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## ABSTRACT

This study reports the characteristics of the graduated science student population as well as of science faculty and post doctoral appointees, and examines trends of certain key factors over a three-year period. Information was analyzed from 2.990 doctoral science departments reporting for 1971 and was machine matched with similar data reported for 1969 and 1970 by the same departments. Results indicated: (1) graduate scifnce enrollients in doctoral depaztments applying for National Science Foundation traineeships declined $3 \%$ from 1970 to 1971 ; (2) joth full. and part-time enrollment dropped during 1970-1971; (3) the most substantial change in the graduate enrollment picture occurred in the number of students enrolled for the first time; (4) graduate enrollment of foreign students was down $2 \%$ in 1971 after increasing $5 \%$ in 1970; (5) the enrollment dropped off of nearly $2 \%$ in full-time graduate science students is attributable to a $10 \%$ decline in the number supported by fellowships or traineeships; (6) research assistantships and teaching assistantships declined $4 \%$ and $1 \%$ respectively; (7) the number of federally supported full-time students declined from 1970-71; and (8) science faculty and postdoctorals associated with doctorate departments were increasing. (Author/MJM)

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## Graduate Student Support and Manpo in Graduate Science Educ

# Student Support and Manpower Resources 

 in Graduate Science Education, Fall 1971
# NATIONAI. SCIENCE FOUNDATION <br> WASHINGTON, D.C. 20550 

August 13, 1973

## PUBLICATION ANNOUNCEMENT

Trends in graduate science and engineering enrollments for the years 1969-71 are described in a new National Science Foundation (NSF) report.

The report, Graduate Student Support and Manpower Resources in Graduate Science Education (NSF 73-304) provides data on characteristics of graduate science enrollment in terms of types and sources of major financial support for graduate students, level of study, citizenship, and field of science. Data on science faculty and postdoctorals are also analyzed.

Highlights of the report include:
Enrollment of first-time graduate students in science and engineering declined by $8 \%$ in 1971, following a $4 \%$ drop in 1970;

Overall graduate science and engineering enrollments in doctorate departments declined $3 \%$ from 1970 to 1971; and

Running counter to the trend, enrollments during that period increased in the social sciences and psychology.

Data for the reports were obtained from 224 principal doctorate granting institutions in the U.S. and from 2,579 doctorate departinents reporting consistently for the years 1969, 1970, and 1971.

This report presents the detailed findings that were the basis for the Science Resources Studies Highlights of May 25, 1972 entitled "FirstYear Ful.1-Time Graduate Science Enrollment Continues to Decline" (NSF 72308). Both the Highlights and the final report were prepared by the Foundations' Division of Science Resources Studies.

Copies of Graduate Student Support and Manpower Resources in Graduate Science Education, Fall 1971 (NSF 73-304) may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. for $\$ 1.25$ per copy domestic postpaid; or $\$ 1.00$ at the GPO bookstore.

## FOREWORD

During the 1960's the Federal Government acted boldly to strengthen the Nation's science and technology through expansion of its scientific manpower resources. As part of this effort, the National Science Fouridation established the Graduate Traineeship Program in 1964 which was designed to increase the flow of high-ability graduate science students into the mainstream of the Nation's scientific community. With the current supply of research-oriented Ph.D.'s and other graduates with advanced science and engineering degrees more nearly in balance with the Nation's requirements, this program has been phased out in favor of new methods for improving the scientific educational system itself.

The National Science Foundation is grateful for the cooperation of the graduate deans and department chairmen who supplied the information on which this report is based. The results presented here may in turn be useful to them in serving as planning tools for the management of the scientific resources of institutions of higher education.

## general notes

- Fall 1971 data contained in this report were provided by 2,990 doctorate science departments as part of the National Science Foundation's Graduate Traineeship Program.
- Trend statistics were available for only the 2,579 science departments that provided data each year during the period 1969-71.
- The term "science" as used in this report, is understood to include engincering.
- The phrase "graduate enrollment" refers to the total of full- and part-time graduate science students.
- Details may not add to totals because of rounding.
- The phrases, "1969-70" and "1970-71" refer to the period fall 1969 to fall 1970 and fall 1970 to fall 1971, respectively; the terms are not used in reference to academic years.


## acknowledgments

This report was prepared by Per Nonprofit Institutions Studies Group by William L. Stewart, Head, R\&D Ecd of Science Resources Studies, Thomas Helenc Ebenfield, Special Analytical $\$$ ration of the section entitled "Charac Fall 1971."

Statistics upon which this and plied by the Division of Higher Educ accorded Dr. Douglas S. Chapin, Head for his valuable assistance.
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tilable for only the 2,579 science departments that during the period 1969-71.
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" and "1970-71" refer to the period fall 1969 to to fall 1971, respectively; the terms are not used in ears.

## acknowledgments

This report was prepared by Penny D. Foster of the Universities and Nonprofit Institutions Studies Group. Guidance and review were provided by William L. Stewart, Head, R\&D Economic Studies Section of the Division of Science Resources Studies, Thomas J. Mills, Director. Special thanks go to Helene Ebenfield, Special Analytical Section, who contributed to the preparation of the section entitled "Characteristics of Graduate Student Support, Fall 1971."

Statistics upon which this and previous reports were based were supplied by the Division of Higher Education in Science. Special recognition is accorded Dr. Douglas S. Chapin, Head, Fellowships and Traineeships Section, for hi , valizible assistance.

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## HIGHLIGHTS

- Graduate science enrollment in doctorate departments applying for National Science Foundation traineeships declined 3 percent from 1970 to 1971. This decline prevailed in all areas of science except psychology and the social sciences (page 1).
- Both full- and part-time enrollment dropped from 1970 to 1971. The 8percent decline in part-time enrollment represented the second successive year of reductions (page 1).
- The most substantial change in the graduate enrollment picture occurred in the number of students enrolled for the first time, traditionally a measure used for projecting the future scientific manpower pool. The number of students in this group declined by 8 percent in 1971, following a 4 percent drop in 1970 (page 1).
- For the first time since this statistical series was inaugurated, graduate enrollment of foreign students was down 2 percent in 1971 after increasing 5 percent the previous year. Foreign graduate enrollment in the earlier study had gained 10 percent f́rom 1967 to 1968 and another 11 percent by 1969 (page 2.)
- The enrollment aropoff of nearl students is attributable primarily supported by fellowships or tra utilized by 17 percent fewer fi (page 4).
- Research assistantships and teach 1 percent, respectively, while stu anisms registered a 9 -percent incr
- The number of federally support to 1971 at twice the rate of decl ing support from all outside sourc
- First-year fu'l-time enrollment in 8 percent from 1970 to 1971, i developing graduate schools and $t$ (pagc 9).
- At a time when graduate enrollm and postdoctorals associated with (page 18).
departments applying for eclined 3 percent from 1970 ff science except psychology
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enrollment picture cecuried irst time, traditionally a meamanpower pool. The number cent in 1971, following a 4 -
vas inaugurated, graduate encent in 1971 after increasing te enrollment in the earlier 968 and another 11 percent
- The enrollment dropoff of nearly 2 percent in full-time graduate science students is attributable primarily to a 10 -percent decline in the number supported by fellowships or traineeships. This method of support was utilized by 17 percent fewer first-year students in 1971 than in 1970 (page 4).
- Research assistantships and teaching assistantships declined 4 percent and 1 percent, respectively, while students relying on "other" support mechanisms registered a 9 -percent increase (page 4).
- The number of federally supported full-time students declined from 1970 to 1971 at twice the rate of decline, or 10 percent, of the students receiving support from all outside sources (page 6).
- First-year full-time enrollment in the "first 20 " institutions declined by 8 percent from 1970 to 1971, nearly three times the rate of decline in developing graduate schools and twice the rate in intermediate institutions (page 9).
- At a time when graduate enrollments were declining, both science faculty and postdoctorals associated with doctorate departments were increasing (page 18).


## INTRODUCTION

Since 1965 graduate science departments in doctorate-granting institutions, in applying to the NSF Graduate Traineeship Program, have supplied the National Science Foundation with information on the types and sources of support utilized by graduate students. Four reports based on these statistics have been published to date, and this report presents information on the patterns of graduate student support as of fall 1971. A new survey for fall 1972 that is currently being processed will include a larger number of science departments - over 4,500 - and will provide data for the first time from all medical schools offering the doctorate.

This is one of the series of Foundation studies analyzing the utilization of the Nation's resources for science in accordance with its legislative mandate. This study reports the characteristics of the graduate science student population, as well as of science faculty and postdoctoral appointees, and examines trends in certain kev factors over a 3-year period.

Information was analyzed from 2,990 doctorate science departments reporting for 1971 and was machine matched with similar data reported for 1969 and 1970 by the same departments. Analyses of trends were therefore based on data from the 2,579 doctorate science departments which had reported for the entire period 1969-71.

Data on graduate enrollments presented here are considered highly representative of total U.S. graduate enrollment in the sciences and engineering as reported by the Office of Education. The institutions covered in this study awarded over 95 percent of the science doctorates conferred by all U.S. institutions in 1971, as described in appendix table A-1. Comparable science enrollment data were not yet available from the Office of Education at the time of this report. In 1970 however, institutions applying for NSF traineeships enrolled 80 percent of the science students in graduate degree-credit programs, as shown in appendix table A-2.

The report examines four principal characteristics of graduate students enrolled in doctorate science departments: Enrollment status (full- or parttime); distribution among fields of science; level of study (first year or beyond); and citizenship. Full-time students are further examined by types and sources of their major support.

## Section 1. SUPPORT OF GRADUATE STUDENTS IN SCIEN

## General Enrollment Patterns

Graduate scierice enrollment declined for the second consecutive year, among doctorate departments reporting consistently during 1969-71, falling to 165,300 in 1971, 3 percent below the 1970 figure. Part-time students accounted for three-fifths of the total reduction in graduate enrollment between 1970 and 1971. First-year enrollments were down a total of 12 percent during the period 1969-71-4 percent in 1969 and 8 percent in 1970. Beyond first-year enrollment, on the other hand, remained fairly stable throughout the 3 -year period, declining less than 1 percent in 1971.

The most frequent explanation given by university officials attributes this downward trend in graduate science enrollments to the financial squeeze that was reported to be particular!y acute in 1971 and the years immediately preceding. Several of the leading universities, for reasons of economy, began consciously reducing, or at least restricting, enrollment. Also cited as reasons for the downturn were a general feeling of disenchantment among students towards the sciences and technology and the rising unemployment rate among scientists and engineers.

Only psychology and the social sciences avoided reduced graduate enrollment levels in 1971. The remaining fields experienced declines ranging from 1 percent in the life sciences to nearly 6 percent in the mathematical sciences. In 1970 the only decreases noted occurred in engineering and the physical sciences.

Change in graduate enrollment by are


PARTTIM

 Gasedon 2,579 dotorate deportments for 1 Gess than 0.05 percent change.

SOURCES National, Science Foundation lapp

## ORT OF GRADUATE STUDENTS IN SCIENCE, 1969-7!

Change in graduate enroliment by area of science, $1969-71^{\circ}$


Based on 2579 , doctorate departments for 1969,1970 , and 1971.
bess thano. 05 percent change.
SOURCE Nationat Science Foundation (appendix table $\subset 15$ )

\% $\stackrel{3}{3}$ $+$ $\stackrel{5}{4}$ 4

It declined for the second consecutive year, porting consistently during 1969-71, falling below the 1970 figure. Part-time students total reduction in graduate enrollment be$r$ enrollments were down a total of 12 per--4 percent in 1969 and 8 percent in 1970. on the other hand, remained fairly stable declining less than 1 percent in 1971.
tion given by university officials attributes science enrollments to the financial squeeze ly acute in 1971 and the years immediately universities, for reasons of economy, began estricting, enrollment. Also cited as reasons feeling of disenchantment among students gy and the rising unemployment rate among
scial sciences avoided reduced graduate enhaining fields experienced declines ranging es to nearly 6 percent in the mathematical ases noted occurred in engineering and the
erns

Although an earlier study ${ }^{1}$ showed steady increases in the number of foreign graduate students enrolled in doctorate departments at U.S. institutions, 10 percent from 1967 to 1968 and 11 percent from 1968 to 1969 , the $4: 1$ ratio of U.S. citizen graduate students to foreign students has remained stable for the period 1969-71.

Private institutions accounted for the major portion of the cutback in graduate enrollment in science programs during 1971. Again, the decline in part-time students shows up as the primary factor influencing total enroi!ment figures in both public and private institutions.

## Support of Full-Time Graduate

## Students

miter maintaining a generally stable position thruggh 1970, full-time enrollment began to show the effect of reduced support for fellowship and

[^0]Percent change in graduate enrollment, by control of institution, 1970 to $1971^{\text {a }}$

| Enrollment status | Public <br> institutions | Private <br> institutions |
| :---: | :---: | :---: |
| Graduate enroltment <br> in the sciences and engineering . . . . . | -1.2 | -6.1 |
|  | -1.2 | -2.4 |
| Full-time enrollment . . . . . . . . | -.2 | .3 |
| U. S. citizens . . . . . . . . . . | -1.9 | -2.5 |
| Foreign students . . . . . . | -2.0 |  |
| First-year students . . . . . . . . | -4.3 | -3.0 |
| Beyond-first-year students . . . | 1.9 | -2.1 |
| Part-time enrollment. . . . . . . . . . | -6.0 | -13.6 |

[^1]traineeship programs and the leveling off of the rate of growth of academic research. As funds for such programs became tighter, more students were forced to seek support from other sources. Perhaps because of prevailing economic conditions and the effect of campus unrest on traditional sources of support, the only increase in financial support turned out to be from family assistance, loans, and other forms of "selfsupport."

The proportion of students holding fellowships and traineeships has declined; by 1971 these students represented 25 percent of the total, in contrast with the 29 -percent share they represented in 1969. Both teaching and research assistantships have maintained about their same share of the total number of full-time students


Percent

Types of
Total
Fellowshi Research Teaching Other typ self-supp
${ }^{\text {a Based on }}$ each of the $b_{\text {Less than }}$
in this pe mechanis from 25

The ships or counted graduate of resear rolled in trend, an own expe in enrollm The ships avai iod 1969. growth in experienc ning with
${ }^{2}$ National S ities at Uni4 ington, D. Printing Offi
wed steady aduate stunts at U.S. b 1968 and 1 ratio of gn students 59-71.
the major rollment in the decline he primary res in both

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Support and ion, Fall 1970 f Documents,
traineeship programs and the leveling off of the rate of growth of academic research. As funds for such programs becamc tighter, more students were forced to seek support from other sources. Perhaps because of prevailing economic conditions and the effect of campus unrest on traditional sources of support, the only increase in financial support turned out to be from family assistance, loans, and other forms of "selfsupport."

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Percent change in full-time graduate enrollment, by type of support, 1969-71 ${ }^{\text {a }}$

| Types of major support | Parcent change |  |
| :---: | :---: | :---: |
|  | $1969-70$ | $1970-71$ |
| Total . . . . . . . . . . . | (b) | -1.5 |
|  | (bellowships-traineeships . . | -6.5 |
| Research assistantships . . | (b) | -9.5 |
| Teaching assistantships . . | 4.5 | -4.4 |
| Other types, primarily <br> self-support . . . . . . . | 3.3 | 8.9 |

${ }^{\text {a }}$ Based on 2,579 doctorate science departments reporting for each of the years 1969, 1970, and 1971.
$b_{\text {Less than }} 0.05$ percent change.
in this period, while those depending on "other" mechanisms represented 29 percent in 1971, up from 25 percent in 1969.

## LEVEL OF STUDY

The sharp decrease in availability of fellowships or traineeships to first-year students accounted for the bulk of the decline in full-time graduate enrollment in 1971. Both the number of research and teaching assistants newly enrolled in graduate school exhibited a downward trend, and only those students attending at their own expense showed consistent but minor gains in enrollment.

