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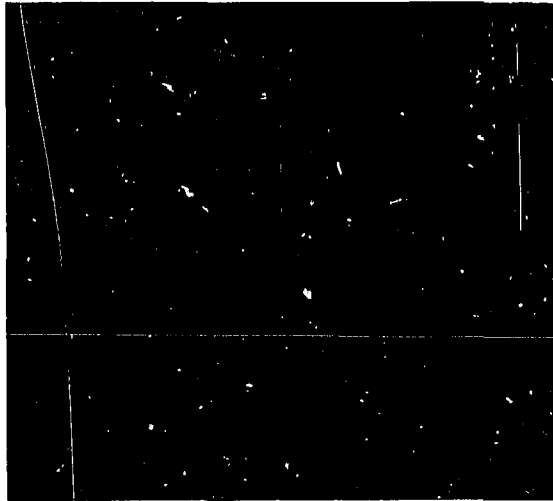
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ABSTRACT

This report summarized statistical data on graduate student support, postdoctorals, and graduate faculty as of fall 1969 in 224 doctorate granting institutions applying for traineeship grants from the National Science Foundation for 1970. These 224 include virtually all U.S. doctoral granting institutions. Information is presented on: (1) graduate enrollment in the sciences; (2) types of major support of full-time graduate students in doctoral departments in terms of fellowships and traineeships, research assistantships, teaching assistantships, and other types of support; (3) sources of major support for full-time graduate students in doctoral departments in terms of U.S. Government support, institutional support, other outside support, and self-support; and (4) faculty and postdoctorals in doctoral departments. The appendices include: (1) a list of the institutions participating in the graduate traineeship program; (2) some technical notes presenting definitions of the terms used in this report and some comparative tables; (3) statistical tables; (4) instructions and consolidated departmental data sheets of doctoral departments; and (5) consolidated departmental summaries. (AF)

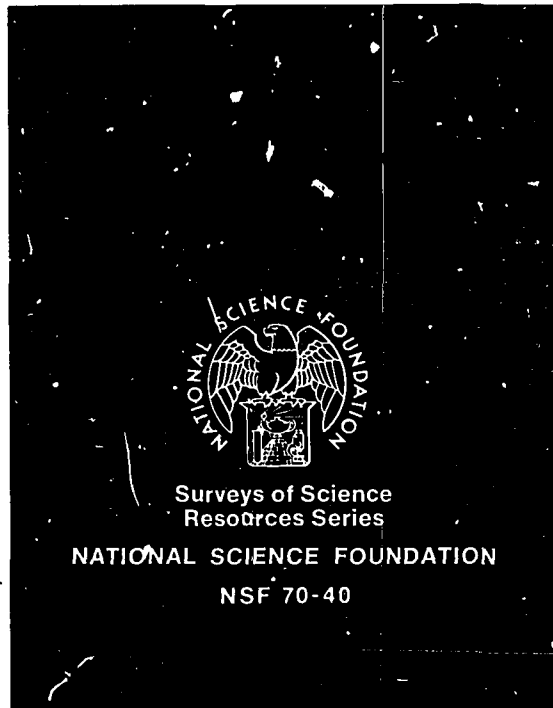


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## GENERAL NOTES

- Statistical data presented in this report relate solely to the 2,894 doctorate science departments of 224 institutions that furnished data on NSF traineeship applications for 1970.
- All data published in this report on student enrollment, faculty, and postdoctorals for 1969 refer to the fall of that year.
- The term "support" as used here refers in all cases to *major* support, which is defined as a total stipend of \$1,200 or more, excluding tuition. In cases of multiple support, the major source was reported, and a graduate student was counted only once under one category.
- Information on degrees awarded refers to the academic year ended June 30 of the designated year.
- For convenience, the term "sciences" is used to denote both science and engineering.

ED049687

**Graduate Student  
Support  
and Manpower  
Resources in  
Graduate Science  
Education,  
Fall 1969**

An Analysis of Student  
Enrollments, Sources of  
Student Support, Faculty,  
and Postdoctorals in  
Doctorate Departments



**Surveys of Science  
Resources Series**

**NATIONAL SCIENCE FOUNDATION**

**NSF 70-40**

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## Foreword

**T**HIS REPORT summarizes statistical data on graduate student support, postdoctorals, and graduate faculty as of fall 1969 in doctorate-granting institutions applying for traineeship grants from the National Science Foundation for 1970. Virtually all doctorate-granting institutions in the United States applied for traineeships and submitted information on their graduate programs. The primary purpose of such information is to facilitate the administration of the NSF's traineeship grant program. Secondly, however, the data constitute a fund of information on graduate science education that is not available from any other source, particularly with reference to the types and major sources of financial support of graduate students.

Information on the characteristics and support of graduate science education is important to officials in government, education, and other organizations concerned with assuring an adequate supply of highly trained scientists and engineers to meet present and future manpower requirements of the U.S. economy. The types and sources of support available to graduate students are of interest to all concerned with the financing of higher education, including prospective graduate students, guidance counsellors, and the general public.

Data on the types and sources of financing of graduate education are particularly important today, because of the various pressures being placed on the structure of higher education by such public issues as inflation, selective service policies, leveling off of Federal support of higher education, student unrest, and competing demands for public funds to alleviate and solve problems faced by society. The present study provides some insight into the resultant impact of changing patterns of public and private support programs on graduate education in the sciences and engineering in doctorate-granting institutions.

This is the third in a series of published reports analyzing data submitted in traineeship grant applications by doctorate-granting institutions. The first covered graduate student support and manpower resources in graduate science education, fall 1965 and fall 1966, while the second was limited to an analysis of the support of full-time graduate students in the sciences, fall 1967.

This report on fall 1969 characteristics of graduate enrollment in doctorate institutions was prepared in the National Science Foundation's Office of Economic and Manpower Studies, Thomas J. Mills, Head. The basic data on which the report is based were supplied by the NSF's Division of Graduate Education, Howard D. Kramer, Division Director. Special recognition is accorded Dr. Douglas S. Chapin, Program Director, Graduate Fellowships and Traineeships Program, whose cooperation and assistance greatly facilitated the preparation of this report.

CHARLES E. FALK  
*Director, Division of Science Resources  
and Policy Studies*

SEPTEMBER 1970.

## **ACKNOWLEDGMENTS**

This report was prepared by Penny D. Foster under the supervision of Joseph H. Schuster, Study Director, Universities and Nonprofit Institutions Studies Group. Guidance and review in the preparation of the report were provided by Kenneth Sanow, Head, Statistical Surveys and Reports Section.

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- Data in percent terms are rounded to the nearest whole number in the text and charts, but are shown in tables to one decimal. Annual percent changes and ratios are shown to one decimal throughout the report.
- Data may not add to subtotals and totals because of rounding.

## Summary

### Number of Science Graduate Students

Graduate enrollment in 2,894 science doctorate departments of 224 universities and colleges that submitted information to the National Science Foundation for fall 1969 totaled 184,845. These students were distributed as follows:

*Area of science*—Engineering, 28 percent; social sciences, 20 percent; physical sciences, 19 percent; life sciences, 17 percent; mathematical sciences, 8 percent; psychology, 7 percent.

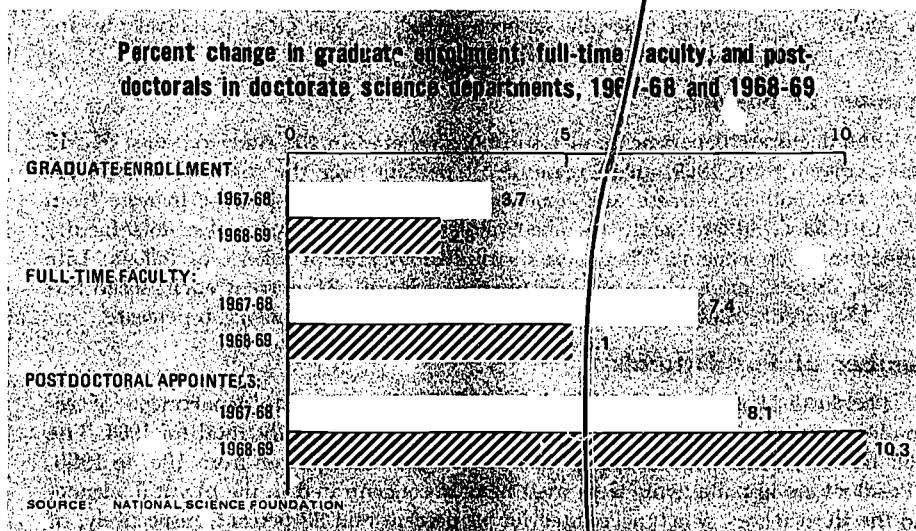
*Enrollment status*—Full-time students, 76 percent; part-time students, 24 percent.

*Citizenship*—U.S. citizens, 83 percent; foreign students, 17 percent.

*Level of study*—First-year students, 35 percent; beyond first-year students, 65 percent.

Fall 1969 graduate enrollment in reporting science doctorate departments was 2.8 percent higher than in fall 1968, or slightly below the 3.1 percent increase from 1967 to 1968. The annual rates of increase in graduate enrollment in psychology, the social sciences, and the life sciences were substantially higher than the averages prevailing for all areas of science combined for 1967-68 and 1968-69, respectively.

*Types of major support of full-time graduate students.* Principal mechanisms utilized for full-time graduate student support in 1969 were: Fellowships and traineeships (30 percent), teaching assistantships (23 percent), research assistantships (22 percent), and "other" types, including principally self-support (26 percent).



The relative change in the number of students utilizing various types of support during 1967-69, based on 2,338 identical departments reporting for each of the 3 years, was as follows:

<i>Type of support</i>	<i>Percent change</i>	
	<i>1967-68</i>	<i>1968-69</i>
Fellowships-traineeships.....	1.8	-6.0
Research assistantships.....	-1.1	-.8
Teaching assistantships.....	5.0	3.6
Other types of support.....	6.0	11.6

**Sources of major support of full-time graduate students.** More than four-fifths (81 percent) of the full-time graduate science students received major financial assistance (\$1,200 or more annually, exclusive of tuition) from outside sources. The U.S. Government financed 37 percent of the full-time graduate students in 1969; institutions and State and local governments, 36 percent; and other outside sources, such as industry, private foundations, etc., 9 percent. The remaining 19 percent relied upon self-support, including loans, savings, and family assistance, to finance their education.

The Federal Government provided major support to 51,620 full-time graduate students through the following mechanisms: Fellowships-traineeships, 56 percent; research assistantships, 38 percent; teaching assistantships, 1 percent; and other types, 6 percent.

The relative change in the number of students receiving support from various sources, based on the 2,338 identical departments reporting from 1967 to 1969, was as follows:

<i>Source of support</i>	<i>Percent change</i>	
	<i>1967-68</i>	<i>1968-69</i>
U.S. Government.....	-1.6	-5.9
Other U.S. sources, including institutional and self-support.....	6.4	6.0
Foreign sources.....	-12.0	11.6

The leveling off of U.S. Government support was a factor in the reduction of growth rate in graduate science enrollment from 1967-69. However, the impact of the decline in number of federally supported students was offset principally by increases in institutional support and in self-support.

### **Number of Faculty**

The doctorate departments of institutions covered in the study reported 54,549 faculty members in 1969, an increase of 5.1 percent over the comparable total for 1968. The 1968-69 increase was somewhat less than the 7.4-percent increase from 1967 to 1968. Graduate faculty members totaled 45,687, or 84 percent of total faculty in doctorate departments. They were distributed by area of science as follows: Life sciences, 25 percent; engineering and physical sciences, 21 percent each; social sciences, 17 percent; mathematical sciences, 10 percent; and psychology, 6 percent.

### **Number of Postdoctorals**

Postdoctoral appointments totaled 8,517 in the doctorate departments of respondent institutions in 1969, an increase of 10.3 percent over the total for 1968. The 1968-69 rate of increase was higher than the 8.1-percent increase from 1967 to 1968.

Postdoctoral appointments were most heavily concentrated in the physical sciences and the life sciences, which accounted for 44 percent and 38 percent, respectively, of the total.

## Section I. Introduction

The 224 science doctorate-granting institutions that applied for 1970 NSF traineeships included virtually all the institutions granting such degrees. At least one institution from each of the 50 States and the District of Columbia was represented in the roster of applications, as is shown in the list of institutions in appendix A. Doctorate departments in the study account for approximately 76 percent of the graduate enrollment and 94 percent of the doctorates granted in the sciences and engineering by U.S. universities and colleges.<sup>1</sup>

The present report for fall 1969 has a number of features in common with the two previous reports in this series.<sup>2</sup> For example, the information requested on Departmental Data Sheets that have been used to collect data on science departments for each of the years since 1966 has remained unchanged. Among the differentiating features in each of the reports issued in the series are the differences in coverage of graduate science education resulting from the increase in the number of applicant doctorate institutions, as well as the number of participating science departments. The number of participating institutions and departments for recent years was as follows:

Year	Number of institutions	Number of departments		
		Total	Master's	Doctorate
1966.....	204	2,866	441	2,425
1967.....	209	3,016	436	2,580
1968.....	219	3,190	454	2,736
1969.....	224	3,354	460	2,894

As previously mentioned, not all eligible institutions nor all science departments within an applicant institution request NSF traineeship grants. Nevertheless, the coverage of science departments, though not complete, has become increasingly comprehensive.

<sup>1</sup> See appendix B for a description of the coverage of graduate enrollment and degree statistics presented in this report.

<sup>2</sup> National Science Foundation, *Graduate Student Support and Manpower Resources in Graduate Science Education, Fall 1965 and Fall 1966* (NSF 68-13), and *Support of Full-Time Graduate Students in the Sciences, Fall 1967* (NSF 69-34) (Washington, D.C., 20402: Supt. of Documents, U.S. Government Printing Office).

The Departmental Data Sheets and Departmental Summaries submitted by the 224 institutions seeking grants for 1970 under the NSF's Graduate Traineeship Program provided the fall 1969 data upon which this report is based.<sup>3</sup> (Graduate enrollment characteristics reported in NSF traineeship grant applications aggregate data for the year prior to the one for which the grant is requested.) The Departmental Data Sheet was the principal source of information on full- and part-time graduate students, faculty, postdoctorals, and related characteristics of graduate science education. The Departmental Summary provided trend statistics on enrollment, faculty, and postdoctorals, 1967 to 1969, in the doctorate departments of institutions covered in this report.

This report is devoted to an analysis of graduate student support and manpower resources in the 2,894 doctorate departments of participating institutions. Moreover, the educational characteristics of these doctorate departments can be considered reasonably representative of the universe, since statistical coverage was virtually complete. In contrast, the 460 master's departments accounted for a relatively minor share of the degree output or of manpower resources of the doctorate institutions.<sup>4</sup>

Figures on graduate enrollment in doctorate departments contained in this report include virtually all graduate students enrolled in degree-credit programs with the direct objective of attaining a doctorate degree in the sciences or engineering. They, of course, also include students whose current educational objective is the attainment of master's degrees, and who may or may not plan to continue to the doctorate level at some later time.

Trends in selected characteristics of graduate enrollment in doctorate science departments during 1967-69 are covered in the report. These trend data relate to data for an identical group of departments

<sup>3</sup> The Departmental Data Sheets and the Departmental Summaries are reproduced in appendixes D and E, respectively.

<sup>4</sup> In the fall 1969, the 460 master's departments accounted for only 6 percent of the graduate enrollment, 8 percent of the full-time graduate science faculty, and 1 percent of the postdoctorals in the 224 doctorate-granting institutions.

for each of the 3 years. For example, the Departmental Summary provided selected overall data on graduate enrollment and manpower resources during 1967-69 for the 2,894 doctorate departments that applied for traineeship grants for 1970. Other trend data, such as type and sources of major support, are based on information reported by the 2,338 doctorate departments that applied for NSF traineeships for each of the years, 1968, 1969, and 1970. Thus, all trend data shown in the report relate to identical groups of departments.

The university and college science departments that supplied the information utilized a wide variety of titles. To organize the statistical data reported by departments in a convenient form, the system used in the two earlier NSF studies of graduate student support was adopted. Departments were classified in 41 fields of science, which, in turn, were grouped for some purposes in six areas of science, as follows:

- |                     |                             |
|---------------------|-----------------------------|
| <i>Engineering</i>  | Metallurgical and materials |
| Aeronautical        | Mining                      |
| Agricultural        | Nuclear                     |
| Chemical            | Petroleum                   |
| Civil               | Other engineering           |
| Electrical          | <i>Physical sciences</i>    |
| Engineering science | Astronomy                   |
| Industrial          | Atmospheric sciences        |
| Mechanical          |                             |

- |                              |                                   |
|------------------------------|-----------------------------------|
| Chemistry                    | Other life sciences               |
| Geosciences                  | <i>Psychology</i>                 |
| Oceanography                 | <i>Social sciences</i>            |
| Physics                      | Agricultural economics            |
| <i>Mathematical sciences</i> | Anthropology                      |
| Applied mathematics          | Economics (except agricultural)   |
| Mathematics                  | Geography                         |
| Statistics                   | History and philosophy of science |
| <i>Life sciences</i>         | Linguistics                       |
| Agriculture                  | Political science                 |
| Biochemistry                 | Sociology                         |
| Biology                      | Sociology and anthropology        |
| Botany                       |                                   |
| Microbiology                 |                                   |
| Pharmacology                 |                                   |
| Physiology                   |                                   |
| Zoology                      |                                   |

The appendixes provide somewhat more statistical information than is contained in the text of the report and provide reference materials that may be useful to persons concerned with details on characteristics of graduate education in doctorate departments in specific areas or fields of science. Appendix A lists by State the 224 doctorate institutions that supplied the information on which the report is based, while appendix B contains information regarding the definitions and extent of coverage. Appendixes C, D, and E consist of statistical aggregates reported by doctorate departments, including the Instructions, Consolidated Departmental Data Sheets, and Departmental Summaries for each of the six areas of science.

## Section II. Graduate Enrollment in the Sciences

This section of the report is primarily concerned with four important characteristics of graduate science enrollment in doctorate departments, as follows: (1) Distribution of graduate students among areas and fields of science; (2) relative number of full- and part-time students; (3) citizenship of students, U.S. or foreign; and (4) proportions of first-year and beyond-first-year students.

Graduate enrollment in the science doctorate departments covered in this study increased 2.8 percent between 1968 and 1969, compared with a rate of increase of 3.7 percent between 1967 and 1968 (table 1). The foregoing annual rates of increase were substantially below the 9.3-percent annual rate of increase in enrollment for advanced degrees in the sciences and engineering in all institutions of higher education that prevailed during the 7-year period 1960 to 1967.<sup>5</sup> The reduced rate of increase in graduate enrollment in science doctorate departments during 1967-69 was contrary to expectations based on demographic factors. The population base that includes most graduate students, persons ranging in age from 22 through 27 years, increased 3.0 percent from 1967 to 1968 and at a substantially higher rate of 8.0 percent from 1968 to 1969.<sup>6</sup>

<sup>5</sup> Based on U.S. Office of Education statistics contained in National Science Foundation, *Science and Engineering Doctorate Supply and Utilization, 1968-80*, (NSF 69-37) (Washington, D.C. 20402: Supt. of Documents, U.S. Government Printing Office, 1969), page 14.

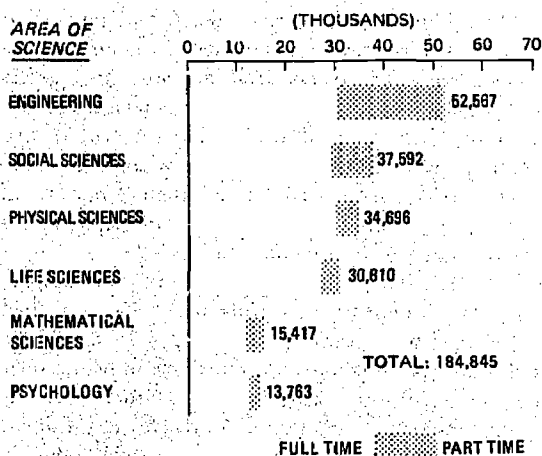
<sup>6</sup> Based on data published in U.S. Bureau of the Census, *Current Population Reports*, Series P-25, Nos. 314, 385, and 441.

Table 1.—Percent change in enrollment of graduate students in doctorate departments, by area of science and enrollment status, 1967-68 and 1968-69<sup>a</sup>

Area of science	Total		Full time		Part time	
	1967-68	1968-69	1967-68	1968-69	1967-68	1968-69
Total.....	3.7	2.8	3.8	2.1	3.3	4.9
Engineering.....	1.0	1.9	1.4	1.5	.5	2.6
Physical sciences.....	1.6	-1.2	2.0	-2.4	-1.2	7.4
Mathematical sciences.....	2.8	.5	3.1	.2	1.6	1.2
Life sciences.....	5.3	3.9	4.5	3.7	13.3	5.0
Psychology.....	8.5	7.0	7.9	5.3	13.5	19.0
Social sciences.....	7.3	6.4	6.7	5.8	9.4	8.7

<sup>a</sup> Based on appendix table C-1.

Chart 1. Number of graduate students in doctorate departments, by enrollment status, 1969



SOURCE: NATIONAL SCIENCE FOUNDATION (APPENDIX TABLE C-1).

It is also noteworthy that graduate enrollment in nonscientific fields far outstripped the relatively small increases experienced in the sciences and engineering in recent years. Graduate enrollments in the arts, humanities, and other nonscientific fields increased 10.3 percent from 1967 to 1968 and 9.4 percent from 1968 to 1969.<sup>7</sup> As will be seen in sections III and IV of this report, there was a notable reduction in the number of federally financed fellowships-traineeships and research assistantships which could have been a principal factor responsible for the lowered rate of growth in graduate enrollment in the sciences and engineering since 1968.

In the analysis of various characteristics of graduate education covered in this report, such as relative change in enrollment and relative numbers of part-

<sup>7</sup> Based on statistics of the U.S. Office of Education, Survey of Students Enrolled for Master's and Higher Degrees, various years, and preliminary data for fall 1969.

time students, foreign students, etc., the wide differences in graduate enrollment in the various areas of science should be taken into account. For example, the number of students in the six areas of science ranged from a high of 52,567 in engineering to a low of 13,763 in psychology (chart 1).

As might be expected with respect to the 41 fields of science, the disparity among fields in number of students was much greater than was the case with the six areas.<sup>8</sup> For example, the six fields with 10,000 or more students were electrical engineering (16,162), chemistry (15,813), psychology (13,763), physics (12,804), mathematics (12,123), and political science (10,546). The foregoing accounted for 44 percent of the students in doctorate departments. In contrast, the six fields with the fewest graduate students—petroleum engineering (331), mining engineering (334), astronomy (531), agricultural engineering (533), history and philosophy of science (766), and atmospheric sciences (815)—accounted for less than 2 percent of the graduate enrollment in the doctorate departments covered in the study (appendix table C-2).

Of the 184,845 graduate students in doctorate departments, 76 percent were full-time students and 24 percent part-time students (chart 2). It should be noted that the foregoing proportions indicate relatively more full-time and fewer part-time students than do those developed by the U. S. Office of Education in its enrollment survey. This is attributable to the fact that the NSF's Departmental Data Sheet defines a full-time graduate student as a "bona fide graduate student (not a regular staff member, e.g., an instructor) who is engaged entirely in training activities in his field of science; these activities may embrace any appropriate combination of study, teaching, and research." In contrast, the U.S. Office of Education's definition is more restrictive and excludes many research assistants and teaching assistants counted as full-time students in this report.<sup>9</sup> It is difficult to

<sup>8</sup> There is considerable arbitrariness in defining the 41 fields of science. The number of students shown for a given field could depend on the fineness of the classification and the extent to which subdisciplines or related disciplines were grouped together or shown separately. For example, the classification used in this report does not break the area of science, "psychology," into any separate fields.

<sup>9</sup> The U.S. Office of Education's Higher Education General Information Survey (HEGIS), Students Enrolled for Advanced Degrees, Fall 1969 (OE Form 2300-2.5), defined a full-time graduate student as follows: "A full-time student is one whose academic load in terms of course work or other activity (such as a thesis, research, or teaching) is at least 75 percent of that normally required of such students. Time spent by teaching fellows should be included only if such teaching is performed as a requirement for a degree. Employment which is not a part of the prescribed activity for an advanced degree or time spent on work required because of lack of undergraduate background should not be counted as time spent on graduate work. A part-time student is one who is carrying an academic schedule of less than three-fourths the normal load."

make exact comparisons of enrollment data contained in this report with U.S. Office of Education data, because these data include only students in doctorate departments that applied for NSF traineeships for 1970, while the latter include all graduate students, including those in both master's and doctorate departments.

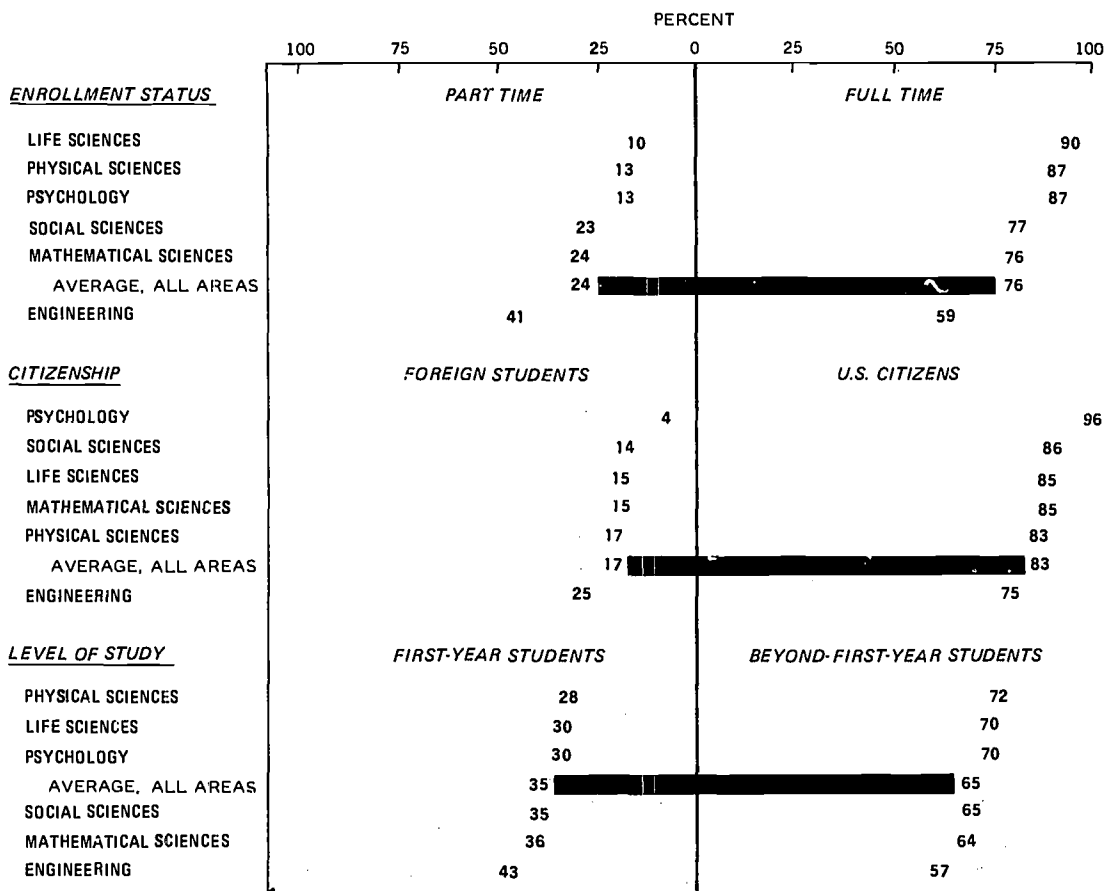
One of the noteworthy aspects of the reduced rate of increase in overall graduate enrollments from 1968 to 1969 was that part-time enrollment increased 4.9 percent, or more than double the 2.1-percent rate of increase for full-time enrollment. The foregoing differing rates of increase may partly reflect career choices made by male graduate students to avoid the impact of 1967 Selective Service Act changes, which increased their vulnerability to the draft. Some male graduate students, both first-year and beyond-first-year, may have chosen to pursue graduate study on a part-time basis in order to take deferrable full-time jobs. The increase in graduate enrollment—both full- and part-time—in psychology was the most dramatic shift upward during 1968-69. In contrast, the decline in full-time enrollment in the physical sciences of 2.4 percent more than offset the increase in part-time enrollment of 7.4 percent from 1968 to 1969.

U.S. citizens comprised 83 percent of graduate enrollment in the sciences and engineering, and foreign students constituted the remaining 17 percent (chart 2). In both absolute and relative terms, students of foreign citizenship in engineering far exceeded the comparable number in the other areas of science. In terms of enrollment status (full-time and part-time) the differences among areas of science in the citizenship of graduate students were quite pronounced.

First-year graduate students in doctorate departments comprised 35 percent of the total in 1969, and beyond-first-year students, 65 percent. Among areas of science, the relative number of first-year students ranged from a high of 43 percent in engineering to a low of 28 percent in the physical sciences. Interpreting the significance of the foregoing data requires that a number of divergent factors be taken into account. For example, the proportion of first-year students tends to be highest in growing areas of science where ample stipend-support is available to attract new students, as well as in areas of science where relatively large numbers of students view master's degrees as a terminal degree. On the other hand, the proportion of beyond-first-year students will be highest in fields where a relatively large number of students seek doctorates and the time required to earn the advanced degree is relatively long.

In terms of enrollment status, there were sizable dif-

Chart 2. Characteristics of graduate students in doctorate departments, 1969



SOURCE: NATIONAL SCIENCE FOUNDATION (APPENDIX TABLES C-2, C-3, AND C-6).

ferences among areas of science, and, on an overall basis, in the relative numbers of first-year and beyond-first-year students. Full-time graduate enrollment consisted of 33 percent first-year students and 67 percent beyond-first-year, compared with 42 percent and 58 percent, respectively, for part-time enrollment. Engineering exceeded all other areas in the relative numbers of first-year students on both a full-time basis

(39 percent) and a part-time basis (50 percent). This is probably related to the large number of terminal master's degrees awarded in engineering. The physical sciences had the highest proportion of full-time graduate students in the beyond-first-year category (73 percent), while the life sciences ranked first in terms of part-time graduate students in the beyond-first-year level of study (72 percent) (appendix table C-6).



### Section III. Types of Major Support of Full-Time Graduate Students in Doctorate Departments

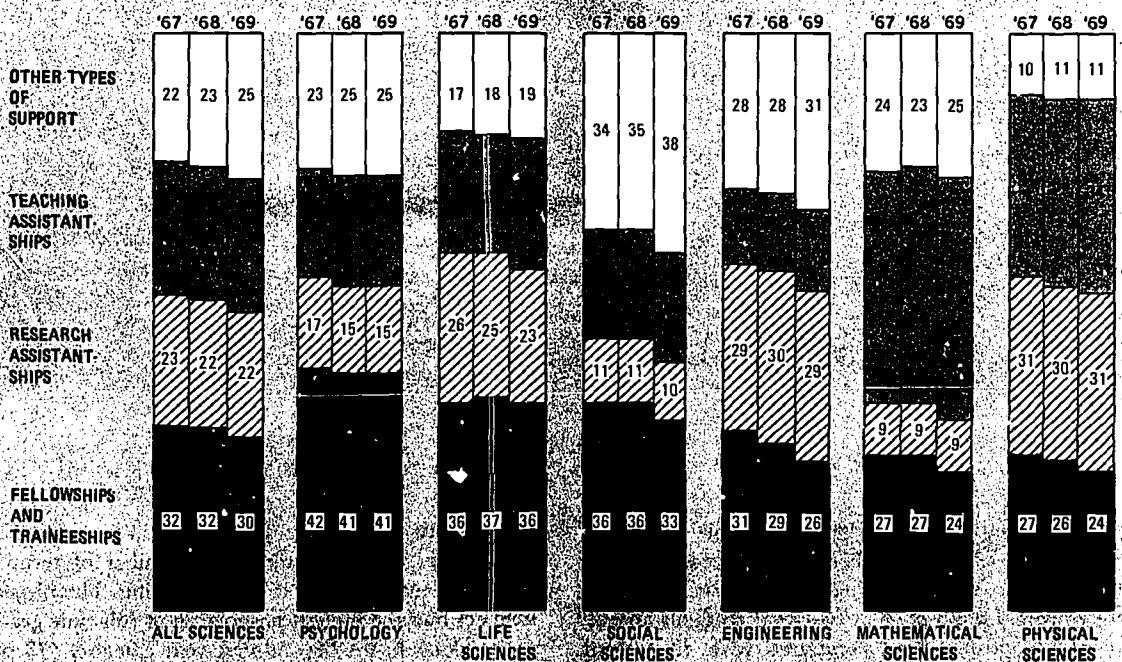
As part of their requests for NSF traineeship grants, institutions provided information about the number of full-time graduate students supported by the following mechanisms: Fellowships-traineeships,<sup>10</sup> research assistantships, teaching assistantships, and "other" types of support (e.g., self-support, loans, family support, etc.). This section will consider these support mechanisms in conjunction with the following characteris-

tics: Area of science, citizenship, and level of study. The section that follows will analyze the sources of financing of the four categories of support mechanisms.

