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ABSTRACT

This report presents a summary of the 1989-90 results of the Survey of Earned Doctorates conducted each year since 1958. Organized into three sections, the report first presents an analysis of trends in the numbers of doctorate recipients including data with regard to fields, gender, citizenship status, time-to-degree, and post-graduation plans (status, postdoctoral location and plans, employment sector). A second section on financial support examines primary sources of support and indebtedness. The final section discusses trends among United States citizen minority doctorates including trends in numbers and proportions of doctorates, doctoral fields, gender, parents' education, degree-granting institutions, primary sources of support, indebtedness, time-to-degree, post-graduation plans, and a summary and tables. Data on five groups are reported: Asians, blacks, Hispanics, Native Americans, and whites. Minorities earned 9.4 percent of doctorates in 1990 and in 1975 they earned 6.3 percent. The most significant gains were among Asians, Native Americans, and Hispanics. Blacks experienced a 17 percent decrease in doctoral degrees received between 1975 and 1990. Four appendixes present basic tables, trend tables for 1980 through 1990, technical notes and the survey instrument. (JB)

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Summary Report 1990

Doctorate Recipients from United States Universities

HIGHLIGHTS

Doctorate Recipients in 1990

- In 1990, 36,027 Ph.D.s were graduated from U.S. universities, the largest number of doctorates ever awarded. The doctorates were distributed among the seven broad fields as follows: life sciences (6,613), education (6,484), social sciences (6,076), physical sciences (5,859), engineering (4,892), humanities (3,820), and professional/other fields (2,283).

- Women earned 13,061 doctoral degrees in 1990, the largest number of any year. Their 36 percent share of the cohort was the same as in 1989. Despite gains in many fields, women continued to be underrepresented in physical sciences and engineering, accounting for 18 percent and 8 percent of 1990 doctorates in these fields, respectively.

- In 1990, 9,398 Ph.D.s were awarded to non-U.S. citizens (1,654 to permanent residents and 7,744 to temporary residents). Foreign nationals received 28 percent of all doctoral degrees, the highest proportion ever. Moreover, they earned 57 percent of the degrees in engineering and 40 percent of the degrees in physical sciences. Asian countries supplied the greatest number of foreign national Ph.D.s.

- The median total elapsed time-to-degree (TTD) from year of baccalaureate to year of doctorate in 1990 was 10.5 years, the same as last year. Median registered, or enrolled, time (RTD) was 7.0 years—a slight increase since last year. Time-to-degree was longer for Ph.D.s in social sciences and the nonsciences than in the natural sciences.

- Seventy-four percent of the 1990 doctorate recipients with definite postgraduation commitments planned to be employed, while 26 percent planned further study. Of those non-U.S. recipients who indicated that the had definite plans, either for employment or study, 86 percent of permanent residents and 54 percent of temporary residents planned to stay in the United States. Among U.S. and permanent resident Ph.D.s who planned to work in the United States, 52 percent planned employment in academe, 20 percent in industry, 10 percent in government, and 18 percent in "other" sectors.

- In 1990, 48 percent of new Ph.D.s reported universities and 40 percent reported personal sources as the main providers of their financial support. Another 5 percent reported primary support from the federal government, and 7 percent stated that most of their support came from "other" sources.

- Half of the doctorate recipients in 1990 reported educational debt upon graduation. In addition, 16 percent of Ph.D.s in 1990 owed less than $5,000; 12 percent owed between $5,001 and $10,000; and 22 percent owed $10,001 or more.

U.S. Citizen Minority Doctorates (Special Section)

- Between 1975 and 1990, U.S. minority groups increased their annual number of doctorates by 37.7 percent—from 1,624 to 2,236—and their share of all doctorates from 6.3 percent to 9.4 percent. This growth occurred at a time when the overall number of Ph.D.s granted to U.S. citizens fell by 10.7 percent. However, while Asians, Native Americans, and Hispanics made gains since 1975, blacks experienced a 17.1 percent decrease—primarily a result of the more than 50 percent decline in Ph.D.s earned by black men. Degree attainment also fell among white men (by one-third), accounting for the 11.1 percent decrease in the total number of doctorates received by whites.

- Asian Ph.D.s in 1990 were most concentrated in engineering (24.6 percent) and life sciences (24.1 percent), while the other minority groups preferred education (50.7 percent of blacks, 38.7 percent of Native Americans, and 24.6 percent of Hispanics).

- In 1990 black women received 61.4 percent of all Ph.D.s awarded to blacks; Hispanic and Native American women approached parity with their male counterparts; and Asian women earned one-third of their group's doctorates. Women in all groups significantly increased both their number and proportion of Ph.D.s since 1975.

- Time to doctorate—both total and registered—was longest among black and Native American Ph.D.s in 1990 and shortest among Asian Ph.D.s. The longest TTD was held by blacks (a median 16.5 years) and the longest RTD by Native Americans (8.3 years). Asians experienced both the shortest TTD and RTD at 9.2 years and 6.8 years, respectively.

- Colleges and universities were the primary source of graduate school support for 54.4 percent of Asian Ph.D.s in 1990, whereas personal sources (including loans) were cited by 62.7 percent of blacks, 59.5 percent of Native Americans, and 47.5 percent of Hispanics.

- In 1990, 69.0 percent of Hispanics and 61.8 percent of blacks reported education-related debt, compared with approximately 55 percent of Asians and Native Americans. Over one-third of Hispanic Ph.D.s and about one-fourth of the other minorities owed more than $10,000 by the time they graduated.

- Although there has been a noticeable shift toward postdoctoral study since 1975, over half of each minority group in 1990 reported plans for employment after graduation. Black Ph.D.s were the most likely to be employed (89.3 percent) and Asian Ph.D.s the most likely to further their education (36.7 percent). Academe remained the principal employer of all minority groups except Asians, who were more attracted to industry.

Summary Report 1990

Doctorate Recipients from United States Universities

The Survey of Earned Doctorates is conducted
for the National Science Foundation
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NOTICE: The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The survey project is part of the program of the Office of Scientific and Engineering Personnel (OSEP).

This report has been reviewed by a group of persons other than the author according to procedures approved by a Report Review Committee consisting of members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

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This report is based on research conducted by OSEP with the support of the National Science Foundation (NSF), the National Institutes of Health (NIH), the National Endowment for the Humanities (NEH), the U.S. Department of Education (U.S. Dept. of Ed.), and the U.S. Department of Agriculture (USDA) under NSF Contract No. SRS-8517008. Opinions, findings, conclusions, or recommendations expressed in this publication are those of OSEP and do not necessarily reflect the views of the sponsoring agencies.

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PREFACE AND ACKNOWLEDGMENTS

This report presents a summary of the results of the 1989-90 Survey of Earned Doctorates (SED), which has been conducted each year since 1958 by the National Research Council's Office of Scientific and Engineering Personnel (OSEP) and its predecessor organizations. Questionnaires, distributed with the cooperation of the graduate deans of U.S. universities, are filled in by graduates as they complete requirements for their doctoral degrees. The doctorates are reported by academic year (from July 1 of one year through June 30 of the following year) and include research and applied-research doctorates in all fields. Professional degrees such as the M.D., D.D.S., O.D., D.V.M., and J.D. are not covered by this survey. A full list of included degrees can be found inside the back cover. For convenience throughout this report, "Ph.D." is used to represent any of the doctoral degrees covered by the survey.

This *Summary Report* is the twenty-fourth in an annual series of reports that began in 1967. Trend data from earlier periods can be found in the book *A Century of Doctorates: Data Analyses of Growth and Change* (National Academy of Sciences, 1978). All survey responses become part of the Doctorate Records File (DRF), a virtually complete data bank on doctorate recipients from 1920 to 1990. More than 85 percent of the 987,010 records now in the DRF have come from results of the 1958-1990 surveys. For doctorates granted during the 1920-1957 period, information was compiled from commencement bulletins, registrars' records, and other published material.

The conduct of the SED, the maintenance of the resulting data file, and the publication of this report are funded jointly by the National Science Foundation (NSF), the National Institutes of Health (NIH), the National Endowment for the Humanities (NEH), the U.S. Department of Education (U.S. Dept. of Ed.), and the U.S. Department of Agriculture (USDA). Susan Hill (NSF) serves as the project officer for the agencies, and her counsel is appreciated. In addition, constructive reviews of the design and analysis of the survey by Mary Golladay (NSF), David Chananie (NIH), Jeffrey Thomas (NEH), Linda Zimbler (U.S. Dept. of Ed.), and K. Jane Coulter and Gwen Lewis (USDA) increased the survey's relevance to national policy issues. We also express deep appreciation to the graduate deans in the doctorate-granting institutions for their continuing interest in and assistance to this project. It is through their cooperation that the DRF continues to serve as a useful resource for monitoring developments in graduate education in the country.

The 1989-90 Survey of Earned Doctorates was conducted under the able administrative supervision of Joanne M. Weinman, who, together with Delores H. Thurgood, analyzed survey results and prepared this report. Andrew Flannery produced the graphics and tables for the body of the report, reviewed drafts of the report, and verified the accuracy of the numbers. George Orvis also reviewed the report and verified the accuracy of the numbers. Martha Bohman prepared all appendix tables and finalized the manuscript for publication, and Julie Clarke assisted in finalizing the

manuscript. Special appreciation is also expressed to the following people: Eileen Milner, who supervised the coding and editing of the data, and her staff who provided proficient support in the collection and processing of the survey: Walter Fox, Abraham Gedamu, John Hines, and Mary Wanyoike. Thanks are also expressed to George Boyce, manager of OSEP's Data Processing Section, and to Joseph Finan and Maren Herman, who were responsible for the computer programming and processing.

The work of this project was overseen by the Advisory Committee for Studies and Analysis of the Office of Scientific and Engineering Personnel, which is concerned with those activities of the National Research Council that contribute to the effective development and utilization of the nation's scholars and research personnel. During the development of this report, Alan E. Fechter, Executive Director OSEP, provided helpful guidance, as did Pamela Ebert Flattau, who served as OSEP's Director of Studies and Surveys. Suggestions for improvement of the content or format of the report, other comments, and questions are welcome and may be directed to the Project Manager, Joanne M. Weinman.

Linda Wilson, Chair
Office of Scientific and Engineering Personnel
Advisory Committee on Studies and Analyses

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INTRODUCTION

In academic year 1990 (July 1, 1989-June 30, 1990), 36,027 Ph.D.s were graduated from U.S. universities.[1] This is the largest number of doctorates ever awarded in the more than three decades that these data have been collected. This year also marks the peak for various subpopulations within the overall group of recipients. For instance, both men and women received the highest number of doctorates of any year—22,966 and 13,061, respectively. The number of foreign citizens (9,398) earning doctorates in the United States was also the greatest number ever. In addition, the median total elapsed time from baccalaureate to doctorate remained at its record high of 10.5 years in 1990; and registered, or enrolled, time grew to 7.0 years. The median age of recipients was 33.9 years in 1990, the oldest cohort ever.

Selected statistics from the 1989-90 Survey of Earned Doctorates (SED) are presented in this report, along with trend data from the comprehensive Doctorate Records File (a virtually complete data bank on doctorate recipients from 1920 to 1990). The body of the report discusses highlights of these data. Supplementary tables on 1990 doctorates are displayed in Appendix A, and 1980-1990 data are displayed in Appendix B. Technical notes are in Appendix C, and the survey questionnaire is included in Appendix D.

Recent *Summary Reports* have included special sections that analyze important trends in the survey results. This year's special section focuses on U.S. minorities during the period 1975 to 1990. It presents trends in the number of doctorates and findings on gender differences, fields of specialization, and immediate postgraduation plans. In addition, it examines several factors that may contribute to persistence in graduate school: the educational attainment of parents; the institutions granting baccalaureate and doctorate degrees to Ph.D. recipients; the length of time it took to earn the Ph.D.; and financial considerations such as sources of support in graduate school and education-related debt.

Seven broad fields are profiled in the text of *Summary Reports*. Readers should note that these fields may differ from those reported by federal sponsors of the survey. For a list of subfields that make up each broad field, see the inside back cover of this report and the specialties list in Appendix D. Data on fine fields of Ph.D.s are included in the appendix tables.[2]

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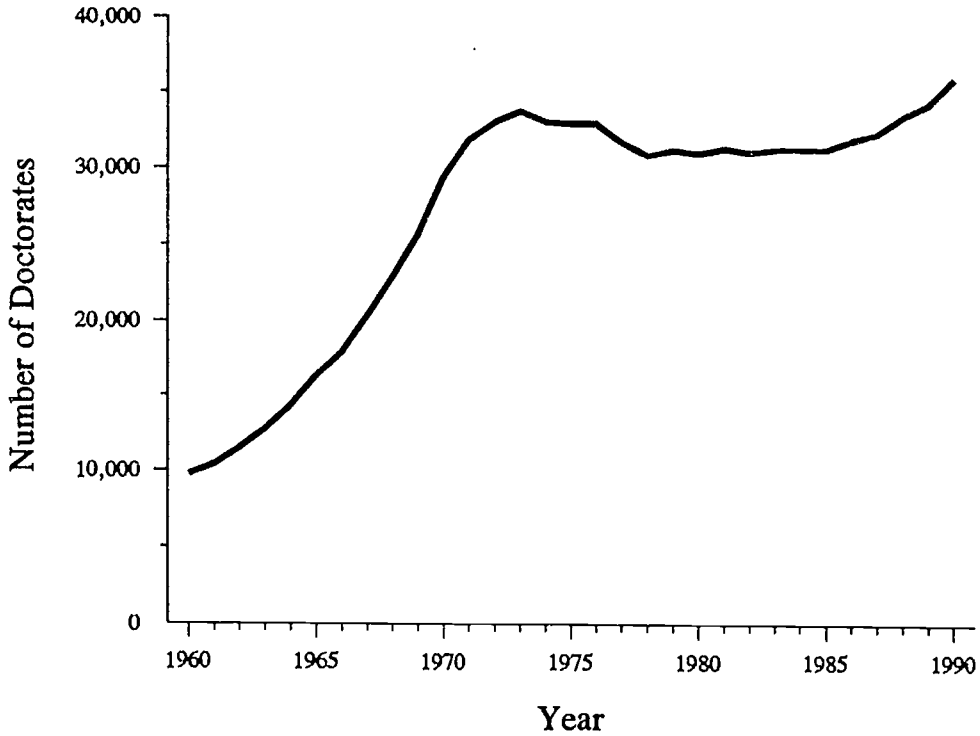
[1]Responses were received from 33,599, or 93.3 percent, of the 36,027 persons who earned doctorates in academic year 1990. When individuals did not complete the questionnaire, abbreviated records were compiled using information from the universities' commencement bulletins. As a result, basic information—such as gender, field, institution, and year of Ph.D.—is available for all of the 36,027 doctorate recipients.

[2]Additional information on doctorates in science and engineering fields is available from the National Science Foundation, a sponsor of the SED. Please contact the project officer, Susan Hill, for further information at the National Science Foundation, 1800 G Street N.W., Room L-609, Washington, D.C. 20550.

TREND ANALYSIS OF THE NUMBER OF DOCTORATE RECIPIENTS

In academic year 1990, U.S. colleges and universities awarded the largest number of doctorates ever, 36,027. For the fifth consecutive year, the number of students earning doctoral degrees increased. This rise occurred after a plateau that characterized the first half of the 1980s. The trend line of the number of Ph.D.s awarded shows a dramatic rise in the 1960s, peaking initially at 33,755 in 1973. (See Figure 1 and Table 1.) A decline then occurred through 1978, after which the number of Ph.D.s stabilized around 31,200 annually through 1985.

Although the number of doctorates increased more than three and a half times between 1960 and 1990, some groups of recipients increased while others declined proportionately. For example, the proportion of women increased from 11 percent (1,042) in 1960 to 36 percent (13,061) in 1990. The proportion of non-U.S. citizens grew from 12 percent (1,176) in 1960 to 28 percent (9,398) in 1990, the largest proportion (and number) of foreign citizens in any year.



NOTE: See Table 1 for numbers of doctorates.

FIGURE 1 Doctorates awarded by U.S. colleges and universities, 1960-1990.

TABLE 1 Doctorates Awarded by U.S. Colleges and Universities, 1960-1990

Year	Number	Year	Number	Year	Number	Year	Number
1960	9,733	1968	22,936	1976	32,946	1984	31,337
1961	10,413	1969	25,743	1977	31,716	1985	31,297
1962	11,500	1970	29,498	1978	30,875	1986	31,895
1963	12,728	1971	31,867	1979	31,239	1987	32,364
1964	14,325	1972	33,041	1980	31,020	1988	33,490
1965	16,340	1973	33,755	1981	31,357	1989	34,319
1966	17,949	1974	33,047	1982	31,111	1990	36,027
1967	20,403	1975	32,952	1983	31,282		

Field of Doctorate

The growth in the total number of doctorates awarded obscures differences among the seven broad fields. Figure 2 shows the trend in doctorate production from 1960 to 1990 for each of the seven broad fields. (See also Table 3 on page 10.) The field of life sciences[3] continued its upward trend in 1990 and exceeded the field of education for the second consecutive year in the number and proportion of degrees awarded: 6,613 Ph.D.s (or 18 percent). This number contrasts sharply with the 1,729 Ph.D.s awarded in the life sciences in 1960, although the proportion of life science degrees is the same for both years. Within life sciences, health sciences grew from 4 percent to 14 percent of the field over the period, while biological sciences decreased from 72 percent to 66 percent and agricultural sciences declined from 24 percent to 20 percent. The upsurge in the field of nursing largely accounted for the growth in health sciences over the last decade. In 1980, doctorates in nursing comprised 13 percent (77)[4] of health sciences Ph.D.s, and in 1990 they comprised 28 percent (267). (See Appendix Table B-1.)

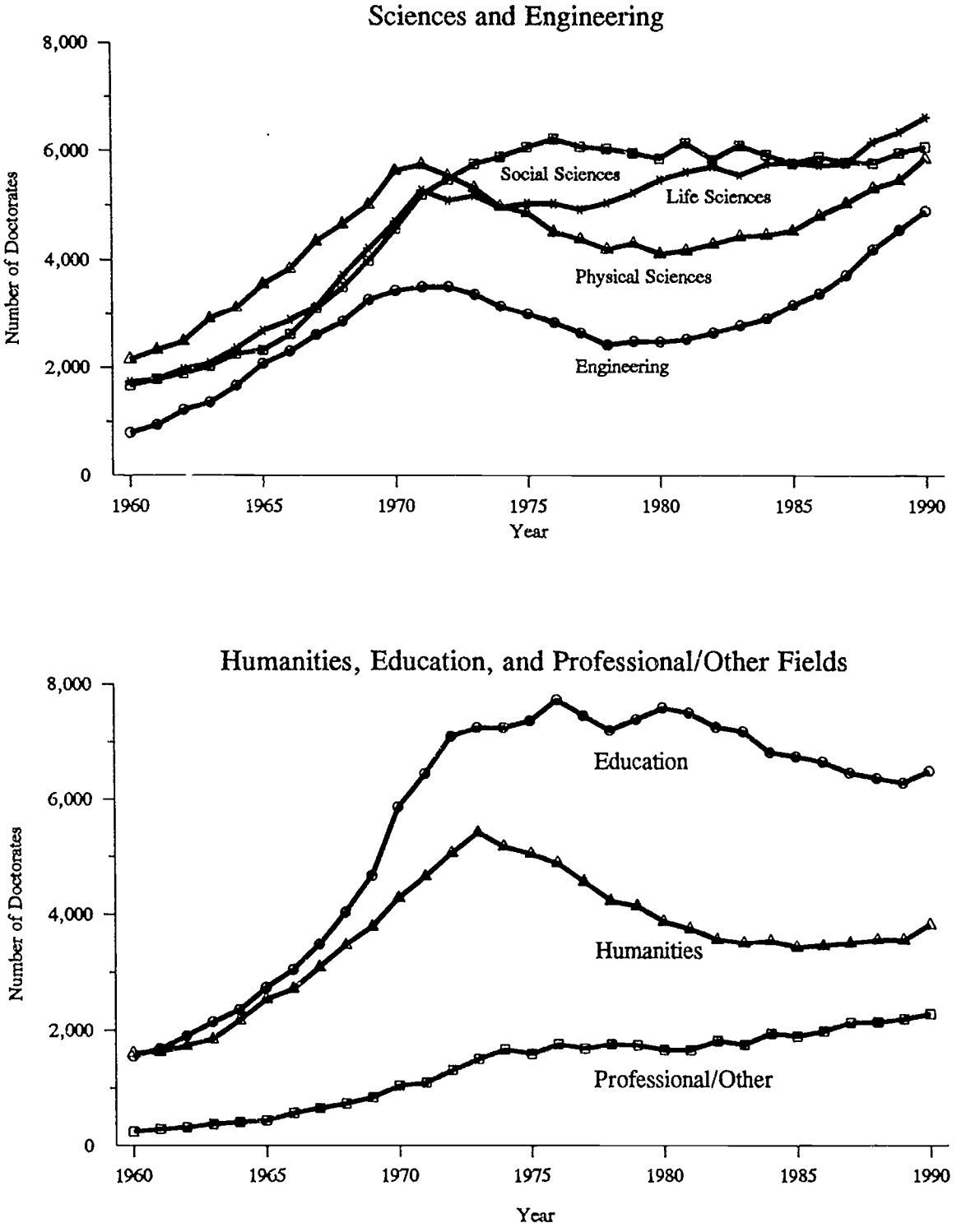
The number of doctorates in both physical sciences and engineering has increased fairly steadily over the last decade, recovering from their declines which characterized the period from 1965 to 1980. In 1990, these two fields reached all-time highs in the number of degrees awarded, 5,859 and 4,892, respectively. (See Table 3 on page 10.) The proportion of doctorates in engineering was also the highest in 1990, at 14 percent of all doctorates, while physical sciences, at 16 percent, was still well below its 1960 proportional high of 22 percent.

Professional/other fields[5] was the one broad area that grew in most years, steadily climbing upward from 241 recipients in 1960 to 2,283 in 1990. It also showed a proportionate increase, growing from 3 percent in 1960 to 6 percent in 1990.

[3]"Life sciences" is an umbrella term that covers the biological, agricultural, and health sciences.

[4]Data on nursing are not available for years before 1979.

[5]Professional/other fields include business and management, communications, and other fields as specified in the specialties list in Appendix D, page 95 of this report.



NOTE: See Table 3 for the number of doctorates in selected years, 1960-1990.

FIGURE 2 Doctorate recipients, by broad field, 1960-1990.

While degree production has grown in numbers since 1960, the distribution by fields has shifted. Humanities exhibited a downward trend in proportionate shares since 1960, falling from 16 percent to 11 percent over the period, with 3,820 degrees awarded in 1990. The 6,076 doctorates received in social sciences in 1990 was a return to the 1960 level of 17 percent, but this represents a drop from 19 percent a decade ago. Similarly, the field of education with 6,484 degrees and 18 percent in 1990 has fallen since 1980, when it represented 24 percent of the Ph.D.s, although it has not returned to the 1960 level of 16 percent. (Numbers used in this discussion can be found in Table 3 on page 10.)

The characteristics of recipients in the various fields have also changed since 1960. In that year, about 87 percent of new physical science doctorates and 77 percent of new engineering doctorates were U.S. citizens. In 1990, the U.S. percentages were about 60 and 43, respectively. Another change in the overall characteristics of the recipients is the increasing participation of women in certain fields. Women significantly increased their proportion among life sciences doctorates, from 9 percent in 1960 to 37 percent in 1990. They also increased their presence in professional/other fields: in 1960 women represented 15 percent of the recipients; in 1990 they received 36 percent of the doctorates. (See Table 2 page 6.)

Gender

The record number of doctorates awarded in 1990 was attributable to an increase in the numbers of both men and women earning the Ph.D. Men achieved their largest number of degrees ever this year, 22,966. The number of men earning the doctorate began a 13-year decrease in 1973; since 1986, however, men have increased their doctorate production each year. (See Table 2.) This increase can be explained by the influx of foreign men earning degrees; in 1990, foreign male Ph.D.s earned 7,496 degrees (or 35 percent of all doctorates awarded to men).

Women also reached their highest number ever this year, 13,061. In comparison to men, however, women have increased both their number and proportion of doctorates in almost every year from inception of the SED (1958) through 1986. Since then their number has continued to grow but their proportion stayed at about 35 percent through 1988, rising to 36 percent in 1989 and 1990. The increase in the number of degrees awarded to women also was related to the increased numbers of foreign doctorates, although to a lesser extent than for men. In 1990, foreign women earned 1,902 Ph.D.s (or 15 percent of all degrees awarded to women).

Since 1960, women have experienced significant gains in fields in which they have been typically underrepresented—such as physical sciences, life sciences, and engineering—and more moderate growth in social sciences and professional/other fields where they have been typically well represented. In humanities and education, the number of doctorates earned by women has remained relatively stable since 1984.

Among men, the number of Ph.D.s in the fields of physical sciences, engineering, and life sciences began to fall after peaking in 1971. The decrease in these fields corresponded to the decline in the total number of men who received doctorates during much of the 1970s and 1980s. The number of men who received Ph.D.s in life sciences showed a more moderate decline than in the other two fields and has been relatively stable over the last two decades. The decline in the number of men who received degrees in social sciences and professional/other fields began later, in 1977. The number of doctorates awarded to males in social sciences declined through 1988 but recovered somewhat in 1989 and 1990, and the number awarded to men in professional/other fields has grown in the last five years. Over the last seven years,

TABLE 2 Gender of Doctorate Recipients, by Broad Field for Selected Years, 1960-1990

Gender	1960	1965	1970	1975	1980	1985	1990
Total All Fields	9,733	16,340	29,498	32,952	31,020	31,297	36,027
Men	8,691	14,580	25,527	25,751	21,612	20,553	22,966
Women	1,042	1,760	3,971	7,201	9,408	10,744	13,061
Physical Sciences*	2,152	3,550	5,628	4,857	4,111	4,531	5,859
Men	2,077	3,373	5,308	4,454	3,609	3,817	4,791
Women	75	177	320	403	502	714	1,068
Engineering	794	2,074	3,434	3,002	2,479	3,166	4,892
Men	791	2,067	3,419	2,950	2,389	2,968	4,478
Women	3	7	15	52	90	198	414
Life Sciences	1,729	2,684	4,693	5,026	5,461	5,780	6,613
Men	1,576	2,406	4,084	4,031	4,047	3,910	4,139
Women	153	278	609	995	1,414	1,870	2,474
Social Sciences	1,668	2,327	4,566	6,066	5,855	5,765	6,076
Men	1,453	2,035	3,829	4,544	3,810	3,388	3,261
Women	215	292	737	1,522	2,045	2,377	2,815
Humanities	1,600	2,530	4,278	5,046	3,872	3,429	3,820
Men	1,339	2,120	3,296	3,359	2,339	1,940	2,079
Women	261	410	982	1,687	1,533	1,489	1,741
Education	1,549	2,736	5,857	7,360	7,586	6,733	6,484
Men	1,250	2,209	4,671	5,065	4,203	3,242	2,748
Women	299	527	1,186	2,295	3,383	3,491	3,736
Professional/Other	241	439	1,042	1,595	1,656	1,893	2,283
Men	205	370	920	1,348	1,215	1,288	1,470
Women	36	69	122	247	441	605	813

*Includes mathematics and computer sciences.

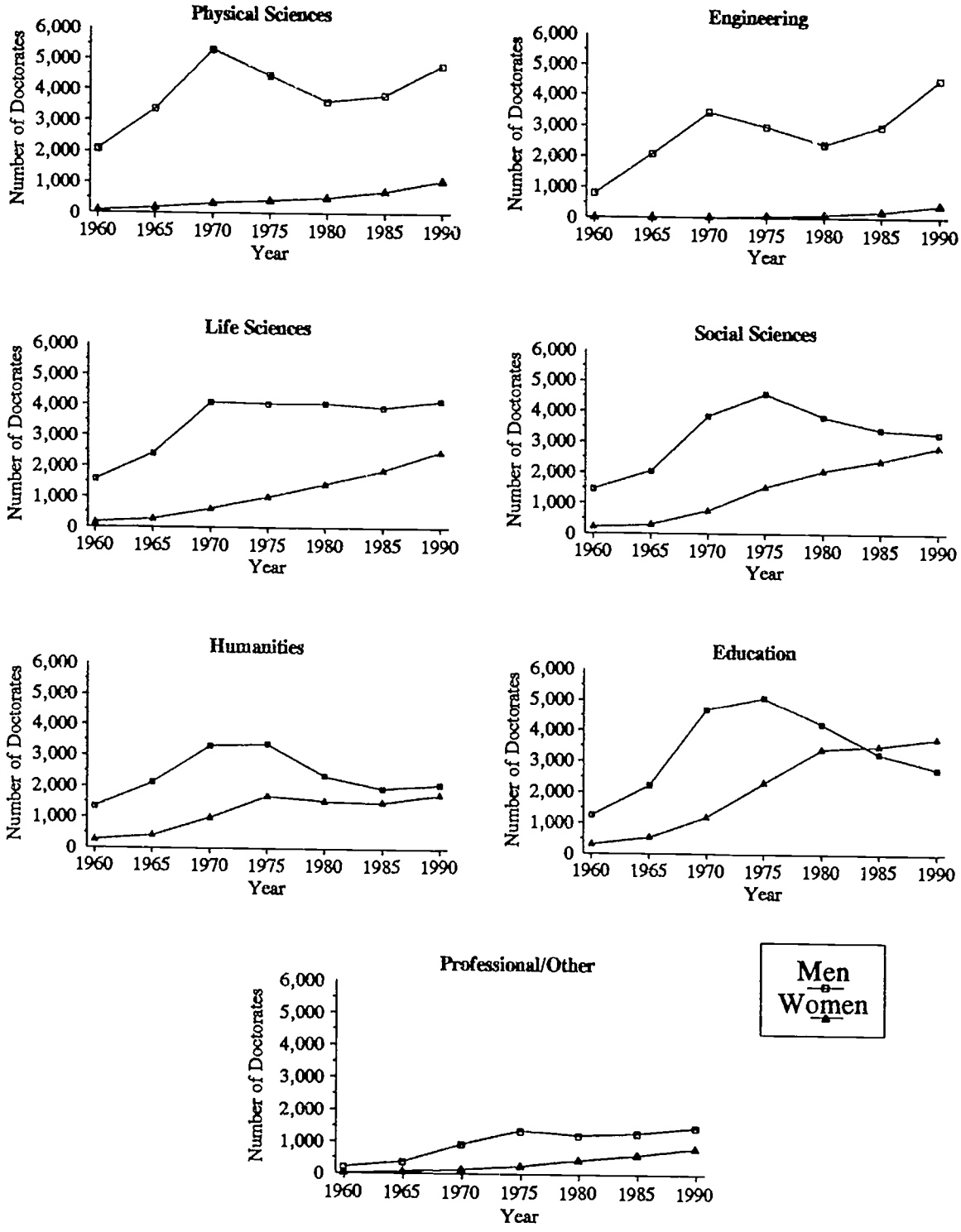
decreases occurred in the number of men receiving doctorates in humanities and education; however, some improvement was apparent this past year, when their number in both fields showed some growth. (See Figure 3 for doctorate recipients by gender and broad field at five-year intervals.)

It is evident from both Table 2 and Figure 3 that the gender gap has narrowed in all fields—in some cases because women increased their numbers dramatically, and in others because the number of men decreased while the number of women grew. Nevertheless, disparities between the sexes remain in certain disciplines. (See Appendix Table A-3.) The data indicate that, despite numerical gains, women are still underrepresented proportionately in physical sciences and engineering (82 percent male versus 18 percent female in physical sciences, and 92 percent male versus 8 percent female in engineering). In life sciences, women earned 37 percent of all doctorates in 1990, although they outnumbered men in the subfield of health sciences, where they constituted 62 percent of Ph.D.s. This proportion was largely the result of the number of women earning Ph.D.s in nursing, a traditionally female-dominated area; 43 percent of health science Ph.D.s awarded to women were in nursing. (See Appendix Table A-1 for numbers in each specialty.)

In both social sciences and humanities, on the other hand, the gap between the numbers of men and women receiving doctorates has narrowed considerably. While in 1960 women received only 13 percent of all social science doctorates and 16 percent of all humanities doctorates, they received 46 percent of doctorates in each of those fields in 1990. Education was the only broad field in 1990 where women—earning 58 percent of the doctorates—were more numerous than men. The number of female education doctorates was 3,736 in 1990, and the number of men was 2,748. In contrast to the two previous years, however, the number of degrees in this field increased for both men and women in 1990.

Among U.S. citizens only, the proportion of women doctorates is higher than the proportion of women doctorates for all citizenship groups combined. In 1990, U.S. citizen women were 43 percent of all U.S. doctorates (compared with 36 percent of women doctorates for all citizenship groups). The data confirm that U.S. women represent higher proportions in all fields as well. In 1990, they represented 21 percent of U.S. citizen doctorates in physical sciences, 13 percent in engineering, and 41 percent in life sciences (compared with respective percentages of 18, 8, and 37 for all citizenship groups combined). In contrast, the proportion of U.S. women in 1960 was lower than all women in physical sciences (3 percent versus 4 percent) and engineering (0.2 percent versus 0.4 percent). In life sciences that same year, U.S women and all women doctorates represented the same proportion of the field (9 percent).

In 1990, U.S women also showed greater proportions than all women doctorates in social sciences (52 percent versus 46 percent), humanities (47 percent versus 46 percent), and education (60 percent versus 58 percent). In 1960, the proportion of U.S. women was the same as the proportion of all women in social sciences (13 percent), humanities (16 percent), and education (19 percent).



NOTE: See Table 2 for the number of doctorates in selected years, 1960-1990.

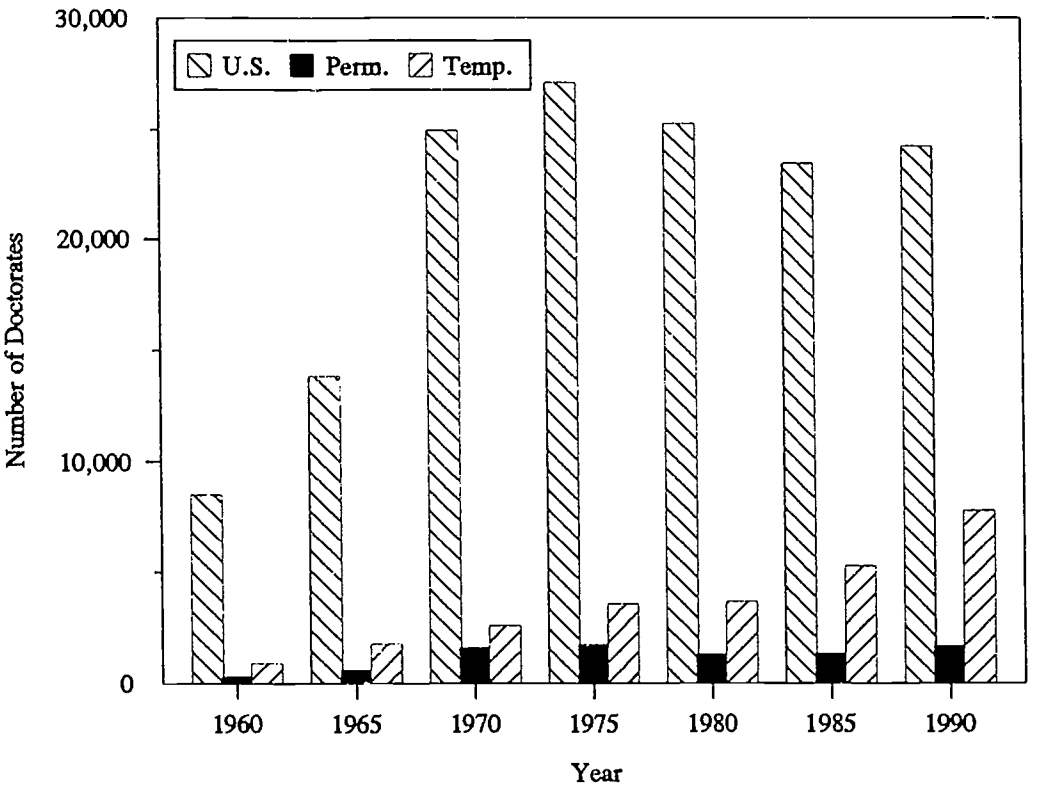
FIGURE 3 Doctorate recipients, by gender and broad field for selected years, 1960-1990.

Citizenship Status

In 1990, the number of U.S. citizens who earned doctorates increased for the third consecutive year. This may signal that the earlier decline in the numbers has ended, although the proportion of doctorates earned by U.S. citizens continued its decline. In 1960, 88 percent (8,469) of doctorates were granted to U.S. citizens and 12 percent (1,176) to non-U.S. citizens. By 1990, the U.S. percentage was 72 percent (24,190 Ph.D.s), and the non-U.S. percentage had grown to 28 percent (9,398 Ph.D.s).

It is evident from Figure 4 and Table 3 that temporary visa-holders have largely been responsible for the rise in non-U.S. Ph.D.s, especially during the last decade. In 1960, temporary residents earned only 897 Ph.D.s, or 9 percent of all doctorates in this country; in 1990, they earned 7,744, or 23 percent of all doctorates. Growth has been more moderate among permanent visa-holders who earned Ph.D.s, although both the number and proportion of doctorates in this group have increased in recent years. In 1960 this group was awarded 3 percent (279) of all doctorates, and last year they received 5 percent (1,654).

Table 3 also displays percentages of U.S. and non-U.S. citizens for the seven broad fields. Although the number of doctorates granted to U.S. citizens increased in each of the fields between 1960 and 1990, the U.S. share of degrees decreased in every field. This was most pronounced in engineering, where the U.S. percentage dropped



NOTE: See Table 3 for further detail. See technical notes in Appendix C for rates of nonresponse to the question on citizenship status.

FIGURE 4 Citizenship composition of doctoral cohorts for selected years, 1960-1990.

TABLE 3 Citizenship Status of Doctorate Recipients, by Broad Field for Selected Years, 1960-1990 (in percent)

Field/ Citizenship	1960	1965	1970	1975	1980	1985	1990
Total All Fields (No.)	9,733	16,340	29,498	32,952	31,020	31,297	36,027
U.S. Citizens	87.8	85.6	85.7	83.8	83.6	78.1	72.0
Permanent Residents	2.9	3.5	5.4	5.3	4.3	4.4	4.9
Temporary Residents	9.3	10.9	8.8	10.9	12.1	17.5	23.1
Physical Sciences* (No.)	2,152	3,550	5,628	4,857	4,111	4,531	5,859
U.S. Citizens	86.7	84.9	83.4	76.9	76.6	70.1	60.5
Permanent Residents	2.9	3.6	6.4	7.3	6.3	5.4	5.3
Temporary Residents	10.4	11.5	10.2	15.8	17.1	24.5	34.2
Engineering (No.)	794	2,074	3,434	3,002	2,479	3,166	4,892
U.S. Citizens	76.8	77.5	73.6	58.2	52.2	42.4	42.9
Permanent Residents	6.8	6.8	12.6	14.2	12.4	10.5	8.4
Temporary Residents	16.3	15.7	13.8	27.6	35.4	47.1	48.8
Life Sciences (No.)	1,729	2,684	4,693	5,026	5,461	5,780	6,613
U.S. Citizens	81.9	77.2	80.9	79.7	82.4	80.0	72.1
Permanent Residents	3.3	3.6	5.2	6.3	4.3	3.4	4.5
Temporary Residents	14.8	19.2	14.0	14.0	13.3	16.6	23.4
Social Sciences (No.)	1,668	2,327	4,566	,066	5,855	5,765	6,076
U.S. Citizens	88.0	86.3	86.2	87.2	88.0	83.9	80.4
Permanent Residents	3.0	3.6	5.0	3.6	3.4	3.8	4.2
Temporary Residents	9.0	10.1	8.8	9.2	8.6	12.2	15.4
Humanities (No.)	1,600	2,530	4,278	5,046	3,872	3,429	3,820
U.S. Citizens	94.0	92.3	91.3	90.9	90.8	87.4	83.8
Permanent Residents	3.0	3.0	4.8	4.5	3.6	4.6	5.4
Temporary Residents	3.0	4.7	3.9	4.6	5.5	8.1	10.9
Education (No.)	1,549	2,736	5,857	7,360	7,586	6,733	6,484
U.S. Citizens	94.8	94.6	95.3	93.6	91.6	89.2	89.6
Permanent Residents	0.5	1.0	1.2	1.6	1.5	2.0	2.5
Temporary Residents	4.7	4.5	3.5	4.8	6.9	8.8	7.9
Professional/Other (No.)	241	439	1,042	1,595	1,656	1,893	2,283
U.S. Citizens	89.0	83.4	81.2	84.3	83.8	76.7	70.7
Permanent Residents	0.8	4.4	5.7	5.1	4.2	5.4	6.1
Temporary Residents	10.1	12.1	13.2	10.5	12.0	17.9	23.2

NOTE: Totals in each field include doctorates with unknown citizenship status. Percentages are based on the number who reported citizenship status. See technical notes in Appendix C for rates of nonresponse to this question.

*Includes mathematics and computer sciences.

almost 34 points, from 77 percent in 1960 (607 Ph.D.s) to 43 percent in 1990 (1,927 Ph.D.s). In contrast, non-U.S. citizens increased their share of engineering doctorates from 23 percent to 57 percent. U.S. citizens experienced significant decreases in physical sciences as well, from 87 percent to 60 percent (a decline of 26 points); non-U.S. citizens increased their share in this field from 13 percent to 40 percent. The decreases in the life and social sciences, however, were less significant: 10 points (from 82 percent to 72 percent) and 8 points (from 88 percent to 80 percent), respectively. The proportion of U.S. citizens in professional/other fields dropped 18 points over the 1960-1990 period (from 89 percent to 71 percent). Humanities declined 10 points, from 94 percent to 84 percent, including a sharp 4-point drop during the most recent six-year interval, 1985-1990. In contrast to the other broad fields, the proportion of U.S citizens in education decreased only 5 points (from 95 percent to 90 percent) during the last three decades.

Table 4 shows that a small group of countries are the major sources of foreign nationals earning doctorates in the United States. In 1990, the Republic of Korea displaced Taiwan as the top-ranked country in number of Ph.D.s earned by foreign citizens here. Among the top 30 countries of origin of non-U.S. citizens earning Ph.D.s in the United States, eight are in Western Asia, seven in Eastern Asia, six in Europe, four in the Americas, three in the Pacific, and two in Africa.

TABLE 4 Top 30 Countries of Origin of Non-U.S. Citizens Earning Ph.D.s at U.S. Colleges and Universities, 1990 (ranked on number of Ph.D.s)

Country	Number	Country	Number
1. Republic of Korea*	1,218	16. Turkey	119
2. Taiwan, Republic of China†	1,110	17. Israel	116
3. People's Republic of China†	1,061	18. Hong Kong	112
4. India	849	19. Saudi Arabia	97
5. Canada	406	20. Australia	91
6. Iran	270	21. Malaysia	90
7. Egypt	183	22. France	88
8. Japan	179	23. Jordan	86
9. Thailand	163	24. Italy	84
10. West Germany‡	161	25. Pakistan	81
11. England	158	26. Sri Lanka	77
12. Nigeria	144	27. Argentina	76
13. Greece	130	28. Indonesia	72
14. Mexico	125	29. Spain	71
15. Brazil	120	30. Philippines	67

NOTE: See technical notes in Appendix C for rates of nonresponse to the country of citizenship question.

*Includes "Korea, unspecified." The Democratic People's Republic of Korea (North Korea) does not permit its citizens to study in the United States.

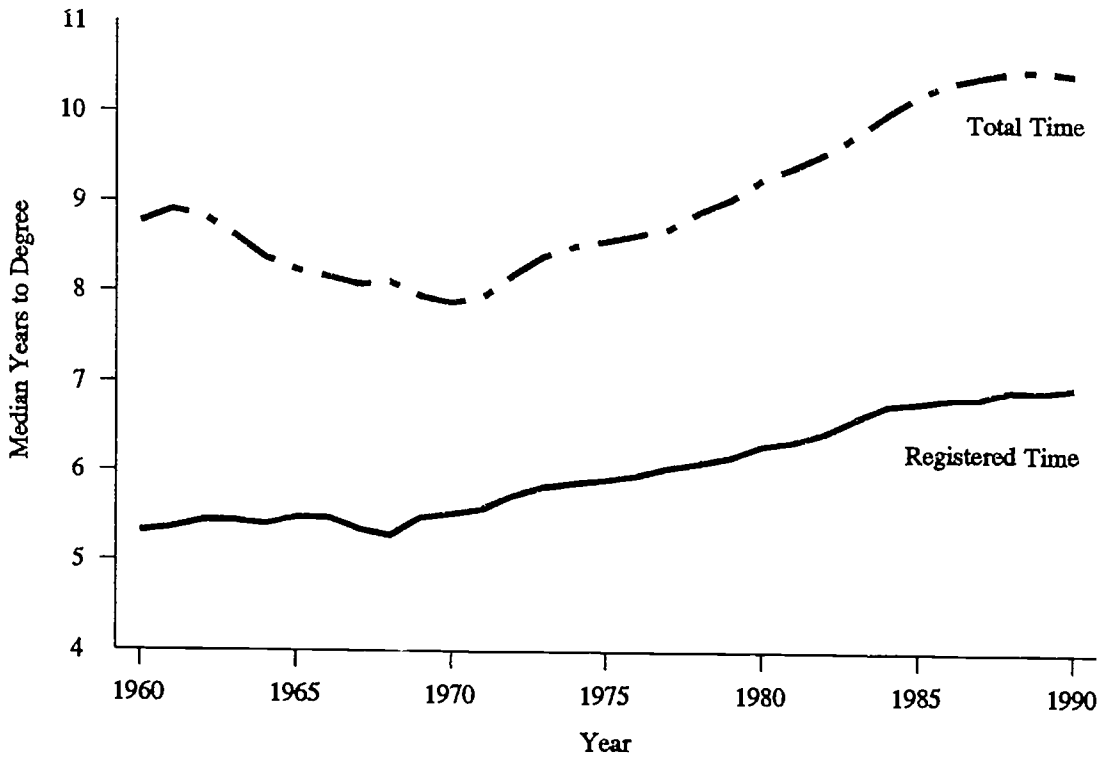
†An additional 127 Ph.D.s indicated "China" as their country of citizenship, but their specific origin could not be determined.

‡Includes "Germany, unspecified." The German Democratic Republic (East Germany) allowed exchange students in the United States for partial preparation toward the Ph.D., but the degree was subsequently awarded by the home country institution. Virtually all German recipients of U.S. Ph.D.s have been West German.

Time-to-Degree

Two time measures, total time and registered time to doctorate,[6] can be extracted from the survey's item on educational history. (See item 13 of the questionnaire in Appendix D.) Changes in elapsed time signify different graduate school enrollment patterns for the two measures. The growth of RTD means that students are spending more time enrolled in graduate school. When TTD grows more than RTD, it means that students are also increasing their time out of graduate school—either by delaying their entrance into a graduate program or by dropping out for some period(s) of time prior to the completion of the program.[7]

By either dimension, time-to-degree has increased over the last three decades: by 32 percent for RTD and by 19 percent for TTD. Figure 5 shows that RTD fluctuated throughout the 1960s before beginning a steady increase in 1969: RTD rose



NOTE: See Table 5 for median years to degree. See technical notes in Appendix C for rates of nonresponse to the applicable questions.

FIGURE 5 Median years to degree for doctorate recipients, all fields combined for selected years, 1960-1990.

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[6]Total time-to-degree (TTD) is a gross measure and refers to the number of years elapsed between earning the baccalaureate and the doctorate. Registered time-to-degree (RTD) is a net measure of time lapse and is derived by subtracting the years a recipient was not in graduate school between earning a baccalaureate and a Ph.D. The median rather than the mean is used as the measure of central tendency because the distribution is skewed.