The 3-percent decline in research assistantships available to first-year students for the period 1969-71 reflects the slowdown in the rate of growth in R\&D expenditures from all sources experienced by universities and colleges beginning with academic year 1969. ${ }^{2}$ The 5 -percent

[^2]
## Changes in the number of full-time graduate students, by type of major support, 1969-71 ${ }^{\text {a }}$



BGased on 2,579 doctorate depertments reporting for 1969,3970 , and 1971.
${ }^{6}$ Lest than 0.5 percent ohange
SOURCE National Science foundation (appendix rables C-17A and C-18A)
per year rate of increase in $R \& \mathbb{I}$ siderably below the 13 -percent ant four years, 1954-68. The main facto was that portion supplied by the $F$ 3 percen: per year during $1968-$ during 1964-68.

A somewhat different picturt rolled beyond their first year o trainceships were reduced, the rat 1970 to 1971 than that experien

CIT
Among graduate science stude has remained constant at about 4 : enrollment reported for 1971 affec dropping at a rate of 2.4 percent c This is the first decline in numbers of since the Foundation began compilin with the latest data collected by th This report showed a reduction by graduate student population bentweer The proportion of graduate, to the percent below the 1970 figure, the

The rate of reduction in foreign was most noticeable in the number lowed in order by fellows-trainees U.S. citizen enrollment for that per of iellowships and trainceships.

The continuing drop in enroll 1971 runs counter to population t the prime group from which gradu Census statistics, the total populatio from 1967 to 197 । although a slowd

| Year <br> (as of July 1) | Age <br> In the |  |
| :---: | :---: | ---: |
|  |  | 16 |
| $1967 \ldots \ldots$ |  | 16 |
| $1968 \ldots \ldots$ |  | 17 |
| $1969 \ldots \ldots$ |  | 18 |
| $1970 \ldots \ldots$ | $\ldots$. | 19 |

[^3]
## -time graduate students, by type


per year rate of increase in R\&D expenditures during $1968-70 \mathrm{v}$; con sicerably belov, the 13 -percent annual rate of growth during the previous frur years, 1964-68. The main factor responsible for this lower rate of growth was that portion supplied by the Federal Governrnent, which increased only 3 percent per year during 1968-70, compare」 with 14 percent per year during 1964-68.

A somewhat different picture emerges for those full-time students enrolled beyond their first year of graduate work. While fellowships and traineeships were reduced, the rate of decline was considerably less from 1970 to 1971 than that experienced by their first-year counterparts.

## CITIZENSHIP

Among graduate science students the ratio of U.S. citizens to foreigners has remained constant at about $4: 1$ for the past several years. The decline in enrollment reported for $19 ? 1$ affected both groups, with foreign enrollment dropping at a rate of 2.4 percent cumpared to 1.3 percent for L'.S. citizens. This is the first decline in nurn', ers of full-time foreign graduate students noted since the Foundation began compiling these data, and this decline is consistent with the latest data collected by the Institute of International Education. ${ }^{3}$ This report showed a reduction by some 4,500 students in the totai foreign graduate student population between 1970 and 1971, from 65,859 to 59,333 . The proportion of graduates to the total number of foreign students was 4 percent below the 1970 figure, the lowest in 8 years.

The rate of reduction in foreign graduate enrollment from 1970 to 1971 was most noticeable in the number of holders of research assistantships, followed in order by fellows-trainees and icaching assistants. The reduction in U.S. citizen enrollment for that period was ielf most strongly by the holders of fellowships and traineeships.

The continuing drop in enrollment of U.S. citizens in both 1970 and 1971 runs counter to population trends for the 22 -to-27-years age group, the prime group from which graduate students are derived. According to Census statistics, the total population in this age group has increased yearly from 1967 to 1971 although a slowdown was noted in 1970.

| $\begin{gathered} \text { Year } \\ \text { (as of July } 7 \text { ) } \end{gathered}$ | $\begin{aligned} & \text { Age 22-27 } \\ & \text { (In thousands) } \end{aligned}$ | Annual percent change |
| :---: | :---: | :---: |
| 1967 | 16,106 | 3.4 |
| 1968 | 16,592 | 3.0 |
| 1969 | 17,918 | 8.0 |
| 1970 | 18,631 | 4.0 |
| 1971 | 19,308 | 3.6 |

[^4]
## TYPES OF MAJOR SUPPORT

Only the life sciences and psychology enroiled more students in 1971 than in 1970. In the life sciences, the increase was barely measurable, but it resulted primarily from an influx of students dependent on "other" mechanisms. In psychology, ! hese students had a strong influence also, as they did in every other area of science. The physical sciences suffered the greatest relative decrease in st dents holding fellowships or traineeships, while the mathematical sciences lost the most research assistants.

The sharp dow sturn in first-year full-time graduate enrollment from 1970 to 1971 took place in virtually every area of science. As shown in the accompanying ch> t , fellows-trainees bore the brunt of this decline, especially in the physical and mathematical sciences. Although the number of research and teaching assistants also tapered off, the effect was not as great as that felt by fellows-trainees. The number of first-year students depending on other mechanisms of support actually increased in 1971, the only form of support to do so, with every area of science except engineering and the social sciences showing substantial gains.

| Percent change in rull-tim major support and ar |  |  |
| :---: | :---: | :---: |
| Types of majur support | Total | Engineering |
| Total . | - 1.5 | -2.0 |
| Fellowships and traineeships | -9.5 | -10.6 |
| Research assistantships | -4.4 | - 4.2 |
| Teaching assistantships | -. 9 | - . 8 |
| "Other" types, primarily self-support | 8.8 | 6.0 |

${ }^{\text {a }}$ Based on 2,579 doctorate departments reporting for 1
USF traineeships were not awarded in clinical medical ${ }^{\mathbf{c}}$ History and philosophy departments were not eligible SOURCE: National Science Foundation lappendix table


## DF MAJOR SUPPORT

psychology enrolled more students in 1971 es, the increase was barely measurable, but it Ux of students dependent on "other" mech.dents had a strong influence also, as they did The physical sciences suffered the greatest lding fellowships or traineeships, while the blost research assistants.
rst-year full-time graduate enrollment from tually every area of science. As shown in the linees bore the brunt of this decline, espeiematical sciences. Although the number of also tapered off, the effect was not as great The number of first-year students depending actually increased in 1971, the only form of a of science except engineering and the social is.

Percent change in full-time graduate enrollment, by type of major support and area of science, 1970 to $1971^{a}$

| Types of major support | Total | Engineering | Physical sciences | Math. ematical sciences | $\underbrace{\text { Life }}_{\text {sciences }}$ | Psy. chology | Social sciences ${ }^{\text {C }}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total . | - 1.5 | -2.0 | -4.3 | -4.3 | 0.1 | 4.8 | -0.9 |
| Fellowships and traineeships | -9.5 | -10.6 | -15.6 | -13.7 | -8.5 | -6.0 | -6.0 |
| Research assistantships | -4.4 | -4.2 | - 6.3 | -16.8 | - 2.0 | 1.8 | -1.5 |
| Teaching assistantships | - . 9 | - . 8 | - 1.2 | -3.5 | . 2 | 3.9 | - . 9 |
| "'Other" types, primarily self-support | 8.8 | 6.0 | 11.9 | 7.7 | 15.3 | 23.2 | 3.4 |

[^5]st-year full-time graduate students, by type of major support and area of science, 1969-71 ${ }^{\mathrm{a}}$

tts reporting for 1969, 1970, and 1971. on iappendix tables $\mathrm{C}-18 \mathrm{~A}$ through $\mathrm{C}-18 \mathrm{G}$ ).

Full-time students beyond their first year of study increased only slightly from 1970 to 1971. Fellows-trainees in this category were reduced in every area of science. Research assistants followed the same pattern except for a slight increase in advanced students enrolled in psychology and the social sciences.

The lack of availability of teaching assistantships for students beyond their first year of study became apparent for the first time in 1971. Substantial gains in teaching assistants had been reported in every area of science in prior years.

The advanced students relying on "other" mechanisms of support increased sharply in 1971, following the pattern set in 1970. Every area of science reported increased enrollment of these students.

In the physical and mathematical sciences, 5 percent fewer U. S. citizens were enrolled in 1971 than in 1970, while in engineering and the social sciences, 1 percent fewer were enrolled that year. The life sciences remained stable, while psychology gained 5 percent, as it did in foreign enrollment.

Engineering, the field that has consistently attracted the largest proportion of foreign students, lost 3 percent of such enrollees in 1971 after showing an increase of 5 percent in 1970. The same reversal in pattern occurred in the social sciences-d 3-percent decline in 1971 followed a 7 -percent increase the year before. Only in psychology was there any significant increase in foreign enrollment in 1971-5 percent.
lowsh area o than physic of 17
declin
resear physic of sut increas ever, e crease the pa

Change in the number of beyond-first-year full-time graduate students, by type of major support and area of scienc

their first year of fom 1970 to 1971. y were reduced in ssistants followed slight increase in pychology and the
eaching assistantirst year of study ime in 1971. Subants had been rece in prior years. lying on "other" dsharply in 197d, 70. Every area of ollment of these

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The number of $U$. S. citizens holding fellowships or traineeships edged downward in every area of science at a faster rate from 1970 to 1971 than was evident from 1969 to 1970, with the physical and mathematical sciences reaching lows of 17 percent and 15 percent, respectively.

Although only two areas of science showed declines in the number of $U$. S. citizeiss holding research assistantships from 1970 to 1971--the physical and mathematical sciences - these were of sufficient magnitude to outweigh the small increases in the remaining fields of science. However, enrollment of foreign research assistants decreased in all areas except psychology, following the pattern set by foreign fellows and trainees.
eyond-first-year full-time graduate students, by type of major support and area of science, 1969-71²


The teaching assistant holding U. S. citizenship fared only slightly better than his research assistant counterpart when areas of science were compared. Both forms of support registered reductions in the physical and mathematical sciences, but rates of decline were slightly less for teaching assistants in 1971. The number of foreign teaching assistants exhibited enrollment patterns similar to foreign fellows-trainees and research assistants - after increasing yearly, the trend was reversed from 1970 to 1971.

Both U. S. and foreign graduate students supported by "other" mechanisms increased in numbers between 1970 and 1971, in sharp contrast to the declining number receiving support through the mechanisms described above. In every area of science, the number of U.S. citizens increased to some degree; foreign students increased at even higher rates. Stiffer competition for financial aid has reversed the trend that was evident in prior years when foreign students had little or no difficulty in finding help from government, institutional, and industrial sources. By 1971 these sources were in dwindling supply, forcing the foreign student to rely more on his own resources in order to continue his graduate work.

## SOURCES OF MAJOR SUPPORT

In the preceding section, discussion centered on the major mechanisms of support utilized by full-time graduate students in the sciences and engineering. These mechanisms of support will now be related to the major sources of such support during the period 1969-71. The doctorate departments supplying data for three consecutive years reported the following changes in support patterns of full-time students.

Percent change in full-time graduate enrollment, by source of major support, 1969.71 ${ }^{\text {a }}$

| Sources of major support | Peacent change |  |
| :---: | :---: | :---: |
|  | 1969.70 | 1970.71 |
| Total | (b) | - 1.5 |
| Sources of outside support, total: | - 1.0 | - 5.3 |
| U. S. Government | - 5.6 | -9.6 |
| Institutional support ${ }^{\text {c }}$.. | 3.1 | - 1.3 |
| Other outside support ${ }^{\text {d }}$. | 1.7 | - 5.0 |
| Self-support . . . . . . . . . | 4.3 | 14.5 |

${ }^{\text {a }}$ Based on 2,579 doctorate partments reporting for each of the years 1969, 1970, and 1971.
${ }^{b}$ Less than 0.05 percent change.
CIncludes institutions, State, and local governments.
Includes private foundations, industry, and all other U. S. and foreign sources.

Sources of major support as percent of full-time enrollment, 1969 and 1971 ${ }^{\text {a }}$


All $f$
graduate period, w ing affect in the rat supported upswing i

The
ceiving $U$ percent $f$ While ins support the total self-suppo

Stud ships und duced by another affected g in researe reduced st and the trend ma planned it institutior effect. ${ }^{4}$ Tc port were impact or for only students i

Dimi students 1971 by "other" Despite it of such stu

[^6]

All forms of traditional support available to graduate students were curtailed in the 1970-71 period, with Government-supported students being affected to the greatest extent. Acceleration in the rate of decline in the number of federally supported students contrasted sharply with the upswing in self-supported students.

The proportion of graduate students receiving U. S. Government aid in 1971 dropped 5 percent from the proportion reported in 1969. While institutional and other forms of outside support maintained their same relative share of the total from 1969 to 1971, the proportion of self-supported students increased by 4 percent.

Students receiving fellowships and traineeships under U. S. Government auspices were reduced by 10 percent from 1969 to 1970 and by another 13 percent in 1971, the most seriously affected group of all fellows-trainees. The decline in research assistantships in 1971 was based on reduced support by both the Federas Gowernment and the institutions themselves. However, this trend may be reversed in the coming years as the planned increases in Federal R\&D obligations to institutions of higher education begins to take effect. ${ }^{4}$. Teaching assistants receiving Federal support were on the rise in both periods, but their impact on the total is slight, having accounted for only 1 percent of all federally supported students in 1971.

Diminishing outside support to graduate students was partially offset in botin 1970 and 1971 by an influx of students depending on "other" mechanisms - primarily self-support. Despite increased tuition and fees, the number of such students rose in both years.

[^7]In all areas of science, reduced enrollments of federally supported students were the norm. The relative impact on the mathematical sciences students was greater than on any of tire other federally supported students. Engineering and the physical and life sciences accounted for 71 percent of the students receiving Government support in 1971; together, these fields experienced a 10 -percent decrease in graduate students supported through Federal prograns between 1970 and 1971.

By 1971, enrollment of institutionally supported students was down in all but lwo areas - the life sciences and psychology. In previous years, these students were on the increase in every field of science except social. These same two fields were the only ones to increase their enrollment of students supported by all other outside sources from 1970 to 1971.

In contrast with the declining rates of enrollment of all students depending on outside support, self-supported students gained appreciably from 1970 to 1971 , especially in the mathematical sciences and psychology.

Percent change in ft by source of major suppor

|  |  | Engi. |
| ---: | :---: | :---: |
| Sources of major support | Total | Enering |
| Total . . . . . . . . | -1.5 | -2.0 |
| U. S. Government ..... | -9.6 | -9.6 |
| Institutional support ... | -1.3 | -2.5 |
| Other outside support ... | -5.0 | -7.0 |
| Self.support . . . . . . . | 14.5 | 17.2 |

anased on 2.579 doctorate departments reporting tor 1969

Change in the number of full-time graduate students, by type and source of major support, 1969-71 ${ }^{\text {a }}$


[^8]educed enrollments of federally supported stuative impact on the mathematical sciences stufy of the other federally supported students. and life sciences accounted for 71 percent of ment support in 1971; together, these fields rease in graduate students supported through 0 and 1971.
institutionally supported students was down fe sciences and psychology. In previous years, icrease in every field of science except social. the only ones to increase their enrollment of routside sources from 1970 to 1971.
ning rates of enrollment of all students dependported students gained appreciably from 1970 hematical sciences and psychology.

