.

Graduate students performing thesis or dissertation research away from the campus at Government and contractor-owned facilities are to be included as long as they are enrolled for credit in an advanced degree program.

A graduate student, whether full- or part-time should be reported in only one department. If any students or postdoctorals are in interdisciplinary programs, please coordinate your response with the other participating departments, so that each student or postdoctoral will be counted only once.

Care should be taken to submit as complete and accurate a report as possible so that followup procedures with your institution may be reduced to a minimum, and more timely statistics can be made available. If there are any questions concerning your response, please contact:

TeleSec Data Preparation Division, Suite 16
1725 K Street, N.W.
Washington, D.C. 20006

Or call Mrs. Susan Gray (collect): (202) 223-2651

Item Instructions

HIGHEST DEGREE PROGRAM OFFERED, item 4: Check the box which refers to the HIGHEST DEGREE program offered by this science department in November 1975. Medical school departments or sections should check "DOCTORATE."

FULL-TIME GRADUATE STUDENTS, item 5: A full-time graduate student is defined as a student enrolled for credit in a master's or Ph.D. degree program (not a regular staff member) who is engaged full time in training activities in his field of science, these activities may embrace any appropriate combination of study, teaching, and research, depending upon YOUR INSTITUTION'S OWN POLICY.

MECHANISMS OF SUPPORT, item 5, lines 1-8: Report each full-time graduate student according to the TYPE OF SUPPORT received in the fall of 1975. If the mechanisms of graduate student support utilized in your department do not correspond exactly to the title shown in item 5, please categorize your students according to how each spends the MAJORITY of his time, e.g., a graduate assistant spending most of his time in teaching should be classified as a graduate teaching assistant.

LEVEL OF STUDY, FIRST-YEAR AND BEYOND-FIRST, items 5 & 6. A FIRST-YEAR graduate student is defined as one who will have completed LESS THAN A FULL YEAR of graduate study as of the beginnings of the fall term of 1975. All other graduate students should be considered BEYOND THEIR FIRST YEAR.

STUDENTS RECEIVING FINANCIAL ASSISTANCE, item 5, columns (A) thru (H). Report the number of full-time graduate students in the appropriate column according to the source of the largest portion of their support. If a graduate student receives stipend support from more than one source, choose the MAJOR SOURCE category so that using ONLY WHOLE NUMBERS the Departmental Data Sheet will give a reasonably accurate AVERAGE support picture for the total number of full-time students in the department receiving financial assistance.

FEDERAL SOURCES, columns (A) thru (E). Report the number of full-time graduate students in the appropriate column where they receive the largest portion of their support. Full-time graduate students receiving the largest portion of their support from Federal Government LOANS should be reported as SELF-SUPPORTED, column I.

Department of Defense (DOD), column (A): Report full-time graduate students receiving support from the Department of the Army, Navy, or Air Force. Full-time graduate students whose major source of support is derived from the G.I. Benefit Program, should be reported as "SELF-SUPPORTED", column (I). See instructions concerning G.I. Benefits, item 7, below.

Department of Health, Education, and Welfare (DHEW), columns (B) and (C). Report full-time graduate students receiving support from the institutes or divisions of the NATIONAL INSTITUTES OF HEALTH (NIH) under column (B); support from all other components of DHEW should be reported under column (C), as indicated below:

Column (B)

National Cancer Institute
National Eye Institute
National Heart and Lung Institute
National Institute on Aging
National Institute of Allergy and Infectious Diseases
National Institute of Arthritis, Metabolism, and Digestive Diseases
National Institute of Child Health and Human Development
National Institute of Dental Research
National Institute of Environmental Health Sciences
National Institute of General Medical Sciences
National Institute of Neurological and Communicative Disorders and Stroke

Column (C)

Alcohol, Drug Abuse, and Mental Health Administration (including National Institute of Mental Health)
Center for Disease Control
Food and Drug Administration
Health Resources Administration
Health Services Administration
National Institute of Education
Office of Education
Social and Rehabilitation Service

NONFEDERAL SOURCES, columns (F) thru (H):

Institutional support, column (F). Report full-time graduate students receiving support from your own institution and State and local governments. Funds given to a university by the FEDERAL GOVERNMENT, such as training grant funds, should be reported under the appropriate Federal agency and NOT reported as institutional support.