[7]For a thorough treatment of issues surrounding changes in time-to-degree, see H. Tuckman, S. Coyle, and Y. Bae, *On Time to the Doctorate: A Study of the Increased Time to Complete Doctorates in Science and Engineering*, Washington, D.C.: National Academy Press, 1990.

from a median 5.3 years in 1960 to 7.0 years in 1990, an all-time high and an increase of 1.7 years. TTD declined from a median 8.8 years to a median 7.9 years between 1960 and 1970, after which it also began a steady rise to a high of 10.5 years in 1988, where it remains.

While all broad fields experienced the basic pattern of lengthening registered and total time-to-degree between 1960 and 1990, the origin and size of the change varied by field. (See Table 5.) In general, recipients in social sciences and in nonsciences experienced longer time lapses than did Ph.D.s in natural sciences. In 1960, the seven broad fields varied in RTD by up to 1.5 years, ranging from 5.0 years for physical sciences and engineering to 6.5 years for education. By 1990 the spread had widened, with engineering doctorates showing the shortest RTD at 6.0 years and humanities showing the longest at 8.3 years.

Evaluation of RTD and TTD for the various demographic groups reveals quite noticeable differences for all fields combined. Table 6 shows that both RTD and TTD were longer for women than for men; and they were longer for U.S. citizens than for foreign citizens. Differences between the groups were much smaller when the fields were disaggregated because time to degree is primarily field-related as described in the previous paragraph.

It should be noted that the 1990 median time-to-degree estimates for humanities doctorates may overstate the situation in those fields. Bowen, Lord, and Sosa[8] developed alternate statistical analyses involving the use of the baccalaureate-year cohort rather than the Ph.D.-year cohort as the base for estimating the median. Using this method to compute time to doctorate for degree recipients in the humanities, Bowen and his colleagues reported the following:

- estimates of the median generated from the Ph.D. cohort will be sensitive to the rate of change in the size of the baccalaureate cohort;[9]
- the recent dramatic upward trend in TTD for humanists based on Ph.D.-year cohort is approximately double the comparable trend derived from the baccalaureate-year cohort;[10] and
- the estimates will not differ from those generated using Ph.D.-year cohorts in periods in which the annual number of baccalaureate-year doctorates remains stable.

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[8]Bowen, W., G. Lord, and J.A. Sosa, "Measuring Time to the Doctorate: A Reinterpretation of the Evidence," published in *The Proceedings of the National Academy of Sciences* (Vol. 88, pp. 713-717, February 1991, Washington, D.C.).

[9]Other things being equal, the median will vary inversely with the direction of change, increasing when the size of the baccalaureate cohort decreases and decreasing when the size of this cohort increases. The authors report that recent trends in the size of baccalaureate cohorts may have produced a difference of two years between the alternative estimates of TTD.

[10]Based on baccalaureate-year cohorts alternatively truncated at 8, 10, and 12 years, the authors report increases in TTD for the period 1966 to 1982 of roughly 15 to 20 percent; the comparable increases for Ph.D.-year cohorts were 38 to 42 percent. (op. cit., p. 716).

TABLE 5 Median Years to Degree for Doctorate Recipients, by Broad Field for Selected Years, 1960-1990

Field	1960	1965	1970	1975	1980	1985	1990
Total All Fields							
Registered	5.3	5.5	5.5	5.9	6.3	6.8	7.0
Total	8.8	8.2	7.9	8.6	9.3	10.2	10.5
Physical Sciences*							
Registered	5.0	5.2	5.3	5.5	5.8	6.0	6.2
Total	6.5	6.2	6.1	6.8	6.9	7.2	7.6
Engineering							
Registered	5.0	5.2	5.2	5.5	5.6	5.8	6.0
Total	7.4	7.0	6.9	7.5	7.6	8.1	8.2
Life Sciences							
Registered	5.2	5.4	5.3	5.6	5.8	6.3	6.7
Total	8.0	7.4	6.6	7.2	7.4	8.4	9.1
Social Sciences							
Registered	5.3	5.4	5.5	5.7	6.4	7.1	7.5
Total	8.8	7.9	7.3	7.7	8.6	9.9	10.6
Humanities							
Registered	5.9	5.9	6.1	6.7	7.7	8.3	8.3
Total	10.1	9.5	9.1	9.6	10.6	11.8	12.2
Education							
Registered	6.5	6.9	6.2	6.4	6.9	7.6	8.1
Total	12.9	13.7	12.7	12.5	13.2	15.1	17.9
Professional/Other							
Registered	5.2	5.2	5.4	6.1	6.4	7.2	7.5
Total	11.8	11.3	10.2	10.3	11.1	12.9	13.1

NOTE: Medians are based on the number of individuals who have provided complete information about their postbaccalaureate education. See technical notes in Appendix C for rates of nonresponse to the applicable questions.

*Includes mathematics and computer sciences.

Calculations such as those performed by Bowen et al. may extend the understanding of the behavior underlying patterns of Ph.D. production in any field. Taken together, various methods and studies[11] regarding time to the doctorate serve as indicators of time-to-degree trends or models for analyzing doctoral completion rates.

TABLE 6 Median Years to Degree for Doctorate Recipients, by Demographic Group and Broad Field, 1990

	All Fields	Physical Sci.*	Engineering	Life Sci.	Social Sci.	Humanities	Education	Prof/Other
RTD Years								
All Ph.D.s	7.0	6.2	6.0	6.7	7.5	8.3	8.1	7.5
Men	6.7	6.2	6.0	6.6	7.4	8.3	8.0	7.3
Women	7.4	6.3	6.1	6.8	7.7	8.3	8.1	7.6
U.S. Citizens	7.2	6.2	6.0	6.7	7.7	8.4	8.3	7.7
Permanent Res.	7.1	6.7	6.5	6.7	7.8	8.5	7.5	7.8
Temporary Res.	6.3	6.3	6.9	6.5	6.9	7.4	6.1	6.8
TTD Years								
All Ph.D.s	10.5	7.6	8.2	9.1	10.6	12.2	17.9	13.1
Men	9.6	7.6	8.2	8.8	10.4	11.9	17.3	12.3
Women	12.6	7.6	7.8	9.7	10.8	12.5	18.4	14.9
U.S. Citizens	11.4	7.2	7.8	9.0	10.9	12.5	18.4	14.4
Permanent Res.	9.8	8.7	8.6	9.5	10.4	11.1	13.6	11.0
Temporary Res.	8.9	8.1	8.3	9.3	9.5	10.2	12.8	10.3

NOTE: Medians are based on the number of individuals who have provided complete information about their postbaccalaureate education. See technical notes in Appendix C for rates of nonresponse to the applicable questions.

*Includes mathematics and computer sciences.

[11]For another analysis of time to doctorate, see M. Nerad and J. Cerny, "From Facts to Action: Expanding the Educational Role of the Graduate Division," published as a special issue of *Communicator*, The Council of Graduate Schools, May 1991, Washington, D.C.

Postgraduation Plans

Status

The share of new doctorate recipients planning further study after completing their degree has been increasing since 1970, although most new recipients still prefer employment to continued education. In 1990, 17,045 doctorates (74 percent of recipients with definite commitments) planned employment, and 6,130 (26 percent) planned postdoctoral study—the latter representing an increase of more than 11 percentage points since 1970. (See Table 7.) The movement toward continued education was most pronounced in physical and life sciences. In 1990, the proportion of physical science Ph.D.s with study plans (47 percent) was almost as large as that for employment (53 percent), and life science Ph.D.s as a whole favored study opportunities (63 percent). This dramatic shift to continued education (an increase of 15 and 13 percentage points, respectively, since 1970) occurred especially during the last decade and was due largely to the surge in the number of Ph.D.s earned by temporary residents.

TABLE 7 Postgraduation Commitments of Doctorate Recipients, by Broad Field for Selected Years, 1970-1990 (in percent)

	All Fields	Physical Sci.*	Engineering	Life Sci.	Social Sci.	Humanities	Education	Prof/Other
Total Commitments (No.)								
1970	22,596	4,271	2,500	3,635	3,629	3,413	4,370	778
1975	22,925	3,375	2,050	3,657	4,312	2,945	5,286	1,300
1980	21,920	3,083	1,834	4,030	3,994	2,296	5,371	1,312
1985	20,953	3,190	1,983	4,018	3,661	2,031	4,665	1,405
1990	23,299	3,839	2,822	4,525	3,775	2,290	4,433	1,615
Study								
1970	15.3	31.4	7.2	40.0	8.3	2.5	1.9	1.3
1975	16.9	38.5	11.3	47.4	8.6	3.7	1.8	1.6
1980	19.7	36.0	12.3	54.3	13.1	5.0	2.3	2.2
1985	22.2	40.7	14.6	55.2	14.8	5.8	3.0	2.4
1990	26.5	46.7	19.3	62.9	15.8	6.3	4.0	3.4
Employment								
1970	84.7	68.6	92.8	60.0	91.7	97.5	98.1	98.7
1975	83.1	61.5	88.7	52.6	91.4	96.3	98.2	98.4
1980	80.3	64.0	87.7	45.7	86.9	95.0	97.7	97.8
1985	77.8	59.3	85.4	44.8	85.2	94.2	97.0	97.6
1990	73.5	53.3	80.7	37.1	84.2	93.7	96.0	96.6

NOTE: Only doctorates with definite commitments are included. Percentages are based on the number of Ph.D.s with known postgraduation plans. See technical notes in Appendix C for rates of nonresponse to the applicable questions and for further explanation of postgraduation plans.

*Includes mathematics and computer sciences.

Disaggregation of the data by demographic group also demonstrates this trend. However, Table 8 shows that a greater proportion of men than women planned to continue their education, and the proportions of non-U.S. citizens electing study were greater than those for U.S. citizens. (For a discussion of U.S. minorities, see page 35 of the special section of this report.)

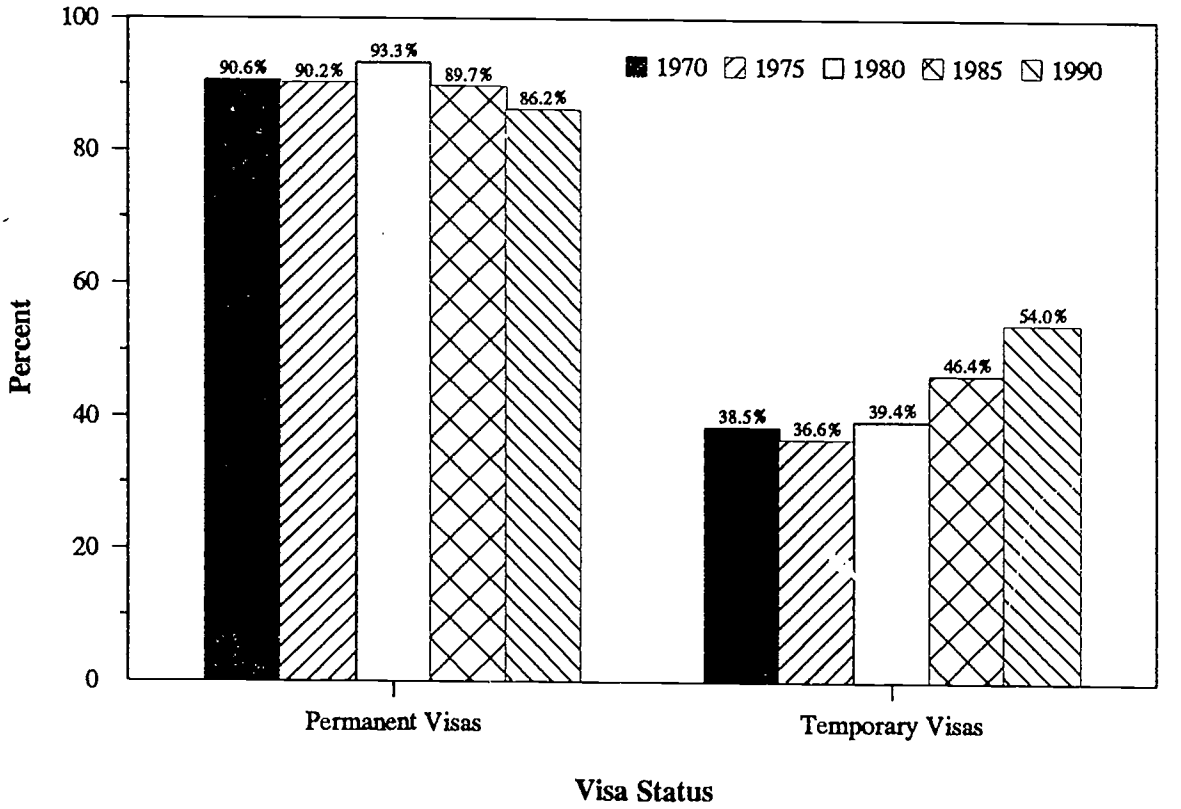
TABLE 8 Postgraduation Commitments of Doctorate Recipients, by Demographic Group for Selected Years, 1970-1990 (in percent)

	Total Ph.D.s	Men	Women	U.S. Citizens	Permanent Residents	Temporary Residents
Total Commitments (No.)						
1970	22,596	19,968	2,628	19,779	994	1,797
1975	22,925	18,406	4,519	19,561	1,040	2,278
1980	21,920	15,690	6,230	18,637	815	2,449
1985	20,953	14,043	6,910	16,878	763	3,290
1990	23,299	14,826	8,473	17,693	908	4,649
Study						
1970	15.3	15.4	14.3	14.1	22.5	24.3
1975	16.9	17.2	15.6	15.6	26.1	24.2
1980	19.7	20.7	17.1	19.0	22.7	23.9
1985	22.2	23.7	19.0	21.3	20.8	26.9
1990	26.5	28.7	22.6	23.6	30.6	36.7
Employment						
1970	84.7	84.6	85.7	85.9	77.5	75.7
1975	83.1	82.8	84.4	84.4	73.9	75.8
1980	80.3	79.3	82.9	81.0	77.3	76.1
1985	77.8	76.3	81.0	78.7	79.2	73.1
1990	73.5	71.3	77.4	76.4	69.4	63.3

NOTE: Only doctorates with definite commitments are included. Percentages are based on the number of Ph.D.s with known postgraduation plans. See technical notes in Appendix C for rates of nonresponse to the applicable questions and for further explanation of postgraduation plans.

Postdoctoral Location and Plans

The postdoctoral location of non-U.S. citizens continues to be of interest to researchers. The data displayed in Figure 6 on postdoctoral location plans show that many non-U.S. citizens in 1990 planned to remain in the United States after receiving their degrees. Of those non-U.S. recipients who indicated that they had definite plans,[12] either for employment or for postdoctoral study, 86 percent of permanent residents and 54 percent of temporary residents planned to stay in the United States. Since 1970, these percentages decreased from 91 percent to 86 percent among permanent visa-holders (including a drop from 93 percent to 86 percent over the last decade). Yet, temporary visa-holders staying in this country increased from 39 percent in 1970 to 54 percent in 1990.



NOTE: See technical notes in Appendix C for rates of nonresponse to the applicable questions.

FIGURE 6 Percentage of non-U.S. citizen doctorate recipients with definite plans to remain in the United States after graduation, by visa status for selected years, 1970-1990.

[12]Because recipients sometimes complete the survey form well ahead of graduation, the final status of those who indicated that they were still "negotiating" or "seeking" cannot be determined. Therefore, the discussion of postgraduation plans in this report is limited to Ph.D.s who reported "definite" commitments at the time of survey completion, i.e., those who had signed a contract or were returning to predoctoral employment.

Table 9 presents the immediate postgraduation plans of permanent and temporary visa-holders with definite commitments, including location, type of commitment, and major field of doctorate. Overall, most permanent residents with definite commitments had employment plans in the United States (60 percent). Among temporary visa-holders, 28 percent planned to be employed in this country while 36 percent planned to be employed abroad.

TABLE 9 Postdoctoral Location of Non-U.S. Citizen Doctorate Recipients with Postgraduation Commitments, by Visa Status and Major Field, 1990 (in percent)

	Postdoctoral Location							
	Permanent Visas				Temporary Visas			
	U.S. Location		Foreign Location		U.S. Location		Foreign Location	
Field of Doctorate	Empl	Study	Empl	Study	Empl	Study	Empl	Study
All Fields	60.4	25.7	10.1	3.8	28.1	26.0	36.4	9.4
Physical Sciences	48.3	37.4	7.5	6.8	23.8	43.0	20.1	13.2
Physics/Astronomy	22.2	58.3	0.0	19.4	11.9	58.6	10.6	18.9
Chemistry	42.0	46.0	8.0	4.0	11.6	56.3	15.1	16.9
Earth, Atmos. & Marine	54.5	27.3	18.2	0.0	14.0	36.6	37.6	11.8
Mathematics	59.1	27.3	13.6	0.0	38.2	27.5	25.8	8.6
Computer Sciences	82.1	7.1	7.1	3.6	55.9	13.1	29.0	2.1
Engineering	73.4	15.8	9.0	1.7	41.6	17.8	33.9	6.8
Life Sciences	19.3	65.0	7.9	7.9	6.0	44.8	36.5	12.7
Biological Sciences	14.4	74.0	2.9	8.7	4.4	63.6	19.5	12.5
Health Sciences	53.3	46.7	0.0	0.0	14.7	22.1	51.6	11.6
Agricultural Sciences	19.0	33.3	38.1	9.5	6.0	17.7	62.8	13.5
Social Sci. (incl. Psych.)*	73.5	16.2	8.5	1.7	33.8	8.9	51.1	6.2
Economics	82.5	0.0	17.5	0.0	36.7	4.3	53.8	5.2
Political Sci./Int'l. Relat.	66.7	11.1	11.1	11.1	33.3	1.9	57.4	7.4
Humanities	81.1	6.3	10.5	2.1	40.5	4.2	47.4	7.9
Education	63.2	14.0	19.3	3.5	14.7	2.2	77.2	5.8
Professional/Other*	80.0	2.5	16.3	1.3	51.1	2.2	41.3	5.4
Business & Management	80.8	1.9	15.4	1.9	62.0	2.3	31.7	4.1

NOTE: Only doctorates with definite commitments are included. Percentages are based on the number of Ph.D.s with known postgraduation plans and location in each field. See technical notes in Appendix C for rates of nonresponse to these questions and for further explanation of postgraduation plans.

*Totals include other fields not shown.

Employment Sector in the U.S. Labor Force (U.S. Citizens and Permanent Residents)[13]

The changing role of the Ph.D and employment prospects in various sectors are of interest to researchers as well as prospective students. As can be seen in Table 10, in 1990 52 percent of new Ph.D.s who planned to work in the United States after graduation found employment in academe, 21 percent in industry, 10 percent in government, and 18 percent in "other" sectors (which include nonprofit organizations and elementary/secondary schools). Academe employed the largest proportions of new Ph.D.s in all broad fields except physical sciences and engineering; in these two fields, industry employed more than 50 percent of Ph.D.s in 1990. Humanities doctorates were the most likely to work in academe (84 percent), while engineering doctorates were the least likely (26 percent).

Nonetheless, academe has declined as an employer since 1970. In 1970, 68 percent of new Ph.D.s were employed in academe whereas by 1985, new doctorates who indicated academe as their employment sector dropped to a low 49 percent. Although still below its 1970 percentage, academe's percentage in 1990 increased about 3 points since 1985, to 52 percent, and the numbers of Ph.D.s employed in academe increased from 6,559 in that year to 7,047 in 1990. The downward trend in academe between 1970 and 1990 was balanced by increases in the percentages of new Ph.D.s employed in industry, government, and "other." In 1970, industry started employing larger numbers of doctorates, increasing its share from 15 percent in that year to 21 percent in 1990. "Other" sectors have increased from 8 percent to 18 percent over the last two decades. Government's share, on the other hand, has grown less than 1 percent.

While all broad fields shared in academe's decline over the period, dropping the most precipitously were percentages in social sciences (from 76 percent to 49 percent) and education (from 71 percent to 47 percent). The other employment sectors—industry, government, and "other"—showed increases in these fields. Humanities' decrease of 12 percentage points in academe was largely balanced by increases in industry and "other." Industry also accommodated the 14-point dropoff in physical sciences and the 17-point decline in life sciences. Engineering declined the least of any field in academe, falling only 1 point since 1970. It is interesting to note that although still well below the proportions of 1970, the percentages of Ph.D.s in physical sciences, humanities, and professional/other fields who plan to work in academe have grown since 1980.

Further disaggregation of the data by gender (see Table 11)[14] reveals a consistent pattern of diminishing proportions of new Ph.D.s employed in academe. From 1970 to 1990, the percentage of men with commitments in the academic sector decreased from 66 percent to 48 percent, and the percentage of women fell from 82 percent to 57 percent, while their proportions grew in all other sectors. In the industrial sector, the proportion of men increased 9 points, although their actual number dropped from 2,492 in 1970 to 2,006 in 1990. Meanwhile, the proportion of women in industry more

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[13]Because researchers are primarily interested in the employment situation of doctorates within this country, the discussion of new Ph.D.s' employment commitments is restricted to U.S. citizens and permanent residents in the aggregate—the group most likely to be long-term members of the U.S. labor force. Table 11, however, displays employment sector data separately for U.S. citizens, permanent residents, and temporary residents.

[14]Table 11 also displays employment sector data by citizenship groups: U.S. citizens, permanent residents, and temporary residents. The discussion in this report, however, is limited to U.S. citizens and permanent residents in the aggregate.

TABLE 10 Employment Sector of Doctorate Recipients with Postgraduation Commitments in the United States, by Broad Field for Selected Years, 1970-1990 (U.S. citizens and permanent residents, in percent)

	All Fields	Physical Sci.*	Engineering	Life Sci.	Social Sci.	Humanities	Education	Prof/Other
Academe								
1970	67.7	49.0	27.6	66.7	76.3	95.5	71.0	84.7
1975	60.2	40.6	24.3	58.5	66.2	86.6	56.3	78.5
1980	51.9	33.0	24.9	55.8	51.7	76.7	49.2	72.4
1985	48.8	32.6	26.2	54.5	46.5	77.9	41.7	71.7
1990	51.8	34.8	26.3	50.2	48.6	83.6	46.9	76.6
Industry/Self-Employed								
1970	15.1	36.3	53.5	13.3	5.1	0.7	1.6	7.1
1975	12.9	39.7	51.1	16.3	6.0	2.3	2.5	6.9
1980	17.8	52.1	55.4	21.4	12.9	7.1	5.1	8.3
1985	20.5	54.6	56.8	25.8	17.3	6.3	7.8	9.2
1990	20.5	53.1	56.0	25.2	19.8	4.7	6.3	7.5
Government								
1970	9.0	10.9	14.1	16.0	11.6	1.2	6.6	6.3
1975	12.8	17.0	21.9	18.3	16.4	3.2	11.1	5.2
1980	12.5	12.8	17.5	17.1	17.8	4.6	11.2	6.6
1985	11.7	11.2	15.0	14.2	16.2	3.3	12.3	6.7
1990	9.6	10.0	15.3	16.7	14.1	2.2	7.4	4.4
Other								
1970	8.2	3.8	4.9	4.0	7.0	2.6	20.8	1.9
1975	14.0	2.7	2.6	6.8	11.3	7.9	30.1	9.4
1980	17.8	2.1	2.2	5.8	17.7	11.5	34.5	12.7
1985	19.0	1.6	2.0	5.5	20.0	12.5	38.3	12.3
1990	18.1	2.1	2.4	7.9	17.5	9.4	39.5	11.5

NOTE: Only doctorates with definite commitments for employment are included. Foreign locations are excluded. Percentages are based on the number of Ph.D.s with known employment sector. See technical notes in Appendix C for rates of nonresponse to this question.

*Includes mathematics and computer sciences.

than quadrupled, and the number of women increased dramatically from 64 in 1970 to 789 in 1990. (For a discussion of U.S. minorities, see page 35 of the special section of this report.)

TABLE 11 Employment Sector of Doctorate Recipients with Postgraduation Commitments in the United States, by Demographic Group for Selected Years, 1970-1990 (in percent)

	U.S. Citizens & Permanent Residents					
	Total Ph.D.s	Men	Women	U.S. Citizens	Permanent Residents	Temporary Residents
Academe						
1970	67.7	65.7	82.0	67.9	62.7	69.1
1975	60.2	57.3	71.2	60.6	51.1	52.5
1980	51.9	48.2	60.1	52.4	40.8	48.3
1985	48.8	45.8	53.7	48.7	52.5	61.4
1990	51.8	47.8	57.0	51.6	55.8	56.0
Industry/Self-Employed						
1970	15.1	16.7	3.1	14.4	31.1	22.1
1975	12.9	15.1	4.9	11.9	37.9	38.1
1980	17.8	21.0	10.6	16.5	48.5	41.5
1985	20.5	25.0	13.0	19.7	40.2	31.5
1990	20.5	25.9	13.4	20.0	33.3	38.9
Government						
1970	9.0	9.5	5.4	9.3	2.2	2.5
1975	12.8	14.0	8.6	13.2	5.2	2.6
1980	12.5	14.2	9.0	12.9	3.8	4.5
1985	11.7	12.1	11.1	12.1	2.7	2.0
1990	9.6	11.0	7.8	9.8	3.8	1.8
Other						
1970	8.2	8.0	9.4	8.4	4.0	6.2
1975	14.0	13.7	15.3	14.4	5.8	6.8
1980	17.8	16.6	20.3	18.2	6.9	5.7
1985	19.0	17.1	22.2	19.6	4.6	5.1
1990	18.1	15.4	21.7	18.5	7.2	3.3

NOTE: Only doctorates with definite commitments for employment are included. Foreign locations are excluded. Percentages are based on the number of Ph.D.s with known employment sector. See technical notes in Appendix C for rates of nonresponse to this question.

FINANCIAL SUPPORT OF DOCTORAL EDUCATION

Primary Source of Support

Table 12 presents a frequency distribution of doctorates among "primary"[15] sources of graduate school support. In 1990, 48 percent of new Ph.D.s reported colleges and universities and 40 percent reported personal sources as the main providers of their support. Another 5 percent of doctorates reported primary support from the federal government,[16] and 7 percent stated that most of their support came from "other" sources. Table 12 further compares the primary sources of support of new Ph.D.s in 1990, by broad field, gender, and citizenship. Doctorates in some fields relied on certain sources more than those in other fields: 78 percent of recipients in physical sciences, 69 percent in engineering, and 55 percent in life sciences reported university sources as their primary source. In the other broad fields, 78 percent of Ph.D.s in education, 54 percent in professional/other fields, 52 percent in social sciences, and 48 percent in humanities reported personal sources as their primary source of support.

Differences among the demographic groups were largely related to field rather than to demographic group. For example, the majority of men received university support, while women relied more on personal sources. This difference can be explained by the fact that men were most concentrated in physical sciences and engineering (fields with high frequencies of university support) and women were most concentrated in social sciences and education (fields with high frequencies of personal support). (For a discussion of the sources of support of U.S. minorities, see page 33 in the special section of this report.)

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[15]In 1990, the sources of support question on the survey was revised to request participants to indicate **primary** and **secondary** sources of support. Thus, the designation of **primary** is the choice of the survey respondent. From 1987 to 1989, doctorate recipients were asked to estimate the percentage of the support they received from various sources. See the technical notes in Appendix C for rates of nonresponse regarding this question.

[16]The reader should note that federal research assistantships (RAs) are aggregated with university support in this year's report. It is believed that many recipients of this type of support may not realize the original source of their funding and therefore report this support as university RA instead of federal RA. Consequently, percentages for university support appear higher and federal support lower than in previous reports, making it inadvisable to compare this year's results with those from earlier years.

TABLE 12 Primary Sources of Support for Doctorate Recipients, by Broad Field and Demographic Group, 1990 (in percent)

Primary Source of Support	Total	Men	Women	U.S. Cits.	Perm. Res.	Temp. Res.
Total All Fields						
Personal	39.8	33.0	51.6	48.0	31.4	13.8
University	48.4	54.0	38.9	41.8	60.6	68.8
Federal	5.1	5.1	5.2	6.6	1.2	1.1
Other	6.6	8.0	4.3	3.7	6.8	16.3
Physical Sciences*						
Personal	13.5	13.3	14.4	17.4	14.2	5.4
University	77.7	77.7	77.5	73.4	82.2	85.7
Federal	3.8	3.5	5.2	5.7	0.4	0.6
Other	5.0	5.5	2.9	3.5	3.1	8.3
Engineering						
Personal	15.5	15.8	13.1	21.5	18.8	9.1
University	68.7	68.5	70.3	59.5	73.4	76.9
Federal	4.5	4.3	6.8	9.4	0.3	0.3
Other	11.3	11.5	9.8	9.5	7.5	13.7
Life Sciences						
Personal	23.3	19.7	29.1	27.1	25.9	10.3
University	54.5	57.6	49.6	51.9	61.0	62.5
Federal	14.0	12.6	16.2	18.2	4.4	1.7
Other	8.1	10.1	5.1	2.9	8.8	25.5
Social Sciences						
Personal	52.2	47.3	57.7	58.0	41.7	22.2
University	38.9	41.7	35.8	35.6	47.6	55.8
Federal	3.7	3.9	3.5	4.2	1.2	1.3
Other	5.2	7.1	3.0	2.2	9.5	20.7
Humanities						
Personal	48.3	49.2	47.4	50.8	45.3	28.7
University	46.0	44.3	47.9	44.4	51.1	56.6
Federal	1.8	2.4	1.2	1.8	0.7	3.1
Other	3.9	4.2	3.5	3.0	2.9	11.5
Education						
Personal	78.3	77.3	79.0	81.4	68.8	41.2
University	14.3	12.8	15.4	13.0	24.7	28.1
Federal	1.8	2.7	1.2	1.8	0.0	2.6
Other	5.6	7.2	4.4	3.8	6.5	28.1
Professional/Other						
Personal	54.3	52.3	57.9	63.0	47.1	27.6
University	36.5	37.6	34.6	30.5	42.3	54.9
Federal	1.7	1.6	1.9	2.0	1.0	1.0
Other	7.4	8.5	5.7	4.5	9.6	16.4

NOTE: Percentages are based on the number of Ph.D.s with known primary support. "Personal" includes loans as well as own earnings and contributions from the spouse/family. Federally funded research assistantships (RAs) are grouped under "University" because recipients of such support may not be aware of the actual source of funding. It is believed that many of these Ph.D.s are reporting their support as university RA instead of federal RA. "Other" support includes U.S. nationally competitive fellowships, business/employer funds, foreign government, and other nonspecified sources. See technical notes in Appendix C for rates of nonresponse to this question.

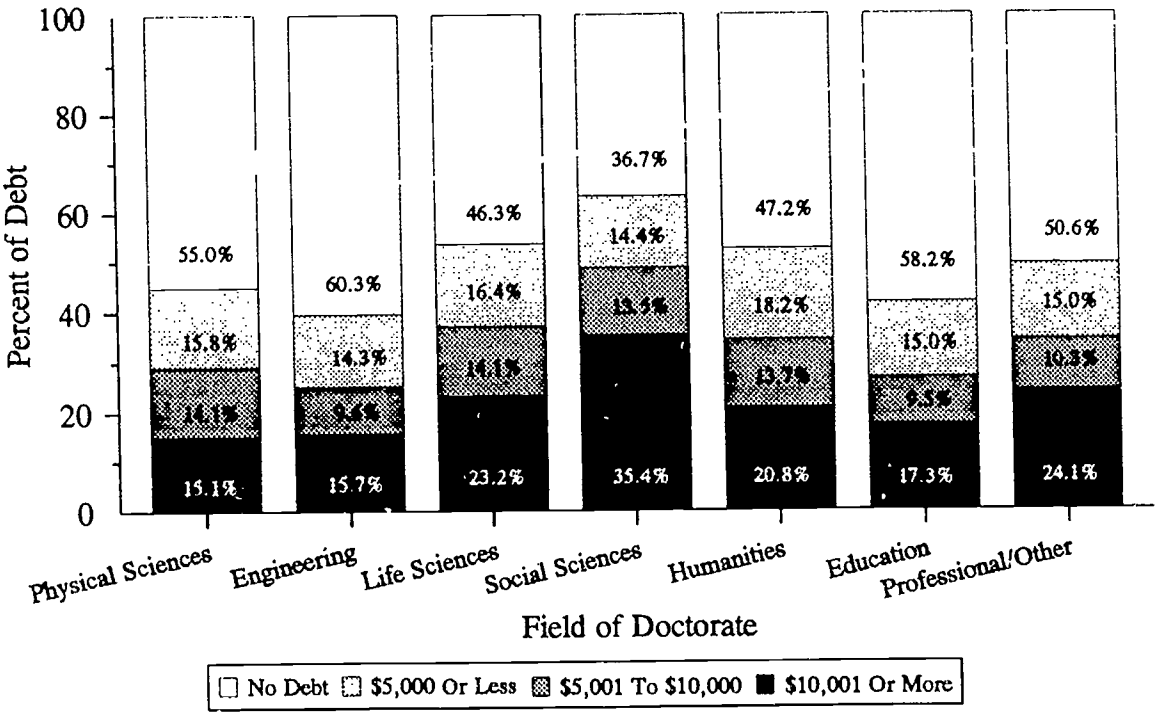
*Includes mathematics and computer sciences.

Indebtedness

The question on indebtedness was added to the survey in 1987 to determine whether Ph.D.s have debt by the time they graduate and, if so, the level of debt they have incurred during their undergraduate and graduate education. Because 18 percent of the survey respondents in 1990 filled out a superseded questionnaire which had different debt level categories than the 1990 form, it is not possible to compute median debt levels for this year's report.

Of the 33,113 respondents to the debt question in 1990, half reported finishing their doctoral programs with debt related to their college education; 16 percent of the 33,113 respondents owed less than $5,000; 12 percent owed between $5,001 and $10,000; and 22 percent owed $10,001 or more.

Figure 7 and Table 13 display the percentages of education-related debt by field. Engineering Ph.D.s had the lowest percentage with debt (40 percent), followed by doctorates in education and in physical sciences (42 percent and 45 percent, respectively). The field having both the highest percentage of recipients with debt (63 percent) and the highest percentage owing $10,001 or more (35 percent) was social sciences. In each of the three remaining broad fields, about half of the recipients reported having debt although at varying levels: 54 percent in life sciences, 53 percent in humanities, and 49 percent in professional/other fields.



NOTE: See technical notes in Appendix C for rates of nonresponse to the question on cumulative debt.

FIGURE 7 Cumulative debt related to education by broad field, 1990.

TABLE 13 Cumulative Debt Related to Education, by Broad Field, 1990 (in percent)

	All Fields	Physical Sci.*	Engineering	Life Sci.	Social Sci.	Humanities	Education	Prof/Other
Without Debt	50.5	55.0	60.3	46.3	36.7	47.2	58.2	50.6
With Debt	49.5	45.0	39.7	53.7	63.3	52.8	41.8	49.4
$5,000 or less	15.5	15.8	14.3	16.4	14.4	18.2	15.0	15.0
$5,001 to $10,000	12.3	14.1	9.6	14.1	13.5	13.7	9.5	10.3
$10,001 or more	21.6	15.1	15.7	23.2	35.4	20.8	17.3	24.1

NOTE: Percentages are based on known responses to the debt question. Percentages for "with" and "without" debt add to 100.0. Percentages for levels of debt add to the total percentage of Ph.D.s "with debt." See technical notes in Appendix C for rates of nonresponse to this question.

In Table 14, percentage and level of debt are displayed by demographic group. The percentages of men and women with debt were similar: 49 percent of men and 50 percent of women. Men and women also had approximately the same percentages in each category of debt. Disaggregated by citizenship, the data show U.S. citizens reporting not only the greatest frequency of debt (57 percent, compared with 29 percent of temporary residents and 39 percent of permanent residents), but also much higher debt—25 percent in the $10,001 or more category versus 12 percent of temporary residents and 16 percent of permanent residents in this category. (For a discussion of the indebtedness of U.S. minorities, see page 34 of the special section in this report.)

TABLE 14 Cumulative Debt Related to Education, by Demographic Group, 1990 (in percent)

	All Ph.D.s	Men	Women	U.S. Citizens	Perm. Res.	Temp. Res.
Without Debt	50.5	50.7	50.2	43.3	61.2	71.2
With Debt	49.5	49.3	49.8	56.7	38.8	28.8
$5,000 or less	15.5	15.6	15.4	16.9	13.7	11.3
$5,001 to $10,000	12.3	12.5	12.0	14.7	9.0	5.4
$10,001 or more	21.6	21.2	22.4	25.0	16.0	12.0

NOTE: Percentages are based on known responses to the debt question. Percentages for "with" and "without" debt add to 100.0. Percentages for levels of debt add to the total percentage of Ph.D.s "with debt." See technical notes in Appendix C for rates of nonresponse to this question.

U.S. CITIZEN MINORITY DOCTORATES

(SPECIAL SECTION)

The collection of racial/ethnic data from the Survey of Earned Doctorates affords an opportunity to monitor the educational progress of minorities at the doctoral level. This section of the report presents trends in the overall number of doctorates earned by each American racial or ethnic group during the period 1975[15] to 1990, as well as findings on their gender differences, fields of specialization, and immediate postgraduation plans. In addition, it examines several factors that may contribute to persistence in graduate school: the educational attainment of parents; the institutions granting baccalaureate and doctorate degrees to Ph.D. recipients; the length of time between receipt of the baccalaureate and the Ph.D.; and financial considerations such as sources of support in graduate school and education-related debt.

Data are reported on five American racial/ethnic groups: Asians, blacks, Hispanics, Native Americans, and whites. Ethnicity takes precedence over race in this analysis; respondents claiming Hispanic heritage are designated as Hispanic regardless of racial identification (see items 9 and 10 on the survey form in Appendix D, page 95). Only U.S. citizens are included in the discussion, and naturalized citizens are aggregated with native-born Americans.

Tables referenced in this section appear as a set immediately following the text.

Trends in Numbers and Proportions of Doctorates

In 1990, minorities earned 2,236 doctoral degrees, or 9.4 percent of all doctorates awarded to U.S. citizens (Table S-1, page 39).[16] In 1975, they earned 1,624 degrees, or 6.3 percent of all doctorates. Despite a 10.7 percent decline in the number of Ph.D.s granted to U.S. citizens during this period, awards to minorities increased by 37.7 percent. Significant gains were exhibited by three of the four minority groups: Asians increased from 286 Ph.D.s in 1975 to 617 Ph.D.s in 1990,

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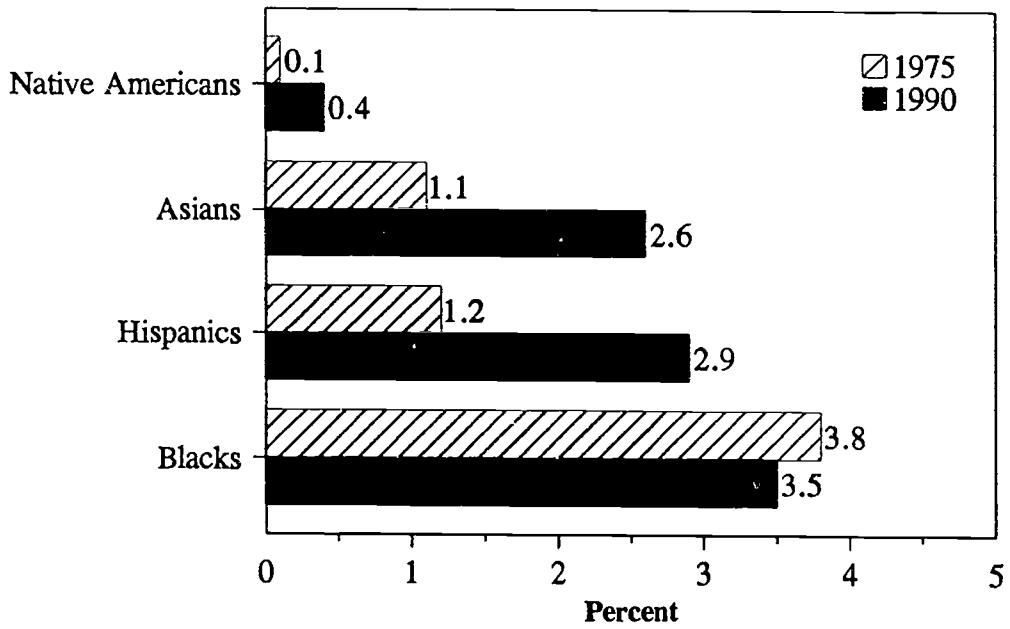
[15]Although the item on race/ethnicity was first introduced in 1973, the data are most reliable beginning in 1975. Over 25 percent of recipients in 1973 and about 13 percent in 1974 either completed superseded questionnaires or provided unusable responses. Since 1975, however, response rates to the question on race/ethnicity have ranged between 91 and 95 percent.

[16]It is important to keep in mind that this discussion is restricted to U.S. citizens. As can be seen in Appendix Table B-2, U.S. institutions in 1990 granted another 5,431 doctorates to non-U.S. Asians, 421 to non-U.S. blacks, and 488 to non-U.S. Hispanics.

Native Americans from 36 to 93, and Hispanics from 303 to 698.[17] As Figure S-1 shows, the proportions of doctorates earned by these minorities also grew over the period: from 1.1 percent to 2.6 percent for Asians, 1.2 percent to 2.9 percent for Hispanics, and 0.1 percent to 0.4 percent for Native Americans.

Blacks, on the other hand, experienced a 17.1 percent decrease in the number of awards, down from 999 Ph.D.s in 1975 to 828 Ph.D.s in 1990. The number of black Ph.D.s topped 1,000 in each year between 1976 and 1982, but has since ranged between 768 and 953 degrees. (The 828 degrees earned in 1990, however, was the largest annual number since 1985.) Blacks' share of doctorates fell somewhat, too—from 3.8 percent in 1975 to 3.5 percent in 1990. Although whites continued to earn the great majority of doctorates, they also showed declines in both the number and proportion of Ph.D.s received. Between 1975 and 1990, the number of degrees awarded to whites dropped from 24,353 to 21,650, for a decrease of 11.1 percent, and their share of doctorates declined from 93.7 percent to 90.6 percent.

While less than 5 percent of U.S. citizen Ph.D.s in both 1975 and 1990 were naturalized Americans (as opposed to native-born), more than a fifth of Hispanics were



NOTE: See Table S-1 for numbers of doctorates; see technical notes in Appendix C for rates of nonresponse to the citizenship question.

FIGURE S-1 Percentage of doctorates earned by U.S. minorities, 1975 and 1990.

[17]Of the 698 U.S. Hispanic Ph.D.s in 1990, 29.5 percent were Puerto Rican, 25.2 percent Mexican American, and 45.3 percent of other Hispanic heritage. While 51.8 percent of "other Hispanics" were born in the United States, 21.9 percent were born in the Caribbean (mainly Cuba), 15.4 percent in South America, and 6.8 percent in Mexico/Central America. In 1981—the earliest year with comparable and complete data—there were 464 U.S. Hispanic Ph.D.s; 24.8 percent were Puerto Rican, 33.2 percent Mexican American, and 42.0 percent "other Hispanic." About half (48.5 percent) of "other Hispanics" in 1981 were born in the United States, 30.4 percent in the Caribbean (mainly Cuba), 13.9 percent in South America, and 2.1 percent in Mexico/Central America.

naturalized, as were more than half of Asians. In 1990, 59.2 percent of Asian Ph.D.s were naturalized, an increase of almost 5 percentage points since 1975. The percentage of naturalized citizens among blacks also rose over the period—from 2.3 percent to 7.6 percent. This means that native-born blacks suffered an even greater decline (21.6 percent) in doctoral awards than did the group as a whole (17.1 percent).

Field of Doctorate

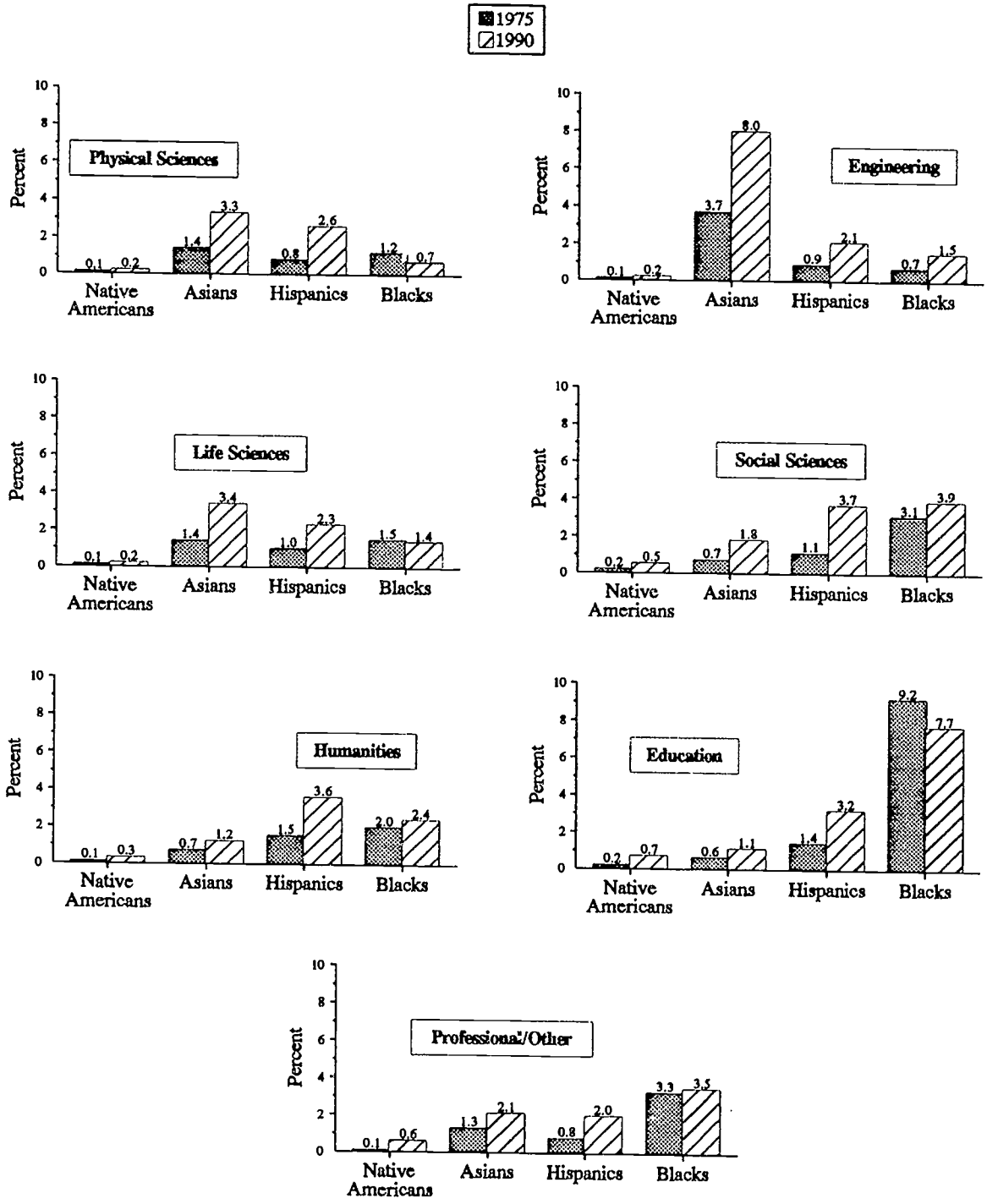
As can be seen in Table S-2 (page 40), Asian Ph.D.s in 1990 continued to concentrate heavily in engineering and the natural sciences, while the other minority groups clustered in social sciences and nonscience fields. Engineering was the preferred field for 24.6 percent of Asians in 1990, followed closely by life sciences at 24.1 percent. These were the favored areas of study in 1975 as well. Among the other minorities in 1990, education led by a large margin—selected by 50.7 percent of blacks, 38.7 percent of Native Americans, and 24.6 percent of Hispanics. Nevertheless, the proportions in education have declined noticeably since 1975, while those in other fields, especially social sciences, have grown. In 1990, almost one-fourth of both Native Americans and Hispanics and more than one-fifth of blacks majored in social sciences. An encouraging finding for blacks is that, despite a 17.1 percent decline since 1975 in their total annual number of doctoral awards, their numbers of Ph.D.s have increased in four of the seven broad fields: engineering (from 11 to 28), life sciences (from 56 to 63), social sciences (from 153 to 172), and professional/other fields (from 42 to 52).