Percent change in full-time graduate enroliment by source of major support and area of science, 1970 to $1971^{\text {a }}$

| Sources of major support | Total | Engi• <br> neering | Physical <br> sciences | Math. <br> ematical <br> sciences | Life <br> sciences | Psy. <br> chology | Social <br> sciences |
| ---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total . . . . . . . . | -1.5 | -2.0 | -4.3 | -4.3 | 0.1 | 4.8 | -0.9 |
| U. S. Government . . . . | -9.6 | -9.6 | -11.8 | -19.6 | -8.8 | -4.4 | -5.7 |
| Institutional support . . . | -1.3 | -2.5 | .- .9 | -5.8 | .7 | 4.2 | -1.9 |
| Other outsicie support . . . | -5.0 | -7.0 | -4.2 | -6.1 | 3.4 | 14.0 | -12.8 |
| Self-support . . . . . . . | 14.5 | 17.2 | 16.9 | 22.6 | 17.6 | 24.5 | 6.7 |

[^9]Fime graduate students, by type and source of major support, $196971^{\text {a }}$


## TYPE OF INSTITUTION

An important factor determinirig the size and makeup of the future scientific manpower pool is the errollment of science students entering graduate school for the first time. For this purpose, institutions applying for NSF traineeships were separated into four major types: (1) The "first 20 ," meaning those institutions which were selected by the largest number of applicants for NSF fellowships over the period 1968 through 1971; (2) the "developing" institutions, referring to those 65 institutions that first granted science Ph.D.'s subsequent to the 1960-61 academic year; (3) the 12 medical schools applying for NSF traineeships; and (4) the 127 remaining institutions, shown in this anialysis as "intermediate" graduate schools. In each of these categories full-time enrollment data were presented for each broad area of science by level of study, i.e., first-year and beyond-first-year students, for two periods, 1969 to 1970 and 1970 to 1971. (See technical notes, appendix A, for further explanatory remarks on the classification scheme utilized for this analysis.)

Analysis in this section is confined to data reported by 212 institutions, omitting the 12 medical schools that reported a first-year enrollment of only 129 students in 1971 and were not considered illustrative of medical schools as a whole.

The "first 20 " institutions reduced first-year enrollment at a greater rate than did the developing or intermediate institutions in both periods studied in virtually all areas of science.


## INSTITUTION

fing the size and makeup of the future sciIlment of science students entering gradI $r$ this purpose, institutions applying for to four major types: (1) The "first 20," were selected by the largest number of r the period 1968 through 1971; (2) the to those 65 institutions that first granted 960-61 academic year; (3) the 1? medical ps; and (4) the 127 remaining institutions, diate" graduate schools. In each of these a were presented for each broad area of -year and beyond-first-year students, for O to 1971. (See technical notes, appendix on the classification scheme utilized for
ined to data reported by 212 institutions, t reported a first-year enrollment of orily considercu' illustrative of medical schools
duced first-year enrollment at a greater mediate institutions in both periods stud-

Change in the numider of tirst-year full-time graduate students, by area of science and type of inietitution, 1969-71 ${ }^{\text {a }}$


[^10]As expected, first-year enrollment in the 13 private institutions of the "first 20" category was affected severely by prevailing funding limitations, resulting in an enrollment drop of over 11 percent from 1969 to 1970. This group lost an additional 2 percent in first-year erirollees in the following year. In the seven public institutions the pattern was reversed: reductions in the number of first-year entrants were greatest in the 1970-71 period, 13 percent, than in the earlier period, 4 percent.

Full-time enrollment in the "first 20 " institutions was down in both periods, with firstyear enrollment showing losses in each area of science.

Percent change in full-time enrollment in "first 20" institutions ${ }^{\text {a }}$

| $*$ | Full-time graduate students |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Total |  |  | First year |  |
| Total . . . | -2.3 | -4.2 | -7.4 | -7.8 |  |
|  | -1970.71 | 1969.70 | $1970-71$ |  |  |
| Engineering . . . . | .1 | -3.6 | (b) | -6.7 |  |
| Physical sciences . | -6.1 | -5.4 | -18.4 | -7.1 |  |
| Mathcmatical sciences | -.5 | -4.4 | -4.5 | -15.4 |  |
| Life sciences . . . . | 1.0 | -7.3 | -7.2 | -14.6 |  |
| Psychology . . . . | -5.6 | 1.8 | -17.3 | -2.6 |  |
| Social sciences . . . | -3.5 | -3.3 | -8.8 | -5.1 |  |

"Based on selection of these institutiona by the most number of INSF Fellows from 1968 through 1971.

Lese then 0.05 percent chenge.

In contrast to the "first 20" institutions, the 65 "developing" graduate schools, as shown below, actually gained in overall full-time enrollment in all areas of science during the first period.

These enroliment gains were not maintained at the same rate in the following period, however, and psychology and the social sciences actually reflected losses. The number of first-year students declined in these developing universities in all but engineering and the mathematical sciences in the latest period, indicating this group of institutions was also beginning to feel the slump in science enrollment, but not to the same extent as that of the "first 20 " schools.

Percent change in full-time enrollment in "developing" institutions ${ }^{\text {a }}$

| $*$ | Full-time graduate students |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
|  | Total |  | First year |  |
| Total . . . | 7.5 | 0.3 | 0.1 | -3.0 |
| Engineering . . . . | 15.5 | 6.5 | 20.9 | 1.0 |
| Physical scien:es . | 2.0 | .5 | -.9 | -3.3 |
| Mathematical sciences | 5.0 | 1.4 | -12.0 | 11.7 |
| Life sciences . . . | 9.5 | 2.5 | 7.3 | -6.7 |
| Psychology . . . . . | 8.0 | -2.3 | 4.1 | -11.5 |
| Social sciences . . . | 7.6 | -6.1 | -15.5 | -6.4 |

${ }^{2}$ Based on the institution's first awarding of science Ph.D.'s In academic year 1960-61, according to data from the Office of Education.
ollment in the 13 20' category was g funding limitaat drop of over 11 This group lost an ar enrollees in the public institutions tions in the nume greatest in the han in the earlier
he "first 20 " instiriods, with firsts in each area of
nroliment in

| gduate students |  |
| :---: | :---: |
| First year |  |
|  | 1969.70 |
| -7.4 | -7.8 |
| (b) | -6.7 |
| -18.4 | -7.1 |
| -4.5 | -15.4 |
| -7.2 | $i 4.6$ |
| -17.3 | -2.6 |
| -8.8 | -5.1 |

ost number of NSF

In contrast to the "first 20 " institutions, the 65 "developing" graduate schools, as shown below, actually gained in overall full-time enrollment in all areas of science during the first period.

These enrollment gains were not maintained at the same rate in the following period, however, and psychology and the social sciences actually reflected losses. The numbe of first-year students declined in these developing universities in all but engineering and the mathematical sciences in the latest period, indicating this group of institutions was also beginning to feel the slump in science enrollment, but not to the same extent as that of the "first 20" schools.

Percent change in full-time enrollment in "developing" institutions ${ }^{\text {a }}$

| Area of science | Fuli-time graduate students |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Total |  | First year |  |
|  | 1969.70 | 1970.71 | 1969.70 | 1970.71 |
| Total. . . | 7.5 | 0.3 | 0.1 | - 3.0 |
| Engineering | 15.5 | 6.5 | 20.9 | 1.0 |
| Physical scien*es . | 2.0 | . 5 | - 9 | - 3.3 |
| Mathematical sciencrs | 5.0 | 1.4 | $-12.0$ | 11.7 |
| Life sciences | 9.5 | 2.5 | 7.3 | - 6.7 |
| Psjchology . . . . . | 8.0 | - 2.3 | 4.1 | -11.5 |
| Soriai sciences. | 7.6 | -6.1 | -15.5 | -6.4 |

${ }^{1}$ Based on the institution's first awarding of science Ph.O.'sin academic Year 1960-61, according to data from the Office of Education.

The group of 127 intermediate institutions was also affected by the enrollment slump, with only the life sciences and psychology reflecting any measurable gains in first-year students in the 1970-71 period. Increases in engineering and the social sciences from 1969 to 1970 were not maintained in 1971.

Percent change in full-time enrollinent in "interrıediate" institutions ${ }^{\text {a }}$

| Area of science | Full-time graduate students |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Total |  | First year |  |
|  | 1969.70 | 1970.71 | 1969.70 | 197071 |
| Total . . | (b) | - 0.5 | - U. 2 | - 4.2 |
| Engineering. . . . | 2.7 | - 2.0 | 5.5 | - 4.4 |
| Physical sciences . | - 3.1 | - 4.7 | - 6.9 | - 6.9 |
| Mathematical sciences | 1.6 | - 5.0 | - . 8 | -10.1 |
| Lite sciences. | - . 8 | 1.8 | - 2.4 | . 5 |
| Psychology . | 1.7 | 6.5 | - 1.6 | 2.4 |
| Social sciences. . . | - . 1 | 1.5 | 2.1 | - 6.4 |

[^11]
# Section 2. CHARACTERISTICS OF GRADUATE STUDEN FALL 1971 

## General Enrollment Patterns

The preceding section presented trend data reported by the 2,579 doctorate science departments that submitted information over a 3 -year period, 1969-i1. This section analyzes the data supplied by the entire 2,990 doctor-
ate departments in the 224 doctorate- 8 traineeships in 1971. These institution in the fall of $1971 ; 142,169$ of these

Total graduate enrollment
182,000
39


## ETERISTICS OF GRADUATE STUDENT SUPPORT, 71

end data reported by the 2,579 doced information over a 3 -year period, supplied by the entire 2,990 doctor-
ate departments in the 224 doctorate-granting institutions applying for NSF traineeships in 1971. These institutions enrolled 182,001 graduate students in the fall of $1971 ; 142,169$ of these were full-time students, or 78 percent.

## rollment, 1971


tables C 3

Publicly controlled institutions enrolled more than two-thirds, or 123,676, of all graduate students, 82 percent of whom attended full time. Registration in privately controlled institutions, on the other hand, reflected a considerably smaller proportion of full-time students - 69 percent. Students who had completed ouse or more years of graduate study made up the largest portion of full-time cirollments, over two-thirds, with little distinction being evident between the proportion attending public and private institutions, as shown below:

| Control of institution | Percent distribution |  |  |
| :---: | :---: | :---: | :---: |
|  | Total | First-year students | Beyond-firstyear students |
| Public | 100 | 32 | 68 |
| Private . . . . | 100 | 31 | 69 |

Foreign students represented 20 percent of full-time graduate enrollment and 11 percent of the part-time enrollment. Little more than twothirds of foreign full-time students were enrolled in public institutions. Ar. even larger proportion, nearly three-fourths, of U.S. citizens ; ere enrolled iis public universities, as shown here:

|  | Percent distribution |  |
| ---: | ---: | ---: | ---: |
| Controi of institution <br> Total . . . . . . . <br> citizens | Foreign <br> students |  |
| Public . . . . . . . . . . . . | 73 | 100 |
| Private . . . . . . . . . . . | 27 | 67 |

Note: See appendix tables D-8 and D-9 for detailed data on institutional control.

Engineering attracted 38 percent of foreign full-time enrollment, almost double the 20 -percent share reported in the second largest field of study, the physical sciences. The heaviest concentration of U.S. citizans was found in the social and life sciences, registering 22 percent each.

The largest proportion of full-time students enrolled beyond their first year were in the physical sciences. Engineering students in their first year were the only group among the various fields to exceed one-third of total enrollment.
institutions enrolled more than two-thirds, or tudents, 82 percent of whom attended full time. pntrolled institutions, on the other hand, reflected portion of full-time students -69 percent. Stu3ne or more years of graduate study made up the enrollments, over two-thirds, with little distincthe proportion attending public and private in-

| Cution | Percent distribution |  |  |
| :---: | :---: | :---: | :---: |
|  | Total | First-year students | Beyond-firstyear students |
|  | 100 | 32 | 68 |
|  | 100 | 31 | 69 |

sented 20 percent of full-time graduate enrollne part-time enrollment. Little more than twotudents were enrolled in public institutions. An $y$ three-fourths, of U.S. citizens were enrolled in here:

|  | Percent distribution <br>  <br> nstitution |  |
| :---: | :---: | :---: |
|  | U.S. <br> citizens | Foreign <br> students |
| $\ldots \ldots \ldots$ | 100 | 100 |
| $\ldots \ldots \ldots$ | 73 | 67 |
| $\ldots \ldots$. | 27 | 33 |

$x$ tables D-8 and D-9 for detailed data on control.
percent of foreign full-time enrollment, almost eported in the second largest field of study, the est concentration of U.S. citizens was found in gistering 22 percent each.
of full-time students enrolled beyond their first iences. Engineering students in their first year the various fields to exceed one-third of total


## Types of Major Support

The number of fellowships-traineeships in 1971 exceeded that of teaching assistantships only slightly, with each accounting for approximately onefourth of full-time enrollments, and research assistantships accuunted for another fifth. When examined in terms of types of support, the various areas of science presented a diverse picture. In the physical sciences, for instance, over 85 percent of the graduate students had some form of fellowship, trainceship, or assistantship, but in the social sciences the percentage was only about 58 .

Between 70 percent and 79 percent of students relying on some form of traditional support were advanced students, while 58 percent of those relying on "other" types of support were in this category, as illustrated belnw:

| Types of major support | Percent distribution |  |  |
| :---: | :---: | :---: | :---: |
|  | Total | First-year students | Beyond-firstyear students |
| Fellowships-traineeships | 100 | 29 | 71 |
| Research assistanships | 100 | 21 | 79 |
| Teaching assistantships | 100 | 30 | 70 |
| Other types of support | 100 | 43 | 58 |

Graduate students holding U.S. citizenship depended on fellowshipstraineeships more than on any other form of outside support in 1971. Foreign students, because or iestrictions imposed by some agencies and institutions, depended most heavily on research assistantships.

In the life sciences and psychology, more U.S. citizens held fellow'ships or traineeships than any other support. In the physical and mathematical science; U.S. citizens relied upon teaching assistantships to the greatest extent; in engineering and the social sciences, primarily upon "other" types of support. This pattern - except in the physical and mathematical sciences was not repeated for foreign students. In the life sciences, the primary mechanism was the research assistantship, and in engineering, psychology, and the social sciences, "other" types of support were the prime source.

Distribution of full-time graduate stud support and area of science, 1971

in 1971 exceeded that of teachcounting for approximately onech assistantships accounted for pes of support, the various areas e physical sciences, for instance, some form of fellowship, trainfiences the percentage was only
tudents relying on some form of while 58 percent of those relying gory, as illustrated below:
ercent distribution
First-vear Beyond-first-
students year students

| 29 | 71 |
| :--- | :--- |
| 21 | 79 |
| 30 | 70 |
| 43 | 58 |

iship depended on fellowships$f$ outside support in 1971. Ford by some agencies and institustantships.
re U.S. citizens held fellowships the physical and mathematical ssistantships to the greatest exprimarily upon "other" types of jal and mathematical sciences life sciences, the primary mechngineering, psychology, and the the prime source.


## Sources of Major Support

Full-time students received the major portion of their support in 1971 from their own institutions and/or State and local governments, with Federal support ranking second.

In three areas of science - the physical, mathematical, and life - institutional support was the major source of financial aid. In the social sciences, students relied primarily on self-support; in engineering and psychology, upon the Federal Government.

Approximately one-third of all U.S. citizens attending graduate school full time in these fieids received support from the Federal Government, but an even larger proportion depended upon institutional support. Foreign students displayed a strong dependency on institutional support, in virtually all areas of science, since certain types of Federal assistance were not available to them.

Distribution of full-time gradu
support and area of science, 15



Distribution of full-time graduate students by source of major support and area of science, 1971

major portion of their support in 1971 ate and local governments, with Federal
physical, mathematical, and life - instie of financial aid. In the social sciences, port; in engineering and psychology,
U.S. citizens attending graduate school port from the Federal Government, but upon institutional support. Foreign stuon institutional support, in virtually all f Federal assistance were not available

The Federal Government supported 45,101 full-time graduate students, or 32 percent of the total, in $197 \%$. The accompanying chart shows that two agencies combined to generate almost two-thirds of the awards made; HEW supported 17,734 and NSF supported 11,598 . Because of the major role played by the Public Health Service, HEW's support was concentrated in the life sciences, where over one-third of its awards were made to full-time students. NSF's support was concentrated in physical sciences and engineering. DOD, AEC, and NASA together accounted for less than one-fifth of the graduate students receiving Federal support. Concentration of their awards among fields of science was cunsonant with their primary missions. For example, over one-half of DOD- and NASA-supported students were enrolled in engineering, and nearly two-thirds of AEC-supported students were enrolled in physical sciences programs.