Chart 3, which utilizes information supplied by 2,338 identical doctorate departments for each of the years 1967-69, indicates that the decline in the relative number of full-time science graduate students with fellowships and traineeships was offset principally through an increase in the relative number dependent primarily upon self-support. Among the ex-

<sup>10</sup> See definitions in technical notes, appendix B, for further explanation of the two categories of stipenda.

Chart 3. Percent distribution of types of major support of full-time graduate students in doctorate departments, by area of science, 1967-69<sup>a/</sup>



<sup>a/</sup> Based on 2,338 doctorate departments reporting consistently for three years, 1967-69.

SOURCE: NATIONAL SCIENCE FOUNDATION (APPENDIX TABLES C-10 - C-16).

ceptions to this overall pattern were psychology and the life sciences in which the proportion of fellowships-trainees remained rather stable. The data also indicate that graduate students in the physical sciences tended to shift from fellowships-traineeships to teaching assistantships for their principal support during the period.

Of the four different classifications of student aid used in this report, fellowships-traineeships were the type of major support utilized by the largest number of students, followed in order by "other" types (primarily self-support), teaching assistantships, and research assistantships (appendix table C-7).

There were wide variations among areas of science in the types of support used by full-time students to finance their graduate education in 1969. For instance, in engineering and the social sciences, the largest relative number of full-time students were supported primarily by "other" mechanisms; in the physical and mathematical sciences, by teaching assistantships; in the life sciences and psychology, by fellowships and traineeships. In none of the six areas of

science were research assistantships the leading mechanism of major support.

U.S. citizens were predominantly supported by fellowships-traineeships, and more of these students were studying in the life sciences than any other area. The largest numbers of U.S. citizens on research and teaching assistantships were in the physical sciences, while the social sciences enrolled the largest number relying on "other" support mechanisms (table 2).

Foreign students, who are not eligible for NSF or AEC fellowships-traineeships, relied primarily upon research assistantships for their support and concentrated their efforts in engineering. Those utilizing fellowships and traineeships were mainly in the social sciences, those relying upon teaching assistantships were most heavily engaged in the physical sciences. Those depending upon other types of support were predominantly in engineering.

A dissimilar pattern was discernible in the mechanism utilized by first-year students as opposed to those beyond their first year. In rank order, first-year students depended mostly upon "other mechanisms," fel-

**Table 2.—Percent distribution of full-time graduate students in doctorate departments, by area of science, citizenship, and type of support, 1969<sup>a</sup>**

Area of science	Total	Fellowships and traineeships	Research assistantships	Teaching assistantships	Other types of support
Total (number).....	141,199	41,734	30,471	32,991	36,003
Percent distribution					
Engineering.....	21.8	19.3	29.7	12.8	26.4
Physical sciences.....	21.4	17.0	30.9	30.5	10.0
Mathematical sciences.....	8.3	6.7	8.8	14.5	8.3
Life sciences.....	19.5	28.2	21.0	18.5	15.0
Psychology.....	8.4	11.4	5.6	6.9	9.0
Social sciences.....	20.5	22.4	9.1	16.9	31.4
U.S. citizens (number).....	119,167	36,462	21,466	26,485	28,754
Percent distribution					
Engineering.....	17.6	18.1	22.5	9.8	20.9
Physical sciences.....	21.6	17.3	34.1	30.1	10.0
Mathematical sciences.....	8.5	6.6	3.8	14.6	8.7
Life sciences.....	20.6	24.0	22.2	20.2	15.5
Psychology.....	10.1	12.7	7.8	8.1	10.8
Social sciences.....	21.6	21.3	10.2	17.8	34.2
Foreign students (number).....	28,032	5,272	9,005	6,506	7,249
Percent distribution					
Engineering.....	38.9	27.6	46.9	27.0	48.0
Physical sciences.....	20.4	15.2	28.2	32.4	10.1
Mathematical sciences.....	7.6	7.1	8.9	14.8	6.6
Life sciences.....	15.2	17.7	18.1	11.5	18.1
Psychology.....	1.8	2.8	1.5	2.0	1.8
Social sciences.....	16.0	30.1	6.4	12.9	20.3

<sup>a</sup> Based on Departmental Data Sheets appearing in appendix D.

lowships-traineeships, teaching assistantships, and finally, research assistantships. The beyond-first-year students were supported first by fellowships-traineeships, then research assistantships, teaching assistantships, and last, "other mechanisms," reflecting the increased experience and qualification gained after further study which improved their opportunities for the more desirable forms of support.

### Fellowships and Traineeships

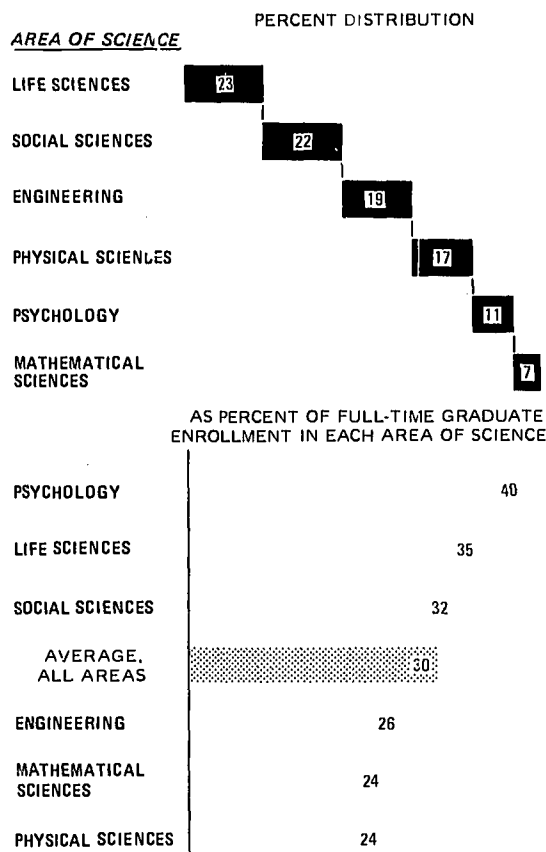
Two of the most common types of graduate student assistance are fellowships and traineeships, both of which offer the student considerable freedom during his studies to pursue his advanced training without having to provide any specific services to his institution. Financial aid is offered with "no strings" attached, which allows the student to attain his educational goal more rapidly than any other form of assistance. The terms "fellowships" and "traineeships" are frequently used interchangeably, and, as mentioned previously, are considered together in this report for purposes of simplification.

Fellowships and traineeships were the predominant types of major support of full-time graduate students in doctorate departments in 1969. The 41,734 fellows and trainees comprised 30 percent of full-time enrollment in such departments. The ranking of areas of science in terms of number of fellowship-traineeship holders is shown in chart 4. Particular fields of science with the largest numbers of fellows-trainees were: chemistry, 3,293; physics, 2,415; biology, 2,389; political science, 2,304; mathematics, 2,124; and economics, 2,092 (appendix table C-7).

When the detailed fields of science were ranked from highest to lowest for all doctorate departments—in terms of relative numbers of full-time students supported primarily by fellowships and traineeships—biochemistry placed at the top of the list, and received slightly more support in 1969 than in 1967. Students in applied mathematics received the least amount of support through this mechanism, 18 percent in 1969, a decrease from 24 percent in 1967 (table 3).

The number of U.S. citizen fellows and trainees totaled 36,462, or 32 percent of total graduate students of U.S. citizenship. Of fellows and trainees with U.S. citizenship, 24 percent were enrolled in the life sciences, 21 percent in the social sciences, 18 percent in engineering, 17 percent in the physical sciences, 13 percent in psychology, and 7 percent in mathematics. When classified according to their level of study, 29 percent of those U.S. citizens supported by fellowships and traineeships were in their first year of study and 71 percent were advanced students.

Chart 4. Full-time graduate students holding fellowships and traineeships in doctorate departments, 1969 <sup>a/</sup>



<sup>a/</sup> Refers to graduate students receiving their major support through fellowships and traineeships.

SOURCE: NATIONAL SCIENCE FOUNDATION (APPENDIX TABLE C-9).

Less than 19 percent of foreign students studying in this country relied upon fellowships and traineeships for their support. As stated previously, foreign students are not eligible for support of this type under two Federal agency programs, the Atomic Energy Commission and the National Science Foundation. Of the 5,272 foreign fellows and trainees, the social sciences enrolled 30 percent; engineering, 28 percent; life sciences, 18 percent; physical sciences, 15 percent; mathematical sciences, 7 percent; and psychology, 2 percent (appendix table C-8).

An analysis of 2,338 doctorate departments reporting consistently since 1967 indicated an overall reduc-

**Table 3.—Proportion of full-time graduate students in doctorate departments receiving major support from fellowships and traineeships, ranked by field of science, 1967 and 1969<sup>a</sup>**

Field of science <sup>b</sup>	1967	1969
Number of departments.....	2,580	2,894
	(Percent)	
All fields.....	32.6	29.6
Biochemistry.....	53.4	55.7
Physiology.....	54.1	50.8
Microbiology.....	44.7	47.4
Nuclear engineering.....	50.0	45.7
Pharmacology.....	46.8	45.1
History and philosophy of science.....	48.8	42.0
Other life sciences.....	44.8	41.7
Psychology.....	41.7	39.8
Biology.....	40.7	38.0
Anthropology.....	41.8	36.4
Sociology.....	40.8	36.0
Astronomy.....	35.6	34.6
Linguistics.....	36.8	34.6
Statistics.....	35.6	34.1
Chemical engineering.....	38.8	32.8
Engineering science.....	35.7	32.8
Other engineering.....	33.7	31.5
Political science.....	33.8	30.7
Economics.....	34.7	30.4
Petroleum engineering.....	38.5	29.2
Civil engineering.....	35.8	28.4
Mining engineering.....	29.6	28.4
Sociology and anthropology.....	32.1	28.0
Aeronautical engineering.....	31.6	26.4
Geography.....	29.1	25.5
Agricultural engineering.....	29.2	25.4
Geosciences.....	29.6	24.6
Oceanography.....	31.7	24.6
Agricultural economics.....	24.6	24.5
Chemistry.....	28.6	24.2
Zoology.....	26.3	24.1
Industrial science.....	23.2	23.4
Mathematics.....	26.3	23.4
Metallurgical and materials engineering.....	28.7	22.9
Botany.....	26.0	22.0
Mechanical engineering.....	27.0	21.9
Physics.....	25.4	21.9
Agriculture.....	22.6	21.6
Atmospheric sciences.....	23.6	21.4
Electrical engineering.....	26.8	21.0
Applied mathematics.....	24.1	18.2

<sup>a</sup> Data for 1967 were published in *Support of Full-Time Graduate Students in the Sciences, Fall 1967* (NSF 69-34), p. 119; data for 1969 are shown in appendix table C-7.

<sup>b</sup> See appendix, table B-3 for list of departmental titles grouped into fields of science.

tion of 6.0 percent in the number of graduate students with fellowship-traineeship support in the period 1968-69, after showing a slight increase of 1.8 percent from 1967 to 1968. The number of U.S. citizens in this category decreased from 1968 to 1969 after increasing from 1967 to 1968. In contrast, foreign students increased in enrollment from 1967 to 1968 and from 1968 to 1969, but at a lower rate in the latter period (table 4).

**Table 4.—Percent change in the number of full-time graduate students receiving major support as fellows and trainees, by citizenship and level of study, 1967-68 and 1968-69<sup>a</sup>**

Citizenship and level of study	Percent change	
	1967-68	1968-69
Total.....	1.8	-6.0
First year.....	-11.5	-1.2
Beyond first year.....	8.0	-7.9
U.S. citizens.....	1.2	-7.2
First year.....	-12.8	-2.3
Beyond first year.....	7.6	-9.0
Foreign students.....	6.5	3.4
First year.....	-2.6	5.3
Beyond first year.....	12.2	2.4

<sup>a</sup> Based on data for 2,338 departments that accounted for 87 percent of full-time graduate enrollment in doctorate departments in 1969.

## Research Assistantships

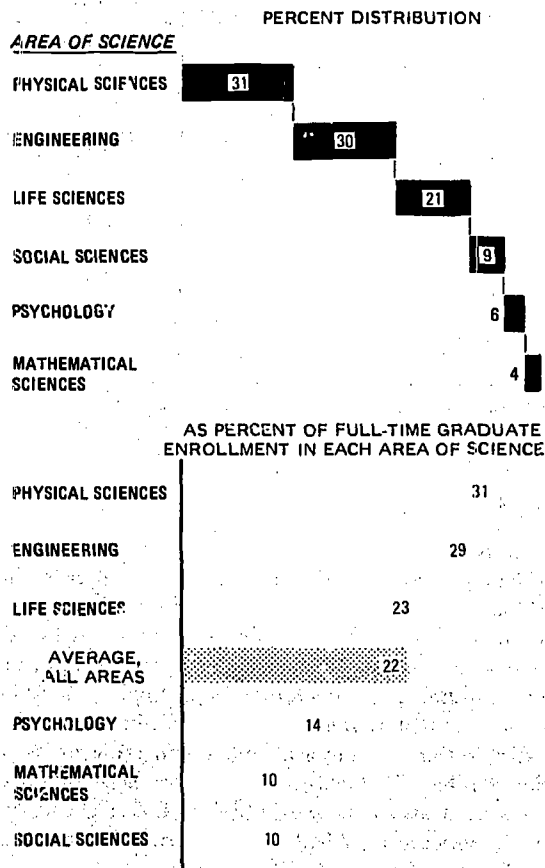
An appointment as a research assistant requires services on research projects and often affords the graduate student the opportunity to apply this research toward his thesis requirement. Students in this category accounted for almost 22 percent of the full-time enrollment in doctorate departments in 1969, and the largest numbers were primarily engaged in studies within the physical and engineering areas of science (chart 5). Fields of science with large numbers of research assistants were physics, 4,051; chemistry, 3,647; agriculture, 2,840; and electrical engineering, 2,027 (appendix table C-7).

For all doctorate departments reporting in 1967 and 1969, the field "metallurgical and materials engineering" ranked first in terms of relative number of full-time students supported through research assistantships. Ranking lowest on the scale in both years was "history and philosophy of science," in which research assistants comprised only 4 percent of the field total in 1967 and 3 percent in 1969 (table 5).

Relatively more foreign students than U.S. citizens held research assistantships in 1969. Of the 113,167 full-time students with U.S. citizenship, only 21,466, or 19 percent, received major support through research assistantships in 1969. Foreign students using this mechanism comprised 32 percent of the 28,032 total number of foreign graduate students (appendix table C-8).

For U.S. students, the physical sciences accounted for 34 percent of the research assistantships, but engi-

**Chart 5. Full-time graduate students holding research assistantships in doctorate departments, 1969**



U. Refers to graduate students receiving their major support through research assistantships.

SOURCE: NATIONAL SCIENCE FOUNDATION (APPENDIX TABLE C-9b).

neering provided 47 percent of research assistantships held by foreign students. Mathematical sciences ranked lowest with U.S. citizens, 4 percent, and psychology ranked lowest with foreign students, less than 2 percent.

Further analysis of students holding research assistantships indicated that 24,132, or 79 percent, were in their second year of study or beyond. Of these, 35 percent were studying in the physical sciences, 28 percent in engineering, 20 percent in the life sciences, 8 percent in the social sciences, 5 percent in psychology, and the remaining 4 percent in the mathematical sciences. First-year students were distributed in a similar

**Table 5.—Proportion of full-time graduate students in doctorate departments receiving major support from research assistantships, ranked by field of science, 1967 and 1969**

Field of science *	1967	1969
Number of departments.....	2,580	2,894
	(Percent)	
All fields.....	28.1	21.6
Metallurgical and materials engineering.....	58.2	59.5
Atmospheric sciences.....	51.2	47.8
Agriculture.....	50.2	47.6
Agricultural economics.....	48.8	46.1
Oceanography.....	46.9	46.1
Agricultural engineering.....	41.9	45.5
Astronomy.....	39.7	39.6
Physics.....	36.8	36.8
Mining engineering.....	48.0	38.4
Aeronautical engineering.....	32.4	38.0
Chemical engineering.....	32.2	31.4
Other engineering.....	31.3	30.1
Engineering science.....	29.4	29.7
Petroleum engineering.....	38.5	28.6
Applied mathematics.....	32.6	28.1
Electrical engineering.....	25.5	27.0
Mechanical engineering.....	26.4	26.8
Chemistry.....	27.8	26.7
Botany.....	30.0	26.0
Civil engineering.....	28.7	26.5
Biochemistry.....	31.1	24.9
Nuclear engineering.....	22.9	24.2
Geosciences.....	19.1	21.1
Statistics.....	20.4	18.9
Microbiology.....	22.6	18.8
Industrial science.....	15.9	17.4
Pharmacology.....	18.6	17.1
Zoology.....	17.3	15.6
Physiology.....	15.6	14.4
Psychology.....	16.9	14.2
Other life sciences.....	14.5	13.8
Economics.....	12.9	11.9
Sociology.....	14.0	9.8
Biology.....	11.5	9.5
Sociology and anthropology.....	10.6	8.5
Linguistics.....	7.6	7.3
Political science.....	6.2	7.3
Geography.....	6.6	5.9
Anthropology.....	6.9	5.7
Mathematics.....	6.6	5.7
History and philosophy of science.....	3.6	2.5

\* Data for 1967 were published in *Support of Full-Time Graduate Students in the Sciences, Fall 1967* (NSF 69-84), p. 119; data for 1969 are shown in appendix table C-7.

† See appendix table B-3 for list of departmental titles grouped into fields of science.

pattern, although engineering ranked first (appendix table C-9b).

The number of students supported by research assistantships declined 1.1 percent from 1967 to 1968 and 0.8 percent from 1968 to 1969, as reported by the 2,338 doctorate departments applying consistently for 3 years in the NSF traineeship program. This decline was considerably less than that experienced by fellow-

ship-traineeship students in the latter period (table 4). Even though first-year U.S. students increased in numbers from 1968 to 1969 by 2.2 percent, the decline in the number enrolled beyond their first year offset the increase and resulted in a net decrease of 4.4 percent of U.S. citizen research assistants. Table 6 shows that foreign research assistants increased substantially, while U.S. citizen-research assistants declined.

**Table 6.—Percent change in the number of full-time graduate students receiving major support as research assistants, by citizenship and level of study, 1967-68 and 1968-69<sup>a</sup>**

Citizenship and level of study	Percent change	
	1967-68	1968-69
Total.....	-1.1	-0.8
First year.....	-7.8	2.8
Beyond first year.....	.6	-1.6
U.S. citizens.....	-4.2	-4.4
First year.....	-13.4	2.2
Beyond first year.....	-1.9	-5.9
Foreign students.....	8.4	9.1
First year.....	8.7	4.0
Beyond first year.....	8.5	10.4

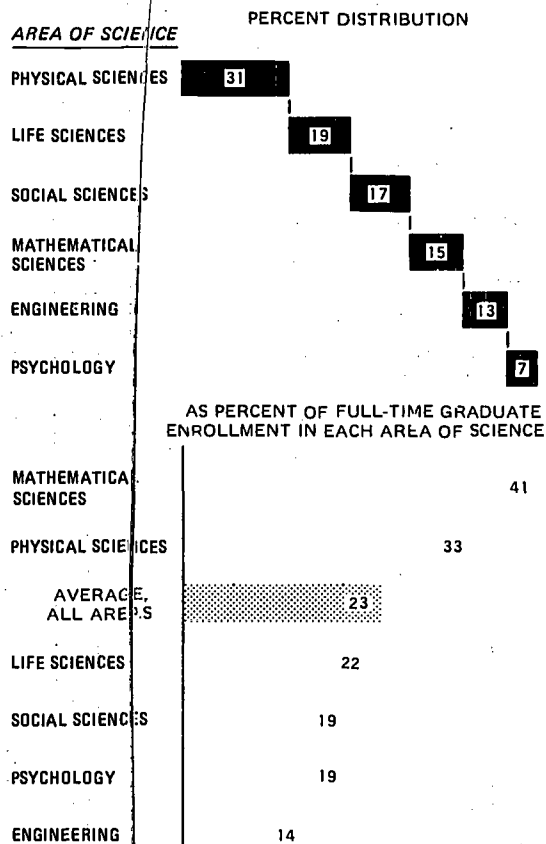
<sup>a</sup> Based on data for 2,338 departments that accounted for 87 percent of full-time graduate enrollment in doctorate departments in 1969.

### Teaching Assistantships

Teaching assistantships tend to be a demanding form of financial assistance, in terms of time and effort required from graduate students. They are the least popular support mechanism, since the duty assignments are of such a nature that they tend to lengthen the time interval required for students to complete their graduate work. However, 32,991 students in 1969—or 23 percent of full-time enrollment—were supported through teaching assistantships. These students, like those holding research assistantships, were concentrated in the physical sciences (chart 6). The fields providing the most teaching assistants were chemistry, 5,540; mathematics, 4,276; and physics, 3,284 (appendix table C-7).

In a ranking of the 41 detailed fields of science reported by all doctorate departments, the field "mathematics" was first in both 1967 and 1969. "History and philosophy of science," which ranked last in research assistantship support, was ranked ninth in both 1967 and 1969 in relative number of teaching assistantships.

**Chart 6. Full-time graduate students holding teaching assistantships in doctorate departments, 1969<sup>a/</sup>**



<sup>a/</sup> Refers to graduate students receiving their major support through teaching assistantships.

SOURCE: NATIONAL SCIENCE FOUNDATION (APPENDIX TABLE C-9b).

The proportion of graduate enrollment supported through teaching assistantships was lowest in agricultural economics in both years, with only slight changes in rankings and relative support of the other fields of science, indicating a fairly stable pattern for most fields (table 7).

Students holding teaching assistantships in their first year of study were found primarily in the physical science area (36 percent), followed by the life sciences, 19 percent. Beyond-first-year students were also primarily enrolled in the physical sciences (with 28 percent), but the social sciences ranked second, with 19 percent (appendix table C-9).

Teaching assistantship support gained in 1969, es-

**Table 7.—Proportion of full-time graduate students in doctorate departments receiving major support from teaching assistantships, ranked by field of science, 1967 and 1969<sup>a</sup>**

Field of science <sup>b</sup>	1967	1969
Number of departments.....	2,680	2,894
	(Percent)	
All fields.....	22.3	23.4
Mathematics.....	43.7	47.0
Chemistry.....	38.1	40.6
Zoology.....	36.2	39.3
Botany.....	31.0	35.4
Geography.....	31.2	33.5
Geosciences.....	30.4	32.5
Biology.....	29.1	30.2
Physics.....	27.4	29.8
History and philosophy of science.....	23.9	26.2
Engineering science.....	16.0	21.9
Economics.....	20.4	21.5
Pharmacology.....	21.8	21.4
Statistics.....	19.8	21.0
Microbiology.....	19.9	19.6
Sociology.....	19.4	19.4
Psychology.....	18.7	19.0
Applied mathematics.....	14.1	18.8
Linguistics.....	16.7	18.8
Astronomy.....	15.4	17.8
Electrical engineering.....	16.0	17.8
Anthropology.....	16.5	17.6
Sociology and anthropology.....	19.2	16.8
Chemical engineering.....	15.0	16.3
Other life sciences.....	10.9	16.2
Petroleum engineering.....	9.2	16.1
Political science.....	15.7	15.7
Mechanical engineering.....	12.8	14.5
Physiology.....	16.6	14.5
Aeronautical engineering.....	12.8	13.4
Industrial science.....	9.1	11.9
Mining engineering.....	9.5	10.7
Biochemistry.....	8.5	10.5
Civil engineering.....	10.9	10.2
Nuclear engineering.....	7.6	8.11
Metallurgical and materials engineering.....	5.7	8.1
Agricultural engineering.....	5.9	8.3
Agriculture.....	6.6	8.3
Other engineering.....	6.8	6.2
Atmospheric sciences.....	3.7	5.5
Oceanography.....	4.0	4.5
Agricultural economics.....	2.9	3.3

<sup>a</sup> Data for 1967 were published in *Support of Full-Time Graduate Students in the Sciences, Fall 1967* (NSF 69-34), p. 119; data for 1969 are shown in appendix table C-7.

<sup>b</sup> See appendix table B-3 for list of departmental titles grouped into fields of science.

pecially with foreign students, in contrast to the net declines in both fellowship-traineeship support and research assistantships. An examination of the doctorate

**Table 8.—Percent change in the number of full-time graduate students receiving major support as teaching assistants, by citizenship and level of study, 1967-68 and 1968-69<sup>a</sup>**

Citizenship and level of study	Percent change	
	1967-68	1968-69
Total.....	5.0	3.6
First year.....	- .7	2.9
Beyond first year.....	8.3	4.0
U.S. citizens.....	2.7	1.4
First year.....	-3.9	1.3
Beyond first year.....	6.6	1.5
Foreign students.....	16.6	13.4
First year.....	17.0	9.8
Beyond first year.....	16.3	15.2

<sup>a</sup> Based on data for 2,338 departments that accounted for 87 percent of full-time graduate enrollment in doctorate departments in 1969.

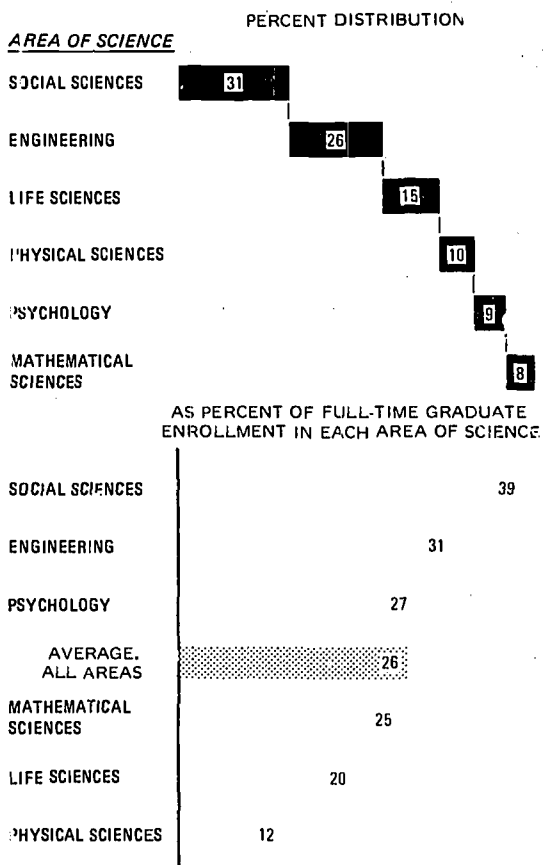
departments reporting consistently for 3 years indicated an increase of 5.0 percent from 1967 to 1968 and 3.6 percent from 1968 to 1969 in full-time graduate students supported through teaching assistantships (table 8).

### Other Types of Support

The remaining 26 percent of full-time students attending doctorate-granting institutions in 1969 were supported by a variety of "other" mechanisms which were outside the three major types discussed previously. These students were primarily dependent upon themselves, loans, or their families for support. The social sciences enrolled the largest number of students in this category, and engineering ranked next (chart 7). Fields of science with the largest numbers of students in this category were political science (3,470), psychology (3,227), electrical engineering (2,573), economics (2,492), and mathematics (2,169) (appendix table C-7).

Of the 36,003 full-time students primarily supported by "other" mechanisms, including self-support, 80 percent were U.S. citizens. These students concentrated their studies in the social sciences area, while foreign students emphasized engineering.

Chart 7. Full-time graduate students receiving major support through "other" mechanisms, 1969 <sup>a/</sup>



<sup>a/</sup> Primarily self-support.

SOURCE: NATIONAL SCIENCE FOUNDATION (APPENDIX TABLE C-9B).

The doctorate departments that reported consistently for 3 years experienced marked increases in the number of students supported by other mechanisms. This contrasts with the reductions in the number of students supported by fellowships-traineeships and research assistantships, and the reduced rate of growth in the number of teaching assistantships. This difference seems to indicate that when outside support tapers off, graduate students rely more upon themselves and their families to finance their graduate education. Table 9 indicates the changes in enrollment by citizenship and level of study for the period 1967-68 and 1968-69.

Further details on this form of support will be discussed in the succeeding section, where types of support are related directly to the various sources of financial support utilized by graduate students.

Table 9.—Percent change in the number of full-time graduate students receiving major support through "other" mechanisms, by citizenship and level of study, 1967-68 and 1968-69 <sup>a</sup>

Citizenship and level of study	Percent change	
	1967-68	1968-69
Total.....	6.0	11.6
First year.....	-.3	13.6
Beyond first year.....	11.6	10.0
U.S. citizens.....	4.1	10.5
First year.....	-4.2	12.7
Beyond first year.....	11.2	8.9
Foreign students.....	14.5	16.2
First year.....	15.6	16.9
Beyond first year.....	13.4	15.6

<sup>a</sup> Based on data for 2,338 departments that accounted for 87 percent of full-time graduate enrollment in doctorate departments in 1969.



## Section IV. Sources of Major Support of Full-Time Graduate Students in Doctorate Departments

It is generally recognized that one of our national goals is nurturing and fostering the development and growth of graduate education, in order to improve our social, economic, and cultural position. Without question, the future scientific and technological potentials of the economy are closely interlinked with the strength and vitality of the Nation's universities and colleges. Recently, the President's National Goals Research Staff presented its report, *Toward Balanced Growth: Quantity with Quality*,<sup>11</sup> in which it was stated that:

"Taken all in all, the educational system, which is the crucial single institution for the development of our citizenry

so that they can live happily, shape our system wisely, and contribute to both the direction and rate of its growth, is in a state of severe stress. The educational system is having its own 'growth' problems which, if not solved, will have a profound impact on the growth of the Nation as a whole."

The Nation's universities and colleges have always been heavily dependent upon private and public support, since tuition and other student charges, endowment earnings, and other regular income sources cover only a small part of their total outlay. The pressures of increased demands in recent years for education, research, and public services, coupled with inflationary pressures and competing demands for public and private philanthropy, have presented formidable problems for U.S. higher education. Graduate education imposes particular financial burdens because of heavy outlays to retain qualified faculty, to purchase and

<sup>11</sup> U.S. President, *Toward Balanced Growth: Quantity with Quality*, Report of the National Goals Research Staff (Washington, D.C. 20402: Supt. of Documents, U.S. Government Printing Office, 1970), p. 99.

**Table 10.—Full-time graduate students in doctorate departments, by principal source and type of support, 1969**

Principal source of support	Total	Fellowships and traineeships	Research assistantships	Teaching assistantships	Other types of support
<b>Number</b>					
Total.....	141,199	41,734	30,471	32,991	36,009
U.S. Government.....	51,620	28,707	19,646	327	2,940
Institutions and State and local governments.....	50,471	7,191	8,451	32,524	2,305
Other outside sources *.....	12,801	5,896	2,374	1.0	4,451
Self-support.....	26,307				26,307
<b>Percent distribution, by principal source</b>					
Total.....	100.0	100.0	100.0	100.0	100.0
U.S. Government.....	36.6	68.8	64.5	1.0	8.2
Institutions and State and local governments.....	35.7	17.2	27.7	98.6	6.4
Other outside sources.....	9.1	14.0	7.8	.4	12.4
Self-support.....	18.6				73.1
<b>Percent distribution, by type</b>					
Total.....	100.0	29.6	21.6	23.4	25.5
U.S. Government.....	100.0	55.6	38.1	.6	5.7
Institutions and State and local governments.....	100.0	14.2	16.7	64.4	4.6
Other outside sources.....	100.0	45.6	18.5	1.1	34.8
Self-support.....	100.0				100.0

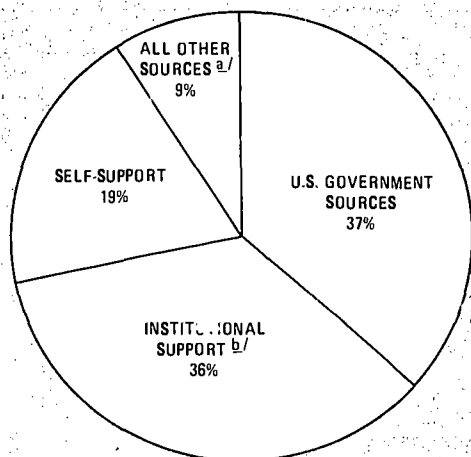
\* See appendix tables C-11a and C-11b for separate data on industry, private foundations, foreign, and other outside sources of support.

maintain costly facilities and equipment, and to provide stipend support for graduate students. Financial stringencies of recent years, including the leveling of Federal support of graduate education, have had consequential impacts on graduate enrollment and the methods used by graduate students to finance their education. This section is concerned with the major sources of financing utilized by full-time graduate science students in doctorate institutions, by type of support, area of science, and citizenship in 1969, and trends in such financing, 1967-69 (appendix tables C-10a through C-15g).