Figure S-2 approaches these data from another perspective and displays the racial/ethnic composition of the seven fields. It is evident that since 1975, Asians, Hispanics, and Native Americans have increased their share of doctorates in every field. Particularly notable is the 8.0 percent share of engineering doctorates received by Asians in 1990, up from 3.7 percent in 1975. Meanwhile, the proportions of doctorates awarded to Hispanics rose from 1.1 to 3.7 percent in social sciences and from 1.5 to 3.6 percent in humanities. Blacks exhibited only moderate change over the period but nevertheless increased their presence in engineering, social sciences, professional/other fields, and humanities (the latter despite a decline in the number of degrees). At the same time, however, blacks' share of education doctorates decreased from 9.2 percent to 7.7 percent.

Gender

While men still outnumber women in Ph.D. attainment, women in every racial/ethnic group have demonstrated tremendous growth since 1975, both in number and in proportion of degrees earned (Table S-3, page 42).[18] Between 1975 and 1990, black women increased both their number of doctorates (from 349 to 508) and their share of all doctorates awarded to black Americans (from 34.9 percent to 61.4 percent). Hispanic and Native American females, meanwhile, have approached parity with their male counterparts. Hispanic women received 326 doctorates in 1990 (46.7 percent of all Hispanic Ph.D.s), up from 61 Ph.D.s (20.1 percent) in 1975. Native American women increased their number of degrees from 9 to 44 over the period and increased their share of degrees awarded to Native Americans from 25.0 to 47.3 percent. Asian

[18]Additional data for the period 1980-1990 are presented in Appendix Table B-2. This table shows annual numbers of Ph.D.s by citizenship, race/ethnicity, and gender.



NOTE: See Table S-2 for numbers of doctorates in each field; see technical notes in Appendix C for rates of nonresponse to the question on race/ethnicity by field.

FIGURE S-2 Percentage of doctorates earned by U.S. minorities in each broad field, 1975 and 1990.

females showed the least amount of growth but still accounted for 206 Ph.D.s in 1990 (or 33.4 percent of all Asian doctorates), compared with 64 Ph.D.s (or 22.4 percent) in 1975. White women, too, made significant gains over the period, increasing from 5,716 to 9,263 Ph.D.s and from 23.5 to 42.8 percent of all white recipients.

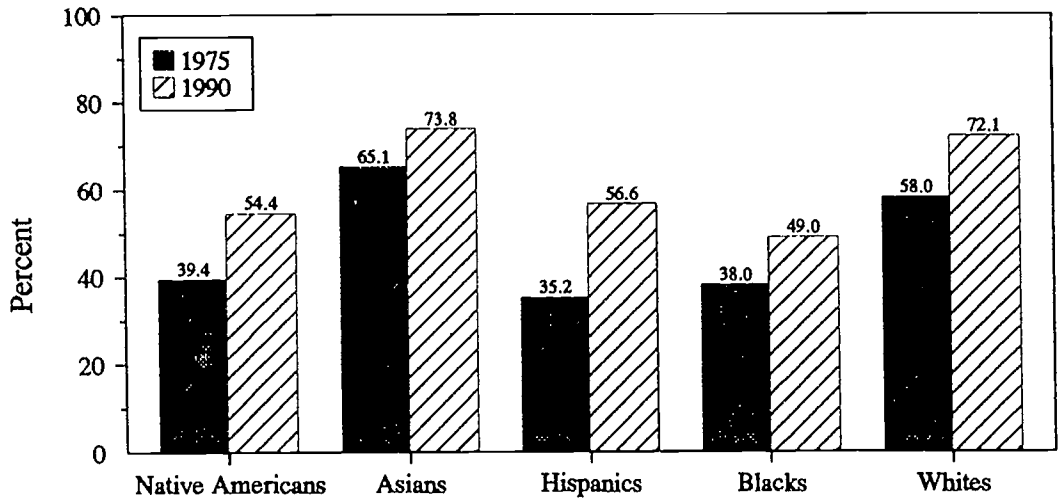
Although men's share of doctorates declined in all racial/ethnic groups, the only numerical decreases were among whites and blacks. Degree attainment for white men fell by one-third, from 18,637 Ph.D.s in 1975 to 12,387 in 1990. The decline for black men was even more severe, with Ph.D.s awarded in 1990 (320) numbering less than half of those awarded in 1975 (650). The annual number of doctorates received by black men started to fall in 1978 and, with some fluctuation, continued downward through 1990. Over the past five years, the number has stayed within the range of 315 Ph.D.s (in 1988) to 327 degrees (in 1989).

Interestingly, black men have increased their number of Ph.D.s in a few fields, most notably engineering, where the number of degrees in 1990 (23) was more than double that in 1975 (11). Smaller gains were made in health sciences, economics, and history. Although black male recipients still show their highest concentration in education, as do their female counterparts, they have branched out into other areas.

Education was also the most common field in 1990 among Native Americans—both male and female—as it was in 1975. By a slight margin, Hispanic men in 1990 favored social sciences over education, their field of choice in 1975. Hispanic women were clustered in education this year but showed large numbers in social sciences, too (in 1975, most degrees were in humanities, closely followed by education). Asians were the only minority group to prefer engineering and the sciences—engineering among men and life sciences among women.

Parents' Education

Figure S-3 displays the percentages of U.S. Ph.D.s who reported at least one parent with some college education. Included are parents who attended college but



NOTE: See technical notes in Appendix C for rates of nonresponse to this question.

FIGURE S-3 Percentage of U.S. citizen Ph.D.s with parents who attended college, 1975 and 1990.

never received a baccalaureate or higher-level degree. Although at least half of U.S. Ph.D.s in 1990 had parents with some college education, large numbers of recipients achieved well beyond their parents' level. This was especially true for non-Asian minority Ph.D.s, whose parents were about as likely *not* to have attended college as to have done so. College-educated parents were reported by only 49.0 percent of blacks, 54.4 percent of Native Americans, and 56.6 percent of Hispanics. Moreover, one-fourth of blacks and about one-fifth of Hispanics and Native Americans said their parents had not completed high school. Asians showed the highest percentage with college-educated parents (73.8 percent), closely followed by whites (72.1 percent). For all groups, parents of recent graduates were better educated than parents of Ph.D.s in 1975.

Degree-Granting Institutions

As can be seen on pages 44 and 45, many of the U.S. institutions granting large numbers of doctorates (Table S-4) and baccalaureates (Table S-5) to minority Ph.D.s are in states with substantial populations of the same racial/ethnic background. California especially, but also Hawaii and Washington, figure prominently on the list of schools attended by Asians who received Ph.D.s between 1986 and 1990. The University of California campuses at Los Angeles and Berkeley were the leading Ph.D institutions for Asians; Berkeley also occupied first place among their baccalaureate-granting schools. The most frequently attended institutions for Hispanic Ph.D.s are located in California, Florida, New Mexico, New York, Puerto Rico, and Texas. The University of Puerto Rico-Rio Piedras surpassed by far the other baccalaureate schools, awarding undergraduate degrees to 435 of the 1986-1990 Hispanic Ph.D.s—five times more baccalaureates than were awarded by the second-place school. The University of Texas-Austin was the leading doctorate-granting institution among Hispanics. Schools in Arizona, California, Oklahoma, and Wisconsin appear on both lists for Native Americans. Oklahoma State University was first in the awarding of Ph.D.s, and Northeastern State University (also in Oklahoma) was first in the awarding of baccalaureates.

The institutions for black doctorate recipients merit additional comment. Particularly interesting are the 20 leading baccalaureate-granting schools of black Ph.D.s. Seventeen of these schools are "historically black colleges and universities" (HBCUs),[19] the only exceptions being Wayne State University, City University of New York-City College, and New York University. Howard University was the leading baccalaureate institution for blacks who received Ph.D.s between 1986 and 1990. Unlike the other minorities—who frequently selected large, state-supported, predominantly white universities—blacks were often attracted to smaller, predominantly black schools, especially at the undergraduate level; 59.9 percent of black Ph.D.s in 1975 and 38.8 percent in 1990 earned their baccalaureates at HBCUs. Moreover, with the establishment of new doctoral programs at some of these schools, the percentage of black Ph.D.s earning their doctorates at HBCUs has increased (9.9 percent in 1990 versus 2.5 percent in 1975). In fact, the two schools that awarded the largest numbers of Ph.D.s to blacks between 1986 and 1990 are HBCUs—Howard University and Clark Atlanta University. The presence of supportive role models, a sense of community and

[19]By definition, HBCUs are the 107 institutions founded in the late 1800s and early 1900s for the specific purpose of educating blacks. Baccalaureates are awarded by 82 of these schools.

history, and a comfortable social climate are some of the reasons given by black students for their HBCU preferences.[20]

Time-to-Degree

Time-to-degree, in the aggregate, was longest among black and Native American Ph.D.s in 1990 and shortest among Asian Ph.D.s (Table S-6, page 46). This was true for both measures: TTD (total time elapsed between the baccalaureate and doctorate) and RTD (time actually registered in school between the two degrees). Blacks held the longest TTD (a median 16.5 years) and Native Americans the longest RTD (8.3 years). Asians experienced both the shortest TTD (9.2 years) and the shortest RTD (6.8 years). The medians for Hispanics and whites were in the middle range. As for all recipients (see earlier discussion on page 12), time-to-degree has been on the rise for minority Ph.D.s, although the data from 1975 revealed a few surprises. Blacks in 1975 experienced the longest TTD (a median 12.4 years), as they did in 1990; yet while their 1990 RTD was the second longest, their 1975 RTD (5.9 years) was the shortest. Meanwhile, Asian Ph.D.s—who took the least amount of time to earn their degrees in 1990—displayed the longest RTD (6.5 years) and the second longest TTD (10.3 years) in 1975. However, their RTD grew only slightly over the period, and their TTD was actually shortened by a year. Time-to-degree increased the most among blacks and Native Americans (4 years in TTD and over 2 years in RTD) while among Hispanics, TTD grew by 2 years and RTD by 1.5 years.

It must be noted, however, that a strong correlation exists between field of doctorate and time-to-degree, with science Ph.D.s taking less time to complete than nonscience Ph.D.s. This accounts, at least in part, for the wide range of overall medians among the racial/ethnic groups. Because Asians tended to cluster in the sciences, their overall TTD and RTD medians were generally shorter than those for the other minority groups, who concentrated in nonscience fields where time-to-degree is longer. When fields were disaggregated, blacks and Native Americans still showed somewhat longer medians than the other groups, but differences were greatly moderated. Moreover, all groups exhibited the same pattern of shorter medians for science degrees and longer ones for nonscience degrees. For example, while blacks' TTD in education was a median 19.6 years in 1990, it was only 8.2 years in physical sciences. Additionally, Asian Ph.D.s—who held the shortest TTDs in science and engineering fields—had a TTD of 19.3 years in education. The gaps in RTD narrowed even more when field of doctorate was controlled, and differences among the racial/ethnic groups all but disappeared in physical sciences, engineering, life sciences, and education.

Primary Source of Support

Table S-7 (page 47) presents data on the primary sources of graduate school support for U.S. racial/ethnic groups. While the majority of Asians in 1990 (54.4 percent) received their primary support from colleges and universities, personal sources were most frequently cited by the other groups: 62.7 percent of blacks, 59.5 percent of Native Americans, 48.1 percent of whites, and 47.5 percent of Hispanics. (Subsumed under personal sources are loans, which provided the major

[20]Fernandez, L., "Enrollment rising again at state's black colleges," *The Miami Herald*, February 10, 1991.

support for 7.7 percent of Hispanics and 6.6 percent of blacks.) University support was the second most frequently reported source for all groups but Asians. Among those Ph.D.s primarily supported by the university, Asians and whites were more likely to be research assistants (RAs) than teaching assistants (TAs), while blacks and Hispanics were more often TAs. Native Americans reported being RAs and TAs in equal proportion. Except among blacks, federal support[21] was the third most frequently indicated source, followed by "other" sources (e.g., nonfederal fellowships, business/employer funds, foreign government); the percentages of blacks primarily supported by federal and "other" sources were the same.

Because type of graduate support is highly correlated with field of doctorate, disaggregation of these data by field reveals a very different picture. Although some distinctions among the racial/ethnic groups remain, the general pattern is one of primary support from the university in physical sciences, engineering, and life sciences, and support from personal sources in all other fields. For example, the proportions of Ph.D.s in physical sciences who indicated major support from the university were large for all groups, ranging from 64.7 percent of Hispanics to 82.1 percent of Asians. In education, all groups were heavily self-supported; percentages of Ph.D.s reporting personal sources as their primary means of support ranged from 70.8 percent of Asians to 85.7 percent of Hispanics.

Indebtedness

The majority of U.S. citizen Ph.D.s in 1990 reported debt related to their undergraduate and graduate education (Table S-8, page 48). However, while the margin was slim among Asians, Native Americans, and whites (approximately 55 percent of each group indicated debt), proportions of indebted Ph.D.s were notably higher among Hispanics (69.0 percent) and blacks (61.8 percent). In addition, over one-third of all Hispanic Ph.D.s and about one-fourth of Ph.D.s in the other racial/ethnic groups owed more than $10,000 by the time they graduated. Hispanic social scientists displayed the largest percentages of Ph.D.s with debt (77.0 percent) and owing more than $10,000 (46.0 percent). Percentages for black social scientists were similar. In general, the social sciences exhibited the highest frequencies for both indebtedness and debt level above $10,000, although Asian Ph.D.s owed more in life sciences. Education was the only field where more than half of American recipients (58.2 percent) were debt-free. Hispanics and blacks in education were exceptions, however, with 64.3 percent and 54.3 percent, respectively, reporting debt. Additionally, a third of all Hispanic doctorates in education and more than a fifth of all black doctorates in the field reported debt above $10,000. Since education and social sciences are the two areas in which Hispanics and blacks are most concentrated, their high percentages in these fields convert to substantial numbers of indebted Ph.D.s (see Table S-2 for numbers of Ph.D.s by field).

[21]The reader should note that federal research assistantships (RAs) are aggregated with university support in this year's report. The inconsistency of federal RA data from one year to the next has led to the conclusion that many recipients of this type of support may not have realized the true source of their funding and therefore reported this support as university RA instead of federal RA. Consequently, percentages for university support appear higher and federal support lower than in previous reports, making it inadvisable to compare this year's results with those from earlier years.

Postgraduation Plans

Three-fourths of the U.S. citizen Ph.D.s who indicated firm postgraduation commitments in 1990 planned to be employed (Table S-9, page 50).[22] Blacks were the group most likely to have employment plans (89.3 percent), and Asians the least likely (63.3 percent). Conversely, Asians displayed the largest proportion of Ph.D.s planning to continue their education (36.7 percent), while only 10.7 percent of blacks had such plans. (These differences are largely explained by field preferences: Asians clustered in science areas where postdoctoral study is common; blacks concentrated in education where employment is most likely.) For all groups, however, there has been a noticeable shift toward further study over the last 15 years.

Academe continues to be the principal employer of new Ph.D.s in the U.S. labor force. In 1990, more than half of every group except Asians reported academic commitments. Asians were more likely to be employed in industry (42.8 percent versus 36.6 percent in academe). Government hired 10 to 11 percent of every racial/ethnic group except Native Americans (4.0 percent). "Other" sectors (mainly nonprofit organizations and elementary/secondary schools) employed a significant 28.3 percent of blacks, only 9.1 percent of Asians, and approximately 18 percent of the other groups.

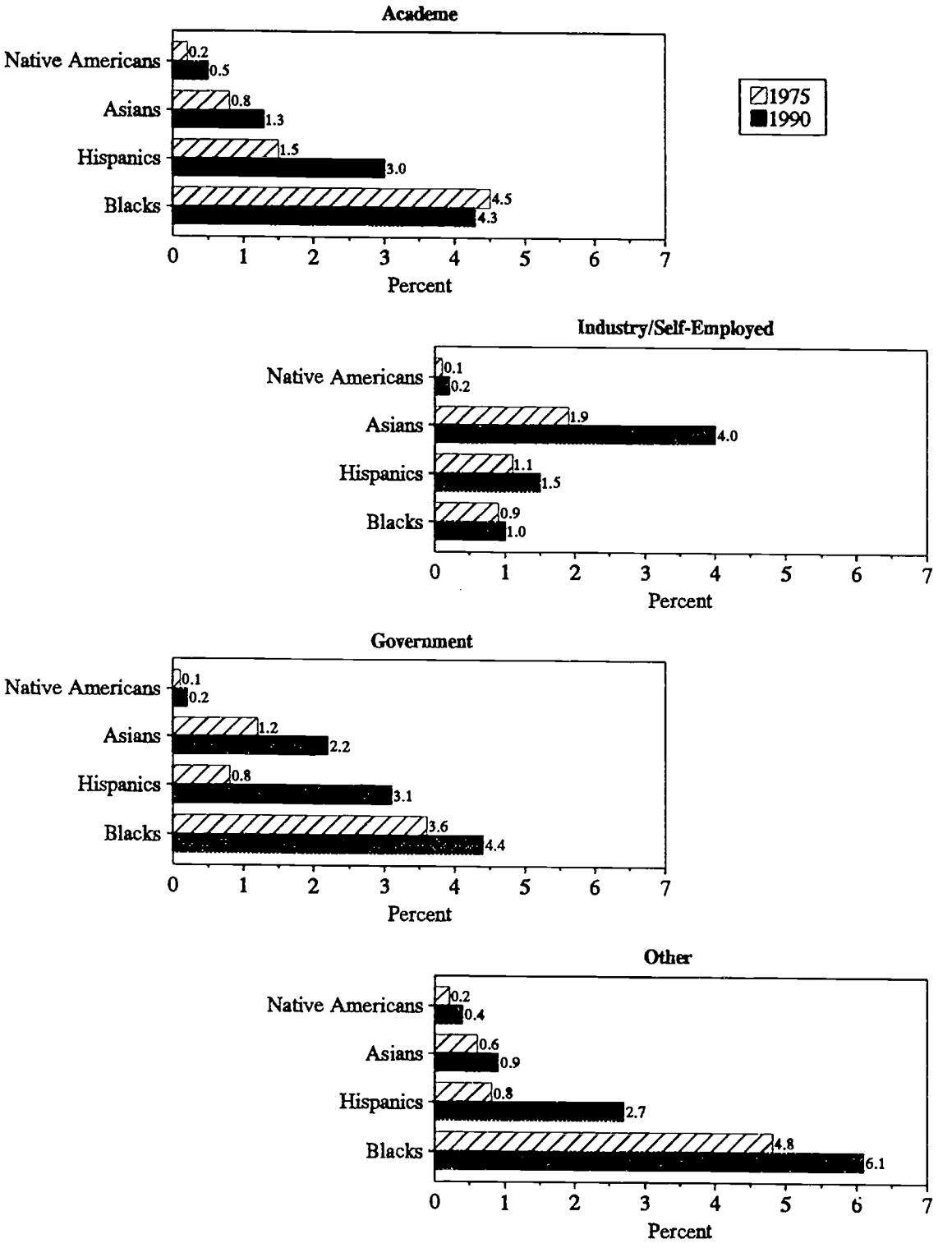
Although academe is still the largest employer of new Ph.D.s, the percentage of each group reporting academic commitments has declined since 1975, albeit with some fluctuation. Proportions in the industrial sector, on the other hand, have increased substantially, especially among Asians, Native Americans, and whites. Blacks and Hispanics experienced their greatest proportional growth in "other" sectors, although both groups showed small increases in industry as well. Hispanics also increased their share in government, the only group to do so. It is important to realize that numerical changes do not always parallel proportional shifts. Since 1975, for example, Asians, Hispanics, and Native Americans have increased their numbers of Ph.D.s in every employment sector, regardless of the changes in proportions; this is reflective of the overall growth in their numbers of doctoral awards during the period.

Figure S-4 shows the racial/ethnic mix of new Ph.D.s in each employment sector. It is evident that, with the exception of blacks in academe, every minority group has increased its presence in all sectors of the labor force over the last 15 years. In 1990, black Ph.D.s were still the most represented minority group in academe (4.3 percent of new Ph.D.s), government (4.4 percent), and "other" (6.1 percent), as were Asians in the industrial sector (4.0 percent). However, while blacks have exhibited only moderate proportional change since 1975, Asians have more than doubled their share of the industrial sector. The proportions held by Native Americans also increased at least twofold in every sector, but their numbers remained quite small. Hispanic Ph.D.s, too, demonstrated significant proportional growth over the period and, in 1990, constituted about 3 percent of all sectors except industry.

Summary

Between 1975 and 1990, U.S. minorities increased their annual number of doctorates by 37.7 percent, from 1,624 to 2,236 Ph.D.s, and their share of doctorates

[22]Because recipients sometimes complete the survey form well ahead of graduation, the final status of those who indicated that they were still "negotiating" or "seeking" cannot be determined. Therefore, the discussion of postgraduation plans in this report is limited to Ph.D.s who reported "definite" commitments at the time of survey completion.



NOTE: See Table S-9 for numbers of new doctorate recipients in each employment sector; see technical notes in Appendix C for rates of nonresponse to the applicable questions.

FIGURE S-4 Racial/ethnic composition of new Ph.D.s in the U.S. labor force, 1975 and 1990 (U.S. citizens, in percent).

from 6.3 percent to 9.4 percent. Significantly, this growth occurred at a time when the overall number of Ph.D.s awarded to U.S. citizens declined by 10.7 percent. However, while gains were exhibited by Asians, Native Americans, and Hispanics, blacks suffered a 17.1 percent decrease in their number of Ph.D.s—a result of the more than 50 percent decline in degrees earned by black men. Black women, in contrast, increased their number of Ph.D.s by 45.6 percent. Women in the other minority groups also made progress over the period, especially Hispanics and Native Americans, who have now approached parity with their male counterparts.

In 1990, Asian Ph.D.s continued to be most concentrated in engineering and the natural sciences while the other minorities clustered in social sciences and nonscience fields. Engineering was the field of choice for almost one-fourth of Asians, who earned 8.0 percent of all engineering doctorates granted to U.S. citizens that year. Education was the field selected most frequently by the other minorities (50.7 percent of blacks, 38.7 percent of Native Americans, and 24.6 percent of Hispanics), although there were also significant percentages of these groups in social sciences. Despite an overall decline since 1975, blacks still increased their numbers of doctorates in engineering, life sciences, social sciences, and professional/other fields. Black men, too, earned more degrees in a few fields, most notably engineering.

While 73.8 percent of Asian Ph.D.s in 1990 had at least one parent with some college education, only half of the other minorities reported parents at that level. Moreover, one-fourth of blacks and about one-fifth of Hispanics and Native Americans said their parents had not completed high school. Parents of 1990 Ph.D.s, however, were better educated than parents of Ph.D.s in 1975.

Many of the leading baccalaureate and doctorate institutions of minority Ph.D.s from 1986 to 1990 are located in states with substantial populations of the same racial/ethnic background. "Historically black colleges and universities" (HBCUs) have been awarding large numbers of baccalaureate degrees to blacks who go on to earn doctorates. In fact, 17 of the top 20 baccalaureate institutions among black Ph.D.s are HBCUs, as are the first- and second- place Ph.D. schools. In 1990, 9.9 percent of blacks received their Ph.D.s from HBCUs.

Time to doctorate—both total and registered—was longest among black and Native American Ph.D.s in 1990 and shortest among Asian Ph.D.s. The longest TTD was held by blacks (a median 16.5 years), and the longest RTD was held by Native Americans (8.3 years). Asians experienced both the shortest TTD and the shortest RTD (9.2 years and 6.8 years, respectively). Differences were moderated, however, when field of doctorate was controlled, with a general pattern among all groups of shorter times-to-degree in science and engineering fields and longer ones in nonscience fields.

While colleges and universities were the primary source of graduate school support for the majority (54.4 percent) of Asian Ph.D.s in 1990, personal sources (including loans) were cited by 62.7 percent of blacks, 59.5 percent of Native Americans, and 47.5 percent of Hispanics. As with time-to-doctorate, variations among the groups can be largely explained by the field preferences of Ph.D.s; Asians tended to cluster in science and engineering fields where university support is most abundant, while the other groups were more concentrated in nonscience areas where university support is less available.

The groups with the highest frequencies of indebted Ph.D.s in 1990 were Hispanics (69.0 percent) and blacks (61.8 percent)—compared with approximately 55 percent of Asians and Native Americans. In addition, more than one-third of Hispanic Ph.D.s owed over $10,000 by the time they graduated, as did about one-fourth of the other minorities. Hispanic social scientists reported the largest proportions of Ph.D.s with debt and owing more than $10,000. Because education and social

sciences are the areas in which Hispanics and blacks are most concentrated, their high percentages in these fields convert to significant numbers of indebted Ph.D.s.

Although there has been a noticeable shift toward further study over the past 15 years, more than half of each minority group in 1990 planned to be employed after graduation. Black Ph.D.s were the most likely to be employed (89.3 percent), and Asian Ph.D.s were the most likely to continue their education (36.7 percent). Academe remained the principal employer of all minority groups except Asians, who were more attracted to industry. Nevertheless, the proportions of Ph.D.s with academic commitments have declined since 1975. Asians and Native Americans have shown their greatest growth in the industrial sector, while blacks and Hispanics have been moving into "other" sectors (mainly nonprofit organizations and elementary/secondary schools). In 1990, blacks constituted over 4 percent and Hispanics about 3 percent of new Ph.D.s in academe, government, and "other" sectors, while Asians represented 4 percent of new Ph.D.s in industry.

TABLE S-1 Race/Ethnicity of U.S. Citizen Ph.D.s, 1975-1990

	Total U.S.	Total Known Race	Asians	Blacks	Hispanics	Native Amers.	Whites
1975 (No.)	27,082	25,977	286	999	303	36	24,353
(%)		100.0	1.1	3.8	1.2	0.1	93.7
1976 (No.)	27,269	26,182	334	1,095	340	40	24,373
(%)		100.0	1.3	4.2	1.3	0.2	93.1
1977 (No.)	26,119	25,008	339	1,116	423	65	23,065
(%)		100.0	1.4	4.5	1.7	0.3	92.2
1978 (No.)	25,291	23,767	390	1,033	473	60	21,811
(%)		100.0	1.6	4.3	2.0	0.3	91.8
1979 (No.)	25,464	23,947	428	1,056	462	81	21,920
(%)		100.0	1.8	4.4	1.9	0.3	91.5
1980 (No.)	25,222	23,971	458	1,032	412	75	21,994
(%)		100.0	1.9	4.3	1.7	0.3	91.8
1981 (No.)	25,061	24,007	465	1,013	464	85	21,980
(%)		100.0	1.9	4.2	1.9	0.4	91.6
1982 (No.)	24,391	23,791	452	1,047	535	77	21,680
(%)		100.0	1.9	4.4	2.2	0.3	91.1
1983 (No.)	24,359	23,734	492	922	539	81	21,700
(%)		100.0	2.1	3.9	2.3	0.3	91.4
1984 (No.)	24,027	23,425	512	953	536	74	21,350
(%)		100.0	2.2	4.1	2.3	0.3	91.1
1985 (No.)	23,370	22,848	516	912	561	96	20,763
(%)		100.0	2.3	4.0	2.5	0.4	90.9
1986 (No.)	23,081	22,651	530	823	571	99	20,628
(%)		100.0	2.3	3.6	2.5	0.4	91.1
1987 (No.)	22,983	22,505	542	768	618	115	20,462
(%)		100.0	2.4	3.4	2.7	0.5	90.9
1988 (No.)	23,287	22,900	614	814	597	94	20,781
(%)		100.0	2.7	3.6	2.6	0.4	90.7
1989 (No.)	23,398	23,014	625	821	582	94	20,892
(%)		100.0	2.7	3.6	2.5	0.4	90.8
1990 (No.)	24,190	23,886	617	828	698	93	21,650
(%)		100.0	2.6	3.5	2.9	0.4	90.6

NOTE: See technical notes in Appendix C for rates of nonresponse to the questions on citizenship status and race/ethnicity.

TABLE S-2 Major Doctorate Field of U.S. Citizen Ph.D.s, by Race/Ethnicity, 1975 and 1990

1975	Total U.S.*	Asians	Blacks	Hispanics	Native Amers.	Whites
Total All Fields	25,977	286	999	303	36	24,353
Physical Sciences	3,476	50	41	27	3	3,355
Physics/Astronomy	875	18	10	9	0	838
Chemistry	1,326	18	20	7	0	1,281
Earth, Atmos. & Marine Sci.	467	3	1	3	0	460
Mathematics	808	11	10	8	3	776
Computer Science†	N/A	N/A	N/A	N/A	N/A	N/A
Engineering	1,641	61	11	15	1	1,553
Life Sciences	3,801	54	56	39	2	3,650
Biological Sciences	2,811	43	46	28	1	2,693
Health Sciences	349	6	7	7	1	328
Agricultural Sciences	641	5	3	4	0	629
Social Sciences	4,935	36	153	56	8	4,682
Psychology	2,451	13	76	30	5	2,327
Anthropology	319	1	5	3	0	310
Economics	609	6	9	3	1	590
Poli. Sci. & Int'l. Relat.	668	5	17	9	0	637
Sociology	532	5	24	8	1	494
Other Social Sciences	356	6	22	3	1	324
Humanities	4,249	30	87	64	5	4,063
History	1,020	8	18	11	3	980
Amer. & Eng. Lang. & Lit.	1,139	8	20	6	1	1,104
Foreign Lang. & Lit.	652	3	17	39	0	593
Other Humanities	1,438	11	32	8	1	1,386
Education	6,604	39	609	92	16	5,848
Teacher Education	536	2	37	10	4	483
Teaching Fields	1,256	8	80	4	2	1,162
Other Education	4,812	29	492	78	10	4,203
Professional/Other	1,271	16	42	10	1	1,202
Business & Management	598	10	8	5	0	575
Communications	234	0	8	1	0	225
Other Professional Fields	425	6	26	3	1	389
Other Fields	14	0	0	1	0	13

TABLE S-2 (Continued)

1990	Total U.S.*	Asians	Blacks	Hispanics	Native Amers.	Whites
Total All Fields	23,886	617	828	698	93	21,650
Physical Sciences	3,237	108	23	83	5	3,018
Physics/Astronomy	694	32	4	13	0	645
Chemistry	1,334	53	12	48	3	1,218
Earth, Atmos. & Marine Sci.	512	4	2	11	1	494
Mathematics	362	9	4	7	1	341
Computer Science	335	10	1	4	0	320
Engineering	1,892	152	28	39	4	1,669
Life Sciences	4,443	149	63	103	8	4,120
Biological Sciences	3,058	113	28	72	3	2,842
Health Sciences	704	26	23	17	1	637
Agricultural Sciences	681	10	12	14	4	641
Social Sciences	4,440	82	172	164	23	3,999
Psychology	2,766	42	107	94	18	2,505
Anthropology	264	6	2	11	1	244
Economics	380	12	13	11	1	343
Poli. Sci. & Int'l. Relat.	356	4	17	16	1	318
Sociology	289	10	18	20	1	240
Other Social Sciences	385	8	15	12	1	349
Humanities	2,955	34	70	107	8	2,736
History	503	8	19	7	1	468
Amer. & Eng. Lang. & Lit.	683	7	18	15	1	642
Foreign Lang. & Lit.	324	4	3	55	1	261
Other Humanities	1,445	15	30	30	5	1,365
Education	5,434	61	420	172	36	4,745
Teacher Education	337	0	18	12	4	303
Teaching Fields	745	10	50	25	2	658
Other Education	4,352	51	352	135	30	3,784
Professional/Other	1,485	31	52	30	9	1,363
Business & Management	573	13	10	9	2	539
Communications	235	2	8	4	4	217
Other Professional Fields	637	14	29	17	3	574
Other Fields	40	2	5	0	0	33

NOTE: See technical notes in Appendix C for rates of nonresponse to the question on race/ethnicity by field.

*Includes only U.S. citizens whose racial/ethnic group is known.
†Not available in 1975.

TABLE S-3 Major Doctorate Field of U.S. Citizen Ph.D.s, by Race/Ethnicity and Gender, 1975 and 1990

1975	Total U.S.*		Asians		Blacks		Hispanics		Native Amers.		Whites	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Total All Fields	19,778	6,199	222	64	650	349	242	61	27	9	18,637	5,716
Physical Sciences	3,199	277	46	4	36	5	25	2	3	0	3,089	266
Physics/Astronomy	831	44	18	0	9	1	9	0	0	0	795	43
Chemistry	1,203	123	16	2	19	1	6	1	0	0	1,162	119
Earth, Atmos. & Marine Sci.	442	25	3	0	0	1	3	0	0	0	436	24
Mathematics	723	85	9	2	8	2	7	1	3	0	696	80
Computer Sciences†	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Engineering	1,609	32	60	1	11	0	15	0	1	0	1,522	31
Life Sciences	2,985	816	33	21	37	19	34	5	1	1	2,880	770
Biological Sciences	2,143	668	24	19	31	15	25	3	0	1	2,063	630
Health Sciences	229	120	4	2	3	4	6	1	1	0	215	113
Agricultural Sciences	613	28	5	0	3	0	3	1	0	0	602	27
Social Sciences	3,609	1,326	26	10	106	47	47	9	6	2	3,424	1,258
Psychology	1,675	776	5	8	51	25	27	3	4	1	1,588	739
Anthropology	198	121	0	1	2	3	2	1	0	0	194	116
Economics	545	64	6	0	7	2	3	0	1	0	528	62
Poli. Sci. & Int'l. Relat.	543	125	4	1	16	1	7	2	0	0	516	121
Sociology	350	182	5	0	11	13	5	3	1	0	328	166
Other Social Sciences	298	58	6	0	19	3	3	0	0	1	270	54
Humanities	2,799	1,450	17	13	60	27	40	24	3	2	2,679	1,384
History	783	237	4	4	13	5	10	1	2	1	754	226
Amer. & Eng. Lang. & Lit.	664	475	6	2	12	8	5	1	1	0	640	464
Foreign Lang. & Lit.	316	336	0	3	10	7	20	19	0	0	286	307
Other Humanities	1,036	402	7	4	25	7	5	3	0	1	999	387
Education	4,518	2,086	27	12	376	233	72	20	13	3	4,030	1,818
Teacher Education	318	218	0	2	14	23	10	0	3	1	291	192
Teaching Fields	814	442	7	1	46	34	2	2	1	1	758	404
Other Education	3,386	1,426	20	9	316	176	60	18	9	1	2,981	1,222
Professional/Other	1,059	212	13	3	24	18	9	1	0	1	1,013	189
Business & Management	574	24	10	0	8	0	4	1	0	0	552	23
Communications	161	73	0	0	2	6	1	0	0	0	158	67
Other Professional Fields	315	110	3	3	14	12	3	0	0	1	295	94
Other Fields	9	5	0	0	0	0	1	0	0	0	8	5

TABLE S-3 (Continued)

1990	Total U.S.*		Asians		Blacks		Hispanics		Native Amers.		Whites	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Total All Fields	13,539	10,347	411	206	320	508	372	326	49	44	12,387	9,263
Physical Sciences	2,566	671	84	24	16	7	54	29	4	1	2,408	610
Physics/Astronomy	634	60	26	6	4	0	11	2	0	0	593	52
Chemistry	998	336	40	13	8	4	29	19	3	0	918	300
Earth, Atmos. & Marine Sci.	395	117	3	1	0	2	7	4	0	1	385	109
Mathematics	282	80	6	3	3	1	4	3	1	0	268	73
Computer Sciences	257	78	9	1	1	0	3	1	0	0	244	76
Engineering	1,651	241	133	19	23	5	33	6	4	0	1,458	211
Life Sciences	2,598	1,845	95	54	30	33	57	46	7	1	2,409	1,711
Biological Sciences	1,862	1,196	75	38	12	16	44	28	2	1	1,729	1,113
Health Sciences	214	490	12	14	7	16	2	15	1	0	192	445
Agricultural Sciences	522	159	8	2	11	1	11	3	4	0	488	153
Social Sciences	2,123	2,317	42	40	77	95	84	80	8	15	1,912	2,087
Psychology	1,134	1,632	17	25	41	66	44	50	6	12	1,026	1,479
Anthropology	116	148	3	3	1	1	3	8	0	1	109	135
Economics	277	103	9	3	8	5	8	3	1	0	251	92
Poli. Sci. & Int'l. Relat.	251	105	4	0	13	4	13	3	1	0	220	98
Sociology	131	158	4	6	8	10	9	11	0	1	110	130
Other Social Sciences	214	171	5	3	6	9	7	5	0	1	196	153
Humanities	1,568	1,387	21	13	35	35	47	60	6	2	1,459	1,277
History	335	168	6	2	16	3	5	2	1	0	307	161
Amer. & Eng. Lang. & Lit.	291	392	4	3	4	14	10	5	0	1	273	369
Foreign Lang. & Lit.	129	195	1	3	1	2	14	41	1	0	112	149
Other Humanities	813	632	10	5	14	16	18	12	4	1	767	598
Education	2,202	3,232	16	45	126	294	80	92	15	21	1,965	2,780
Teacher Education	100	237	0	0	5	13	5	7	1	3	89	214
Teaching Fields	323	422	2	8	19	31	11	14	2	0	289	369
Other Education	1,779	2,573	14	37	102	250	64	71	12	18	1,587	2,197
Professional/Other	831	654	20	11	13	39	17	13	5	4	776	587
Business & Management	361	212	10	3	5	5	7	2	2	0	337	202
Communications	117	118	1	1	0	8	2	2	2	2	112	105
Other Professional Fields	339	298	8	6	7	22	8	9	1	2	315	259
Other Fields	14	26	1	1	1	4	0	0	0	0	12	21

NOTE: See technical notes in Appendix C for rates of nonresponse to the question on race/ethnicity by gender.

*Includes only U.S. citizens whose racial/ethnic group is known.
†Not available in 1975.

TABLE S-4 Ph.D. Institutions of U.S. Minorities, 1986-1990 (ranked on number of Ph.D.s)

Institution	Number	Institution	Number
Asians		Hispanics	
Univ. of California-Los Angeles	147	Univ. of Texas-Austin	133
Univ. of California-Berkeley	145	Univ. of California-Berkeley	74
Stanford Univ.	97	Univ. of California-Los Angeles	71
Univ. of Illinois-Urbana	72	New York Univ.	69
Univ. of Hawaii-Manoa	67	Texas A & M Univ.	68
Univ. of Washington	62	Univ. of Puerto Rico-Rio Piedras	60
Univ. of Southern California	62	Univ. of Massachusetts-Amherst	58
Massachusetts Inst. of Technology	54	Stanford Univ.	56
Univ. of Wisconsin-Madison	49	CUNY-Grad. School & Univ. Center	55
Univ. of California-Davis	49	Columbia Teachers College	43
Univ. of Michigan-Ann Arbor	47	Cornell Univ.	43
Cornell Univ.	44	Univ. of Southern California	43
Purdue Univ.	44	Rutgers Univ.	42
Univ. of Pennsylvania	41	Univ. of Florida	42
Univ. of Maryland	40	Univ. of Miami	42
Univ. of Texas-Austin	40	Fordham Univ.	41
Univ. of Minnesota-Minneapolis	39	Penn State Univ.	41
Ohio State Univ.	37	Harvard Univ.	40
Univ. of California-San Diego	36	Columbia Univ.	40
Univ. of Chicago	35	Univ. of Michigan-Ann Arbor	40
Northwestern Univ.	35	Univ. of California-Davis	40
Blacks		Native Americans	
Howard Univ.	123	Oklahoma State Univ.	19
Clark Atlanta Univ.	121	Univ. of Oklahoma	14
Univ. of Maryland	111	Univ. of Washington	14
Nova Univ.	110	Michigan State Univ.	12
Ohio State Univ.	104	Penn State Univ.	11
Univ. of Michigan-Ann Arbor	97	Univ. of Wisconsin-Madison	11
Columbia Teachers College	93	Univ. of California-Berkeley	11
Florida State Univ.	70	Univ. of California-Los Angeles	11
Univ. of Pittsburgh	68	Cornell Univ.	8
Southern Illinois Univ.	68	Univ. of Minnesota-Minneapolis	8
George Washington Univ.	68	Univ. of Texas-Austin	8
Temple Univ.	67	Northern Arizona Univ.	7
Univ. of N. Carolina-Chapel Hill	62	Univ. of California-Davis	7
George Peabody College	60	Harvard Univ.	6
Univ. of Massachusetts-Amherst	58	Univ. of Pittsburgh	6
Univ of California-Berkeley	58	Univ. of Illinois-Urbana	6
New York Univ.	56	Univ. of Michigan	6
Wayne State Univ.	54	Univ. of New Mexico	6
Rutgers Univ.	49	Univ. of Arizona	6
Georgia State Univ.	49	Univ. of Oregon	6
Univ. of Texas-Austin	49	Stanford Univ.	6

TABLE S-5 Baccalaureate Institutions of U.S. Minority Ph.D.s, 1986-1990 (ranked on number of Ph.D.s)

Institution	Number
Asians	
Univ. of California-Berkeley	171
Univ. of Hawaii-Manoa	136
Univ. of California-Los Angeles	92
Massachusetts Inst. of Technology	48
Univ. of California-Davis	41
Cornell Univ.	38
Univ. of Illinois-Urbana	37
Stanford Univ.	37
Harvard Univ.	35
Univ. of Washington	33
Yale Univ.	28
Univ. of Chicago	28
Univ. of Maryland	28
Univ. of Michigan	26
Univ. of California-San Diego	25
California Inst. of Technology	24
Univ. of California-Irvine	21
Pomona College	21
Northwestern Univ.	20
Univ. of Southern California	19
Blacks	
Howard Univ.	110
Hampton Univ.	68
Spelman College	67
Morgan State Univ.	56
Tuskegee Univ.	55
North Carolina Ag. & Tech. St. Univ.	53
Jackson State Univ.	51
Southern Univ.	51
North Carolina Central Univ.	50
Wayne State Univ.	46
Virginia State Univ.	40
South Carolina State College	40
Fisk Univ.	38
Tennessee State Univ.	37
Univ. of the District of Columbia	36
CUNY-City College	33
Florida Ag. & Mech. Univ.	32
Cheyney Univ. of Pennsylvania	30
Morris Brown College	30
New York Univ.	29

Institution	Number
Hispanics	
Univ. of Puerto Rico-Rio Piedras	435
Univ. of Puerto Rico-Mayaguez	86
Univ. of Texas-Austin	54
Univ. of California-Berkeley	45
Univ. of New Mexico	42
Univ. of Texas-El Paso	37
Univ. of California-Los Angeles	37
Univ. of Miami	36
Univ. of Florida	33
California State Univ.-Los Angeles	31
Univ. of California-Santa Barbara	30
CUNY-City College	29
Catholic Univ. of Puerto Rico	29
Univ. of Arizona	28
New York Univ.	26
Texas A & I Univ.	23
Univ. of Texas/Pan Am. U.-Edinburg	23
CUNY-Hunter College	22
Princeton Univ.	22
Univ. of California-Santa Cruz	22
Native Americans	
Northeastern State Univ.	13
Univ. of Wisconsin-Madison	9
Univ. of Oklahoma	9
Univ. of California-Berkeley	9
Univ. of Michigan	7
Oklahoma State Univ.	7
Univ. of Arizona	7
Univ. of California-Davis	6
Univ. of California-Los Angeles	6
Univ. of Pittsburgh	5
Univ. of Nebraska-Lincoln	5
Pembroke State Univ.	5
Univ. of Texas-Austin	5
Univ. of California-Santa Barbara	5

NOTE: See technical notes in Appendix C for rates of nonresponse to baccalaureate institution.

TABLE S-6 Median Years to Degree for U.S. Citizen Ph.D.s, by Race/Ethnicity and Major Field, 1990

Field	Total U.S.		Asians		Blacks		Hispanics		Native Amers.		Whites	
	TTD	RTD	TTD	RTD	TTD	RTD	TTD	RTD	TTD	RTD	TTD	RTD
Total All Fields	11.4	7.2	9.2	6.8	16.5	8.2	11.2	7.5	14.1	8.3	11.3	7.2
Physical Sciences	7.2	6.2	6.8	6.0	8.2	6.5	7.1	6.3	9.3	*	7.2	6.2
Physics/Astronomy	7.1	6.4	6.5	6.0	*	*	6.3	6.1	*	*	7.1	6.4
Chemistry	6.1	5.4	6.4	5.7	8.0	6.3	6.7	6.0	*	*	6.0	5.4
Earth, Atmos. & Marine Sci.	9.2	7.2	*	*	*	*	11.3	9.2	*	*	9.2	7.2
Mathematics	7.8	6.6	7.5	5.7	*	*	7.3	6.3	*	*	7.7	6.6
Computer Science	9.7	7.1	12.5	8.5	*	*	*	*	*	*	9.6	7.0
Engineering	7.8	6.0	8.0	6.1	8.5	6.2	9.6	6.1	*	*	7.7	6.0
Life Sciences	9.0	6.7	8.2	6.8	10.0	6.8	9.0	6.6	9.2	7.5	9.0	6.7
Biological Sciences	8.2	6.6	7.5	6.7	8.1	7.2	8.7	6.8	*	*	8.2	6.6
Health Sciences	13.9	7.5	14.0	7.6	13.3	6.1	12.0	6.1	*	*	14.0	7.6
Agricultural Sciences	9.4	6.4	12.0	6.7	10.2	7.0	7.5	5.4	*	*	9.4	6.4
Social Sciences	10.9	7.7	9.9	7.7	12.0	8.5	10.5	8.2	16.0	8.2	10.8	7.6
Psychology	10.2	7.4	8.7	6.5	10.8	8.3	8.7	7.6	16.5	8.3	10.3	7.4
Anthropology	13.3	9.9	9.5	9.0	*	*	13.8	11.0	*	*	13.1	9.8
Economics	9.2	6.9	11.0	7.8	12.2	8.8	13.0	7.0	*	*	8.9	6.8
Poli. Sci. & Int'l. Relat.	10.9	7.8	*	*	12.8	8.0	11.9	8.8	*	*	10.5	7.7
Sociology	12.1	8.9	14.5	11.0	13.0	10.0	11.0	9.5	*	*	12.1	8.8
Other Social Sciences	14.2	8.1	10.5	7.5	16.0	9.0	13.3	7.1	*	*	14.1	8.1
Humanities	12.5	8.4	13.4	8.8	16.4	9.8	11.6	8.9	12.0	7.0	12.4	8.3
History	12.9	8.7	16.8	8.5	17.0	11.8	*	*	*	*	12.6	8.6
Amer. & Eng. Lang. & Lit.	12.2	8.0	10.0	8.0	16.0	10.5	10.8	7.5	*	*	12.1	8.0
Foreign Lang. & Lit.	12.1	8.8	*	*	*	*	11.8	9.0	*	*	12.1	8.7
Other Humanities	12.7	8.4	13.3	9.5	16.2	8.8	12.0	9.1	13.0	*	12.6	8.4
Education	18.4	8.3	19.3	8.5	19.6	8.5	16.4	8.5	17.7	9.0	18.3	8.3
Teacher Education	19.1	7.9	*	*	19.5	8.4	18.5	8.0	*	*	19.1	7.7
Teaching Fields	16.0	7.7	20.0	8.8	17.3	8.0	16.0	8.8	*	*	15.8	7.6
Other Education	18.7	8.4	19.2	8.4	20.0	8.6	16.5	8.4	18.0	9.3	18.7	8.4
Professional/Other	14.4	7.7	15.3	8.3	17.0	7.2	12.8	7.8	11.0	9.0	14.3	7.7
Business & Management	13.0	7.3	14.8	8.5	17.5	9.0	10.0	6.5	*	*	13.0	7.2
Communications	13.0	7.2	*	*	15.5	7.3	*	*	*	*	12.8	7.1
Other Professional Fields	15.9	8.3	15.0	7.5	17.3	6.6	16.5	8.8	*	*	15.8	8.4
Other Fields	15.1	8.1	*	*	20.0	9.0	*	*	*	*	15.1	7.8

NOTE: Medians are based on the number of individuals who have provided complete information about their postbaccalaureate education. Medians were computed wherever there were five or more Ph.D.s with known time-to-degree. See Table S-2 for numbers of Ph.D.s in each field. Refer to Table 6 on page 15 for trend data on time-to-degree for U.S. citizens in the aggregate. See technical notes in Appendix C for rates of nonresponse to the applicable questions.