Distribution of federally supported full-ti by agancy and area of science; 1971

ment supported 45,101 full-time graduate students, 1, in 1971. The accompanying chart shows that two herate almost two-thirds of the awards made; HEW ISF supported 11,598 . Because of the major role alth Service, HEW's support was concentrated in the one-third of its awards were made to full-time stus concentrated in physical sciences and engineering. together accounted for less than one-fifth of the ing Federal support. Concentration or their awaids was consonant with their primary missions. For ex-DOD- and NASA-supported students vere enrolled y two-thirds of AEC-supported stude: ts were en$s$ programs.

Distribution of federally supported full-time graduate students by agency and area of science, 1071


Geographic distribution of full-time graduate students, by sou of major support, 1971

An examination of the geographic distribution of full-time students showed a concentration of 21 percent in the East North Central division, followed in order by the Middle Atlantic, with 17 percent, and the Pacific, with 16 percent. Each division was further analyzed in terms of Federal and non-Federal support. Thirty-seven percent of New England's students received support of some sort from the Federal Government. The Pacific ranked a close second, with 36 percent; this division was completely dominated by one State, California, in which over 70 percent of the students receiving Federal support were located.

The West South Central division had the lowest percentage of federaily supported students, 27 percent. The phenomenon of one State enrolling a majority of the federally supported students is also reflected here, where Texas enrolled 61 percent, as well as the Middle Atlantic and New England divisinns, where New York registered 57 percent, and Massachusetts, 64 percent, respectively.


SOURCE: Natiomel Sclence Foundrtion Iappendix table C-13).

Geographic distribution of full-time graduate students, by source of major support, 1971




A little over two-thirds of all full-time graduate students, or 97,068 , received their support from outside the Federal Government in 1971. More than one-half of these students received institutional support which includes that from State or local governments. One-fourth of the students receiving such institutional support were studying in the physical sciences. Students dependent upon nonprofit foundations and self-support were concentrated in the social sciences. Engineering dominated the support from the industrial sector as well as that from all "other" sources.

Percent distribution of full-time graduate students in doctorate departments, iny source and type of major support, 1971

| Sources of major support | Total | Fellowships and traineeships | Research assistantships | Teaching assistantships | Other types of support |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Total (number) | 142,169 | 36,103 | 29,668 | 35,140 | 41,258 |
|  | Percent distribution, by source |  |  |  |  |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| U.S. Government | 31.7 | 64.2 | 63.7 | 1.2 | 6.3 |
| Institutional support ${ }^{\text {a/ }}$. | 37.0 | 19.7 | 28.4 | 98.0 | 6.4 |
| Other outside support ${ }^{\text {b/ }}$. | 8.8 | 16.0 | 7.9 | . 8 | 10.1 |
| Self-support | 22.4 | - | - | - | 77.3 |
| Total | Percent distribution, by type |  |  |  |  |
|  | 100.0 | 25.4 | 20.9 | 24.7 | 29.0 |
| U.S. Government | 100.0 | 51.4 | 41.9 | 1.0 | 5.7 |
| Institutional support . . | 100.0 | 13.6 | 16.0 | 65.5 | 5.0 |
| Other outside support. . | 100.0 | 46.0 | 18.7 | 2.1 | 33.2 |
| Self-support | 100.0 | - | - | - | 100.0 |

a/Includes institutions and State and local governments.
b/Includes private foundations, industry, and foreign sources.
SOURCE: National Science Foundation (appendix table C-10).

Nearly two-thirds of all fellowship ships were financed by the Federal Go tantships were funded by institutions o students depending upon "other" mecha self-supporting.

Of the federally supported stude fellowships-traineeships or research ass time students received federally financed

Distribution of nonfederally supporte by source and area of science, 1971

raduate students, or 97,068 , real Government in 1971. More tutional support which includes gurth of the students receiving The physical sciences. Students self-support were concentrated the support from the industrial
its in doctorate departments, pport, 1971

| esearch | Teaching <br> tantships | Other <br> types of <br> assistantships |
| :--- | :---: | :---: |
| 9,668 | 35,140 | 41,258 |

## bution, by source

| 100.0 | 100.0 | 100.0 |
| :---: | :---: | ---: |
| 63.7 | 1.2 | 6.3 |
| 28.4 | 98.0 | 6.4 |
| 7.9 | .8 | 10.1 |
| - | - | 77.3 |

## ibution, by type

| 20.9 | 24.7 | 29.0 |
| :---: | ---: | ---: |
| 41.9 | 1.0 | 5.7 |
| 16.0 | 65.5 | 5.0 |
| 18.7 | 2.1 | 33.2 |
| - | - | 100.0 |

Nearly two-thirds of all fellowships-traineeships and research assistantships were financed by the Federal Government. Almost all teaching assistantships were funded by institutions or State and local governments. Those students depending upon "other" mechanisms of support were predominantly self-supporting.

Of the federally supported students, over 90 percent utilized either fellowships-traineeships or research assistantships. Only 1 percent of fulltime students received federally financed teaching assistantships.


# Section 3. SCIENCE FACULTY AND POSTDOCTORALS 

Trends, $1960-71^{5}$

For the purpose of this report, staff members with an academic rank of instructor or above who are involved in either undergraduate or graduate programs of an institution are termed "faculty". If a staff member teaches one or more courses or seminars or if he directs the research of one or more students, he is considered to te a full-time member of the faculty. The term "graduate" faculty is used here to refer to those staff members who are significantly involved in the graduate academic program only. Part-time graduate faculty members have major responsibilities outside of the department, such as administrators, affiliate professors, extension service, museum staff, etc.

Science departments reported an increase in full-time faculty of some 1,300 between 1969 and 1971, a gain of less than 3 percent. This rise is probably a reflection of the increasing teaching load imposed by the 8 percent increase in total enrollment for degree credit in all fields from 1969 to $1971 .{ }^{6}$ Evidence of the pattern of increased undergraduate teaching responsibilities is supported by data available from OE which shows an increase of 8 percent from academic year 1969 to 1970 and another 3 percent from 1970 to 1971 in the number of bachelor's and first professional degrees awarded in the sciences and engineering. ${ }^{7}$

Both engineering and the mathematical sciences showed decreases in the number of full-time faculty from 1970 to 1971. Among the remaining areas of science, all but the life sciences showed slower rates of increase in 1971; full-time faculty in the life sciences increased by 2 percent in both periods.

Except for the life sciences where graduate faculty increased at a slightly higher rate in 1971 than in 1970, the number of such personnel remained relatively stable in all remaining fields. During the previous period, every field showed considerable gains.

[^12]
## NCE FACULTY AND POSTDOCTORALS

$r t$, staff members with an academic ronk of plved in either undergraduate or graduate rmed "faculty". If a staff member teaches or if he directs the research of one or more full-time member of the faculty. The term refer to those staff members who are sigacademic program only. Part-time graduate onsibilities outside of the department, such sors, extension service, museum staff, etc. d an increase in full-tire faculty of some ${ }^{1}$ gain of less than 3 fercent. This rise is reasing teaching load i nposed by the 8 ot for degree credit in all fields from 1969 ern of increased undergraduate teaching ata available from OE which shows an inyear 1969 to 1970 and another 3 percent of bachelor's and first professional degrees ering. ${ }^{7}$
hematical sciences showed decreases in the 1970 to 1971. Among the remaining areas showed slower rates of increase in 1971; es increased by 2 percent in both periods.
here graduate faculty increased at a slightly , the number of such personnel remained fields. During the previous period, every
ting for 1969, 1970. and 1971.
371 from the Office of Education. e, Office of Education, Earied Degrees Conferred,

Change in the number of full-time faculty, by area of science, $1969.71^{\circ}$


Postdoctorals are defined in this study as individuals holding doctorates who are assigned on a full-time basis to perform research or to study in a graduate science department, usually for a specific time period. These scholars have no academic rank but may contribute to the graduate program by lecturing or supervising the work of graduate students. Appointments of this type enable the scholar to augment his education and experience in a specific field prior to seeking permanent employment and, in turn, tend to strengthen the department's research and teaching capabilities. Currently, some holders of these appointments may be performing a "holding action," as these positions are regarded as stepping stones to permanent appointments in either industry or higher education. For the purpose of this report, research associates are included in this category.

Although graduate science enrollment declined from 1970 to 1971 and the growth rate of full-time faculty slowed down considerably, the number of postdoctorals accelerated rapidly, particularly in engineering. Every area of science except the mathematical and social sciences experienced an increase in postdoctorals. Because data for this study were compiled from applications to the NSF Traineeship Program, the life sciences may be understated.

Change in the number of postdoctorals,

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Enginaering
Physical sciences

Mathematical sciences:

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Bychology


BNochange.
SOURCE: National
Sol National Science Foundation 1 ppondxa
in this study as individuals holding doctorates e basis to perform research or to study in a ually for a specific time period. These scholars nay contribute to the graduate program by ork of graduate students. Appointments of augment his education and experience in a permanent employment and, in turn, tend to esearch and teaching capabilities. Currently, ments may be performing a "holding action," stepping stones to permanent appointments ation. For the purpose of this report, research tegory.
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Change in the number of postdoctorals, by area of science, 1969.71

${ }^{3}$ Based on 2,579 doctorate depertments reporting for 1969, 1970, and 1971.
bNo change.
SOURCE: National sciance Foundation lappondi xtabla C20).



## Fall 1971 Characteristics ${ }^{8}$

Eighty-five percent of the 57,363 full-time faculty members reported by doctorate science departments in 1971 were classified as graduate faculty. The life sciences, as in prior years, accounted for the largest number, over onefourth of the graduate faculty.

The initial publication in this series reported a ratio of 3.3 full-time graduate students per graduate faculty member in 1966.9 By 1971, this ratio had been reduced to 2.9. Psychology, which enrolled the lowest number of students9 percent of the total-had the highest ratio, and the life sciences, representing 20 percent of the students, had the lowest.

Seventy-one percent of the postdoctorals reported in 1971 were classified as "recent" doctorals, referring to those who received their doctorate some time after 1967. The highest concentration within this group, 77 percent, occurred in the physical sciences.

The physical sciences had the lowest faculty to postdoctoral ratio. This field accounted for 20 percent of the graduate faculty and 43 percent of the postdoctorals. The ocial sciences had the highest ratio, and accounted for 17 percent of the faculty at the graduate level and only 2 percent of the postdoctorals.

When the doctorate-granting institutions reporting in 1971 were classified according to control of the institution, a close correlation was evident between graduate faculty and graduate students. Public institutions attracted over 71 percent of both faculty and students. However, the publicly controlled institutions employed just ove: une-half of the postdoctorals.

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## APPENDIXES

A. Technical Notes
B. Institutions Participating in the Graduate Traineeship Program, Fall 1971
C. Statistical Tables
D. Instructions and Consolidated Departmental Data Sheets

## APPENDIX A

Technical Notes

Table
A. 1 Doctorate; awarded in the sciences and engireering by the 224 institutions applying for NSF traineeships, compared with total science doctorates granted by all U. S. Institutions of higher education, by area of science, academic years ended lune 30, 1967.71
A- 2 Graduate science enrollment in 227 doctorate institutions covered in the 1970 study, compared with 1970 enrollment for advanced degrees, by area of science and department degree level
A. 3 Number of doctorate departments in the 224 institutions covered in the study, by area and ficid of science, 1971

26
A. 4 Comparison of matched doctorate departments, 1969.71, with departments reporting for 1971 only, by afea and field of science32

The Graduate Traineeship Program. inaugurated by the National Science Foundation in 1964, provides information regarding the types and sources of graduate science student support and the number of science faculty and postdoctorals. Departmental Data Sheets, which supported applications for trainceships by doctorategranting institutions, have remained substantially unchanged from 1967 to 1971. Thus, the statistics compiled from these applications represent a consistent source of data. The data reported for 1971 from 2,990 doctorate science departments were machine-matched wi:h data from the same departments submitting information for 1969 and 1970. This process selected 2,579 departments which reported consistently for 3 years, but excluded newly organized doctorate departments and others not applying for traineeships in the earlier years.

The data available from the Graduate Traineeship Program has been the subject of analysis in four previous repoits; the present publication constitutes the fifth in the series. ${ }^{1}$ Because of the discontinuance of the Program, the Division of Science Resources Studies has developed an expanded survey of both master's and doctorate departments in doctorate-granting institutions for fall 1972 in order in continue to make available similar informaitor. during a critical period in the advancement of graduate science education. Initial findings of this fall 1972 surve will be published in a Science Resources Studies Highlights in the summer of 1973.

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Year
1966. . .
1967. .
1968. .
1969. . .
1970. . .
1971. .

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Program
last year

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[^16]Since 1966, the number of institutions applying for traineeships has increased 10 percent and the number of doctorate departments, 23 percent, as shown below:

| Year | Numbe: of institutions | Number of departments |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Total | Master's | Doctorate |
| 1966. | 204 | 2,866 | 441 | 2,425 |
| 196\%. | 209 | 3,016 | 436 | 2,580 |
| 1968. | 219 | 3,190 | 454 | 2.736 |
| 1969. | 224 | 3,354 | 460 | 2.894 |
| $19 \% 0$. | 227 | 3,544 | 473 | 3,071 |
| 1971. | 224 | 3,397 | 407 | 2,990 |

Announcement of the phasing out of the Program resulted in fewer applications in the last year.

## Definitions ${ }^{2}$

Highest degree offered (Item 4). Institutions in which at least one department offered science doctorates were eligible for NSF iraineeships. In such institutions, degrartments offering master's as thrir highest degree were also eligible. Analysis in this report, however, has been limited to science doctorate departments.

Degrees granted (Item 5). Departments were asked to report the degrees granted during the period July 1, 1970 through June 30, 1971, by level, i.e., bachelor's, master's, master's in teaching, and doctoral degrees. When two or more departments conferred joint degrees, they were to be reported by one department only. Degree output is compared with data from the Office of Education in anpendix table A-1 and appears also in the Consolidated Departmental Data Sheets appearing in Appendix D.

[^17]Enrollment status. The definition of a fulltime student as used in the traineeship program differs from that used in the Office of Education in its Higher Education General Information Survey. ${ }^{3}$ A full-time student as referred to in this report is engaged entirely in training activities in his field of science, including any combination of study, teaching, and research. Any other stuwit enrolled for degree credit is considered pa tione. The OE definition, in contrast, specifies $t_{r}$ it : full-time student is one whose academic load.s at least 75 percent of the normal load expected of such students, and a part-time student is one whe carries less than three-fourths of a normal lo... . Any attempt to compare data collected through the two sources should be done with these differences in mind.

Level of study. A first-year graduate student is one who, in the fall of the year of applization, 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 the first year of study or more were classified as beyond-first-year or advanced graduate students.

Citizanship. Citizens of the United States or native residents of a possession of the United States were considered U.S. citizens. All others, including those who have applied for U.S. citizenship, were considered foreign.

Types of major support (Item 6). Four types of major support were indicated, without definitions, as follows: Fellowships and traineeships, teaching assistantships, research assistantships, and all other mechanisms of support. The Federal Interagency Committee on Education (FICE) differentiates between the two fellowship and traineeship stipends as follows: (1) A fellowship is an "award made directly to or on behalf of a student selected in a national com-

[^18]petition, to enable him to pursue postbaccalaureate training," and (2) a traineeship is "an educational award to a student selected by his university." Except for the student selection process, the terms and conditions of the two types of awards are generaily identical, according to the Student Support Study Group. ${ }^{4}$ Both fullowships and traineeships allow the graduate student a wide degree of freedom while pursuing his training without requiring any specific services to the institution in exchange.

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

Of the several mechanisms available for supporting graduate students, the teaching assistantship is often the most demanding in terms of time and efiort required. Teaching assistantships tend to be viewed as less desirable than other traditional forms of financial support in that they often entail rigorous and time-consuming duty assignments which sometimes lengthen the time required for completion of graduate work. On the other hand, such work expericnce is valuable to students preparing for careers in science, particularly those planning to join university faculties. Moreover, graduate teaching assistants render important services to universities.