In 1969, outside sources provided major support to 81 percent of the full-time science graduate students;<sup>12</sup> the remaining 19 percent relied upon self-support, including savings, loans, part-time employment, and family and other types of assistance. The U.S. Government was the predominant source of major financial support for 37 percent of the full-time graduate students. Ranking next were institutions and State and local governments (36 percent), and other outside sources, such as industry, private foundations, and foreign organizations (9 percent) (table 10 and chart 8).

<sup>12</sup> The term "outside sources," as used in this report, refers to all sources of support other than self-support.

Chart 8. Major sources of support of full-time graduate students in doctorate departments, 1969



a/ Includes private foundations, industry, and foreign sources.  
b/ Includes institutions and State and local governments.

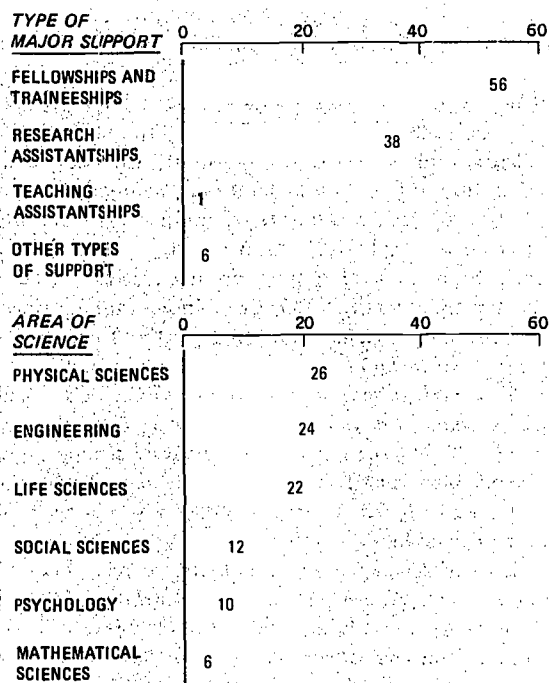
SOURCE: NATIONAL SCIENCE FOUNDATION (TABLE 10).

## U.S. Government

Federal agencies were reported as supporting 51,620 full-time graduate students in doctorate departments in 1969. The principal agencies, in terms of the relative number of students supported, were the Department of Health, Education, and Welfare (HEW), 40 percent; National Science Foundation (NSF), 25 percent; Department of Defense (DOD), 10 percent; Atomic Energy Commission (AEC), 6 percent; and National Aeronautics and Space Administration (NASA), 5 percent. The HEW programs supporting the largest number of students were those of the National Institutes of Health (NIH) and those funded through the National Defense Education Act (NDEA), which accounted for 24 percent and 13 percent, respectively, of all federally supported students (appendix table C-12).

The large majority of full-time graduate students supported by Federal agencies were fellows and trainees, and research assistants (chart 9). The principal

Chart 9. Percent distribution of graduate students supported by the U.S. Government, 1969



SOURCE: NATIONAL SCIENCE FOUNDATION (APPENDIX TABLES C-10b and C-11b).

**Table 11.—Full-time graduate students in doctorate departments, by principal source of support and area of science, 1969**

Principal source of support	Total	Engineering	Physical sciences	Mathematical sciences	Life sciences	Psychology	Social sciences
Number							
Total.....	141,199	30,820	30,175	11,727	27,588	11,918	28,971
U.S. Government.....	51,620	12,334	13,187	3,223	11,513	5,127	6,236
Institutions and State and local governments.....	50,471	8,025	12,497	5,886	9,879	3,902	10,282
Other outside sources *.....	12,801	4,979	1,990	578	2,085	708	2,461
Self-support.....	26,307	5,482	2,501	2,040	4,111	2,181	9,992
Percent distribution, by principal source							
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
U.S. Government.....	36.6	40.0	43.7	27.5	41.7	43.0	21.5
Institutions and State and local governments.....	35.7	26.0	41.4	50.2	35.8	32.7	35.5
Other outside sources.....	9.1	16.2	6.6	4.9	7.6	5.9	8.5
Self-support.....	18.6	17.3	8.3	17.4	14.9	18.3	34.5
Percent distribution, by area of science							
Total.....	100.0	21.8	21.4	8.3	19.5	8.4	20.5
U.S. Government.....	100.0	23.9	25.5	6.2	22.3	9.9	12.1
Institutions and State and local governments.....	100.0	15.9	24.8	11.7	19.6	7.7	20.4
Other outside sources.....	100.0	38.9	15.5	4.5	16.3	5.5	19.2
Self-support.....	100.0	20.8	9.5	7.8	15.6	8.3	38.0

\* See appendix tables C-10a and C-10b for separate data on industry, private foundations, foreign, and other outside sources of support.

Federal agencies in terms of fellowships and traineeships awarded were HEW, 16,895, and NSF, 7,255. Agencies supporting the largest number of research assistants were NSF, 5,225; DOD, 3,525; HEW, 3,492, and AEC, 2,395 (appendix tables C-11a and C-11b).

Nearly three-fourths of graduate students with major support from the Federal Government were enrolled in the physical sciences, engineering, and the life sciences (table 11). As might be expected, the allocation of Federal support among areas of science reflected the scientific interests of individual agencies. For example, students supported by the Department of Agriculture and NIH were principally in the life sciences, while those supported by AEC, DOD, and NASA were principally in engineering and physical sciences. NSF support was quite diffused among areas of science, but nearly three-fifths of the students supported were in the physical sciences and engineering (appendix tables C-10a and C-10b).

The number of graduate students receiving Federal support declined 1.6 percent from 1967 to 1968 and 5.9 percent from 1968 to 1969. The decrease in Government support of graduate students reflects the corresponding slowdown of Federal funding of sci-

entific activities in universities and colleges that began in the mid-1960's (table 12).

**Table 12.—Percent change in the number of full-time graduate students in doctorate departments supported by the U.S. Government, 1967-68 and 1968-69 <sup>a</sup>**

Item	Percent change	
	1967-68	1968-69
Total.....	-1.6	-5.9
Type of support:		
Fellowships and traineeships.....	.1	-10.2
Research assistantships.....	-3.1	-2.0
Teaching assistantships.....	-22.5	30.9
Other types of support.....	-6.9	13.1
Area of science:		
Engineering.....	-5.6	-5.3
Physical sciences.....	-3.5	-8.9
Mathematical sciences.....	-2.8	-8.2
Life sciences.....	1.2	-5.0
Psychology.....	5.6	3.0
Social sciences.....	2.6	-7.3
Citizenship:		
U.S. citizens.....	-2.6	-7.6
Foreign students.....	6.7	6.8

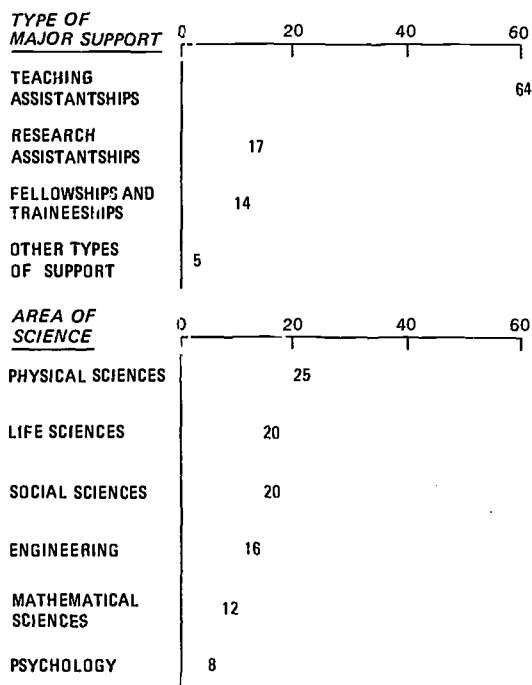
<sup>a</sup> Based on 2,338 doctorate departments, as shown in appendix tables C-15a through C-15g.

## Institutional Support

In publicly supported institutions of higher education, it is often difficult to separate the funds received from the State or local government from those that might be considered the institution's own funds that are not under the direct control of the government. As a consequence, funds from these sources are grouped, for the purposes of this report, into a single category, "institutional support." The 50,471 students receiving such support constituted 36 percent of all full-time students in doctorate departments in 1969, or nearly as large as the number of U.S. Government-supported students (appendix table C-10b).

The physical sciences, social sciences, and life sciences accounted for nearly two-thirds of all graduate students supported by institutions (chart 10). Chemistry, with 6,438 students, ranked first in terms of institutional support, followed by mathematics (4,916) and physics (4,185) (appendix table C-14).

Chart 10. Percent distribution of graduate students supported by institutions and State and local governments, 1969



SOURCE: NATIONAL SCIENCE FOUNDATION (APPENDIX TABLES C-10b and C-11b).

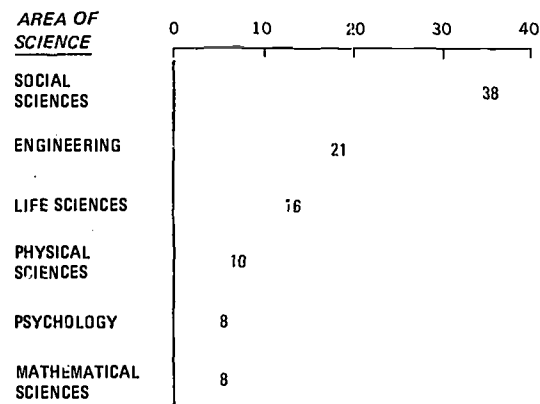
Trend data developed in this report to examine certain characteristics of graduate students were grouped in three categories: U.S. Government, other U.S. sources, and foreign sources. Students receiving institutional support comprised the largest group (about 58 percent) of the category "other U.S. sources." Thus, trend data applying to the overall category may be considered reasonably representative of students receiving institutional support (appendix tables C-15a through C-15g).

The number of graduate students receiving support from other U.S. sources increased 6.4 percent from 1967 to 1968 and 6.0 percent from 1968 to 1969, while students supported by U.S. Government sources declined in both periods, as mentioned earlier. In each of the areas of science, the number of graduate students supported by "other U.S. sources" increased. The increase was greatest in the social sciences, which rose 7.9 percent from 1967 to 1968, and 11.5 percent from 1968 to 1969.

## Other Outside Support

Graduate students relying upon all other outside support totaled 12,801, or 9 percent of the total in 1969. Those supported by private industry ranked first in number (4,568), followed by private foundations (3,836), foreign sources (2,245), and all other U.S. sources (2,152), as indicated in appendix table C-10a.

Chart 11. Percent distribution of graduate students depending upon self-support, 1969



SOURCE: NATIONAL SCIENCE FOUNDATION (APPENDIX TABLE C-10b).

Fellowships and traineeships were the predominant form of student assistance in this category, 46 percent; followed by "other" mechanisms, 35 percent; research assistantships, 19 percent; and teaching assistantships, only 1 percent (table 10).

### **Self-Support**

The 26,307 graduate students who were reported as self-supporting in doctorate departments in 1969 ac-

counted for 19 percent of the total number of full-time graduate students and were concentrated in the social sciences as shown in chart 11. All of these students were, obviously, classified into the "other" mechanisms form of support. Particular fields of science with the largest numbers of self-supporting students were political science (3,114), economics (2,270), psychology (2,181), electrical engineering (1,637), and mathematics (1,591), as shown in appendix table C-14.

## Section V. Faculty and Postdoctorals in Doctorate Departments

### Faculty

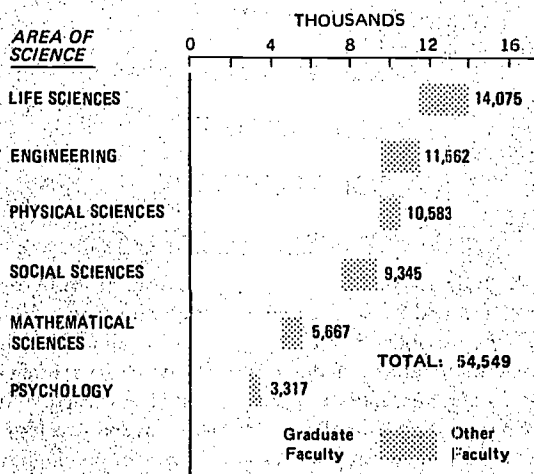
The term "faculty," as used in this report and for the purposes of the NSF traineeship program, refers to staff with an academic rank of instructor or above who are significantly involved in the graduate or undergraduate program of the institution in teaching one or more courses or seminars, or in directing the research of one or more students. Those with full-time appointments are differentiated from part-time faculty whose major responsibilities are outside of the department, such as university administrators, deans, affiliate professors, extension service staff, museum staff, etc. "Graduate" faculty refers to those who teach one or more graduate courses or seminars and/or direct the research of one or more graduate students.

The number of full-time faculty in doctorate departments totaled 54,549 in 1969, of which 84 percent

were identified as full-time graduate faculty (chart 12). Fields of science reporting the largest numbers of faculty members were mathematics, 4,963; physics, 4,361; chemistry, 4,077; agriculture, 3,771; and psychology, 3,317 (appendix table C-16).

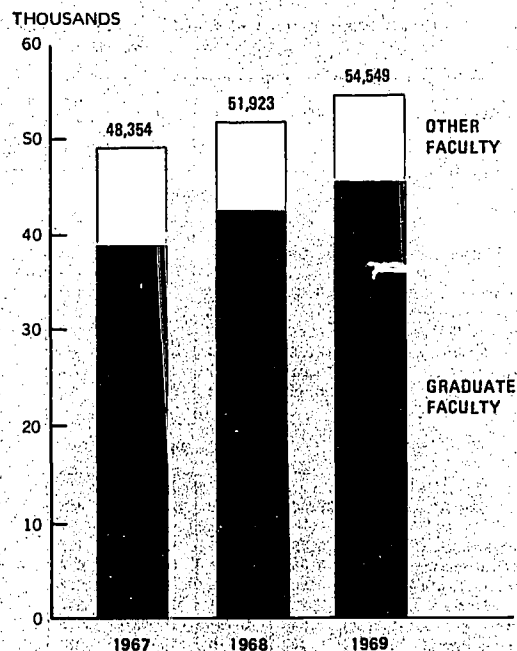
As stated earlier, although total graduate enrollment in the sciences increased from 1967 to 1969 in doctorate departments, it has shown a slowdown in its rate of growth. This reduced growth rate was also apparent in the number of full-time faculty reported by these same doctorate departments. Mathematical sciences experienced the greatest change, from an increase of 7.1 percent during 1967-68 to only 2.3 per-

Chart 12. Number of full-time faculty in doctorate departments, 1969



SOURCE: NATIONAL SCIENCE FOUNDATION (APPENDIX TABLE C-17).

Chart 13. Number of full-time faculty in doctorate departments, 1967-69



SOURCE: NATIONAL SCIENCE FOUNDATION (TABLE 13).

cent for 1968-69. Every area of science showed a declining rate of increase from 1968 to 1969 (table 13 and chart 13).

A look at the full-time graduate faculty alone shows a similar pattern with, again, a rather consequential drop in the rate of increase in mathematical sciences faculty for 1968-69. In an earlier discussion of teaching assistantships, it was pointed out that in the mathematical sciences there was more concentration of students using this aid mechanism than any other type in 1969, and it may be due to the lessening amount of faculty involvement in this field, which has resulted in a greater dependence upon teaching assistants (appendix table C-7).

**Relationship to graduate enrollment and Ph.D. degrees awarded.** A comparison of full-time graduate enrollment with full-time graduate faculty in 1969 reveals an overall ratio of 3.1 graduate students per faculty member, a slight reduction from the ratio of 3.3 to 1 reported for 1966 in the first report of this series.<sup>13</sup> The highest graduate student-faculty ratio occurred in psychology, and the lowest in the life sciences (chart 14).

<sup>13</sup> National Science Foundation, *Graduate Student Support and Manpower Resources in Graduate Science Education, Fall 1965 and 1966* (NSF 68-13) (Washington, D.C. 20402: Supt. of Documents, U.S. Government Printing Office), p. 69.

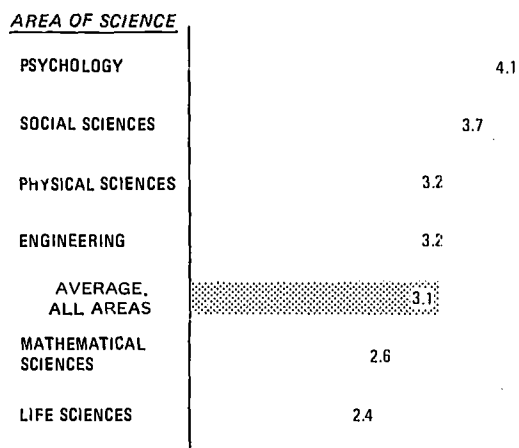
**Table 13.—Trends in the number of full-time faculty in doctorate departments, by area of science, 1967-69<sup>a</sup>**

Area of science	1967	1968	1969	Percent change	
				1967-68	1968-69
Total faculty					
Total.....	48,354	51,923	54,549	7.4	5.1
Engineering.....	10,540	11,155	11,562	5.8	3.6
Physical sciences.....	9,558	10,135	10,583	6.0	4.4
Mathematical sciences.....	5,169	5,537	5,667	7.1	2.3
Life sciences.....	12,224	13,251	14,075	8.4	6.2
Psychology.....	2,815	3,081	3,317	9.4	7.7
Social sciences.....	8,048	8,764	9,345	8.9	6.6
Graduate faculty					
Total.....	39,078	42,674	45,687	9.2	7.1
Engineering.....	8,395	9,034	9,665	7.6	7.0
Physical sciences.....	8,303	8,874	9,414	6.9	6.1
Mathematical sciences.....	3,804	4,268	4,471	12.2	4.8
Life sciences.....	9,723	10,681	11,497	9.9	7.6
Psychology.....	2,385	2,707	2,902	13.5	7.2
Social sciences.....	6,468	7,110	7,738	9.9	8.8

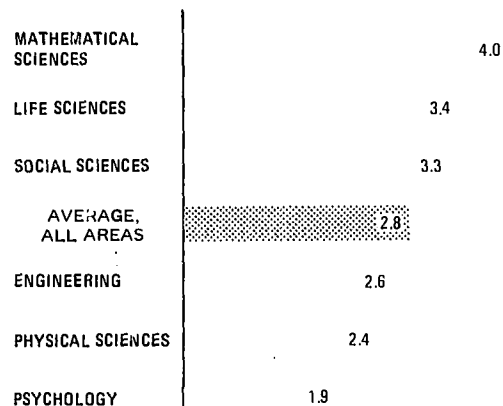
<sup>a</sup> Based on Departmental Summaries from 2,894 doctorate departments, as shown in appendix E.

**Chart 14. Full-time graduate faculty in doctorate departments, 1969**

FULL-TIME GRADUATE STUDENTS PER FACULTY MEMBER



FACULTY <sup>a/</sup> PER PH.D. DEGREE GRANTED <sup>b/</sup>



<sup>a/</sup> Fall 1968

<sup>b/</sup> Academic Year 1968-69

SOURCE: NATIONAL SCIENCE FOUNDATION (APPENDIX TABLES C-18 AND C-19).

A study of the interrelationship between Ph.D. degrees granted in the academic year ended June 1969 and the number of graduate faculty in fall 1968 indicated that staffing of doctorate departments averaged 2.8 faculty members per Ph.D. degree awarded.<sup>14</sup> In 1968 the ratio of faculty-to-degrees awarded was highest in mathematical sciences and lowest in psychology.

<sup>14</sup> Because fall 1968 faculty comprise the departmental staff for academic year 1968-69, it was relevant to compare faculty data for the beginning of the academic year with Ph.D. output for the entire year.

## Postdoctorals

Postdoctorals, or research associates as they are sometimes called, are essentially full-time researchers without academic rank and with no permanent status with the host institution.<sup>15</sup> A postdoctoral appointment allows the scholar to acquire new skills and experience in his chosen research field and enhances his qualification for a faculty position in a major university or a top research position in other sectors of the economy. Science departments depend upon these postdoctorals to carry on high quality research and bring new techniques to the laboratory that otherwise might not be available.

**Number of postdoctorals.** Postdoctoral appointments in doctorate departments totaled 8,517 in 1969, of whom more than four-fifths were in the physical sciences and the life sciences (chart 15). As might be expected, the number of postdoctorals was rather closely associated with the availability of research funds. For example, the area-of-science distribution of separately budgeted research expenditures totaling \$2.1 billion in universities and colleges in academic year 1967-68 was as follows: Physical and life sciences combined, 69 percent; engineering, 13 percent; and social, mathematical, psychological, and other sciences combined, 18 percent.<sup>16</sup>

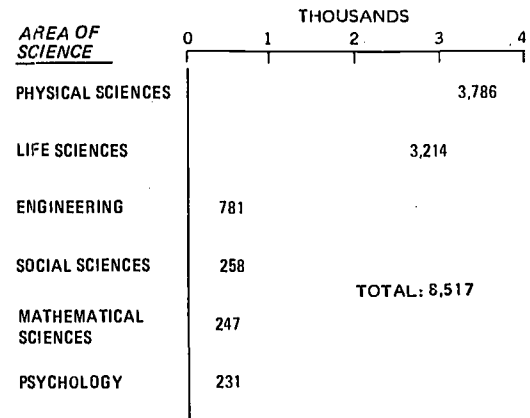
While graduate enrollment and faculty showed declining rates of increase in the period 1967-69, the increase in the number of postdoctorals in doctorate departments accelerated each year. The total number reported by the doctorate departments in this study increased 8.1 percent from 1967 to 1968 and 10.3 percent from 1968 to 1969 (table 14).

**Relationship to enrollment, Ph.D. degrees, and faculty.** Data on postdoctorals were compared with related educational variables, including graduate students, doctorate degrees granted, and graduate faculty. The social sciences attracted 21 percent of all graduate students but only 3 percent of the postdoctorals, with a student-to-postdoctoral ratio of 112.3 to 1, the highest of any major area of science. With 45 percent of the postdoctorals and 21 percent of the students in the physical sciences, this area exhibited the

<sup>15</sup> For a comprehensive analysis of postdoctoral appointments in universities and colleges, government, industry, and independent nonprofit institutions, see National Academy of Sciences, *The Invisible University, Postdoctoral Education in the United States* (Washington, D.C.: National Academy of Sciences, 1969).

<sup>16</sup> National Science Foundation, *Resources for Scientific Activities at Universities and Colleges, 1969* (NSF 70-16) (Washington, D.C. 20402: Supt. of Documents, U.S. Government Printing Office), table 17.

Chart 15. Number of postdoctorals in doctorate departments, 1969



SOURCE: NATIONAL SCIENCE FOUNDATION (APPENDIX TABLE C-19).

lowest student-to-postdoctoral ratio (8.0 to 1), followed by the life sciences with 8.6 to 1 (appendix table C-20).

In a detailed examination of the 41 fields of science in which postdoctorals were engaged in research, only two fields, chemistry (2,236) and physics (1,203), had more than 1,000 postdoctoral appointees. In contrast, fewer than 10 postdoctorals were reported in doctorate departments in the following fields: Sociology and anthropology combined, 2;<sup>17</sup> petroleum engineering, 4; mining engineering, 7; and agricultural economics, 9, as shown in appendix table C-19.

<sup>17</sup> This figure does not include the 54 postdoctorals in departments of sociology.

Table 14.—Trends in the number of postdoctorals in doctorate departments, by area of science, 1967-69<sup>a</sup>

Area of science	1967	1968	1969	Percent change	
				1967-68	1968-69
Total .....	7,140	7,720	8,517	8.1	10.3
Engineering.....	617	690	781	11.8	13.2
Physical sciences.....	3,407	3,615	3,786	6.1	4.7
Mathematical sciences.....	225	236	247	4.9	4.7
Life sciences.....	2,491	2,743	3,214	10.1	17.2
Psychology.....	170	214	231	25.9	7.9
Social sciences.....	230	222	258	-3.5	16.2

Source: Departmental Summaries from 2,894 doctorate departments, as shown in appendix E.



An almost one-to-one ratio existed in both the physical and life sciences in the number of doctorate degrees granted per postdoctoral in academic year 1968-69.<sup>18</sup> The highest ratio was in the social sciences, where 9.7 doctorate degrees were awarded per postdoctoral appointment (appendix table C-21).

Comparisons of the numbers of postdoctorals and graduate faculty provided another illustration of the concentration of postdoctoral appointees in the physi-

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<sup>18</sup> It was relevant to compare fall 1968 postdoctoral data with Ph.D. degrees awarded for the entire year, as in similar correlations made between faculty and Ph.D. degrees.

cal and life sciences. The physical sciences, with the largest number of postdoctorals, reported 2.5 faculty members per postdoctoral. The ratio was highest in the social sciences, with 30.0 faculty members per postdoctoral (appendix table C-22).

About two-thirds of the postdoctorals counted here received their doctorates in 1965, or later, and were termed "recent postdoctorals" for the purposes of this study. The highest proportion of recent postdoctorals among areas of science was in the physical sciences, 77 percent, while the lowest proportion was in the social sciences, 38 percent (appendix table C-19).

## **APPENDIXES**

- A. Institutions Participating in the Graduate Traineeship Program,  
Fall 1969**
- B. Technical Notes**
- C. Statistical Tables**
- D. Instructions and Consolidated Departmental Data Sheets**
- E. Consolidated Departmental Summaries**

## APPENDIX A

# Institutions Participating in Graduate Traineeship Program, Fall 1969<sup>1</sup>

Alabama.....	Auburn University University of Alabama	District of Columbia...	American University Catholic University George Washington University Georgetown University Howard University
Alaska.....	University of Alaska	Florida.....	Florida State University Nova University University of Florida University of Miami University of South Florida
Arizona.....	Arizona State University University of Arizona	Georgia.....	Atlanta University Emory University Georgia Institute of Technology Georgia State College Medical College of Georgia University of Georgia
Arkansas.....	University of Arkansas, Fayetteville	Hawaii.....	University of Hawaii
California.....	California Institute of Technology Claremont Graduate School and University Center Loma Linda University Stanford University University of California, Berkeley University of California, Davis University of California, Irvine University of California, Los Angeles University of California, Riverside University of California, San Diego University of California, San Francisco University of California, Santa Barbara University of California, Santa Cruz University of the Pacific University of Santa Clara University of Southern California U.S. International University	Idaho.....	University of Idaho
Colorado.....	Colorado School of Mines Colorado State University University of Colorado	Illinois.....	DePaul University Illinois Institute of Technology Illinois State University Loyola University Northern Illinois University Northwestern University Southern Illinois University University of Chicago University of Illinois, Urbana University of Illinois Medical Center University of Illinois, Chicago Circle
Connecticut.....	University of Connecticut Wesleyan University Yale University	Indiana.....	Indiana University Purdue University University of Notre Dame
Delaware.....	University of Delaware	Iowa.....	Iowa State University University of Iowa
		Kansas.....	Kansas State University University of Kansas
		Kentucky.....	University of Kentucky University of Louisville
		Louisiana.....	Louisiana Polytechnic Institute Louisiana State University, Baton Rouge Louisiana State University, New Orleans Louisiana State University Medical Center, New Orleans

<sup>1</sup>The 224 science doctorate institutions listed here may differ from similar listings published elsewhere for the following principal reasons: (1) Differences in classifying branches, affiliates, or other organizational components of university systems; (2) variations in definitions of science and engineering fields; (3) differences in the time-period covered by the classification (e.g., single year or longer period); and (4) differences in classifications based on level of degree offered or level of degree granted, respectively, in a particular period.

Louisiana—Cont.

	Loyola University		Polytechnic Institute of Brooklyn
	Tulane University		Rensselaer Polytechnic Institute
Maine . . . . .	University of Maine		Rockefeller University
Maryland . . . . .	Johns Hopkins University		St. Bonaventure University
	University of Maryland		St. Johns University
Massachusetts . . . . .	Boston College		State University of New York at Albany
	Boston University		State University of New York at Binghamton
	Brandeis University		State University of New York at Buffalo
	Clark University		State University of New York, College of Forestry at Syracuse
	Harvard University		State University of New York, Downstate Medical Center
	Lowell Technological Institute		State University of New York, Stony Brook
	Massachusetts Institute of Technology		State University of New York, Upstate Medical Center
	Northeastern University		Syracuse University
	Tufts University		Union College and University
	University of Massachusetts		University of Rochester
	Worcester Polytechnic Institute		Yeshiva University
Michigan . . . . .	Michigan State University, East Lansing	North Carolina . . . . .	Duke University
	Michigan Technological University		University of North Carolina, Chapel Hill
	University of Detroit		University of North Carolina— North Carolina State University, Raleigh
	University of Michigan		Wake Forest University
	Wayne State University	North Dakota . . . . .	North Dakota State University
	Western Michigan University		University of North Dakota
Minnesota . . . . .	University of Minnesota, Minneapolis	Ohio . . . . .	Bowling Green State University
Mississippi . . . . .	Mississippi State University		Case-Western Reserve University
	University of Mississippi		Kent State University
	University of Southern Mississippi		Miami University
Missouri . . . . .	St. Louis University		Ohio State University
	University of Missouri, Columbia		Ohio University
	University of Missouri, Kansas City		University of Akron
	University of Missouri, Rolla		University of Cincinnati
	Washington University		University of Dayton
Montana . . . . .	Montana State University		University of Toledo
	University of Montana	Oklahoma . . . . .	Oklahoma State University
Nebraska . . . . .	University of Nebraska		University of Oklahoma
Nevada . . . . .	University of Nevada	Oregon . . . . .	Oregon Graduate Center
New Hampshire . . . . .	Dartmouth College		Oregon State University
	University of New Hampshire		Portland State University
New Jersey . . . . .	Newark College of Engineering		University of Oregon
	Princeton University		University of Portland
	Rutgers, The State University	Pensylvania . . . . .	Bryn Mawr College
	Seton Hall University		Carnegie-Mellon University
	Stevens Institute of Technology		Drexel Institute of Technology
New Mexico . . . . .	New Mexico Institute of Mining and Technology		Duquesne University
	New Mexico State University		Hahnemann Medical College and Hospital
	University of New Mexico		Lehigh University
New York . . . . .	Adelphi University		The Medical College of Pennsylvania
	Alfred University		Pennsylvania State University
	City University of New York		Philadelphia College of Pharmacy and Science
	Clarkson College of Technology		Temple University
	Columbia University		Thomas Jefferson University
	Cooper Union		
	Cornell University		
	Fordham University		
	New School of Social Research		
	New York Medical College		
	New York University		

Pennsylvania—Cont.	University of Pennsylvania University of Pittsburgh Villanova University	Texas A&M University Texas Christian University Texas Tech University Texas Woman's University University of Houston University of Texas, Arlington University of Texas, Austin
Rhode Island . . . . .	Brown University Providence College University of Rhode Island	Utah . . . . .
South Carolina . . . . .	Clemson University Medical University of South Carolina	Brigham Young University University of Utah Utah State University, Logan
South Dakota . . . . .	University of South Carolina South Dakota School of Mines and Technology South Dakota State University University of South Dakota	Vermont . . . . .
Tennessee . . . . .	George Peabody College Memphis State University University of Tennessee, Knox- ville University of Tennessee, Memphis Vanderbilt University	Virginia . . . . .
Texas . . . . .	Baylor University, Waco Baylor College of Medicine, Houston North Texas State University Rice University Southern Methodist University	College of William and Mary University of Virginia Virginia Commonwealth University Virginia Polytechnic Institute Washington . . . . .
		University of Washington Washington State University
		West Virginia . . . . .
		West Virginia University
		Wisconsin . . . . .
		Institute of Paper Chemistry (Lawrence University) Marquette University University of Wisconsin, Madison University of Wisconsin, Mil- waukee
		Wyoming . . . . .
		University of Wyoming

## APPENDIX B

### Technical Notes

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#### Definitions

**Highest degree offered.** The department was asked to state whether the master's or doctor's degree was the highest degree offered by the department at the time the statistics were supplied (October 1969). Institutions in which at least one department offered science doctorates were eligible for NSF traineeship grants. In such institutions, departments offering master's as their highest science degrees were also eligible. Statistics on which this report is based, however, relate only to science doctorate departments of eligible institutions that elected to apply for NSF Traineeships for 1970.