Foreign sources, column (G): Includes support from any non-U.S. source.

Other U.S. sources, column (H): Includes support from nonprofit institutions, private industry, and all other U.S. sources.

SELF-SUPPORTED STUDENTS, column (I): Include full-time graduate students whose major source of support is derived from loans from any source and from personal or family financial contributions. Full-time graduate students receiving the largest portion of their support from Federal loans should be reported here.

TOTAL FOR ALL SOURCES, column (J): Please note that in providing information on sources of support, including self-support, your response should account for the total number of full-time graduate students in your department.

WOMEN, lines 10 and 11: Report the sources of support of all first-year women students in line 10 and of those beyond their first year in line 11. Please note that lines 10 and 11 in each column should not exceed the total of all first-year students or those beyond their first year that have been reported in lines 1-8 above.

FOREIGN STUDENTS, line 12: A FOREIGN full-time graduate student is defined as one who has not attained U.S. citizenship. Do not include native residents of a possession of the U.S., such as American Samoa. Applicants for U.S. citizenship are to be considered as "FOREIGN" until the date their citizenship becomes effective.

PART-TIME GRADUATE STUDENTS, item 6: A part-time graduate student is defined as a student who is enrolled in a master's or Ph.D. program, who is NOT pursuing graduate work full time as defined above in item 5.

G.I. BENEFITS, item 7: All graduate students whether full- or part-time who receive G.I. Benefits are to be totaled in item 7. Department chairmen are encouraged to coordinate with their institution's Office of Veterans Affairs to determine how many of their total graduate students received any G.I. Benefits, regardless of whether this was the major source of support or supplemental to another major source.

POSTDOCTORALS AND/OR RESEARCH ASSOCIATES, item 8. Under this category, include individuals with science or engineering doctorates and M.D.'s (including foreign degrees that are equivalent to U.S. doctorates) who devote FULL TIME to RESEARCH activities or study in the department under temporary appointments carrying no academic rank such as instructor or above. Such appointments are usually for a SPECIFIC TIME PERIOD. They may contribute to the academic program through seminars, lectures, or working with graduate students. Their postdoctoral activities have an element of additional training for them. Exclude medical residents, unless RESEARCH TRAINING under the supervision of a Senior Mentor is the PRIME PURPOSE of the appointment. Under column (A) enter the number of fellows and trainees receiving support under Federal training grants and/or fellowships. Under column (B) enter the number of research associates appointed with Federal support. Those remaining appointees with non-Government support are to be entered under column (C). Of the total in column (D), enter in column (E) the number receiving their Ph.D. or M.D. between 1971 and 1975.

Fields of Science

This form is being mailed to all institutions of higher education in the U.S. that confer doctorate-level degrees in the sciences and/or engineering, and to all medical schools contributing to the training of science master's and Ph.D. candidates and postdoctorals. Please return the completed forms for each graduate department in your institution represented by the following fields:

Engineering

Aeronautical
Agricultural
Chemical
Civil
Electrical
Engineering sciences
Industrial
Mechanical
Metallurgical
Mining
Nuclear
Petroleum
Other engineering

Physical Sciences

- Astronomy
- Atmospheric sciences
- Chemistry
- Geosciences
- Oceanography
- Physics
- Other physical sciences

Mathematical Sciences

- Applied mathematics
- Mathematics
- Statistics

Life Sciences

- Agriculture
- Biological sciences
  - Anatomy
  - Biochemistry
  - Biophysics
  - Microbiology
  - Pathology
  - Pharmacology
  - Physiology
  - Biology
  - Biometry and biostatistics
  - Botany
  - Cell biology
  - Ecology
  - Entomology and parasitology
  - Genetics
  - Nutrition
  - Zoology
  - Other biosciences
- Other life sciences
  - Anesthesiology
  - Cardiology
  - Clinical pharmacology
  - Endocrinology
  - Gastroenterology
  - Hematology
  - Neurology
  - Obstetrics and gynecology
  - Ophthalmology
  - Otorhinolaryngology
  - Pediatrics
  - Preventive medicine and community health
  - Psychiatry
  - Pulmonary disease
  - Radiology
  - Surgery
  - Clinical medicine
  - Nursing
  - Pharmaceutical sciences
  - Veterinary sciences
  - Other health related