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ted States he United All others, U.S. citi-
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[^20]petition, to enable him to pursue postbaccalaureate training," and (2) a traineeship i, "an educational award to a student selected by his university." Except in the student selection process, the terms and conditions of the two types of awards are generally identical, according to the Student Support S. $\cdot 1 \mathrm{dy}$ Group. ${ }^{4}$ Both fellowships and traineeships allow the graduate student a wide degree of freedorn while pursuing his training without requiring any specific services to the institution !n exchange.

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

Sources of major support. An amount of $\$ 1,200$ was initially stipulated as major support and has been maintained in subsequent years to ensure comparability of data. For purposes of analysis of major sources of support, four sources were used: (1) U.S. Government; (2) institutional support (including State and local governments and "This" institution); (3) all other outside sources, such as private nonprofit foundations, industry, and foreign organizations; and (4) selfsupport, including loans and family support.

Part-time graduate students (Item 9). Four entries were provided for the students who were enrolled for advanced degrees on an other than full-time basis, i.e., first-year and beyond-first year U.S.citizens and the same entries for foreign students. A separate category (ltem 8) was provided for "special" students who were not enrolled for degree credit.

Faculty (Item 10). These were staff of academic rank of instructor or above, who were significantly involved in the graduate or undergraduate 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. This included faculty on sabbatical leave who were exr cuted to return, but visiting professors were to be excluded. Fulltime faculty, including the department head, were those staff of academic rank of instructor or above with a full-time appointment in that department and whose major responsibilities were 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 separately counted as those who met the definition for full-time faculty but did not
teach any regularly scheduled courses. Part-time faculty were those who met the faculty definition but h-ve major responsibilities or activities outside the department. This included 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 or research associates (Item 11). All individuals who devoted essentially fulltime effort to research activities within that department, whose appointments were nonpermanent and who were not of academic rank were considered to be postdoctorals or research associates. Such individuals usually have an earned doctorate or the equivalent in experience and contributed to the academic program through seminars, lectures, or working with graduate students, but their postdoctoral activities were considered to have an element of additional training for them.

## Statistical Coverage of Graduate Science Education

Statistics reported by the doctorate departments applying for NSF traineeships were considered to be highly representative of the general characteristics of all doctorate-granting institutions. The 2,990 doctorate science departments reporting for 1971 granted 95 percent of the doctorate science degrees awarded by all institutions of higher education, as shown in table A-1. In the physical sciences, these departments awarded 96 percent of the Ph . D. degrees; in mathematical sciences, 93 percent; and in psychology, 92 percent. In the life sciences, coverage represented only 81 percent of the total, due primarily to the award of such grants by the National Institutes of Health rather than by the National Science Foundation. In other areas where degrees awarded were higher than reported by $O E$, variations can be attributed to differences in reporting to the two Federal agencies and to differing definitions of scientific fields.

Examination of enroliment statistics provides another measure of the representativeness of traineeship statistics. At the time this report was prepared, data were not yet available from the Office of Education on enrollment for advanced degrees for fall 1971. Therefore, table A-2 compares OE enrollment data for 1970 with traineeship statistics for 1970 which were published in the previous report. At that time, the 227 doctorate institutions submittirg traineeship applications accounted for 80 percent of the total U. S. science and engineering enrollment for advanced degrees. Doctorate departments accounted for 75 percent of the total and master's departments, 5 percent. Because of this limited representation of master's departments, the analysis in this report was confined to doctorate level departments. Coverage of graduate enrollment in doctoral departments varied from a high of 89 percent in the social sciences to a low of 52 percent in mathematical sciences. This relatively low percentage was due in part to the comparatively large enrollment in mathematics in institutions not eligible for NSF traineeships; i.e., those not granting science doctolates. Variations can also be attributed to the interpretation by institutions of the terminology and scientific disciplines used by NSF and OE, as stated earlier.

The science departments applying for traineeships employed many different titles. These departments were aggregated into the 41 fields of science utilized in all previous reports, and these fields were then grouped into six areas of science, as shown in table A-3.

As described earlier, departments reporting for 3 consecutive years were analyzed to determine the evolving patterns of support in each area of science. These 2,579 matched departments represented 86 percent of the total number of doctorate departments supplying statistics. The coverage represented by these matched departments is given in table A-4 for each of the 41 fields of science.
Table A－1－Doctorates awarded in the sciences and engineering by the 224 institu－ tions applying for NSF traineeships，compared with total science doctorates grand by all U．S．institutions of higher education，by area of science，academic years endel

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|  |  |  |  |  |  |
|  |  |  |  |  |  |


ased on USOE statistics on earned degrees conferred, various years, by U.S. institutions of higher education.
${ }^{6}$ Unpublished data provided by USOE.

Table A-2 - Graduate science enroliment in 227 doctorate institutions covered in the 1970 study, compared with 1970 enrollment for advanced degrees, by area of science and department degree level

| Area of science | Enrollment for advanced degrees, fall $1970^{\text {a }}$ | Graduate students enrolled in 227 doctorate institutions covered in 1970 study |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | All departments |  | Doctorate departments |  | Master's departments |  |
|  |  | Number | Percent of total | Number | Percent of total | Number | Percent of total |
| Total | 252,159 | 201,918 | 80.1 | 188,773 | 74.9 | 13,145 | 5.2 |
| Engineering | 64,788 | 54,805 | 84.6 | 51,107 | 78.9 | 3.698 | 5.7 |
| Physical sciences | 40,113 | 34,856 | 86.9 | 33,648 | 83.9 | 1,208 | 3.0 |
| Mathematical sciences. | 30,608 | 18,028 | 58.9 | 16,041 | 52.4 | 1,987 | 6.5 |
| Life sciences | 46,260 | 34,755 | 75.1 | 33,486 | 72.4 | 1,269 | 2.7 |
| Psychology . | 25,342 | 15,256 | 60.2 | 14,473 | 57.1 | 783 | 3.1 |
| Social sciences | 45,048 | 44,218 | 98.2 | 40,018 | 88.8 | 4,200 | 9.3 |

[^21]Table A-3. - Number of doctorate departments in the 224 institutions covered in the study, by area and field of science, 1971

## Doctorate

 departmentsTotal 2,990
Engineering ..... 664
Aeronautical, total ..... 33
Aeronautical and astronautical engineering ..... 3
Aeronautical engineering ..... 1
Aeronautics ..... 1
Aeronautics and astronautics ..... 6
Aerospace engineering ..... 18
Aerospace engineering and engineering physics ..... 2
Astronautics ..... 1
Space science ..... 1
Agricultural, total ..... 24
Agricultural and irrigation engineering ..... 1
Agricultural engineering ..... 21
Wood technology ..... 1
Wood products engineering ..... 1
Chemical, total ..... 92
Chemical engineering ..... 83
Chemical engineering and materials science ..... 2
Chemical and metallurgical engineering ..... [ 4
Chemical and nuclear engineering ..... 2
Textiles ..... 1
Civil, total ..... 88
Civil engineering ..... 71
Civil engineering hydraulics ..... 1
Civil engineering and engineering mechanics ..... 3
Civil and environmental engineering ..... 5
Civil and geological engineering ..... 2
Environmental engineering ..... 4
Environmental sciences and engineering ..... 2

Area, field of science, and departmen

Electrical, total

> Electrical and instrumental . . . . . Electrical computer science . . . . Electrical engineering . . . . . . . Engineering science, total . . . . . . . . . .  Applied mechanics . . . . . . . . . . . Applied science . . . . . . . . . . Engineering acoustics . . . . . . . Engineering mechanics . . . . . . Engineering science . . . . . . Engineering and applied physics . . Mechanical science . . . . . . . Mechanics . . . . . . . . . . . . Mechanics and hydraulics . . . . Theoretical and applied mechanics

## Industrial, total

Administrative science
Applied analysis
Communications
Industrial communication engineering Industrial engineering
Industrial engineering and management Industrial engineering and operations re,
Management
Management engineering
Management science
Operations research
Urganization behavior
Systems engineering

## Mechanical, total

Aerospace and mechanical engineering.
Marine engineering and naval architectur
Mechanical engineering
Mechanical engineering and applied mec Mechanical and aeronautical engineering
partments in the 224
Ind field of science, 1971
Doctorate departments 2,990
sics ..... 2
~rea, field of science, and departmental title
Electrical, total ..... 108
Electrical and instrumental ..... 1
Electrical computer science ..... 2
Electrical engineering ..... 105
Engineering science, total ..... 40
Applied mechanics ..... 4
Applied science ..... 1
Engineering acoustics ..... 1
Engineering mechanics ..... 15
Engineering science ..... 8
Engineering and applied physics ..... 1
Mechanical science ..... 1
Mechanics ..... 5
Mechanics and hydraulics ..... 1
Theoretical and applied mechanics ..... 3
Industrial, total ..... 53
Administrative science ..... 1
Applied analysis ..... 1
Communications ..... 3
Industrial communication engineering ..... 1
Industrial engineering ..... 22
Industrial engineering and management science ..... 3
Industrial engineering and operations research ..... 6
Management ..... 1
Management engineering ..... 1
Management science ..... 2
Operations research ..... 5
Organization behavior ..... 1
Systems engineering ..... 6
Mechanical, total ..... 102
Aerospare and mechanical engineering ..... 1818
Marine engineering and naval architecture
Mechanical engineering ..... 74
Mechanical engineering and applied mechanics ..... 1
Mechanical and aeronautical engineering and material science ..... 4
Area, field of science, and departmental title
Mechanical - Cont.
Mechanical and industrial engineering ..... 1
Naval architecture ..... 2
Transportation ..... 1
Metallurgical, total ..... 49
Ceramic engineering ..... 4
Ceramics ..... 1
Material science ..... 7
Materials engineering ..... 10
Metallurgical engineering ..... 8
Metallurgical and materials engineering ..... 12
Metallurgy ..... 6
Solid state science and technology ..... 1
Mining, total ..... 9
Geological engineering ..... 1
Mineral engineering ..... 1
Niining ..... 2
Mining engineering ..... 4
Mining and metallurgy ..... 1
Nuclear, total ..... 26
Nuclear engineering ..... 22
Nuclear science and engineering ..... 4
Petroleum, total ..... 6
Petroleum engineering ..... 2
Petroleum and chemical engineering ..... 4
Other engineering, tctal ..... 34
Applied physics ..... 4
Bioengineering ..... 1
Biomedical engineering ..... 9
Biomedical engineering and mathematics ..... 1
Economics of engineering ..... 1
Energy engineering ..... 1

Area, field of science, and departme Enạineering Engineering mathematics Engineering physics and physics Polymer science and engineering Thermal engineering

Physical sciences
Astronomy, total
Atmospheric sciences, total
Aeronautics and planet atmospheres
Astrogeophysics
Astrophysics
Atmospheric sciences
Atmospheric and space sciences
Meterology
Meterology and oceanography
Chemistry, total
Chemistry
Crystallography
Paper tecínology
Polymer science
Geosciences, total
Earth and planetary science
Earth sciences
Environmental sciences
Geodetic science
Geological ssience
Geology
Geology and geography
Geology and geological engineering
Geology and geophysics
Geophysical engineering

## Geophysics

Geophysics and planetary physics
Geosciences
Hydrology
ience, and departmental titleDoctorate departments

Area, field of science, and departmental title

Doctorate departments

;
dustrial engineering ..... 1
. ..... 1
ing ..... 10
peering ..... 8
materials engineering ..... 12
and technology ..... 16
ring ..... 1
g . ..... 124
urgy ..... 126
9 ..... 22
d engineering ..... 4
ring ..... 2
mical engineering ..... 434
1ering
ering and mathematics ..... 1
heering ..... 1
ERIC
Eng̣ineering ..... 12
Engineering mathematics ..... 2
Engineering physics and physics ..... 1
Polymier science and engineering ..... 1
Thermal engineering ..... 1
Physical sciences ..... 524
Astronomy, total ..... 23
Atmospheric sciences, total ..... 21
Aeronautics and planet atmospheres ..... 1
Astrogeophysics ..... 1
Astrophysics ..... 1
Atmospheric sciences ..... 6
Atmospheric and space sciences ..... 1
Meterology ..... 9
Meterology and oceanography ..... 2
Chemistry, total ..... 183
Chemistry ..... 180
Crystallography ..... 1
Paper technology ..... 1
Polymer science ..... 1
Geosciemines, total ..... 107
Earth and planetary science ..... 4
Earth sciences ..... 5
Environmental sciences ..... 2
Geodetic science ..... 1
Geological science ..... 16
Geology ..... 49
Geology and geography ..... 2
Geology and geological engineering ..... 4
Geology and geophysics ..... 7
Geophysical engineering ..... 1
Geophysics ..... 5
Geophysics and planetary physics ..... 1
Geosciences ..... 6
Hydrology ..... 1
Area, field of science, and departmental title
Geosciences - Cont.
Mineralogy . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Paleontology . . . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Petroleum geology . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Mai:ine bioiogy . . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Marine science . . . . . . . . . . . . . . . . . . . . . . . . . . . 4
Ocean engineering . . . . . . . . . . . . . . . . . . . . . . . . . . 3
Oceanography . . . . . . . . . . . . . . . . . . . . . . . . . . . . 11
Water chemistry . . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Physics, total . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 170
Astronomy and space science . . . . . . . . . . . . . . . . . . 1
Chemical physics . . . . . . . . . . . . . . . . . . . . . . . . . . . 4
Electrophysics . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2
Mathematical physics . . . . . . . . . . . . . . . . . . . . . . 1
Molecular physics . . . . . . . . . . . . . . . . . . . . . . . . . 1
Optical science . . . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Optics . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Physics . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 141
Physics and astronomy . . . . . . . . . . . . . . . . . . . . . . . 16
Physics and astrophysics . . . . . . . . . . . . . . . . . . . . . . 1
Mathematical sciences . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 214
Applied mathematics, total . . . . . . . . . . . . . . . . . . . . . . . . 35
Afplied mathematics . . . . . . . . . . . . . . . . . . . . . . 6
Applied mathematics and computer science . . . . . . . 2
Computer science . . . . . . . . . . . . . . . . . . . . . . . . 27
Mathematics, total . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 139
Mathematical science . .. . . . . . . . . . . . . . . . . . . . . . . 1
Mathematics . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 131
Mathematics and astronomy . . . . . . . . . . . . . . . . . . . 1
Mathematics and statistics . . . . . . . . . . . . . . . . . . . . . 6

## Doctorate departments <br> departments

1101370,116

Plasma physics . . . . . . . . . . . . . . . . . . . . . . . . . 1
Plasma physics ..... 1Mathenatical sciences35

Oceanography, total . . . . . . . . . . . . . . . . . . . . . . . . . . . 20
oceanography, total

Doctorate departments
r science ..... 227

Area, field of science, and departmental title
Statistics, total . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 40
Applied statistics . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Biostatistics . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 3
Mathematical statistics . . . . . . . . . . . . . . . . . . . . . . 1
Statistics . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 34
Statistics and computer science . . . . . . . . . . . . . . . 1
Life sciences . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 924
Agricultural, total . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 202
Agricultural chemistry . . . . . . . . . . . . . . . . . . . . . . 3
Agronomy . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 20
Agronomy and genelics . . . . . . . . . . . . . . . . . . . . . . . 1
Animal diseases . . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Animal husbandry . . . . . . . . . . . . . . . . . . . . . . . . . . 2
Animal industry . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Animal nutrition . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Animal science . . . . . . . . . . . . . . . . . . . . . . . . . . 24
Crop and soil science . . . . . . . . . . . . . . . . . . . . . . . 1
Dairy science. . . . . . . . . . . . . . . . . . . . . . . . . . . . 3
Entomology . . . . . . . . . . . . . . . . . . . . . . . . . . . i . 26
Entomology and varasitology . . . . . . . . . . . . . . . . . 2
Farm crops . . . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Floriculture . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Food science . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 7
Food science and technology . . . . . . . . . . . . . . . . . . 7
Food technology . . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Food and nutrition. . . . . . . . . . . . . . . . . . . . . . . . . 6
Forest chemistry . . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Forest economics . . . . . . . . . . . . . . . . . . . . . . . . . 1
Forest entomology . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Forest management . . . . . . . . . . . . . . . . . . . . . . . . 2
Forest resources . . . . . . . . . . . . . . . . . . . . . . . . . . . 6
Forestry. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 13
Forestry and horticulture . . . . . . . . . . . . . . . . . . . . . 1
Horticulture . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 14
Nutrition . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 10
Parasitology . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2
Plant science . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 8