**Degrees conferred.** Degrees conferred during the previous 12-month period ending in June of the current year are reported. Degrees conferred jointly by two or more departments were recorded by one department only, at the discretion of the departments. The present report does not analyze the degree output of doctorate departments included in the study. However, statistics on this subject, by area of science, are summarized in the Consolidated Departmental Data Sheets (appendix D) and the Consolidated Departmental Summaries (appendix E).

**Enrollment status of graduate students.** A full-time graduate student is a *bona fide* graduate student (not a regular staff member; e.g., not an instructor) who is engaged entirely in training activities in his field of science; these activities may embrace any appropriate combination of study, teaching, and research. (Some institutions use the phrase, "geographical full-time student" to describe such students.) All other graduate students are considered parttime.

**Level of study of graduate students.** A first-year graduate student is one who in the fall of the year of application is entering graduate school for the first time, or has completed less than a normal year of graduate study. All graduate students who had completed a normal year of graduate study, or more, were classified as beyond-first-year graduate students.

**Types and sources of major support.** Information on graduate student support was requested for full-time students only. In cases of multiple support, the major source of support was requested. Major support is defined as a total stipend of \$1,200 or more, exclusive of tuition and self-support during a particular academic year. A given student should be counted only once, and for each department the sum of full-

time graduate students enrolled should equal the sum of full-time graduate students listed by sources of major support. Four types of major support were indicated, without definitions, as follows: Fellowships and traineeships, teaching assistantships, research assistantships, and all other types of support. Separate data on number of graduate fellows and trainees, respectively, were not requested from institutions applying for NSF traineeships because of the problem of making meaningful distinctions between the two types of awards. The Federal Interagency Committee on Education (FICE) (as does NSF in its fellowship and traineeship programs) differentiates between the two categories of stipends, as follows: (1) A fellowship is "an award made directly to or on behalf of a student, selected in a national competition, to enable him to pursue post-baccalaureate training," and (2) a traineeship is "an educational award to a student selected by his university." Except for the student selection process, the terms and conditions of the two types of awards are generally identical, according to the Federal Interagency Committee on Education's Student Support Study Group, *Report on Federal Predoctoral Student Support, Part I, Fellowships and Traineeships*, April 1970, page 3. For purposes of analysis of major sources of support, four sources were used:<sup>1</sup> (1) U.S. Government; (2) institutional support (includes State and local government and "This" institution); (3) other outside sources; and (4) self-support, including loans and family support.

**Citizenship of graduate students.** Citizens of the United States or native residents of a possession of the United States are considered U.S. citizens. All others, including those who have applied for U.S. citizenship, are considered foreign.

**Faculty.** Faculty are staff of academic rank, instructor or above, who are significantly involved in the graduate academic program of the department (i.e., teaching one or more graduate courses or seminars and/or directing the research of one or more graduate students), including faculty on sabbatical leave who were expected to return. Visiting professors were excluded. Full-time faculty are those staff (including the departmental head) of academic rank, instructor or above, with a full-time appointment in that department and whose major responsibilities are in the academic programs of that department. Research professors (and research associates with academic rank) were included in the full-time faculty count and also

<sup>1</sup> See appendixes D and E for the application forms used for NSF Traineeships and instructions used to complete the Departmental Data Sheet (NSF Form 345).

separately counted as those who met the definition for full-time faculty but did not teach any regularly scheduled courses. Part-time faculty are those who met the faculty definition but have major responsibilities or activities outside the department (includes deans, affiliate or adjunct professors from other departments or outside the university, professors emeriti, experiment laboratory or extension service staff, museum staff, etc.). Any one faculty member was counted as full-time in only one department.

**Postdoctorals and research associates.** All individuals who devote essentially full-time effort to research activities within that department, whose appointment is nonpermanent, not of academic rank (instructor or above), and usually for a specific time period, are postdoctorals or research associates. Such individuals usually have an earned doctorate (or the equivalent in experience) and may contribute to the academic program through seminars, lectures, or working with graduate students, but their postdoctoral activities are considered to have an element of additional training for them.

## Statistical Coverage of Graduate Science Education

Statistics on graduate enrollment, faculty, and postdoctorals in the sciences and engineering submitted by the 224 doctorate institutions that applied for 1970 NSF traineeship grants, upon which this report is based, represent nearly the complete universe for doctorate-granting departments. As mentioned elsewhere in the report, the graduate educational characteristics of master's departments of the 224 institutions were not included for two principal reasons: (1) They constitute only a small fraction of the educational activities of doctorate-granting institutions, and (2) the data for these master's departments could not be considered representative of similar departments of the approximately 200 institutions granting master's degrees in the sciences and engineering that were not covered in this study, since they were not eligible for NSF traineeship grants.

The 2,894 doctorate departments of these 224 institutions awarded well over 90 percent of the doctorate degrees awarded by all U.S. institutions of higher education in each of the 3 academic years ended June 30, 1967-69 (appendix table B-1). Coverage in terms of proportion of doctorates awarded was quite consistent in each area of science throughout the 3-year period. It was weakest in the life sciences, in which slightly more than three-fourths of the doctorates were awarded by institutions in the study. In this regard, it

should be noted that many departments granting doctorates in the basic-medical and clinical-medical sciences do not apply for NSF traineeships. In the social sciences and engineering for each of the 3 years, and in mathematical sciences for 1969 only, the indicated doctorate output of institutions in the study was higher than that shown for each of the areas of science by U.S. Office of Education statistics. This apparent discrepancy may be attributed to the differences in the classifications of scientific fields used by NSF and OE, respectively.

Enrollment statistics provide another measure of the coverage of graduate science education characterizing the present study. The 224 doctorate institutions in this study enrolled 196,341 graduate students, or 81 percent of total U.S. enrollment for advanced degrees in all institutions in 1969. Doctorate departments of the 224 institutions accounted for 76 percent of the U.S. total, and their master's departments accounted for an additional 5 percent (appendix table B-2).<sup>2</sup>

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<sup>2</sup> As noted elsewhere, statistics on the characteristics of master's departments of the doctorate institutions are not presented in this report.

Among areas of science, coverage of graduate enrollment in doctorate departments ranged from a high of 88 percent in the social sciences to a low of 53 percent in the mathematical sciences. As mentioned earlier, the foregoing area-of-science comparisons do not include enrollment in master's departments of the 224 institutions in the study and of other institutions outside the scope of the traineeship program. It should also be noted that some differences in the foregoing comparisons of enrollment data may be due to differences in institutional reporting of such information to the U.S. Office of Education and to the National Science Foundation, respectively, as well as differences in definitions of scientific fields used by the two agencies.

The classification of departments, by area and field of science, used in the present study is shown in appendix table B-3. In addition to providing details regarding the system used to classify the data on graduate science education contained in this report, the listing of titles used by the 2,894 doctorate departments and the 460 master's departments provides useful information on the organizational structure of U.S. higher education in the sciences and engineering.



**Table B-1.—Doctorates awarded in the sciences and engineering by the 224 institutions covered in the study, compared with total science doctorates granted by all U.S. institutions of higher education, by area of science, academic years ended June 30, 1967-69**

Area of science and academic year	U.S. total, all institutions <sup>a</sup>	Institutions covered in study		Area of science and academic year	U.S. total, all institutions <sup>a</sup>	Institutions covered in study	
		Doctorates awarded	Percent of total			Doctorates awarded	Percent of total
<b>Total:</b>				<b>Life sciences:</b>			
1967.....	12,981	12,121	93.4	1967.....	3,116	2,442	78.4
1968.....	14,420	13,364	92.7	1968.....	3,681	2,802	76.1
1969.....	15,982	14,998	93.8	1969.....	4,116	3,154	76.6
<b>Engineering:</b>				<b>Psychology:</b>			
1967.....	2,581	2,731	105.8	1967.....	1,293	1,058	81.8
1968.....	2,833	3,003	106.0	1968.....	1,452	1,186	81.7
1969.....	3,234	3,514	108.7	1969.....	1,728	1,398	80.9
<b>Physical sciences:</b>				<b>Social sciences:</b>			
1967.....	3,478	3,327	95.7	1967.....	1,685	1,755	104.2
1968.....	3,642	3,495	96.0	1968.....	1,842	1,929	104.7
1969.....	3,901	3,704	95.0	1969.....	1,940	2,157	111.2
<b>Mathematical sciences:</b>							
1967.....	828	808	97.6				
1968.....	970	949	97.8				
1969.....	1,063	1,071	100.8				

<sup>a</sup> Based on U.S. Office of Education statistics on earned degrees granted by U.S. institutions of higher education.

**Table B-2.—Graduate student enrollment (full-time and part-time) in the sciences and engineering in 224 doctorate institutions covered in the study, compared with estimated U.S. enrollment for advanced degrees, by area of science and department degree level, 1969**

Area of science	Estimated U.S. total enrollments for advanced degrees, fall 1969 <sup>a</sup>	Graduate students enrolled in 224 doctorate institutions covered in study, 1969					
		All departments		Doctorate departments		Master's departments	
		Number	Percent of total	Number	Percent of total	Number	Percent of total
<b>Total.....</b>	<b>243,715</b>	<b>196,341</b>	<b>80.6</b>	<b>184,845</b>	<b>75.8</b>	<b>11,496</b>	<b>4.7</b>
<b>Engineering.....</b>	<b>65,048</b>	<b>55,537</b>	<b>85.4</b>	<b>52,567</b>	<b>80.8</b>	<b>2,970</b>	<b>4.6</b>
<b>Physical sciences.....</b>	<b>39,885</b>	<b>35,642</b>	<b>89.4</b>	<b>34,696</b>	<b>87.0</b>	<b>946</b>	<b>2.4</b>
<b>Mathematical sciences.....</b>	<b>29,175</b>	<b>17,383</b>	<b>59.6</b>	<b>15,417</b>	<b>52.8</b>	<b>1,966</b>	<b>6.7</b>
<b>Life sciences.....</b>	<b>44,203</b>	<b>32,129</b>	<b>72.7</b>	<b>30,810</b>	<b>69.7</b>	<b>1,319</b>	<b>3.0</b>
<b>Psychology.....</b>	<b>22,726</b>	<b>14,487</b>	<b>63.7</b>	<b>13,763</b>	<b>60.6</b>	<b>724</b>	<b>3.2</b>
<b>Social sciences.....</b>	<b>42,678</b>	<b>41,163</b>	<b>96.5</b>	<b>37,592</b>	<b>88.1</b>	<b>3,571</b>	<b>8.4</b>

<sup>a</sup> Based on preliminary data of the U.S. Office of Education, fall 1969.

Table B-3.—Number of science departments in the 223 doctorate institutions covered in the study, by area and field of science and department degree level, 1969\*

Field of science and departmental title	Total	Doctorate	Master's	Field of science and departmental title	Total	Doctorate	Master's
<b>Total</b> .....	<b>3,354</b>	<b>2,894</b>	<b>460</b>	Engineering sciences, total.....	50	45	5
Engineering.....	765	665	100	Applied mechanics.....	6	5	1
Aeronautical, total.....	33	33		Applied science.....	1	1	
Aeronautical and astronautical engineering.....	3	3		Engineering acoustics.....	1	1	
Aeronautics.....	1	1		Engineering mechanics.....	20	18	2
Aeronautics and astronautics.....	6	6		Engineering science.....	10	8	2
Aeronautics and engineering mechanics.....	1	1		Engineering and applied physics.....	1	1	
Aerospace engineering.....	16	16		Mechanical science.....	2	2	
Aerospace engineering and engineering physics.....	2	2		Mechanics.....	6	6	
Astronautics.....	1	1		Mechanics and hydraulics.....	1	1	
Space science.....	3	3		Theoretical and applied mechanics.....	2	2	
Agricultural, total.....	32	24	8	Industrial, total.....	59	47	12
Agricultural and irrigation engineering.....	1	1		Administrative science.....	1	1	
Agricultural engineering.....	28	21	7	Applied analysis.....	1	1	
Chemical and paper engineering.....	1	1		Industrial communication engineering.....	1	1	
Wood technology.....	1	1		Industrial engineering.....	28	21	7
Wood products engineering.....	1	1		Industrial engineering and management science.....	4	3	1
Chemical, total.....	101	91	10	Industrial engineering and operations research.....	7	5	2
Chemical engineering.....	91	83	8	Information engineering.....	1	1	
Chemical engineering and materials science.....	2	2		Management.....	1	1	
Chemical and metallurgical engineering.....	5	4	1	Management engineering.....	1	1	
Chemical and nuclear engineering.....	2	2		Management science.....	2	2	
Plastics.....	1	1		Operations research.....	4	4	
Civil, total.....	104	88	16	Organization behavior.....	1	1	
Civil engineering.....	89	74	15	Systems engineering.....	7	6	1
Civil engineering and engineering mechanics.....	1	1		Mechanical, total.....	120	102	18
Civil and environmental engineering.....	5	4	1	Aerospace and mechanical engineering.....	22	22	
Civil and geological engineering.....	2	2		Marine engineering and naval architecture.....	1	1	
Environmental engineering.....	2	2		Mechanical engineering.....	92	75	17
Environmental sciences and engineering.....	2	2		Mechanical and industrial engineering.....	1	1	
Electrical, total.....	125	108	17	Naval architecture.....	2	2	
Electrical computer science.....	2	1	1	Structural engineering.....	1	1	
Electrical engineering.....	120	106	14	Transportation.....	1	1	
Electronic engineering.....	2	2		Metallurgical, total.....	58	51	7
Electronics.....	1	1		Ceramic engineering.....	5	4	1
				Ceramics.....	2	2	
				Material science.....	8	8	
				Materials engineering.....	10	10	
				Metallurgical engineering.....	7	7	
				Metallurgical and materials engineering.....	10	10	
				Metallurgy.....	10	9	1
				Soil, state science and technology.....	1	1	
				Mining, total.....	14	9	5
				Mineral engineering.....	8	1	7

\* Although the present report covers only the 2,894 doctorate departments, information on the 460 master's departments is also included in the table.

Table B-3.—Number of science departments in the 224 doctorate institutions covered in the study, by area and field of science and department degree level, 1969—continued

Field of science and departmental title	Total	Doctorate	Master's	Field of science and departmental title	Total	Doctorate	Master's
Mining.....	1	1	—	Geosciences, total.....	133	100	33
Mining engineering.....	5	3	2	Earth and planetary science.....	4	4	—
Mining and geological engineering.....	3	3	—	Earth sciences.....	6	5	1
Mining and metallurgy.....	2	1	1	Geodetic science.....	1	1	—
Nuclear, total.....	31	29	2	Geochemistry.....	1	1	—
Nuclear engineering.....	26	24	2	Geochronology.....	1	1	—
Nuclear science and engineering.....	4	4	—	Geological science.....	18	14	4
Nuclear studies.....	1	1	—	Geology.....	69	46	23
Petroleum, total.....	8	8	—	Geology and geography.....	6	4	2
Petroleum engineering.....	4	4	—	Geology and geological engineering.....	3	3	—
Petroleum and chemical engineering.....	4	4	—	Geology and geophysics.....	7	7	—
Other engineering, total.....	35	30	5	Geophysical instruction.....	1	—	1
Applied physics.....	3	3	—	Geophysics.....	6	5	1
Bioengineering.....	3	3	—	Geophysics and planetary physics.....	1	1	—
Biomedical engineering.....	7	7	—	Geosciences.....	5	4	1
Economics of engineering.....	1	1	—	Hydrology.....	1	1	—
Energy engineering.....	2	2	—	Mineralogy.....	1	1	—
Engineering.....	11	11	—	Paleontology.....	1	1	—
Engineering design.....	2	—	2	Sedimentary structure.....	1	1	—
Engineering mathematics.....	1	—	1	Oceanography, total.....	23	20	3
Engineering physics and physics.....	1	1	—	Marine biology.....	2	1	1
Polymer science and engineering.....	1	1	—	Marine science.....	5	5	—
Technology.....	1	1	—	Ocean engineering.....	4	2	2
Textile engineering.....	2	2	—	Oceanography.....	11	11	—
Physical sciences.....	583	509	74	Water chemistry.....	1	1	—
Astronomy, total.....	23	22	1	Physics, total.....	185	165	20
Atmospheric sciences, total.....	20	20	—	Astronomy and space science.....	1	1	—
Aeronautics and planet atmospheres.....	1	1	—	Chemical physics.....	3	3	—
Astrogeophysics.....	1	1	—	Electrophysics.....	1	1	—
Astrophysics.....	1	1	—	Mathematical physics.....	1	1	—
Atmospheric sciences.....	5	5	—	Molecular physics.....	1	1	—
Atmospheric and space sciences.....	1	1	—	Optics.....	1	1	—
Meteorology.....	9	9	—	Physics.....	161	141	20
Meteorology and oceanography.....	2	2	—	Physics and astronomy.....	14	14	—
Chemistry, total.....	199	182	17	Physics and astrophysics.....	1	1	—
Chemistry.....	193	177	16	Plasma physics.....	1	1	—
Chemistry and physics.....	1	1	—	Mathematical sciences.....	253	203	50
Crystallography.....	1	1	—	Applied mathematics, total.....	37	27	10
Paper technology.....	1	1	—	Applied mathematics.....	6	6	—
Polymer science.....	3	3	—	Applied mathematics and computer science.....	2	2	—
				Computer science.....	29	19	10
				Mathematics, total.....	175	139	36

Table B-3.—Number of science departments in the 224 doctorate institutions covered in the study, by area and field of science and department degree level, 1969—continued

Field of science and departmental title	Total	Doctorate	Master's	Field of science and departmental title	Total	Doctorate	Master's
Mathematical science.....	2	2	.....	Silviculture.....	1	1	.....
Mathematics.....	169	133	36	Soil science.....	3	3	.....
Mathematics and statistics.....	4	4	.....	Soil and water science.....	1	.....	1
Statistics, total.....	41	37	4	Soils.....	4	.....	4
Biostatistics.....	3	1	2	Soils and meteorology.....	1	1	.....
Experimental statistics.....	1	1	.....	Vegetable crops.....	2	2	.....
Mathematical biology.....	2	2	.....	Water resources.....	1	1	.....
Mathematical statistics.....	1	1	.....	Watershed management.....	3	3	.....
Statistics.....	32	30	2	Wildlife.....	2	2	.....
Statistics and computer science.....	2	2	.....	Wildlife management.....	1	1	.....
Life sciences.....	949	874	75	Biochemistry, total.....	120	119	1
Agricultural, total.....	225	198	27	Agricultural biochemistry.....	2	2	.....
Agricultural chemistry.....	4	4	.....	Biochemical science.....	1	1	.....
Agromony.....	22	20	2	Biochemistry.....	79	78	1
Agromony and genetics.....	2	2	.....	Biochemistry and biophysics.....	6	6	.....
Animal husbandry.....	3	2	1	Biochemistry and nutrition.....	2	2	.....
Animal industry.....	1	1	.....	Biological chemistry.....	3	3	.....
Animal nutrition.....	1	1	.....	Biophysics.....	12	12	.....
Animal science.....	30	25	5	Biophysics and microbiology.....	2	2	.....
Conservation.....	1	1	.....	Biophysics and physical biochemistry.....	1	1	.....
Crop and soil science.....	1	1	.....	Medical biochemistry.....	2	2	.....
Dairy science.....	5	2	3	Medical physics.....	1	1	.....
Entomology.....	30	27	3	Molecular biophysics.....	1	1	.....
Entomology and parasitology.....	2	2	.....	Molecular biophysics and biochemistry.....	1	1	.....
Farm crops.....	1	1	.....	Molecular biology.....	1	1	.....
Floriculture.....	1	1	.....	Plant nutrition.....	1	1	.....
Food science.....	9	7	2	Radiation biology.....	4	4	.....
Food science and technology.....	6	6	.....	Radiation biology and biophysics.....	1	1	.....
Food technology.....	1	1	.....	Radiation biophysics.....	1	1	.....
Food and nutrition.....	8	5	3	Biology, total.....	140	116	24
Forest chemistry.....	1	1	.....	Biological science.....	27	21	6
Forest economics.....	1	1	.....	Biology.....	93	75	18
Forest management.....	2	2	.....	Biomedical science.....	3	3	.....
Forest resources.....	4	3	1	Cellular biology.....	5	5	.....
Forestry.....	15	13	2	Experimental biology.....	1	1	.....
Forestry and horticulture.....	1	1	.....	Molecular basis of biological phenomena.....	1	1	.....
Home economics.....	1	1	.....	Molecular biology.....	7	7	.....
Horticulture.....	16	16	.....	Organismic biology.....	1	1	.....
Nutrition.....	10	9	1	Population and environmental biology.....	1	1	.....
Parasitology.....	1	1	.....	Botany, total.....	79	74	5
Plant breeding.....	2	2	.....	Botanical science.....	1	1	.....
Plant science.....	6	6	.....	Botany.....	38	37	1
Plant and soil science.....	4	3	1	Botany and microbiology.....	7	6	1
Poultry.....	1	1	.....	Botany and plant pathology.....	10	9	1
Poultry science.....	9	7	2	Plant pathology.....	20	18	2
Range science.....	2	2	.....	Plant physiology.....	3	3	.....
Recreation parks.....	1	1	.....				
Resource development.....	1	1	.....				

Table B-3.—Number of science departments in the 224 doctorate institutions covered in the study, by area and field of science and department, degree level, 1961.—continued

Field of science and departmental title	Total	Doctorate	Master's	Field of science and departmental title	Total	Doctorate	Master's
Microbiology, total.....	81	79	2	General science.....	2	2	
Bacteriology.....	8	7	1	Genetics.....	14	14	
Cell physiology.....	1	1		Health science.....	1		
Medical microbiology.....	6	6		Health and physical education.....	2	2	
Microbiology.....	65	64	1	History of medicine.....	1		1
Virology.....	1	1		Immunology.....	2	2	
Pharmacology, total.....	74	72	2	Life sciences.....	3	3	
Biochemical pharmacology.....	1	1		Medical sciences.....	1	1	
Biopharmaceutical sciences.....	1	1		Natural resources.....	2	2	
Chemistry and pharmaceutical chemistry.....	1	1		Neurobiology.....	2	2	
Medicinal chemistry.....	3	3		Occupational health.....	1		1
Pharmaceutical chemistry.....	10	10		Pathology.....	11	10	1
Pharmacognosy.....	1	1		Planetary and space science.....	1	1	
Pharmacology.....	42	41	1	Preventive medicine and public health.....	2	1	1
Pharmacology and toxicology.....	1	1		Psychobiology.....	1	1	
Pharmacy.....	14	13	1	Radiology.....	2	1	1
Physiology, total.....	65	65		Science.....	1	1	
Animal physiology.....	2	2		Science education.....	1	1	
Medical physiology.....	3	3		Toxicology.....	1	1	
Physiological chemistry.....	1	1		Tropical medicine.....	1	1	
Physiological optics.....	2	2		Veterinary medicine.....	1	1	
Physiology.....	37	37		Veterinary science.....	2	1	1
Physiology and anatomy.....	2	2		Psychology.....	160	141	19
Physiology and biophysics.....	13	13		Psychology, total.....	160	141	19
Physiology and pharmacology.....	5	5		Animal behavior.....	1	1	
Zoology, total.....	58	54	4	Child development.....	3	3	
Fish and wildlife.....	3	3		Educational psychology.....	1	1	
Fisheries.....	1	1		Experimental social psychology.....	1	1	
Forest zoology.....	1	1		Human development.....	2	2	
Zoology.....	45	42	3	Psychiatry and neurology.....	1	1	
Zoology and entomology.....	5	5		Psychology.....	150	132	18
Zoology and physiology.....	3	2	1	Social psychology.....	1	1	
Other life sciences, total.....	107	97	10	Social sciences.....	614	502	112
Administration medicine.....	1	1		Agricultural economics, total.....	21	16	5
Anatomy.....	38	37	1	Agricultural economics.....	13	11	2
Animal genetics.....	1	1		Agricultural economics and economics.....	2	1	1
Arts and sciences.....	1	1		Agricultural economics and sociology.....	6	4	2
Audiology.....	1	1		Anthropology, total.....	67	56	11
Bacteriology and public health.....	1	1		Economics, total.....	126	104	22
Biometrics.....	2	2		Business economics.....	1	1	
Dentistry.....	5	5		Economics.....	118	96	22
Ecology.....	1	1		Economics and business administration.....	2	2	
Embryology.....	1	1		Industrial relations.....	2	2	
Endocrinology.....	1	1		Mineral economics.....	1	1	
				Political economy.....	2	2	

Table B-3.--Number of science departments in the 224 doctorate institutions covered in the study, by area and field of science and department degree level, 1969--continued

Field of science and departmental title	Total	Doctorate	Master's	Field of science and departmental title	Total	Doctorate	Master's
Geography, total.....	69	44	15	Political science, total.....	125	97	28
Geography.....	58	43	15	Government.....	17	12	5
Geography and anthropology.....	1	1		Government and foreign affairs.....	1	1	
History and philosophy of science, total.....	36	34	2	International relations.....	2	2	
History.....	1	1		International studies.....	3	3	
History and philosophy of science.....	5	5		Political science.....	92	72	20
History of science.....	10	9	1	Politics.....	4	4	
Logic and methodology of science.....	1	1		Public administration.....	3	2	1
Philosophy.....	15	14	1	Public affairs.....	3	1	2
Philosophy of science.....	4	4		Sociology, total.....	113	85	28
Linguistics, total.....	65	54	11	Area studies.....	1		1
Communication.....	2	2		City planning.....	1	1	
Communications.....	3	3		Demography.....	1	1	
English.....	1			Folklore.....	1	1	
Information science.....	5	3	2	Interdisciplinary studies.....	1	1	
Interpersonal communication.....	1	1		Labor and industrial relations.....	1	1	
Journalism.....	1	1		Leadership and human behavior.....	1	1	
Linguistics.....	38	32	6	Regional science.....	1	1	
Mass communications.....	1	1		Rural sociology.....	2	2	
Psycholinguistics.....	2	2		Social relations.....	2	2	
Sensory communication.....	1	1		Social sciences.....	2	1	1
Speech.....	6	5	1	Sociology.....	93	70	23
Speech and pathology.....	4	3	1	Urban planning.....	6	3	3
				Sociology and anthropology, total.....	92	12	20

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## APPENDIX C

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**Table C-1.—Graduate students in doctorate departments, by area of science and enrollment status, 1967-69**

Area of science	Total	Full time		Part time	
		Number	Percent of total	Number	Percent of total
1967					
Total.....	178,459	138,200	76.8	40,259	23.2
Engineering.....	51,034	29,946	58.7	21,088	41.3
Physical sciences.....	34,556	30,295	87.7	4,261	12.3
Mathematical sciences.....	14,934	11,346	76.0	3,588	24.0
Life sciences.....	28,164	25,456	90.4	2,708	9.6
Psychology.....	11,858	10,491	88.5	1,367	11.5
Social sciences.....	32,913	25,666	78.0	7,247	22.0
1968					
Total.....	179,888	138,283	76.9	41,605	23.1
Engineering.....	51,565	30,366	58.9	21,199	41.1
Physical sciences.....	35,126	30,916	88.0	4,210	12.0
Mathematical sciences.....	15,346	11,700	76.2	3,646	23.8
Life sciences.....	29,666	26,597	89.7	3,069	10.3
Psychology.....	12,868	11,317	87.9	1,551	12.5
Social sciences.....	35,317	27,387	77.5	7,930	22.1
1969					
Total.....	184,845	141,199	76.4	43,646	23.6
Engineering.....	52,567	30,820	58.6	21,747	41.4
Physical sciences.....	34,696	30,175	87.0	4,521	13.0
Mathematical sciences.....	15,417	11,727	76.1	3,690	23.9
Life sciences.....	30,810	27,588	89.5	3,222	10.5
Psychology.....	13,763	11,918	86.6	1,845	13.4
Social sciences.....	37,592	28,971	77.1	8,621	22.9

Table C-2.—Graduate students in doctorate departments, by field of science and enrollment status, 1969

Area and field of science	Total		Full time		Part time	
	Number	Percent distribution	Number	Percent of total	Number	Percent of total
Total.....	184,845	100.0	141,199	76.4	43,646	23.6
Engineering.....	52,567	28.4	30,820	58.6	21,747	41.4
Aeronautical.....	2,162	1.2	1,504	67	658	30.4
Agricultural.....	533	.3	433	81.2	100	18.8
Chemical.....	4,819	2.6	3,204	66.5	1,615	33.5
Civil.....	6,546	3.5	4,543	69.4	2,003	30.6
Electrical.....	16,162	8.7	7,518	46.5	8,644	53.5
Engineering science.....	1,792	1.0	1,207	67.4	585	32.6
Industrial.....	5,017	2.7	2,405	47.9	2,612	52.1
Mechanical.....	8,326	4.5	4,547	54.6	3,779	45.4
Metallurgical and materials.....	2,411	1.3	1,802	74.7	609	25.3
Mining.....	334	.2	299	89.5	35	10.5
Nuclear.....	1,307	.7	1,002	76.7	305	23.3
Petroleum.....	331	.2	192	58.0	139	42.0
Other engineering.....	2,827	1.5	2,164	76.5	663	23.5
Physical sciences.....	34,696	18.8	30,175	87.0	4,521	13.0
Astronomy.....	531	.3	512	96.4	19	3.6
Atmospheric sciences.....	815	.4	739	90.7	76	9.3
Chemistry.....	15,813	8.6	13,634	86.2	2,179	13.8
Geosciences.....	3,625	2.0	3,297	91.0	328	9.0
Oceanography.....	1,108	.6	984	88.8	124	11.2
Physics.....	12,804	6.9	11,009	86.0	1,795	14.0
Mathematical sciences.....	15,417	8.3	11,727	76.1	3,690	23.9
Applied mathematics.....	1,804	1.0	1,447	80.2	357	19.8
Mathematics.....	12,123	6.6	9,091	75.0	3,032	25.0
Statistics.....	1,490	.8	1,189	79.8	301	20.2
Life sciences.....	30,810	16.7	27,588	89.5	3,222	10.5
Agriculture.....	6,856	3.7	5,963	87.0	893	13.0
Biochemistry.....	3,481	1.9	3,256	93.5	225	6.5
Biology.....	7,197	3.9	6,282	87.3	915	12.7
Botany.....	2,588	1.4	2,316	89.5	272	10.5
Microbiology.....	1,998	1.1	1,838	92.0	160	8.0
Pharmacology.....	1,304	.7	1,195	91.6	109	8.4
Physiology.....	1,337	.7	1,250	93.5	87	6.5
Zoology.....	3,902	2.1	3,659	93.8	243	6.2
Other life sciences.....	2,147	1.2	1,829	85.2	318	14.8
Psychology.....	13,763	7.4	11,918	86.6	1,845	13.4
Social sciences.....	37,592	20.3	28,971	77.1	8,621	22.9
Agricultural economics.....	893	.5	785	87.9	108	12.1
Anthropology.....	3,511	1.9	3,116	88.7	395	11.3
Economics (except agricultural).....	8,834	4.8	6,881	77.9	1,953	22.1
Geography.....	1,997	1.1	1,709	85.6	288	14.4
History and philosophy of science.....	766	.4	688	89.8	78	10.2
Linguistics.....	2,845	1.5	2,191	77.0	654	23.0
Political science.....	10,546	5.7	7,503	71.1	3,043	28.9
Sociology.....	6,896	3.7	5,366	77.8	1,530	22.2
Sociology and anthropology.....	1,304	.7	732	56.1	572	43.9

Table C-3.—Graduate students in doctorate departments, by field of science and citizenship, 1969