Psychology

- Clinical psychology
- Experimental psychology
- Human development
- Physiological psychology
- Social psychology
- Other psychology

Social Sciences

- Agricultural economics
- Anthropology
- Economics (except agric.)
- Geography
- History and philosophy of science
- Linguistics
- Political science
- Sociology
- Sociology and anthropology
- Other social sciences

PLEASE EXCLUDE FROM YOUR RESPONSE ALL GRADUATE DEPARTMENTS IN THE FIELDS OF EDUCATION, LAW, HUMANITIES, MUSIC, THE ARTS, PHYSICAL EDUCATION, LIBRARY SCIENCE, AND ALL OTHER NONSCIENCE FIELDS.

Form 812 is to be returned to each institution's Survey Coordinator for transmittal by January 31, 1976 to:

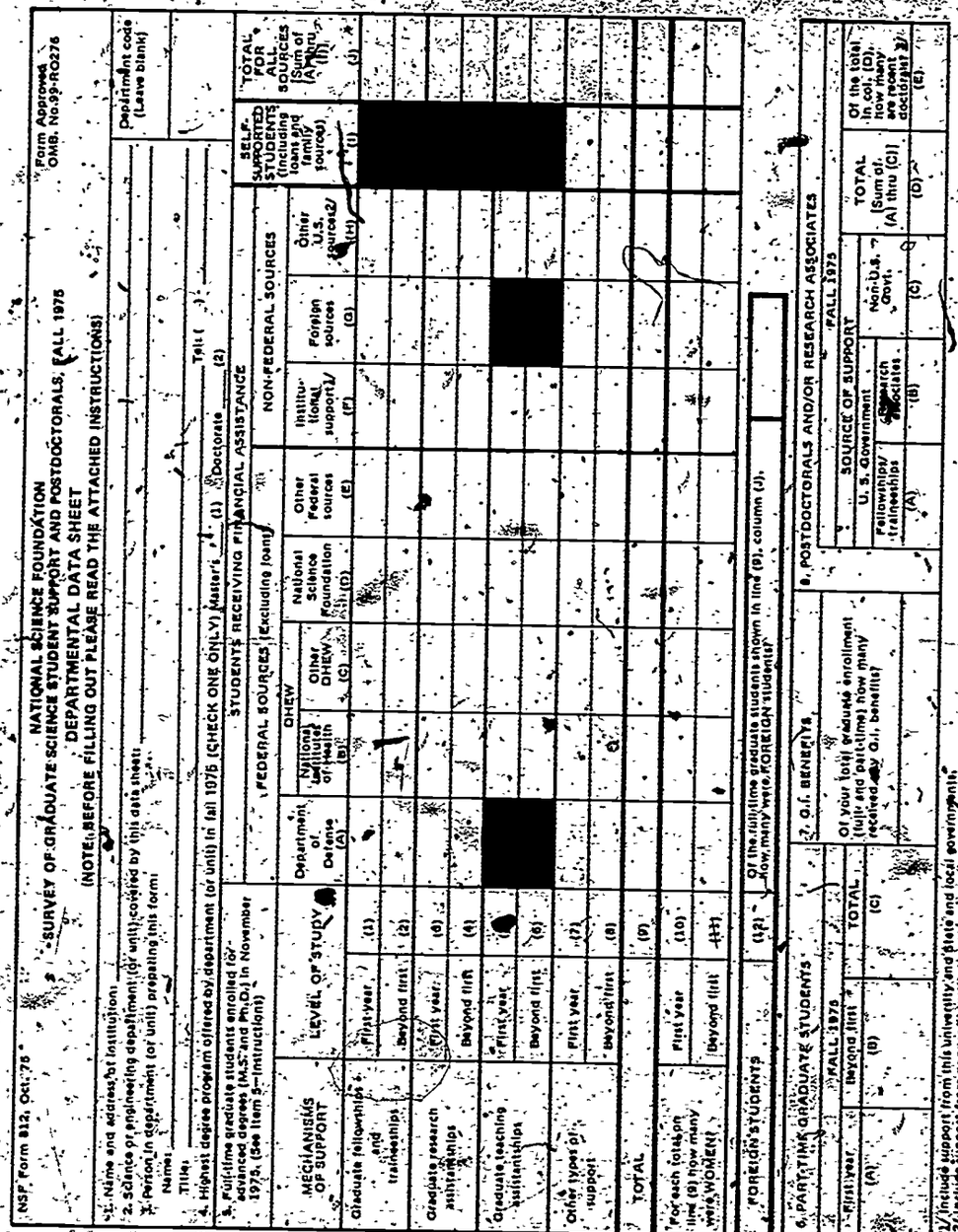
TeleSec Data Preparation Division, Suite 16
1725 K Street, N.W.
Washington, D.C. 20006