## Table A.3. - Ciontinued

Area, field of science, and department title

## Agricultural - Cont.

Plant and soil science . . . . . . . . . . . . . . . . . . . . . . . 4
Poultry . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Poultry sciencr . . . . . . . . . . . . . . . . . . . . . . . . . . . 7
Range science . . . . . . . . . . . . . . . . . . . . . . . . . . . . 3
Recreation and parks . . . . . . . . . . . . . . . . . . . . . . . 1
Resource development . . . . . . . . . . . . . . . . . . . . . 1
Silviculture . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Soil science . . . . . . . . . . . . . . . . . . . . . . . . . . . 4
Soil and water science . . . . . . . . . . . . . . . . . . . . . 1
Soils . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 3
Soils and meterology . . . . . . . . . . . . . . . . . . . . . . . 1
Vegetable crops . . . . . . . . . . . . . . . . . . . . . . . . . . . 2
Water resources administration . . . . . . . . . . . . . . . . . 1
Watershed management . . . . . . . . . . . . . . . . . . . 2
Wildlife . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2
Wildlife management . . . . . . . . . . . . . . . . . . . . . 1
Biochemistry, total . . . . . . . . . . . . . . . . . . . . . . . . . . . 121

Agricultural biochemistry . . . . . . . . . . . . . . . . . . . . 2
Agricultural biochemistry and nutrition . . . . . . . . . . . 1
Biochemical science . . . . . . . . . . . . . . . . . . . . . . . . 1
Biochemistry . . . . . . . . . . . . . . . . . . . . . . . . . 74
Biochemistry and biophysics . . . . . . . . . . . . . . . . . . 6
Biochemistry and nutrition . . . . . . . . . . . . . . . . . . . 3
Biological chemistry . . . . . . . . . . . . . . . . . . . . . . . . 7
Biophysical science . . . . . . . . . . . . . . . . . . . . . . 2
Biophysics . . . . . . . . . . . . . . . . . . . . . . . . . . . 14
Biophysics and microbiology . . . . . . . . . . . . . . . . . 2
Comparative biochemistry . . . . . . . . . . . . . . . . . . . . 1
Medical physics . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Mclecular biophysics and biochemistry . . . . . . . . . . 1
Radiation biology . . . . . . . . . . . . . . . . . . . . . . . . . 3
Radiation biology and biophysics . . . . . . . . . . . . . . . 1
Radiology science . . . . . . . . . . . . . . . . . . . . . . . . 1
Biology, total . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 127
Biological science . . . . . . . . . . . . . . . . . . . . . . . . . 22
Biological structure . . . . . . . . . . . . . . . . . . . . . . . . 2 departments




3

Radiation biophysics . . . . . . . . . . . . . . . . . . . . . . . 1Radiology science1

Doctorate

$\square$

Doctorate departments 4 1 7 3 1 1 1 4 1 3 1 2 1 2
id nutrition ..... 1
pchemistry ..... 1
ysics ..... , ..... 11

Area, field of science, and department title
Biology ..... 83
Biomedical science ..... 3
Cellular biology ..... 5
Development biology ..... 1
Evolutionary biology ..... 1
Experimental biology ..... 1
Molecular biology ..... 8
Population and enviornmental biology ..... 1
Botany, total. ..... 71
Botanical science ..... 1
Botany ..... 38
Botany and mirerobiology ..... 4
Botany and plant pathology ..... 7
Plant pathology. ..... 17
Plant physiology ..... 4
Microbiology, total ..... 89
Bacteriology ..... 7
Cell physiology ..... 1
Medical microbiology ..... 7
Microbiology ..... 73
Virology ..... 1
Pharmacology, total ..... 80
Biochemical pha., inscology ..... 1
Biopharmaceutical sciences ..... 1
Chemistry and pharmaceutical chemistry ..... 1
Medicinal chemistry ..... 5
Pharamaceutical chemistry ..... 6
Pharınaceutics ..... 4
Pharmacognosy ..... 1
Pharinacology ..... 45
Pharmacology and toxicology. ..... 3
Pharmacy ..... 13
Physiology, tetal ..... 62
Animal physiology ..... 2
Medical physiology ..... 1 departments

## Doctorate

## 


$\qquad$

Table A-3. - Continued

Doctorate departments

Physiology - Cont.
Physiological chemistry . . . . . . . . . . . . . . . . . . . . . . 1
Physiological optics . . . . . . . . . . . . . . . . . . . . . . . . 2
Physiological science . . . . . . . . . . . . . . . . . . . . . . 1
Physiology . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 37
Physiology and anatomy . . . . . . . . . . . . . . . . . . . . . 2
Physiology and biophysics . . . . . . . . . . . . . . . . . . . . 12
Physiology and pharmacology . . . . . . . . . . . . . . . 4
Zoology, total . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 58
Economic zoology . . . . . . . . . . . . . . . . . . . . . . . . 1
Fish and wildlife . . . . . . . . . . . . . . . . . . . . . . . . . . 3
Fisheries . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2
Forest zoology . . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Zoology . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 44
Zoology and entomology . . . . . . . . . . . . . . . . . . . 4
Zoology and physiology . . . . . . . . . . . . . . . . . . . . . 3
Other life sciences, total . . . . . . . . . . . . . . . . . . . . . . . . . 114

Anatomy . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 39
Animal genetics . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Audiology . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2
Bacteriology and public health . . . . . . . . . . . . . . . . . . 1
Biobehavioral science . . . . . . . . . . . . . . . . . . . . . . . . 1
Biometrics . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2
Ecology . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 7
Endocrinology . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Environmental health . . . . . . . . . . . . . . . . . . . . . . . 2
General scierıe . . . . . . . . . . . . . . . . . . . . . . . . . . . 2
Genetics . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 19
Health and ph.ysical education . . . . . . . . . . . . . . . . . 2
Immunology . . . . . . . . . . . . . . . . . . . . . . . . . . . 3
Medical sciences . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Medicine . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 1
Natural resources . . . . . . . . . . . . . . . . . . . . . . . . . . 2
Neurobiology . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2
Neur ssciences . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2
Pathology . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 14
Planetary and space science . . . . . . . . . . . . . . . . . . . 1

Area, field of science, and de
Psychobiology
Public Health

## Science

Science education
Toxir.ology
Tropical medicine
Veterinary medicine
Veterinary science
Psychology
Psychology, total
Child development
Child sturdies
Educational psychology
Experiinental psychology
Experimental social psycholog
Hurnan development
Psyciniatry and neurology
Psychology
Psychology and education
Social psychology
Social sciences
Agricultural economics, total . . .
Agricultural economics
Agricultural economics and ec Agricultural economics and so

Anthropology, total
Economics, total
Economics
Economics and business admir
industrial relations
Mineral economics
Political economy

Doctorate department:
1
try.2137
omy ..... 2
hysics ..... 12
macology ..... 4
logy ..... 4
ogy ..... 3114
3912
blic health ..... 1
e. ..... 12712219
education ..... 231122214
science ..... 1

## Area, fieid of science, and department title

Psychobiology ..... 1
Public Health ..... 2
Science ..... 1
Science education ..... 1
Toxicology ..... 1
Tropical medicine ..... 1
Veterinary medicine ..... 1
Veterinary science ..... 1
Psychology ..... 147
Psychology, total ..... 147
Child development ..... 2
Child studies ..... 1
Enucational psychology ..... 1
Experimental psychology ..... 1
Experimental social psychology ..... 1
Human development ..... 3
Psychiatry and neurology ..... 1
Psychology ..... 135
Psychology and education ..... 1
Social psychology ..... 1
Social sciences ..... 517
Agricultural economics, total ..... 17
Agricultural economics ..... 13
Agricultural economics and economics ..... 1
Agricultural economics and sociology ..... 3
Anthropology, total ..... 60
Economics, total ..... 109
Economics ..... 101
Economics and business administration ..... 3
Industrial relations ..... 2
Mineral economics ..... 1
Political economy ..... 2

Table A-3. - Continued
Area, field of science, and department title
Geography, total ..... 42
Geography ..... 41
Geography and anthropology ..... 1
History and philosophy of science, total ..... 33
History ..... 1
History und philosophy of science ..... 6
History of science ..... 8
History of science and medicine ..... 1
Logic and methodology of science ..... 1
Philosophy ..... 13
Philosophy of science ..... 3
Linguistics, total ..... 58
Communication ..... 3
Information science ..... 5
Interpersonal communication ..... 1
Journalism ..... 1
Linguistics ..... 34
Mass communications ..... 1
Psycholinguistics ..... 2
Sensory zommunication ..... 1
Speech ..... 7
Speech ind pathology ..... 3
Political scienc 3 , total ..... 92
Governnent ..... 11
Govern nent and foreign affairs. ..... 1
International relations ..... 2
International studies ..... 2
Political science ..... 70
Politics ..... 4
Public administration ..... 1
Public affairs ..... 1

Area, field of science, and dep

City planning
Criminology Demography Development sociology Familv life

## Folklore

International service
Labor and industrial relations
Leadership and human behavior
Regional plan
Regional science
Rurai sociology
Social relations
Social sciences
Sociology
Urban planning
Sociology and anthropology, total

Ind department title ................... 42

## 41

ogy . . . . . . . . . . . . . . . . 1
ce, total. . . . . . . . . . . . . 33 departments 42


science ..... 6
dicine
science ..... 1
ion. ..... 1134
fairs. ..... 1

Doctorate

13........................ 3

2.......................

## Area, field of science, and department title

Sociology, total ..... 93
City planning ..... 1
Criminology ..... 2
Demagraphy ..... 1
Development sociology ..... 1
Family life ..... 1
Folklore ..... 1
International service ..... 1
Labor and industrial relations. ..... 1
Leadership and human behavior ..... 1
Regional flan ..... 1
Regional science ..... 1
Rural sociology ..... 1
Social relations ..... 1
Social sciences ..... 1
Sociology ..... 74
U:ban planning ..... 4
Sociology and anthropology, tote; ..... 133
Table A-4. - Comparison of matched c cctorate departments,
1969-71, with departments reporting for 1971, by area and

| Area of field of science | Departments reporting for 1971 | Departments reporting for 3 vears, 1969-71 | Percent of total |
| :---: | :---: | :---: | :---: |
| Total | 2,990 | 2,579 | 86.3 |
| Engineering | 664 | 596 | 89.8 |
| Aeronautical | 33 | 26 | 78.8 |
| Agricultural | 24 | 22 | 91.7 |
| Chemical | 92 | 89 | 96.7 |
| Civil | 88 | 78 | 88.6 |
| Electrical | 108 | 105 | 97.2 |
| Engineering science | 40 | 37 | 92.5 |
| Industrial | 53 | 47 | 88.7 |
| Mechanical | 102 | 88 | 86.3 |
| Metallurgical | 49 | 44 | 89.8 |
| Mining | 9 | 3 | 33.3 |
| Nuclear | 26 | 25. | 96.2 |
| Petroleum | 6 | 6 | 100.0 |
| Other engineering | 34 | 26 | 76.5 |
| Physical sciences | 524 | 487 | 92.9 |
| Astronomy | 23 | 22 | 95.7 |
| Atmospheric sciences . . . | 21 | 17 | 81.0 |
| Chemistry | 183 | 178 | 97.3 |
| Geosciences | 107 | 91 | 85.0 |
| Oceanography | 20 | 19 | 95.0 |
| Physics | 170 | 160 | 94.1 |
| Mathematical sciences | 214 | 189 | 88.3 |
| Applied mathematics | 35 | 26 | 74.3 |
| Mathematics | 139 | 131 | 94.2 |
| Statistics | 40 | 22 | 8 O .0 |
| Life sciences | 924 | 735 | 79.5 |
| Agricultural | 202 | 164 | 81.2 |
| Biochemis'ry | 121 | 95 | 78.5 |
| Biology | 127 | 16 | 83.5 |
| Botany | 71 | 63 | 88.7 |
| Microbiology | 89 | 71 | 79.8 |
| Pharmacology . . . . . . . . | 80 | 57 | 71.3 |
| Physiology | 62 | 51 | 82.3 |
| Zoology | 58 | 52 | 89.7 |

#  





Mathematical sciences Applied mathematics . . . .
Mathematics . . . . . . .
Statistics . . . . . . . . Life sciences . Agricultural . Biochemistry $\vdots$
$\vdots$
$\vdots$
荡
0
0
0 Microbiology Pharmacology Physiology Zoology . Other life sciences chology . . . . . . . . . . .
Agricultural economics . . .
Anthropology . . . . . . .
Economics . . . . . . . . .
Geography . . . . . . .
History and philosophy
of science . . . . . . . .
Linguistics . . . . . . . . .
Political science . . . . . . .
Sociology . . . . . . .
Sociology \& anthropology . chology . . . . . . . . . . .
Agricultural economics . . .
Anthropology . . . . . . .
Economics . . . . . . . . .
Geography . . . . . . .
History and philosophy
of science . . . . . . . .
Linguistics . . . . . . . . .
Political science . . . . . . .
Sociology . . . . . . .
Sociology \& anthropology . chology . . . . . . . . . . .
Agricultural economics . . .
Anthropology . . . . . . .
Economics . . . . . . . . .
Geography . . . . . . .
History and philosophy
of science . . . . . . . .
Linguistics . . . . . . . . .
Political science . . . . . . .
Sociology . . . . . . .
Sociology \& anthropology . chology . . . . . . . . . . .
Agricultural economics . . .
Anthropology . . . . . . .
Economics . . . . . . . . .
Geography . . . . . . .
History and philosophy
of science . . . . . . . .
Linguistics . . . . . . . . .
Political science . . . . . . .
Sociology . . . . . . .
Sociology \& anthropology .

The instit ate Trainceship as follows:

## APPENDIX B

## Classification of Institutions Participating in Graduate Traineeship Program ${ }^{1}$

[^22]"Firs selec Fello The a vaı then they this Fello the rank have of N 1969
(2) Deve begar demic to be for th ison Educ
(3) Medic repre applis the consi for $t$ fall will schoc from data sively enrol
(4) Interi that terme

## APPENDIX B

## utions Participating in Traineeship Program ${ }^{1}$

may differ from similar tistings published in classifying branches, affiliates, or other ions in definitions of science and engineerhe classification le.g. single year or longer Of degree offered or livel of degree granted ame refer to the following classificarions: by NSF Fellows from 1968 through 1971 ; Fe Ph.D.'s after 1960-61; 3) M-"Medical -raint: ${ }^{-h i r} \cdot$.
$A^{\prime}$.ABAMA
Auburn University-I
University of Alabaına-1
AI.ASKA
University of Alaska-I
ARIZONA
Arizona State University-D
University of Arizona-1
ARKANSAS
University of Arkansas-I
CALIFORNIA
Califurnia Institute of Technology-First 20
Claremont Graduate School and University Center-I
Loma Linda University-D
Stanford University-First 20
University of California, Berkeley-First 20
University of California, Davis-I
University of California, Irvin -
University of California, Les ^ngeles-First 20
University of California, Riverside-D
University of California, San Diego-First 20
University of California, San Francisco-I
University of California, Santa Barbara-D
University of California, Santa Cruz-D
University of the Pacific-D
University of Santa Clara-D
University of Southern California--I
U.S. International University-D

COLORADO
Colorado School of Mines-1
Colorado State University-I
University of Colorado-1
University of Denver-1
CONNECTICUT
University of Connecticut-I
Wesleyan University-D
Yale University-First 20
DELAWARE
University of Delaware-I
(See footnote on page 33 for explanstion of symbols.)