Area and field of science	Total	U.S. citizens		Foreign students	
		Number	Percent of total	Number	Percent of total
Total.....	184,846	163,306	82.9	31,539	17.1
Engineering.....	52,597	39,486	75.1	13,081	24.9
Aeronautical.....	2,162	1,715	79.3	447	20.7
Agricultural.....	593	326	61.2	207	38.8
Chemical.....	4,819	3,248	67.4	1,571	32.6
Civil.....	6,546	4,300	65.7	2,246	34.3
Electrical.....	16,162	13,116	81.2	3,046	18.8
Engineering science.....	1,792	1,263	70.5	529	29.5
Industrial.....	5,017	3,962	79.0	1,055	21.0
Mechanical.....	8,326	6,356	76.3	1,970	23.7
Metallurgical and materials.....	2,411	1,642	68.1	769	31.9
Mining.....	334	152	45.5	182	54.5
Nuclear.....	1,307	1,059	81.0	248	19.0
Petroleum.....	331	224	67.7	107	32.3
Other engineering.....	2,827	2,123	75.1	704	24.9
Physical sciences.....	34,696	28,678	82.7	6,018	17.3
Astronomy.....	531	464	87.4	67	12.6
Atmospheric sciences.....	815	694	85.2	121	14.8
Chemistry.....	15,813	13,072	82.7	2,741	17.3
Geosciences.....	3,625	3,080	85.0	545	15.0
Oceanography.....	1,108	1,018	91.9	90	8.1
Physics.....	12,804	10,350	80.8	2,454	19.2
Mathematical sciences.....	15,417	13,109	85.0	2,308	15.0
Applied mathematics.....	1,804	1,511	83.8	293	16.2
Mathematics.....	12,123	10,584	87.3	1,539	12.7
Statistics.....	1,490	1,014	68.1	476	31.9
Life sciences.....	30,810	26,339	85.5	4,471	14.5
Agriculture.....	6,856	5,131	74.8	1,725	25.2
Biochemistry.....	3,481	2,925	84.0	556	16.0
Biology.....	7,197	6,561	91.2	636	8.8
Botany.....	2,588	2,138	82.6	450	17.4
Microbiology.....	1,998	1,774	88.8	224	11.2
Pharmacology.....	1,304	996	76.4	308	23.6
Physiology.....	1,337	1,222	91.4	115	8.6
Zoology.....	3,902	3,649	93.5	253	6.5
Other life sciences.....	2,147	1,943	90.5	204	9.5
Psychology.....	13,763	13,202	95.9	561	4.1
Social sciences.....	37,592	32,492	86.4	5,100	13.6
Agricultural economics.....	893	642	11.9	251	28.1
Anthropology.....	3,511	3,324	94.7	187	5.3
Economics (except agricultural).....	8,834	6,799	77.0	2,035	23.0
Geography.....	1,997	1,692	84.7	305	15.3
History and philosophy of science.....	766	698	91.1	68	8.9
Linguistics.....	2,845	2,422	85.1	423	14.9
Political science.....	10,546	9,608	91.1	938	8.9
Sociology.....	6,896	6,133	88.9	763	11.1
Sociology and anthropology.....	1,304	1,174	90.0	130	10.0

Table C-4.—Graduate students in doctorate departments, by field of science, citizenship, and enrollment status, 1969

Area and field of science	Full time					Part time				
	Total	U.S. citizens		Foreign students		Total	U.S. citizens		Foreign students	
		Number	Percent of total	Number	Percent of total		Number	Percent of total	Number	Percent of total
Total.....	141,199	113,167	80.1	28,032	19.9	43,646	40,139	92.0	3,507	8.0
Engineering.....	30,820	19,904	64.6	10,916	35.4	21,747	19,582	90.0	2,165	10.0
Aeronautical.....	1,504	1,130	75.1	374	24.9	658	585	88.9	73	11.1
Agricultural.....	433	240	55.4	193	44.6	100	86	86.0	14	14.0
Chemical.....	3,204	1,820	56.8	1,384	43.2	1,615	1,428	88.4	187	11.6
Civil.....	4,543	2,624	57.8	1,919	42.2	2,003	1,676	83.7	327	16.3
Electrical.....	7,578	5,181	68.9	2,397	31.1	8,644	7,935	91.8	709	8.2
Engineering science.....	1,207	741	61.4	466	38.6	585	522	89.2	63	10.8
Industrial.....	2,405	1,614	67.1	791	32.9	2,612	2,348	89.9	264	10.1
Mechanical.....	4,547	2,988	64.6	1,609	35.4	3,779	3,418	90.4	361	9.6
Metallurgical and materials.....	1,802	1,071	59.4	731	40.6	609	571	93.8	38	6.2
Mining.....	299	130	43.5	169	56.5	35	42	62.9	13	37.1
Nuclear.....	1,002	771	76.9	231	23.1	305	288	94.4	17	5.6
Petroleum.....	192	90	46.9	102	53.1	139	134	96.4	5	3.6
Other engineering.....	2,164	1,554	71.8	610	28.2	663	569	85.8	94	14.2
Physical sciences.....	30,175	24,446	81.0	5,729	19.0	4,521	4,232	93.6	289	6.4
Astronomy.....	512	446	87.1	66	12.9	19	18	94.7	1	5.3
Atmospheric sciences.....	739	620	83.9	119	16.1	76	74	97.4	2	2.6
Chemistry.....	13,634	11,082	81.3	2,552	18.7	2,179	1,990	91.3	189	8.7
Geosciences.....	3,297	2,764	83.8	533	16.2	328	316	96.3	12	3.7
Oceanography.....	984	904	91.9	80	8.1	124	114	91.9	10	8.1
Physics.....	11,009	8,630	78.4	2,379	21.6	1,795	1,720	95.8	75	4.2
Mathematical sciences.....	11,727	9,593	81.8	2,134	18.2	3,690	3,516	95.3	174	4.7
Applied mathematics.....	1,447	1,186	82.0	261	18.0	357	325	91.0	32	9.0
Mathematics.....	9,091	7,667	84.3	1,424	15.7	3,032	2,917	96.2	115	3.8
Statistics.....	1,189	740	62.2	449	37.8	301	274	91.0	27	9.0
Life sciences.....	27,588	23,326	84.6	4,262	15.4	3,222	3,013	93.5	209	6.5
Agriculture.....	5,963	4,306	72.2	1,657	27.8	893	825	92.4	68	7.6
Biochemistry.....	3,266	2,715	83.4	541	16.6	225	210	93.3	15	6.7
Biology.....	6,282	5,702	90.8	580	9.2	915	859	93.9	56	6.1
Botany.....	2,316	1,890	81.6	426	18.4	272	248	91.2	24	8.8
Microbiology.....	1,838	1,622	88.2	216	11.8	160	152	95.0	8	5.0
Pharmacology.....	1,195	897	75.1	298	24.9	109	99	90.8	10	9.2
Physiology.....	1,250	1,139	91.1	111	8.9	87	83	95.4	4	4.6
Zoology.....	3,659	3,415	93.3	244	6.7	243	234	96.3	9	3.7
Other life sciences.....	1,829	1,640	89.7	189	10.3	318	303	95.3	15	4.7
Psychology.....	11,918	11,404	95.7	514	4.3	1,845	1,798	97.5	47	2.5
Social sciences.....	28,971	24,494	84.5	4,477	15.5	8,621	7,998	92.8	623	7.2
Agricultural economics.....	785	549	69.9	236	30.1	108	93	86.1	15	13.9
Anthropology.....	3,116	2,934	94.2	182	5.8	395	390	98.7	5	1.3
Economics (except agricultural).....	6,881	5,126	74.5	1,755	25.5	1,963	1,673	85.7	280	14.3
Geography.....	1,709	1,414	82.7	295	17.3	288	273	95.5	10	3.5
History and philosophy of science.....	688	621	90.3	67	9.7	78	77	98.7	1	1.3
Linguistics.....	2,191	1,810	82.6	381	17.4	654	612	93.6	42	6.4
Political science.....	7,503	9,734	89.8	769	10.2	3,043	2,874	94.4	169	5.6
Sociology.....	5,366	4,670	87.0	696	13.0	1,530	1,463	95.6	6	4.4
Sociology and anthropology.....	732	636	86.9	96	13.1	572	538	94.1	34	5.9

Table C-5.—Graduate students in doctorate departments, by field of science and level of study, 1969

Area and field of science	Total	First year		Beyond first year	
		Number	Percent of total	Number	Percent of total
Total.....	184,845	64,654	35.0	120,191	65.0
Engineering.....	52,567	22,757	43.3	29,810	56.7
Aeronautical.....	2,162	779	36.0	1,383	64.0
Agricultural.....	533	149	28.0	384	72.0
Chemical.....	4,819	1,851	38.4	2,968	61.6
Civil.....	6,546	3,055	46.7	3,491	53.3
Electrical.....	16,162	7,406	45.8	8,756	54.2
Engineering science.....	1,792	596	33.3	1,196	66.7
Industrial.....	5,017	2,624	52.3	2,393	47.7
Mechanical.....	8,326	3,775	45.3	4,551	54.7
Metallurgical and materials.....	2,411	687	28.5	1,724	71.5
Mining.....	334	141	42.2	193	57.8
Nuclear.....	1,307	460	35.2	847	64.8
Petroleum.....	331	134	40.5	197	59.5
Other engineering.....	2,827	1,100	38.9	1,727	61.1
Physical sciences.....	34,696	9,576	27.6	25,120	72.4
Astronomy.....	531	142	26.7	389	73.3
Atmospheric sciences.....	815	234	28.7	581	71.3
Chemistry.....	15,813	4,481	28.0	11,382	72.0
Geosciences.....	3,625	1,151	31.8	2,474	68.2
Oceanography.....	1,108	368	33.2	740	66.8
Physics.....	12,804	3,250	25.4	9,554	74.6
Mathematical sciences.....	15,417	5,572	36.1	9,845	63.9
Applied mathematics.....	1,804	720	39.9	1,084	60.1
Mathematics.....	12,123	4,401	36.3	7,722	63.7
Statistics.....	1,490	451	30.3	1,039	69.7
Life sciences.....	30,810	9,297	30.2	21,513	69.8
Agriculture.....	6,856	2,085	30.4	4,771	69.6
Biochemistry.....	3,481	897	25.8	2,584	74.2
Biology.....	7,197	2,296	31.9	4,901	68.1
Botany.....	2,588	620	24.0	1,968	76.0
Microbiology.....	1,998	644	32.2	1,354	67.8
Pharmacology.....	1,304	395	27.8	941	72.2
Physiology.....	1,337	393	29.4	944	70.6
Zoology.....	2,902	1,206	30.9	2,697	69.1
Other life sciences.....	2,147	794	37.0	1,353	63.0
Psychology.....	13,763	4,118	29.9	9,645	70.1
Social sciences.....	37,592	13,334	35.5	24,258	64.5
Agricultural economics.....	893	247	27.7	646	72.3
Anthropology.....	3,511	1,084	30.9	2,427	69.1
Economics (except agricultural).....	8,834	3,180	36.0	5,654	64.0
Geography.....	1,997	560	28.0	1,437	72.0
History and philosophy of science.....	766	233	30.4	533	69.6
Linguistics.....	2,845	1,064	37.0	1,791	63.0
Political science.....	10,546	4,164	39.5	6,382	60.5
Sociology.....	6,896	2,301	33.4	4,595	66.6
Sociology and anthropology.....	1,304	511	39.2	793	60.8

Table C-6. -Graduate students in doctorate departments, by field of science, level of study, and enrollment status, 1969

Area and field of science	Full time					Part time				
	Total	First year		Beyond first year		Total	First year		Beyond first year	
		Number	Percent of total	Number	Percent of total		Number	Percent of total	Number	Percent of total
Total.....	141,199	46,371	32.8	94,828	67.2	43,646	18,283	41.9	25,363	58.1
Engineering.....	30,820	12,000	38.9	18,820	61.1	21,747	10,757	49.5	10,990	50.5
Aeronautical.....	1,504	521	34.6	983	65.4	658	258	39.2	400	60.8
Agricultural.....	433	138	31.9	295	68.1	100	11	11.0	89	89.0
Chemical.....	3,204	1,079	33.7	2,125	66.3	1,615	772	47.8	843	52.2
Civil.....	4,543	2,147	47.3	2,396	52.7	2,003	908	45.3	1,095	54.7
Electrical.....	7,518	2,986	39.7	4,532	60.3	8,644	4,420	51.1	4,224	48.9
Engineering science.....	1,207	337	27.9	870	72.1	585	259	44.3	326	55.7
Industrial.....	2,405	1,190	49.5	1,215	50.5	2,612	1,434	54.9	1,178	45.1
Mechanical.....	4,547	1,789	39.3	2,758	60.7	3,779	1,986	52.6	1,793	47.4
Metallurgical and materials.....	1,802	483	26.8	1,319	73.2	609	204	33.5	405	66.5
Mining.....	299	135	45.2	164	54.8	35	6	17.1	29	82.9
Nuclear.....	1,002	332	33.1	670	66.9	305	128	42.0	177	58.0
Petroleum.....	192	72	37.5	120	62.5	139	62	44.6	77	55.4
Other engineering.....	2,164	791	36.6	1,373	63.4	663	309	46.6	354	53.4
Physical sciences.....	30,175	8,098	26.8	22,077	73.2	4,521	1,478	32.7	3,043	67.3
Astronomy.....	512	141	27.5	371	72.5	19	1	5.3	18	94.7
Atmospheric sciences.....	739	217	29.4	522	70.6	76	17	22.4	59	77.6
Chemistry.....	13,634	3,619	26.5	10,015	73.5	2,179	812	37.3	1,367	62.7
Geosciences.....	3,297	1,074	32.6	2,223	67.4	328	77	23.5	251	76.5
Oceanography.....	984	352	35.8	632	64.2	124	16	12.9	108	87.1
Physics.....	11,009	2,695	24.5	8,314	75.5	1,795	555	30.9	1,240	69.1
Mathematical sciences.....	11,727	4,199	35.8	7,528	64.2	3,690	1,373	37.2	2,317	62.8
Applied mathematics.....	1,447	578	39.9	869	60.1	357	142	39.8	215	60.2
Mathematics.....	9,091	3,247	35.7	5,844	64.3	3,032	1,154	38.1	1,878	61.9
Statistics.....	1,189	374	31.5	815	68.5	301	77	25.6	224	74.4
Life sciences.....	27,588	8,393	30.4	19,195	69.6	3,222	904	28.1	2,318	71.9
Agriculture.....	5,963	1,917	32.1	4,046	67.9	893	168	18.8	725	81.2
Biochemistry.....	3,256	826	25.4	2,430	74.6	225	71	31.6	154	68.4
Biology.....	6,282	1,936	30.8	4,346	69.2	915	360	39.3	555	60.7
Botany.....	2,316	583	25.2	1,733	74.8	272	37	13.6	235	86.4
Microbiology.....	838	605	72.2	233	27.8	160	39	24.4	121	75.6
Pharmacology.....	1,195	342	28.6	853	71.4	109	21	19.3	88	80.7
Physiology.....	1,250	371	29.7	879	70.3	37	22	25.3	65	74.7
Zoology.....	3,659	1,134	31.0	2,525	69.0	243	71	29.2	172	70.8
Other life sciences.....	1,829	679	37.1	1,150	62.9	318	115	36.2	203	63.8
Psychology.....	11,918	3,592	30.1	8,326	69.9	1,845	526	28.5	1,319	71.5
Social sciences.....	28,971	10,089	34.8	18,882	65.2	8,621	3,245	37.6	5,376	62.4
Agricultural economics.....	785	237	30.2	548	69.8	108	10	9.3	98	90.7
Anthropology.....	3,116	965	31.0	2,151	69.0	395	119	30.1	276	69.9
Economics (except agricultural).....	6,881	2,465	35.8	4,416	64.2	1,953	715	36.6	1,238	63.4
Geography.....	1,709	520	30.4	1,189	69.6	288	40	13.9	248	86.1
History and philosophy of science.....	688	219	31.8	469	68.2	78	14	17.9	64	82.1
Linguistics.....	2,191	830	37.9	1,361	62.1	654	224	34.3	430	65.7
Political science.....	7,503	2,819	37.6	4,684	62.4	3,043	1,345	44.2	1,698	55.8
Sociology.....	5,366	1,779	33.2	3,587	66.8	1,530	522	34.1	1,008	65.9
Sociology and anthropology.....	732	255	34.8	477	65.2	572	256	44.8	316	55.2

Table C-7.—Full-time graduate students in doctorate departments, by field of science and type of support, 1969

Area and field of science	Total		Fellowships and traineeships		Research assistantships		Teaching assistantships		Other types of support	
	Number	Percent distribution	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total
Total.....	141,199	100.0	41,734	29.6	30,471	21.6	32,991	23.4	36,003	25.5
Engineering.....	30,820	21.8	8,072	26.2	9,048	29.4	4,213	13.7	9,487	30.8
Aeronautical.....	1,504	1.1	397	26.4	497	33.0	202	13.4	408	27.1
Agricultural.....	433	.3	110	25.4	197	45.5	36	8.3	90	20.8
Chemical.....	3,204	2.3	1,050	32.8	1,007	31.4	522	16.3	625	19.5
Civil.....	4,543	3.2	1,289	28.4	1,205	26.5	465	10.2	1,584	34.9
Electrical.....	7,518	5.3	1,578	21.0	2,027	27.0	1,340	17.8	2,573	34.2
Engineering science.....	1,207	.9	396	32.8	358	29.7	264	21.9	189	15.7
Industrial.....	2,405	1.7	563	23.4	418	17.4	285	11.9	1,139	47.4
Mechanical.....	4,547	3.2	996	21.9	1,218	26.8	658	14.5	1,675	36.8
Metallurgical and materials.....	1,802	1.3	412	22.9	1,072	59.5	156	8.7	162	9.0
Mining.....	299	.2	85	28.4	100	33.4	32	10.7	82	27.4
Nuclear.....	1,002	.7	468	46.7	242	24.2	88	8.8	214	21.4
Petroleum.....	192	.1	56	29.2	55	28.6	31	16.1	50	26.0
Other engineering.....	2,164	1.6	682	31.5	652	30.1	134	6.2	696	32.2
Physical sciences.....	30,175	21.4	7,096	23.5	9,404	31.2	10,072	33.4	3,603	11.9
Astronomy.....	512	.4	177	34.6	203	39.6	91	17.8	41	8.0
Atmospheric sciences.....	739	.5	158	21.4	353	47.8	41	5.5	187	25.3
Chemistry.....	13,634	9.7	3,293	24.2	3,647	26.7	5,540	40.6	1,154	8.5
Geosciences.....	3,297	2.3	811	24.6	696	21.1	1,072	32.5	718	21.8
Oceanography.....	984	.7	242	24.6	454	46.1	44	4.5	244	24.8
Physics.....	11,009	7.8	2,415	21.9	4,051	36.8	3,284	29.8	1,259	11.4
Mathematical sciences.....	11,727	8.3	2,794	23.8	1,154	9.8	4,798	40.9	2,981	25.4
Applied mathematics.....	1,447	1.0	264	18.2	407	28.1	272	18.8	504	34.8
Mathematics.....	9,091	6.4	2,124	23.4	522	5.7	4,276	47.0	2,169	23.9
Statistics.....	1,189	.8	406	34.1	225	18.9	250	21.0	308	25.9
Life sciences.....	27,588	19.5	9,692	35.1	6,399	23.2	6,088	22.1	5,409	19.6
Agriculture.....	5,963	4.2	1,286	21.6	2,840	47.6	497	8.3	1,340	22.5
Biochemistry.....	3,256	2.3	1,812	55.7	811	24.9	344	10.6	289	8.9
Biology.....	6,282	4.4	2,389	38.0	595	9.5	1,895	30.2	1,403	22.3
Botany.....	2,316	1.6	514	22.2	602	26.0	819	35.4	381	16.5
Microbiology.....	1,838	1.3	871	47.4	346	18.8	361	19.6	260	14.1
Pharmacology.....	1,195	.8	539	45.1	294	17.1	256	21.4	196	16.4
Physiology.....	1,250	.9	635	50.8	180	14.4	181	14.5	254	20.3
Zoology.....	3,659	2.6	883	24.1	569	15.6	1,439	39.3	768	21.0
Other life sciences.....	1,829	1.3	763	41.7	252	13.8	296	16.2	118	28.3
Psychology.....	11,918	8.4	4,738	39.8	1,593	14.2	2,260	19.0	3,227	27.1
Social sciences.....	28,971	20.5	9,342	32.2	2,773	9.6	5,560	19.2	11,296	39.0
Agricultural economics.....	785	.6	192	24.5	362	46.1	26	3.3	205	26.1
Anthropology.....	3,116	2.2	1,135	36.4	178	5.7	548	17.6	1,255	40.3
Economics (except agricultural).....	6,881	4.9	2,092	30.4	819	11.9	1,478	21.5	2,492	36.2
Geography.....	1,709	1.2	435	25.5	101	5.9	572	33.5	601	35.2
History and philosophy of science.....	688	.5	289	42.0	17	2.5	180	26.2	202	29.3
Linguistics.....	2,191	1.6	757	34.6	160	7.3	412	18.8	863	39.3
Political science.....	7,503	5.3	2,304	30.7	549	7.3	1,180	15.7	3,470	46.2
Sociology.....	5,366	3.8	1,933	36.0	525	9.8	1,041	19.4	1,867	34.8
Sociology and anthropology.....	732	.5	205	28.0	62	8.5	123	16.8	342	46.7

Table C-8.—Full-time graduate students in doctorate departments, by type of support, level of study, and citizenship, 1969

Type of support	Total		First year		Beyond first year	
	Number	Percent distribution	Total	Percent of total	Total	Percent of total
	All full-time students					
Total.....	141,199	100.0	46,371	32.8	94,828	67.2
Fellowships and traineeships.....	41,734	29.6	12,487	29.9	29,247	70.1
Research assistantships.....	30,471	21.6	6,339	20.8	24,132	79.2
Teaching assistantships.....	32,991	23.4	11,285	34.2	21,706	65.8
Other support.....	36,003	25.5	16,260	45.2	19,743	54.8
	U.S. citizens					
Total.....	113,167	100.0	36,584	32.3	76,583	67.7
Fellowships and traineeships.....	36,462	32.2	10,527	28.9	25,935	71.1
Research assistantships.....	21,466	19.0	4,423	20.6	17,043	79.4
Teaching assistantships.....	26,485	23.4	9,143	34.5	17,342	65.5
Other support.....	28,754	25.4	12,491	43.4	16,263	56.6
	Foreign students					
Total.....	28,032	100.0	9,787	34.9	18,245	65.1
Fellowships and traineeships.....	5,272	18.8	1,960	37.2	3,312	62.8
Research assistantships.....	9,005	32.1	1,916	21.3	7,089	78.7
Teaching assistantships.....	6,506	23.2	2,142	32.9	4,364	67.1
Other support.....	7,249	25.9	3,769	52.0	3,480	48.0

Table C-9a.—Full-time graduate students in doctorate departments, by area of science, type of support, and level of study, 1969

Area of science	Total	All full-time students			
		Fellowships and traineeships	Research assistantships	Teaching assistantships	Other types of support
Total.....	141,199	41,734	30,471	32,991	36,003
Engineering.....	30,820	8,072	9,048	4,213	9,487
Physical sciences.....	30,175	7,096	9,404	10,072	3,603
Mathematical sciences.....	11,727	2,794	1,154	4,798	2,981
Life sciences.....	27,568	9,692	6,399	6,088	5,409
Psychology.....	11,918	4,738	1,693	2,260	3,227
Social sciences.....	28,971	9,342	2,773	5,560	11,296
	First year				
Total.....	46,371	12,487	6,339	11,285	16,260
Engineering.....	12,000	3,085	2,284	1,513	5,118
Physical sciences.....	8,098	1,737	888	4,068	1,405
Mathematical sciences.....	4,199	958	208	1,546	1,487
Life sciences.....	8,393	2,266	1,624	2,098	2,405
Psychology.....	3,592	1,374	558	679	981
Social sciences.....	10,089	3,067	777	1,381	4,864
	Beyond first year				
Total.....	94,828	29,247	24,132	21,706	19,743
Engineering.....	18,820	4,987	6,764	2,700	4,369
Physical sciences.....	22,077	5,359	8,516	6,004	2,198
Mathematical sciences.....	7,528	1,836	946	3,252	1,494
Life sciences.....	19,195	7,426	4,775	3,990	3,004
Psychology.....	8,326	3,364	1,135	1,581	2,246
Social sciences.....	18,882	6,275	1,996	4,179	6,432



**Table C-9b.—Percent distributions of full-time graduate students in doctorate departments, by area of science, type of support, and level of study, 1969**

Area of science	Total	Fellowships and traineeships	Research assistantships	Teaching assistantships	Other types of support	Area of science	Total	Fellowships and traineeships	Research assistantships	Teaching assistantships	Other types of support
All full-time students											
Total.....	100.0	100.0	100.0	100.0	100.0	Total.....	100.0	29.6	21.6	23.4	25.5
Engineering.....	21.8	19.3	29.7	12.8	26.4	Engineering.....	100.0	26.2	29.4	13.7	30.8
Physical sciences.....	21.4	17.0	30.9	30.5	10.0	Physical sciences.....	100.0	23.5	31.2	33.4	11.9
Mathematical sciences.....	8.3	6.7	3.8	14.5	8.3	Mathematical sciences.....	100.0	23.8	9.8	40.9	25.4
Life sciences.....	19.5	23.2	21.0	18.5	15.0	Life sciences.....	100.0	35.1	23.2	22.1	19.6
Psychology.....	8.4	11.4	5.6	6.9	9.0	Psychology.....	100.0	39.8	14.2	19.0	27.1
Social sciences.....	20.5	22.4	9.1	16.9	31.4	Social sciences.....	100.0	32.2	9.6	19.2	39.0
First year											
Total.....	100.0	100.0	100.0	100.0	100.0	Total.....	100.0	26.9	13.7	24.3	35.1
Engineering.....	25.9	24.7	36	13.4	31.5	Engineering.....	100.0	25.7	19.0	12.6	42.7
Physical sciences.....	17.5	13.9	14.0	36.0	8.6	Physical sciences.....	100.0	21.4	11.0	50.2	17.3
Mathematical sciences.....	9.1	7.7	3.3	13.7	9.1	Mathematical sciences.....	100.0	22.8	5.0	36.8	35.4
Life sciences.....	18.1	18.1	25.6	18.6	14.8	Life sciences.....	100.0	27.0	19.3	25.0	28.7
Psychology.....	7.7	11.0	8.8	6.0	6.0	Psychology.....	100.0	38.3	15.5	18.9	27.3
Social sciences.....	21.8	24.6	12.3	19.9	39.9	Social sciences.....	100.0	30.4	7.7	13.7	48.2
Beyond first year											
Total.....	100.0	100.0	100.0	100.0	100.0	Total.....	100.0	30.3	25.4	22.9	20.8
Engineering.....	19.8	17.1	28.0	12.4	22.1	Engineering.....	100.0	26.5	35.9	14.3	23.2
Physical sciences.....	23.3	18.3	35.3	27.7	11.1	Physical sciences.....	100.0	24.3	38.6	27.2	10.0
Mathematical sciences.....	7.9	6.3	3.9	15.0	7.6	Mathematical sciences.....	100.0	24.4	12.6	43.2	19.8
Life sciences.....	20.2	25.4	19.8	18.4	15.2	Life sciences.....	100.0	33.7	24.9	20.8	15.6
Psychology.....	8.8	11.5	4.7	7.3	11.4	Psychology.....	100.0	40.4	13.6	19.0	27.0
Social sciences.....	19.9	21.5	8.3	19.3	32.5	Social sciences.....	100.0	33.2	10.6	22.1	34.1

Table C-10a.—Full-time graduate students in doctorate departments, by source of support and area of science, 1969

Source of support	Total	Engineering	Physical sciences	Mathematical sciences	Life sciences	Psychology	Social sciences
Total.....	141,199	30,820	30,175	11,727	27,588	11,918	28,971
All U.S. sources, total.....	138,954	29,815	29,881	11,601	27,232	11,875	28,550
U.S. Government.....	51,620	12,334	13,187	3,223	11,513	5,127	6,286
Atomic Energy Commission.....	2,940	845	1,819	40	223	1	12
Department of Agriculture.....	1,091	61	63	13	766	-----	188
Department of Defense.....	4,963	2,732	1,438	324	131	178	160
Department of Health, Education, and Welfare, total.....	20,611	2,229	3,092	748	7,237	3,580	3,725
National Defense Education Act.....	6,858	1,053	1,353	506	1,325	563	2,058
National Institutes of Health.....	12,189	1,025	1,679	186	5,614	2,487	1,198
Other HEW.....	1,564	151	60	56	298	530	469
National Aeronautics and Space Administration.....	2,683	1,308	910	188	183	52	42
National Science Foundation.....	12,981	3,055	4,664	1,708	1,895	467	1,192
All other U.S. Government agencies.....	6,351	2,104	1,201	202	1,078	849	917
Other U.S. sources.....	87,334	17,481	16,694	8,378	15,719	6,748	22,314
Institutions and State and local governments.....	50,471	8,025	12,497	5,886	9,879	3,902	10,282
Private foundations.....	3,836	641	643	125	740	252	1,435
Industry.....	4,568	2,930	715	200	488	69	172
Self-support.....	26,307	5,482	2,501	2,040	4,111	2,181	9,992
All other U.S. sources.....	2,152	403	338	127	501	350	433
Foreign sources, total.....	2,245	1,005	294	126	356	43	421

Table C-10b.—Percent distributions of full-time graduate students in doctorate departments, by source of support and area of science, 1969

Source of support	Total	Engineering	Physical sciences	Mathematical sciences	Life sciences	Psychology	Social sciences
By source of support							
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All U.S. sources, total.....	98.4	96.7	99.0	98.9	98.7	99.6	98.5
U.S. Government.....	36.6	40.0	43.7	27.5	41.7	43.0	21.5
Atomic Energy Commission.....	2.1	2.7	6.0	.3	.8	(*)	(*)
Department of Agriculture.....	.8	.2	.2	.1	2.8		.6
Department of Defense.....	3.5	8.9	4.8	2.8	.5	1.5	.6
Department of Health, Education, and Welfare, total.....	14.6	7.2	10.2	6.4	26.2	30.0	12.9
National Defense Education Act.....	4.9	3.4	4.5	4.3	4.8	4.7	7.1
National Institutes of Health.....	8.6	3.3	5.6	1.6	20.3	20.9	4.1
Other HEW.....	1.1	.5	.2	.5	1.1	4.4	1.6
National Aeronautics and Space Administration.....	1.9	4.2	3.0	1.6	.7	.4	.1
National Science Foundation.....	9.2	9.9	15.5	14.6	6.9	3.9	4.1
All other U.S. Government agencies.....	4.5	6.8	4.0	1.7	3.9	7.1	3.2
Other U.S. sources.....	61.9	56.7	55.3	71.4	57.0	56.6	77.0
Institutions and State and local governments.....	35.7	26.0	41.4	50.2	35.8	32.7	35.5
Private foundations.....	2.7	2.1	2.1	1.1	2.7	2.1	5.0
Industry.....	3.2	9.5	2.4	1.7	1.8	.5	.6
Self-support.....	18.6	17.8	8.3	17.4	14.9	18.3	34.5
All other U.S. sources.....	1.5	1.3	1.1	1.1	1.8	2.9	1.5
Foreign sources, total.....	1.6	3.3	1.0	1.1	1.3	.4	1.5
By area of science							
Total.....	100.0	21.8	21.4	8.3	19.5	8.4	20.5
All U.S. sources, total.....	100.0	21.5	21.5	8.3	19.6	8.5	20.5
U.S. Government.....	100.0	23.9	25.5	6.2	22.3	9.9	12.1
Atomic Energy Commission.....	100.0	28.7	61.9	1.4	7.6	(*)	.4
Department of Agriculture.....	100.0	5.6	5.8	1.2	70.2		17.2
Department of Defense.....	100.0	55.0	29.0	6.5	2.6	3.6	3.2
Department of Health, Education, and Welfare, total.....	100.0	10.8	15.0	3.6	35.1	17.4	18.1
National Defense Education Act.....	100.0	15.4	19.7	7.4	19.3	8.2	30.0
National Institutes of Health.....	100.0	8.4	13.8	1.5	46.1	20.4	9.8
Other HEW.....	100.0	9.7	3.8	3.6	19.1	33.9	30.0
National Aeronautics and Space Administration.....	100.0	48.8	33.9	7.0	6.8	1.9	1.6
National Science Foundation.....	100.0	23.5	35.9	13.2	14.6	3.6	9.2
All other U.S. Government agencies.....	100.0	33.1	18.9	3.2	17.0	13.4	14.4
Other U.S. sources.....	100.0	20.0	19.1	9.6	18.0	7.7	25.6
Institutions and State and local governments.....	100.0	15.9	24.8	11.7	19.6	7.7	20.4
Private foundations.....	100.0	16.7	16.8	3.3	19.3	6.6	37.4
Industry.....	100.0	64.1	15.7	4.4	10.7	1.4	3.8
Self-support.....	100.0	20.8	9.5	7.8	15.6	8.3	38.0
All other U.S. sources.....	100.0	18.7	15.7	5.9	23.3	16.3	20.1
Foreign sources, total.....	100.0	44.8	13.1	5.6	15.9	1.9	13.8

\* Less than 0.05 percent.