*A median was not computed because the number of Ph.D.s in this field with known time-to-degree was fewer than five.

TABLE S-7 Primary Sources of Support for U.S. Citizen Ph.D.s, by Race/Ethnicity and Broad Field, 1990 (in percent)

Primary Source of Support	Total U.S.	Asians	Blacks	Hispanics	Native Amers.*	Whites
Total All Fields						
Personal	48.0	30.1	62.7	47.5	59.5	48.1
University	41.8	54.4	24.8	37.2	20.3	42.1
Federal	6.6	9.6	6.3	11.3	10.8	6.3
Other	3.7	5.8	6.3	4.0	9.5	3.5
Physical Sciences†						
Personal	17.4	8.4	16.7	14.7	0.0	17.9
University	73.4	82.1	77.8	64.7	75.0	73.2
Federal	5.7	6.3	5.6	14.7	0.0	5.5
Other	3.5	3.2	0.0	5.9	25.0	3.4
Engineering						
Personal	21.5	17.1	10.5	27.3	75.0	21.7
University	59.5	65.0	47.4	39.4	25.0	59.9
Federal	9.4	4.3	5.3	24.2	0.0	9.6
Other	9.5	13.7	36.8	9.1	0.0	8.9
Life Sciences						
Personal	27.1	23.3	22.4	23.8	12.5	27.5
University	51.9	49.2	38.8	51.2	50.0	52.1
Federal	18.2	25.0	30.6	21.4	25.0	17.6
Other	2.9	2.5	8.2	3.6	12.5	2.7
Social Sciences						
Personal	58.0	44.9	48.5	49.2	61.1	59.0
University	35.6	42.0	37.1	34.9	11.1	35.5
Federal	4.2	5.8	9.1	12.7	16.7	3.7
Other	2.2	7.2	5.3	3.2	11.1	1.8
Humanities						
Personal	50.8	50.0	50.0	46.4	50.0	51.1
University	44.4	37.5	35.4	52.2	50.0	44.2
Federal	1.8	8.3	4.2	0.0	0.0	1.7
Other	3.0	4.2	10.4	1.4	0.0	2.9
Education						
Personal	81.4	70.8	81.4	85.7	77.8	81.3
University	13.0	27.1	12.1	7.1	3.7	13.2
Federal	1.8	2.1	2.5	4.0	11.1	1.7
Other	3.8	0.0	4.0	3.2	7.4	3.8
Professional/Other						
Personal	63.0	68.0	69.7	45.8	71.4	63.1
University	30.5	28.0	21.2	33.3	14.3	30.7
Federal	2.0	0.0	0.0	12.5	0.0	1.9
Other	4.5	4.0	9.1	8.3	14.3	4.2

NOTE: Percentages are based on the number of Ph.D.s with known primary support. "Personal" includes loans as well as own earnings and contributions from the spouse/family. Federally funded research assistantships (RAs) are grouped under "University" because recipients of such support may not be aware of the actual source of funding. It is believed that many of these Ph.D.s are reporting their support as university RA instead of federal RA. "Other" support includes U.S. nationally competitive fellowships, business/employer funds, foreign government, and other nonspecified sources. See Table S-2 for numbers of Ph.D.s in each field. See technical notes in Appendix C for rates of nonresponse to this question.

*Because of the small number of Native Americans (a total of 93 Ph.D.s in 1990), percentages in fields other than education and social sciences are not very meaningful. See Table S-2 for the number of Native Americans in each field.
†Includes mathematics and computer sciences.

TABLE S-8 Cumulative Debt Related to Education for U.S. Citizen Ph.D.s, by Race/Ethnicity and Broad Field, 1990 (in percent)

	Total U.S.	Asians	Blacks	Hispanics	Native Americans*	Whites
Total All Fields						
Without Debt	43.3	44.4	38.2	31.0	45.7	43.9
With Debt	56.7	55.6	61.8	69.0	54.3	56.1
$5,000 or less	16.9	15.8	18.3	18.6	17.4	16.9
$5,001 to $10,000	14.7	16.5	15.1	14.6	14.1	14.6
$10,001 or more	25.0	23.0	28.3	35.8	22.8	24.5
Physical Sciences†						
Without Debt	40.7	43.9	34.8	35.8	60.0	40.7
With Debt	59.3	56.1	65.2	64.2	40.0	59.3
$5,000 or less	19.2	15.9	34.8	14.8	0.0	19.3
$5,001 to $10,000	19.9	23.3	17.4	19.8	40.0	20.0
$10,001 or more	20.1	15.9	13.0	29.6	0.0	19.9
Engineering						
Without Debt	47.3	48.3	35.7	36.8	50.0	47.5
With Debt	52.7	51.7	64.3	63.2	50.0	52.5
$5,000 or less	18.0	14.6	14.3	15.8	25.0	18.6
$5,001 to $10,000	14.5	15.2	28.6	7.9	0.0	14.4
$10,001 or more	20.2	21.9	21.4	39.5	25.0	19.5
Life Sciences						
Without Debt	37.1	43.2	23.8	27.5	50.0	37.3
With Debt	62.9	56.8	76.2	72.5	50.0	62.7
$5,000 or less	18.5	15.5	27.0	15.7	12.5	18.5
$5,001 to $10,000	17.4	11.5	25.4	20.6	12.5	17.4
$10,001 or more	27.0	29.7	23.8	36.3	25.0	26.6

Social Sciences						
Without Debt	30.8	31.3	24.7	23.0	27.3	31.4
With Debt	69.2	68.8	75.3	77.0	72.7	68.6
$5,000 or less	14.3	16.3	13.5	16.1	13.6	14.2
$5,001 to $10,000	15.1	26.3	15.9	14.9	22.7	14.9
$10,001 or more	39.8	26.3	45.9	46.0	36.4	39.5
Humanities						
Without Debt	43.2	41.2	41.8	34.6	12.5	43.7
With Debt	56.8	58.8	58.2	65.4	87.5	56.3
$5,000 or less	18.8	17.6	19.4	24.0	50.0	18.6
$5,001 to $10,000	15.0	14.7	11.9	14.4	0.0	15.1
$10,001 or more	22.9	26.5	26.9	26.9	37.5	22.5
Education						
Without Debt	58.2	55.7	45.7	35.7	52.8	60.3
With Debt	41.8	44.3	54.3	64.3	47.2	39.7
$5,000 or less	15.3	19.7	18.4	20.2	19.4	14.8
$5,001 to $10,000	9.7	9.8	13.2	10.7	11.1	9.3
$10,001 or more	16.7	14.8	22.5	33.3	16.7	15.6
Professional/Other						
Without Debt	45.5	48.4	37.3	26.7	77.8	46.1
With Debt	54.5	51.6	62.7	73.3	22.2	53.9
$5,000 or less	16.1	12.9	15.7	26.7	0.0	16.1
$5,001 to $10,000	11.9	12.9	11.8	10.0	11.1	11.8
$10,001 or more	26.6	25.8	35.3	36.7	11.1	26.0

NOTE: Percentages are based on known responses to the debt question. Percentages for "with" and "without" debt add to 100.0. Percentages for levels of debt add to the total percentage of Ph.D.s "with debt." See technical notes in Appendix C for rates of nonresponse to this question.

*Because of the small number of Native Americans (a total of 93 Ph.D.s in 1990), percentages in fields other than education and social sciences are not very meaningful. See Table S-2 for the number of Native Americans in each field.
†Includes mathematics and computer sciences.

TABLE S-9 Postgraduation Commitments of U.S. Citizen Ph.D.s, by Race/Ethnicity for Selected Years, 1975-1990 (in percent)

	Total U.S.*	Asians	Blacks	Hispanics	Native Amers.	Whites
Total Commitments (No.)†						
1975	19,561	199	688	227	27	17,932
1980	18,637	315	732	274	57	16,572
1985	16,878	342	611	376	71	15,265
1990	17,693	403	595	461	59	15,981
Study						
1975	15.6	22.7	5.7	11.2	7.4	15.8
1980	19.0	28.0	6.0	11.7	14.0	19.3
1985	21.3	31.1	8.6	15.5	18.6	21.7
1990	23.6	36.7	10.7	21.8	13.6	23.7
Employment						
1975	84.4	77.3	94.3	88.8	92.6	84.2
1980	81.0	72.0	94.0	88.3	86.0	80.7
1985	78.7	68.9	91.4	84.5	81.4	78.3
1990	76.4	63.3	89.3	78.2	86.4	76.3
EMPLOYED IN THE U.S. (No.)‡						
1975	16,024	147	631	197	25	14,651
1980	14,824	224	670	240	48	13,133
1985	13,053	222	549	309	57	11,761
1990	13,226	244	525	351	51	11,932
Academe						
1975	60.6	50.0	68.3	71.3	66.7	60.2
1980	52.4	36.6	59.1	56.7	47.9	52.4
1985	48.7	40.6	51.4	58.3	52.6	48.4
1990	51.6	36.6	55.8	58.2	66.0	51.5
Industry/Self-Employed						
1975	11.9	24.0	2.6	10.8	4.2	12.1
1980	16.5	37.1	3.7	10.1	12.5	16.7
1985	19.7	37.9	6.2	11.3	14.0	20.1
1990	20.0	42.8	5.0	11.5	12.0	20.4
Government						
1975	13.2	16.4	11.8	8.2	12.5	13.3
1980	12.9	12.9	14.2	13.4	16.7	12.8
1985	12.1	11.9	14.7	11.6	10.5	12.0
1990	9.8	11.5	10.9	11.5	4.0	9.7
Other						
1975	14.4	9.6	17.3	9.7	16.7	14.5
1980	18.2	13.4	23.1	19.7	22.9	18.1
1985	19.6	9.6	27.6	18.9	22.8	19.5
1990	18.5	9.1	28.3	18.7	18.0	18.4

NOTE: Only doctorates with definite commitments are included. Percentages are based on the number of Ph.D.s with known postgraduation plans. See technical notes in Appendix C for rates of nonresponse to the applicable questions and for further explanation of postgraduation plans.

*Includes U.S. citizens whose racial/ethnic group is not known.
†Includes Ph.D.s whose type of commitment is not known.
‡Includes Ph.D.s whose employment sector is not known.

APPENDIXES

APPENDIX A: The Seven Basic Tables, 1990

Table titles and headings are generally self-explanatory, but a few terms need special definition or explanation. The survey questionnaire is presented at the back of the report.

A-1 Number of Doctorate Recipients, by Gender and Subfield, 1990
A-2 Number of Doctorate Recipients, by Citizenship, Race/Ethnicity, and Subfield, 1990
A-3 Statistical Profile of Doctorate Recipients, by Major Field, 1990
A-4 Statistical Profile of Doctorate Recipients, by Race/Ethnicity and Citizenship, 1990
A-5 Sources of Graduate School Support for Doctorate Recipients, by Broad Field and Gender, 1990
A-6 State of Doctoral Institution of Doctorate Recipients, by Broad Field and Gender, 1990
A-7 Institutions Granting Doctorates, by Major Field, 1990

Tables A-1 and A-2: These tables display data for the most recent year by subfield of doctorate. The subfields correspond to the fields on the questionnaire's Specialties List located at the back of this report. Field groupings may differ from those in reports published by federal sponsors of the Survey of Earned Doctorates (SED). See inside the back cover for a description of field groupings as reported in these tables. The "general" field categories—e.g., "chemistry, general"—contain individuals who either received the doctorate in the general subject area or did not indicate a particular specialty field. The "other" field categories—e.g., "chemistry, other"—include individuals whose specified doctoral discipline was not included among the specialty fields.

Table A-1 presents data by doctoral specialty and gender. Table A-2 displays doctoral specialty by citizenship and race/ethnicity. See the explanatory note on Table A-4 for further description of the racial/ethnic variable and changes that have been made to the question over the years.

Table A-3: These are three 2-page tables: one contains data about all doctorate recipients in the most recent year, and the other two present data by gender. Field groupings may differ from those in reports published by federal sponsors of the SED. See inside the back cover for a description of field groupings as reported in these tables; see the questionnaire's Specialties List at the back of the report for the names and codes of the subfields included. Terms requiring definition are as follows:

- *Median Age at Doctorate*: One-half received the doctorate at or before this age. A recipient's age is derived by subtracting the year of birth from the calendar year of doctorate. Months are not included in the computation.
- *Percentage with Master's*: The percentage of doctorate recipients in a field who received a master's degree in any field before earning the doctorate.
- *Median Time Lapse*: "Total Time" refers to total calendar time elapsed between the year of baccalaureate and the year of doctorate; "Registered Time" refers to the total time registered in a university between baccalaureate and doctorate. Months are often not indicated by the recipient, and are, therefore, not included in the computation of time-to-doctorate.

Each year's doctorate recipients provide information on postgraduation employment or study plans in response to items 20 and 21 on the survey form. Since the questionnaire is filled out around the time the doctorate is received, these planned activities can be subject to change. However, comparisons with data from the longitudinal Survey of Doctorate Recipients have shown these data to be a reasonable predictor of actual employment status in the year following the doctorate (see the discussion on "definite" postgraduation plans in the Technical Notes in Appendix C). Postgraduation plans of the doctorate recipients are grouped as follows: "Postdoctoral Study Plans" (fellowship, research associateship, traineeship, other), "Planned Employment" (educational institution, industry, etc.), or "Postdoctoral Status Unknown." The sum of these lines totals 100 percent for each column, with allowance for rounding: for example, 48.7 percent of all chemists had postdoctoral study plans, 42.7 percent planned to be employed, and 8.6 percent did not report their postgraduation plans; these total 100.0 percent. The study and employment rows are further subdivided—showing that 21.7 percent of all the chemists planned to pursue postdoctoral fellowships; 25.3 percent, research associateships; 1.0 percent, traineeships; and 0.8 percent, some other form of postdoctoral study. The employment row is similarly subdivided; the percentages, listed by type of employer, show that a total of 42.7 percent planned employment.

The four lines of data beginning with "Definite Postdoctoral Study" distinguish between individuals who have definite postgraduation plans (item 20: "Am returning to, or continuing in, predoctoral employment" or "Have signed contract or made definite commitment") and those who are still seeking employment or postdoctoral study (item 20: "Am negotiating with one or more specific organizations," "Am seeking position but have no specific prospects," or "Other"). These four lines, when added to the prior line, "Postdoctoral Status Unknown," total 100 percent with allowance for rounding. The two lines, "Definite Postdoctoral Study" and "Seeking Postdoctoral Study," add to give the percentage having "Postdoctoral Study Plans"; the two lines, "Definite Employment" and "Seeking Employment," add to give the percentage having "Planned Employment After Doctorate."

Percentages showing the distribution of doctorate recipients by work activity and by region of employment are based on those who have definite employment commitments. They exclude those still seeking employment and those planning postdoctoral study as described above. Unfortunately, questionnaire revisions in 1990 appear to have resulted in a higher rate of nonresponse to the item on work activity than in previous years. In 1990, the nonresponse rate was 14.0 percent, compared to 6.2 percent in 1989. Nonresponse was especially high among recipients planning to work in educational institutions, thereby affecting the percentages in teaching and administration.

Table A-4: Table A-4 contains data by race/ethnicity (first included in *Summary Report 1973*) and by citizenship for selected variables from Tables A-3 and A-5. Field groupings displayed may differ from those in reports published by federal sponsors of the SED. See inside the back cover for a description of field groupings as reported in these tables; see the questionnaire's Specialties List at the back of the report for the names and codes of the subfields included.

In 1977, the item on race/ethnicity in the survey questionnaire was revised to coincide with the question format recommended by the Federal Interagency Committee on Education and adopted by the Office of Management and Budget (OMB) for use in federally sponsored surveys; an explanation of the effect of these changes is detailed on page 13 of *Summary Report 1977*. Changes in the OMB guidelines prompted the moving of persons having origins in the Indian subcontinent from the white category to

Asian in 1978. In 1980, two survey revisions were made: (1) the category Hispanic was subdivided into Puerto Rican, Mexican American, and "other" Hispanic to provide more detail for users of the racial/ethnic data, and (2) respondents were asked to check only one racial category (prior to 1980, doctorate recipients could check more than one category to indicate their race). However, when the data were compiled, all persons who checked Native American, Asian, or Hispanic and also checked white were included in the minority-group category; and those whose responses were black as well as any other category were designated as black.

Beginning with the 1982 survey, this item was revised to separate questions on racial and ethnic groups. Respondents are first asked to check one of the four racial group categories (Native American, Asian, black, or white) and then to indicate Hispanic heritage. For purposes of analysis, all respondents who indicated Hispanic heritage, regardless of racial identification, are included in one of three Hispanic groups. The remaining survey respondents are then counted in the respective racial groups.

Table A-5: Table A-5 displays data reported in item 17 on all sources of financial support received during graduate school, by broad field and gender. Field groupings may differ from those in reports published by federal sponsors of the SED. See inside the back cover for a description of field groupings as reported in this table; see the questionnaire's Specialties List at the back of the report for the names and codes of the subfields included.

Doctorate recipients indicate multiple sources of support. In this table, a recipient counts once in each source category from which he or she received support. Since students indicate multiple sources of support, the vertical percentages sum to more than 100 percent.

Federal research assistantships (RAs) are aggregated with university support in this year's report. The inconsistency of federal RA data from one year to the next has led to the conclusion that many recipients of this type of support may not have realized the true source of their funding and, therefore, reported this support as university RA instead of federal RA. Consequently, percentages for university support appear higher and federal support lower than in previous reports, making it inadvisable to compare this year's results with those from earlier years.

The data should be interpreted as follows: 110 male doctorate recipients in the physical sciences reported financial support from National Science Foundation fellowships during graduate school. This number is 2.5 percent of the male physical sciences doctorates who answered the question, and it is 37.4 percent of the males in all fields who reported NSF fellowship support.

Table A-6: This table shows, by broad field and gender, the number of persons receiving a doctorate in the most recent year from institutions in each of the 50 states, the District of Columbia, and Puerto Rico. Field groupings may differ from those in reports published by federal sponsors of the SED. See inside the back cover for a description of field groupings as reported in this table; see the questionnaire's Specialties List at the back of the report for the names and codes of the subfields included.

Table A-7: This table displays data by doctorate-granting institution and major field. It includes all institutions in the 50 states, the District of Columbia, and Puerto Rico that awarded doctoral degrees in the most recent year. Field groupings may differ from those in reports published by federal sponsors of the SED and from departmental designations at institutions. See inside the back cover for a description of field groupings as reported in this table; see the questionnaire's Specialties List at the back of the report for the names and codes of the subfields included.

APPENDIX TABLE A-1 Number of Doctorate Recipients, by Gender and Subfield, 1990

Subfield of Doctorate	Number of Doctorates		
	Total	Men	Women
TOTAL ALL FIELDS	36027	22966	13061
PHYSICAL SCIENCES	5859	4791	1068
MATHEMATICS	892	734	158
Applied Mathematics	185	151	34
Algebra	39	33	6
Analysis and Functional Analysis	90	75	15
Geometry	42	34	8
Logic	19	16	3
Number Theory	26	25	1
Probability and Math Statistics	157	126	31
Topology	50	39	11
Computing Theory and Practice	12	11	1
Operation Research	29	27	2
Mathematics, General	191	159	32
Mathematics, Other	52	38	14
COMPUTER SCIENCE	704	594	110
Computer Sciences	612	527	85
Information Sciences and Systems	92	67	25
PHYSICS AND ASTRONOMY	1392	1243	149
Astronomy	52	39	13
Astrophysics	76	69	7
Acoustics	21	19	2
Atomic and Molecular	87	80	7
Electron	2	2	
Elementary Particles	162	148	14
Fluids	17	16	1
Nuclear	73	68	5
Optics	76	71	5
Plasma	42	40	2
Polymer	11	8	3
Solid State	306	271	35
Physics, General	325	293	32
Physics, Other	142	119	23
CHEMISTRY	2102	1600	502
Analytical	293	225	68
Inorganic	242	182	60
Nuclear	13	11	2
Organic	452	348	104
Pharmaceutical	48	28	20
Physical	322	246	76
Polymer	81	68	13
Theoretical	55	41	14
Chemistry, General	529	402	127
Chemistry, Other	67	49	18
EARTH, ATMOS, & MARINE SCI	769	620	149
Atmospheric Physics and Chemistry	18	17	1
Atmospheric Dynamics	20	16	4
Meteorology	20	17	3
Atmos and Meteorological Sci, General	23	18	5
Atmos and Meteorological Sci, Other	2	1	1
Geology	167	135	32
Geochemistry	56	47	9
Geophysics and Seismology	91	76	15
Paleontology	21	19	2
Mineralogy, Petrology	26	22	4
Stratigraphy, Sedimentation	25	20	5
Geomorphology and Glacial Geology	14	13	1
Applied Geology	6	3	3
Geological Sciences, General	31	26	5
Geological Sciences, Other	27	19	8
Environmental Sciences	50	39	11
Hydrology and Water Resources	13	12	1
Oceanography	89	65	24
Marine Sciences	39	32	7
Physical Sciences, Other	31	23	8
ENGINEERING	4892	4478	414
Aerospace, Aeronautic & Astronautic	192	188	4
Agricultural	101	94	7
Bioengineering and Biomedical	129	106	23
Ceramic	43	32	11
Chemical	560	490	70
Civil	505	465	40
Communications	34	32	2
Computer	132	120	12
Electrical, Electronics	1110	1040	70
Engineering Mechanics	111	102	9
Engineering Physics	16	15	1
Engineering Science	37	31	6
Environmental Health Engineering	48	38	10
Industrial	151	126	25
Materials Science	306	276	30
Mechanical	771	741	30
Metallurgical	91	84	7
Mining and Mineral	40	37	3
Naval Architecture, Marine Eng	8	7	1
Nuclear	115	106	9
Ocean	17	15	2
Operations Research	46	40	6
Petroleum	49	49	
Polymer	47	40	7
Systems	51	48	3
Engineering, General	75	67	8
Engineering, Other	107	89	18
LIFE SCIENCES	6613	4139	2474
BIOLOGICAL SCIENCES	4333	2727	1606
Biochemistry	682	444	238
Biophysics	103	80	23
Bacteriology	15	11	4
Plant Genetics	31	24	7
Plant Pathology	37	26	11
Plant Physiology	51	32	19
Botany, Other	104	71	33
Anatomy	70	41	29
Biometrics and Biostatistics	47	30	17
Cell Biology	145	76	69
Ecology	166	114	52
Embryology	22	10	12
Endocrinology	24	13	11
Entomology	147	121	26
Immunology	153	81	72
Molecular Biology	410	262	148
Microbiology	335	221	114
Neurosciences	192	116	76
Nutritional Sciences	118	30	88
Parasitology	13	9	4
Toxicology	91	55	36
Human and Animal Genetics	153	80	73
Human and Animal Pathology	101	69	32
Human and Animal Pharmacology	243	153	90
Human and Animal Physiology	276	179	97
Zoology, Other	122	86	36
Biological Sciences, General	340	198	142
Biological Sciences, Other	142	95	47
HEALTH SCIENCES	960	365	595
Audiology and Speech Pathology	93	25	68
Environmental Health	38	26	12
Public Health	122	46	76
Epidemiology	102	42	60
Nursing	267	11	256
Pharmacy	116	78	38
Veterinary Medicine	70	46	24
Health Sciences, General	33	25	8
Health Sciences, Other	119	66	53
AGRICULTURAL SCIENCES	1320	1047	273
Agricultural Business & Mgmt	2	1	1
Agricultural Economics	144	117	27
Animal Breeding and Genetics	22	19	3
Animal Nutrition	54	41	13
Dairy Science	20	18	2
Poultry Science	17	14	3
Fisheries Science	42	36	6
Animal Sciences, Other	90	79	11
Agronomy	143	122	21
Plant Breeding and Genetics	87	67	20
Plant Pathology	64	39	25
Plant Protection-Pest Mgmt	4	3	1
Plant Sciences, Other	23	19	4
Food Engineering	10	8	2
Food Sciences, Other	141	88	53
Soil Chemistry/Microbiology	27	21	6
Soil Sciences, Other	91	83	8
Horticulture Science	101	74	27

NOTE: Field groupings may differ from those in reports published by federal sponsors of the Survey of Earned Doctorates. See inside the back cover for a description of fields as reported in this table. Refer also to the explanatory note about this table in front of Appendix A.

Subfield of Doctorate	Number of Doctorates		
	Total	Men	Women
Forest Biology	27	19	8
Forest Engineering	2	2	
Forest Management	14	13	1
Wood Science	16	16	
Renewable Natural Resources	16	13	3
Forestry & Related Sci, Other	62	52	10
Wildlife/Range Management	58	52	6
Agriculture, General	5	5	
Agriculture, Other	38	26	12
SOCIAL SCIENCES (INCL PSYCH)	6076	3261	2815
Anthropology	324	152	172
Area Studies	22	13	9
Criminology	42	26	16
Demography	20	9	11
Economics	836	667	169
Econometrics	26	23	3
Geography	131	96	35
International Relations	96	81	15
Political Science and Government	462	355	107
Public Policy Studies	88	62	26
Sociology	427	221	206
Statistics	69	57	12
Urban Studies	67	46	21
Social Sciences, General	23	14	9
Social Sciences, Other	176	78	98
PSYCHOLOGY	3267	1361	1906
Clinical	1329	548	781
Cognitive	76	41	35
Comparative	8	5	3
Counseling	464	184	280
Developmental	158	47	111
Experimental	143	94	49
Educational	98	29	69
Industrial and Organizational	124	71	53
Personality	20	10	10
Physiological	46	18	28
Psychometrics	8	4	4
Quantitative	15	12	3
School	81	28	53
Social	145	53	92
Psychology, General	373	140	233
Psychology, Other	179	77	102
HUMANITIES	3820	2079	1741
History, American	212	147	65
History, European	151	104	47
History of Science	26	17	9
History, General	110	71	39
History, Other	112	71	41
Classics	59	30	29
Comparative Literature	97	35	62
Linguistics	167	78	89
Speech and Debate	38	19	19
Letters, General	19	6	13
Letters, Other	52	22	30
American Studies	72	35	37
Archeology	22	10	12
Art History and Criticism	135	37	98
Music	571	371	200
Philosophy	243	184	59
Religion	218	173	45
Theatre	106	55	51
LANGUAGE AND LITERATURE	1308	562	746
American	229	103	126
English	567	249	318
French	123	42	81
German	78	33	45
Italian	25	10	15
Spanish	173	65	108
Russian	19	4	15
Slavic	7	4	3
Chinese	16	9	7
Japanese	9	3	6
Hebrew	14	10	4
Arabic	7	4	3
Other Languages	41	26	15
Humanities, General	28	12	16
Humanities, Other	74	40	34

Subfield of Doctorate	Number of Doctorates		
	Total	Men	Women
EDUCATION	6484	2748	3736
Curriculum and Instruction	838	295	543
Educational Admin and Supervision	1640	825	815
Educational Media	55	25	30
Educational Statistics and Research	58	17	41
Educational Testing, Eval and Meas	40	13	27
Educational Psychology	321	114	207
School Psychology	87	36	51
Social Foundations	87	40	47
Special Education	225	64	161
Student Counseling, Personnel Serv	301	134	167
Higher Education	422	183	239
Pre-elementary Education	41	4	37
Elementary Education	109	25	84
Secondary Education	56	17	39
Adult and Continuing Education	210	80	130
TEACHING FIELDS	921	438	483
Agricultural Education	38	31	7
Art Education	44	18	26
Business Education	34	11	23
English Education	52	26	26
Foreign Languages Education	31	12	19
Health Education	95	26	69
Home Economics Education	10	1	9
Industrial Arts Education	18	14	4
Mathematics Education	66	35	31
Music Education	78	43	35
Nursing Education	24		24
Physical Education	190	112	78
Reading Education	83	21	62
Science Education	72	48	24
Social Science Education	11	6	5
Speech Education	5	2	3
Technical Education	15	9	6
Trade and Industrial Education	18	11	7
Other Teaching Fields	37	12	25
Education, General	539	221	318
Education, Other	534	217	317
PROFESSIONAL/OTHER FIELDS	2283	1470	813
BUSINESS AND MANAGEMENT	1038	772	266
Accounting	173	114	59
Banking and Finance	133	122	11
Business Admin and Management	278	211	67
Business Economics	21	18	3
Marketing Management and Research	120	82	38
Business Statistics	10	8	2
Operations Research	46	38	8
Organizational Behavior	65	34	31
Business and Management, General	70	55	15
Business and Management, Other	122	90	32
COMMUNICATIONS	322	179	143
Communications Research	86	48	38
Journalism	21	15	6
Radio and Television	17	9	8
Communications, General	86	49	37
Communications, Other	112	58	54
OTHER PROFESSIONAL FIELDS	856	490	366
Architecture, Environmental Design	41	27	14
Home Economics	75	12	63
Law	33	26	7
Library and Archival Science	42	11	31
Public Administration	86	64	22
Social Work	245	87	158
Theology	273	228	45
Professional Fields, General	3	3	
Professional Fields, Other	58	32	26
OTHER FIELDS	67	29	38

APPENDIX TABLE A-2 Number of Doctorate Recipients, by Citizenship, Race/Ethnicity, and Subfield, 1990

Subfield of Doctorate	Total Doctorates	Non-U.S. Citizens Temp. Visas	U.S. Citizens and Non-U.S. with Permanent Visas								
			Total	Native Amer.	Asian	Black	White	Puerto Rican	Mexican Amer.	Other Hispanic	Other & Unk
TOTAL ALL FIELDS	36027*	7744	25844	93	1260	972	22345	207	187	419	361
PHYSICAL SCIENCES	5859	1868	3600	5	249	34	3132	32	17	49	82
MATHEMATICS	892	413	416	1	25	4	367	2	3	5	9
Applied Mathematics	185	86	93		7		79		1	3	3
Algebra	39	15	23		1		21				1
Analysis and Functional Analysis	90	45	45		3	1	39	1	1		
Geometry	42	23	19		1	1	17				
Logic	19	6	13	1			12				
Number Theory	26	11	15			1	14				
Probability and Math Statistics	157	87	62		4	1	56		1		
Topology	50	16	34		1		33				
Computing Theory and Practice	12	3	9				8				1
Operations Research	29	16	13		1		11	1			
Mathematics, General	191	91	52		7		40			1	4
Mathematics, Other	52	14	38				37			1	
COMPUTER SCIENCE	704	263	396		46	1	334	2		3	10
Computer Sciences	612	240	333		37	1	282	2		2	9
Information Sciences and Systems	92	23	63		9		52			1	1
PHYSICS AND ASTRONOMY	1392	511	788		63	5	677	4		11	28
Astronomy	52	12	37		1		35	1			
Astrophysics	76	17	58		4	1	51			1	1
Acoustics	21	8	13			1	10	1			1
Atomic and Molecular	87	25	62		5		56				1
Electron	2	2									
Elementary Particles	162	63	99		7		88			3	1
Fluids	17	5	12		1		11				
Nuclear	73	24	49		3		41			2	3
Optics	76	28	47		1		42				4
Plasma	42	13	29		4		23			1	1
Polymer	11	7	4				4				
Solid State	306	132	174		19	1	145	1		1	7
Physics, General	325	128	118		12	2	95			2	7
Physics, Other	142	47	86		6		76	1		1	2
CHEMISTRY	2102	510	1456	3	98	22	1252	19	11	25	26
Analytical	293	51	241		13	2	212	7		4	3
Inorganic	242	48	193		7	2	179	3	1	1	
Nuclear	13	4	9				9				
Organic	452	79	372	1	25	11	317	4	3	4	7
Pharmaceutical	48	15	31		4		26				1
Physical	322	89	233	1	10	2	203	1	2	8	6
Polymer	81	30	50		8		39			2	1
Theoretical	55	13	42		3		36		1	1	1
Chemistry, General	529	167	239	1	25	4	190	4	4	5	6
Chemistry, Other	67	14	46		3	1	41				1
EARTH, ATMOS, & MARINE SCI	769	171	544	1	17	2	502	5	3	5	9
Atmospheric Physics and Chemistry	18	8	10		1		6	1		1	1
Atmospheric Dynamics	20	7	13		3		10				
Meteorology	20	6	13				12				1
Atmos and Meteorological Sci, General	23	10	11				11				
Atmos and Meteorological Sci, Other	2	1	1				1				
Geology	167	21	125				121	1	1	1	1
Geochemistry	56	11	45		1		39	1			4
Geophysics and Seismology	91	29	56		2		54				
Paleontology	21	2	19				19				
Mineralogy, Petrology	26	3	23				23				
Stratigraphy, Sedimentation	25		25			2	22		1		
Geomorphology and Glacial Geology	14	1	13		1		12				
Applied Geology	6	1	5				5				
Geological Sciences, General	31	7	18				18				
Geological Sciences, Other	27	6	21				20			1	
Environmental Sciences	50	7	40		2		37			1	
Hydrology and Water Resources	13	4	9				9				
Oceanography	89	33	46	1	2		39	1	1	1	1
Marine Sciences	39	8	31		3		27	1			
Physical Sciences, Other	31	6	20		2		17				1
ENGINEERING	4892	2191	2303	4	345	40	1818	6	13	34	43
Aerospace, Aeronautic & Astronautic	192	86	88		10	3	72			2	1
Agricultural	101	42	57		4	3	49				1
Bioengineering and Biomedical	129	41	83		7	2	71		1	1	1
Ceramic	43	15	27		2		23				2
Chemical	560	194	347		44	7	284	2	1	4	5
Civil	505	258	213	2	26	1	171	1	2	5	5
Communications	34	21	13		4		8	1			
Computer	132	62	56		16	1	35		1	1	2

NOTE: Field groupings may differ from those in reports published by federal sponsors of the Survey of Earned Doctorates. See inside the back cover for a description of fields as reported in this table. Refer also to the explanatory note about this table in front of Appendix A.

*Includes 2,439 individuals who did not report their citizenship at time of doctorate.

Subfield of Doctorate	Total Doctorates	Non-U.S. Citizens Temp. Visas	U.S. Citizens and Non-U.S. with Permanent Visas								
			Total	Native Amer.	Asian	Black	White	Puerto Rican	Mex-ican Amer.	Other His-panic	Other & Unk
Electrical, Electronics	1110	502	520		90	7	402	1	3	6	11
Engineering Mechanics	111	60	40		8		31				1
Engineering Physics	16	7	9		2		7				
Engineering Science	37	13	21		5	3	13				
Environmental Health Engineering	48	19	24		2		21			1	
Industrial	151	77	69		8	1	54	1		5	
Materials Science	306	146	137	1	22		107			1	6
Mechanical	771	382	323		58	5	255		3	2	
Metallurgical	91	42	44	1	5		37		1		
Mining and Mineral	40	19	15		1	1	12			1	
Naval Architecture, Marine Eng	8	3	3		1		2				
Nuclear	115	36	47		9		35			3	
Ocean	17	10	4		1		2			1	
Operations Research	46	22	21		3	1	15			1	1
Petroleum	49	24	23		3	2	17		1		
Polymer	47	28	18		2	1	15				
Systems	51	21	25		2		21				2
Engineering, General	75	24	25		5	1	17				2
Engineering, Other	107	37	51		5	1	42				3
LIFE SCIENCES	6613	1463	4779	8	262	91	4221	35	36	57	69
BIOLOGICAL SCIENCES	4333	821	3288	3	193	41	2908	24	21	43	55
Biochemistry	682	144	510		32	10	453	2	1	2	10
Biophysics	103	37	59		10		43			3	3
Bacteriology	15	2	12				12				
Plant Genetics	31	8	21		1		20				
Plant Pathology	37	11	23	1			21				1
Plant Physiology	51	9	42		5		37				
Botany, Other	104	25	72		1		68	1		1	1
Anatomy	70	9	56		4	1	46	1		1	3
Biometrics and Biostatistics	47	10	32		3		29				
Cell Biology	145	18	117	1	7	2	102	1		3	1
Ecology	166	19	144		3		137	1			3
Embryology	22	2	20				19			1	
Endocrinology	24	1	23		2	2	17		1		1
Entomology	147	33	112		1	2	99	2	3	3	2
Immunology	153	21	127		6	2	112	1	1	4	1
Molecular Biology	410	85	323		15		297	2	3	2	4
Microbiology	335	77	245	1	17	3	214	4	2	2	2
Neurosciences	192	27	155		7		140	1	1	2	4
Nutritional Sciences	118	25	87		8	1	73		2	1	2
Parasitology	13	5	8				8				
Toxicology	91	13	73		2	2	68				1
Human and Animal Genetics	153	17	127		5		113		2	6	1
Human and Animal Pathology	101	22	76		6	2	65	1		1	1
Human and Animal Pharmacology	243	40	192		14	4	168		1	2	3
Human and Animal Physiology	276	55	205		18	5	172	1	2	3	4
Zoology, Other	122	12	105		1		100	2	1		1
Biological Sciences, General	340	67	218		17	4	185	2		5	5
Biological Sciences, Other	142	27	104		8	1	90	2	1	1	1
HEALTH SCIENCES	960	157	739	1	37	30	651	6	7	4	3
Audiology and Speech Pathology	93	7	83		1	4	74	1	1	2	
Environmental Health	38	11	25		3		21	1			
Public Health	122	22	93		4	5	80	1	3		
Epidemiology	102	13	87		6	4	76			1	
Nursing	267	12	243		6	6	228	1	1		1
Pharmacy	116	48	60	1	8	4	45	1			1
Veterinary Medicine	70	24	40		2	1	36				1
Health Sciences, General	33	2	21		3	1	16			1	
Health Sciences, Other	119	18	87		4	5	75	1	2		
AGRICULTURAL SCIENCES	1320	485	752	4	32	20	662	5	8	10	11
Agricultural Business & Mgmt	2	2									
Agricultural Economics	144	61	73		2	5	65				1
Animal Breeding and Genetics	22	6	16				15			1	
Animal Nutrition	54	11	43		2		40			1	
Dairy Science	20	8	12			1	11				
Poultry Science	17	8	9		1		8				
Fisheries Science	42	9	29		1	1	27				
Animal Sciences, Other	90	36	46		2	1	40		2		1
Agronomy	143	54	83		1	4	75				3
Plant Breeding and Genetics	87	27	59		3		53		1		2
Plant Pathology	64	23	39	1			32	1	1	3	1
Plant Protection-Pest Mgmt	4	1	3				3				
Plant Sciences, Other	23	8	13		1		12				
Food Engineering	10	6	3		1		2				
Food Sciences, Other	141	69	65	1	9	4	44	2	2	3	
Soil Chemistry/Microbiology	27	10	17				16	1			
Soil Sciences, Other	91	36	48		2	2	43		1		
Horticulture Science	101	30	63		3	1	57			1	1

APPENDIX TABLE A-2 (Continued)

Subfield of Doctorate	Total Doctorates	Non-U.S. Citizens Temp. Visas	U.S. Citizens and Non-U.S. with Permanent Visas								
			Total	Native Amer.	Asian	Black	White	Puerto Rican	Mex-ican Amer.	Other His-panic	Other & Unk
Forest Biology	27	8	19				19				
Forest Engineering	2	1	1	1							
Forest Management	14	5	9				8			1	
Wood Science	16	9	7		2		5				
Renewable Natural Resources	16	6	10				9				1
Forestry & Related Sci, Other	62	21	25				25				
Wildlife/Range Management	58	11	43		1	1	40				1
Agriculture, General	5	4									
Agriculture, Other	38	15	17	1	1		13	1	1		
SOCIAL SCIENCES (INCL PSYCH)	6076	859	4721	23	139	204	4115	44	43	98	55
Anthropology	324	31	275	1	8	3	249	4	1	7	2
Area Studies	22	5	12			1	9			2	
Criminology	42	4	37			2	35				
Demography	20	12	8			1	7				
Economics	836	332	440	1	30	19	368		5	9	8
Econometrics	26	14	12		3	1	8				
Geography	131	35	88		2		85				1
International Relations	96	29	60		2	7	48			1	2
Political Science and Government	462	85	337	1	10	23	279	4	5	7	8
Public Policy Studies	88	20	63		9	9	42	1		1	1
Sociology	427	93	315	1	15	20	249	6	6	15	3
Statistics	69	40	26		3		22				1
Urban Studies	67	15	37		3	3	28	1		2	
Social Sciences, General	23	7	15		1	1	12				1
Social Sciences, Other	176	21	137	1	2	4	123	2	1	2	2
PSYCHOLOGY	3267	116	2859	18	51	110	2551	26	25	52	26
Clinical	1329	23	1156	8	19	45	1025	9	13	26	11
Cognitive	76	11	65		1	1	61	1		1	
Comparative	8	1	7				7				
Counseling	464	9	451	5	2	26	409	3	2	3	1
Developmental	158	6	151		4	7	131	3	3	2	1
Experimental	143	16	126		3	2	113	2		4	2
Educational	98	2	89		3	5	79	1			1
Industrial and Organizational	124	3	116		4	3	104	2		1	2
Personality	20	1	19			1	17			1	
Physiological	46	3	43				41	1		1	
Psychometrics	8	1	7		2		5				
Quantitative	15	3	12				12				
School	81		80			2	77				1
Social	145	8	135	1	7	3	117	1	2	2	2
Psychology, General	373	17	250	2	6	11	215	2	5	6	3
Psychology, Other	179	12	152	2		4	138	1		5	2
HUMANITIES	3820	388	3182	8	75	73	2853	30	20	82	41
History, American	212	8	201	1	4	10	181	1		1	3
History, European	151	5	146			2	142	1		1	
History of Science	26	6	19		1		17				1
History, General	110	14	71		3	5	58	1		2	2
History, Other	112	13	95		6	2	83	1	1		2
Classics	59	4	53				53				
Comparative Literature	97	23	68		5	6	55	2			
Linguistics	167	56	93	1	9	1	75	1	1	2	3
Speech and Debate	38		38			1	37				
Letters, General	19		19				18			1	
Letters, Other	52	2	49			2	43	1		2	1
American Studies	72	2	65		4	2	55	1		2	1
Archeology	22		21	1			19	1			
Art History and Criticism	135	9	121	1	3	1	109	2	2	2	1
Music	571	40	471	1	13	8	437	1	2	4	5
Philosophy	243	37	181	1	2		171			1	6
Religion	218	17	186		4	3	174		1	2	2
Theatre	106	12	92		1	3	87				1
LANGUAGE AND LITERATURE	1308	130	1114	2	19	23	967	17	13	62	11
American	229	12	215	1	2	9	193		3	5	2
English	567	47	501		11	10	466	1	1	6	6
French	123	9	105			3	99			2	1
German	78	11	61				60				1
Italian	25	6	17				17				
Spanish	173	32	131	1		1	57	16	8	48	
Russian	19	1	17				17				
Slavic	7	1	5				5				
Chinese	16	3	12		3		9				
Japanese	9		9		2		6				1
Hebrew	14		12				12				
Arabic	7	2	5				5				
Other Languages	41	6	24		1		21		1	1	
Humanities, General	28	1	25				24				1
Humanities, Other	74	9	54		1	4	48				1

NOTE: Field groupings may differ from those in reports published by federal sponsors of the Survey of Earned Doctorates. See inside the back cover for a description of fields as reported in this table. Refer also to the explanatory note about this table in front of Appendix A.