Attention: Mrs. Susan Gray

Thank you very much for your cooperation.

Office of Program Planning and Evaluation
National Institutes of Health
Bethesda, Maryland 20014

Division of Science Resources Studies
National Science Foundation
Washington, D.C. 20550



Other Science Resources Publications

REPORTS	NSF No.	Price
Characteristics of Doctoral Scientists and Engineers in the United States: 1975	77-309	$3.50
Women and Minorities in Science and Engineering	77-304	$0.35
Federal Funds for Research, Development, and Other Scientific Activities: Fiscal Years 1975, 1976, and 1977, Volume XXV	77-301	$1.45
Detailed Statistical Tables	76-315	—
Characteristics of the National Sample of Scientists and Engineers, 1974:		
Part 1. Demographic and Educational	75-333	$1.90
Part 2. Employment	76-323	$2.80
Part 3. Geographic	76-330	$2.00
U.S. Scientists and Engineers, 1974	76-329	$1.25
An Analysis of Federal R&D Funding by Function, Fiscal Years 1969-1977	76-325	$2.45
Research and Development in Industry, 1974: Funds, 1974; Scientists & Engineers, Jan. 1975	76-322	$2.00
1985 R&D Funding Projections	76-314	$2.90
National Patterns of R&D Resources: Funds & Manpower in the United States 1953-1977	77-310	$1.50
Projections of Degrees and Enrollment in Science and Engineering Fields to 1985	76-301	$1.15
The 1972 Scientist and Engineer Population Redefined:		
Volume 1. Demographic, Education, and Professional Characteristics	75-313	$3.70
Volume 2. Labor Force and Employment Characteristics	75-327	$2.65
Detailed Statistical Tables, Engineers, by Field	76-306	—

Research and Development in State Government Agencies, Fiscal Years 1972 and 1973	75-303	$1.80
Young and Senior Science and Engineering Faculty: 1974 Support, Research Participation, and Tenure	75-302	$1.70
Projections of Science and Engineering Doctorate Supply and Utilization, 1980 and 1985	75-301	$1.30
REVIEWS OF DATA ON SCIENCE RESOURCES		
No. 28. "Scientists and Engineers From Abroad: Trends of the Past Decade, 1966-75"	77-305	$0.35
No. 27. "Education and Work Activities of Federal Scientific and Technical Personnel: January 1974"	76-308	$0.40
No. 26. "Energy and Energy-Related R&D Activities of Federal Installations and Federally Funded Research and Development Centers: Funds, FY 1973-75 (est.) and Manpower, Jan. 1973-75 (est.)"	76-304	$0.35
No. 23. "R&D Expenditures of State Public Institutions, Fiscal Year 1973"	75-311	$0.35
HIGHLIGHTS		
"Private Industry Employment of Scientists and Engineers in 1975 Shows 5-Year Decline"	77-312	—
"Energy Increase of 18 Percent Paces Industrial R&D Spending in 1975"	76-324	—
"Racial Minorities in the Scientist and Engineer Population"	75-314	—