**Table C-11a.—Full-time graduate students in doctorate departments, by source and type of support, 1969**

Source of support	Total	Fellowships and traineeships	Research assistantships	Teaching assistantships	Other types of support
<b>Total.....</b>	<b>141,119</b>	<b>41,734</b>	<b>30,471</b>	<b>32,991</b>	<b>36,008</b>
<b>All U.S. sources, total.....</b>	<b>133,954</b>	<b>40,465</b>	<b>30,414</b>	<b>32,991</b>	<b>35,084</b>
<b>U.S. Government.....</b>	<b>51,620</b>	<b>28,707</b>	<b>19,646</b>	<b>327</b>	<b>2,940</b>
Atomic Energy Commission.....	2,940	500	2,395	-----	45
Department of Agriculture.....	1,091	56	949	-----	86
Department of Defense.....	4,963	370	3,525	-----	1,068
Department of Health, Education, and Welfare, total.....	20,611	16,895	3,492	64	160
National Defense Education Act.....	6,858	6,753	94	-----	11
National Institutes of Health.....	12,189	9,086	2,965	29	109
Other HEW.....	1,564	1,056	433	35	40
National Aeronautics and Space Administration.....	2,683	1,353	1,242	-----	88
National Science Foundation.....	12,981	7,255	5,225	122	379
All other U.S. Government agencies.....	6,351	2,278	2,818	141	1,114
<b>Other U.S. sources.....</b>	<b>87,334</b>	<b>11,758</b>	<b>10,768</b>	<b>32,664</b>	<b>32,144</b>
Institutions and State and local governments.....	50,471	7,191	8,451	32,524	2,305
Private foundations.....	3,336	2,515	872	78	371
Industry.....	4,568	1,663	1,142	9	1,754
Self-support.....	26,307	-----	-----	-----	26,307
All other U.S. sources.....	2,152	339	303	53	1,407
<b>Foreign sources, total.....</b>	<b>2,245</b>	<b>1,269</b>	<b>57</b>	<b>-----</b>	<b>919</b>

Table C-11b.—Percent distributions of full-time graduate students in doctorate departments, by source and type of support, 1969

Source of support	By source of support					Other types of support
	Total	Fellowships and traineeships	Research assistantships	Teaching assistantships	Total	
Total.....	100.0	100.0	100.0	100.0	100.0	100.0
All U.S. sources, total.....	98.4	97.0	99.8	100.0	97.4	97.4
U.S. Government.....	36.6	68.8	64.5	1.0	8.2	8.2
Atomic Energy Commission.....	2.1	1.2	7.9	.....	.1	.1
Department of Agriculture.....	.8	.1	3.1	.....	.....	.....
Department of Defense.....	3.5	.9	11.6	.....	3.0	3.0
Department of Health, Education, and Welfare, total.....	14.6	40.5	11.5	.2	.4	.4
National Defense Education Act.....	4.9	16.2	.3	.....	(*)	(*)
National Institutes of Health.....	8.6	21.8	9.7	.1	.3	.3
Other HEW.....	1.1	2.5	1.4	.1	.1	.1
National Aeronautics and Space Administration.....	1.9	3.2	4.1	.....	.2	.2
National Science Foundation.....	9.2	17.4	17.1	.4	1.1	1.1
All other U.S. Government agencies.....	4.5	5.5	9.2	.4	3.1	3.1
Other U.S. sources.....	61.9	28.2	35.3	99.0	89.3	89.3
Institutions and State and local governments.....	35.7	17.2	27.7	98.6	6.4	6.4
Private foundations.....	2.7	6.0	2.9	.2	1.0	1.0
Industry.....	3.2	4.0	3.7	(*)	4.9	4.9
Self-support.....	18.6	.....	.....	.....	73.1	73.1
All other U.S. sources.....	1.5	.9	1.0	.2	3.9	3.9
Foreign sources, total.....	1.6	3.0	.2	.....	2.6	2.6

\* Less than 0.05 percent.

Table C-12.—Full-time graduate students in doctorate departments supported by U.S. Government sources, by Federal agency and citizenship, 1969

Federal agency	Total		U.S. citizens		Foreign students	
	Number	Percent distribution	Number	Percent of total	Number	Percent of total
Total.....	51,620	100.0	44,760	86.7	6,860	13.3
Atomic Energy Commission.....	2,340	5.7	2,340	79.6	600	20.4
Department of Agriculture.....	1,091	2.1	857	78.6	234	21.4
Department of Defense.....	4,963	9.6	3,767	75.9	1,196	24.1
Department of Health, Education, and Welfare, total.....	20,611	39.9	19,585	94.8	1,076	5.2
National Defense Education Act.....	6,858	13.3	6,792	99.0	66	1.0
National Institutes of Health.....	12,189	23.6	11,267	92.4	922	7.6
Other HEW.....	1,564	3.0	1,476	94.4	88	5.6
National Aeronautics and Space Administration.....	2,683	5.2	2,236	83.3	447	16.7
National Science Foundation.....	12,981	25.1	11,336	87.3	1,645	12.7
All other U.S. Government agencies.....	6,351	12.3	4,689	73.8	1,662	26.2

Table C-13a.—Full-time graduate students in doctorate departments supported by U.S. Government sources, by field of science and Federal agency, 1969

Area and field of science	Total	Department of Defense	Department of Health, Education, and Welfare		National Science Foundation	All other agencies	Total	Department of Defense	Department of Health, Education, and Welfare		National Science Foundation	All other agencies
			National Defense Education Act	National Institutes of Health					National Defense Education Act	National Institutes of Health		
Total.....	51,620	4,963	12,981	12,981	12,981	14,629	11,513	131	1,325	5,614	1,895	2,548
Engineering.....	12,334	2,732	1,053	1,025	3,055	4,469	2,106	30	298	384	234	1,160
Aeronautical.....	837	251	53	8	145	380	2,175	16	141	1,553	252	213
Agricultural.....	146	3	27	12	26	78	2,377	17	274	1,161	559	366
Chemical.....	1,228	101	157	121	452	397	689	3	152	137	212	185
Civil.....	1,710	264	94	296	323	733	1,044	13	84	696	106	45
Electrical.....	2,749	656	243	187	871	792	551	9	58	406	38	40
Engineering science.....	533	80	60	32	140	221	690	31	56	478	64	61
Industrial.....	743	287	71	21	161	203	1,078	5	166	374	288	245
Mechanical.....	1,742	487	180	108	398	569	803	7	96	425	142	133
Metallurgical and materials.....	1,044	315	80	50	209	390	5,127	178	563	2,487	467	1,432
Mining.....	77	9	10	22	22	36	6,236	160	2,058	1,198	1,192	1,628
Nuclear.....	600	59	35	15	96	395	255	---	45	---	20	190
Petroleum.....	61	14	4	3	20	20	897	1	222	373	134	117
Other engineering.....	864	206	39	172	192	255	1,100	17	405	32	349	297
Physical sciences.....	13,187	1,438	1,353	1,679	4,664	4,053	383	20	159	9	71	124
Astronomy.....	280	10	27	---	151	92	177	---	117	3	54	3
Atmospheric sciences.....	545	152	15	31	185	162	595	18	223	49	102	203
Chemistry.....	5,328	314	596	1,540	1,792	1,086	1,182	95	564	40	198	285
Geosciences.....	1,087	131	203	7	434	262	1,456	9	275	600	197	375
Oceanography.....	527	74	37	23	201	192	191	---	48	---	17	34
Physics.....	5,420	757	475	78	1,851	2,559	---	---	---	---	---	---
Mathematical sciences.....	3,223	324	506	186	1,708	499	---	---	---	---	---	---
Applied mathematics.....	517	127	42	25	205	118	---	---	---	---	---	---
Mathematics.....	2,268	131	400	33	1,393	311	---	---	---	---	---	---
Statistics.....	438	66	64	128	110	70	---	---	---	---	---	---

Table C-13b.—Percent distribution of full-time graduate students in doctorate departments supported by U.S. Government sources, by field of science, 1969

Area and field of science	Total	Department of Defense	Department of Health, Education, and Welfare		National Science Foundation	All other agencies	Total	Department of Defense	Department of Health, Education, and Welfare		National Science Foundation	All other agencies
			National Defense Education Act	National Institutes of Health					National Defense Education Act	National Institutes of Health		
Total	100.0	100.0	100.0	100.0	100.0	100.0	4.4	5.8	.3	10.7	2.1	
Engineering	23.9	55.0	15.4	8.4	23.5	30.5	.8	.9	1.1	.8	.5	
Aeronautical	1.6	5.1	.8	.1	1.1	2.6						
Agricultural	.3	.1	.4	1.0	.2	.5						
Chemical	2.4	2.0	2.3	1.0	3.5	2.7						
Civil	3.3	5.3	1.4	2.4	2.5	5.0						
Electrical	5.3	13.2	3.5	1.5	6.7	5.4						
Engineering science	1.0	1.6	.9	.3	1.1	1.5						
Industrial	1.4	5.8	1.0	.2	1.2	1.4						
Mechanical	3.4	9.8	2.6	.9	3.1	3.9						
Metallurgical and materials	2.0	6.3	1.2	.4	1.6	2.7						
Mining	.1	.2	.1		.2	.2						
Nuclear	1.2	1.2	.5	.1	.7	2.7						
Petroleum	.1	.3	.1	(*)	.2	.1						
Other engineering	1.7	4.2	.6	1.4	1.5	1.7						
Physical sciences	25.5	29.0	19.7	13.8	35.9	27.7	.5	.7		.2	1.3	
Astronomy	.5	.2	.4		1.2	.6						
Atmospheric sciences	1.1	3.1	.2	.3	1.4	1.1						
Chemistry	10.3	6.3	8.7	12.6	13.8	7.4						
Geosciences	2.1	2.6	3.0	.1	3.7	1.8						
Oceanography	1.0	1.5	.5	.2	1.5	1.3						
Physics	10.5	15.3	6.9	.6	14.5	15.4						
Mathematical sciences	6.2	6.5	.4	1.5	13.2	3.4	.4	.7	.8	.1	.2	
Applied mathematics	1.0	2.6	.6	.2	1.6	.8						
Life sciences	22.3	2.6	19.3	46.1	14.6	17.4	4.1	4.3	3.2	1.8	7.9	
Agriculture	4.1	.6				2.6						
Biochemistry	4.2	.3	2.1	12.7	1.9	1.5						
Biology	4.6	.3	4.0	9.5	4.3	2.5						
Botany	1.3	.1	2.2	1.1	1.6	1.3						
Microbiology	2.0	.3	1.2	5.7	.8	1.0						
Pharmacology	1.1	.2	.8	3.3	.3	.3						
Physiology	1.3	.6	.8	3.9	.5	.4						
Zoology	2.1	.1	2.4	3.1	2.2	1.7						
Other life sciences	1.6	.1	1.4	3.5	1.1	.9						
Psychology	9.9	3.6	8.2	20.4	3.6	9.8						
Social sciences	12.1	3.2	30.0	9.8	9.2	11.1						
Agricultural economics												
Anthropology	1.7	(*)	3.2	3.1	1.4	.8						
Economics (except agricultural)	2.1	.3	5.9	.3	2.7	2.0						
Geography	.7	.4	2.3	.1	.5	.8						
History and philology of science	.3				.4	(*)						
Linguistics	1.2	.4	3.3	.4	.8	1.4						
Political science	2.3	1.9	8.2	.3	1.5	1.9						
Sociology	2.8	.2	4.0	4.9	1.5	2.6						
Sociology and anthropology	.4		.7	.8	.1	.2						

\* Less than 0.05 percent.

Table C-13c.—Percent distribution of full-time graduate students in doctorate departments supported by U.S. Government sources, by Federal agency, 1969

Area and field of science	Total	Department of Health, Education, and Welfare		National Science Foundation	All other agencies	Area and field of science	Total	Department of Defense	Department of Health, Education, and Welfare		National Science Foundation	All other agencies
		Department of Defense	National Defense Education Act						National Institutes of Health	National Institutes of Health		
Total	100.0	9.6	13.3	23.6	25.1	28.3	100.0	5.8	17.6	1.5	61.4	13.7
Engineering	100.0	22.2	8.5	8.3	24.8	36.2	100.0	15.1	14.6	29.2	25.1	15.0
Aeronautical	100.0	30.0	6.3	1.0	17.3	45.4	100.0	1.4	14.2	18.2	11.1	55.1
Agricultural	100.0	2.1	18.5	8.2	17.8	53.4	100.0	.7	6.5	71.4	11.6	9.8
Chemical	100.0	8.2	12.8	9.9	36.8	32.3	100.0	.7	11.5	48.8	23.5	15.4
Civil	100.0	15.4	5.5	17.3	18.9	42.9	100.0	.4	22.1	19.9	30.8	26.9
Electrical	100.0	23.9	8.8	6.8	31.7	28.8	100.0	1.2	8.0	66.7	10.2	13.9
Engineering sciences	100.0	15.0	11.3	6.0	26.3	41.5	100.0	1.6	10.5	73.7	6.9	7.3
Industrial	100.0	38.5	9.6	2.8	21.7	27.3	100.0	4.5	8.1	69.3	9.3	8.8
Mechanical	100.0	28.0	10.3	6.2	22.8	32.7	100.0	.5	15.4	34.7	26.7	22.7
Metallurgical and materials	100.0	30.2	7.7	4.8	20.0	37.4	100.0	.9	12.0	52.9	17.7	16.6
Mining	100.0	11.7	13.0	-----	28.6	46.3	100.0	3.5	11.0	48.5	9.1	27.9
Nuclear	100.0	9.8	5.8	2.5	16.0	65.8	100.0	2.6	33.0	19.2	19.1	26.1
Petroleum	100.0	23.0	6.6	4.9	32.8	32.8	100.0	-----	-----	-----	-----	-----
Other engineering	100.0	23.8	4.5	19.9	22.2	29.5	100.0	-----	17.6	-----	7.8	74.5
Physical sciences	100.0	10.9	10.3	12.7	35.4	30.7	100.0	.1	24.7	41.6	20.5	13.0
Astronomy	100.0	3.6	9.6	-----	53.9	32.9	100.0	1.5	36.8	2.9	31.7	27.0
Atmospheric sciences	100.0	27.9	2.8	5.7	33.9	29.7	100.0	5.2	41.5	2.3	18.5	32.4
Chemistry	100.0	5.9	11.2	28.9	33.6	20.4	100.0	-----	66.1	1.7	30.5	1.7
Geosciences	100.0	12.1	18.7	.6	44.5	24.1	100.0	3.0	37.5	8.2	17.1	34.1
Oceanography	100.0	14.0	7.0	4.4	38.1	36.4	100.0	8.0	47.7	3.4	16.8	24.1
Physics	100.0	14.0	8.8	1.4	34.2	41.7	100.0	.6	18.9	41.2	13.5	25.8
Mathematical sciences	100.0	10.1	15.7	5.8	53.0	15.5	100.0	-----	25.1	48.2	8.9	17.8
Applied mathematics	100.0	24.6	8.1	4.8	39.7	22.8	100.0	-----	-----	-----	-----	-----



Table C-14.—Full-time graduate students in doctorate departments supported by other U.S. sources, by field of science, 1969

Area and field of science	Total		Institutions and State and local governments		Self-support		All other U.S. sources	
	Number	Percent distribution	Number	Percent of total	Number	Percent of total	Number	Percent of total
Total.....	87,334	100.0	50,471	57.8	26,307	30.1	10,556	12.1
Engineering.....	17,481	20.0	8,025	45.9	5,482	31.4	3,974	22.7
Aeronautical.....	647	.7	344	53.2	169	26.1	134	20.7
Agricultural.....	257	.3	179	69.6	46	17.9	32	12.5
Chemical.....	1,889	2.2	961	50.9	438	23.2	490	25.9
Civil.....	2,580	3.0	1,303	50.5	990	38.4	287	11.1
Electrical.....	4,629	5.3	2,028	43.8	1,637	35.4	964	20.8
Engineering science.....	647	.7	458	70.8	115	17.8	74	11.4
Industrial.....	1,509	1.7	576	38.2	553	36.6	380	25.2
Mechanical.....	2,633	3.0	1,121	42.6	1,025	38.9	487	18.5
Metallurgical and materials.....	718	.8	300	41.8	96	13.4	322	44.8
Mining.....	206	.2	131	63.6	45	21.8	30	14.6
Nuclear.....	382	.4	225	58.9	100	26.2	57	14.9
Petroleum.....	119	.1	57	47.9	29	24.4	33	27.7
Other engineering.....	1,265	1.4	342	27.0	239	18.9	684	54.1
Physical sciences.....	16,694	19.1	12,497	74.9	2,501	15.0	1,696	10.2
Astronomy.....	228	.3	187	82.0	25	11.0	16	7.0
Atmospheric sciences.....	183	.2	97	53.0	65	35.5	21	11.5
Chemistry.....	8,240	9.4	6,438	78.1	863	10.5	939	11.4
Geosciences.....	2,119	2.4	1,413	66.7	500	23.6	206	9.7
Oceanography.....	498	.5	177	40.4	116	26.5	145	33.1
Physics.....	5,486	6.3	4,185	76.3	932	17.0	369	6.7
Mathematical sciences.....	8,378	9.6	5,886	70.3	2,040	24.3	462	5.4
Applied mathematics.....	922	1.1	554	60.1	256	27.8	112	12.1
Mathematics.....	6,748	7.7	4,916	72.9	1,591	23.6	241	3.6
Statistics.....	708	.8	416	58.8	193	27.3	99	14.0
Life sciences.....	15,719	18.0	9,879	62.8	4,111	26.2	1,729	11.0
Agriculture.....	3,678	4.2	2,097	57.0	943	25.6	638	17.3
Biochemistry.....	1,058	1.2	704	66.5	193	18.2	161	15.2
Biology.....	3,885	4.4	2,483	63.9	1,083	27.9	319	8.2
Botany.....	1,577	1.8	1,173	74.4	305	19.3	99	6.3
Microbiology.....	778	.9	484	62.2	218	28.0	76	9.8
Pharmacology.....	638	.7	393	61.6	144	22.6	101	15.8
Physiology.....	553	.6	290	52.4	178	32.2	85	15.4
Zoology.....	2,549	2.9	1,721	67.5	669	26.2	159	6.2
Other life sciences.....	1,003	1.1	534	53.2	378	37.7	91	9.1
Psychology.....	6,748	7.7	3,902	57.8	2,181	32.3	665	9.9
Social sciences.....	22,314	25.6	10,282	46.1	9,992	44.8	2,040	9.1
Agricultural economics.....	519	.6	325	62.6	125	24.1	69	13.3
Anthropology.....	2,204	2.5	873	39.6	1,166	52.9	165	7.5
Economics (except agricultural).....	5,565	6.4	2,841	51.1	2,270	40.8	454	8.2
Geography.....	1,300	1.5	723	55.6	498	38.3	79	6.1
History and philosophy of science.....	506	.6	294	58.1	175	34.6	37	7.3
Linguistics.....	1,578	1.7	724	46.0	755	48.0	94	6.0
Political science.....	6,270	7.2	2,488	39.7	3,114	49.7	668	10.7
Sociology.....	3,846	4.4	1,813	47.1	1,606	41.8	427	11.1
Sociology and anthropology.....	531	.6	201	37.7	283	53.3	47	8.9

56 **Table C-15.1.—Total full-time graduate students in 2,338 science doctorate departments, by type and source of support and citizenship, 1967-68 and 1968-69**

Type and source of support and citizenship	1967			1968			1969			Percent change	
	Type and source of support and citizenship			Type and source of support and citizenship			Type and source of support and citizenship			Percent change	
	1967	1968	1969	1967-68	1968-69	1967	1968	1969	1967-68	1968-69	
<b>ALL SOURCES, total</b> .....	118,367	121,661	123,311	2.8	1.4	14,134	13,261	12,439	-6.6	-5.8	
U.S. Government.....	49,179	46,402	45,554	-1.6	-5.9	6,356	6,432	6,321	1.2	-1.7	
Other U.S. sources.....	67,254	71,592	75,897	6.4	6.0	2					
Foreign sources.....	1,894	1,667	1,860	-12.0	11.6	6,681	7,242	7,898	8.4	9.1	
<b>U.S. citizens</b> .....	98,398	99,442	98,714	1.1	-.7	4,360	4,716	5,111	8.2	8.4	
U.S. Government.....	43,871	42,739	39,507	-2.6	-7.6	2,279	2,480	2,742	8.8	10.6	
Other U.S. sources.....	54,493	56,677	59,172	4.0	4.4	42	46	45	9.5	-2.2	
Foreign sources.....	34	26	35	-23.5	34.6						
<b>Foreign students</b> .....	19,969	22,219	24,597	11.5	10.7	26,984	28,338	29,356	5.0	3.6	
U.S. Government.....	5,308	5,663	6,047	6.7	6.8	284	220	288	-22.5	30.9	
Other U.S. sources.....	12,801	14,915	16,725	16.5	12.1	26,700	28,118	29,068	5.3	3.4	
Foreign sources.....	1,860	1,641	1,825	-11.8	11.2						
<b>FELLOWSHIPS AND TRAINEESHIPS, total</b> .....	38,284	36,963	36,615	1.8	-6.0	22,551	23,171	22,497	2.7	1.4	
U.S. Government.....	27,952	27,955	25,146	.1	-10.2	231	173	215	-25.1	24.3	
Other U.S. sources.....	9,257	9,896	10,398	6.9	5.1	22,320	22,998	23,282	3.0	1.2	
Foreign sources.....	1,065	1,072	1,099	.7	-.3	4,433	5,167	5,859	16.6	13.4	
<b>U.S. citizens</b> .....	34,158	34,569	32,071	1.2	-7.2	53	47	73	-11.3	55.3	
U.S. Government.....	27,302	27,321	24,512	.1	-10.3	4,380	5,120	5,786	16.9	13.0	
Other U.S. sources.....	6,822	7,222	7,527	5.9	4.2						
Foreign sources.....	34	26	32	-23.5	23.1						
<b>Foreign students</b> .....	4,127	4,394	4,544	6.5	3.4	25,928	27,465	30,680	6.0	11.6	
U.S. Government.....	660	674	636	2.1	-5.6	2,439	2,270	2,568	-6.9	13.1	
Other U.S. sources.....	2,435	2,674	2,871	9.8	7.4	22,702	24,666	27,368	8.7	11.0	
Foreign sources.....	1,031	1,046	1,037	1.5	-.9	787	549	744	-30.2	35.5	
<b>RESEARCH ASSISTANTSHIPS, total</b> .....	27,171	26,875	26,660	-1.1	-.8	21,199	22,069	24,384	4.1	10.5	
U.S. Government.....	18,494	17,917	17,550	-3.1	-2.0	2,204	2,044	2,341	-7.3	14.5	
Other U.S. sources.....	8,635	8,912	9,063	3.2	1.7	18,995	20,025	22,042	5.4	10.1	
Foreign sources.....	42	46	47	9.5	2.2			1			
<b>U.S. citizens</b> .....	20,490	19,633	18,762	-4.2	-4.4	4,729	5,416	6,296	14.5	16.2	
U.S. Government.....						235	226	227	-3.8	.4	
Other U.S. sources.....						3,707	4,641	5,326	25.2	14.8	
Foreign sources.....						787	549	743	-30.2	55.3	

Table C-15b.—Full-time graduate students in 566 engineering doctorate departments, by type and source of support and citizenship, 1967-68 and 1968-69

Type and source of support and citizenship	Percent change			1967	1968	1969	Percent change		
	1967-68	1968-69	1968-69				1967-68	1968-69	1968-69
TOTAL.....	27,591	27,336	27,640	-0.9	9.1				
U.S. Government.....	12,383	11,691	11,076	-5.6	-5.3				
Other U.S. sources.....	14,423	14,955	15,738	4.0	5.0				
Foreign sources.....	785	650	826	-17.2	27.1				
U.S. citizens.....	20,191	18,805	17,886	-6.9	-4.9				
U.S. Govern.....	10,251	9,269	8,375	-9.6	-9.6				
Other U.S. sources.....	9,929	9,551	9,507	-4.0	-0.3				
Foreign sources.....	8	5	4	(*)	(*)				
Foreign students.....	7,400	8,531	9,754	15.3	14.3				
U.S. Government.....	2,129	2,422	2,701	13.8	11.5				
Other U.S. sources.....	4,494	5,464	6,231	21.6	14.0				
Foreign sources.....	777	645	822	-17.0	27.4				
FELLOWSHIPS AND TRAINEES, total.....	8,539	8,043	7,204	-5.8	-10.4				
U.S. Government.....	5,921	5,390	4,501	-9.0	-16.5				
Other U.S. sources.....	2,258	2,304	2,351	2.0	2.0				
Foreign sources.....	360	349	352	-3.1	.9				
U.S. citizens.....	7,443	6,891	5,955	-7.4	-13.6				
U.S. Government.....	5,790	5,231	4,332	-9.7	-17.2				
Other U.S. sources.....	1,645	1,655	1,619	.6	-2.2				
Foreign sources.....	8	5	4	(*)	(*)				
Foreign students.....	1,096	1,152	1,249	5.1	8.4				
U.S. Government.....	131	159	169	21.4	6.3				
Other U.S. sources.....	613	649	732	5.9	12.8				
Foreign sources.....	352	344	348	-2.3	1.2				
RESEARCH ASSISTANTS, total.....	7,961	8,052	8,031	1.1	-0.3				
U.S. Government.....	5,322	5,284	5,281	-0.7	-1.1				
Other U.S. sources.....	2,634	2,759	2,738	4.7	-0.8				
Foreign sources.....	5	9	12	(*)	(*)				
U.S. citizens.....	4,967	4,637	4,265	-6.6	-8.0				

Type and source of support and citizenship	Percent change			1967	1968	1969	Percent change		
	1967-68	1968-69	1968-69				1967-68	1968-69	1968-69
U.S. Government.....	3,412	3,122	2,866	-8.5	-8.2				
Other U.S. sources.....	1,555	1,515	1,399	-2.6	-7.7				
Foreign sources.....	2,994	3,415	3,766	14.1	10.3				
U.S. Government.....	1,910	2,162	2,415	13.2	11.7				
Other U.S. sources.....	1,079	1,244	1,389	15.3	7.6				
Foreign sources.....	5	9	12	(*)	(*)				
TEACHING ASSISTANTS, total.....	3,504	3,608	3,808	3.0	5.5				
U.S. Government.....	61	37	71	-39.3	91.9				
Other U.S. sources.....	3,443	3,571	3,737	3.7	4.6				
Foreign sources.....	2,378	2,254	2,188	-5.2	-2.9				
U.S. citizens.....	38	24	29	-36.8	(*)				
U.S. Government.....	2,340	2,230	2,159	-4.7	-3.2				
Other U.S. sources.....	1,120	1,354	1,620	20.2	19.6				
Foreign students.....	23	13	42	(*)	(*)				
U.S. Government.....	1,103	1,341	1,578	21.6	17.7				
Other U.S. sources.....	7,587	7,633	8,597	.6	12.6				
Foreign sources.....	1,079	980	1,223	-9.2	24.8				
U.S. Government.....	6,088	6,361	6,912	4.5	8.7				
Other U.S. sources.....	420	292	462	-30.5	58.2				
Foreign sources.....	5,403	5,023	5,478	-7.0	9.1				
U.S. citizens.....	1,014	892	1,148	-12.0	28.7				
U.S. Govern.....	4,389	4,131	4,330	-5.9	4.8				
Other U.S. sources.....	2,184	2,610	3,119	19.5	19.5				
Foreign sources.....	65	88	75	35.4	-14.8				
U.S. Govern.....	1,699	2,230	2,582	31.3	15.8				
Other U.S. sources.....	420	292	462	-30.5	58.2				
Foreign sources.....									

\* Percent change was not shown when base was less than 25.

58 Table C-15c.—Full-time graduate students in 452 physical science doctorate departments, by type and source of support and citizenship, 1967-68 and 1968-69

Type and source of support and citizenship	1967	1968	1969	Percent change		Type and source of support and citizenship	1967	1968	1969	Percent change	
				1967-68	1968-69					1967-68	1968-69
<b>TOTAL</b> .....	28,796	29,262	28,267	1.6	-3.4	U.S. Government.....	6,408	6,080	5,811	-5.1	-4.4
U.S. Government.....	14,171	13,672	12,458	-3.5	-8.9	Other U.S. sources.....	941	1,010	1,096	7.3	8.5
Other U.S. sources.....	14,363	15,369	15,554	7.0	1.2	Foreign sources.....	1,636	1,686	1,972	3.1	17.0
Foreign sources.....	262	221	255	-15.6	15.4	Foreign students.....	1,397	1,461	1,641	4.6	12.3
U.S. citizens.....	24,436	24,490	22,919	.2	-6.4	Other U.S. sources.....	235	214	322	-8.9	50.5
U.S. Government.....	12,665	12,104	10,719	-4.4	-11.4	Foreign sources.....	4	11	9	(*)	(*)
Other U.S. sources.....	11,762	12,380	12,185	5.3	-1.6	TEACHING ASSISTANTSHIPS, total.....	3,129	9,587	9,529	5.0	-1.6
Foreign sources.....	9	6	15	(*)	(*)	U.S. Government.....	97	90	60	-7.2	-83.3
Foreign students.....	4,360	4,772	5,348	9.4	12.1	Other U.S. sources.....	9,032	9,497	9,469	5.1	-1.3
U.S. Government.....	1,506	1,568	1,739	4.1	10.9	Foreign sources.....	7,503	7,710	7,546	2.8	-2.1
Other U.S. sources.....	2,601	2,989	3,369	14.9	12.7	U.S. citizens.....	71	71	48	-14.5	-82.1
Foreign sources.....	253	215	240	-15.0	11.6	Other U.S. sources.....	7,420	7,609	7,498	3.0	-1.3
Foreign students.....	7,856	7,721	6,641	-1.7	-14.0	Foreign sources.....	1,626	1,877	1,983	15.4	5.6
U.S. Government.....	5,880	5,641	4,590	-4.1	-18.6	U.S. Government.....	88	71	48	-14.5	-82.1
Other U.S. sources.....	1,798	1,914	1,814	6.5	-2.1	Other U.S. sources.....	7,420	7,609	7,498	3.0	-1.3
Foreign sources.....	178	156	177	-6.7	6.6	Foreign students.....	1,626	1,877	1,983	15.4	5.6
U.S. citizens.....	7,012	7,012	5,006	-2.7	-15.8	U.S. Government.....	1,612	1,858	1,971	15.3	6.1
Foreign students.....	5,802	5,578	4,535	-3.9	-18.7	Other U.S. sources.....	2,826	3,178	3,218	12.5	7.3
U.S. Government.....	1,392	1,428	1,357	2.6	-5.0	OTHER SUPPORT, total.....	389	400	356	2.8	-11.0
Foreign sources.....	9	6	14	(*)	(*)	Other U.S. sources.....	2,357	2,734	2,793	16.0	2.2
Foreign students.....	653	709	735	8.6	3.7	Foreign sources.....	80	44	69	-45.0	56.8
U.S. Government.....	78	63	55	-19.2	12.7	U.S. citizens.....	2,381	2,678	2,560	12.5	-4.4
Other U.S. sources.....	406	486	517	19.7	6.4	U.S. Government.....	372	375	325	.8	-13.3
Foreign sources.....	169	160	163	-5.3	1.9	Other U.S. sources.....	2,009	2,303	2,234	14.6	-3.0
Foreign students.....	8,985	8,776	8,879	-2.3	1.2	Foreign sources.....	445	500	658	12.4	31.6
U.S. Government.....	7,805	7,541	7,452	-3.4	-1.2	U.S. Government.....	17	25	31	(*)	24.0
Other U.S. sources.....	1,176	1,224	1,418	4.1	15.8	Other U.S. sources.....	348	431	559	23.9	29.7
Foreign sources.....	4	11	9	(*)	(*)	Foreign sources.....	80	44	68	-45.0	54.5
U.S. citizens.....	7,349	7,090	6,907	-3.5	-2.6						

\* Percent change was not shown when base figure was less than 25.