Subfield of Doctorate	Total Doctorates	Non-U.S. Citizens Temp. Visas	U.S. Citizens and Non-U.S. with Permanent Visas								
			Total	Native Amer.	Asian	Black	White	Puerto Rican	Mex-ican Amer.	Other His-panic	Other & Unk
EDUCATION	6484	482	5626	36	98	459	4803	55	48	79	48
Curriculum and Instruction	838	63	756	2	17	53	646	11	8	12	7
Educational Admin and Supervision	1640	60	1532	16	14	145	1310	4	16	15	12
Educational Media	55	8	47		1	2	41			3	
Educational Statistics and Research	58	6	49			3	44		2		
Educational Testing, Eval and Meas	40	4	35		1	2	31				1
Educational Psychology	321	24	291	2	5	18	255	3	4	2	2
School Psychology	87	5	80	1	2	1	72	1	1	2	
Social Foundations	87	13	70		3	9	55	2		1	
Special Education	225	16	204	1	3	12	184	1	1		2
Student Counseling, Personnel Serv	301	18	264		1	24	221	4	4	7	3
Higher Education	422	27	379	5	11	35	321	3		1	3
Pre-elementary Education	41	4	35		1	3	30			1	
Elementary Education	109	11	67		1	3	60		1	1	1
Secondary Education	56	4	51			4	43	1	1	1	1
Adult and Continuing Education	210	14	193	4	2	8	173	1	1	4	
TEACHING FIELDS	921	104	788	2	18	57	676	13	2	11	9
Agricultural Education	38	7	29			5	24				
Art Education	44	5	37			4	33				
Business Education	34	1	32		2	4	26				
English Education	52	5	43			3	35	2		1	2
Foreign Languages Education	31	10	21		1	1	18	1			
Health Education	95	6	87		1	5	77			3	1
Home Economics Education	10	3	7		2	1	3			1	
Industrial Arts Education	18	4	14		1	3	10				
Mathematics Education	66	6	59		1	3	52	2	1		
Music Education	78	3	73		2	8	62	1			
Nursing Education	24	1	22		2	1	17		1	1	
Physical Education	190	23	163	2	2	6	142	6		2	3
Reading Education	83	5	75		1	5	64	1		2	2
Science Education	72	15	56		2	1	52				1
Social Science Education	11		11			2	8			1	
Speech Education	5		5			1	4				
Technical Education	15	2	11			1	10				
Trade and Industrial Education	18	2	15			2	13				
Other Teaching Fields	37	6	28		1	1	26				
Education, General	539	58	371		8	35	309	3	4	8	4
Education, Other	534	43	414	3	10	45	332	8	3	10	3
PROFESSIONAL/OTHER FIELDS	2283	493	1633	9	92	71	1403	5	10	20	23
BUSINESS AND MANAGEMENT	1038	309	656	2	58	15	562	1	4	5	9
Accounting	173	41	128		5	5	115		1	1	1
Banking and Finance	133	56	74		9	2	59	1	1	1	1
Business Admin and Management	278	80	152		13	2	134		1		2
Business Economics	21	8	10			2	8				
Marketing Management and Research	120	24	94	2	12	2	73			1	4
Business Statistics	10	5	5				5				
Operations Research	46	22	23		5		18				
Organizational Behavior	65	10	54			1	52			1	
Business and Management, General	70	24	38		3		34		1		
Business and Management, Other	122	39	78		11	1	64			1	1
COMMUNICATIONS	322	50	262	4	9	17	220		1	5	6
Communications Research	86	12	73	1	3	2	65			2	
Journalism	21	6	15		2	2	10				1
Radio and Television	17	2	15		1		13			1	
Communications, General	86	17	66	1	3	6	52			1	3
Communications, Other	112	13	93	2		7	80		1	1	2
OTHER PROFESSIONAL FIELDS	856	120	670	3	23	33	585	4	5	10	7
Architecture, Environmental Design	41	20	16				16				
Home Economics	75	9	66	2	2	4	57				1
Law	33	16	10			1	9				
Library and Archival Science	42	9	31			2	27			2	
Public Administration	86	14	56		2	4	48			1	1
Social Work	245	23	201		8	19	162	3	3	4	2
Theology	273	17	244	1	10	3	224		1	3	2
Professional Fields, General	3	2	1						1		
Professional Fields, Other	58	10	45		1		42	1			1
OTHER FIELDS	67	14	45		2	6	36				1

APPENDIX TABLE A-3 Statistical Profile of Doctorate Recipients, by Major Field, 1990

Total All Doctorates

		1990 Total	Physics and Astronomy	Chemistry	Earth, Atmos. and Marine Sci.	Mathematics	Computer Sciences	PHYSICAL SCIENCES	ENGINEERING	Biochemistry	Other Biosciences	Biosciences Subtotal	Health Sciences	Agricultural Sciences	LIFE SCIENCES
Number in Field		36027	1392	2102	769	892	704	5859	4892	682	3651	4333	960	1320	6613
Male	%	63.7	89.3	76.1	80.6	82.3	84.4	81.8	91.5	65.1	62.5	62.9	38.0	79.3	62.6
Female		36.3	10.7	23.9	19.4	17.7	15.6	18.2	8.5	34.9	37.5	37.1	62.0	20.7	37.4
U.S. Citizenship	%	67.1	51.7	64.6	67.8	41.4	48.7	56.5	39.4	70.2	71.9	71.6	73.5	52.2	68.0
Non-U.S., Permanent Visa		4.6	5.0	4.7	3.0	5.3	7.5	4.9	7.7	4.5	4.2	4.2	3.4	4.8	4.2
Non-U.S. Temporary Visa		21.5	36.7	24.3	22.2	46.3	37.4	31.9	44.8	21.1	18.5	18.9	16.4	36.7	22.1
Unknown		6.8	6.7	6.5	7.0	7.1	6.4	6.7	8.1	4.1	5.4	5.2	6.7	6.3	5.6
Married	%	57.1	50.1	51.7	55.5	51.6	60.9	52.9	58.7	54.1	54.3	54.2	58.8	64.2	56.9
Not Married		34.3	41.6	40.7	34.5	39.2	32.2	38.8	31.4	39.1	38.7	38.8	32.8	27.5	35.7
Unknown		8.7	8.3	7.6	10.0	9.2	6.8	8.2	9.9	6.7	7.0	7.0	8.4	8.3	7.5
Median Age at Doct.	Yrs	33.9	30.2	29.4	32.4	31.0	32.0	30.5	31.2	29.9	31.6	31.3	36.4	33.5	32.3
Percent with Bacc. in Same Field as Doctorate	%	55.4	76.0	79.4	57.0	67.6	26.6	67.5	76.9	25.2	57.8	52.7	49.9	60.1	53.8
Percent with Masters	%	77.8	63.6	35.3	78.5	74.2	85.4	59.7	84.7	30.2	50.7	47.5	83.8	90.4	61.3
Median Time Lapse From Bacc. to Doct.															
Total Time	Yrs	10.5	7.5	6.7	9.1	7.9	8.9	7.6	8.2	7.2	8.5	8.2	13.3	10.2	9.1
Registered Time		7.0	6.4	5.6	7.0	6.4	6.6	6.2	6.0	6.1	6.8	6.6	7.4	6.4	6.7
Postdoctoral Study Plans	%	24.3	60.4	48.7	39.3	25.6	12.8	42.4	20.2	85.9	68.6	71.3	19.1	30.5	55.6
Fellowship		11.8	21.6	21.7	17.8	13.3	4.0	17.8	6.2	53.7	40.5	42.6	9.8	9.4	31.2
Research Assoc.		9.8	37.3	25.3	20.3	8.9	7.4	22.8	11.9	26.5	21.0	21.9	6.1	19.5	19.1
Traineeship		1.1	0.8	1.0	0.8	1.9	1.0	1.1	1.3	1.2	1.8	1.7	1.3	0.9	1.5
Other Study		1.6	0.7	0.8	0.4	1.5	0.4	0.8	0.8	4.5	5.2	5.1	1.9	0.8	3.8
Planned Employment After Doctorate	%	66.7	30.2	42.7	51.1	63.8	79.4	48.5	68.9	9.1	24.9	22.4	72.0	59.5	37.0
Educ. Institution*		39.5	9.7	6.3	19.1	50.4	43.2	20.0	22.2	3.4	12.1	10.7	39.7	25.9	17.9
Industry/Business		14.0	13.9	31.8	18.1	9.0	27.7	21.8	35.5	4.0	5.6	5.3	12.0	13.9	8.0
Government		5.7	4.1	2.8	9.5	1.3	4.7	4.0	7.0	0.6	3.6	3.2	8.9	13.7	6.1
Nonprofit		3.9	0.6	0.4	0.7	0.6	1.1	0.6	1.4	0.4	1.7	1.5	6.1	1.3	2.1
Other & Unknown		3.6	1.9	1.4	3.8	2.5	2.7	2.2	2.8	0.7	1.9	1.8	5.3	4.8	2.9
Postdoc. Status Unknown	%	9.0	9.3	8.6	9.6	10.7	7.8	9.1	10.9	5.0	6.5	6.3	9.0	9.9	7.4
Definite Postdoc. Study	%	17.0	43.2	37.2	25.7	16.8	8.1	30.5	11.1	72.4	53.8	56.7	13.8	18.7	42.9
Seeking Postdoc. Study		7.3	17.2	11.6	13.5	8.7	4.7	11.9	9.1	13.5	14.8	14.6	5.3	11.8	12.7
Definite Employment		47.3	19.8	32.4	38.5	43.7	56.8	34.9	46.3	6.2	16.8	15.1	50.0	40.8	25.3
Seeking Employment		19.4	10.4	10.3	12.6	20.1	22.6	13.6	22.6	2.9	8.1	7.2	22.0	18.7	11.7
Employment Activity After Doctorate†															
Primary Activity															
R & D	%	28.6	60.9	73.4	45.6	35.6	53.5	56.6	65.2	47.6	41.5	41.9	37.5	55.1	44.9
Teaching		32.5	15.2	11.3	20.6	42.1	30.0	22.7	15.4	9.5	24.3	23.3	34.2	16.3	24.2
Administration		11.5	1.8	1.5	3.4	0.0	3.0	1.8	1.9	7.1	4.4	4.6	8.1	5.6	5.9
Prof. Services		12.5	4.3	3.7	14.9	3.6	1.3	4.9	5.9	11.9	15.1	14.9	11.3	9.1	12.0
Other		1.0	1.8	0.7	3.7	0.8	0.5	1.3	0.8	2.4	1.1	1.2	0.6	2.6	1.5
Secondary Activity															
R & D	%	25.6	14.1	8.7	23.0	35.4	28.3	20.4	16.3	16.7	26.5	25.9	32.3	21.0	26.1
Teaching		14.3	9.4	2.8	12.5	21.8	22.3	12.5	13.8	11.9	14.5	14.3	15.8	15.6	15.2
Administration		10.4	13.8	28.5	12.2	3.3	7.5	15.2	14.3	14.3	12.5	12.7	15.5	13.5	13.2
Prof. Services		8.6	7.2	11.0	9.1	5.9	5.3	8.1	10.0	2.4	8.6	8.2	7.9	9.6	8.6
Other		1.0	1.1	0.6	0.3	0.0	1.0	0.6	1.4	0.0	0.5	0.5	0.6	1.3	0.8
No Secondary Activity		26.2	38.4	39.1	31.1	15.6	24.0	30.4	33.4	33.3	23.8	24.4	21.5	27.6	24.6
Activity(ies) Unknown	%	14.0	15.9	9.4	11.8	17.9	11.8	12.7	10.9	21.4	13.5	14.0	8.3	11.3	11.5
Region of Employment After Doctorate‡															
New England	%	6.1	6.9	5.4	7.8	4.6	4.5	5.6	4.8	4.8	5.9	5.8	4.8	2.0	4.3
Middle Atlantic		14.1	12.0	18.8	8.4	14.6	13.8	14.6	13.9	26.2	12.4	13.3	14.2	5.6	11.0
East No. Central		13.4	6.9	19.2	7.1	12.8	11.3	13.0	12.6	11.9	10.9	11.0	14.2	8.2	11.0
West No. Central		6.6	4.3	4.0	3.4	5.9	5.5	4.6	3.3	0.0	6.7	6.3	6.3	10.4	7.6
South Atlantic		15.3	12.3	15.1	13.9	14.9	15.5	14.6	11.2	26.2	17.1	17.7	17.7	12.1	15.9
East So. Central		4.5	3.6	4.0	1.7	2.3	4.3	3.3	3.8	0.0	3.9	3.7	4.8	3.2	3.8
West So. Central		8.2	5.1	12.0	14.9	3.8	7.5	9.1	8.1	2.4	6.0	5.8	9.8	6.5	7.2
Mountain		5.2	8.3	3.1	11.1	4.6	4.5	5.5	6.4	2.4	4.2	4.1	1.9	4.5	3.6
Pacific & Insular		11.3	21.7	7.9	14.9	12.1	16.0	13.2	12.8	11.9	11.4	11.4	12.3	6.9	10.2
Foreign		11.1	13.0	7.5	12.5	17.2	12.0	11.7	17.9	9.5	18.2	17.7	11.7	38.4	22.6
Region Unknown		4.4	5.8	2.9	4.4	7.2	5.3	4.8	5.2	4.8	3.3	3.4	2.5	2.4	2.8

NOTE: Field groupings may differ from those in reports published by federal sponsors of the Survey of Earned Doctorates. See inside the back cover for a description of fields as reported in this table. Physical Sciences includes Mathematics and Computer Sciences, as well as Physics/Astronomy, Chemistry, and Earth/Atmospheric/Marine Sciences. Refer also to the explanatory note about this table in front of Appendix A.

*Includes 2-year, 4-year, and foreign colleges and universities, medical schools, and elementary/secondary schools.

†Includes only recipients with definite employment plans. Revisions to the survey form in 1990 appear to have resulted in a higher rate of nonresponse to this item than in previous years. The nonresponse rate in 1990 was 14.0% compared to 6.2% in 1989 and was especially high among recipients planning to work in educational institutions, thereby affecting the percentages in teaching and administration.

‡Includes only recipients with definite employment plans.

Psychology	Economics	Anthropology and Sociology	Political Sci./ Internat'l Rel.	Other Social Sciences	SOCIAL SCI. INCL. PSYCH	TOTAL SCIENCES	History	Eng. and Amer. Lang. and Lit.	Foreign Lang. and Lit.	Other Humanities	HUMANITIES	EDUCATION	Business and Management	Other Professional Fields	Other Fields§§	PROFESSIONAL/ OTHER FIELDS	TOTAL NONSCIENCES
3267	862	751	558	638	6076	23440	611	796	512	1901	3820	6484	1038	1178	67	2283	12587
41.7	80.0	49.7	78.1	62.9	53.7	71.1	67.1	44.2	41.0	58.2	54.4	42.4	74.4	56.8	43.3	64.4	50.0
58.3	20.0	50.3	21.9	37.1	46.3	28.9	32.9	55.8	59.0	41.8	45.6	57.6	25.6	43.2	56.7	35.6	50.0
85.4	44.8	74.3	64.9	61.1	73.8	60.7	83.3	86.8	63.7	77.0	78.3	84.4	55.7	75.0		65.8	79.2
2.1	7.7	4.3	6.3	5.2	3.9	5.0	3.8	3.1	14.1	3.8	5.0	2.3	7.5	4.1		5.7	3.8
3.6	40.1	16.5	20.4	24.9	14.1	27.2	7.5	7.4	13.9	11.2	10.2	7.4	29.8	14.4		21.6	10.8
8.9	7.4	4.9	8.4	8.8	8.2	7.1	5.4	2.6	8.4	8.0	6.5	5.8	7.0	6.5		6.9	6.2
49.4	54.3	55.3	53.4	59.1	52.2	55.1	57.3	53.1	51.2	53.7	53.8	64.0	64.9	62.6		63.4	60.8
39.9	36.5	37.4	35.1	31.3	37.8	36.1	34.9	41.5	39.3	36.5	37.6	27.9	26.6	28.9		27.9	30.8
10.7	9.2	7.3	11.5	9.6	10.0	8.8	7.9	5.4	9.6	9.8	8.5	8.1	8.5	8.5		8.7	8.3
33.9	32.3	36.5	34.3	36.3	34.2	32.0	36.4	35.6	35.5	35.6	35.7	41.6	34.9	37.9		36.6	38.9
62.2	61.3	49.4	50.5	23.8	55.4	62.5	59.2	67.6	49.4	54.1	57.1	37.5	35.8	26.3		30.3	42.1
76.8	74.9	89.3	84.9	88.1	80.0	70.6	90.5	89.1	86.7	87.5	88.2	93.7	83.3	94.2		89.1	91.2
10.1	9.1	12.4	10.7	12.5	10.6	8.7	12.6	11.9	11.5	12.3	12.2	17.9	11.8	14.5		13.1	15.3
7.4	6.8	9.1	7.8	7.7	7.5	6.5	8.6	8.0	8.4	8.3	8.3	8.1	7.1	7.9		7.5	8.0
20.1	5.8	13.3	9.7	10.7	15.3	34.5	9.0	5.0	6.4	6.8	6.7	5.0	3.2	4.8		4.1	5.3
12.7	2.4	7.6	5.9	4.5	9.1	16.9	6.1	3.4	3.5	3.6	3.9	1.7	0.6	1.7		1.2	2.3
3.6	2.0	3.5	2.3	3.6	3.2	14.4	1.5	0.3	1.2	1.4	1.1	1.4	1.6	1.2		1.4	1.3
2.7	0.3	1.1	0.4	0.8	1.8	1.4	0.3	0.4	0.6	0.3	0.4	0.6	0.5	0.5		0.5	0.5
1.1	1.0	1.2	1.1	1.7	1.2	1.7	1.1	1.0	1.2	1.5	1.3	1.3	0.5	1.4		0.9	1.2
69.6	85.7	79.6	78.9	79.0	75.0	56.4	83.0	89.1	81.4	82.3	83.7	87.0	88.2	87.1		87.4	86.0
25.1	55.1	54.6	58.4	49.5	38.6	24.7	66.8	80.0	71.3	65.1	69.3	66.8	75.6	55.5		64.7	67.2
17.1	8.6	6.1	4.7	10.8	12.8	18.4	3.1	2.9	4.1	5.8	4.6	5.4	8.0	7.9		8.1	5.6
8.8	11.5	6.7	8.4	7.5	8.8	6.4	5.4	0.8	0.8	1.5	1.9	6.0	1.5	5.3		3.6	4.3
13.2	2.6	6.3	3.0	5.6	9.1	3.4	3.4	1.0	1.0	6.5	4.1	4.3	0.9	14.0		7.7	4.9
5.4	8.0	6.0	4.3	5.5	5.7	3.4	4.3	4.4	4.3	3.3	3.8	4.5	2.1	4.3		3.4	4.1
10.3	8.5	7.1	11.5	10.3	9.7	9.2	8.0	5.9	12.1	10.9	9.6	8.1	8.7	8.1		8.5	8.6
13.7	3.5	7.3	4.7	5.0	9.7	24.6	4.6	3.1	3.3	3.8	3.7	2.7	2.3	2.3		2.4	2.9
6.3	2.3	6.0	5.0	5.6	5.5	9.9	4.4	1.9	3.1	3.0	3.0	2.3	0.9	2.5		1.7	2.4
49.7	63.3	52.6	49.8	50.2	52.1	39.0	53.5	59.3	56.1	54.7	55.6	65.0	73.3	64.9		68.2	62.7
19.9	22.4	27.0	29.0	28.8	22.9	17.4	29.5	29.8	25.4	27.6	28.1	21.9	14.8	22.2		19.2	23.3
15.1	44.0	26.1	19.8	27.5	23.1	45.0	10.1	5.1	8.4	9.1	8.3	5.8	34.4	9.5		21.7	9.6
14.4	34.2	43.0	49.3	38.8	26.9	22.6	57.5	73.1	66.9	64.5	65.6	32.2	46.1	43.1		44.6	43.9
5.2	3.7	7.8	5.0	8.4	5.6	3.9	5.8	4.2	3.1	4.3	4.4	5.1	3.5	10.8		7.3	20.3
54.8	3.5	6.6	4.3	10.3	31.0	15.5	4.6	1.9	1.4	7.0	4.8	10.8	2.5	17.0		9.8	9.0
0.8	1.5	0.8	0.7	0.6	0.9	1.1	1.5	0.6	0.7	1.1	1.0	0.7	0.1	2.7		1.6	0.9
22.8	31.3	34.7	41.0	35.3	28.6	23.3	43.4	48.1	48.4	36.6	41.8	18.3	39.4	30.7		35.1	28.2
16.7	24.2	13.2	13.3	13.8	16.9	14.8	9.5	6.6	7.3	9.1	8.4	13.0	31.5	14.4		22.7	13.6
12.8	5.5	10.6	4.7	9.1	10.2	12.9	3.7	4.9	2.8	10.0	6.9	8.6	2.2	8.9		5.5	7.5
9.4	6.2	4.1	3.6	6.6	7.4	8.4	3.7	1.7	1.4	5.9	4.0	12.4	2.5	8.8		5.7	8.8
1.2	1.1	0.8	0.0	0.9	1.0	1.0	0.0	1.2	0.7	2.7	1.7	0.9	0.1	0.9		0.5	1.0
27.5	18.5	21.0	16.5	20.0	23.4	27.7	19.3	22.5	19.9	21.8	21.3	29.3	10.9	19.6		15.5	24.4
9.7	13.2	15.7	20.9	14.4	12.5	12.0	20.5	15.0	19.5	14.0	16.0	17.1	13.3	16.7		15.0	16.4
7.3	7.5	8.4	6.5	7.2	7.4	5.8	5.8	6.1	12.2	6.6	7.2	6.4	5.3	5.5		5.3	6.4
20.9	11.5	17.2	14.7	11.6	17.3	14.7	14.7	13.3	17.1	14.2	14.5	13.4	11.7	11.1		11.6	13.3
13.1	9.9	12.4	13.3	14.1	12.6	12.4	15.9	16.9	11.1	13.8	14.4	14.4	16.2	14.4		15.2	14.6
8.3	4.2	5.8	5.0	6.6	6.8	5.6	3.4	10.4	8.4	9.6	8.7	7.7	7.2	6.7		6.9	7.8
4.2	19.0	12.9	18.7	17.5	15.6	14.3	19.3	16.3	11.5	12.1	14.1	18.3	14.2	14.9		14.5	16.4
4.1	4.2	2.3	4.7	3.1	3.8	3.7	3.7	5.3	4.9	4.4	4.6	5.3	5.9	6.5		6.3	5.3
7.1	3.5	5.8	6.1	5.0	6.0	7.4	7.0	7.8	5.9	7.6	7.3	9.3	10.2	11.6		11.0	9.1
4.5	2.7	7.6	6.1	6.6	4.9	5.2	6.4	4.2	4.9	5.3	5.2	5.2	5.3	5.5		5.3	5.2
14.2	8.2	11.6	7.6	9.1	11.8	12.0	13.5	11.0	14.6	12.4	12.6	9.8	9.1	9.0		9.1	10.4
2.2	24.7	13.2	14.7	13.1	9.6	14.5	5.8	5.3	3.5	9.5	7.2	5.4	11.6	11.1		11.4	7.1
4.3	4.4	2.8	2.5	6.3	4.2	4.3	4.6	3.2	5.9	4.3	4.3	4.8	3.4	3.7		3.5	4.4

§§Statistics are not presented for this group because too few records contained the specific data.

APPENDIX TABLE A-3 (Continued)

Doctorates: Men

		1990 Total	Physics and Astronomy	Chemistry	Earth, Atmos. and Marine Sci.	Mathematics	Computer Sciences	PHYSICAL SCIENCES	ENGINEERING	Biochemistry	Other Biosciences	Biosciences Subtotal	Health Sciences	Agricultural Sciences	LIFE SCIENCES
Total Male		22966	1243	1600	620	734	594	4791	4478	444	2283	2727	365	1047	4139
Male as a Percent of Total Doctorates	%	63.7	89.3	76.1	80.6	82.3	84.4	81.8	91.5	65.1	62.5	62.9	38.0	79.3	62.6
U.S. Citizenship	%	59.9	53.0	63.6	64.8	39.2	44.4	54.9	37.6	69.8	69.6	69.6	38.6	50.6	63.8
Non-U.S., Permanent Visa		5.1	4.2	4.2	3.7	4.9	7.2	4.6	7.8	4.3	3.9	4.0	4.7	4.7	4.2
Non-U.S., Temporary Visa		27.6	35.9	25.2	24.5	48.2	41.9	33.5	46.3	21.6	20.2	20.4	25.5	37.9	25.3
Unknown		7.4	6.9	7.1	6.9	7.6	6.4	7.0	8.3	4.3	6.4	6.0	11.2	6.8	6.7
Married	%	60.1	50.2	51.8	59.5	52.0	59.9	53.4	59.4	56.8	56.9	56.9	66.3	67.7	60.5
Not Married		30.8	41.3	40.3	31.5	38.0	33.2	38.2	30.5	36.7	35.2	35.5	21.6	23.9	31.3
Unknown		9.0	3.5	8.0	9.0	9.9	6.9	8.4	10.0	6.5	7.8	7.6	12.1	8.4	8.2
Median Age at Doct.	Yrs	33.0	30.2	29.6	32.4	30.9	31.7	30.5	31.3	30.0	31.7	31.4	34.3	33.8	32.2
Percent with Bacc. in Same Field as Doctorate	%	57.7	75.5	79.2	59.5	66.9	26.6	67.3	78.0	26.1	54.6	50.0	32.3	62.5	51.6
Percent with Masters	%	76.3	62.4	35.8	78.7	73.8	85.7	60.3	85.1	30.6	50.9	47.6	73.4	90.2	60.7
Median Time Lapse From Bacc. to Doct.															
Total Time	Yrs	9.6	7.4	6.7	8 9	7.8	8.6	7.6	8.2	7.3	8.3	8.1	11.3	10.2	8.8
Registered Time		6.7	6.4	5.6	7.0	6.3	6.4	6.2	6.0	6.2	6.8	6.7	7.2	6.4	6.6
Postdoctoral Study Plans	%	26.3	60.0	49.8	39.2	26.2	13.8	43.0	20.0	85.1	67.4	70.3	22.2	29.8	55.8
Fellowship		11.9	21.4	21.6	18.2	14.0	4.0	17.8	6.1	52.5	37.4	39.9	8.2	8.8	29.2
Research Assoc.		11.7	37.2	26.2	19.8	9.0	8.1	23.4	11.9	25.2	21.3	22.0	8.2	19.2	20.1
Traineeship		1.1	0.8	1.2	0.8	2.2	1.2	1.2	1.2	1.4	2.2	2.1	2.5	1.0	1.8
Other		1.7	0.6	0.9	0.3	1.0	0.5	0.7	0.7	6.1	6.4	6.3	3.3	0.9	4.7
Planned Employment															
After Doctorate	%	64.2	30.6	41.3	51.5	62.9	78.6	47.8	69.0	9.9	25.4	22.8	65.8	60.1	36.0
Educ. Institution*		35.5	9.8	5.6	19.2	50.0	40.6	19.6	22.4	3.2	12.0	10.6	27.1	25.9	15.9
Industry/Business		16.4	14.1	31.9	19.5	9.0	29.8	21.9	35.6	4.3	5.8	5.5	20.3	14.0	9.0
Government		6.1	4.4	2.3	8.7	1.4	4.5	3.8	7.1	0.9	4.4	3.9	11.8	14.2	7.2
Nonprofit		3.3	0.6	0.4	0.5	0.7	1.2	0.6	1.4	0.7	1.8	1.6	4.1	1.6	1.8
Other & Unknown		2.8	1.7	1.1	3.5	1.9	2.5	1.9	2.6	0.9	1.4	1.3	2.5	4.3	2.2
Postdoc. Status Unknown	%	9.4	9.4	8.9	9.4	10.9	7.6	9.2	11.0	5.0	7.3	6.9	12.1	10.1	8.2
Definite Postdoc. Study	%	18.4	42.9	38.8	25.0	17.6	8.6	31.1	10.7	71.6	53.3	56.3	15.9	18.6	43.2
Seeking Postdoc. Study		7.9	17.1	11.0	14.2	8.6	5.2	11.9	9.3	13.5	14.1	14.0	6.3	11.2	12.6
Definite Employment		45.8	20.1	32.6	38.9	43.3	56.1	34.7	46.3	7.0	18.0	16.2	48.5	42.3	25.6
Seeking Employment		18.4	10.5	8.8	12.6	19.6	22.6	13.1	22.7	2.9	7.4	6.7	17.3	17.8	10.4
Employment Activity After Doctorate†															
Primary Activity															
R & D	%	35.3	60.8	74.7	44.8	37.4	57.4	57.7	65.7	54.8	42.0	42.9	52.0	53.0	48.6
Teaching		29.0	15.2	10.0	19.5	41.2	27.0	21.5	15.0	6.5	21.2	20.2	18.6	16.9	18.6
Administration		9.6	2.0	1.5	3.7	0.0	2.7	1.9	2.0	3.2	4.1	4.1	6.2	5.4	5.0
Prof. Services		10.5	4.0	3.6	15.8	2.2	1.2	4.7	5.5	9.7	17.1	16.6	13.0	9.7	13.1
Other		1.1	1.6	0.8	4.6	0.6	0.3	1.3	0.7	3.2	1.5	1.6	1.7	2.5	2.0
Secondary Activity															
R & D	%	23.8	13.2	7.5	21.6	33.6	25.8	19.1	15.9	9.7	26.1	24.9	19.8	22.1	22.9
Teaching		15.0	9.6	2.9	13.7	21.1	22.8	12.9	14.0	12.9	15.1	15.0	18.6	15.6	15.8
Administration		11.1	14.4	29.8	11.2	4.1	7.8	15.5	14.2	19.4	13.2	13.6	15.8	12.9	13.7
Prof. Services		8.1	6.8	10.9	9.5	6.3	5.7	8.2	10.0	3.2	8.3	7.9	4.5	9.5	8.0
Other		0.8	0.8	0.8	0.4	0.0	0.9	0.6	1.3	0.0	0.2	0.2	1.1	1.4	0.8
No Secondary Activity		26.7	38.8	38.8	32.0	16.4	25.5	30.8	33.4	32.3	22.9	23.6	31.6	26.2	26.0
Activity(ies) Unknown	%	14.5	16.4	9.4	11.6	18.6	11.4	12.9	11.1	22.6	14.1	14.7	8.5	12.4	12.7
Region of Employment After Doctorate‡															
New England	%	5.5	6.0	5.6	7.1	4.7	4.5	5.5	4.6	6.5	5.1	5.2	4.0	1.6	3.5
Middle Atlantic		12.8	11.6	17.7	9.5	12.3	11.7	13.3	13.4	25.8	12.9	13.8	11.9	5.0	9.8
East No. Central		13.1	6.8	19.8	6.6	11.3	11.4	12.6	12.3	12.9	12.2	12.2	11.3	7.9	10.3
West No. Central		6.4	4.0	3.5	3.7	5.7	6.0	4.5	3.3	0.0	7.6	7.0	10.7	10.6	9.1
South Atlantic		14.3	12.8	15.5	12.4	16.0	13.8	14.4	11.1	32.3	16.8	17.9	15.8	12.0	15.1
East So. Central		4.3	4.0	4.0	0.8	1.9	3.6	3.1	4.0	0.0	2.7	2.5	2.8	3.4	2.9
West So. Central		8.2	5.2	11.9	15.4	4.4	7.8	9.1	8.0	0.0	5.9	5.4	7.9	5.9	6.0
Mountain		5.4	9.2	3.5	11.2	3.8	4.5	5.7	6.5	0.0	4.1	3.9	2.3	4.5	3.9
Pacific & Insular		11.1	21.2	7.5	14.1	12.6	16.8	13.3	12.4	9.7	10.7	10.7	10.2	6.8	9.0
Foreign		14.5	13.6	8.1	14.1	19.5	14.1	13.2	18.8	9.7	19.3	18.6	19.8	39.7	27.6
Region Unknown		4.4	5.6	3.1	5.0	7.9	5.7	5.2	5.4	3.2	2.7	2.7	3.4	2.7	2.8

NOTE: Field groupings may differ from those in reports published by federal sponsors of the Survey of Earned Doctorates. See inside the back cover for a description of fields as reported in this table. Physical Sciences includes Mathematics and Computer Sciences, as well as Physics/Astronomy, Chemistry, and Earth/Atmospheric/Marine Sciences. Refer also to the explanatory note about this table in front of Appendix A.

*Includes 2-year, 4-year, and foreign colleges and universities, medical schools, and elementary/secondary schools.

†Includes only recipients with definite employment plans. Revisions to the survey form in 1990 appear to have resulted in a higher rate of nonresponse to this item than in previous years. Among men, the nonresponse rate in 1990 was 14.5% compared to 6.8% in 1989 and was especially high among recipients planning to work in educational institutions, thereby affecting the percentages in teaching and administration.

‡Includes only recipients with definite employment plans.

Psychology	Economics	Anthropology and Sociology	Political Sci./ Internat'l Rel.	Other Social Sciences	SOCIAL SCI. INCL. PSYCH	TOTAL SCIENCES	History	Eng. and Amer. Lang. and Lit.	Foreign Lang. and Lit.	Other Humanities	HUMANITIES	EDUCATION	Business and Management	Other Professional Fields	Other Fields§§	PROFESSIONAL/ OTHER FIELDS	TOTAL NONSCIENCES
1361	690	373	436	401	3261	16669	410	352	210	1107	2079	2748	772	669	29	1470	6297
41.7	80.0	49.7	78.1	62.9	53.7	71.1	67.1	44.2	41.0	58.2	54.4	42.4	74.4	56.8	43.3	64.4	50.0
84.1	40.9	67.3	58.7	53.9	65.9	54.6	83.2	84.9	61.9	74.8	76.9	80.6	47.2	69.1		57.2	73.9
1.8	7.4	4.0	7.8	6.2	4.6	5.4	2.4	4.0	9.5	3.5	4.0	3.1	8.5	4.6		6.7	4.3
4.5	43.8	22.3	23.9	30.7	20.6	32.4	8.5	8.0	18.1	11.6	11.0	10.7	36.8	18.5		28.3	14.9
9.6	8.0	6.4	9.6	9.2	8.9	7.6	5.9	3.1	10.5	10.1	8.1	5.6	7.5	7.8		7.8	6.9
53.2	55.9	60.6	54.1	61.8	55.8	57.2	62.2	57.1	46.2	57.0	57.0	75.8	66.1	71.6		68.2	67.8
35.6	34.3	31.9	33.7	28.2	33.7	33.5	29.8	36.9	41.4	31.2	32.9	17.1	25.1	19.3		22.7	23.6
11.2	9.7	7.5	12.2	10.0	10.5	9.2	8.0	6.0	12.4	11.8	10.1	7.2	8.8	9.1		9.1	8.6
33.9	32.2	36.3	34.4	35.6	34.1	31.7	36.3	35.1	36.0	35.2	35.4	40.9	34.5	37.0		35.7	37.8
65.2	61.7	46.4	51.4	24.7	55.5	64.0	60.5	67.9	44.3	55.4	57.4	33.4	37.6	26.9		32.3	41.1
76.6	74.1	90.1	85.1	88.8	80.2	70.9	90.5	89.5	86.2	86.4	87.7	93.6	83.2	93.9		88.2	90.4
10.1	9.0	12.3	10.5	11.9	10.4	8.5	12.7	11.3	11.4	11.8	11.9	17.3	11.5	13.5		12.3	14.3
7.4	6.6	9.2	7.7	7.7	7.4	6.4	8.6	7.9	7.9	8.3	8.3	8.0	7.0	7.9		7.3	7.9
18.1	6.4	13.4	10.8	8.7	13.0	34.1	8.5	6.0	6.7	6.7	6.9	5.5	3.5	5.4		4.6	5.8
11.3	2.6	7.8	6.7	3.5	7.5	15.5	5.4	5.4	3.3	2.9	3.8	1.7	0.5	1.9		1.3	2.3
3.5	2.3	3.2	2.5	3.7	3.1	15.5	1.7	0.3	1.4	1.5	1.3	1.7	1.9	1.2		1.7	1.6
2.4	1.6	0.5	0.0	1.3	1.4	0.5	0.0	0.5	0.3	0.3	0.7	0.6	0.4	0.0		0.5	
1.2	1.0	0.8	1.1	1.5	1.1	1.8	1.0	0.3	1.4	2.0	1.4	1.4	0.4	1.8		1.0	1.3
71.2	84.5	79.1	76.4	80.8	76.8	56.2	82.9	88.1	79.0	81.0	82.4	87.1	87.4	85.4		86.1	85.3
25.3	54.6	54.7	56.0	51.6	42.2	23.8	66.8	80.7	70.5	64.6	68.4	67.0	74.9	48.3		62.3	66.4
18.3	9.0	6.7	4.8	11.0	12.3	20.5	3.2	3.1	3.3	5.1	4.2	5.5	7.8	7.6		7.8	5.6
11.1	11.3	7.5	9.2	8.5	10.2	6.8	6.3	0.9	1.4	1.5	2.4	6.3	1.8	6.9		4.1	4.5
12.4	2.2	6.4	3.2	4.2	7.3	2.4	3.7	1.1	2.4	7.0	4.9	4.3	0.6	19.9		9.4	5.7
4.1	7.4	3.8	3.2	5.5	4.8	2.7	2.9	2.3	1.4	2.9	2.6	4.0	2.3	2.7		2.5	3.2
10.7	9.1	7.5	12.8	10.5	10.2	9.6	8.5	6.0	14.3	12.3	10.7	7.4	9.1	9.3		9.3	8.9
13.2	3.6	7.2	4.8	4.5	8.3	24.2	4.6	3.7	2.4	3.8	3.8	3.0	2.6	2.5		2.7	3.2
5.0	2.8	6.2	6.0	4.2	4.7	10.0	3.9	2.3	4.3	2.9	3.1	2.5	0.9	2.8		1.8	2.6
53.6	61.9	53.9	48.2	52.4	54.5	39.5	52.7	57.1	57.6	53.3	54.3	66.1	71.6	64.6		67.7	62.6
17.6	22.6	25.2	28.2	28.4	22.3	16.8	30.2	31.0	21.4	27.7	28.1	21.0	15.8	20.8		18.4	22.8
15.6	44.7	25.9	17.6	25.7	25.2	50.0	8.8	4.0	10.7	7.3	7.4	6.1	35.8	7.6		23.3	10.8
15.8	32.8	41.3	48.1	41.4	29.6	21.2	55.6	71.6	66.9	63.6	63.8	27.8	45.6	39.8		43.1	42.0
5.6	4.2	9.0	5.2	9.0	6.0	3.5	6.0	3.5	4.1	2.9	3.7	36.8	3.8	10.4		6.6	19.7
52.3	4.0	7.5	4.8	8.1	24.8	11.7	4.6	3.0	1.7	9.2	6.4	8.9	2.4	20.4		10.3	8.5
0.7	1.9	1.5	1.0	0.0	1.0	1.1	1.4	1.0	1.7	1.0	1.2	0.6	0.0	3.9		1.8	1.0
23.8	29.7	29.9	38.6	37.6	29.3	21.4	42.6	48.8	48.8	35.9	40.9	16.3	38.2	27.1		33.3	27.6
15.3	26.2	14.9	11.0	12.9	17.1	14.9	10.6	7.0	9.9	8.6	8.9	13.5	32.7	16.4		25.4	15.2
14.4	5.9	10.9	4.8	9.0	10.2	13.3	3.2	4.5	1.7	10.3	7.0	8.3	2.7	10.0		5.8	7.3
9.6	6.1	4.5	4.8	4.8	7.0	8.4	3.7	2.0	3.3	5.6	4.3	11.2	2.5	8.1		4.9	7.6
1.2	0.5	0.5	0.0	1.0	0.8	0.9	0.0	1.5	0.8	1.9	1.3	0.5	0.0	0.9		0.4	0.7
25.6	19.2	24.4	17.6	19.0	22.2	28.6	16.2	19.4	20.7	21.5	20.0	30.3	11.4	19.7		15.3	23.6
10.0	12.4	14.9	23.3	15.7	13.4	12.4	23.6	16.9	14.9	16.1	17.6	19.9	12.5	17.8		14.9	18.0
7.9	5.9	8.5	7.1	7.6	7.4	5.4	5.6	3.5	11.6	5.8	5.9	6.3	4.5	4.2		4.3	5.7
18.9	11.0	16.9	14.8	11.9	15.5	13.4	12.5	11.4	15.7	12.0	12.4	12.3	12.1	8.3		10.7	11.9
12.1	9.8	11.9	12.4	13.3	11.7	11.9	17.6	17.9	9.9	13.6	14.7	14.7	17.4	14.4		16.1	15.1
9.2	4.2	6.5	4.8	7.1	6.9	5.5	3.7	12.9	8.3	9.7	9.0	8.0	7.2	5.6		6.4	7.9
14.5	16.9	11.4	18.1	14.8	15.2	13.7	20.8	18.9	13.2	11.7	14.9	16.5	12.5	15.0		13.6	15.3
4.0	4.2	3.0	4.8	1.9	3.8	3.5	3.7	3.5	7.4	5.3	4.9	5.4	5.6	8.3		6.8	5.6
7.8	4.0	6.0	5.7	5.2	6.1	7.5	6.5	6.5	6.6	9.5	8.1	8.8	10.8	13.4		12.0	9.4
4.2	2.6	7.0	5.7	7.1	4.7	5.4	4.2	4.5	4.1	5.9	5.1	5.9	4.2	5.1		4.5	5.3
14.9	8.2	9.5	7.1	7.1	10.9	11.7	13.9	12.4	13.2	11.7	12.4	9.7	8.7	7.6		8.2	10.1
2.6	27.9	16.9	16.7	17.1	13.7	17.4	6.5	4.5	5.0	10.8	8.2	8.1	13.4	14.6		13.9	9.6
3.8	5.4	2.5	2.9	6.7	4.3	4.6	5.1	4.0	5.0	4.1	4.3	4.3	3.6	3.5		3.5	4.1

§Statistics are not presented for this group because too few records contained the specific data.

APPENDIX TABLE A-3 (Continued)

Doctorates: Women

		1990 Total	Physics and Astronomy	Chemistry	Earth, Atmos. and Marine Sci.	Mathematics	Computer Sciences	PHYSICAL SCIENCES	ENGINEERING	Biochemistry	Other Biosciences	Biosciences Subtotal	Health Sciences	Agricultural Sciences	LIFE SCIENCES
Total Female		13061	149	502	149	158	110	1068	414	238	1368	1606	595	273	2474
Female as a Percent of Total Doctorates	%	36.3	10.7	23.9	19.4	17.7	15.6	18.2	8.5	34.9	37.5	37.1	62.0	20.7	37.4
U.S. Citizenship	%	79.8	40.3	67.9	79.9	51.3	71.8	63.7	58.5	71.0	75.8	75.1	82.7	58.2	75.1
Non-U.S., Permanent Visa		3.8	11.4	6.2	0.0	7.0	9.1	6.5	6.8	5.0	4.7	4.7	2.7	5.1	4.3
Non-U.S., Temporary Visa		10.8	43.6	21.3	12.8	37.3	12.7	24.7	28.3	20.2	15.8	16.4	10.8	32.2	16.8
Unknown		5.6	4.7	4.6	7.4	4.4	6.4	5.1	6.5	3.8	3.7	3.7	3.9	4.4	3.8
Married	%	51.7	49.0	51.6	38.9	49.4	66.4	50.7	51.2	49.2	49.8	49.7	54.1	50.5	50.8
Not Married		40.3	44.3	42.0	47.0	44.9	27.3	41.9	40.3	43.7	44.5	44.4	39.7	41.4	42.9
Unknown		8.0	6.7	6.4	14.1	5.7	6.4	7.4	8.5	7.1	5.7	5.9	6.2	8.1	6.2
Median Age at Doct.	Yrs.	36.1	30.6	29.1	32.3	31.4	33.8	30.3	30.2	29.8	31.5	31.2	38.2	32.6	32.6
Percent with Bacc. in Same Field as Doctorate	%	51.3	80.5	80.3	46.3	70.9	26.4	68.6	64.7	23.5	63.2	57.3	60.7	50.9	57.4
Percent with Masters		80.5	73.2	34.1	77.9	75.9	83.6	56.9	80.0	29.4	50.4	47.3	90.1	91.2	62.4
Median Time Lapse From Bacc. to Doct.															
Total Time	Yrs.	12.6	7.7	6.6	9.6	8.3	11.4	7.6	7.8	7.2	8.7	8.4	14.7	10.2	9.7
Registered Time		7.4	6.7	5.5	7.2	6.9	7.5	6.3	6.1	6.0	6.7	6.6	7.5	6.5	6.8
Postdoctoral Study Plans	%	20.7	63.8	45.2	39.6	22.8	7.3	39.8	22.5	87.4	70.6	73.1	17.1	33.3	55.3
Fellowship		11.7	23.5	22.1	16.1	10.1	3.6	17.8	7.2	55.9	45.7	47.2	10.8	11.7	34.5
Research Assoc.		6.6	37.6	22.3	22.1	8.2	3.6	20.4	11.1	29.0	20.5	21.8	4.9	20.5	17.6
Traineeship		1.0	0.7	0.4	0.7	0.6	0.0	0.5	1.7	0.8	1.2	1.1	0.5	0.7	0.9
Other		1.4	2.0	0.4	0.7	3.8	0.0	1.1	2.4	1.7	3.2	3.0	1.0	0.4	2.2
Planned Employment After Doctorate	%	71.2	27.5	47.2	49.7	67.7	83.6	51.6	67.6	7.6	24.0	21.6	75.8	57.5	38.6
Educ. Institution*		46.7	8.7	8.8	18.8	52.5	57.3	21.6	21.0	3.8	12.1	10.9	47.4	26.0	21.3
Industry/Business		9.7	12.8	31.5	12.1	8.9	16.4	21.3	35.0	3.4	5.2	4.9	6.9	13.2	6.3
Government		4.9	1.3	4.2	12.8	1.3	5.5	4.7	5.6	0.0	2.3	2.0	7.1	11.7	4.3
Nonprofit		5.0	1.3	0.4	1.3	0.0	0.9	0.7	1.2	0.0	1.5	1.3	7.4	0.0	2.6
Other & Unknown		5.0	3.4	2.4	4.7	5.1	3.6	3.4	4.8	0.4	2.9	2.5	7.1	6.6	4.0
Postdoc. Status Unknown	%	8.2	8.7	7.6	10.7	9.5	9.1	8.6	9.9	5.0	5.3	5.3	7.1	9.2	6.1
Definite Postdoc. Study	%	14.6	45.6	31.9	28.9	13.3	5.5	27.9	15.5	73.9	54.6	57.5	12.4	19.0	42.4
Seeking Postdoc. Study		6.1	18.1	13.3	10.7	9.5	1.8	11.9	7.0	13.4	16.0	15.6	4.7	14.3	12.9
Definite Employment		50.0	17.4	31.9	36.9	45.6	60.9	35.6	46.1	4.6	14.9	13.4	50.9	35.2	24.8
Seeking Employment		21.2	10.1	15.3	12.8	22.2	22.7	16.0	21.5	2.9	9.1	8.2	24.9	22.3	13.8
Employment Activity After Doctorate*															
Primary Activity															
R & D	%	17.8	61.5	69.4	49.1	27.8	34.3	51.8	59.7	27.3	40.7	40.0	29.0	64.6	38.4
Teaching		38.1	15.4	15.6	25.5	45.8	44.8	27.9	18.8	18.2	30.4	29.8	43.2	13.5	33.9
Administration		14.5	0.0	1.3	1.8	0.0	4.5	1.6	0.5	18.2	4.9	5.6	9.2	6.3	7.5
Prof. Services		15.6	7.7	3.8	10.9	9.7	1.5	5.8	9.9	18.2	11.3	11.6	10.2	6.3	10.1
Other		0.8	3.8	0.6	0.0	1.4	1.5	1.1	2.1	0.0	0.5	0.5	0.0	3.1	0.7
Secondary Activity															
R & D	%	28.5	23.1	12.5	29.1	43.1	40.3	26.3	20.9	36.4	27.5	27.9	39.6	15.6	31.8
Teaching		13.2	7.7	2.5	7.3	25.0	19.4	10.8	11.0	9.1	13.2	13.0	14.2	15.6	14.0
Administration		9.3	7.7	24.4	16.4	0.0	6.0	14.2	14.7	0.0	11.3	10.7	12.2	16.7	12.4
Prof. Services		9.3	11.5	11.3	7.3	4.2	3.0	7.9	9.4	0.0	9.3	8.8	9.9	10.4	9.6
Other		1.2	3.8	0.0	0.0	0.0	1.5	0.5	2.1	0.0	1.0	0.9	0.3	1.0	0.7
No Secondary Activity		25.3	34.6	40.0	27.3	12.5	16.4	28.4	33.0	36.4	25.5	26.0	15.5	34.4	22.1
Activity(ies) Unknown	%	13.2	11.5	9.4	12.7	15.3	13.4	11.8	8.9	18.2	12.3	12.6	8.3	6.3	9.4
Region of Employment After Doctorate‡															
New England	%	7.0	15.4	5.0	10.9	4.2	4.5	6.3	6.8	0.0	7.4	7.0	5.3	4.2	5.7
Middle Atlantic		16.1	15.4	22.5	3.6	25.0	23.9	20.0	18.8	27.3	11.3	12.1	15.5	8.3	13.2
East No. Central		13.9	7.7	17.5	9.1	19.4	10.4	14.7	15.2	9.1	8.3	8.4	15.8	9.4	12.2
West No. Central		6.9	7.7	5.6	1.8	6.9	3.0	5.0	3.1	0.0	4.9	4.7	3.6	9.4	4.9
South Atlantic		16.9	7.7	13.8	20.0	9.7	23.9	15.3	12.0	9.1	17.6	17.2	18.8	12.5	17.3
East So. Central		4.7	0.0	3.8	5.5	4.2	7.5	4.5	2.1	0.0	6.4	6.0	5.9	2.1	5.4
West So. Central		8.2	3.8	12.5	12.7	1.4	6.0	8.7	8.9	9.1	6.4	6.5	10.9	9.4	9.1
Mountain		4.9	0.0	1.9	10.9	8.3	4.5	4.7	6.3	9.1	4.4	4.7	1.7	4.2	3.1
Pacific & Insular		11.6	26.9	9.4	18.2	9.7	11.9	12.4	16.8	18.2	12.7	13.0	13.5	7.3	12.4
Foreign		5.5	7.7	5.6	5.5	6.9	1.5	5.3	7.3	9.1	16.2	15.8	6.9	32.3	14.0
Region Unknown		4.3	7.7	2.5	1.8	4.2	3.0	3.2	2.6	9.1	4.4	4.7	2.0	1.0	2.8

NOTE: Field groupings may differ from those in reports published by federal sponsors of the Survey of Earned Doctorates. See inside the back cover for a description of fields as reported in this table. Physical Sciences includes Mathematics and Computer Sciences, as well as Physics/Astronomy, Chemistry, and Earth/Atmospheric/Marine Sciences. Refer also to the explanatory note about this table in front of Appendix A.

*Includes 2-year, 4-year, and foreign colleges and universities, medical schools, and elementary/secondary schools.