## DİTRICT OF COLUMBIA

American University-I
Eatholic University-1
George Washington University-I
Georgetown University-I
Howard University-I
FLORIDA
Florida State University-I
Nova University-D
University of Florida-I
University of Miami-I
University of South Florida-D
GEORGIA
Atlanta University-D
Emory University-I
Georgia Institute of Technology-1
Georgia State University-D
Medical College of Georgia-M
University of Georgia-I
HAWAll
University of Hawaii-1
IDAHO
University of Idaho-D
ILLINOIS
DePaul University-D
Illinois Institute of Technology-I
Illinois State University-D
Loyola University-I
Northern Illinois University-D
Northwestern University-I
Southern Illinois University-I
University of Chicago-First 20
University of Illinois, Chicago Circle-D
University of Illinois, Urbana-First 20
University of Illinois Medical Center-M
INDIANA
Indiana University-I

- urdue University-I

Universicy of Notre Dame-I
IOWA
lowa State Universi y-1
University of lowa-I

Kansas State U University of $k$

University of $k$ University of $L$

Louisiana Tech
Louisiana Statd
Lcuisiana Statd
Louisiana State
New Orlean
Loyola Univer
Tulane Univers

University of $M$

Johns Hopkins
University of N

Boston College
Boston Univer
Brandeis Unive
Clark Universit
Harvard Univer
Lowell Techno
Massachusetts
Northeastern 1
Tufts Universit
University of $M$
Worcester Poly

Michigan State
Michigan Techn
University of D
University of M
Wayne State (/i
Western: 'ig

University of $M$

DISTRICT OF COLUMBIA
American University-I
Catholic University-I
George Washington University-1
Georgetown University-I
Howard University-I
FLCRIDA
Florida State University-I
Nova University-D
University of Florida-I
University of Miami-I
University of South Florida-D
GEORGIA
Atlanta University-D
Emory University-I
Georgia Institute of Technology-I
Georgia State University-D
Medical College of Georgia-M
University of Georgia-I
HAWAll
University of Hawaii-I
ILAHO
University of Idaho-D
ILLINOIS
DePaul University-D
Illinois Institute of Technology-I
Illinois State University-D
Loyola University-I
Northern Illinois University-D
Northwestern University-I
Southern Illinois University-1
University of Chicago-First 20
University of Illinois, Chicage Fircle-D
University of Illinois, Urbana-First 20
University of Illinois Medical Center-M
INIIANA
Indiana University-I
Purdue University-I
University of Notre Dame-I
IOWA
lowa State University-I
University of lowa-I

KANSAS
Kansas State University-1
University of Kansas-1

## KENTUCKY

University of Kentucky-I
University of Louisville-l
LOUISIANA
Louisiana Technological University-D
Louisiana State University, Baton Rouge-I
Louisiana State University, New Orleans-D
Louisiana State University Medical Center, New Orleans-M
Loyola University-D
Tulane University-I
MAINE
University of Maine-I
MARYLAND
Johns Hopkir.s University-First 20
University of Maryland-I
MASSACHUSETTS
Boston Colluge-1
Boston University-I
Brandeis University-I
Clark University-I
Harvard University-First 20
Lowell Technological Institute-D
Massachusetts Institute of Technology-First 20
Northeastern University-D
Tufts University-I
University of Massachusetts-I
Worcester Polytechnic Institute-D
MICHIGAN
Michigan State University-I
Michigan Technological University-D
University of Detroit-D
University of Michigan-First 20
Wayne State University-I
Western Michigan University-D
MINNESOTA
University of Minnesota-I

MISSISSIPPI
Mississippi State University-I
University of Mississippi-I
University of Southern Mississippi-D
MISSOURI
St. Louis University-I
University of Missouri, Columbia-I
University of Missouri, Kansas City-D
University of Missouri, Rolla-I
Washington University-I
MONTANA
Montana State University-I
University of Montana-D
NEBRASKA
University of Nebraska-1
NEVADA
University of Nevada-D
NEW HAMPSHIRE
Dastmouth College-D
University of New Hampshire-1
NEW JERSEY
Newark College of Engineering-D
Princeton University-First 20
Rutgers, The State University-I
Scton Hall University-D
Stevens Institute of Technology-I
NEW MEXICO
New Mexico Institute of Mining and Technology -D
New Mexico State University-I
University of New Mexico-I

## NEW YORK

Adelphi University-I
Alfred University - I
City University of New York -D
Clarkson College of Technology-D
Columbia University-First 20
Cooper Union-D
(See footnote on page 33 for explanation of symbols.)

Cornell University-First 20
Fordham University-I
New School of Social Research-I
New York Medical College-M
New York University-I
Polytechnic Institute of Brooklyn-1
Rensselaer Polytechnic Institute-I
Rockefeller University-First 20
St. Bonaventure University-I
St. Johns University-I
State University of New York a.t Albany-D
State University of New York at Binghamton-D
State University of New York at Buffalo-D
State University of New York, Coliege of Forestry at Syracuse-I
State University of New York Downstate Medical Center-M
State University of New York, Stony Brook-D
State University of New York, Upstate Medical Center-M
Syracuse University -I
Union College and University-1
University of Rochester-1
Yeshiva University-I

## NORTH CAROLINA

Duke University-1
University of North Carolina, Chapel Hill-I
University of North Carolina, North Carolina State University, Raleigh-I
Wake Forest University-D
NORTH DAKOTA
North Dakota State University-D
Uni:ersity of North Dakota-i

## OHIO

Bowling Green State University -D
Case-Western Reserve University-1
Kent State University-D
Miami University-D
Ohio State University-1
Ohio University-I
University of Akron-1
University of Cincinnati-l
University of Dayton-D
University of Toledo--D

Cilahoma State University of $\mathrm{Ok} / 4$

Oregon firaduate Oregon State Uni ?ortland State Un Un versity of Ores University of Port

Bryn "lawr Colles Candie-Mellon 4 Drave! University Duquesne Univers Hahinemann Media Lehigh University The Medical Colle Pennsylrauiia Statc Philadelphia Colle Templ: University Thomas Jefferson University of Penr University of Pitts Villanova Universi

Brown University Providence Collega University of Rhod

Clemson Universit Medical University University of Sout

South Dakota Sch South Dakota Stat University of Soul

George Peabody C Memphis State Un University of Tenn University of Tenn Vanderbilt Univers

Cornell University-First 20
Fordham University--I
New School of Social Research-I
New York Medical College--M
New York University-I
Polytechnic Institute of Brooklyn-I
Fensselaer Polytechnic Institute--I
Ruckefeller University-First 20
St. Bonaventure University-I
St. Johns University-1
State University of New York at Albany-D
State University of New York at Binghamton--D
State University of New York at Buffalo-D
State University of New York,College of Forestry at Syracuse-1
State Univers ty of New York Downstate Medical Center-is
State University of New York, Stony Brook-D
State University of New York, Upstate Medical Center-M
Syracuse University-1
Union College and University-I
University of Rochester-I
Yeshiva University-I
NORTH CAROLINA
Duke University-I
University of North Carolina, Thapel H:il-I
University of North Caroline, North Carolina State University, Raleigh - I
Wake Forest University-D
NORTH DAKOTA
North Dakota State University-D
University of North Dakota-I
OHIO
Bowling Green State University-D
Case-Western Reserve University-I
Kent State University-D
Miami University-D
Ohio State University-I
Ohio University-I
University of Akron-I
University of Cincinnati-I
University of Dayton-D
University of Toledo-D

OKLAHOMA
Oklahoma State University-I
University of Oklahoma-I
OREGON
Oregon Graduate Center--D
Oregon State University-I
Portland State University -D
University of Oregon-l
University of Portland-I

## PENNSYLVANIA

Bryn Mawr College - I
Carnegie-Mellon University-I
Drexel University--D
Duquesne University-I
Hahnemann Medical College and Hospital-M
Lehigh University-I
The Medical College of Pennsylvania-M
Pernnsylvania State University-I
Philadelphia College of Pharmacy and Science-1
Temple University-1
Thomas Jefferson University-M
University of Pennsylvania-First 20
University of Pittsburgh--I
Villanova University-D
RHODE ISLAND
Brown University-I
Providence College-D
University of Rhode Island-I
SOUTH CAROLINA
Clemson University-D
Medical University of South Carolina-M
University of South Carolina-I
SOUTH DAKOTA
South Dahota School of Mines and Technology-D
South Dakota State University-I
University oi South Dakota-I
TENNESSEE
George Peabody College--I
Memphis State University-D
University of Tennessec, Knoxville-I
University of Tennessec, Memphis-I
Vanderbilt University-I

## TEXAS

Bayior University-1
Baylor College of Medicirie, Houston-M
North Texas State University -D
Rice University-First 20
Southern Methodist University-D
Texas A\&M University-I
Texas Christian University-D
Texas Tech University-1
Texas Woman's University-D
University of Houston-1
University of Texas, Arlington-D
University of Texas, Austin-I
UTAH
Brigham Young University-1
University of Utah-I
Utah State University-1
VERMONT
University of Vermont -D
VIRGINIA
College of William and Mary-D
University of Virginid-1
Virginia Commonwealth University-M
Virginia Poly technic Institute-I
WASHINGTON
University of Washington - First 20
Washington State University-.
WEST VIRGINIA
West Virginia University-I
WISCONSIN
Institute of Paper Chemistry (Lawrence University)-1
Marquette University-1
University of Wisconsin, Madison-First 20
University of Wisconsin, Milwaukec-I
WYOMING
University of Wyoming-1
(Sec tootnute on page 33 for explanation of symbols.)

Table
C-1 Graduate students in doctorate departments, by field of science and enrollment status, 1971.
C. 2 Graduate students in doctorate departments, by field of science and citizenship, 1971
C-3 Graduate students in doctorate departments, by field of science, enrollment status, and citizenship, 1971
C. 4 Graduate students in doctorate departments, by field of science and level of study, 1971
C-5 Graduate students in doctorate departments, by field of science, enrollment status, and level of study, 1971
C-6 Full-time graduate students in soctorate departments, by field of science and type of major support, 1971
C-7 Full-time graduate students in doctorate departments, by area of science, citizenship, and type of major support, 1971
C-8 Full-time graduate students in doctorate departments, by area of science, level of study, and type of major support, lyth.
C-9 Full-time graduate students in doctorate departments, by source of major support and area of science, 1971
C-10 Full-time graduate students in doctorate departments, by source and type of major support., 1971
C-11 Full-time graduate students in doctorate departments supported by U.S. Government sources, by field of science and Federal agency, 1971
C-12 Full-time graduate students in doctorate departments supported by other U.S. sources, by field of science, 1971
C-13 Geographic distribution of graduate students in doctorate departments, by enrollment status and source of major support, 1971.
C-14 Full-time faculty and postdoctorals in doctorate departments, by field of science, 1971
C-15 Graduate students in doctorate departments reporting consistently for three years, by area of science, citizenship, and enrollment status, 1969-71
C- 16 Graduate students in doctorate departments reporting consistently for three years, by area of science, level of study, and eirollment status, 1969-71
C-17A Full-time graduate students in science doctorate departments reporting consistently for three years, by source and type of major support and citizenship, 1969-71

58
C-17B Full-time graduate students in engineering doctorate departments reporting consistently for three years, by source and type of major support and citizenship, 1969-71

Page60

Statistical Tables


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 $\vec{\sigma} \dot{\sim} \dot{\sim}$

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U.S. CITIZENS | $\underset{\sim}{4}$ |
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NUMBER
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| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \underline{\sim} \\ & \underset{\sim}{x} \end{aligned}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $\begin{aligned} & \vdots \\ & \frac{\vdots}{3} \\ & \underset{\sim}{\mathbf{m}} \end{aligned}$ | $\begin{aligned} & \stackrel{\sim}{山 己} \\ & \stackrel{\rightharpoonup}{D} \\ & \stackrel{N}{2} \\ & \hline \end{aligned}$ | $\begin{aligned} & x \\ & \substack{f \\ \vdots \\ \underset{\sim}{N} \\ \sim} \end{aligned}$ | $\begin{aligned} & 0 \\ & \text { in } \\ & \dot{\sim} \\ & \dot{\sim} \end{aligned}$ |  <br>  <br>  | $\begin{gathered} \stackrel{5}{N} \\ \stackrel{N}{N} \\ \end{gathered}$ |  | $\begin{aligned} & \pm \\ & 0 \\ & 0 \\ & 0 \end{aligned}$ |  | $\begin{aligned} & \underset{\sim}{n} \\ & 0 \\ & \dot{N} \\ & \end{aligned}$ |  <br>  <br>  | 0 0 0 0 | 域 |  |


|  |  | $\begin{gathered} \stackrel{0}{\mathbf{m}} \\ \hline \end{gathered}$ | $\stackrel{5}{7}$ |  <br>  | $\begin{aligned} & \text { a } \\ & \dot{N} \end{aligned}$ | NAN | $\begin{gathered} 5 \\ \vdots \\ \hline \end{gathered}$ |  | $\stackrel{\sim}{\infty}$ |  | $\begin{aligned} & 0 \\ & \dot{5} \\ & \text { N } \end{aligned}$ | $\stackrel{\mathbf{N}}{\stackrel{1}{\mathrm{~m}}}$ | nopmystyon <br>  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\underset{\underset{\sim}{\underset{\sim}{u}}}{\stackrel{\alpha}{\underset{1}{2}}}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $\stackrel{\sim}{n}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| － | $\begin{aligned} & \frac{\tilde{\sim}}{山 己} \\ & \frac{\pi}{3} \\ & \frac{2}{2} \end{aligned}$ | $\begin{gathered} m \\ \tilde{n} \\ \tilde{j} \\ \dot{n} \end{gathered}$ | $\begin{aligned} & 0 \\ & 0 \\ & 0 \\ & 0 \\ & \text { in } \end{aligned}$ |  <br>  －imin Nim | $\begin{aligned} & \stackrel{\circ}{\infty} \\ & \stackrel{\infty}{\infty} \\ & \stackrel{1}{2} \end{aligned}$ |  | $\begin{aligned} & n \\ & \underset{n}{n} \\ & i n \end{aligned}$ |  | N |  <br>  | $\cdots$ | $\begin{aligned} & \tilde{\sim} \\ & \underset{\sim}{\sim} \\ & \underset{\sim}{N} \end{aligned}$ |  |



| NIJMBER |
| :---: |
| 182．001 |
| 48，410 |
| 1，742 |
| 518 |
| 4，441 |
| 7，636 |
| 13，822 |
| 1，432 |
| 4，809 |
| 7，239 |
| 2，205 |
| 305 |
| 1，161 |
| 218 |
| 2，882 |
| 31．870 |
| 565 |
| 879 |
| 13，990 |
| 4，210 |
| 1．119 |
| 11.107 |
| 15，499 |
| 2，916 |
| 11，075 |
| 1，508 |
| 32，282 |
| 7，202 |
| 3，262 |
| 7.613 |
| 2．317 |
| ？．2．71 |
| 1．471 |
| 1，410 |
| 4．090 |
| 2，646 |
| 14，613 |
| 39，327 |
| 954 |
| 3.799 |
| 8，779 |
| 1，799 |
| 727 |
| 3.209 |
| 10，968 |
| 7，984 |
| 1．154 |

AREA $\triangle N D$ FIELD OF SCIENCE
total，all fielos of，science．．．．．．．．．．．．．


PHYSICAL SCIENCES．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．

mathematical sciences．．．．．．．．．．．．．．．．．．．．．．．



Life sciences．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．




 OTHER LIFE SC：ENCES．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． PSYChOLGEY．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．

SOCIAL SCIENCFS．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．


 LINGUISTICS．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．

$\circ$
$\stackrel{\circ}{\circ}$
$\stackrel{y}{*}$



品| 0 |
| :---: |
|  |
|  |PERCENT－tutal$14,637 \quad 36.7$o．ovnúamsmonNininNUMBER

14.637$\stackrel{m}{\stackrel{n}{\sim}}$$\stackrel{H}{4}$$\stackrel{\circ}{m}$TOTAL
39,832$\overrightarrow{0}$
$\vdots$
$\dot{m}$のが心NOT$m$
$\infty$
$\infty$
$m$FIRST YEAR BEYOND FIRST YEARPERCENT PERCENT年number total number tutal$44,716 \quad 31.5 \quad 97.453 \quad 68.5$$\stackrel{+}{\dot{0}} \underset{\sim}{\circ}$$\stackrel{7}{i}$$\stackrel{+}{\infty}$0
$\vdots$
$\vdots$

$i$90man우№ñ$\begin{array}{ll}\stackrel{m}{n} \\ \text { in } & m \\ m\end{array}$m $\dot{m} \dot{m} \dot{\sim} \dot{\sim} \dot{m} \dot{\sim}$| in |
| :---: |
|  |
|  |2

0
$m$$\stackrel{N}{N}$0
$\infty$
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$m$$\vec{F}$
$\dot{m}$
$\dot{m}$691＊でて
30.902
30.902
1.355
427


11,816

28,888

$\stackrel{\rightharpoonup}{2}$
$\underset{\sim}{\sim}$
$\sim$
total. all fieldos of science.........
area ano fielo of science
ENGiNEERING......................................