Table 15d.—Full-time graduate students in 176 mathematics doctorate departments, by type and source of support and citizenship, 1967-68 and 1968-69

Type and source of support and citizenship	1967	1968	1969	Percent change		1967	1968	1969	Percent change	
				1967-68	1968-69				1967-68	1968-69
<b>TOTAL</b>	10,600	10,668	10,508	0.6	-1.5	526	437	466	-16.9	6.6
U.S. Government	3,244	3,154	2,896	-2.8	-8.2	235	215	202	-8.5	-6.0
Other U.S. sources	7,259	7,415	7,615	2.1	1.3	235	267	297	13.6	11.2
Foreign sources	97	99	97	2.1	-2.0	173	208	221	17.3	8.9
U.S. citizens	3,181	9,019	8,619	-1.8	-4.4	60	64	76	6.7	18.8
U.S. Government	3,014	2,905	2,625	-3.6	-9.6	2			(*)	
Other U.S. sources	6,166	6,114	5,990	-0.8	-2.0	4,225	4,410	4,396	4.4	-0.8
Foreign sources	1		4	(*)	(*)	36	19	40	-47.2	(*)
Foreign students	1,419	1,649	1,889	16.2	14.6	4,189	4,391	4,356	4.8	-0.8
U.S. Government	230	249	271	8.3	8.8	3,608	3,710	3,561	2.8	-4.0
Other U.S. sources	1,093	1,301	1,525	19.0	17.2	35	13	38	-62.3	(*)
Foreign sources	96	99	93	3.1	-6.1	3,573	3,697	3,523	3.5	-4.7
<b>FELLOWSHIP AND TRAINEESHIPS, total</b>	2,837	2,906	2,543	2.4	-12.5	617	700	835	13.5	19.3
U.S. Government	2,255	2,222	1,829	-1.5	-17.7	1	6	2	(*)	(*)
Other U.S. sources	524	617	648	17.7	5.0	616	694	832	12.7	20.0
Foreign sources	58	67	66	15.5	-1.5	2,542	2,433	2,604	-4.3	7.0
U.S. citizens	2,597	2,615	2,201	.7	-15.8	254	273	340	7.5	24.5
U.S. Government	2,220	2,204	1,802	-0.7	-18.2	2,251	2,123	2,233	-5.5	4.9
Other U.S. sources	376	411	395	9.3	-3.9	37	92	31	-13.5	-3.1
Foreign sources	1		4	(*)	(*)	2,215	2,042	2,189	-7.8	7.2
Foreign students	240	291	342	21.3	17.5	233	251	319	7.7	27.1
U.S. Government	35	18	27	-48.6	(*)	1,982	1,791	1,870	-9.6	4.4
Other U.S. sources	148	206	253	39.2	22.8	327	391	415	19.6	6.1
Foreign sources	57	67	62	17.5	-7.5	21	22	21	(*)	(*)
<b>RESEARCH ASSISTANTSHIPS, total</b>	996	919	966	-7.7	5.0	269	337	363	25.2	7.7
U.S. Government	699	640	687	-8.4	7.3	37	32	31	-13.5	-3.1
Other U.S. sources	295	279	278	-5.4	-0.4	37	32	31	-13.5	-3.1
Foreign sources	2			(*)						
U.S. citizens	761	652	668	-14.3	2.5					

\* Percent change was not shown when base figure was less than 25.

80 Table C-15e.—Full-time graduate students in 619 life science doctorate departments, by type and source of support and citizenship, 1967-68 and 1968-69

Type and source of support and citizenship	1967	1968	1969	Percent change		Type and source of support and citizenship	1967	1968	1969	Percent change	
				1967-68	1968-69					1967-68	1968-69
TOTAL.....	20,377	21,067	21,486	3.4	2.0	U.S. Government.....	2,281	2,122	1,881	-7.0	-11.4
U.S. Government.....	9,337	9,452	9,378	1.2	-5.0	Other U.S. sources.....	1,721	1,752	1,737	1.8	-.9
Other U.S. sources.....	10,704	11,343	12,251	6.0	8.0	Foreign sources.....	2	2	2	(*)	(*)
Foreign sources.....	336	272	257	-19.0	-5.5	Foreign students.....	1,261	1,278	1,236	1.3	-3.2
U.S. citizens.....	17,365	17,933	18,236	3.3	1.7	U.S. Government.....	686	690	609	.6	-11.7
U.S. Government.....	8,361	8,484	8,078	1.5	-4.5	Other U.S. sources.....	551	563	610	2.2	8.3
Other U.S. sources.....	8,999	9,444	10,152	4.5	7.5	Foreign sources.....	24	25	17	(*)	-32.0
Foreign sources.....	5	5	6	(*)	(*)	TEACHING ASSISTANTSHIPS, total.....	4,315	4,457	4,845	4.0	8.0
Foreign students.....	3,012	3,134	3,250	4.1	3.7	U.S. Government.....	29	29	34		17.2
U.S. Government.....	976	968	900	-.8	-7.0	Other U.S. sources.....	4,286	4,456	4,811	4.0	7.9
Other U.S. sources.....	1,735	1,899	2,095	11.4	10.5	Foreign sources.....	3,866	3,968	4,268	2.6	7.5
Foreign sources.....	331	267	251	-19.3	-6.0	U.S. citizens.....	24	24	27	(*)	7.5
FELLOWSHIPS AND TRAINESHIPS, total.....	7,286	7,731	7,629	6.1	-1.3	U.S. Government.....	9,942	9,944	4,241	2.7	7.5
U.S. Government.....	5,982	6,320	6,171	5.1	-2.4	Other U.S. sources.....	449	519	577	15.6	11.2
Other U.S. sources.....	1,163	1,257	1,316	9.0	4.7	Foreign sources.....	5	5	7	(*)	(*)
Foreign sources.....	151	154	142	2.0	-7.8	Foreign students.....	444	514	570	15.8	10.9
U.S. citizens.....	6,593	6,981	6,892	5.9	-1.3	U.S. Government.....	3,513	3,697	4,156	5.2	12.4
U.S. Government.....	5,787	6,120	5,949	5.8	-2.8	Other U.S. sources.....	359	291	283	-18.9	-2.8
Other U.S. sources.....	801	856	939	6.9	9.7	Other U.S. sources.....	2,993	3,313	3,777	10.7	14.0
Foreign sources.....	5	5	4	(*)	(*)	Foreign sources.....	161	93	96	-42.2	3.2
Foreign students.....	693	750	737	8.2	-1.7	U.S. citizens.....	2,904	3,110	3,456	7.1	11.1
U.S. Government.....	195	200	222	2.6	11.0	U.S. Government.....	269	218	221	-19.0	1.4
Other U.S. sources.....	352	401	377	13.9	-6.0	Other U.S. sources.....	2,635	2,892	3,235	9.8	11.9
Foreign sources.....	146	149	138	2.1	-7.4	Foreign sources.....	609	587	700	-3.6	19.3
RESEARCH ASSISTANTSHIPS, total.....	5,263	5,152	4,856	-2.1	-5.7	Foreign students.....	90	73	62	-18.9	-15.1
U.S. Government.....	2,967	2,812	2,490	-5.2	-11.5	U.S. Government.....	353	421	542	17.6	28.7
Other U.S. sources.....	2,272	2,315	2,347	1.9	1.4	Other U.S. sources.....	161	93	96	-42.2	3.2
Foreign sources.....	24	25	19	(*)	-24.0	Foreign sources.....					
U.S. citizens.....	4,002	3,874	3,620	-3.2	-6.6						

\* Percent change was not shown when base was less than 25.

Table C-15f.—Full-time graduate students in 128 psychology doctorate departments, by type and source of support and citizenship, 1967-68 and 1968-69

Type and source of support and citizenship	1967	1968	1969	Percent change		Type and source of support and citizenship	1967	1968	1969	Percent change	
				1967-68	1968-69					1967-68	1968-69
TOTAL.....	9,267	10,204	10,790	10.1	5.7	U.S. Government.....	882	879	877	-.3	-.2
U.S. Government.....	4,383	4,627	4,766	5.6	3.0	Other U.S. sources.....	580	565	592	-2.6	4.8
Other U.S. sources.....	4,866	5,559	5,986	14.2	7.7	Foreign sources.....					
Foreign sources.....	18	13	38	(*)	(*)	Foreign students.....	102	105	123	2.9	17.1
U.S. citizens.....	8,921	9,842	10,332	10.3	5.0	U.S. Government.....	71	66	73	-7.0	10.6
U.S. Government.....	4,287	4,541	4,670	5.9	2.8	Other U.S. sources.....	31	39	49	25.8	25.6
Other U.S. sources.....	4,633	5,300	5,659	14.4	6.8	Foreign sources.....	1		1		(*)
Foreign sources.....	1	1	3	(*)	(*)	TEACHING ASSISTANTSHIPS, total.....	1,733	1,963	2,089	13.3	6.4
Foreign students.....	346	362	458	4.6	26.5	U.S. Government.....	9	8	8	(*)	(*)
U.S. Government.....	96	86	96	10.4	11.6	Other U.S. sources.....	1,724	1,955	2,081	13.4	6.4
Other sources.....	233	269	327	11.2	26.3	Foreign sources.....					
Foreign sources.....	17	17	35	(*)	(*)	U.S. citizens.....	1,655	1,881	1,977	13.7	5.1
FELLOWSHIPS AND TRAINEE- SHIPS, total.....	3,862	4,196	4,415	8.6	5.2	U.S. Government.....	8	8	8	(*)	(*)
U.S. Government.....	3,308	3,534	3,686	6.8	4.3	Other U.S. sources.....	1,647	1,873	1,969	13.7	5.1
Other U.S. sources.....	541	649	659	20.1	7.7	Foreign sources.....					
Foreign sources.....	13	13	30	(*)	(*)	Foreign students.....	78	82	112	5.1	36.6
U.S. citizens.....	3,765	4,106	4,313	9.1	5.0	U.S. Government.....	1			(*)	
U.S. Government.....	3,287	3,516	3,663	7.0	4.3	Other U.S. sources.....	77	82	112	6.5	36.6
Other U.S. sources.....	477	589	642	23.5	9.0	Foreign sources.....					
Foreign sources.....	1	1	3	(*)	(*)	OTHER SUPPORT, total.....	2,108	2,496	2,694	18.4	7.9
Foreign students.....	97	90	102	-7.2	13.3	U.S. Government.....	113	140	122	23.9	-12.9
U.S. Government.....	21	18	18	(*)	(*)	Other U.S. sources.....	1,990	2,351	2,565	18.1	9.1
Other U.S. sources.....	64	60	57	-6.3	-5.0	Foreign sources.....	5	5	7	(*)	(*)
Foreign sources.....	12	12	27	(*)	(*)	U.S. citizens.....	2,039	2,411	2,573	18.2	6.7
RESEARCH ASSISTANTSHIPS, total.....	1,564	1,549	1,592	-1.0	2.8	U.S. Government.....	110	138	117	25.5	-15.2
U.S. Government.....	953	945	950	-.8	-.5	Other U.S. sources.....	1,929	2,273	2,456	17.8	8.1
Other U.S. sources.....	611	604	641	-1.1	6.1	Foreign sources.....					
Foreign sources.....			1		(*)	Foreign students.....	69	85	121	23.2	42.4
U.S. citizens.....	1,462	1,444	1,469	-1.2	1.7	U.S. Government.....	3	2	5	(*)	(*)
						Other U.S. sources.....	61	78	109	27.9	39.7
						Foreign sources.....	5	5	7	(*)	(*)

\* Percent change was not shown when base figure was less than 25.

62 Table C-15g.—Full-time graduate students in 397 social science doctorate departments, by type and source of support and citizenship, 1967-68 and 1968-69

Type and source of support and citizenship	1967	1968	1969	Percent change		Type and source of support and citizenship	1967	1968	1969	Percent change	
				1967-68	1968-69					1967-68	1968-69
<b>TOTAL</b> .....	21,736	23,124	24,620	6.4	6.5	U.S. Government.....	625	561	588	-10.2	-4.1
U.S. Government.....	5,661	5,806	5,380	2.6	-7.3	Other U.S. sources.....	1,324	1,375	1,295	3.9	-5.8
Other U.S. sources.....	15,679	16,911	18,863	7.9	11.5	Foreign sources.....	453	491	504	8.4	2.6
Foreign sources.....	396	407	387	2.8	-4.9	Foreign students.....	123	134	152	8.9	13.4
U.S. citizens.....	18,304	19,353	20,722	5.7	7.1	Other U.S. sources.....	323	356	346	10.2	-2.8
U.S. Government.....	5,290	5,436	5,040	2.8	-7.3	Foreign sources.....	7	1	6	(*)	(*)
Other U.S. sources.....	13,004	13,908	15,679	7.0	12.7	<b>TEACHING ASSISTANTSHIPS,</b>	4,078	4,283	4,689	5.0	9.5
Foreign sources.....	10	9	3	(*)	(*)	total.....	52	37	75	-28.8	102.7
Foreign students.....	3,432	3,771	3,888	9.9	3.4	U.S. Government.....	4,026	4,246	4,614	5.5	8.7
U.S. Government.....	371	370	340	-3	-8.1	Other U.S. sources.....	3,541	3,648	3,957	3.0	8.5
Other U.S. sources.....	2,675	3,003	3,174	12.3	5.7	U.S. citizens.....	43	33	65	-23.3	97.0
Foreign sources.....	336	398	384	3.1	-3.5	Other U.S. sources.....	3,498	3,615	3,892	3.3	7.7
Foreign sources.....	336	398	384	3.1	-3.5	Foreign sources.....	537	635	732	18.2	15.3
<b>FELLOWSHIPS AND</b>	7,904	8,366	8,183	5.8	-2.2	U.S. Government.....	9	4	10	(*)	(*)
<b>TRAINESHIPS, total</b> .....	4,616	4,888	4,371	5.9	-10.6	Other U.S. sources.....	528	631	722	19.5	14.4
U.S. Government.....	2,983	3,155	3,510	5.8	11.3	Foreign sources.....	7,352	8,048	9,411	9.5	16.9
Other U.S. sources.....	305	323	302	5.9	-6.5	U.S. Government.....	245	186	244	-24.1	31.2
Foreign sources.....	6,557	6,964	6,804	6.2	-2.3	Other U.S. sources.....	7,023	7,779	9,088	10.8	16.8
U.S. Government.....	4,416	4,672	4,326	5.8	-9.5	Foreign sources.....	84	83	79	-1.2	4.8
Other U.S. sources.....	2,131	2,283	2,575	7.1	12.8	U.S. citizens.....	6,257	6,805	8,128	8.8	19.4
Foreign sources.....	10	9	3	(*)	(*)	U.S. Government.....	206	170	211	-17.5	24.1
Foreign students.....	1,347	1,402	1,379	4.1	-1.6	Other U.S. sources.....	6,051	6,635	7,917	9.7	19.3
U.S. Government.....	200	216	145	8.0	-32.9	Foreign sources.....	1,095	1,243	1,283	13.5	3.2
Other U.S. sources.....	852	872	935	2.3	7.2	Foreign students.....	39	16	33	-59.0	(*)
Foreign sources.....	295	314	299	6.4	-4.8	U.S. Government.....	972	1,144	1,171	17.7	2.4
<b>RESEARCH ASSISTANTSHIPS,</b>	2,402	2,427	2,387	1.0	-3.7	Other U.S. sources.....	84	83	79	-1.2	-4.8
<b>total</b> .....	748	695	690	-7.1	-7	Foreign sources.....	84	83	79	-1.2	-4.8
U.S. Government.....	1,647	1,731	1,641	5.1	-5.2	U.S. citizens.....	39	16	33	-59.0	(*)
Other U.S. sources.....	7	1	6	(*)	(*)	Other U.S. sources.....	972	1,144	1,171	17.7	2.4
Foreign sources.....	1,949	1,936	1,893	-7	-5.3	Foreign sources.....	84	83	79	-1.2	-4.8

\* Percent change was not shown when base figure was less than 25.



Table C-16.—Full-time faculty in doctorate departments, by field of science, 1969

Area and field of science	Total faculty		Graduate faculty		Area and field of science	Total faculty		Graduate faculty	
	Number	Percent distribution	Number	Percent of total		Number	Percent distribution	Number	Percent of total
<b>TOTAL</b> .....	54,549	100.0	45,687	83.8	Applied mathematics.....	264	.5	233	88.2
Engineering.....	11,562	21.2	9,565	83.6	Mathematics.....	4,963	9.1	3,634	77.2
Aeronautical.....	542	1.0	461	85.1	Statistics.....	440	.8	404	91.8
Agricultural.....	379	.7	260	68.6	Life sciences.....	14,075	25.8	11,497	81.7
Chemical.....	996	1.8	919	92.3	Agriculture.....	3,771	6.9	2,797	74.2
Civil.....	1,736	3.2	1,450	83.5	Biochemistry.....	1,527	2.8	1,318	86.3
Electrical.....	2,699	4.9	2,271	84.1	Biology.....	2,514	4.6	2,225	88.5
Engineering sciences.....	680	1.2	590	86.8	Botany.....	1,211	2.2	1,025	84.6
Industrial.....	685	1.3	548	80.0	Microbiology.....	828	1.5	725	87.6
Mechanical.....	2,076	3.8	1,633	78.7	Pharmacology.....	820	1.5	659	80.4
Metallurgical and materials.....	612	1.1	566	92.5	Physiology.....	822	1.5	654	79.6
Mining.....	101	.2	78	77.2	Zoology.....	1,191	2.2	1,032	86.6
Nuclear.....	227	.4	222	97.8	Other life sciences.....	1,391	2.6	1,062	76.3
Petroleum.....	66	.1	61	92.4	Psychology.....	3,317	6.1	2,902	87.5
Other engineering.....	763	1.4	606	79.4	Social sciences.....	9,345	17.1	7,738	82.8
Physical sciences.....	10,583	19.4	9,414	89.0	Agricultural economics.....	463	.8	350	75.6
Astronomy.....	211	.4	198	93.8	Anthropology.....	803	1.5	704	87.7
Atmospheric sciences.....	233	.4	202	86.7	Economics (except agricultural).....	2,460	4.5	1,956	79.5
Chemistry.....	4,077	7.5	3,682	90.3	Geography.....	511	.9	444	86.9
Geosciences.....	1,285	2.4	1,175	91.4	History and philosophy of sciences.....	276	.5	250	90.6
Oceanography.....	416	.8	348	83.7	Linguistics.....	581	1.1	453	78.8
Physics.....	4,361	8.0	3,809	87.3	Political science.....	2,273	4.2	1,972	86.8
Mathematical sciences.....	5,667	10.4	4,471	78.9	Sociology.....	1,751	3.2	1,416	80.9
					Sociology and anthropology.....	227	.4	188	82.8

Table C-17.—Full-time graduate students in doctorate departments, compared with full-time graduate faculty, by area of science, 1969

Area of science	Full-time graduate students		Full-time graduate faculty		Number of students per faculty member
	Number	Percent distribution	Number	Percent distribution	
<b>Total</b> .....	141,199	100.0	45,687	100.0	3.1
Engineering.....	30,820	21.8	9,665	21.2	3.2
Physical sciences.....	30,175	21.4	9,414	20.6	3.2
Mathematical sciences.....	11,727	8.3	4,471	9.8	2.6
Life sciences.....	27,588	19.5	11,497	25.2	2.4
Psychology.....	11,918	8.4	2,902	6.4	4.1
Social sciences.....	28,971	20.5	7,738	16.9	3.7

**Table C-18.—Full-time graduate faculty in doctorate departments, 1968, compared with number of Ph.D. degrees granted, academic year 1968-69, by area of science**

Area of science	Full-time graduate faculty, 1968	Ph.D. degrees granted, academic year 1968-69	Number of graduate faculty per Ph.D. degree
Total.....	42,674	14,998	2.8
Engineering.....	9,034	3,514	2.6
Physical sciences.....	8,874	3,704	2.4
Mathematical sciences.....	4,268	1,071	4.0
Life sciences.....	10,681	3,154	3.4
Psychology.....	2,707	1,398	1.9
Social sciences.....	7,110	2,157	3.3

Source: Departmental Summaries from 2,894 doctorate departments, as shown in appendix E.

**Table C-19.—Postdoctorals in doctorate departments, by field of science, 1969**

Area and field of science	Total postdoctorals		Recent postdoctorals		Area and field of science		Total postdoctorals		Recent postdoctorals	
	Number	Percent distribution	Number	Percent of total	Number	Percent distribution	Number	Percent of total	Number	Percent of total
Total.....	8,517	100.0	5,746	67.5	26	.3	26	42.3	11	11
Engineering.....	781	9.2	504	64.5	190	2.2	190	58.4	111	58.4
Aeronautical.....	43	.5	33	76.7	31	.4	25	80.6	25	80.6
Agricultural.....	11	.1	7	63.6	3,214	37.7	1,936	60.2	1,936	60.2
Chemical.....	114	1.3	84	73.7	296	3.5	196	66.2	196	66.2
Civil.....	80	.9	47	58.8	932	10.9	627	67.3	627	67.3
Electrical.....	99	1.2	64	64.6	766	9.0	382	49.9	382	49.9
Engineering science.....	74	.9	31	41.9	160	1.9	91	56.9	91	56.9
Industrial.....	20	.2	11	55.0	251	2.9	157	62.5	157	62.5
Mechanical.....	79	.9	51	64.6	220	2.6	140	63.6	140	63.6
Metallurgical and materials.....	122	1.4	89	73.0	214	2.5	114	53.3	114	53.3
Mining.....	7	.1	4	57.1	160	1.9	89	55.6	89	55.6
Nuclear.....	25	.3	10	40.0	215	2.5	140	65.1	140	65.1
Petroleum.....	4	0	3	75.0	231	2.7	139	60.2	139	60.2
Other engineering.....	103	1.2	70	68.0	258	3.0	97	37.6	97	37.6
Physical sciences.....	3,786	44.4	2,923	77.2	9	.1	3	33.3	3	33.3
Astronomy.....	69	.8	43	62.3	27	.3	13	48.1	13	48.1
Atmospheric sciences.....	43	.5	24	55.8	76	.9	27	35.5	27	35.5
Chemistry.....	2,236	26.3	1,851	82.8	13	.2	7	53.8	7	53.8
Geosciences.....	174	2.0	109	62.6	14	.2	7	50.0	7	50.0
Oceanography.....	61	.7	33	54.1	34	.4	11	32.4	11	32.4
Physics.....	1,203	14.1	863	71.7	29	.3	9	31.0	9	31.0
Mathematical sciences.....	247	2.9	147	59.5	54	.6	19	35.2	19	35.2
					2	(*)	1	50.0	1	50.0

\* Less than 0.05 percent.

**Table C-20.—Full-time graduate students in doctorate departments, compared with postdoctorals, by area of science, 1969**

Area of science	Full-time graduate students		Postdoctorals		Number of students per post-doctoral
	Number	Percent distribution	Number	Percent distribution	
Total.....	141,199	100.0	8,517	100.0	16.6
Engineering.....	30,820	21.8	781	9.2	39.5
Physical sciences.....	30,175	21.4	3,786	44.5	8.0
Mathematical sciences.....	11,727	8.3	247	2.9	47.5
Life sciences.....	27,588	19.5	3,214	37.7	8.6
Psychology.....	11,918	8.4	231	2.7	51.6
Social sciences.....	28,971	20.5	258	3.0	112.3

**Table C-21.—Postdoctorals in doctorate departments, 1968, compared with number of Ph.D. degrees granted, academic year 1968-69, by area of science**

Area of science	Post-doctorals, 1968	Ph.D. degrees granted, academic year 1968-69	Number of Ph.D.'s per post-doctoral
Engineering.....	690	3,514	5.1
Physical sciences.....	3,615	3,704	1.0
Mathematical sciences.....	236	1,071	4.5
Life sciences.....	2,743	3,154	1.1
Psychology.....	214	1,398	6.5
Social sciences.....	222	2,157	9.7

Source: Departmental Summaries from 2,894 doctorate departments, as shown in appendix E

**Table C-22.—Full-time graduate faculty in doctorate departments, compared with number of postdoctorals, by area of science, 1969**

Area of science	Full-time graduate faculty		Postdoctorals		Number of graduate faculty per post-doctoral
	Number	Percent distribution	Number	Percent distribution	
Total.....	45,687	100.0	8,517	100.0	5.4
Engineering.....	9,665	21.2	781	9.2	12.4
Physical sciences.....	9,414	20.6	3,786	44.5	2.5
Mathematical sciences.....	4,471	9.8	247	2.9	18.1
Life sciences.....	11,497	25.2	3,214	37.7	3.6
Psychology.....	2,902	6.4	231	2.7	12.6
Social sciences.....	7,738	16.9	258	3.0	30.0

## APPENDIX D

# Instructions and Consolidated Departmental Data Sheets

(NSF Form 345)—Doctorate Departments

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<b>TABLE</b>	
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## Instructions for Completing the Departmental Data Sheet

For further information on the Graduate Traineeship Program, refer to the Announcement (E 69-G-6). Completed copies of the Departmental Data Sheet should be forwarded to the designated Coordinating Official at the institution. Copies of the form should be prepared in sufficient numbers and in time so that the institution can complete its review and forward five copies (reproductions of the original, not carbons) of each sheet being submitted, to reach the National Science Foundation not later than October 24, 1969.

Item 5—Give the numbers of degrees conferred between 7/1/68 and 6/30/69. Under A insert the number of bachelor's degrees (include 5-year professional degrees). Under B insert the number of master's degrees (excluding degrees in the teaching of science, e. g. M.A.T.). Under C insert the number of master's degrees in the teaching of science (e.g., M.A.T.). Under D insert the number of doctoral degrees. Degrees awarded jointly by two or more departments should be recorded on one departmental data sheet only.

Item 6.—A full-time graduate student is defined here as a bona fide graduate student (not a regular staff member, e.g., an instructor) who is engaged entirely in training activities in his field of science; these activities may embrace any appropriate combination of study, teaching, and research. (Some institutions use the phrase "geographical full-time student" to describe such students.)

A first-year graduate student is defined for this program as one who will have completed less than one normal year of graduate study as of the beginning of the Fall term of 1969. All other students should be considered beyond first level.

Insert in each appropriate box the number of students who are simultaneously (a) full-time graduate students (defined above), (b) enrolled in an advanced degree program, and (c) receiving a total stipend of \$1,200 or more—not counting tuition and excluding personal, family and loan sources—during the 1969-70 academic year.

All students meeting criteria (a) and (b), but not (c), should be counted under "Self, Loans and Family." Full-time graduate students working for an advanced degree who are employees of another organization, on leave of absence, and whose major support is provided by their employer, should be listed by type of employer (e.g., industry). If a graduate student receives stipend support from more than one source, choose the major source. For cases of two or more equivalent sources choose one major source category so that using only whole numbers the departmental data sheet will give a reasonably accurate average support picture for the department.

Care should be used in listing support sources accurately so that students (particularly research assistants) supported under U.S. Government grants are listed under the appropriate U.S. Government agency (e.g., students supported on an AEC research grant should appear under AEC and students supported under an NSF Institutional Grant should appear under NSF, not under "This Institution").

Each row total given under ALL SOURCES is to be split into two components, *First Year* and *Beyond First*. Thus every full-time graduate student enrolled for an advanced degree is counted only once by major source of support and once again in a separate breakout by level (First Year or Beyond First) of study.

Item 8—These students are often called "special" or "nondegree" students. "Special" or "nondegree" students are those students possessing

an undergraduate degree who are enrolled in one or more graduate courses in the department Fall 1968, but who are not enrolled for an advanced degree (they have not been admitted to graduate school).

Item 9—The numbers of graduate students who are working for advanced degrees, but who are not pursuing graduate work full-time are enumerated under the four entries for part-time. Do not include "special" students who are not enrolled for advanced degrees (given in item 8) or students who have left your institution but are completing their theses while engaged in other activities.

Item 10—For items A, B, and C, only faculty of academic rank of instructor or above, who are significantly involved (i.e., teaching one or more courses or seminars and/or directing the research of one or more students) in the graduate and/or undergraduate academic program of the department as of the Fall 1969 should be counted, including faculty on sabbatical leave who are expected to return. Visiting professors should not be counted. Do not count postdoctorals or research associates: they are counted under item 11. Under A, give the number of full-time faculty who are staff (including the department head) of academic rank instructor or above with a full-time appointment in the department and whose major responsibilities are with the academic programs of the department. (A faculty member should be counted as full-time in only one department.) Under B, give the number of faculty included under A who do not teach any regularly scheduled courses (research professors, research associates of professional academic rank, etc.). Under C, give the number of faculty included under A, who are significantly involved in the graduate academic program of the department (i.e., teaching one or more graduate courses or seminars and/or directing the research of one or more graduate students).

Under D, give the number of part-time graduate faculty (part-time in this department), defined to include all faculty who are significantly involved in the graduate academic program (see C, above) but whose major responsibilities or activities are outside the department. Part-time will usually include senior university administrators (deans, etc.) affiliate or adjunct professors (from other departments or outside the university), professors emeriti, experiment laboratory or extension service staff, museum staff, etc.

Item 11—Postdoctorals or Research Associates include individuals with a doctorate (including foreign degrees that are equivalent to U.S. doctorates) who devote full-time to research activities or study in the department under temporary appointments carrying no academic rank (instructor or above). Such appointments are usually for a specific time period. They may contribute to the academic program through seminars, lectures, or working with graduate students. Their postdoctoral activities have an element of additional training for them.

Under A, give the total number of Postdoctorals and/or Research Associates as defined above, as of the Fall of 1969. Of this number enter under B the number who are teaching one or more regularly scheduled courses; under C, give the number of Postdoctorals and/or Research Associates (defined above) who received their doctorates in 1965 or later.

Item 12—Give the number of NSF Graduate Traineeships in each category that your department could effectively use. Avoid unrealistic and inflated numbers, taking full cognizance of all other means of available support. Only U.S. citizens enrolled in an advanced degree program may be appointed. Under a new grant for 1970-71 an institution must appoint most of its 9- or 12-month Trainees at the first-year level.

NATIONAL SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1970

Departmental Data Sheet

(Note: Before filling out please read the instructions on the reverse)

1. Name and address of Institution: 224 Doctoral Granting Institutions Applying in the 1970 GTP.

2. Department (or unit) covered by this data sheet: 2894 Doctoral Science Departments.

3. Person in Department (or unit) preparing this form: Name \_\_\_\_\_ Title \_\_\_\_\_

4. Highest degree offered in the Fall of 1969: (check only one) Masters  (1) Ph. D.  (2)

5. Number of degrees granted 7-1-68 through 6-30-69: BS 99,009 (1); MS 31,751 (2); MAT, 1,458 (3); Ph.D. 14,998 (4)

also BA, etc. also MA, etc. (Ex. MAT, etc.) MAT, etc. Ph.D., DSc, etc.

TYPES OF SUPPORT	U.S. Government (excluding loans)										Other United States (non-U.S. Government)					All sources																
	AEC		Department of Agriculture		Department of Defense		HEW		NSF		Other U.S. Government		NASA		This Institution and State and local Government		Private non-profit foundation		Industry		Self, loans, and family		Other U.S. sub-total		Foreign sources		Total		First year		Beyond first	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)														
1 United States	500	44	353	6,706	8,946	1,043	1,318	7,255	1,752	27,917	5,224	1,637	1,419	228	8,500	37	36,462	10,527	25,935													
2 Foreign	12	17	47	140	13	35	790	1,967	878	244	161	3,250	5,272	1,960	3,312	1,232	5,272	1,960	3,312													
3 United States	1,806	731	2,357	79	2,199	361	833	3,642	1,927	13,935	5,932	609	770	218	7,529	2	21,466	4,423	17,043													
4 Foreign	589	218	1,168	15	766	72	409	1,583	891	5,711	2,519	263	372	85	3,239	55	9,005	1,916	7,089													
5 United States	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---													
6 Foreign	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---													
7 United States	34	82	1,057	7	101	38	85	337	20	46	75	6,403	17	11	6,431	1	28,754	12,491	16,263													
8 Foreign	11	4	11	4	8	2	42	199	284	340	111	133	5,132	331	6,047	918	7,249	3,759	3,480													
9 United States	2,340	857	3,767	6,792	11,267	1,476	2,236	11,336	4,689	44,760	39,242	2,567	3,819	1,564	68,367	40	113,167	36,584	76,583													
10 Foreign	600	234	1,196	66	922	88	447	1,645	1,662	6,860	11,229	1,269	749	588	18,967	2,205	28,032	9,787	18,245													
11 Totals	2,940	1,091	4,963	6,858	12,189	1,564	2,683	12,981	6,351	51,620	50,471	3,836	4,568	2,152	87,334	2,245	141,199	46,371	94,828													

7. The number of students included in the above table (item 6) who are:

- (A) supported with full tuition from this institution 36,906 (1). Include students in institutions charging no tuition, but not those whose tuition comes from the U.S. Government or a non-institutional source.
- (B) performing some regular teaching activity, but who do not receive their major support from a graduate teaching assistantship 10,157 (2)
- (C) receiving support from more than one source, exclusive of self, loans, and family 9,039 (3)

8. Number of "special" students enrolled for graduate course work (full or part-time) in this department who are not enrolled for an advanced degree 8,922

9. Part-time graduate students enrolled for advanced degrees

Fall 1969 by level of study; do not include "special" students.