†Includes only recipients with definite employment plans. Revisions to the survey form in 1990 appear to have resulted in a higher rate of nonresponse to this item than in previous years. Among women, the nonresponse rate in 1990 was 13.2% compared to 5.3% in 1989 and was especially high among recipients planning to work in educational institutions, thereby affecting the percentages in teaching and administration.

‡Includes only recipients with definite employment plans.

Psychology	Economics	Anthropology and Sociology	Political Sci./ Internat'l Rel.	Other Social Sciences	SOCIAL SCI. INCL. PSYCH	TOTAL SCIENCES	History	Eng. and Amer. Lang. and Lit.	Foreign Lang. and Lit.	Other Humanities	HUMANITIES	EDUCATION	Business and Management	Other Professional Fields	Other Fields∞	PROFESSIONAL/ OTHER FIELDS	TOTAL NONSCIENCES
1906	172	378	122	237	2815	6771	201	444	302	794	1741	3736	266	509	38	813	6290
58.3	20.0	50.3	21.9	37.1	46.3	28.9	32.9	55.8	59.0	41.8	45.6	57.6	25.6	43.2	56.7	35.6	50.0
86.3	60.5	81.2	86.9	73.4	83.0	75.5	83.6	88.3	64.9	80.1	80.0	87.3	80.5	82.9		81.4	84.5
2.4	8.7	4.5	0.8	3.4	3.1	4.3	6.5	2.5	17.2	4.2	6.3	1.7	4.5	3.3		3.8	3.3
2.9	25.6	10.8	8.2	15.2	6.6	14.5	5.5	7.0	10.9	10.6	9.1	5.1	9.4	9.0		9.5	6.8
8.4	5.2	3.4	4.1	8.0	7.4	5.7	4.5	2.3	7.0	5.2	4.7	5.9	5.6	4.7		5.3	5.5
46.7	47.7	50.0	50.8	54.4	48.1	49.7	47.3	50.0	54.6	49.1	50.1	55.4	61.7	50.7		54.7	53.9
43.0	45.3	42.9	40.2	36.7	42.5	42.4	45.3	45.0	37.7	44.0	43.3	35.8	30.8	41.7		37.4	38.1
10.2	7.0	7.1	9.0	8.9	9.4	7.9	7.5	5.0	7.6	6.9	6.6	8.8	7.5	7.7		7.9	8.0
33.8	32.5	36.7	34.0	37.5	34.4	32.6	36.6	36.2	35.1	36.4	36.1	42.1	36.1	39.7		38.4	40.1
60.1	59.3	52.4	47.5	22.4	55.3	58.8	56.7	67.3	53.0	52.3	56.7	40.5	30.8	25.5		26.7	43.2
76.9	78.5	88.6	84.4	86.9	79.8	69.8	90.5	88.7	87.1	89.2	88.9	93.8	83.8	94.7		90.8	92.0
10.0	9.6	12.5	11.3	14.1	10.8	9.5	12.4	12.3	11.5	13.0	12.5	18.4	12.5	15.9		14.9	16.4
7.4	7.4	9.1	8.5	7.8	7.7	7.0	8.5	8.0	8.7	8.3	8.3	8.1	7.3	7.9		7.6	8.1
21.5	3.5	13.2	5.7	13.9	17.9	35.3	10.0	4.3	6.3	6.9	6.5	4.5	2.3	3.9		3.2	4.9
13.6	1.7	7.4	3.3	6.3	11.0	20.4	7.5	1.8	3.6	4.5	4.0	1.7	0.8	1.4		1.1	2.3
3.6	0.6	3.7	1.6	3.4	3.3	11.7	1.0	0.2	1.0	1.1	0.9	1.1	0.8	1.2		1.0	1.0
3.1	0.0	0.5	0.0	2.1	2.3	1.5	0.0	0.7	0.7	0.4	0.5	0.4	0.0	0.6		0.4	0.4
1.1	1.2	1.6	0.8	2.1	1.2	1.7	1.5	1.6	1.0	0.9	1.1	1.2	0.8	0.8		0.7	1.1
68.5	90.7	80.2	87.7	75.9	72.9	56.7	83.1	89.9	83.1	84.0	85.2	86.8	90.2	89.4		89.7	86.8
25.0	57.0	54.5	67.2	46.0	34.5	26.8	66.7	79.5	71.9	65.9	70.5	66.6	77.8	65.0		68.9	68.0
16.3	7.0	5.6	4.1	10.5	13.3	13.3	3.0	2.7	4.6	6.9	5.0	5.4	8.6	8.3		8.6	5.7
7.2	12.2	5.8	5.7	5.9	7.1	5.6	3.5	0.7	0.3	1.5	1.3	5.7	0.8	3.3		2.6	4.1
13.7	4.1	6.1	2.5	8.0	11.2	5.8	3.0	0.9	0.0	5.9	3.3	4.3	1.5	6.3		4.7	4.1
6.2	10.5	8.2	8.2	5.5	6.8	5.1	7.0	6.1	6.3	3.8	5.2	4.8	1.5	6.5		4.9	4.9
10.0	5.8	6.6	6.6	10.1	9.2	8.0	7.0	5.9	10.6	9.1	8.3	8.6	7.5	6.7		7.1	8.3
14.2	2.9	7.4	4.1	5.9	11.4	25.6	4.5	2.7	4.0	3.8	3.6	2.5	1.5	2.0		1.7	2.7
7.3	0.6	5.8	1.6	8.0	6.5	9.7	5.5	1.6	2.3	3.1	2.9	2.1	0.8	2.0		1.5	2.2
46.9	69.2	51.3	55.7	46.4	49.2	38.0	55.2	61.0	55.0	56.5	57.3	64.2	78.2	65.4		69.1	62.9
21.6	21.5	28.8	32.0	29.5	23.7	18.7	27.9	28.8	28.1	27.5	28.0	22.6	12.0	24.0		20.5	23.8
14.7	41.2	26.3	26.5	30.9	20.4	32.3	12.6	5.9	6.6	11.6	9.3	5.5	30.8	12.0		18.9	8.4
13.3	39.5	44.8	52.9	33.6	23.5	26.3	61.3	74.2	66.9	65.7	67.7	36.2	47.6	47.4		47.3	45.7
4.9	1.7	6.7	4.4	7.3	5.1	4.8	5.4	4.8	2.4	6.2	5.1	30.3	2.9	11.4		8.4	20.8
56.8	1.7	5.7	2.9	14.5	38.9	25.0	4.5	1.1	1.2	4.2	2.9	12.3	2.9	12.6		8.9	9.4
0.9	0.0	0.0	0.0	1.8	0.7	0.9	1.8	0.4	0.0	1.1	0.8	0.8	0.5	1.2		1.2	0.8
21.9	37.0	39.7	48.5	30.9	27.7	28.0	45.0	47.6	48.2	37.4	42.8	20.8	42.8	35.4		38.4	28.8
17.8	16.8	11.3	20.6	15.5	16.8	14.8	7.2	6.3	5.4	9.8	7.8	12.5	28.4	11.7		17.8	12.1
11.5	4.2	10.3	4.4	9.1	10.2	11.6	4.5	5.2	3.6	9.6	6.8	8.8	1.0	7.5		5.0	7.7
9.2	6.7	3.6	0.0	10.0	7.8	8.4	3.6	1.5	0.0	6.2	3.6	13.3	2.4	9.6		6.9	10.0
1.2	3.4	1.0	0.0	0.9	1.3	1.1	0.0	1.1	0.6	3.8	2.1	1.2	0.5	0.9		0.7	1.3
29.0	16.0	17.5	13.2	21.8	24.9	25.4	25.2	24.7	19.3	22.0	22.7	28.6	9.6	19.5		15.8	25.3
9.4	16.0	16.5	13.2	11.8	11.3	10.8	14.4	13.7	22.9	11.1	14.1	14.9	15.4	15.3		15.3	14.8
6.7	13.4	8.2	4.4	6.4	7.4	6.8	6.3	8.1	12.7	7.8	8.5	6.5	7.2	7.2		6.9	7.1
22.5	13.4	17.5	14.7	10.9	19.7	18.1	18.9	14.8	18.1	17.1	16.9	14.1	10.6	14.7		13.3	14.7
13.9	10.1	12.9	16.2	15.5	13.6	13.6	12.6	16.2	12.0	14.0	14.1	14.2	13.0	14.4		13.7	14.1
7.6	4.2	5.2	5.9	5.5	6.7	5.8	2.7	8.5	8.4	9.6	8.3	7.5	7.2	8.1		7.7	7.7
13.9	26.9	14.4	20.6	22.7	16.1	16.0	16.2	14.4	10.2	12.7	13.1	19.7	18.8	14.7		16.0	17.5
4.1	4.2	1.5	4.4	5.5	3.9	4.2	3.6	6.6	3.0	3.3	4.2	5.3	6.7	4.2		5.3	5.0
6.5	1.7	5.7	7.4	4.5	5.8	7.3	8.1	8.9	5.4	5.1	6.5	9.6	8.7	9.3		9.4	8.8
4.7	3.4	8.2	7.4	5.5	5.3	4.7	10.8	4.1	5.4	4.5	5.2	4.6	8.2	6.0		6.6	5.1
13.6	8.4	13.9	8.8	12.7	12.9	13.0	12.6	10.0	15.7	13.4	12.7	10.0	10.1	10.8		10.5	10.7
1.8	13.4	9.3	8.8	5.5	4.5	7.1	4.5	5.9	2.4	7.8	6.0	3.4	6.7	6.6		6.9	4.5
4.7	0.8	3.1	1.5	5.5	4.0	3.5	3.6	2.6	6.6	4.7	4.3	5.2	2.9	3.9		3.6	4.7

§Statistics are not presented for this group because too few records contained the specific data.

APPENDIX TABLE A-4 Statistical Profile of Doctorate Recipients, by Race/Ethnicity and Citizenship, 1990

		Total				Native American	Asian				Black			
		Total	U.S.	Non-U.S. Perm.	Non-U.S. Temp.	Total	Total	U.S.	Non-U.S. Perm.	Non-U.S. Temp.	Total	U.S.	Non-U.S. Perm.	Non-U.S. Temp.
Total Number		36,027*	24,190	1654	7744	94	6080*	617	643	4788	1255*	828	144	277
Male	%	63.7	56.9	70.1	81.8	52.1	79.9	66.6	72.5	82.5	54.3	38.6	85.4	83.8
Female		36.3	43.1	29.9	18.2	47.9	20.1	33.4	27.5	17.5	45.7	61.4	14.6	16.2
Doctoral Field														
Physical Sciences	%	16.3	13.7	17.5	24.1	5.3	25.7	17.5	21.9	27.4	4.2	2.8	7.6	6.9
Engineering		13.6	8.0	22.7	28.3	4.3	29.6	24.6	30.0	30.2	5.9	3.4	8.3	11.9
Life Sciences		18.4	18.6	16.9	18.9	8.5	18.5	24.1	17.6	17.8	13.2	7.6	19.4	26.0
Social Sciences		16.9	18.5	14.2	11.1	24.5	9.8	13.3	8.9	9.5	21.4	20.8	22.2	23.1
Humanities		10.6	12.4	11.6	5.0	8.5	3.5	5.5	6.4	2.8	6.9	8.5	2.1	4.7
Education		18.0	22.6	9.1	6.2	39.4	5.8	9.9	5.8	5.2	40.9	50.7	27.1	19.1
Professional/Other		6.3	6.2	7.9	6.4	9.6	7.0	5.0	9.5	7.0	7.5	6.3	13.2	8.3
Median Age at Doct.	Yrs	33.9	34.7	33.4	32.5	38.3	32.5	32.0	33.1	32.5	38.2	39.9	36.5	35.7
Median Time Lapse From Bace. to Doct.														
Total Time	Yrs	10.5	11.4	9.8	8.9	14.0	9.1	9.2	10.2	8.9	13.7	16.5	10.2	10.5
Registered Time		7.0	7.2	7.1	6.3	8.2	6.4	6.8	7.1	6.3	7.5	8.2	7.0	6.5
Graduate School Support														
GI Bill	%	1.2	1.8	0.0	0.0	1.1	0.1	1.0	0.0	0.0	1.6	2.4	0.0	0.0
Other Federal†		8.8	12.0	4.0	2.7	18.1	2.9	15.1	2.2	1.4	10.8	12.2	3.5	10.1
State Government		0.7	0.9	0.6	0.3	3.2	0.2	0.5	0.2	0.2	1.4	1.8	0.0	1.1
Foreign Government		4.5	0.4	6.3	18.2	0.0	9.7	0.6	1.9	11.9	6.8	0.2	9.0	24.2
National Fellow (nonfed.)		4.6	5.2	4.0	4.3	11.7	3.5	7.6	3.0	3.0	8.0	7.6	6.3	10.5
Univ. Teaching Asst.	%	45.3	47.3	54.2	50.7	36.2	51.6	46.0	51.5	52.5	31.8	29.3	38.2	36.1
Univ. Research Asst.†		44.5	42.2	52.5	63.5	23.4	68.1	55.9	66.1	70.0	30.4	24.3	37.5	45.1
Other University		22.7	26.2	23.2	18.8	19.1	18.9	24.0	21.3	17.9	29.1	32.6	24.3	21.3
Business/Employer		5.5	7.2	4.4	2.0	8.5	2.5	7.6	5.0	1.5	5.3	6.4	5.6	2.2
Self/Family Sources		67.8	80.4	66.6	49.8	85.1	52.3	68.6	60.5	49.3	75.5	83.9	68.1	55.2
GSL(Stafford) Loan	%	22.4	32.1	14.8	0.4	35.1	3.8	26.1	9.3	0.3	27.5	35.7	31.3	1.4
Other Loans		7.9	10.5	6.0	2.5	14.9	2.2	7.9	3.4	1.3	14.6	16.8	19.4	5.8
Other Sources		2.5	2.8	2.2	2.5	3.2	1.9	2.1	2.6	1.7	3.4	3.3	1.4	5.1
Unknown Sources		7.7	1.0	1.9	1.7	0.0	1.4	0.3	2.2	1.3	1.4	1.2	0.7	2.5
Postdoctoral Plans														
Postdoctoral Study	%	24.3	22.6	28.6	36.1	14.9	36.5	33.2	30.0	37.9	17.5	11.7	26.4	30.3
Planned Employment	%	66.7	75.4	67.4	59.9	83.0	59.2	64.8	64.9	57.8	80.2	86.0	71.5	67.5
Educ. Institution‡		39.5	45.2	36.8	34.5	53.2	31.3	26.6	28.8	32.3	56.7	63.3	44.4	44.4
Industry/Business		14.0	14.6	20.7	14.8	12.8	18.8	25.3	27.5	16.9	6.1	4.8	13.2	6.5
Government		5.7	6.5	2.8	5.6	3.2	4.5	6.0	2.0	4.6	8.7	9.3	3.5	9.0
Nonprofit		3.9	5.2	2.3	1.4	6.4	1.6	3.4	2.3	1.3	4.1	5.1	0.7	2.9
Other & Unknown		3.6	3.9	4.8	3.5	7.4	3.0	3.6	4.2	2.8	4.6	3.5	9.7	4.7
Postdoc. Status Unknown	%	9.0	2.0	4.1	4.0	2.1	4.2	1.9	5.1	4.2	2.2	2.3	2.1	2.2
Definite Postdoc. Study	%	17.0	17.2	16.7	21.9	8.5	23.1	24.0	17.1	23.8	9.5	7.6	13.2	13.0
Seeking Postdoc. Study		7.3	5.5	11.9	14.2	6.4	13.4	9.2	12.9	14.1	8.0	4.1	13.2	17.3
Definite Employment		47.3	55.7	37.8	37.7	54.3	35.1	41.3	34.7	34.4	55.1	63.5	28.5	44.0
Seeking Employment		19.4	19.7	29.6	22.2	28.7	24.1	23.5	30.2	23.5	25.2	22.5	43.1	23.5
Employment Location after Doctorate§														
U.S.	%	84.6	94.6	77.1	40.3	92.2	53.8	90.6	76.7	45.0	80.6	92.6	82.9	29.5
Foreign		11.1	1.7	13.1	53.2	0.0	39.1	4.3	12.6	48.0	12.0	0.2	9.8	62.3
Unknown		4.4	3.6	9.8	6.5	7.8	7.1	5.1	10.8	7.0	7.4	7.2	7.3	8.2

NOTE: Field groupings may differ from those in reports published by federal sponsors of the Survey of Earned Doctorates. See inside the back cover for a description of fields as reported in this table. Refer also to the explanatory note about this table in front of Appendix A for a discussion of past changes in the survey question on race/ethnicity.

*Includes individuals who did not report their citizenship at time of doctorate.
†Because federal support obtained through the university cannot always be determined, no distinction is made between federal and university research assistants in this table. Both types of support are grouped under "University Research Assistant."
‡Includes 2-year, 4-year, and foreign colleges and universities, medical schools, and elementary/secondary schools.
§Includes only recipients with definite employment plans.

White				Puerto Rican	Mexican-American				Other Hispanic				Other & Unknown		
		Non-U.S.					Non-U.S.				Non-U.S.				Non-
Total	U.S.	Perm.	Temp.	Total	Total	U.S.	Perm.	Temp.	Total	U.S.	Perm.	Temp.	Total	U.S.	U.S.
24246*	21650	695	1878	208	210*	176	11	23	774*	316	103	350	3160*	304	484
59.2	57.2	67.1	79.2	51.0	64.3	60.8	81.8	82.6	64.7	50.6	57.3	80.0	72.1	73.0	83.3
40.8	42.8	32.9	20.8	49.0	35.7	39.2	18.2	17.4	35.3	49.4	42.7	20.0	27.9	27.0	16.7
14.5	13.9	16.4	20.7	15.4	9.0	9.1	9.1	8.7	14.9	11.1	13.6	18.3	17.2	24.0	19.2
9.7	7.7	21.4	28.6	2.9	8.1	6.8	9.1	17.4	13.0	6.6	12.6	19.1	16.7	11.5	22.7
18.8	19.0	14.5	17.5	16.8	21.9	18.2	36.4	43.5	20.7	11.4	20.4	29.1	16.6	18.4	22.9
18.0	18.5	16.7	12.7	21.6	22.4	23.3	18.2	17.4	18.3	25.0	18.4	12.6	18.8	15.1	13.0
12.5	12.6	16.8	8.9	14.4	10.0	10.2	18.2	4.3	16.3	19.0	21.4	12.0	9.9	11.5	7.0
20.3	21.9	8.3	6.7	26.4	22.9	26.7	9.1	0.0	12.7	22.2	8.7	5.4	14.3	13.5	8.3
6.2	6.3	5.8	5.0	2.4	5.7	5.7	0.0	8.7	4.1	4.7	4.9	3.4	6.5	5.9	6.8
34.2	34.6	33.0	31.8	34.4	34.2	34.7	38.0	33.4	33.9	34.9	34.1	33.4	33.5	32.9	33.4
10.9	11.3	9.1	8.3	11.8	10.8	10.8	11.0	10.3	10.2	10.9	10.9	9.5	9.9	9.6	9.7
7.1	7.2	7.1	6.2	7.8	7.3	7.5	7.5	5.3	6.6	7.3	7.5	5.8	6.8	7.2	6.5
1.6	1.8	0.0	0.0	1.0	3.3	4.0	0.0	0.0	0.6	1.6	0.0	0.0	0.0	0.1	1.3
10.8	11.7	5.2	3.6	18.8	25.2	29.5	0.0	4.3	10.3	13.6	9.7	7.7	1.7	12.5	3.5
0.8	0.9	0.9	0.4	3.4	1.4	0.6	9.1	4.3	0.9	0.9	1.9	0.6	0.1	1.0	0.2
2.8	0.4	8.6	28.4	1.0	7.1	0.6	45.5	39.1	14.5	0.0	7.8	29.4	4.6	1.0	28.3
5.0	5.0	4.5	5.4	6.3	6.2	6.3	0.0	8.7	8.5	8.5	2.9	10.3	1.0	3.9	4.3
48.6	48.1	60.3	50.5	42.8	45.7	46.6	54.5	34.8	51.8	48.4	57.3	53.1	11.3	50.3	40.7
43.7	42.6	45.6	54.7	31.7	40.0	39.8	45.5	39.1	45.2	36.7	46.6	52.6	12.8	51.3	49.2
25.6	26.0	25.8	21.7	37.5	25.2	26.7	27.3	13.0	21.3	23.4	17.5	20.6	4.6	22.4	14.9
6.9	7.3	3.7	3.1	7.7	3.3	4.0	0.0	0.0	4.8	7.3	3.9	2.9	0.9	5.9	2.3
78.4	80.9	71.8	52.4	71.2	73.3	76.1	63.6	56.5	64.9	77.2	69.9	52.9	13.1	67.4	40.3
29.1	32.0	16.5	0.5	42.3	31.4	36.4	18.2	0.0	18.0	38.0	16.5	0.6	3.3	31.6	1.0
9.6	10.1	6.3	4.5	19.7	15.2	15.9	0.0	17.4	9.7	15.5	5.8	5.4	1.4	11.5	1.7
2.8	2.8	1.3	3.6	2.4	3.8	3.4	0.0	8.7	3.9	2.2	3.9	5.1	0.6	1.6	3.1
1.0	0.9	1.0	1.5	1.4	1.4	1.1	0.0	4.3	1.8	1.6	2.9	1.7	76.2	7.2	6.4
23.7	22.7	27.5	34.1	22.1	23.8	23.9	54.5	8.7	25.8	19.9	27.2	31.1	7.8	28.9	32.4
74.3	75.4	69.9	62.9	75.0	73.8	74.4	45.5	82.6	70.9	77.2	68.0	65.7	15.6	62.8	58.7
44.4	45.0	41.7	37.7	49.5	47.6	47.7	36.4	52.2	43.2	49.1	40.8	37.7	8.9	33.2	36.0
14.8	14.8	18.4	12.9	6.3	10.5	10.2	9.1	13.0	11.6	11.4	12.6	11.7	2.9	15.8	8.1
6.3	6.4	3.3	6.7	5.8	8.1	8.5	0.0	8.7	7.0	7.3	3.9	7.7	1.8	5.6	7.9
4.9	5.3	2.7	1.1	7.2	5.2	6.3	0.0	0.0	3.6	5.4	1.9	2.6	0.7	3.3	1.7
4.0	3.9	3.7	4.5	6.3	2.4	1.7	0.0	8.7	5.6	4.1	8.7	6.0	1.3	4.9	5.2
2.0	1.9	2.6	3.0	2.9	2.4	1.7	0.0	8.7	3.2	2.8	4.9	3.1	76.6	8.2	8.9
17.6	17.4	17.4	19.7	15.4	14.8	15.9	18.2	4.3	16.4	13.0	15.5	20.0	4.8	21.4	17.6
6.2	5.3	10.1	14.4	6.7	9.0	8.0	36.4	4.3	9.4	7.0	11.7	11.1	3.0	7.6	14.9
54.7	56.1	42.9	42.9	50.0	53.3	53.4	27.3	65.2	49.1	51.3	44.7	48.3	10.0	42.4	36.0
19.6	19.3	27.1	20.0	25.0	20.5	21.0	18.2	17.4	21.8	25.9	23.3	17.4	5.6	20.4	22.7
91.0	94.9	77.9	37.8	96.2	84.8	94.7	33.3	33.3	62.1	91.4	80.4	29.6	52.1	87.6	26.4
5.3	1.7	12.8	56.6	0.0	12.5	3.2	66.7	60.0	32.4	2.5	13.0	65.7	39.4	3.9	66.1
3.6	3.4	9.4	5.6	3.8	2.7	2.1	0.0	6.7	5.5	6.2	6.5	4.7	8.6	8.5	7.5

APPENDIX TABLE A-5 Sources of Graduate School Support for Doctorate Recipients, by Broad Field and Gender, 1990

Sources of Support in Graduate School		Total		Physical Sciences		Engineering		Life Sciences		Social Sciences		Humanities		Education		Prof/Other Fields	
		Men/Women		Men/Women		Men/Women		Men/Women		Men/Women		Men/Women		Men/Women		Men/Women	
NSF Fellow	N	294	143	110	25	50	9	71	58	52	38	6	5	3	5	2	3
	V*	1.4	1.2	2.5	2.5	1.2	2.3	1.9	2.5	1.8	1.5	0.3	0.3	0.1	0.1	0.1	0.4
	H*	100.0	100.0	37.4	17.5	17.0	6.3	24.1	40.6	17.7	26.6	2.0	3.5	1.0	3.5	0.7	2.1
NIH Trainee/ Fellow	N	645	662	28	14	14	6	512	471	83	136	1	1	4	24	3	10
	V	3.1	5.4	0.6	1.4	0.3	1.6	13.4	20.0	2.8	5.3	0.1	0.1	0.2	0.7	0.2	1.3
	H	100.0	100.0	4.3	2.1	2.2	0.9	79.4	71.1	12.9	20.5	0.2	0.2	0.6	3.6	0.5	1.5
Other HHS	N	60	100	2	0	3	0	26	47	21	37	0	0	3	10	5	6
	V	0.3	0.8	0.0	0.0	0.1	0.0	0.7	2.0	0.7	1.4	0.0	0.0	0.1	0.3	0 4	G.8
	H	100.0	100.0	3.3	0.0	5.0	0.0	43.3	47.0	35.0	37.0	0.0	0.0	5.0	10.0	8.3	6.0
Dept of Education	N	175	193	11	11	9	8	13	22	60	49	56	41	22	52	4	10
	V	0.8	1.6	0.2	1.1	0.2	2.1	0.3	0.9	2.0	1.9	3.0	2.5	0.9	1.5	0.3	1.3
	H	100.0	100.0	6.3	5.7	5.1	4.1	7.4	11.4	34.3	25.4	32.0	21.2	12.6	26.9	2.3	5.2
GI Bill	N	345	95	36	2	26	0	29	20	66	42	42	3	110	21	36	7
	V	1.6	0.8	0.8	0.2	0.6	0.0	0.8	0.8	2.2	1.6	2.2	0.2	4.3	0.6	2.7	0.9
	H	100.0	100.0	10.4	2.1	7.5	0.0	8.4	21.1	19.1	44.2	12.2	3.2	31.9	22.1	10.4	7.4
Other Federal Support†	N	685	395	113	43	168	17	151	105	96	99	71	64	53	50	33	17
	V	3.3	3.2	2.6	4.3	4.1	4.4	3.9	4.5	3.3	3.8	3.8	3.9	2.1	1.4	2.5	2.2
	H	100.0	100.0	16.5	10.9	24.5	4.3	22.0	26.6	14.0	25.1	10.4	16.2	7.7	12.7	4.8	4.3
State Government	N	139	122	18	12	14	1	36	22	33	40	13	13	18	28	7	6
	V	0.7	1.0	0.4	1.2	0.3	0.3	0.9	0.9	1.1	1.5	0.7	0.8	0.7	0.8	0.5	0.8
	H	100.0	100.0	12.9	9.8	10.1	0.8	25.9	18.0	23.7	32.8	9.4	10.7	12.9	23.0	5.0	4.9
Foreign Government	N	1364	272	238	27	398	24	313	83	163	33	64	43	99	41	89	21
	V	6.5	2.2	5.4	2.7	9.8	6.3	8.2	3.5	5.5	1.3	3.4	2.6	3.9	1.2	6.6	2.8
	H	100.0	100.0	17.4	9.9	29.2	8.8	22.9	30.5	12.0	12.1	4.7	15.8	7.3	15.1	6.5	7.7
National Fellow (nonfed)	N	913	745	170	60	143	31	165	139	191	174	173	193	30	90	41	58
	V	4.3	6.1	3.9	6.0	3.5	8.1	4.3	5.9	6.5	6.7	9.2	11.8	1.2	2.6	3.1	7.6
	H	100.0	100.0	18.6	8.1	15.7	4.2	18.1	18.7	20.9	23.4	18.9	25.9	3.3	12.1	4.5	7.8
University Teaching Assistant	N	10699	5606	3132	720	1801	169	1425	946	1753	1350	1319	1190	583	859	686	372
	V	50.8	46.0	70.9	71.8	44.2	44.1	37.2	40.2	59.4	52.2	70.2	72.8	22.7	24.8	51.0	48.8
	H	100.0	100.0	29.3	12.8	16.8	3.0	13.3	16.9	16.4	24.1	12.3	21.2	5.4	15.3	6.4	6.6
University Research Assistant†	N	11418	4617	3382	745	3120	308	2480	1376	1223	1061	288	272	433	608	492	247
	V	54.2	37.9	76.6	74.3	76.6	80.4	64.7	58.4	41.5	41.0	15.3	16.6	16.8	17 3	36.6	32.4
	H	100.0	100.0	29.6	16.1	27.3	6.7	21.7	29.8	10.7	23.0	2.5	5.9	3.8	13 2	4.3	5.3
University Fellow	N	3306	2051	689	160	494	66	559	394	599	503	584	552	171	254	210	122
	V	15.7	16.8	15.6	16.0	12.1	17.2	14.6	16.7	20.3	19.5	31.1	33.8	6.7	7.3	15.6	16.0
	H	100.0	100.0	20.8	7.8	14.9	3.2	16.9	19.2	18.1	24.5	17.7	26.9	5.2	12.4	6.4	5.9
Other University	N	1669	1677	194	55	204	34	250	219	350	441	277	309	263	501	131	118
	V	7.9	13.8	4.4	5.5	5.0	8.9	6.5	9.3	11.9	17.1	14.7	18.9	10.2	14.4	9.7	15.5
	H	100.0	100.0	11.6	3.3	12.2	2.0	15.0	13.1	21.0	26.3	16.6	18.4	15.8	29.9	7.8	7.0
Business/ Employer	N	1235	745	189	46	305	33	122	93	146	137	80	59	293	322	100	55
	V	5.9	6.1	4.3	4.6	7.5	8.6	3.2	3.9	4.9	5.3	4.3	3.6	11.4	9.3	7.4	7.2
	H	100.0	100.0	15.3	6.2	24.7	4.4	9.9	12.5	11.8	18.4	6.5	7.9	23.7	43.2	8.1	7.4
Own Earnings	N	10671	7862	1357	311	1438	134	1529	1039	1938	1774	1332	1122	2208	2934	869	548
	V	50.7	64.5	30.7	31.0	35.3	35.0	39.9	44.1	65.7	68.6	70.9	68.7	85.9	84.6	64.7	71.8
	H	100.0	100.0	12.7	4.0	13.5	1.7	14.3	13.2	18.2	22.6	12.5	14.3	20.7	37.3	8.1	7.0
Spouse's Earnings	N	5151	4124	811	219	600	88	1005	683	794	929	642	600	873	1304	426	301
	V	24.5	33.8	18.4	21.8	14.7	23.0	26.2	29.0	26.9	35.9	34.1	36.7	34.0	37.6	31.7	39.4
	H	100.0	100.0	15.7	5.3	11.6	2.1	19.5	16.6	15.4	22.5	12.5	14.5	16.9	31.6	8.3	7.3
Family Support	N	5201	2861	895	184	1095	69	924	562	880	773	592	496	400	603	415	174
	V	24.7	23.5	20.3	18.3	26.9	18.0	24.1	23.9	29.8	29.9	31.5	30.4	15.6	17.4	30.9	22.8
	H	100.0	100.0	17.2	6.4	21.1	2.4	17.8	19.6	16.9	27.0	11.4	17.3	7.7	21.1	8.0	6.1
Guaranteed Student Loan (Stafford)	N	4645	3412	681	164	363	58	942	537	1127	1141	626	512	596	744	310	256
	V	22.1	28.0	15.4	16.4	8.9	15.1	24.6	22.8	38.2	44.1	33.3	31.3	23.2	21.5	23.1	33.6
	H	100.0	100.0	14.7	4.8	7.8	1.7	20.3	15.7	24.3	33.4	13.5	15.0	12.8	21.8	6.7	7.5
Perkins Loan (NDSL)	N	886	748	98	15	56	10	136	75	281	306	155	147	106	148	54	47
	V	4.2	6.1	2.2	1.5	1.4	2.6	3.5	3.2	9.5	11.8	8.2	9.0	4.1	4.3	4.0	6.2
	H	100.0	100.0	11.1	2.0	6.3	1.3	15.3	10.0	31.7	40.9	17.5	19.7	12.0	19.8	6.1	6.3
Other Loans	N	767	648	92	25	109	20	108	90	167	178	98	91	123	191	70	53
	V	3.6	5.3	2.1	2.5	2.7	5.2	2.8	3.8	5.7	6.9	5.2	5.6	4.8	5.5	5.2	6.9
	H	100.0	100.0	12.0	3.9	14.2	3.1	14.1	13.9	21.8	27.5	12.8	14.0	16.0	29.5	9.1	8.2
Other Sources	N	485	416	60	20	66	6	108	85	76	82	56	59	64	120	55	44
	V	2.3	3.4	1.4	2.0	1.6	1.6	2.8	3.6	2.6	3.2	3.0	3.6	2.5	3.5	4.1	5.8
	H	100.0	100.0	12.4	4.8	13.6	1.4	22.3	20.4	15.7	19.7	11.5	14.2	13.2	28.8	11.3	10.6
Unduplicated Total‡		21062	12192	4415	1003	4071	383	3831	2355	2950	2586	1880	1634	2571	3468	1344	763

NOTE: Field groupings may differ from those in reports published by federal sponsors of the Survey of Earned Doctorates. See inside the back cover for a description of fields as reported in this table. Refer also to the explanatory note about this table in front of Appendix A.
*V denotes vertical percentage; H denotes horizontal percentage.
†Because federal support obtained through the university cannot always be determined, no distinction is made between federal and university research assistants in this table. Both types of support are grouped under "University Research Assistant."
‡The 2,773 Ph.D.s who did not report sources of support are omitted from this total. Percentages are based only on known responses.

APPENDIX TABLE A-6 State of Doctoral Institution of Doctorate Recipients, by Broad Field and Gender, 1990

	Total		Physical Sciences		Engineering		Life Sciences		Social Sciences		Humanities		Education		Prof./Other Fields	
	Men/Women		Men/Women		Men/Women		Men/Women		Men/Women		Men/Women		Men/Women		Men/Women	
U.S. Total*	22966	13061	4791	1068	4478	414	4139	2474	3261	2815	2079	1741	2748	3736	1470	813
Alabama	207	147	30	11	38	4	47	38	21	27	6	6	39	55	26	6
Alaska	6	2	3	1	0	0	3	1	0	0	0	0	0	0	0	0
Arizona	369	172	106	20	76	5	59	23	31	24	23	18	46	79	28	3
Arkansas	85	50	13	2	7	34	7	3	7	3	3	17	28	8	3	
California	2722	1444	620	130	621	57	422	245	498	492	252	224	181	228	128	68
Colorado	434	216	113	32	95	8	79	28	55	43	28	32	44	54	20	19
Connecticut	337	207	89	30	26	10	66	52	54	38	71	43	22	30	9	4
Delaware	70	45	17	9	33	1	5	4	9	19	5	7	1	5	0	0
Dist. of Columbia	289	220	33	10	38	4	26	40	77	58	56	43	24	41	35	24
Florida	681	487	111	25	105	6	115	49	92	78	37	36	182	262	39	31
Georgia	466	294	63	15	77	6	84	41	72	46	31	30	87	130	52	26
Hawaii	66	47	13	2	1	1	23	7	24	21	5	11	0	5	0	0
Idaho	64	26	9	2	12	2	25	6	5	0	3	1	10	15	0	0
Illinois	1357	717	301	67	261	36	211	126	201	145	146	91	160	198	77	54
Indiana	700	295	144	32	155	18	112	48	93	47	60	50	77	73	59	27
Iowa	407	196	67	17	70	11	101	44	40	27	40	19	62	63	27	15
Kansas	235	110	42	1	38	2	64	30	25	24	17	13	43	33	6	7
Kentucky	172	80	21	7	23	1	30	16	23	20	24	6	16	22	35	8
Louisiana	286	110	65	18	45	3	64	33	16	18	32	15	16	15	48	8
Maine	26	8	7	1	2	0	11	2	2	2	0	0	4	3	0	0
Maryland	464	340	119	24	84	9	108	113	66	64	36	41	41	74	10	15
Massachusetts	1319	741	321	79	310	35	176	136	195	118	107	92	142	237	68	44
Michigan	853	420	145	23	212	16	157	90	115	95	73	53	92	120	59	23
Minnesota	414	236	73	12	89	3	115	58	45	45	30	28	34	72	28	18
Mississippi	181	103	22	2	12	0	43	14	26	13	8	8	50	61	20	5
Missouri	408	202	64	11	74	8	91	39	58	53	39	27	58	57	24	7
Montana	52	20	19	0	3	0	14	3	3	5	0	0	13	12	0	0
Nebraska	155	75	23	4	16	1	38	15	25	10	11	6	24	33	18	6
Nevada	30	12	8	1	3	0	5	4	3	2	0	0	11	5	0	0
New Hampshire	37	33	15	9	3	2	11	10	8	8	0	1	0	3	0	0
New Jersey	471	260	128	37	101	12	64	42	61	59	61	52	28	46	28	12
New Mexico	154	67	37	6	36	3	29	9	15	14	16	7	20	28	1	0
New York	2189	1438	510	107	384	25	359	250	382	400	260	255	192	323	102	78
North Carolina	573	328	111	37	97	9	172	98	67	64	59	29	54	81	13	10
North Dakota	48	23	10	5	4	0	15	5	10	6	5	2	4	5	0	0
Ohio	953	570	195	34	183	11	171	99	120	119	82	72	132	183	70	52
Oklahoma	252	147	32	8	60	3	45	22	42	34	7	10	50	50	16	20
Oregon	271	167	56	9	23	1	81	42	23	27	15	20	60	63	13	5
Pennsylvania	1177	685	224	47	290	35	131	97	157	152	95	96	178	208	102	50
Rhode Island	113	78	48	14	23	3	13	21	14	15	15	25	0	0	0	0
South Carolina	205	110	51	10	26	1	36	16	32	13	8	9	26	48	26	13
South Dakota	29	14	2	0	3	1	8	0	4	3	0	0	12	10	0	0
Tennessee	319	246	32	10	69	3	50	36	45	43	34	21	65	119	24	14
Texas	1453	830	286	69	302	23	260	197	153	120	124	95	182	255	146	71
Utah	258	105	51	12	66	3	40	16	36	31	10	10	42	26	13	7
Vermont	29	30	4	2	3	1	8	7	10	12	0	1	4	7	0	0
Virginia	500	290	94	14	112	11	92	65	63	50	28	31	79	99	32	20
Washington	403	226	91	17	72	11	84	51	46	42	49	47	37	43	24	15
West Virginia	74	57	6	2	16	1	13	3	13	9	2	5	24	37	0	0
Wisconsin	555	298	127	25	76	7	119	73	75	43	64	48	58	77	36	25
Wyoming	39	12	19	1	3	1	9	2	6	3	0	0	2	5	0	0
Puerto Rico	9	25	1	5	0	0	1	1	2	7	2	2	3	10	0	0

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*Includes the 50 states, the District of Columbia, and Puerto Rico.

APPENDIX TABLE A-7 Institutions Granting Doctorates, by Major Field, 1990

	1990 Total	Physics and Astronomy	Chemistry	Earth, Atmos., and Marine Sci.	Math and Computer Sci.	Engineering	Biosciences	Health Sciences	Agricultural Sciences	Psychology	Other Social Sciences	History	Eng. and Amer. Lang. and Lit.	Other Humanities	Education	Professional/ Other Fields
TOTAL ALL INSTITUTIONS*	36027	1392	2102	769	1596	4892	4333	960	1320	3267	2809	611	796	2413	6484	2283
ALABAMA																
Auburn University	120		3		2	20	6	1	22	23	1	1			40	1
Univ of Alabama-Birmingham	65	1	5			4	19	26		4					6	
Univ of Alabama-Huntsville	26	8			7	11										
Univ of Alabama-University	135	4	8	1	2	7	2	1		16	4	2	6	3	48	31
Univ of South Alabama	8						8									
ALASKA																
Univ of Alaska	8	2		2			2		2							
ARIZONA																
Arizona State Univ	191	10	13	3	15	27	6	1		20	10	3	1	14	52	16
Northern Arizona Univ	43						6					2			35	
Univ of Arizona	307	30	13	28	14	54	44	7	18	10	15	2	4	15	38	15
ARKANSAS																
U of Arkansas-Fayetteville	122	5	8	1	1	7	10		18	10		4	2		45	11
U of Arkansas-Med Sci Campus	13						13									
CALIFORNIA																
Biola Univ	5									5						
Cal Inst of Integral Studies	18									17				1		
Cal Inst of Technology	148	34	18	14	11	54	15				2					
Cal Sch Prof Psych-Alameda	67									67						
Cal Sch Prof Psych-Fresno	36									36						
Cal Sch Prof Psych-LA	68									68						
Cal Sch Prof Psych-San Diego	55									55						
Claremont Graduate School	89				4		2			12	11	3	1	11	37	8
Fielding Institute	35									27	2				1	5
Fuller Theological Seminary	43									29	3	1		3		7
Graduate Theological Union	23													5		18
Loma Linda Univ	17						3	3							11	
Naval Postgraduate School	9			5	1	3										
Pacific Grad Sch of Psych	9									9						
Pepperdine Univ	22														22	
Rand Grad Sch Policy Studies	3										3					
Saybrook Institute	27									24	1			2		
Stanford Univ	529	48	18	12	31	171	51	2	2	25	48	18	14	43	31	15
U.S. International Univ	169									109					31	29
Univ of California-Berkeley	794	38	67	9	51	183	105	16	30	22	95	22	21	65	32	38
Univ of California-Davis	259	12	14	5	7	35	113	4	26	7	15	1	8	12		
Univ of California-Irvine	134	4	21	1	10	18	34			6	16	4	6	12		2
Univ of Calif-Los Angeles	558	20	27	24	38	91	73	19		43	53	16	9	71	49	25
Univ of Calif-Riverside	75	6	12		1		13		9	5	10	2	6	7	4	
Univ of Calif-San Diego	186	17	19	25	10	26	41			6	18	6	5	13		
Univ of Calif-San Francisco	52		5		1	2	17	17		2	8					
Univ of Calif-Santa Barbara	181	7	20	9	4	30	17	3		14	28	14	3	18	14	
Univ of Calif-Santa Cruz	67	12	13	5	2		11			9	4	4	6	1		
Univ of La Verne	16														9	7
Univ of the Pacific	21		2				1								18	
Univ of San Diego	29							11							18	
Univ of San Francisco	76														76	
Univ of Southern California	321	4	18	2	12	65	22	7		21	31	1	6	34	56	42
Wright Institute, The	24									24						
COLORADO																
Colorado School of Mines	38	3	1	15	2	12					5					
Colorado State Univ	178	1	24	10	4	41	23	4	37	17	8				9	
Univ of Colorado	285	27	24	13	15	50	29	5		14	22	2	3	37	27	17
Univ of Denver	89	2	2		1		4	1		12	13	1	6	6	21	20
Univ of Northern Colorado	60				1		2	2		4	3			5	41	2
CONNECTICUT																
Univ of Connecticut	217	9	15	1	10	19	37	11	2	20	19	4	2	13	52	3
Univ of Hartford	1													1		
Wesleyan Univ	18		5		1		8							4		
Yale Univ	308	16	27	10	25	17	49	5	6	10	43	15	11	64		10
DELAWARE																
Univ of Delaware	115	1	14	11		34	7		2	14	14	4	6	2	6	
DISTRICT OF COLUMBIA																
American Univ	57	4	3		1					8	25	2		1	12	1
Catholic Univ of America	119	4	3		1	8	2	11		13	8	6	1	29	10	23
George Washington Univ	191	1	3	1	13	33	16			24	25	4	3	8	37	23
Georgetown Univ	80		7				22			1	11	9		30		
Howard Univ	60	1	1			1	14	1		7	13	3	1	2	4	12

NOTE: Field groupings may differ from those in reports published by federal sponsors of the Survey of Earned Doctorates. See inside the back cover for a description of fields as reported in this table. Refer also to the explanatory note about this table in front of Appendix A.

*Includes the 50 states, the District of Columbia, and Puerto Rico.

	1990 Total	Physics and Astronomy	Chemistry	Earth, Atmos., and Marine Sci.	Math and Computer Sci.	Engineering	Biosciences	Health Sciences	Agricultural Sciences	Psychology	Other Social Sciences	History	Eng. and Amer. Lang. and Lit.	Other Humanities	Education	Professional/ Other Fields
FLORIDA																
Barry Univ	4															4
Florida Atlantic Univ	19	1				10									8	
Florida Inst of Technology	13			3	1	6	1								2	
Florida International Univ	20				1					1					14	4
Florida State Univ	250	9	9	13	8		16	2		25	21	8	7	27	76	29
Nova Univ	283			2	8					16	2				238	17
Univ of Central Florida	24				4	9									11	
Univ of Florida	361	8	28	1	9	73	50	7	55	23	25	1	6	7	54	14
Univ of Miami	110		2	9	2	7	23	2	1	25	5	1	2	8	21	2
Univ of South Florida	84	1	10	3	4	6	6	1		24	3		5	1	20	
GEORGIA																
Clark Atlanta Univ	74		2				4			3	9		2	1	44	9
Emory Univ	113	1	17		1		23			13	3	4	10	31	6	4
Georgia Inst of Technology	113	4	6	7	9	81				3	1					2
Georgia State Univ	133	4		1	4		1	3		30	4		2		55	29
Institute of Paper Chemistry	6	1		1		2										2
Medical College of Georgia	9						7	2								
Univ of Georgia	312	4	10	3	3		44	11	30	33	19		2	9	112	32
HAWAII																
Univ of Hawaii at Manoa	113	4	2	8	1	2	14	3	13	7	38	5		11	5	
IDAHO																
Idaho State Univ	13				2		5				4		1	1		
Univ of Idaho	77		3	5	1	14	12		14		1	2			25	
ILLINOIS																
DePaul Univ	7									7						
Illinois Inst of Technology	75				17	37	1			18						2
Illinois State Univ-Normal	47				2		3				1	6	5	1	29	
Loyola Univ of Chicago	85		3				13			20	2	1	4	2	40	
Lutheran Sch of Theol-Chicago	5															5
Northern Illinois Univ	106		5				2			7	17	3	1		71	
Northwestern Univ	326	16	30	6	30	65	29	5		30	28	6	6	35	11	29
Rush Univ	14	1					6	6		1						
Southern Ill Univ-Carbondale	169		3	2	1	1	19	1		24	10	1	6	5	74	22
Southern Ill Univ-Edwardsville	7														7	
Univ of Chicago	332	21	24	11	19		42		1	14	66	28	9	49	20	28
U of Health Sci-Chicago Med	16						7			9						
U of Ill-Chicago	178	3	17	1	14	34	29	26		16	16	1	3	9	3	6
U of Ill-Urbana/Champaign	707	40	42	10	50	160	92	6	49	23	37	5	8	43	103	39
INDIANA																
Ball State Univ	57						2			11	1	2	3	7	31	
Grace Theological Seminary	2															2
Indiana State Univ	30						4			9	4				13	
Indiana Univ-Bloomington	337	6	30	1	11		34	3		11	38	9	17	44	77	56
Indiana Univ Sch of Medicine	9							9								
Purdue Univ	466	23	51	4	21	157	51	12	32	20	24	3	4	10	29	25
Univ of Notre Dame	94	12	8		9	16	13			4	18	3	2	6		3
IOWA																
Drake Univ	9												1		8	
Iowa State Univ	282	11	33	1	12	43	35	1	51	5	24			1	59	6
Maharishi Intl Univ	4						1			3						
Univ of Northern Iowa	9														7	2
Univ of Iowa	299	3	9		15	38	36	20	1	21	14	3	13	41	51	34
KANSAS																
Kansas State Univ	154	6	6		3	14	20	2	39	6	7	2	1		45	3
Univ of Kansas	180	4	17	3	3	17	29	3		28	8	3	4	20	31	10
Wichita State Univ	11		1			9		1								
KENTUCKY																
Southern Bapt Theol Seminary	42											1		17	3	21
Univ of Kentucky	167	3	6	3	8	21	21	6	14	13	17	3	1	5	24	22
Univ of Louisville	43		8			3	5			12	1		1	2	11	
LOUISIANA																
Louisiana St U & A&M College	213	9	13	19	10	33	26	6	28	10	7	4	4	13	17	14
Louisiana St U Med-New Orleans	12						8	4								
Louisiana St U Med-Shreveport	7						7									
Louisiana Tech Univ	10				1	4										5
New Orleans Bapt Theol Seminary	45									1				9	2	33
Northeast Louisiana Univ	3							3								
Northwestern St Univ of LA	3														3	
Tulane Univ of Louisiana	60	1	6		4	7	7	7		4	8	2	4	8		2
Univ of New Orleans	20		5							1	3				9	2
U of Southwestern Louisiana	23				15	4	1						2	1		

APPENDIX TABLE A-7 (Continued)

	1990 Total	Physics and Astronomy	Chemistry	Earth, Atmos., and Marine Sci.	Math and Computer Sci.	Engineering	Biosciences	Health Sciences	Agricultural Sciences	Psychology	Other Social Sciences	History	Eng. and Amer. Lang. and Lit.	Other Humanities	Education	Professional/ Other Fields
MAINE																
Univ of Maine	34	2	3	3		2	9		4	3	1				7	
MARYLAND																
Johns Hopkins Univ	240	10	4	12	7	22	63	47		1	38	13	3	14	6	
Morgan State Univ	3														3	
Peabody Inst of Johns Hopkins	10													10		
Uniformed Serv U of Hlth Sci	10						5			5						
U of Maryland-Baltimore County	30		1		6		8			8	7					
U of Maryland-College Park	467	32	19	7	42	71	49	3	9	26	45	5	8	24	106	21
U of Maryland-Eastern Shore	2			1					1							
U of Maryland Sch of Med	42		2				20	16								4
MASSACHUSETTS																
American Internatl College	3														3	
Boston College	92		6				1			14	14	2	1	7	43	4
Boston Univ	271	7	4		6	4	44	12		22	28	2	9	29	85	19
Brandeis Univ	77	10	8		4		16			6	14	3	5	3	1	7
Clark Univ	27	2	1				3	1		3	11	2			3	1
Harvard Univ	505	42	24	14	20	6	76	19		10	72	21	7	65	98	31
Mass Coll Pharm & Health Sci	2						2									
Mass Inst of Technology	510	35	41	30	29	252	36	3		1	46			17	1	19
Northeastern Univ	61	10	10		3	9	5	1		7	7				9	
Simmons College	5															5
Smith College	9															9
Springfield College	5														5	
Tufts Univ	66	10	5	1	2	2	24			4	13		3	1	1	
Univ of Lowell	26	5	8		1	6	4								2	
Univ of Mass-Amherst	360	17	14	8	17	47	25	7	17	19	22	5	10	7	128	17
Univ of Mass-Boston	2			2												
U Mass-Med School-Worcester	15						8	7								
Worcester Polytechnic Inst	24	1	2		1	19	1									
MICHIGAN																
Andrews Univ	13									3				2	7	1
Michigan State Univ	420	9	26	3	19	51	52	8	64	16	45	3	7	12	71	34
Michigan Technological Univ	17		1			14	2									
Oakland Univ	11		2			5									4	
Univ of Detroit	15		4			1				10						
Univ of Michigan	583	14	35	13	19	138	59	33	4	28	67	10	20	62	41	40
Wayne State Univ	168	4	10		6	19	16	9		22	11	2	2	6	58	3
Western Michigan Univ	46				3					7	1				31	4
MINNESOTA																
Luther Northwestern Theol Sem	3															3
Mayo Graduate School	7						7									
Univ of Minnesota-Minneapolis	633	20	28	2	35	92	74	33	59	50	40	7	10	41	99	43
Univ of St. Thomas	7														7	
MISSISSIPPI																
Delta State Univ	4														4	
Jackson State Univ	4														4	
Mississippi State Univ	101		7		2	10	11	2	25	4	1	2			24	13
Univ of Mississippi	80	4	3		3	2	3	1		12	2	1	2	2	35	10
U of Mississippi-Med Center	12						12									
Univ of Southern Mississippi	83		5				2	1		20		1	3	5	44	2
MISSOURI																
Concordia Seminary	4															4
Midwest Bapt Theol Seminary	16													6		10
St. Louis Univ	93			4			12			15	5	1	6	8	35	7
U of Missouri-Columbia	236	5	8		2	21	29		39	22	23	4	6	10	59	8
U of Missouri-Kansas City	31		2		1		1	2		6				11	8	
U of Missouri-Rolla	52	4	10		4	34										
U of Missouri-St. Louis	23		3							11					9	
Washington University	155	11	8	3	10	27	45	1	1	9	20	1	3	10	4	2
MONTANA																
Montana State Univ	42	4	11		3	3	4		6						11	
Univ of Montana	30		1				3		4	8					14	
NEBRASKA																
Creighton Univ	1						1									
Univ of Nebraska-Lincoln	229	7	8	3	9	17	17	4	31	19	16	1	9	7	57	24
NEVADA																
Univ of Nevada-Las Vegas	8														8	
Univ of Nevada-Reno	34	3	2	4		3	9			5					8	
NEW HAMPSHIRE																
Dartmouth College	32	3	6	1	1	4	14			3						
Univ of New Hampshire	38	3	9	1		1	7			5	8		1		3	

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	1990 Total	Physics and Astronomy	Chemistry	Earth, Atmos., and Marine Sci.	Math and Computer Sci.	Engineering	Biosciences	Health Sciences	Agricultural Sciences	Psychology	Other Social Sciences	History	Eng. and Amer. Lang. and Lit.	Other Humanities	Education	Professional/ Other Fields
NEW JERSEY																
Drew Univ	36										1	1	5	11		18
Fairleigh Dickinson Univ	10									10						
New Jersey Inst Technology	6					6										
Princeton Theol Seminary	12													2		10
Princeton Univ	240	22	16	14	23	40	18			8	41	13	9	36		
Rutgers St U-New Brunswick	318	10	19	8	33	48	48	4	15	13	24	7	8	21	53	7
Rutgers St U-Newark	24		3				5			7	5					4
Seton Hall Univ	36		4				1			10					21	
Stevens Inst of Technology	34	3	4		6	19				1						1
U of Med & Dent of NJ	15						15									
NEW MEXICO																
New Mexico Inst Mining & Tech	12		2	5	1	4										
New Mexico State Univ	71	2	2	1	9	15	6		20	9					7	
Univ of New Mexico	138	7	7	4	3	20	10	2		9	11	3	4	16	41	1
NEW YORK																
Adelphi Univ	47	1			2			10		28						6
Alfred Univ	11					11										
City U of NY-Grad Sch/U Ctr	267	11	18	4	11	20	35	5		55	31	5	6	43	2	21
Clarkson Univ	41	5	10		3	23										
Columbia Univ	394	18	22	18	22	48	27	17		36	51	18	20	53	13	31
Columbia U-Teachers College	222														222	
Cornell Univ	543	46	30	16	38	98	71	17	69	13	71	9	12	28	12	13
Cornell Univ Medical College	14						14									
Fordham Univ	115						4			23	7	1	4	7	54	15
Hofstra Univ	80									62					17	1
Jewish Theol Sem of America	13											1		6	4	2
The Juilliard School	17													17		
Long Island U-Brooklyn Campus	10									10						
Manhattan School of Music	10													10		
New School for Social Research	51									19	32					
New York Medical College	13						13									
New York Univ	383	5	13	1	40	1	34	24		48	29	12	8	77	56	35
Pace Univ	3															3
Polytechnic Inst of New York	53	2	11		8	31	1									
Rensselaer Polytechnic Inst	112	9	9	1	12	67	2				7			2		3
Rockefeller Univ	15						15									
St. John's Univ	47		3				6	8		21			2	2	5	
State Univ of NY-Albany	119	6	9	6	5		6			28	26		4	4	22	3
State Univ of NY-Binghamton	72		3	1	7	3	3			10	23	6	11	5		
State Univ of NY-Buffalo	254	3	19	1	9	42	42	8		28	15	3	18	11	42	13
SUNY Coll-Environ Sci & Forestry	19		4	2		2	6		5							
SUNY-Hlth Sci Ctr-Brooklyn	9						9									
SUNY-Hlth Sci Ctr-Syracuse	6						6									
State Univ of NY-Stony Brook	198	20	10	7	21	20	49			16	11	5	14	25		
Syracuse Univ	179	10	9	4	9	26	8	3		12	20	2	1	13	46	16
Union Theological Seminary	8													2		6
Union Univ	1															1
Union U-Albany Med College	22						22									
Univ of Rochester	226	31	17	1	14	17	37	4		9	22	3	6	39	19	7
Yeshiva Univ	24									19					1	4
Yeshiva U-Einstein Coll Med	29						29									
NORTH CAROLINA																
Duke Univ	168	10	17	2	10	15	44			9	20	8	7	19	1	6
East Carolina U-Sch of Med	8						8									
North Carolina St U-Raleigh	295	9	13	5	11	85	56	1	47	16	10				41	1
U of N Carolina-Chapel Hill	337	9	32	6	22	6	68	31		25	33	8	14	25	48	10
U of N Carolina-Greensboro	79		1				2			12	6		3	4	45	6
Wake Forest Univ	14		1				13									
NORTH DAKOTA																
North Dakota State Univ	27		7		3	4	5		7		1					
Univ of North Dakota	44		3	2			8			15		2	5		9	
OHIO																
Air Force Inst of Technology	11	4			2	5										
Bowling Green State Univ	63				1		5	1		23	5	3	9	5	5	6
Case Western Reserve Univ	151	4	21	3	5	41	20	11		6	5	4	3	7		21
Cleveland State Univ	20		8			11	1									
Hebrew Union College	6													5		1
Kent State Univ	122	7	2	3	2		12	3		20	8	2	2	3	41	17
Medical College of Ohio	11						11									
Miami Univ	51		5				15			6	2	4	6		13	
Ohio State Univ	600	18	33	3	42	62	71	12	38	50	48	8	10	36	118	51
Ohio Univ	104	2	1		5	6	7	3		22		2	6	5	28	17
Univ of Akron	87	3	18			17				11	4	1			33	
Univ of Cincinnati	218	5	17	3	4	34	39	6		16	6	3	4	23	49	9
Univ of Dayton	7					7										
Univ of Toledo	57	2	4			11		2		7		1	2		28	
Wright State Univ	15				2		13									

APPENDIX TABLE A-7 (Continued)

	1990 Total	Physics and Astronomy	Chemistry	Earth, Atmos., and Marine Sci.	Math and Computer Sci.	Engineering	Biosciences	Health Sciences	Agricultural Sciences	Psychology	Other Social Sciences	History	Eng. and Amer. Lang. and Lit.	Other Humanities	Education	Profesional/ Other Fields
OKLAHOMA																
Oklahoma State Univ	229	3	11	3	4	32	14	4	23	37	6		5		60	27
Univ of Oklahoma	143	4	9	2	1	24	16	10		15	10	3	1	5	34	9
Univ of Tulsa	27			3		7				8			3		6	
OREGON																
Oregon Graduate Inst Sci & Tech	10		1	2	1	3	3									
Oregon Health Sciences Univ	17						11	5		1						
Oregon State Univ	188	3	14	4	9	21	35	7	50	3	9				29	4
Portland State Univ	30		1	2	1						6				18	2
Univ of Oregon	193	6	8	4	9		10	2		20	11	2	8	25	76	12
PENNSYLVANIA																
Bryn Mawr College	29	3	1							11	1	3		3		7
Carnegie-Mellon Univ	161	8	7		26	77	7			3	19	4		2		8
Drexel Univ	45	4	4	1	3	24	3				1					5
Duquesne Univ	11									6			1	1		3
Hahnemann Univ	9						3			6						
Indiana Univ of Pennsylvania	26												11	2	13	
Lehigh Univ	105	2	11	2	7	43	4			5	1		2		26	2
Med College of Pensylvania	4						4									
Pennsylvania State Univ	429	27	26	15	18	94	28	9	19	25	30	2	8	23	82	23
Phila Coll of Pharm & Sci	4						3	1								
Temple Univ	251	3	4		4		20	2		47	19	5	5	20	111	11
Thomas Jefferson Univ	16						16									
Univ of Pennsylvania	425	10	18	3	16	48	56	11		16	65	9	13	48	56	56
Univ of Pittsburgh	336	13	20	2	12	39	21	19		24	30	6	3	16	96	35
Villanova Univ	1		1													
Westminster Theol Seminary	6											1		3		2
Widener Univ	4							2							2	
PUERTO RICO																
Caribbean Ctr Adv Studies	8									8						
Inter Amer U PR-Metro Campus	5														5	
Univ of Puerto Rico	21		6				2			1				4	8	
RHODE ISLAND																
Brown Univ	130	11	14	8	14	12	11	4		5	13	2	10	26		
Univ of Rhode Island	61	1	5	8	1	14	16	1	2	10	1		2			
SOUTH CAROLINA																
Clemson Univ	72	2	9	1	6	20	10		8		3				2	11
Medical Univ South Carolina	15					1	11	3								
South Carolina State College	15														15	
Univ of South Carolina	213	3	19	12	9	6	13	7		25	17	1	6	10	57	28
SOUTH DAKOTA																
S Dakota Sch of Mines & Tech	6			2		4										
South Dakota State Univ	10						1		7		2					
Univ of South Dakota	27									5					22	
TENNESSEE																
East Tennessee State Univ	12						2								10	
Geo Peabody Coll for Teachers	92									3					89	
Meharry Medical College	4						4									
Memphis State Univ	81		3	1	2	1	6			20		1		3	34	10
Mid-America Bapt Theol Sem	2															2
Middle Tennessee State Univ	9										1	2	1		5	
Tennessee Technological Univ	8					8										
U of Tenn-Ctr for Health Sci	6						5	1								
Univ of Tennessee-Knoxville	214	3	10	2	5	44	31	3	10	22	11	4	4	6	38	21
Vanderbilt Univ	137	5	4		7	19	21	3		22	9	2	10	22	8	5
TEXAS																
Baylor College of Medicine	19						19									
Baylor Univ	23									1	1		1	6	13	1
Dallas Theological Seminary	11													1		10
East Texas State Univ	48									4					44	
Lamar Univ	1					1										
North Texas State Univ	191	5	6		4		20			17	9	1	2	26	82	19
Rice Univ	97	10	17	3	11	26	10			4	4	2	1	9		
Sam Houston State Univ	10	1									9					
Southern Methodist Univ	40			1	8	21	1				7			2		
Southwestern Bapt Theol Sem	71													14	9	48
Stephen F Austin St Univ	3								3							
Texas A&I Univ	2														2	
Texas A&M Univ	410	4	42	23	10	81	44	2	69	20	12	2	10		73	18
Texas Christian Univ	23	4	3							3		2	7	4		
Texas Southern Univ	26														26	
Texas Tech Univ	136	4	6	2	7	16	14	1	10	16	5	2	2	5	29	17
Texas Woman's Univ	92						9	20	2	21	6		3	1	13	17
Univ of Dallas	5									5	1					1
Univ of Houston	143	6	13	6	5	24	4	2		19	5	3	1		44	11

NOTE: Field groupings may differ from those in reports published by federal sponsors of the Survey of Earned Doctorates. See inside the back cover for a description of fields as reported in this table. Refer also to the explanatory note about this table in front of Appendix A.

	1990 Total	Physics and Astronomy	Chemistry	Earth, Atmos., and Marine Sci.	Math and Computer Sci.	Engineering	Biosciences	Health Sciences	Agricultural Sciences	Psychology	Other Social Sciences	History	Eng. and Amer. Lang. and Lit.	Other Humanities	Education	Professional/ Other Fields
TEXAS (continued)																
Univ of St. Thomas	3													3		
Univ of Texas-Arlington	72	5	5		12	24				2	1		2	7		14
Univ of Texas-Austin	645	39	26	5	29	132	46	46		34	45	8	14	68	102	51
Univ of Texas-Dallas	74	2	4	15	9		9	4		2	10	1		8		10
U Tex-Hlth Sci Ctr-Houston	62			1			38	22			1					
U Tex-Hlth Sci Ctr-San Antonio	15						15									
U Tex-Med Branch-Galveston	14						12	1						1		
U Tex-Southwestern Med Ctr	47	1			1		34			11						
UTAH																
Brigham Young Univ	90	4	3		2	15	4		1	19	4	3		3	32	
Univ of Utah	201	8	27	3	8	40	15	12		12	16	3	4	7	26	20
Utah State Univ	72	3	4		1	14	14		10	8	8				10	
VERMONT																
Middlebury College	1													1		
Univ of Vermont	58	1	5			4	15			22					11	
VIRGINIA																
College of William & Mary	37	6		8	3				1			5			14	
George Mason Univ	28			1	3	1	3	1			10				6	3
Old Dominion Univ	40	1		1	8	11	3			7	4				4	1
Union Theological Seminary	4															4
Univ of Virginia	253	16	6	1	4	34	21	9		20	24	14	16	24	59	5
Virginia Commonwealth Univ	98		9				42	7		20	1				10	9
Virginia Polytech Inst & St U	330	3	18	11	9	77	25	3	42	16	11				85	30
WASHINGTON																
Gonzaga Univ	8														8	
Seattle Univ	25														25	
Univ of Washington	454	19	20	19	23	62	54	18	15	16	46	7	25	57	36	37
Washington State Univ	142	8	8	3	8	21	23	4	21	12	14	1	4	2	11	2
WEST VIRGINIA																
West Virginia Univ	131	4	3	1		17	12		4	16	6	2	2	3	61	
WISCONSIN																
Marquette Univ	47		5			7	5					5	1	7	12	5
Medical College of Wisconsin	7						7									
Univ of Wisconsin-Madison	717	36	46	20	31	72	98	22	51	32	66	19	16	56	104	48
Univ of Wisconsin-Milwaukee	82	3	6	2	3	4	9			8	12		7	1	19	8
WYOMING																
Univ of Wyoming	51	3	7	9	1	4	6		5	8	1				7	

Top 40 Doctorate-Granting Institutions, 1990

1.	Univ of California-Berkeley	794	
2.	Univ of Wisconsin-Madison	717	
3.	Univ of Illinois-Urbana/Champaign	707	
4.	Univ of Texas-Austin	645	
5.	Univ of Minnesota-Minneapolis	633	
6.	Ohio State Univ	600	
7.	Univ of Michigan	583	
8.	Univ of California-Los Angeles	558	
9.	Cornell Univ	543	
10.	Stanford Univ	529	
11.	Massachusetts Inst of Technology	510	
12.	Harvard Univ	505	
13.	Univ of Maryland-College Park	467	
14.	Purdue Univ	466	
15.	Univ of Washington	454	
16.	Pennsylvania State Univ	429	
17.	Univ of Pennsylvania	425	
18.	Michigan State Univ	420	
19.	Texas A&M Univ	410	
20.	Columbia Univ	394	
21.	New York Univ	383	
22.	Univ of Florida	361	
23.	Univ of Massachusetts-Amherst	360	
24.	Indiana Univ-Bloomington	337	
25.	Univ of North Carolina-Chapel Hill	337	
26.	Univ of Pittsburgh	336	
27.	Univ of Chicago	332	
28.	Virginia Polytech Inst & State Univ	330	
29.	Northwestern Univ	326	
30.	Univ of Southern California	321	
31.	Rutgers State Univ-New Brunswick	318	
32.	Univ of Georgia	312	
33.	Yale Univ	308	
34.	Univ of Arizona	307	
35.	Univ of Iowa	299	
36.	North Carolina State Univ-Raleigh	295	
37.	Univ of Colorado	285	
38.	Nova Univ	283	
39.	Iowa State Univ	282	
40.	Boston Univ	271	

APPENDIX B: Trend Tables, 1980-1990

Appendix B includes the following two tables containing trend data:

B-1 Number of Doctorate Recipients, by Subfield, 1980-1990
B-2 Number of Doctorate Recipients, by Gender, Race/Ethnicity, and Citizenship, 1980-1990

Table B-1: This table displays data for the most recent decade by subfield of doctorate. In general, the subfields correspond to the fields on the questionnaire's Specialties List located at the back of this report; some subfields, however, do not appear on the current Specialties List because they are no longer included in the survey taxonomy. Field groupings may differ from those in reports published by federal sponsors of the Survey of Earned Doctorates (SED). See inside the back cover for a description of field groupings as reported in these tables. The "general" field categories—e.g., "chemistry, general"—contain individuals who either received the doctorate in the general subject area or did not indicate a particular specialty field. The "other" field categories—e.g., "chemistry, other"—include individuals whose specified doctoral discipline was not included among the specialty fields.

The seven tables in Appendix A present additional information about the most recent cohort of Ph.D.s by field of doctorate.

Table B-2: Table B-2 presents data on the race/ethnicity of doctorate recipients in the last decade, by gender and citizenship. There are three panels in this table, each displayed on a separate page. The first panel includes all doctorates; the remaining panels disaggregate the data by gender.

In 1977 the item on race/ethnicity in the survey questionnaire was revised to coincide with the question format recommended by the Federal Interagency Committee on Education and adopted by the Office of Management and Budget (OMB) for use in federally sponsored surveys; an explanation of the effect of these changes is detailed on page 13 of *Summary Report 1977*. Changes in the OMB guidelines prompted the moving of persons having origins in the Indian subcontinent from the white category to Asian in 1978. In 1980 two survey revisions were made: (1) the category Hispanic was subdivided into Puerto Rican, Mexican American, and "other" Hispanic to provide more detail for users of the racial/ethnic data, and (2) respondents were asked to check only one racial category (prior to 1980, doctorate recipients could check more than one category to indicate their race). However, when the data were compiled, all persons who checked Native American, Asian, or Hispanic and also checked white were included in the minority-group category; and those whose responses were black as well as any other category were designated as black.

Beginning with the 1982 survey, this item was revised to separate questions on racial and ethnic groups. Respondents are first asked to check one of the four racial group categories (Native American, Asian, black, or white) and then to indicate Hispanic heritage. For purposes of analysis, all respondents who indicated Hispanic heritage, regardless of racial identification, are included in one of three Hispanic groups. The remaining survey respondents are then counted in the respective racial groups.

Tables A-2 and A-4 in Appendix A present additional information about the most recent cohort of Ph.D.s by racial/ethnic group.

APPENDIX TABLE B-1 Number of Doctorate Recipients, by Subfield, 1980-1990

	Year of Doctorate										
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
TOTAL ALL FIELDS	31020	31357	31111	31282	31337	31297	31895	32364	33490	34319	36027
PHYSICAL SCIENCES	4111	4170	4291	4426	4452	4531	4807	5030	5309	5455	5859
MATHEMATICS	744	728	720	701	698	688	729	740	749	859	892
Applied Mathematics	102	118	108	125	108	116	135	131	142	158	185
Algebra	78	56	60	55	65	55	46	57	54	50	39
Analysis and Functional Analysis	91	105	98	76	71	83	81	86	76	103	90
Geometry	35	29	32	44	27	35	38	30	44	47	42
Logic	24	18	17	21	25	30	23	18	20	12	19
Number Theory	28	24	28	19	27	18	20	15	26	23	26
Probability and Math Statistics	151	163	165	151	181	150	141	143	152	167	157
Topology	57	55	45	44	42	35	34	41	27	37	50
Computing Theory and Practice	13	16	11	12	13	15	10	14	12	12	12
Operations Research	41	36	36	20	27	22	29	22	29	22	29
Mathematics, General	83	77	84	86	78	85	125	137	134	177	191
Mathematics, Other	41	31	36	48	34	44	47	46	33	51	52
COMPUTER SCIENCE	218	232	220	286	295	310	399	450	515	612	704
Computer Sciences	218	232	220	264	256	249	355	384	442	519	612
Information Sciences and Systems	-	-	-	22	39	61	44	66	73	93	92
PHYSICS AND ASTRONOMY	983	1015	1014	1043	1080	1080	1187	1237	1302	1274	1392
Astronomy	52	50	52	50	42	43	52	46	66	49	52
Astrophysics	69	59	50	65	56	57	57	54	64	64	76
Acoustics	23	13	11	14	21	10	15	17	16	15	21
Atomic and Molecular	69	66	96	71	77	58	70	79	77	74	87
Electron	-	-	-	1	2	4	2	6	2	4	2
Elementary Particles	117	119	119	136	138	154	147	159	174	135	162
Fluids	15	14	13	15	11	16	6	21	17	14	17
Nuclear	73	63	53	90	72	86	89	74	88	81	73
Optics	43	54	42	50	53	51	58	50	65	78	76
Plasma	59	65	69	72	73	55	61	72	65	61	42
Polymer	-	-	-	10	8	11	11	15	20	7	11
Thermal	5	7	-	-	-	-	-	-	-	-	-
Solid State	201	253	235	222	258	248	280	287	252	296	306
Physics, General	165	164	167	150	170	176	222	238	271	269	325
Physics, Other	92	88	107	97	99	111	117	119	125	127	142
CHEMISTRY	1538	1612	1680	1759	1765	1836	1903	1975	2015	1970	2102
Analytical	185	229	190	264	228	285	257	314	301	289	293
Inorganic	189	188	226	215	233	251	260	240	250	256	242
Nuclear	14	12	20	13	18	7	18	13	7	6	13
Organic	484	494	519	503	525	494	511	511	531	511	452
Pharmaceutical	52	52	55	78	56	60	58	65	73	64	48
Physical	282	275	324	311	329	304	293	302	318	310	322
Polymer	61	62	50	62	63	84	72	96	81	78	81
Theoretical	47	33	32	48	37	48	41	46	50	46	55
Chemistry, General	157	193	175	177	183	213	289	297	310	312	529
Chemistry, Other	67	74	89	88	93	90	104	91	94	98	67
EARTH, ATMOS, & MARINE SCI	628	583	657	637	614	617	589	628	728	740	769
Atmospheric Physics and Chemistry	19	15	17	21	11	16	21	24	19	15	18
Atmospheric Dynamics	20	27	22	16	25	21	16	17	25	16	20
Meteorology	-	-	-	17	28	23	27	17	35	27	20
Atmos and Meteorological Sci, General	-	-	-	16	5	10	7	16	14	14	23
Atmos and Meteorological Sci, Other	51	33	26	27	12	10	7	13	10	15	2
Geology	20	27	25	105	124	111	118	114	144	165	167
Geochemistry	51	48	51	48	43	48	37	31	46	39	56
Geophysics and Seismology	71	72	81	75	68	92	89	75	83	87	91
Paleontology	21	19	24	17	35	23	16	21	24	17	21
Mineralogy, Petrology	47	30	41	24	28	28	17	24	19	36	26
Stratigraphy, Sedimentation	40	42	47	25	16	23	14	22	30	24	25
Geomorphology and Glacial Geology	15	13	21	10	9	13	11	18	9	10	14
Applied Geology	27	21	25	8	7	8	4	5	7	6	6
Geological Sciences, General	48	45	38	15	10	11	12	18	8	19	31
Geological Sciences, Other	21	16	29	21	25	11	12	29	31	28	27
Environmental Sciences	40	54	53	50	45	42	35	29	58	68	50
Hydrology and Water Resources	27	21	24	20	18	17	16	18	24	24	13
Oceanography	85	70	92	87	78	68	78	73	81	87	89
Marine Sciences	25	30	41	22	21	24	22	38	28	26	39
Physical Sciences, Other	-	-	-	13	6	18	30	26	33	17	31

NOTE: Field groupings may differ from those in reports published by federal sponsors of the Survey of Earned Doctorates. See inside the back cover for a description of fields as reported in this table. Refer also to the explanatory note about this table in front of Appendix B.

	Year of Doctorate										
	1980	1981	1982	1983	1984	1985	1986	9187	1988	1989	1990
ENGINEERING	2479	2528	2646	2781	2913	3166	3376	3712	4190	4544	4892
Aerospace, Aeronautic & Astronautic	81	97	86	106	119	124	118	142	150	178	192
Agricultural	68	64	48	58	74	60	52	74	70	102	101
Bioengineering and Biomedical	68	64	59	74	70	69	67	75	114	115	129
Ceramic	24	24	20	24	25	19	25	42	30	35	43
Chemical	285	296	306	349	361	440	476	527	625	625	560
Civil	240	287	308	354	351	358	387	441	489	498	505
Communications	-	-	-	25	11	30	23	26	24	25	34
Computer	62	71	72	83	56	55	77	62	100	117	132
Electrical, Electronics	478	478	544	517	593	631	706	691	886	995	1110
Engineering Mechanics	91	78	103	68	91	89	94	113	105	110	111
Engineering Physics	18	22	12	10	8	12	13	13	9	16	16
Engineering Science	-	-	-	30	28	31	30	26	32	27	37
Environmental Health Engineering	66	71	60	43	57	33	42	36	43	41	48
Industrial	77	66	79	86	84	92	101	120	127	162	151
Materials Science	143	113	147	157	168	188	187	238	252	257	306
Mechanical	293	282	334	311	336	424	442	544	610	650	771
Metallurgical	106	97	88	87	78	96	93	112	92	88	91
Mining and Mineral	4	8	7	22	16	16	22	27	17	33	40
Naval Architecture, Marine Engineering	-	-	-	4	5	8	9	7	9	9	8
Nuclear	112	130	121	103	120	96	98	84	104	86	115
Ocean	-	-	-	12	11	25	14	24	21	20	17
Operations Research	63	80	58	44	50	54	54	51	44	68	46
Petroleum	31	21	27	22	17	24	18	23	33	29	49
Polymer	-	-	-	21	31	40	37	34	28	58	47
Systems	61	68	49	57	52	57	33	47	44	30	51
Engineering, General	42	36	29	30	29	26	55	54	49	61	75
Engineering, Other	66	75	89	84	72	69	103	79	83	109	107
LIFE SCIENCES	5461	5611	5709	5553	5757	5780	5733	5752	6164	6341	6613
BIOLOGICAL SCIENCES	3803	3804	3893	3741	3880	3793	3807	3840	4112	4115	4333
Biochemistry	673	645	649	647	606	581	576	573	613	669	682
Biophysics	108	99	91	88	90	69	72	86	97	87	103
Bacteriology	-	-	-	10	12	17	12	13	7	11	15
Plant Genetics	-	-	-	19	20	31	20	26	26	18	31
Plant Pathology	-	-	-	29	30	38	28	33	30	22	37
Plant Physiology	52	68	56	67	70	58	52	62	74	47	51
Botany, Other	144	147	146	116	126	120	121	106	112	117	104
Anatomy	147	156	163	107	103	135	86	92	88	80	70
Biometrics and Biostatistics	42	48	59	45	49	40	30	37	47	46	47
Cell Biology	44	47	41	118	123	100	130	127	118	133	145
Ecology	169	198	173	183	202	200	183	158	155	161	166
Embryology	18	20	10	13	15	15	9	6	7	10	22
Endocrinology	-	-	-	28	30	17	17	19	21	21	24
Entomology	161	143	170	141	156	173	170	123	133	139	147
Immunology	125	148	151	154	133	124	146	136	179	152	153
Molecular Biology	183	187	223	225	275	277	298	303	364	413	410
Microbiology and Bacteriology	365	355	324	-	-	-	-	-	-	-	-
Microbiology	-	-	-	309	346	289	326	301	333	340	335
Neurosciences	-	-	117	134	145	156	120	153	163	181	192
Nutritional Sciences	90	99	120	111	109	113	122	141	127	128	118
Parasitology	22	18	14	9	30	21	25	16	20	20	13
Toxicology	-	-	-	60	97	99	104	115	108	111	91
Human and Animal Genetics	-	-	-	95	82	105	91	113	118	112	153
Genetics	157	157	176	-	-	-	-	-	-	-	-
Human and Animal Pathology	108	106	97	97	88	110	91	127	112	105	101
Human and Animal Pharmacology	257	280	280	218	237	235	245	234	252	241	243
Human and Animal Physiology	340	327	309	246	237	245	240	248	225	272	276
Zoology, Other	226	198	199	192	158	147	155	139	167	132	122
Biological Sciences, General	209	204	196	174	190	190	213	229	256	231	340
Biological Sciences, Other	163	154	129	106	121	88	125	124	160	116	142
HEALTH SCIENCES	586	657	686	640	722	729	770	800	882	974	960
Audiology and Speech Pathology	123	140	129	113	104	99	82	107	93	91	93
Environmental Health	40	44	39	38	40	31	39	29	52	35	38
Public Health	1	4	3	54	53	103	103	96	121	129	122
Public Health and Epidemiology	127	157	159	-	-	-	-	-	-	-	-
Epidemiology	-	-	-	76	103	76	80	86	97	107	102
Nursing	77	89	112	126	161	183	216	218	247	308	267
Pharmacy	70	69	81	81	102	106	104	133	95	111	116
Veterinary Medicine	41	41	41	45	46	51	41	31	48	48	70
Health Sciences, General	15	24	16	20	14	13	27	12	29	19	33
Health Sciences, Other	92	89	106	87	99	67	78	88	100	126	119
AGRICULTURAL SCIENCES	1072	1150	1130	1172	1155	1258	1156	1112	1170	1252	1320
Agricultural Business & Management	-	-	-	-	-	-	-	-	-	2	2
Agricultural Economics	160	168	179	157	158	147	158	136	155	164	144
Animal Breeding and Genetics	-	-	-	25	28	28	25	23	27	23	22
Animal Husbandry	25	19	22	-	-	-	-	-	-	-	-
Animal Nutrition	119	149	133	56	71	78	65	82	54	67	54

APPENDIX TABLE B-1 (Continued)

	Year of Doctorate										
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	199
Dairy Sciences	-	-	-	-	-	-	-	-	12	16	20
Poultry Science	-	-	-	-	-	-	-	-	10	11	17
Animal Sciences, Other	-	-	-	92	90	95	91	76	86	95	90
Agronomy	151	177	159	149	137	158	159	143	141	140	143
Plant Breeding and Genetics	-	-	-	71	78	88	78	70	83	64	87
Plant Pathology	118	99	114	92	57	89	85	76	46	63	64
Plant Protection-Pest Management	-	-	-	-	-	-	-	-	1	6	4
Plant Sciences, Other	-	-	-	16	20	21	22	20	23	15	23
Food Sciences	102	104	110	141	113	136	121	131	16	1	-
Food Engineering	-	-	-	-	-	-	-	-	6	11	10
Food Sciences, Other	-	-	-	-	-	-	-	-	119	147	141
Soil Sciences	79	90	83	85	99	97	103	74	18	-	-
Soil Chemistry/Microbiology	-	-	-	-	-	-	-	-	33	28	27
Soil Sciences, Other	-	-	-	-	-	-	-	-	62	75	91
Horticulture Science	73	85	88	72	66	76	60	71	61	75	101
Fish and Wildlife	73	66	65	-	-	-	-	-	-	-	-
Fisheries Science	-	-	-	36	45	36	32	32	42	34	42
Wildlife Management	-	-	-	31	31	38	20	23	3	-	-
Wildlife/Range Management	-	-	-	-	-	-	-	-	36	52	58
Forestry Science	80	95	78	90	94	105	88	100	15	-	-
Forestry Biology	-	-	-	-	-	-	-	-	21	22	27
Forestry Engineering	-	-	-	-	-	-	-	-	3	1	2
Forestry Management	-	-	-	-	-	-	-	-	18	21	14
Wood Science	-	-	-	-	-	-	-	-	7	16	16
Renewable Natural Resources	-	-	-	-	-	-	-	-	7	12	16
Forestry & Related Sciences, Other	-	-	-	-	-	-	-	-	35	57	62
Agriculture, General	3	5	5	7	1	5	4	5	9	7	5
Agriculture, Other	89	93	94	52	67	61	45	50	21	27	38
SOCIAL SCIENCES (INCL PSYCH)	5855	6142	5837	6096	5930	5765	5892	5789	5772	5956	6076
Anthropology	370	369	333	373	335	353	381	352	325	325	324
Area Studies	22	20	19	20	23	19	28	17	16	17	22
Criminology	30	35	36	49	41	38	24	29	43	32	42
Demography	-	-	-	26	19	25	15	26	19	22	20
Economics	745	808	737	792	767	785	835	798	826	872	836
Econometrics	22	17	24	21	27	27	25	25	27	26	26
Geography	131	109	106	121	114	120	120	111	129	105	131
International Relations	80	87	77	76	95	78	76	82	77	94	96
Political Science and Government	505	445	459	397	419	406	414	404	392	430	462
Public Policy Studies	-	-	-	69	54	70	81	83	73	79	88
Sociology	600	605	568	525	515	461	491	423	449	436	427
Statistics	33	40	43	47	39	60	65	49	47	69	69
Urban Studies	79	94	93	74	81	75	50	72	86	62	67
Social Sciences, General	32	22	34	17	17	17	36	30	28	26	23
Social Sciences, Other	108	133	149	142	127	114	127	119	171	158	176
PSYCHOLOGY	3098	3358	3159	3347	3257	3117	3124	3169	3064	3203	3267
Clinical	1106	1259	1168	1241	1195	1181	1172	1214	1094	1260	1329
Cognitive	-	-	-	65	77	76	70	80	83	79	76
Comparative	8	11	12	11	13	11	14	9	7	8	8
Counseling	299	351	348	432	464	431	449	486	482	501	464
Developmental	207	201	192	219	207	175	184	200	176	148	158
Experimental	307	283	240	209	169	165	147	146	135	146	143
Educational	137	180	140	154	210	127	106	89	103	105	98
Industrial and Organizational	66	87	83	90	106	102	110	107	118	104	124
Personality	43	49	36	32	25	21	16	25	18	28	20
Physiological	108	102	90	94	73	79	73	69	85	62	46
Psychometrics	21	27	8	10	6	10	11	9	11	6	8
Quantitative	-	-	-	14	17	16	23	13	12	11	15
School	176	133	166	121	89	92	116	93	115	107	81
Social	190	180	179	191	157	167	141	133	140	128	145
Psychology, General	210	279	242	292	267	265	308	339	359	358	373
Psychology, Other	220	216	255	172	182	199	184	157	126	152	179
HUMANITIES	3872	3751	3561	3500	3536	3429	3460	3500	3556	3554	3820
History, American	285	228	271	224	240	176	197	198	209	206	212
History, European	196	166	158	168	150	143	121	121	127	107	151
History of Science	21	26	29	13	24	23	24	25	22	20	26
History, General	-	-	-	58	76	85	83	94	103	85	110
History, Other	243	272	234	153	127	116	138	148	142	120	112
Classics	54	62	60	44	57	44	51	55	56	51	59
Comparative Literature	107	132	118	124	133	133	101	121	139	103	97
Linguistics	182	176	191	164	160	176	189	199	166	188	167
Speech and Debate	64	38	38	48	41	38	30	37	37	35	38
Letters, General	-	-	-	3	14	13	19	25	16	13	19
Letters, Other	-	-	1	19	31	26	37	39	43	60	52
American Studies	81	87	64	99	76	87	68	75	70	76	72
Archeology	26	28	21	30	31	24	28	31	23	26	22
Art History and Criticism	144	158	138	150	141	137	126	143	134	145	135
Music	402	368	402	391	445	447	476	499	505	522	571
Philosophy	255	277	251	241	215	238	247	233	222	270	243
Religion	173	165	151	177	183	181	182	182	217	215	218
Theatre	94	103	94	108	101	92	88	82	92	79	106
LANGUAGE AND LITERATURE	1487	1396	1260	1219	1225	1164	1164	1112	1147	1153	1308
American	209	145	154	173	190	204	215	190	186	192	229
English	743	675	616	542	543	525	504	478	531	528	567
French	162	167	119	121	108	86	102	103	101	106	123
German	99	88	74	77	80	62	79	77	76	73	78
Italian	10	16	17	22	17	14	15	21	14	20	25

NOTE: Field groupings may differ from those in reports published by federal sponsors of the Survey of Earned Doctorates. See inside the back cover for a description of fields as reported in this table. Refer also to the explanatory note about this table in front of Appendix B.

	Year of Doctorate										
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Spanish	145	184	177	161	144	145	122	133	137	134	173
Russian	32	28	24	24	33	28	28	19	13	13	19
Slavic	-	-	-	9	12	10	8	5	5	7	7
Chinese	-	-	-	16	13	14	13	13	12	9	16
Japanese	-	-	-	5	12	13	9	9	6	13	9
Hebrew	-	-	-	11	13	9	11	13	12	11	14
Arabic	-	-	-	8	8	5	9	8	14	6	7
Other Languages	87	93	79	50	52	49	49	43	40	41	41
Humanities, General	12	23	28	17	22	27	23	23	25	19	28
Humanities, Other	46	46	52	50	44	59	68	58	61	61	74
EDUCATION	7586	7497	7251	7174	6808	6733	6645	6450	6357	6276	6484
Curriculum and Instruction	838	815	811	861	869	825	794	762	815	840	838
Educational Admin and Supervision	1536	1659	1474	1632	1569	1625	1637	1686	1748	1632	1640
Educational Media	75	77	76	88	83	101	79	68	67	76	55
Educational Measures and Statistics	89	90	94	-	-	-	-	-	-	-	-
Educational Statistics and Research	-	-	-	86	105	74	58	73	51	59	58
Educational Testing, Eval, Meas	-	-	-	51	56	44	47	37	55	42	40
Educational Psychology	476	445	454	274	233	388	330	320	323	301	321
School Psychology	-	-	-	88	110	102	92	95	98	85	87
Social Foundations	214	209	214	142	151	135	124	114	122	110	87
Special Education	346	312	347	349	312	270	273	248	257	259	225
Student Counseling, Personnel Serv	594	549	540	506	391	397	315	315	324	264	301
Higher Education	685	671	653	635	657	589	612	570	399	373	422
Pre-elementary Education	74	90	78	63	54	65	86	73	83	63	41
Elementary Education	162	180	149	111	97	122	94	105	93	99	109
Junior High Education	-	-	-	1	-	1	-	1	1	-	-
Secondary Education	168	136	104	87	62	68	86	65	67	53	56
Adult and Continuing Education	235	233	257	221	218	207	223	203	229	236	210
TEACHING FIELDS	1471	1437	1333	1327	1170	1118	1142	1064	987	968	921
Agricultural Education	39	43	35	47	47	40	39	39	32	35	38
Art Education	45	63	55	58	41	43	43	52	42	39	44
Business Education	52	50	44	62	52	52	50	36	44	40	34
English Education	76	64	67	76	72	68	79	72	57	51	52
Foreign Languages Education	36	29	31	25	25	30	37	37	53	33	31
Physical Educ, Health and Recreation	365	368	351	-	-	-	-	-	-	-	-
Health Education	-	-	-	99	93	89	81	91	86	100	95
Home Economics Education	27	25	33	25	26	21	17	17	17	19	10
Industrial Arts Education	27	27	39	19	27	13	20	24	11	17	18
Mathematics Education	74	62	50	62	64	65	72	74	56	69	66
Music Education	110	76	103	112	92	81	94	109	76	97	78
Nursing Education	41	23	25	17	21	21	40	36	34	29	24
Physical Education	-	-	-	235	219	220	210	192	183	176	190
Reading Education	160	193	153	169	142	113	134	94	74	95	83
Science Education	96	107	86	78	77	88	65	63	67	48	72
Social Science Education	52	49	29	39	22	24	22	17	23	13	11
Speech Education	10	12	12	2	10	7	5	5	5	1	5
Technical Education	-	-	-	-	-	-	-	-	13	28	15
Trade and Industrial Education	229	213	191	138	117	82	86	68	67	47	18
Other Teaching Fields	32	33	29	64	23	61	48	38	47	31	37
Education, General	427	405	419	349	311	294	354	366	358	414	539
Education, Other	196	189	248	303	360	308	299	285	280	402	534
PROFESSIONAL/OTHER FIELDS	1656	1658	1816	1752	1941	1893	1982	2131	2142	2193	2283
BUSINESS AND MANAGEMENT	640	624	685	750	869	790	902	982	1033	1068	1038
Accounting	-	-	-	163	164	150	157	161	175	186	173
Banking and Finance	-	-	-	94	123	104	126	156	148	151	133
Business Admin and Management	-	-	-	179	175	174	222	225	265	245	278
Business Economics	-	-	-	25	30	20	28	26	27	27	21
Marketing Management and Research	-	-	-	73	126	94	110	113	126	131	120
Business Statistics	-	-	-	8	7	9	3	8	6	15	10
Operations Research	-	-	-	38	46	45	46	64	50	52	46
Organizational Behavior	-	-	-	53	70	68	57	66	74	95	65
Business and Management, General	-	-	-	35	49	49	56	75	75	57	70
Business and Management, Other	640	624	685	82	79	77	97	88	87	109	122
COMMUNICATIONS	270	240	266	250	255	266	258	309	247	306	322
Communications Research	-	-	-	51	66	55	79	90	72	85	86
Journalism	17	18	18	20	17	22	18	7	21	15	21
Radio and Television	-	-	-	27	20	19	13	16	12	29	17
Communications, General	-	-	-	60	68	89	75	102	70	79	86
Communications, Other	253	222	248	92	84	81	73	94	72	98	112
OTHER PROFESSIONAL FIELDS	724	759	841	730	802	812	796	778	812	765	856
Architecture, Environmental Design	-	-	-	34	25	36	27	33	31	43	41
Home Economics	90	85	98	79	107	90	88	67	58	55	75
Law	21	28	21	19	24	25	31	29	33	26	33
Library and Archival Science	66	62	83	51	68	71	57	48	57	60	42
Public Administration	145	147	173	113	127	112	88	78	92	96	86
Social Work	179	213	218	190	231	220	235	214	241	206	245
Theology	195	201	214	227	212	240	240	254	251	232	273
Professional Fields, General	-	-	-	-	2	-	-	1	2	-	3
Professional Fields, Other	28	23	34	17	6	18	30	54	47	47	58
OTHER FIELDS	22	35	24	22	15	25	26	62	50	54	67

APPENDIX TABLE B-2 Number of Doctorate Recipients, by Gender, Race/Ethnicity, and Citizenship, 1980-1990

Total All Doctorates

	Year of Doctorate										
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
TOTAL MEN AND WOMEN	31020	31357	31111	31282	31337	31297	31895	32364	33490	34319	36027
U.S. Citizens	25222	25061	24391	24359	24027	23370	23081	22983	23287	23398	24190
Permanent Visas	1290	1281	1228	1275	1224	1324	1432	1578	1624	1626	1654
Temporary Visas	3644	3940	4204	4499	4832	5228	5276	5610	6195	6648	7744
Unknown Citizenship	864	1075	1288	1149	1254	1375	2106	2193	2384	2647	2439
Total Known Race/Ethnicity	28767	29144	29087	29389	29282	29058	28922	29217	30348	30943	32867
U.S. Citizens	23971	24007	23791	23734	23425	22848	22651	22505	22900	23014	23886
Permanent Visas	1258	1257	1190	1249	1194	1291	1357	1509	1547	1564	1597
Temporary Visas	3462	3757	3954	4250	4509	4848	4837	5141	5839	6296	7317
Unknown Citizenship	76	123	152	156	154	71	77	62	62	69	67
Native Americans	75	85	77	82	74	96	100	116	94	94	94
U.S. Citizens	75	85	77	81	74	96	99	115	94	94	93
Permanent Visas*	-	-	-	1	-	-	-	-	-	-	-
Temporary Visas*	-	-	-	-	-	-	1	1	-	-	1
Unknown Citizenship	-	-	-	-	-	-	-	-	-	-	-
Asians	2621	2711	2904	3124	3394	3642	3727	4126	4780	5182	6080
U.S. Citizens	458	465	452	492	512	516	530	542	614	625	617
Permanent Visas	644	608	552	551	507	553	528	625	622	635	643
Temporary Visas	1472	1564	1829	2006	2295	2526	2645	2933	3517	3905	4788
Unknown Citizenship	47	74	71	75	80	47	24	26	27	17	32
Blacks	1444	1491	1526	1382	1494	1440	1270	1218	1263	1246	1255
U.S. Citizens	1032	1013	1047	922	953	912	823	768	814	821	828
Permanent Visas	73	97	96	83	102	131	126	139	152	141	144
Temporary Visas	331	372	373	363	419	395	313	305	291	273	277
Unknown Citizenship	8	9	10	14	20	2	8	6	6	11	6
Hispanics	821	931	920	969	918	1000	1055	1055	1051	1064	1192
U.S. Citizens	412	464	535	539	536	561	571	618	597	582	698
Permanent Visas	73	62	79	69	71	73	107	91	99	112	115
Temporary Visas	328	389	294	342	300	360	372	338	349	364	373
Unknown Citizenship	8	16	12	19	11	6	5	8	6	6	6
Whites	23806	23926	23660	23832	23402	22880	22770	22702	23160	23357	24246
U.S. Citizens	21994	21980	21680	21700	21350	20763	20628	20462	20781	20892	21650
Permanent Visas	468	490	463	545	514	534	596	654	674	676	695
Temporary Visas	1331	1432	1458	1539	1495	1567	1506	1564	1682	1754	1878
Unknown Citizenship	13	24	59	48	43	16	40	22	23	35	23
Unknown Race/Ethnicity	2253	2213	2024	1893	2055	2239	2973	3147	3142	3376	3160
U.S. Citizens	1251	1054	600	625	602	522	430	478	387	384	304
Permanent Visas	32	24	38	26	30	33	75	69	77	62	57
Temporary Visas	182	183	250	249	323	380	439	469	356	352	427
Unknown Citizenship	788	952	1136	993	1100	1304	2029	2131	2322	2578	2372

NOTE: The reader is referred to the explanatory note about this table in front of Appendix B.