U.S. CITIZENS	FOREIGN		TOTAL		FULL-TIME DEPARTMENTAL FACULTY		PART-TIME	
	1st year	Beyond 1st	1st year	Beyond 1st	Total	Non-teaching	Graduate	Graduate
16,911 (1)	23,228 (2)	1,372 (3)	2,135 (4)	43,646	54,519 (1)	2,700 (2)	45,687 (3)	8,569 (4)

10. Numbers of faculty members:

U.S. CITIZENS		FOREIGN		TOTAL	
Teaching	Recent doctorals	Teaching	Recent doctorals	Teaching	Recent doctorals
8,517 (1)	699 (2)	5,746 (3)	---	---	---

11. Number of Postdoctorals/Research Associates:

U.S. CITIZENS		FOREIGN		TOTAL	
Teaching	Recent doctorals	Teaching	Recent doctorals	Teaching	Recent doctorals
8,517 (1)	699 (2)	5,746 (3)	---	---	---



NATIONAL SCIENCE FOUNDATION GRADUATE TRAINESHIPS FOR 1970

Departmental Data Sheet

(Note: Be sure filling out please read the instructions on the reverse)

- Name and address of Institution: 224 Doctoral Granting Institutions Applying in the 1970 GTP.
- Department (or unit) covered by this data sheet: 509 Physical Sciences Doctoral Departments.
- Person in Department (or unit) preparing this form: Name \_\_\_\_\_ Title \_\_\_\_\_ Ph. D.  (1)  (2)
- Highest degree offered in the Fall of 1969: (check only one) Masters  (1)  (2) Ph. D. 3,704 (4)
- Number of degrees granted 7-1-68 through 6-30-69: BS 9,256 (1); MS 3,948 (2); MAT 326 (3); Ph.D. 3,704 (4) Ph.D., DSc, etc. also BA, etc. also MA, etc. (Ex. MAT, etc.) MAT, etc.

TYPES OF SUPPORT	U.S. Government (excluding loans)										Other United States (non-U.S. Government)					All sources										
	AEC		NSF		NASA		Other U.S. Government		U.S. Government and State and local government		This Institution and State and local government		Private non-profit foundation		Industry		Self, loans, and family		Other U.S. sub-total		Foreign sources		Total		Beyond first year	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o-p)	(q)	(r)	(s)	(t)	(u)	(v)	(w)	(x)	(y)	(z)	
Fellowships and traineeships	106	1	88	1,311	725	36	435	1,993	116	4,811	897	214	346	12	1,469	14	6,294	1,469	4,825							
Graduate research assistantships	1,359	1	2	7	8	1	3	40	62	371	98	67	1	551	189	802	268	534								
Graduate teaching assistantships	346	10	265	5	226	3	91	570	209	1,726	240	56	30	27	353	10	2,089	250	1,839							
Other than above	4	3	138	1	1	1	8	47	168	372	186	20	124	149	2,497	1	2,105	796	1,369							
Total-United States	1,469	52	1,167	1,341	1,444	55	816	4,076	933	11,353	9,746	469	605	2,018	2,870	1	2,870	1,021	1,849							
Total-Foreign	350	11	271	12	235	5	94	588	268	1,834	2,751	174	110	483	384	80	733	384	349							
Totals	1,819	63	1,438	1,353	1,679	60	910	4,664	1,201	13,187	12,497	643	715	2,501	3,254	2	2,443	1,405	2,198							

7. The number of students included in the above table (a)-(z) who are:  
 (A) supported with full tuition from this institution 10,646 (B) performing some regular teaching activity, but who do not receive their major support from a graduate teaching assistantship 2,798 (2)  
 (C) receiving support from more than one source, exclusive of self, loans, and family 2,465 (3)  
 (D) Include students in institutions charging no tuition, but not those whose tuition comes from the U.S. Government or a non-institutional source.

8. Number of "special" students enrolled for graduate course work (full or part-time) in this department who are not enrolled for an advanced degree 1,240

9. Part-time graduate students enrolled for advanced degrees Fall 1969 by level of study; do not include "special" students.

U.S. CITIZENS	FOREIGN		TOTAL	FULL-TIME DEPARTMENTAL F/CULTY		PART-TIME		
	1st year	Beyond 1st		Total	Non-teaching		Graduate	
1,365 (1)	2,867 (2)	113 (3)	176 (4)	4,521 (5)	10,583 (1)	305 (2)	9,414 (3)	1,071 (4)

10. Numbers of faculty members:

U.S. CITIZENS	FOREIGN		TOTAL	FULL-TIME DEPARTMENTAL F/CULTY		PART-TIME		
	1st year	Beyond 1st		Total	Non-teaching		Graduate	
1,365 (1)	2,867 (2)	113 (3)	176 (4)	4,521 (5)	10,583 (1)	305 (2)	9,414 (3)	1,071 (4)

11. Number of Postdoctorals/Research Associates:

Total	Teaching		Recent doctorals
	A	B	
3,786 (1)	287 (2)	2,923 (3)	



NATIONAL SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1970

Departmental Data Sheet

(Note: Before filling out please read the instructions on the reverse)

- Name and address of Institution: 224 Doctoral Granting Institutions Applying in the 1970 GTP.
- Department (or unit) covered by this data sheet: 203 Mathematical Sciences Doctoral Departments.
- Person in Department (or unit) preparing this form: Name \_\_\_\_\_ Title \_\_\_\_\_
- Highest degree offered in the Fall of 1969: (check only one) Masters  (1) Ph. D.  (2)
- Number of degrees granted 7-1-68 through 6-30-69: BS 8,160 (1); MS 2,991 (2); MAT 602 (3); Ph.D. 1,071 (4)

TYPES OF SUPPORT	U.S. Government (excluding loans)										Other United States (non-U.S. Government)					All sources	
	AEC (a)	Dept. of Agriculture (b)	Dept. of Defense (c)	NDEA (d)	NSF (e)	Other U.S. Government (f)	NASA (g)	U.S. Government total (h-1)	This Institution and State and local Government (h-2)	Private profit foundation (h-3)	Industry (h-4)	Self, loans, and family (h-5)	Other U.S. sub-total (h-6)	Foreign sources (h-7)	Total (h-8)	First year (h-9)	Beyond first year (h-10)
Fellowships and traineeships.	4	2	12	501	145	51	158	1,966	324	55	60	10	449	4	2,419	798	1,621
Graduate research assistantships.	24	6	156	1	2	1	2	28	206	46	12	7	271	76	375	160	215
Graduate teaching assistantships.	11	2	80	1	7	1	6	261	76	3	1	8	88	---	349	73	276
Other than above	1	2	68	---	4	---	13	2	322	4	---	---	3,828	---	3,869	1,277	2,592
Total—United States	29	10	242	502	173	54	180	2,903	4,643	65	183	19	406	46	481	225	256
Total—Foreign	11	3	82	4	13	2	8	320	1,243	60	17	34	1,692	122	2,134	727	1,407
Totals	40	13	324	506	186	56	188	3,223	5,886	125	200	127	8,378	126	11,721	4,199	7,528

- The number of students included in the above table (item 6) who are:
  - (A) supported with full tuition from this institution 3,572 (1). Include students in institutions charging no tuition, but not those whose tuition comes from the U.S. Government or a non-institutional source.
  - (B) performing some regular teaching activity, but who do not receive their major support from a graduate teaching assistantship 913 (2)
  - (C) receiving support from more than one source, exclusive of self, loans, and family 1,199 (3)
- Number of "special" students enrolled for graduate course work (full or part-time) in this department who are not enrolled for an advanced degree 1,103

9. Part-time graduate students enrolled for advanced degrees Fall 1969 by level of study; do not include "special" students.		10. Number of faculty members:	
U.S. CITIZENS	FOREIGN	TOTAL	PART-TIME
1st year	Beyond 1st year	Total	Graduate
1,918 (1)	2,198 (2)	55 (3)	119 (4)
54 (2)	147 (3)	5,667 (1)	480 (4)

- Number of Postdoctorals/Research Associates:
  - Total Teaching 54 (2)
  - Recent doctorals 147 (3)

NATION'S SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1970

Departmental Data Sheet

(Note: Before filling out please read the instructions on the reverse)

- Name and address of Institution: 224 Doctoral Granting Institutions Applying in the 1970 GTP.
- Department (or unit) covered by this data sheet: 874 Life and Medical Science Doctoral Departments.
- Person in Department (or unit) preparing this form: Name \_\_\_\_\_ Title \_\_\_\_\_  
Ph. D.  (2)
- Highest degree offered in the Fall of 1969: (check only one) Masters  (1) Ph. D.  (2)  
MS 4,387 (2); MAT 318 (3); Ph.D. 3,154 (4)
- Number of degrees granted 7-1-68 through 6-30-69: BS 16,949 (1); MAT, etc. also MA, etc. (Ex. MAT, etc.) MAT, etc. Ph.D. DSc, etc.

TYPES OF SUPPORT	U.S. Government (excluding loans)										Other United States (non-U.S. Government)					All sources			
	HEW			NASA		NSF		Other U.S. Government total		This Institution State and Federal Government	Private and profit foundation	Industry and family	Other U.S. sources total	Foreign sources	Total	Beyond first year			
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(r)		
Fellowships and traineeships.	59	33	34	1,293	4,340	203	124	1,276	197	7,559	859	255	55	28	1,197	5	8,761	1,987	6,774
Graduate research assistantships.	111	9	2	3	84	7	1	177	283	196	183	25	50	50	454	194	931	279	652
Graduate teaching assistantships.	40	143	12	338	21	10	10	125	111	800	631	6	4	24	5,293	25	5,339	1,856	3,483
Other than above	6	38	30	4	7	9	1	76	61	263	322	29	58	4	741	---	749	242	507
Total--United States	176	611	116	1,321	5,181	269	172	1,763	725	10,334	8,265	456	361	384	12,985	7	23,326	7,082	16,244
Total--Foreign	47	155	15	4	433	29	11	132	353	1,179	1,614	284	127	117	2,734	349	4,262	1,311	2,951
Totals	223	766	131	1,325	5,614	298	183	1,895	1,078	11,513	9,879	740	488	501	15,719	356	27,588	8,393	19,195

- The number of students included in the above table (item 6) who are:
  - (A) supported with full tuition from this institution 7,136 (1). Include students in institutions changing no tuition, but not those whose tuition comes from the U.S. Government or a non-institutional source.
  - (B) performing some regular teaching activity, but who do not receive their major support from a graduate teaching assistantship 3,225 (2)
  - (C) receiving support from more than one source, exclusive of self, loans, and family 1,481 (3)
- Number of "special" students enrolled for graduate course work (full or part-time) in this department who are not enrolled for an advanced degree 1,052

- Part-time graduate students enrolled for advanced degrees
- Numbers of faculty members:

U.S. CITIZENS	FOREIGN		TOTAL		FULL-TIME DEPARTMENTAL FACULTY		PART-TIME	
	1st year	Beyond 1st year	1st year	Beyond 1st year	Total	A	B	C
847 (1)	2,166 (2)	57 (3)	152 (4)	3,222	14,075 (1)	1,454 (2)	11,497 (3)	3,383 (4)

- Number of Postdoctorals/Research Associates:

Total	A	B	C
3,214 (1)	1,811 (2)	986 (3)	

NATIONAL SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1970

Departmental Data Sheet

(Note: Before filling out please read the instructions on the reverse)

- Name and address of Institution: 224 Doctoral Granting Institutions Applying in the 1970 GTP.
- Department (or unit) covered by this data sheet: 141 Psychology Doctoral Departments.
- Person in Department (or unit) preparing this form: Name \_\_\_\_\_ Title \_\_\_\_\_  
Ph. D.  (2)
- Highest degree offered in the Fall of 1969: (check only one) MAT 21 (3); Ph.D. 1,398 (4)
- Number of degrees granted 7-1-68 through 6-30-69: BS 11,748 (1); MS 2,002 (2); MAT 21 (3); Ph.D. 1,398 (4)  
also BA, etc. also MA, etc. (Ex. MAT, etc. MAT, etc. Ph.D., DSc, etc.

6. Major support sources (excluding tuition) of All Full-Time Graduate Students enrolled for Advanced Degrees (M.S. and Ph.D.) in the Fall 1969 (see item 6—instructions)	U.S. Government (excluding loans)										Other United States (non-U.S. Government)					All sources			
	AEC (a)	Department of Agriculture (b)	Department of Defense (c)	HEW			NASA (g)	NSF (h)	Other U.S. Government (i)	U.S. Government total (e-i)	This Institution and local Government (j)	Private profit foundation (k)	Industry (l)	Self, family and other (m)	Other U.S. total (n)	Foreign sources (o)	Total (p)	First year (q)	Beyond first year (r)
				NDEA (d)	PHS (NIH) (e)	Other HEW (f)													
1 United States		29	562	2,002	329	37	334	639	3,932	519	70	9		84	682	3	4,617	1,340	3,277
2 Foreign States				11				10	21	58	7			3	68	32	121	34	87
3 United States		119	1	408	175	13	123	89	928	573	40	15		4	632		1,560	521	1,039
4 Foreign States		9		33	9	2	8	18	80	48	2	1		1	52	1	133	37	96
5 United States				4				2	10	2,118				5	2,123		2,133	644	1,489
6 Foreign States																			
7 United States		21		29	13		2	86	151	448	127	38	2,081	249	2,943		127	35	92
8 Foreign States								5	5	11	6		100	4	121	7	133	51	82
9 United States		169	568	2,443	521	50	459	816	5,021	3,658	237	62	2,081	342	6,380	3	11,404	3,455	7,969
10 Foreign States		9		44	9	2	8	33	106	244	15	1	100	8	368	40	514	157	357
Totals		178	563	2,487	580	52	467	849	5,127	3,902	262	68	2,181	350	6,748	43	11,918	3,592	8,326

- The number of students included in the above table (item 6) who are:
  - (A) supported with full tuition from this institution 2,712
  - (B) performing some regular teaching activity, but who do not receive charging no tuition, but not those whose tuition comes from the U.S. Government or a non-institutional source. 815
  - (C) receiving support from more than one source, exclusive of self, loans, and family 748
- Number of "special" students enrolled for graduate course work (full or part-time) in this department who are not enrolled for an advanced degree 705

- Part-time graduate students enrolled for advanced degrees Fall 1969 by level of study; do not include "special" students.
 

U.S. CITIZENS	FOREIGN		TOTAL	
	Beyond 1st year	1st year	Beyond 1st year	Part-time
509 (1)	1,289 (2)	17 (3)	30 (4)	1,845
Total Teaching Recent doctorals				
231 (1)	46 (2)	139 (3)		
- Numbers of faculty members:
 

FULL-TIME DEPARTMENTAL FACULTY	PART-TIME	
	Total	Graduate
3,317 (1)	64 (2)	2,902 (3)
Total		
738 (4)		

**NATIONAL SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1970**

**Departmental Data Sheet**

(Note: Before filling out please read the instructions on the reverse)

1. Name and address of Institution: 224 Doctoral Granting Institutions Applying in the 1970 GTP.

2. Department (or unit) covered by this data sheet: 502 Social Sciences Doctoral Departments.

3. Person in Department (or unit) preparing this form: Name \_\_\_\_\_ Title \_\_\_\_\_

4. Highest degree offered in the Fall of 1969: (check only one) Masters  (1) Pb. D.  (2)

5. Number of degrees granted 7-1-68 through 6-30-69: BS 26,909 (1); MS 6,229 (2); MAT 136 (3); PhD 2,157 (4)

also BA, etc. also MA, etc. (EX. MAT, etc.) MAT, etc. PhD, DSc, etc.

TYPES OF SUPPORT	U.S. Government (excluding loans)										Other United States (non-U.S. Government)					All sources			
	AEC	Department of Agriculture	Department of Defense	HEW		NASA	NSF	Other U.S. Government total	U.S. Government and sub-local total	This institution and State and local Government	Private non-profit foundation	Industry	Self-loans, and family	Other U.S. sub-total	Foreign sources	Total	First year	Beyond first	
				NDEA (NIH)	FHS (HEW)														(a)
1 Fellowships and traineeships.	6	30	2,023	1,085	376	28	949	327	4,824	2,014	806	39	67	2,925	5	7,755	2,498	5,257	
2 Graduate research assistantships.	2	1	23	8	3			174	211	606	386	8	53	1,053	323	1,587	669	1,018	
3 Graduate teaching assistantships.	10	112	8	82	54	13	166	154	636	1,405	89	10	54	1,558		2,194	641	1,553	
4 Other than above	1	41	3	2	12	13	1	45	172	333	41		22	401	6	579	136	443	
5 Total-United States	1	27	89	1	11	7	15	12	48	75	4,603	33	9	4,646		4,721	1,176	3,545	
6 Total-Foreign	11	145	165	1	1	1	2	8	11	820	4	4	4	828		839	205	634	
7 Total-United States	11	145	165	1	11	7	15	110	261	418	46	111	184	9,563		9,824	4,264	5,560	
8 Total-Foreign	1	43	4	26	20	17	1	639	5,796	8,440	973	161	3	1,339	87	1,472	600	872	
9 Total-United States	12	188	160	2,058	1,198	469	42	1,192	917	6,236	1,436	172	11	1,187	416	4,477	1,510	2,967	
10 Total-All sources	12	188	160	2,058	1,198	469	42	1,192	917	6,236	1,436	172	11	1,187	421	28,971	10,089	18,882	

7. The number of students included in the above table (item 6) who are:  
 (A) supported with full tuition from this institution 6,862 (1). Include students in institutions charging no tuition, but not those whose tuition comes from the U.S. Government or a non-institutional source.  
 (B) performing some regular teaching activity, but who do not receive their major support from a graduate teaching assistantship 1,069 (2)  
 (C) receiving support from more than one source, exclusive of self, loans, and family 1,133 (3)

8. Number of "special" students enrolled for graduate course work (full or part-time) in this department who are not enrolled for an advanced degree 1,617

10. Numbers of faculty members:			
U.S. CITIZENS	FOREIGN	TOTAL	
		Teaching	Recent doctorals
1st year	1st year	1st year	1st year
3,055 (1)	4,943 (2)	190 (3)	433 (4)
Beyond 1st		Beyond 1st	
9,345 (1)	318 (2)	7,738 (3)	1,374 (4)
Total		Total	
258 (1)	44 (2)	97 (3)	

9. Part-time graduate students enrolled for advanced degrees Fall 1969 by level of study; do not include "special" students.

U.S. CITIZENS	FOREIGN	TOTAL	
		Teaching	Recent doctorals
1st year	1st year	1st year	1st year
3,055 (1)	4,943 (2)	190 (3)	433 (4)
Beyond 1st		Beyond 1st	
9,345 (1)	318 (2)	7,738 (3)	1,374 (4)
Total		Total	
258 (1)	44 (2)	97 (3)	

## APPENDIX E

### Consolidated Departmental Summaries

(Selected trend data for doctorate departments requested as part of announcement of NSF graduate traineeships for 1970—E 69-G-6)

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**NATIONAL SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1970  
DEPARTMENTAL SUMMARY**

Table E-1.--All sciences, 2,894 departments

1. \_\_\_\_\_ 2. \_\_\_\_\_  
(Name of Institution) (Name of Department or Unit)

This sheet should be completed in accordance with the relevant instructions for the corresponding items on the Departmental Data Sheet (DDS), NSF Form 345. Data for 1969 should be identical with that entered on the 1970 DDS. If any information supplied on this form differs from that previously submitted in this program, please explain.

2. Degree Productivity Trends:

		12-Month Period Ending						Corresponding Item on 1970 DDS
		June 1964	June 1965	June 1966	June 1967	June 1968	June 1969	
		(a)	(b)	(c)	(d)	(e)	(f)	
BS (also BA, etc.)	(1)	64,075	70,133	73,768	80,640	89,158	99,009	5-1
MS (also MA, not MAT)	(2)	21,562	24,127	26,952	28,975	31,069	31,751	5-2
MAT, etc.	(3)	863	1,053	1,054	1,365	1,361	1,458	5-3
PhD (also DSc, etc.)	(4)	8,391	9,671	10,542	12,121	13,364	14,998	5-4

4. Enrollment Trends:

		Fall 1967 (a)	Fall 1968 (b)	Fall 1969 (c)	Corresponding Item on DDS		
					Item	Column	Row
Total Full-Time	(1)	133,200	138,283	141,199	6	p	9
Full-Time Students U.S. Citizens	Teaching Assistants (2)	25,845	26,781	26,485	6	p	5
	Self, Loans and Family (3)	18,950	20,274	21,175	6	m	7
Total Part-Time	(4)	40,259	41,605	43,646	9-sum		

5. Faculty and Postdoctoral Trends:

		Fall 1967 (a)	Fall 1968 (b)	Fall 1969 (c)	Corresponding Item on DDS		
Total Faculty	(1)	48,354	51,923	54,549	10A		
Graduate Faculty	(2)	39,078	42,674	45,687	10C		
Postdoctorals	(3)	7,140	7,720	8,517	11A		

6. Person completing this form: \_\_\_\_\_ Date: \_\_\_\_\_  
(Signature)

\_\_\_\_\_ Title: \_\_\_\_\_  
(Name typed)



**NATIONAL SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1970  
DEPARTMENTAL SUMMARY**

Table E-3.--Physical sciences, 509 departments

1. \_\_\_\_\_ 2. \_\_\_\_\_  
*(Name of Institution)* *(Name of Department or Unit)*

This sheet should be completed in accordance with the relevant instructions for the corresponding items on the Departmental Data Sheet (DDS), NSF Form 345. Data for 1969 should be identical with that entered on the 1970 DDS. If any information supplied on this form differs from that previously submitted in this program, please explain.

2. Degree Productivity Trends:

		12-Month Period Ending						Corresponding Item on 1970 DDS
		June 1964 (a)	June 1965 (b)	June 1966 (c)	June 1967 (d)	June 1968 (e)	June 1969 (f)	
BS (also BA, etc.)	(1)	7,496	7,851	7,545	7,805	8,644	9,256	5-1
MS (also MA, not MAT)	(2)	3,329	3,537	3,660	3,796	3,869	3,948	5-2
MAT, etc.	(3)	199	226	212	321	316	326	5-3
PhD (also DSc, etc.)	(4)	2,367	2,676	2,947	3,327	3,495	3,704	5-4

4. Enrollment Trends:

			Fall 1967	Fall 1968	Fall 1969	Corresponding Item on DDS		
			(a)	(b)	(c)	Item	Column	Row
<b>Total Full-Time</b>	(1)		30,295	30,916	30,175	6	p	9
Full-Time Students	(2)	Teaching Assistants	8,102	8,316	7,967	6	p	5
U.S. Citizens		Self, Loans and Family	1,870	2,091	2,018	6	m	7
<b>Total Part-Time</b>		(4)		4,261	4,210	4,521	9	sum

5. Faculty and Postdoctoral Trends:

			Fall 1967	Fall 1968	Fall 1969	Corresponding Item on DDS
			(a)	(b)	(c)	
Total Faculty	(1)		9,558	10,135	10,583	10A
Graduate Faculty	(2)		8,303	8,874	9,414	10C
Postdoctorals	(3)		3,407	3,615	3,786	11A

6. Person completing this form: \_\_\_\_\_ Date: \_\_\_\_\_  
*(Signature)*  
 \_\_\_\_\_ Title: \_\_\_\_\_  
*(Name typed)*



**NATIONAL SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1970  
DEPARTMENTAL SUMMARY**

Table E-4.--Mathematical sciences, 203 departments

1. \_\_\_\_\_ 2. \_\_\_\_\_  
(Name of Institution) (Name of Department or Unit)

This sheet should be completed in accordance with the relevant instructions for the corresponding items on the Departmental Data Sheet (DDS), NSF Form 345. Data for 1969 should be identical with that entered on the 1970 DDS. If any information supplied on this form differs from that previously submitted in this program, please explain.

2. Degree Productivity Trends:

		12--Month Period Ending--						Corresponding Item on 1970 DDS
		June 1964	June 1965	June 1966	June 1967	June 1968	June 1969	
		(a)	(b)	(c)	(d)	(e)	(f)	
BS (also BA, etc.)	(1)	5,409	5,671	6,058	6,512	7,108	8,160	5-1
MS (also MA, not MAT)	(2)	2,084	2,324	2,649	2,787	2,878	2,991	5-2
MAT, etc.	(3)	374	439	489	620	568	602	5-3
PhD (also DSc, etc.)	(4)	591	653	723	808	949	1,071	5-4

4. Enrollment Trends:

		Fall 1967	Fall 1968	Fall 1969	Corresponding Item on DDS			
		(a)	(b)	(c)	Item	Column	Row	
Total Full-Time	(1)	11,346	11,700	11,727	6	p	9	
Full-Time Students U.S. Citizens	Teaching Assistants	(2)	3,900	4,048	3,869	6	p	5
	Self, Loans and Family	(3)	1,828	1,689	1,702	6	m	7
Total Part-Time	(4)	3,588	3,646	3,690	9--sum			

5. Faculty and Postdoctoral Trends:

		Fall 1967	Fall 1968	Fall 1969	Corresponding Item on DDS		
		(a)	(b)	(c)			
Total Faculty	(1)	5,169	5,537	5,667	10A		
Graduate Faculty	(2)	3,804	4,268	4,471	10C		
Postdoctorals	(3)	225	236	247	11A		

6. Person completing this form: \_\_\_\_\_ Date: \_\_\_\_\_  
(Signature)  
\_\_\_\_\_  
(Name typed) Title: \_\_\_\_\_

**NATIONAL SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1970  
DEPARTMENTAL SUMMARY**

Table E-5.--Life sciences, 874 departments

1. \_\_\_\_\_ 2. \_\_\_\_\_  
(Name of Institution) (Name of Department or Unit)

This sheet should be completed in accordance with the relevant instructions for the corresponding items on the Departmental Data Sheet (DDS), NSF Form 345. Data for 1969 should be identical with that entered on the 1970 DDS. If any information supplied on this form differs from that previously submitted in this program, please explain.

2. Degree Productivity Trends:

		12-Month Period Ending						Corresponding Item on 1970 DDS
		June 1964 (a)	June 1965 (b)	June 1966 (c)	June 1967 (d)	June 1968 (e)	June 1969 (f)	
BS (also BA, etc.)	(1)	10,182	11,748	12,285	13,572	15,299	16,949	5-1
MS (also MA, not MAT)	(2)	2,836	3,176	3,583	4,068	4,312	4,387	5-2
MAT, etc.	(3)	245	308	293	295	360	318	5-3
PhD (also DSc, etc.)	(4)	1,735	1,934	2,107	2,442	2,802	3,154	5-4

4. Enrollment Trends:

		Fall 1967 (a)	Fall 1968 (b)	Fall 1969 (c)	Corresponding Item on DDS		
					Item	Column	Row
Total Full-Time	(1)	25,456	26,597	27,588	6	p	9
Full-Time Students U.S. Citizens	Teaching Assistants (2)	5,064	5,214	5,339	6	p	5
	Self, Loans and Family (3)	3,021	3,296	3,519	6	m	7
Total Part-Time	(4)	2,708	3,069	3,222	9-sum		

5. Faculty and Postdoctoral Trends:

		Fall 1967 (a)	Fall 1968 (b)	Fall 1969 (c)	Corresponding Item on DDS
Total Faculty	(1)	12,224	13,251	14,075	10A
Graduate Faculty	(2)	9,723	10,681	11,497	10C
Postdoctorals	(3)	2,491	2,743	3,214	11A

6. Person completing this form: \_\_\_\_\_ Date: \_\_\_\_\_  
(Signature)

\_\_\_\_\_ Title: \_\_\_\_\_  
(Name typed)

**NATIONAL SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1970  
DEPARTMENTAL SUMMARY**

Table E-6.--Psychology, 141 departments

1. \_\_\_\_\_ 2. \_\_\_\_\_  
(Name of Institution) (Name of Department or Unit)

This sheet should be completed in accordance with the relevant instructions for the corresponding items on the Departmental Data Sheet (DDS), NSF Form 345. Data for 1969 should be identical with that entered on the 1970 DDS. If any information supplied on this form differs from that previously submitted in this program, please explain.

2. Degree Productivity Trends:

		12-Month Period Ending						Corresponding Item on 1970 DDS
		June 1964 (a)	June 1965 (b)	June 1966 (c)	June 1967 (d)	June 1968 (e)	June 1969 (f)	
BS (also BA, etc.)	(1)	5,747	6,493	7,155	8,745	10,227	11,748	5-1
MS (also MA, not MAT)	(2)	1,152	1,299	1,465	1,691	1,854	2,002	5-2
MAT, etc.	(3)	4	30	10	9	8	21	5-3
PhD (also DSc, etc.)	(4)	759	804	921	1,058	1,186	1,398	5-4

4. Enrollment Trends:

		Fall 1967	Fall 1968	Fall 1969	Corresponding Item on DDS		
		(a)	(b)	(c)	Item	Column	Row
Total Full-Time	(1)	10,491	11,317	11,918	6	p	9
Full-Time Students U.S. Citizens	Teaching Assistants (2)	1,891	2,033	2,133	6	p	5
	Self, Loans and Family (3)	1,759	1,986	2,081	6	m	7
Total Part-Time	(4)	1,367	1,551	1,845	9-sum		

5. Faculty and Postdoctoral Trends:

		Fall 1967	Fall 1968	Fall 1969	Corresponding Item on DDS
		(a)	(b)	(c)	
Total Faculty	(1)	2,815	3,081	3,317	10A
Graduate Faculty	(2)	2,385	2,707	2,902	10C
Postdoctorals	(3)	170	214	231	11A

6. Person completing this form: \_\_\_\_\_ Date: \_\_\_\_\_  
(Signature)

\_\_\_\_\_ Title: \_\_\_\_\_  
(Name typed)

**NATIONAL SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1970  
DEPARTMENTAL SUMMARY**

Table E-7.--Social sciences, 502 departments

1. \_\_\_\_\_ 2. \_\_\_\_\_  
(Name of Institution) (Name of Department or Unit)

This sheet should be completed in accordance with the relevant instructions for the corresponding items on the Departmental Data Sheet (DDS), NSF Form 345. Data for 1969 should be identical with that entered on the 1970 DDS. If any information supplied on this form differs from that previously submitted in this program, please explain.

2. Degree Productivity Trends:

		-----12-Month Period Ending-----						Corresponding Item on 1970 DDS
		June 1964	June 1965	June 1966	June 1967	June 1968	June 1969	
		(a)	(b)	(c)	(d)	(e)	(f)	
BS (also BA, etc.)	(1)	12,739	14,687	17,719	20,795	23,960	26,909	5-1
MS (also MA, not MAT)	(2)	3,146	3,480	4,287	5,096	5,693	6,229	5-2
MAT, etc.	(3)	20	21	24	71	77	136	5-3
PhD (also DSc, etc.)	(4)	1,202	1,272	1,462	1,755	1,929	2,157	5-4

4. Enrollment Trends:

		Fall 1967 (a)	Fall 1968 (b)	Fall 1969 (c)	Corresponding Item on DDS		
					Item	Column	Row
Total Full-Time	(1)	25,666	27,387	28,971	6	p	9
Full-Time Students U.S. Citizens	Teaching Assistants (2)	4,103	4,427	4,721	6	p	5
	Self, Loans and Family (3)	7,157	7,954	8,805	6	m	7
Total Part-Time	(4)	7,247	7,930	8,621	9-sum		

5. Faculty and Postdoctoral Trends:

		Fall 1967 (a)	Fall 1968 (b)	Fall 1969 (c)	Corresponding Item on DDS		
Total Faculty	(1)	8,048	8,764	9,345	10A		
Graduate Faculty	(2)	6,468	7,110	7,738	10C		
Postdoctorals	(3)	230	222	258	11A		

6. Person completing this form: \_\_\_\_\_ Date: \_\_\_\_\_  
(Signature)  
\_\_\_\_\_  
(Name typed) Title: \_\_\_\_\_