*In most cases, non-U.S. Native Americans are citizens of Canada or of Latin America.

Doctorates: MEN

	Year of Doctorate										
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
TOTAL MEN	21612	21465	21018	20749	20638	20553	20591	20938	21679	21811	22966
U.S. Citizens	16875	16360	15562	15120	14730	14223	13636	13574	13725	13395	13761
Permanent Visas	971	973	915	953	892	999	1067	1117	1166	1139	1160
Temporary Visas	3154	3387	3621	3872	4134	4395	4414	4722	5134	5444	6336
Unknown Citizenship	612	745	920	804	882	936	1474	1525	1654	1833	1709
Total Known Race/Ethnicity	19970	19895	19538	19370	19132	18944	18431	18672	19410	19399	20689
U.S. Citizens	15962	15604	15142	14673	14304	13858	13337	13247	13447	13113	13539
Permanent Visas	949	957	886	931	867	971	1004	1064	1099	1094	1124
Temporary Visas	2997	3226	3396	3645	3844	4057	4037	4313	4821	5142	5969
Unknown Citizenship	62	108	114	121	117	58	53	48	43	50	57
Native Americans	46	56	44	51	54	40	59	63	52	49	49
U.S. Citizens	46	56	44	50	54	40	58	62	52	49	49
Permanent Visas*	-	-	-	1	-	-	-	-	-	-	-
Temporary Visas*	-	-	-	-	-	-	1	1	-	-	-
Unknown Citizenship	-	-	-	-	-	-	-	-	-	-	-
Asians	2151	2223	2355	2542	2780	2945	3040	3349	3845	4156	4856
U.S. Citizens	313	315	281	312	338	329	347	369	414	441	411
Permanent Visas	513	499	444	431	389	437	417	455	457	459	466
Temporary Visas	1282	1341	1567	1731	1982	2137	2258	2505	2956	3243	3951
Unknown Citizenship	43	68	63	68	71	42	18	20	18	13	28
Blacks	870	924	911	833	903	851	707	701	697	684	681
U.S. Citizens	499	499	483	413	427	379	323	317	315	327	320
Permanent Visas	62	80	81	73	81	117	106	118	126	125	123
Temporary Visas	305	339	340	339	382	354	275	261	251	222	232
Unknown Citizenship	4	6	7	8	13	1	3	5	5	10	6
Hispanics	592	657	650	635	621	646	665	677	681	665	742
U.S. Citizens	256	275	344	288	314	300	302	332	323	309	372
Permanent Visas	48	47	52	45	47	50	71	50	65	69	69
Temporary Visas	280	321	247	288	252	294	289	288	288	284	299
Unknown Citizenship	8	14	7	14	8	2	3	7	5	3	2
Whites	15311	16035	15578	15309	14774	14462	13960	13882	14135	13845	14361
U.S. Citizens	14848	14459	13990	13610	13171	12810	12307	12167	12343	11987	12387
Permanent Visas	326	331	309	381	350	367	410	441	451	441	466
Temporary Visas	1130	1225	1242	1287	1228	1272	1214	1258	1326	1393	1487
Unknown Citizenship	7	20	37	31	25	13	29	16	15	24	21
Unknown Race/Ethnicity	1642	1570	1480	1379	1506	1609	2160	2266	2269	2412	2277
U.S. Citizens	913	756	420	447	426	365	299	327	278	282	222
Permanent Visas	22	16	29	22	25	28	63	53	67	45	36
Temporary Visas	157	161	225	227	290	338	377	409	313	302	367
Unknown Citizenship	550	637	806	683	765	878	1421	1477	1611	1783	1652

APPENDIX TABLE B-2 (Continued)

Doctorates: WOMEN

	Year of Doctorate										
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
TOTAL WOMEN	9408	9892	10093	10533	10699	10744	11304	11426	11811	12508	13061
U.S. Citizens	8347	8701	8829	9239	9297	9147	9445	9409	9562	10003	10429
Permanent Visas	319	308	313	322	332	325	365	461	458	487	494
Temporary Visas	490	553	583	627	698	833	862	888	1061	1204	1408
Unknown Citizenship	252	330	368	345	372	439	632	668	730	814	730
Total Known Race/Ethnicity	8797	9249	9549	10019	10150	10114	10491	10545	10938	11544	12178
U.S. Citizens	8009	8403	8649	9061	9121	8990	9314	9258	9453	9901	10347
Permanent Visas	309	300	304	318	327	320	353	445	448	470	473
Temporary Visas	465	531	558	605	665	791	800	828	1018	1154	1348
Unknown Citizenship	14	15	38	35	37	13	24	14	19	19	10
Native Americans	29	29	33	31	20	56	41	53	42	45	45
U.S. Citizens	29	29	33	31	20	56	41	53	42	45	44
Permanent Visas*	-	-	-	-	-	-	-	-	-	-	-
Temporary Visas*											1
Unknown Citizenship	-	-	-	-	-	-	-	-	-	-	-
Asians	470	488	549	582	614	697	687	777	935	1026	1224
U.S. Citizens	145	150	171	180	174	187	183	173	200	184	206
Permanent Visas	131	109	108	120	118	116	111	170	165	176	177
Temporary Visas	190	223	262	275	313	389	387	428	561	662	837
Unknown Citizenship	4	6	8	7	9	5	6	6	9	4	4
Blacks	574	567	615	549	591	589	563	517	566	562	574
U.S. Citizens	533	514	564	509	526	533	500	451	499	494	508
Permanent Visas	11	17	15	10	21	14	20	21	26	16	21
Temporary Visas	26	33	33	24	37	41	38	44	40	51	45
Unknown Citizenship	4	3	3	6	7	1	5	1	1	1	
Hispanics	229	274	270	334	297	354	390	378	370	399	450
U.S. Citizens	156	189	191	251	222	261	269	286	274	273	326
Permanent Visas	25	15	27	24	24	23	36	41	34	43	46
Temporary Visas	48	68	47	54	48	66	83	50	61	80	74
Unknown Citizenship	2	5	5	3	4	2	1	1	3	4	
Whites	7495	7891	8082	8523	8628	8418	8810	8820	9025	9512	9885
U.S. Citizens	7146	7521	7690	8090	8179	7953	8321	8295	8438	8905	9263
Permanent Visas	142	159	154	164	164	167	186	213	223	235	229
Temporary Visas	201	207	216	252	267	295	292	306	356	361	391
Unknown Citizenship	6	4	22	17	18	3	11	6	8	11	2
Unknown Race/Ethnicity	611	643	544	514	549	630	813	881	873	964	883
U.S. Citizens	338	298	180	178	176	157	131	151	109	102	82
Permanent Visas	10	8	9	4	5	5	12	16	10	17	21
Temporary Visas	25	22	25	22	33	42	62	60	43	50	60
Unknown Citizenship	238	315	330	310	335	426	608	654	711	795	720

NOTE: The reader is referred to the explanatory note about this table in front of Appendix B.

*In most cases, non-U.S. Native Americans are citizens of Canada or of Latin American countries.

APPENDIX C: Technical Notes

All tables and figures in this report, except for Appendix Tables A-3 and A-4,[1] display percentages based only on the number of doctorate recipients who *responded* to the applicable survey questions; those who did not respond are excluded. The technical notes in this section, for the most part, provide the rates of *nonresponse* to questions covered in the report. Presented first is a table showing the overall nonresponse rates to the various data items in 1990. Following this table is a series of notes related to specific tables and figures that appear in the body of the report. These notes are grouped by the major focus of the data: baccalaureate institution, citizenship, cumulative debt, parents' education, postgraduation plans, primary source of support, race/ethnicity, and time-to-degree. They provide nonresponse rates for selected populations and years, as well as additional descriptive explanation of the data as needed.

In 1990, 93.3 percent of new recipients completed the survey forms themselves. Skeletal information on the remaining 6.7 percent of recipients was obtained from doctorate-granting institutions or commencement programs. The following data items are available for all recipients, whether or not they completed the questionnaires themselves: gender, Ph.D. institution, Ph.D. field, and Ph.D. year. Because nonresponse rates computed by gender or Ph.D. field reflect the entire doctoral cohort, they may be significantly higher than nonresponse rates for other populations (e.g., U.S. citizens, Asians). Populations defined by data items such as citizenship or race/ethnicity are most likely to be comprised of self-reporting recipients, in which case the data are more complete and nonresponse rates are lower than for the overall cohort. For example, in 1990, information on educational debt was not available for 8.7 percent of male Ph.D.s and 7.0 percent of female Ph.D.s., or 8.1 percent overall. Because gender is available for all Ph.D.s, these rates include the 6.7 percent of recipients who were not self-reporting in 1990. In contrast, the nonresponse rate to the debt question was 1.1 percent among U.S. citizens, 2.4 percent among permanent residents, and 3.2 percent among temporary residents. Rates are lower when computed by citizenship than by gender because the base number represents a reduced population that was more likely to have been self-reporting.

Many of the item nonresponse rates were higher in 1990 than in earlier years because the overall self-report rate was lower. Since last year, however, the self-report rate has improved from 91.4 percent to 93.3 percent—a result of new procedures for following up nonrespondents. Consequently, item nonresponse rates in 1990 were often lower than in 1989.

[1]Because Appendix Tables A-3 and A-4 include categories for "unknown" responses, percentages are based on the total doctoral cohort.

ITEM NONRESPONSE RATES: 1990

Data Item	Nonresponse Rate (%)
Baccalaureate field	9.6
Baccalaureate institution	6.1*
Baccalaureate year (for time-to-Ph.D.)	7.3
Birth year (for age)	6.9
Citizenship	6.8
Country of citizenship	3.0 (of non-U.S. citizens)
Cumulative debt	8.1
Dependents	10.3
Doctorate field	0.0
Doctorate institution	0.0
Doctorate year	0.0
Gender	0.0
Marital status	8.7
Master's institution	22.2
Parents' education	
Mother's	9.8
Father's	9.5
Postdoctoral employer type	5.1 (of employed Ph.D.s)
Postdoctoral location	20.4
Postdoctoral plans (employment vs. study)	9.0
Postdoctoral status (definite vs. seek)	9.6
Race/ethnicity	7.8
Sources of graduate school support	7.7
Years not enrolled from (for time-to-Ph.D.):	
Baccalaureate to graduate entrance	14.3
Graduate entrance to doctorate	23.3

NOTE: In 1990, 93.3 percent of new doctorate recipients completed the survey form. The item nonresponse rates in this table include the 6.7 percent of recipients who were not self-reporting. Basic information for the missing group was obtained from the doctorate-granting institutions or commencement programs. Field, institution, and year of doctorate, as well as gender, are available for all recipients.

* The nonresponse rate to this item is less than the overall nonresponse rate of 6.7 percent because baccalaureate institution is sometimes available from commencement programs.

BACCALAUREATE INSTITUTION

1. ***Table S-5*** (page 45): Among U.S. minorities who received Ph.D.s between 1986 and 1990, the rates of nonresponse to baccalaureate institution were 1.3 percent for Asians, 0.9 percent for blacks, 1.1 percent for Hispanics, and 1.0 percent for Native Americans.

CITIZENSHIP

2. ***Figure 4*** (page 9) and ***Table 3*** (page 10): The overall rates of nonresponse to the citizenship status question were 0.9 percent in 1960, 1.5 percent in 1970, 2.8 percent in 1980, and 6.8 percent in 1990. By broad field in 1990, the nonresponse rates to this question were 6.7 percent in physical sciences, 8.1 percent in engineering, 5.6 percent in life sciences, 8.2 percent in social sciences, 6.5 percent in humanities, 5.8 percent in education, and 6.9 percent in professional/other fields. In 1960, the nonresponse rates ranged from 0.5 percent in engineering and education to 1.7 percent in humanities and professional/other fields. In 1970, professional/other fields exhibited the highest rate of nonresponse at 11.9 percent, while the other six fields showed rates between 0.6 percent (engineering) and 1.8 percent (humanities). In 1980, nonresponse rates ranged from 1.9 percent in life sciences to 3.5 percent in humanities.

3. ***Table 4*** (page 11): Three percent of non-U.S. citizen Ph.D.s in 1990 did not report their country of citizenship.

CUMULATIVE DEBT

4. ***Figure 7*** (page 25) and Table 13 (page 26): The overall nonresponse rate to the question on cumulative debt in 1990 was 8.1 percent. By broad field of doctorate, the rates of nonresponse were 8.2 percent in physical sciences, 9.8 percent in engineering, 6.9 percent in life sciences, 9.0 percent in social sciences, 8.0 percent in humanities, 7.1 percent in education, and 8.2 percent in professional/other fields.

5. ***Table 14*** (page 26): In 1990, 8.1 percent of Ph.D.s did not respond to the debt question. By demographic group, the nonresponse rates were 8.7 percent for men, 7.0 percent for women, 1.1 percent for U.S. citizens, 2.4 percent for permanent residents, and 3.2 percent for temporary residents.

6. ***Table S-8*** (pages 48-49): In 1990, 1.1 percent of U.S. citizen Ph.D.s did not answer the debt question. By U.S. racial/ethnic group, the rates of nonresponse were 0.8 percent for Asians, 1.0 percent for blacks, 2.0 percent for Hispanics, 1.1 percent for Native Americans, and 0.9 percent for whites. See technical note 4 for nonresponse rates by field for the total 1990 cohort. Refer to technical note 16 for the overall rates of nonresponse to race/ethnicity among U.S. citizens.

PARENTS' EDUCATION

7. ***Figure S-3*** (page 31): In 1990, the percentages of U.S. Ph.D.s who did not respond to the questions on mother's and father's education were 2.1 percent for Asians,

3.6 percent for blacks, 3.0 percent for Hispanics, 3.2 percent for Native Americans, and 1.6 percent for whites. Nonresponse rates were higher in 1975: 9.8 percent for Asians, 9.9 percent for blacks, 4.3 percent for Hispanics, 8.3 percent for Native Americans, and 4.5 percent for whites. Refer to technical note 16 for the overall rates of nonresponse to race/ethnicity among U.S. citizens.

POSTGRADUATION PLANS

In 1990, 64.7 percent of Ph.D.s reported "definite" commitments for either employment or study after graduation; 8.5 percent reported that they were in the process of "negotiating" with one or more organizations; 16.4 percent reported that they were "seeking" positions with no prospects as of yet; and 10.5 percent did not respond to the question. Because doctorate recipients sometimes complete the survey form months ahead of their actual graduation, it is not possible to determine the final postgraduation plans of many recipients. It is quite likely, however, that some of those Ph.D.s who indicated "negotiating" or "seeking" found positions by the time of graduation. Because the final outcomes are unknown, data on postgraduation plans in this report are restricted to the group of Ph.D.s with known "definite" plans: 76.6 percent of all Ph.D.s in 1970, 70.7 percent in 1980, and 64.7 percent in 1990.

Comparisons with the most recent longitudinal Survey of Doctorate Recipients (SDR) have shown the data on "definite" postgraduation plans to be a reasonable predictor of the actual employment status of new Ph.D.s in the year following the doctorate. (The SDR, also conducted by the National Research Council, is a follow-up employment survey of a sample of doctorate recipients in science, engineering, and humanities fields.) According to the 1989 SDR, 97.2 percent of the 1987-1988 Ph.D.s who had indicated "definite" employment plans in the United States at the time of graduation were in the U.S. labor force as of February 1989. Among non-U.S. citizens with such plans, the percentages in the U.S. labor force a year after graduation were also quite high (98.5 percent of permanent residents and 94.8 percent of temporary residents). Additionally, 94.4 percent of all graduates with immediate postgraduation plans in academe and 90.7 percent of those with plans in industry were working in the same sectors one year later.

8. ***Table 7*** (page 16): This table includes only Ph.D.s with "definite" postgraduation plans. In 1990, "definite" commitments were reported by 64.7 percent of the total cohort, 65.5 percent of Ph.D.s in physical sciences, 57.7 percent in engineering, 68.4 percent in life sciences, 62.1 percent in social sciences, 59.9 percent in humanities, 68.4 percent in education, and 70.7 percent in professional/other fields. Virtually all Ph.D.s who reported "definite" commitments also indicated their plans for employment versus study; the highest nonresponse rate was 1 percent in humanities. For the percentages of Ph.D.s in 1970 and 1980 who reported "definite" plans, see the introductory paragraph on postgraduation plans.

9. ***Table 8*** (page 17): This table includes only Ph.D.s with "definite" postgraduation plans. In 1990, 64.7 percent of all Ph.D.s had "definite" plans, as did 64.6 percent of men, 64.9 percent of women, 73.1 percent of U.S. citizens, 54.9 percent of permanent residents, and 60.0 percent of temporary residents. Virtually all Ph.D.s who reported "definite" commitments also indicated their plans for employment versus study. For the percentages of Ph.D.s in 1970 and 1980 who reported "definite" plans, see the introductory paragraph on postgraduation plans.

10. ***Figure 6*** (page 18): This figure includes only non-U.S. citizen Ph.D.s who reported "definite" postgraduation plans; see technical note 9 for percentages by visa status. Among permanent residents, the rates of nonresponse to postdoctoral location were 5.7 percent in 1970, 6.5 percent in 1980, and 10.1 percent in 1990. Among temporary residents, they were 3.7 percent in 1970, 6.2 percent in 1980, and 7.7 percent in 1990.

11. ***Table 9*** (page 19): This table includes only non-U.S. citizen Ph.D.s from 1990 who reported "definite" postgraduation plans; see technical note 9 for percentages by visa status. Within this subset, 10.5 percent of permanent residents and 8.2 percent of temporary residents did not report their intended postdoctoral location and employment/study plans.

12. ***Table 10*** (page 21) and ***Table 11*** (page 22): These tables focus on U.S. citizen and permanent resident Ph.D.s who reported "definite" postgraduation plans (78.4 percent of the group in 1970, 73.4 percent in 1980, and 72.0 percent in 1990). Within this subset, the proportions of Ph.D.s with employment commitments in the United States were 82.7 percent in 1970, 79.2 percent in 1980, and 74.0 percent in 1990. Rates of nonresponse to the question on employment sector were very low among these Ph.D.s; the highest was 1.4 percent in 1970. ***Table 11*** also shows data for temporary residents; "definite" postgraduation plans were reported by 69.9 percent of the group in 1970, 67.2 percent in 1980, and 60.0 percent in 1990. Among temporary residents with "definite" plans in 1970, 19.6 percent had employment commitments in the United States, as did 19.2 percent in 1980 and 25.8 percent in 1990.

13. ***Figure S-4*** (page 36) and ***Table S-9*** (page 50): This figure and table include only U.S. citizen Ph.D.s with "definite" postgraduation plans (72.2 percent of the group in 1975 and 73.1 percent in 1990). By race/ethnicity in 1990, the proportions of U.S. Ph.D.s with "definite" commitments were 65.3 percent for Asians, 71.9 percent for blacks, 66.0 percent for Hispanics, 63.4 percent for Native Americans, and 73.8 percent for whites. The proportions in 1975 were 69.6 percent for Asians, 68.9 percent for blacks, 74.9 percent for Hispanics, 75.0 percent for Native Americans, and 73.6 percent for whites. Virtually all Ph.D.s who reported "definite" plans in 1990 also indicated their plans for employment versus study. Nonresponse rates to type of plans were slightly higher in 1975, but the largest percentage was only 2.5 percent among Asians and blacks.

Of those U.S. citizen Ph.D.s who reported "definite" plans, 81.9 percent in 1975 and 74.9 percent in 1990 had employment commitments in the United States. Rates of nonresponse to the question on employment sector were very low; in 1990, the highest rate was 2.0 percent for Native Americans.

PRIMARY SOURCE OF SUPPORT

14. ***Table 12*** (page 24): In 1990, 22.2 percent of all Ph.D.s did not indicate a primary source of support. By demographic group, the nonresponse rates were 22.8 percent for men, 21.1 percent for women, 14.4 percent for U.S. citizens, 25.9 percent for permanent residents, and 21.7 percent for temporary residents. By broad field of doctorate, the nonresponse rates in 1990 were 21.0 percent in physical sciences, 22.5 percent in engineering, 20.2 percent in life sciences, 22.8 percent in social sciences, 24.7 percent in humanities, 22.4 percent in education, and 23.4 percent in professional/other fields.

From 1987 to 1989, doctorate recipients were asked to provide the percentage of support they received from each source. The source with the largest declared percentage was then determined to be the the recipient's primary source of support. In 1990, the question was revised to ask the recipient to place a "1" next to his or her primary source instead of indicating the actual percentages of support. This change seems to have resulted in a greater nonresponse than in previous years. The overall nonresponse rate in 1990 was 4 percentage points higher than the 1989 rate of 18.2 percent. Nonresponse rates by demographic group were 3 to 11 points higher than a year ago, and rates by broad field were 2 to 6.5 points higher.

15. ***Table S-7*** (page 47): The rates of nonresponse to primary source of support in 1990 were 14.4 percent for U.S. citizens as a whole, 19.3 percent for Asians, 24.9 percent for blacks, 24.1 percent for Hispanics, 20.4 percent for Native Americans, and 13.4 percent for whites. Percentages were higher this year than in 1989, most likely because of revisions to the 1990 questionnaire (see technical note 14 for further explanation). While the overall nonresponse rate for U.S. citizens was about 5 percentage points higher in 1990 than a year ago, the increases were even greater for the minority groups: more than 8 percentage points for Asians, about 10 points for blacks and Native Americans, and over 11 points for Hispanics. See technical note 14 for 1990 nonresponse rates by broad field for U.S. citizens. Refer to technical note 16 for the overall rates of nonresponse to race/ethnicity among U.S. citizens.

RACE/ETHNICITY

The item on race/ethnicity was first introduced to the Survey of Earned Doctorates in 1973. However, over 25 percent of recipients in 1973 and about 13 percent in 1974 either completed superseded questionnaires or provided unusable responses. In 1975, the racial/ethnic data became more reliable, and response rates have since ranged between 91 and 95 percent. For this reason, the information on race/ethnicity presented in this report is limited to the period 1975 to 1990.

The racial/ethnic question has changed over the years. From 1973 to 1979, respondents were allowed to check up to three racial/ethnic categories. In 1980 and 1981, they were asked to select only one classification. The item became twofold in 1982, separating ethnicity (Hispanic) from race (American Indian, Asian, black, white). In this report, Ph.D.s who reported Hispanic heritage are classified as "Hispanic" regardless of their racial designations; Ph.D.s who checked the category "American Indian or Alaskan Native" are identified as "Native American," the term now preferred by the group; and Ph.D.s from 1975 to 1979 who indicated that they were both white and a minority are included with the minority group.

16. ***Figure S-1*** (page 28) and ***Table S-1*** (page 39): In 1990, 1.3 percent of U.S. citizen Ph.D.s did not report their race/ethnicity. The nonresponse rate in 1975 was 4.1 percent. From 1975 to 1981, rates ranged between 4 and 6 percent; since then, nonresponse has been no higher than 2.6 percent. The 1990 rate was the lowest of any year. See technical note 2 for rates of nonresponse to the question on citizenship status.

17. ***Figure S-2*** (page 30) and ***Table S-2*** (pages 40-41): See technical note 16 for the overall rates of nonresponse to race/ethnicity among U.S. citizens. By broad field of doctorate, the rates in 1990 were 2.2 percent in physical sciences (versus 4.9 percent in 1975), 1.8 percent in engineering (versus 4.4 percent), 1.2 percent in life sciences (versus 3.1 percent), 1.0 percent in social sciences (versus 4.7 percent), 1.2 percent in

humanities (versus 5.4 percent), 0.7 percent in education (versus 2.9 percent), and 1.2 percent in professional/other fields (versus 3.1 percent).

18. ***Table S-3*** (pages 42-43): See technical note 16 for the overall rates of nonresponse to race/ethnicity among U.S. citizens. Among men, the nonresponse rates were 4.3 percent in 1975 and 1.6 percent in 1990. Among women, the 1975 rate was 3.4 percent while the 1990 rate was a very low 0.8 percent. See technical note 17 for rates of nonresponse to race/ethnicity by broad field.

TIME-TO-DEGREE

19. ***Figure 5*** (page 12): Total elapsed time from baccalaureate to doctorate (TTD) can be computed only for individuals whose baccalaureate year is known (note: BA year is often obtained from commencement programs or doctorate institutions if recipients do not provide it). TTD could not be computed for 0.8 percent of Ph.D.s in 1960, 1.6 percent in 1970, 3.0 percent in 1980, and 7.3 percent in 1990. Registered time (RTD) is the time actually enrolled between the baccalaureate and the doctorate; RTD cannot be computed for individuals who have not provided all years during which they were enrolled after earning the baccalaureate. RTD was not available for 5.1 percent of Ph.D.s in 1960, 6.9 percent in 1970, 11.2 percent in 1980, and 23.3 percent in 1990.

20. ***Table 5*** (page 14): See technical note 19 for a description of total and registered time-to-degree and for the overall nonresponse rates for 1960 to 1990 in 10-year intervals. By broad field in 1990, the rates of nonresponse were 7.4 percent (TTD) and 23.0 percent (RTD) in physical sciences, 9.3 percent (TTD) and 22.0 percent (RTD) in engineering, 7.8 percent (TTD) and 27.0 percent (RTD) in life sciences, 7.6 percent (TTD) and 21.5 percent (RTD) in social sciences, 5.6 percent (TTD) and 21.4 percent (RTD) in humanities, 6.1 percent (TTD) and 23.6 percent (RTD) in education, and 6.9 percent (TTD) and 23.7 percent (RTD) in professional/other fields.

21. ***Table 6*** (page 15): See technical note 19 for a description of total and registered time-to-degree and for the overall nonresponse rates for 1990. By demographic group, the nonresponse rates to the time-to-degree measures were 8.0 percent (TTD) and 23.7 percent (RTD) for men, 6.1 percent (TTD) and 22.7 percent (RTD) for women, 1.1 percent (TTD) and 14.8 percent (RTD) for U.S. citizens, 6.9 percent (TTD) and 22.1 percent (RTD) for permanent residents, and 6.6 percent (TTD) and 26.6 percent (RTD) for temporary residents. Refer to technical note 20 for nonresponse rates by broad field.

22. ***Table S-6*** (page 46): See technical note 19 for a description of total and registered time-to-degree. Among U.S. citizen Ph.D.s in 1990, nonresponse rates were 1.1 percent for TTD and 14.8 percent for RTD. By U.S. racial/ethnic group, the rates were 1.1 percent (TTD) and 18.8 percent (RTD) for Asians, 2.2 percent (TTD) and 19.0 percent (RTD) for blacks, 2.4 percent (TTD) and 18.3 percent (RTD) for Hispanics, 0.0 percent (TTD) and 19.4 percent (RTD) for Native Americans, and 0.9 percent (TTD) and 14.3 percent (RTD) for whites. See technical note 20 for nonresponse rates by broad field for the total 1990 cohort. Refer to technical note 16 for rates of nonresponse to race/ethnicity among U.S. citizens.

APPENDIX D

SURVEY OF EARNED DOCTORATES 1989-90

Form Approved
OMB No. 3145-0019
Approval Expires
6/91

This form is to be returned to the GRADUATE DEAN, for forwarding to ..... The Office of Scientific and Engineering Personnel
National Research Council
2101 Constitution Avenue, Washington, D.C. 20418

Please print or type.

1 Name in full: _____ (Last Name) _____ (First Name) _____ (Middle Name)

Cross Reference: Maiden name or former name legally changed _____

2. Permanent address through which you could always be reached: (Care of, if applicable) _____

_____ (Number) _____ (Street) _____ (City)

_____ (State) _____ (Zip Code) _____ (Or Country if not U.S.)

3. U.S. Social Security Number: ___ ___ ___ - ___ ___ - ___ ___ ___ ___

4. Date of birth: _____ (Month) _____ (Day) _____ (Year) Place of birth: _____ (State or Country if not U.S.)

5. Sex: 1 ☐ Male
2 ☐ Female

6. Marital status: 0 ☐ Single, never married
1 ☐ Married
2 ☐ Separated, divorced, widowed

7. Citizenship:
0 ☐ United States, native
1 ☐ United States, naturalized

Non-United States:
2 ☐ Permanent Resident of United States (Immigrant visa)
→ _____ (Country of present citizenship)

3 ☐ Temporary Resident of United States (Non-immigrant visa)
→ _____ (Country of present citizenship)

8 Physical disabilities: 0 ☐ None
1 ☐ No useful sight
2 ☐ No useful hearing
3 ☐ No use of arms and/or legs
5 ☐ Other (specify) _____

9. What is your racial background? (Check only one)
0 ☐ American Indian or Alaskan Native
1 ☐ Asian or Pacific Islander
2 ☐ Black
3 ☐ White

10 Are you Hispanic? ☐ No ☐ Yes → 0 ☐ Mexican American
1 ☐ Puerto Rican
2 ☐ Other Hispanic

11. How many dependents do you have? _____ Do not include yourself.
(Dependent = someone receiving at least one half of his or her support from you.)

EDUCATION

12. Location of high school last attended: _____ (State or Country if not U.S.) Year of graduation from high school. ____

13. List in the table below, chronologically, all colleges (including 2-year colleges) or universities you have attended and each degree earned.

Institution/Branch	State/Country	Years Attended From	Years Attended To	Field of Study — Use Specialties List Name	Field of Study — Use Specialties List Number	Degree Title	Degree Granted Mo	Degree Granted Yr

14 How many years were you a full-time student between receiving your first baccalaureate degree (or equivalent) and receiving your doctorate (include the period spent on your thesis and/or dissertation). _____ (whole numbers)

15 Identify the field of your doctorate and enter below the title of your dissertation. If a project report or a musical or literary composition is a degree requirement in lieu of a dissertation, please check box ☐ Name of field _____

Title _____

16 Name the department (or interdisciplinary committee, center, institute, etc.) and school or college of the university which supervised your doctoral program

_____ (Department, Institute, Committee, Program) _____ (School)

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(continued on next page)

17. Please indicate your **primary** and **secondary** sources of support during graduate study by entering "1" and "2" in the boxes. Check (✓) all other sources from which support was received. (Enter only one source as "1" and one source as "2.")

Own/Family Resources
01 ☐ Own Earnings
02 ☐ Spouse's Earnings
03 ☐ Family Contributions

Student Loans
80 ☐ Guaranteed Student Loan (Stafford Loan)
81 ☐ Perkins Loan (includes former National Direct Student Loan)
89 ☐ Other Loan
Specify _____

University-Related
10 ☐ Teaching Assistant
11 ☐ Research Assistant
12 ☐ University Fellow
14 ☐ College Work-Study
19 ☐ Other
Specify _____

Federal Research Assistant
22 ☐ NIH
32 ☐ NSF
52 ☐ USDA
62 ☐ Other Federal
Specify _____

Other Federal Support
21 ☐ NIH Traineeship/Fellowship
29 ☐ Other HHS
33 ☐ NSF Fellowship
40 ☐ Patricia Roberts-Harris Fellowship – Dept. of Ed. (includes former G*POP)
44 ☐ Title VI Foreign Language
49 ☐ Other Dept. Education
60 ☐ Veterans Administration
53 ☐ USDA Fellowship
69 ☐ Other Federal
Specify _____

U.S. Nationally Competitive Fellowships (Non-Federal)
70 ☐ Ford Foundation
71 ☐ Rockefeller Foundation
73 ☐ Mellon Foundation
78 ☐ Other Fellowship
Specify _____

Other Sources
90 ☐ Business/Employer
91 ☐ Foreign (Non-U.S.) Government
92 ☐ State Government
99 ☐ Other

18. When you receive your doctorate degree, how much money will you owe that is directly related to your undergraduate and/or graduate education (tuition and fees, living expenses and supplies, transportation to and from school)?

0 ☐ None
1 ☐ $5,000 or less
2 ☐ $5,001-$10,000
3 ☐ $10,001-$15,000
4 ☐ $15,001 or more

19A. Please check the category that most fully describes your status during the year immediately preceding the award of the doctorate.
0 ☐ Full-time employed → Go to item 19B →
1 ☐ Held fellowship
2 ☐ Held assistantship
3 ☐ Part-time employed
4 ☐ Not employed
5 ☐ Other (specify) _____

B. If full-time employed, what type of position did you hold?
6 ☐ College or university, faculty
7 ☐ College or university, non-faculty
8 ☐ Elementary or secondary school, teaching
9 ☐ Elementary or secondary school, non-teaching
(11) ☐ Industry or business
(12) ☐ Other (specify) _____

POSTGRADUATION PLANS

20 How definite are your postgraduate plans?
0 ☐ Am returning to, or continuing in, predoctoral employment
1 ☐ Have signed contract or made definite commitment
2 ☐ Am negotiating with one or more specific organizations
3 ☐ Am seeking position but have no specific prospects
4 ☐ Other (specify) _____

21. What best describes your immediate postgraduate plans?
0 ☐ Postdoctoral fellowship
1 ☐ Postdoctoral research associateship
2 ☐ Traineeship
3 ☐ Other study (specify) _____
} Go to Item 22

4 ☐ Employment (other than 0, 1, 2, 3)
5 ☐ Military service
6 ☐ Other (specify) _____
} Go to Item 23

22 If you plan to have a postdoctoral fellowship, associateship, traineeship, or otherwise undertake further study.

A What will be the field of your postdoctoral study? Please enter number from **Specialties List.** _____

B What will be the main source of financial support for your research?
0 ☐ U.S. Government
1 ☐ College or university
2 ☐ Private foundation
3 ☐ Nonprofit, other than private foundation
4 ☐ Other (specify) _____
6 ☐ Unknown

Go to Item 24

23A. For what type of employer will you be working?

Education
a ☐ U.S. 4-yr college or university other than medical school
b ☐ U.S. medical school
c ☐ U.S. jr. or community college
d ☐ Elementary or secondary school
e ☐ Foreign institution

Government
f ☐ Foreign government
g ☐ U.S. federal government
h ☐ U.S. state government
i ☐ U.S. local government

Private Sector
j ☐ Nonprofit organization
k ☐ Industry or business
l ☐ Self-employed

Other
m ☐ Other (specify) _____

B. Indicate what your primary and **secondary** work activities will be with "1" and "2" in the appropriate boxes
0 ☐ Research and development
1 ☐ Teaching
2 ☐ Administration
3 ☐ Professional services to individuals
5 ☐ Other

C In what field will you be working? Please enter number from **Specialties List** _____

Go to Item 24

24 Where do you intend to work/study/live after graduation? _____ _____
State or Country if not U.S.

_____
Name and City of Organization if known

25. What is the highest educational attainment of your mother and father? Please circle

your father	Less than high school	High school graduate	Some college	Bachelors	Masters	Professional	Doctorate
your mother	Less than high school	High school graduate	Some college	Bachelors	Masters	Professional	Doctorate
	1	2	3	4	5	6	7

Signature _____ Date _____

If you would like a summary of the results of this survey, please check box ☐

SPECIALTIES LIST

Instructions: The following field listing is to be used in responding to items 13, 22A, and 23C. If a field marked with an asterisk (*) is chosen in item 13, please write in field of specialization in the space provided.

AGRICULTURE

000 Agricultural Economics
002 Agricultural Business & Mgmt.
005 Animal Breeding & Genetics
010 Animal Nutrition
012 Dairy Science
014 Poultry Science
055 Fisheries Sciences
019 Animal Sciences, Other*
020 Agronomy
025 Plant Breeding & Genetics
030 Plant Path (See also 120)
032 Plant Protection — Pest Mgmt
039 Plant Sciences, Other*
042 Food Distribution
043 Food Engineering
044 Food Sciences, Other*
046 Soil Chemistry/Microbiology
049 Soil Sciences, Other*
050 Horticulture Science
066 Forest Biology
068 Forest Engineering
070 Forest Management
072 Wood Science
074 Renewable Natural Resources
079 Forestry & Related Sci., Other*
080 Wildlife/Range Management
098 Agriculture, General
099 Agricultural Sciences, Other*

BIOLOGICAL SCIENCES

100 Biochemistry
105 Biophysics
110 Bacteriology
115 Plant Genetics
120 Plant Path (See also 030)
125 Plant Physiology
129 Botany, Other*
130 Anatomy
133 Biometrics & Biostatistics
136 Cell Biology (See also 154)
139 Ecology
142 Developmental Bio./Embry
145 Endocrinology
148 Entomology
151 Immunology
154 Molecular Biology
157 Microbiology
160 Neurosciences
163 Nutritional Sciences
166 Parasitology
169 Toxicology
170 Genetics, Human & Animal
175 Pathology, Human & Animal (See also 120)
180 Pharmacology Hum. & Anim
185 Physiology Human & Animal
189 Zoology, Other*
198 Biological Sciences, General
199 Biological Sciences, Other*

HEALTH SCIENCES

200 Audiology & Speech Path
210 Environmental Health
215 Public Health (See also 133)
220 Epidemiology
230 Nursing
240 Pharmacy
250 Veterinary Medicine
298 Health Sciences, General
299 Health Sciences, Other*

ENGINEERING

300 Aerospace, Aeronautical & Astronautical
303 Agricultural
306 Bioengineering & Biomedical
309 Ceramic
312 Chemical
315 Civil
318 Communications
321 Computer
324 Electrical, Electronics
327 Engineering Mechanics
330 Engineering Physics
333 Engineering Science
336 Environmental Health Engin
339 Industrial
342 Materials Science
345 Mechanical
348 Metallurgical
351 Mining & Mineral
354 Naval Arch. & Marine Engin.
357 Nuclear
360 Ocean
363 Operations Research (See also 465, 930)
366 Petroleum
369 Polymer
372 Systems
398 Engineering, General
399 Engineering, Other*

COMPUTER AND INFORMATION SCIENCES

400 Computer Sciences
410 Information Sci. & Systems*

MATHEMATICS

420 Applied Mathematics
425 Algebra
430 Analysis & Functional Analysis
435 Geometry
440 Logic (See also 785)
445 Number Theory
450 Statistics
455 Topology
460 Computing Theory & Practice
465 Operations Research (See also 363, 930)
498 Mathematics, General
499 Mathematics, Other*

PHYSICAL SCIENCES

Astronomy

500 Astronomy
505 Astrophysics

Atmospheric & Meteorological Sciences

510 Atmospheric Physics & Chem
512 Atmospheric Dynamics
514 Meteorology
518 Atmos. & Meteor Sci. Gen
519 Atmos & Meteor. Sci., Other*

Chemistry

520 Analytical
522 Inorganic
524 Nuclear
526 Organic
528 Pharmaceutical
530 Physical
532 Polymer
534 Theoretical
538 Chemistry, General
539 Chemistry, Other* (See 100 Biochemistry)

Geological Sciences

540 Geology
542 Geochemistry
544 Geophysics & Seismology
546 Paleontology
548 Mineralogy, Petrology
550 Stratigraphy, Sedimentation
552 Geomorphology & Glacial Geol
554 Applied Geology
558 Geological Sciences, General
559 Geological Sciences, Other*

Physics

560 Acoustics
561 Atomic & Molecular
562 Electron
564 Elementary Particle
566 Fluids
568 Nuclear
569 Optics
570 Plasma
572 Polymer
574 Solid State
578 Physics, General
579 Physics, Other*

Other Physical Sciences

580 Environmental Sciences
585 Hydrology & Water Resources
590 Oceanography
595 Marine Sciences
599 Physical Sciences, Other*

PSYCHOLOGY

600 Clinical
603 Cognitive
606 Comparative
609 Counseling
612 Developmental
615 Experimental
618 Educational (See also 822)
621 Industrial & Organizational (See also 935)
624 Personality
627 Physiological
630 Psychometrics
633 Quantitative
636 School (See also 825)
639 Social
648 Psychology, General
649 Psychology, Other*

SOCIAL SCIENCES

650 Anthropology
652 Area Studies
658 Criminology
662 Demography
666 Economics
668 Econometrics
670 Geography
674 International Relations
678 Political Sci. & Government
682 Public Policy Studies
686 Sociology
690 Statistics (See also 450)
694 Urban Studies
698 Social Sciences, General
699 Social Sciences, Other*

HUMANITIES

History

700 History, American
705 History, European
710 History of Science
718 History, General
719 History, Other*

Letters

720 Classics
723 Comparative Literature
729 Linguistics
732 Literature, American
733 Literature, English
734 English Language
736 Speech & Debate
738 Letters, General
739 Letters, Other*

Foreign Languages and Literature

740 French
743 German
746 Italian
749 Spanish
752 Russian
755 Slavic (other than Russian)
758 Chinese
762 Japanese
765 Hebrew
768 Arabic
769 Other Languages*

Other Humanities

770 American Studies
773 Archeology
776 Art History & Criticism
780 Music
785 Philosophy (See also 440)
790 Religion (See also 984)
795 Theatre
798 Humanities General
799 Humanities, Other*

EDUCATION

800 Curriculum & Instruction
805 Educ. Administration & Supervision
810 Educational Media
815 Educ. Stat. & Research
820 Educ. Testing, Evaluation & Measurement
822 Educational Psychology (See also 618)
825 School Psychology (See also 636)
830 Social Foundations
835 Special Education
840 Student Counseling & Personnel Services
845 Higher Education Research

Teacher Education

850 Pre-elementary
852 Elementary
856 Secondary
858 Adult & Continuing

Teaching Fields

860 Agricultural Educ
861 Art Educ
862 Business Educ
864 English Educ
866 Foreign Languages Educ
868 Health Educ
870 Home Economics Educ
872 Industrial Arts Educ.
874 Mathematics Educ
876 Music Educ
878 Nursing Educ
880 Physical Educ
882 Reading Educ
884 Science Educ
885 Social Science Educ
886 Speech Educ
887 Technical Educ
888 Trade & Industrial Educ
889 Teacher & Educ Specific Subject Areas, Other*
898 Education, General
899 Education, Other*

PROFESSIONAL FIELDS

Business & Management

900 Accounting
905 Banking & Finance
910 Business Admin & Management
915 Business Economics
920 Marketing Mgmt & Research
925 Business Statistics
930 Operations Research (See also 363 465)
935 Organiz. Ben. (See also 621)
938 Business & Mgmt., General
939 Business & Mgmt., Other*

Communications

940 Communications Research
945 Journalism
950 Radio & Television
958 Communications, General
959 Communications, Other*

Other Professional Fields

960 Architec & Environ Design
964 Home Economics
968 Law
972 Library & Archival Science
976 Public Administration
980 Social Work
984 Theology (See also 790)
988 Professional Fields General
989 Professional Fields Other*

999 OTHER FIELDS*

The Appendix tables present data according to the following field classifications. Appendix Tables A-1 and A-2 and Appendix Table B-1 display all subfields that are on the survey Specialties List. Appendix Tables A-4, A-5, and A-6 show data by seven broad fields only. Appendix Tables A-3 and A-7 include the additional field groupings indicated below.

SCIENCES

Physical Sciences (400-599)
- Physics and Astronomy (500-505, 560-579)
- Chemistry (520-539)
- Earth, Atmospheric and Marine Sciences (510-519, 540-559, 580-599)
- Mathematics (420-499)
- Computer Sciences (400-410)

} Combined in Table A-7

Engineering (300-399)

Life Sciences (000-299)
- Biological Sciences (100-199)
  - Biochemistry (100)
  - Other Biological Sciences (105-199)
- Health Sciences (200-299)
- Agricultural Sciences (000-099)

Social Sciences (600-699)
- Psychology (600-649)
- Economics and Econometrics (666, 668)
- Anthropology and Sociology (650, 686)
- Political Science and International Relations (674, 678)
- Other Social Sciences (652-662, 670, 682, 690-699)

} Combined in Table A-7

NONSCIENCES

Humanities (700-799)
- History (700-719)
- English and American Language and Literature (732-734)
- Foreign Languages and Literature (740-769)
- Other Humanities (720-729, 736-739, 770-799)

} Combined in Table A-7

Education (800-899)

Professional and Other Fields (900-999)
- Business and Management (900-939)
- Other Professional Fields (940-989)
- Other Fields (999)

NOTE: Doctorate recipients indicate their fields of specialty. Their choices may differ from departmental names.

TITLES OF RESEARCH DEGREES INCLUDED IN THE SURVEY OF EARNED DOCTORATES

DA	Doctor of Arts	DMSc	Doctor of Medical Science
DArch	Doctor of Architecture	DNSc	Doctor of Nursing Science
DAS	Doctor of Applied Science	DPA	Doctor of Public Administration
DBA	Doctor of Business Administration	DPE	Doctor of Physical Education
DChem	Doctor of Chemistry	DPH	Doctor of Public Health
DCJ	Doctor of Criminal Justice	DPS	Doctor of Professional Studies
DCL	Doctor of Comparative Law/Civil Law	DrDES	Doctor of Design
DCrim	Doctor of Criminology	DRE	Doctor of Religious Education
DED	Doctor of Environmental Design	DRec/DR	Doctor of Recreation
DEng	Doctor of Engineering	DSc/ScD	Doctor of Science
DEnv	Doctor of Environment	DScD	Doctor of Science in Dentistry
DESc/ScDE	Doctor of Engineering Science	DScH	Doctor of Science and Hygiene
DF	Doctor of Forestry	DScVM	Doctor of Science in Veterinary Medicine
DFA	Doctor of Fine Arts	DSM	Doctor of Sacred Music
DGS	Doctor of Geological Science	DSSc	Doctor of Social Science
DHL	Doctor of Hebrew Literature/Letters	DSW	Doctor of Social Work
DHS	Doctor of Health and Safety	EdD	Doctor of Education
DHS	Doctor of Hebrew Studies	JCD	Doctor of Canon Law
DIT	Doctor of Industrial Technology	JSD	Doctor of Juristic Science
DLS	Doctor of Library Science	LScD	Doctor of Science of Law
DM	Doctor of Music	PhD	Doctor of Philosophy
DMA	Doctor of Musical Arts	RhD	Doctor of Rehabilitation
DME	Doctor of Music Education	SJD	Doctor of Juridical Science
DMin/DM	Doctor of Ministry	STD	Doctor of Sacred Theology
DML	Doctor of Modern Languages	ThD	Doctor of Theology
DMM	Doctor of Music Ministry		

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