PHYSICAL SCIENCES.............................


MATHEMATICAL SCIENCES.....................

LIFE SCIENCES...................................












| Pr | RESEARCH ASSISTANTSHIPS |
| :---: | :---: |
|  | 29,668 |
|  | 9,086 |
|  | 9,494 |
|  | 1,072 |
|  | 6,510 1,738 20 |
|  | 2,768 |
|  | 21,313 |
|  | 5,156 |
|  | 6,549 |
|  | 710 |
|  | 5.037 |
|  | 1,609 |
|  | 2,252 |
|  | 8,355 |
|  | 1,945 |
|  | 1.362 |
|  |  |
|  | 129 |
|  | 516 |
|  |  |
| percent distribution |  |

percent distribution









## area of science


total, all areas of science..........
 PHYSICAL
MATHEMATICAL SCIENCES........................
LIFE SCIEL


total, all areas gf science..........



U.S. Citizens, total.............











percent distribution


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 AND $\begin{gathered}\text { FELLOWSHIPS. } \\ \text { TRAINE ESHIPS }\end{gathered}$
 total 142,169
30,992
 28,888
$\mathbf{1 2}, 781$
29,53
 44,716
12,019
17




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 percent of tutal






 total. all sources of sufport.................
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 foreign sources, total.

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\text { UF SUPPURI } \\
41.258
\end{gathered}
$$

ASSISTACHTSGIPS
35,140
35,140
431
0
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0
72
29
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0
189
141
34709
34442
116
16
0
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0 PERCENT diStitibution

percent uf total.

 tuitia 142,169 688.681
 4.629解我 1,694
11.598
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 100.0
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$\stackrel{\circ}{0}$ source df major support
 total, all sources of support........... all u.s. sources, total................... u.s. giveranment.........................:
 DEPARTMENT OF HEALTH,
ENUCATION. AND WELARE, TOTAL.....
NATHOL DEFENE EDCATON ACT..
NATIONAL INSTITUTES DF HEALTH....

 orhier u.s. sturces........................

 foretgn sources, total....................
total, all sources of support............

 ANO SPACE ADINISTRATIUN.........
NATIONAL SCIENCE FOUNDATION........
ALL OTHER U.S. GOVERNMENT GGENGES.



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GOS.
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 11,598




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PHYSICAL SCIENCES....................................
ASTRONOMY.......................................................




 life sciences........................................ AGRICULTURE ................................................




 AGRICULTURAL ECONOMICS...................
ANTHROPOLOGY
ECONOMICS EXXEPT AGRICUL TURAQ

 SOCIOLOGY. . . .............................................

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U．S．
GUVT．
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NASA

DTHER
HEW


330
total

AREA AND FIELD DF SCIENCE
PERCENT DISTRIBUTION
table c－11．full－time graduate students in ducturate oepartments supported by u．s．guvernmeni suurces，

| $\forall \exists \frac{\square}{}$ | HSN | VSon | $\begin{gathered} \mathrm{M} \mathrm{\exists H} \\ \text { \&ヨHIO } \end{gathered}$ | （HWIN） （HIN） SHC | マ ${ }^{\text {an }}$ | $\begin{gathered} \mathrm{M} ⿻ \mathrm{H} \\ \boldsymbol{7} \mathrm{~V} 101 \end{gathered}$ |  |  | 338 | 78101 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |


| total，all fielos of science．．．．．．．．．．．．．． | 100.0 | 100.0 | 100.0 | Percent distribution |  |  |  |  | 100.0 | 100.0 | 100．0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  | $\because$ | 100.0 |  |  |  |
|  |  |  |  | 100.0 | 100.0 | 100.0 | 100.0 |  |  |  |  |
| ENGINEERING．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 24.7 | 26.9 | 5.0 | 56.0 | 10.8 | 14.9 | 8.8 | 12.9 | 51.8 | 23.4 | 38.1 |
| aEronimutical | 1.6 | －2 | － 0 | 6.5 | ． 2 | ． 6 | ． 0 | －0 | 10.6 | 1.0 | 1.6 |
|  | ． 2 | ． | 3.1 | － 0 | － 1 | ． 3 | ． 0 | .0 | ． 1 | ． 1 | ． 7 |
| CHEMICAL．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 2.4 | 4.0 | 1.4 | 1.8 | 1.3 | 2.2 | 1.0 | ． 9 | 3.1 | 3.7 | 3.0 |
| Civil．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 4.5 | ． 4 | ． 3 | 6.0 | 2.6 | 1.1 | 2.6 | 7.4 | 1.9 | 2.9 | 14.4 |
| ELECTRICAL．．．．．．．．．．．．．．e．．．．．．．．．．．．．．．．．． | 5.0 | 1.5 | ． 2 | 14.4 | 2.0 | 3.8 | 1.4 | －9 | 14.6 | 5.8 | 4.3 |
| ENG INEERING SS＇EACE．．．．．．．．．．．．．．．．．．．．．．．． | 1.0 | ． 3 | .1 | 2.6 | ． 4 | ． 8 | ． 4 | ． 0 | 2.3 | 1.0 | 1.5 |
| INDUSTRIAL．．．： | 1.7 | ． 2 | －1 | 3.9 | ． 8 | 1.5 | ． 5 | 1.4 | 1.7 | 1.3 | 4.1 |
| MECHANICAL METALURGICAL AND MATERIALS．．．．．．．．．．．．．．．．．．．．．． | 3.2 1.9 | 1．7 | －0 | 7.9 | 1.4 | 2.4 | 1.0 | 1.6 | $4.1:$ | 3.3 | 4.2 |
| MININS．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 1.9 .2 | ＋．00 | ． 0 | 7.1 .1 | ． .0 | ． 9 | ． 3 | －0 | 3.6 | 1.7 | 1.0 |
| NUCLEAR．．．．．．．．．．．．．．．．．．．．．．．．．．． | ． 9 | 9.6 | ．0 | $\cdot 8$ | －2 | － 5 | 1 | $\pm$ | $\cdot 2$ | －1 | $\cdot 9$ |
| PETROLEUM．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | －1 | ． 0 | ． 0 | －1 | ． 1 | .1 | .0 | ． 0 | 1.2 | $\cdot 6$ | － 3 |
| OTHER ENGINEERING．．．．．．．．．．．．．．．．．．．．．．．．． | 1.9 | 1.9 | ． 4 | 4.7 | 1.2 | ． 7 | 1.5 | .1 | 3.1 | 1.7 | ＋18 |
| PhyStcal SCIENCES．．．．．．．．．．．．．．．．．．．．．．．．．． | 23.8 | 63.6 | 2.7 | 28.6 | 12.3 | 20.0 | 10.0 | 5.4 | 36.7 | 37.3 | 14.6 |
| ASTRONOMY．． | ． 6 | －0 | ． 0 | $\cdot 2$ | －1 | ． 4 | ． 0 | － 0 | 3.0 | 1.3 | ． 2 |
| ATMOSPHERIC SCIENCES．．．．．．．．．．．．．．．．．．．．． | 1.2 | 1.1 | ． 2 | 2.3 | ． 2 | ． 3 | ． 1 | .7 | 2.7 | 2.1 | 1.3 |
| CHEMISTRY．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 9.3 | 17.1 | 1.0 | 6.5 | 8.7 | 8.7 | 9.3 | 3.4 | 4.6 | 14.3 | 4.1 |
| GEOSC IENCES．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 2.4 | ． 4 | －1 | 3.0 | －9 | 3.0 | .1 | ． 3 | 7.1 | 4.7 | 2.4 |
| nCeanggraphy．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 1.2 | ． 9 | ． 0 | 2.6 | ． 2 | ． 5 | .1 | －2 | ． 4 | $\bigcirc$ | 2.4 |
| PHYSICS．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 9.1 | 44.0 | 1.4 | 13.9 | 2.3 | 7.0 | ． 5 | .8 | 18.9 | －． 2 | 4.2 |
| mathematical sciences．．．．．．．．．．．．．．．．．．．．．．． | 5.2 | 2.6 | ． 6 | 6.5 | 3.3 | 7.7 | 1，4 | 3.9 | 3.0 | 10.1 | 3.1 |
| APPLIEO MATHEMATICS | 1.2 | 2.2 | －2 | 2.9 | ． 3 | ． 7 | ． 1 | $-1$ | ． 3 | 2.3 | ． 4 |
| MaTHEMATICS．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 3.1 | － 2 | －2 | 2.1 | 1.8 | $3: 3$ | ． 1 | $2 \cdot 1$ | $2 \cdot 2$ | 7.0 | 2.1 |
| STATISTICS．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | .9 | －1 | －2 | 1.5 | 1.2 | 1.0 | 1.2 | 1.7 | ． 5 | ． 8 | －3 |
| LJFE SCIENCES．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | ． 23.1 | 6.2 | 75.8 | 2.6 | 36.4 | 19.5 | 45.7 | 17.8 | 5.4 | 14.9 | 17.8 |
| AGRICULTURE． | 4.5 | ． 6 | 56.4 | ． 7 | 3.5 | 4.3 | 3.5 | 1.8 | 1.1 | 2．3 | 7.6 |
| Binchemistry．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 3.9 | 2.7 | 3.1 | － 3 | 8.1 | 2.2 | 11.4 | 1.4 | ． 9 | 1.5 | ． 7 |
| BIOLOGY．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 4.6 | ． 8 | 1.6 | － 2 | 7.9 | 4.4 | 9.3 | 7.7 | ． 8 | 4.1 | 2.3 |
| BOTANY． $\qquad$ | 1.2 | －9 | 5.7 | ． 0 | ． 9 | 1.8 | － 5 | ． 7 | －3 | 1.7 | 1.4 |
| MICROB IOLOGY | 2.3 | ． 2 | 4.0 | ． 4 | 4.6 | 1.5 | 6.3 | 1.1 | ． 3 | ． 8 | ． 7 |
| Pharmacology．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 1.3 | ． 0 | ． 0 | －1 | 2.8 | ． 8 | 3.7 | 2.6 | ． 1 | ． 3 | －${ }^{\text {b }}$ |
| PHYSIOLOGY．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 1.3 | －1 | ． 5 | 4 | 2.7 | ． 7 | 3.9 | ． 6 | ． 4 | ． 4 | ． 4 |
|  | 2.0 |  | 1.5 | －1 | 2.2 | 2.5 | 2.4 | ． 1 | ． 3 | 2.2 | 3.4 |
| OTHER LIFE SCIENCES．．．．．．．．．．．．．．．．．．．．．．．．． | 2.0 | ． 5 | 3.1 | － 2 | 3.6 | 1.4 | 4.7 | 1.8 | 1.2 | 1.3 | ． 7 |
| PSYCHOLOGY．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 10.6 | －1 | ． 0 | 1.7 | 19.3 | 8.4 | 22.9 | 27.1 | 1.9 | 4.5 | 11.2 |
| SOCIAL SCIENCES．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 12.6 | －6 | 15.3 | 4.7 | 17.9 | 29.5 | 11.2 | 33.1 | 1.3 | 9.8 | 15.2 |
| AGRICULTURAL ECONOMICS．．．．．．．．．．．．．．．．．． | ． 5 | ． 6 | 9.7 | ． 0 | ． 2 | ． 6 | ．0 | ． 0 | ． 1 | .1 | 1.1 |
| ANTHROPOLDGY．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 1.7 | ． 0 | ． 0 | － 1 | 3.1 | 3.4 | 3.1 | 1.5 | ． 2 | 1.6 | ． 8 |
| ECONOMICS（EXCEPT AGRICULTURAL）．．．．．．．． | 2.7 | ． 0 | 1.2 | 2.7 | 1.9 | 5.9 | － 3 | ． 9 | ． 1 | 3.1 | 3.6 |
| GEOGRAPHY $\qquad$ | ． 6 | － 0 | $\cdot 1$ | － 2 | ． 7 | 2.1 | －1 | 1.7 | －1 | ．$t$ | ． 8 |
| HISTORY AND PHILOSDPHY OF SCIENCF．．．．． | － 3 | － 0 | ． 0 | ． 0 | ． 5 | 1.9 | ． 0 | － 0 | ． 1 | .4 | ． 0 |
| LINGUISTICS <br> POLITICAL SCIENEE | 1.3 1.9 | ．0 | ．0 | .78 | 1.9 2.8 | 3.1 7.7 | ． .7 | 10.0 $\times 4.1$ | ． 2 | 1.1 1.4 | 1.4 2.6 |
| SOC IULOGY．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． | 1.9 3.2 | .0 | .0 3.8 | ． 7 | 2.8 5.8 | 7.7 | .7 6.1 | 1.4 8.4 | ． 6 | 1.6 | 2.6 2.7 |
| SOC IDLOGY AND ANTHROPGLOGY．．．．．．．．．．．．．． | $\bigcirc$ | .0 | ． 5 | .0 | －9 | 4.4 | 6.1 | 8.4 | ．0 | 1.6 .1 | 2.7 |






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SUPPPRRT $\begin{gathered}\text { PRIVATE } \\ \text { NONPRUFIT } \\ \text { FUUNDATIUNS }\end{gathered} \quad$ INDUSTRY


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ENGINEERING......................................................





 physical sciences...............................


life sciences.....................................

PSYChology.........................................

Table C-13. Geographic distribution of graduate students in doctorate departments,



table c-15. Graduate students in noctorate depariments reporing cunsistently fur three years,

| area of science | 1969 | $\begin{aligned} & \text { NUMBER } \\ & 1970 \end{aligned}$ | 1971 | 1969-70 | CHANGE $1970-71$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | all graduate students |  |  |  |  |
| TOTA'....̇....... | 171,571 | 170,295 | 165,303 | -0.7 | -2.9 |
| Enginetring....... | 48,422 | 47,586 | 44,869 | -1.7 | -5.7 |
| PhYSICAL SCIENCES.... | 33,357 | 32,199 | 30,411 | -3.5 | -5.6 |
| mathematical sciencfs | 14,865 | 14,905 | 14,041 | . 3 | -5:8 |
| LIfe SCIENCES..... | 27.580 | 27,912 | 27,607 | 1.2 | -1.1 |
| PSYCHOLOGY.. | 12,713 | 12,902 | 13,444 | 1.5 | 4.2 |
| SOCIAL SCIENCFS.... | 34,634 | 34,741 | 34,931 | 5 | . 4 |
| U. S. Citizens... | 142,199 | 139,362 | 134,970 | -2.0 | -3.2 |
| ENGINEERING........ | 36,249 | 34,582 | 32.118 | -4.6 | -7.1 |
| PHYSICAL SCIENCES.. | 27.574 | 26,228 | 24,583 | -4.9 | -6.3 |
| MATHEMATICAL SCIENCFS | 12,659 | 12,564 | 11,706 | -. 8 | -6.8 |
| LIFE SCIENCES........ | 23.635 | 23,912 | 23,735 | 1.2 | -. 7 |
| PSYCHOLDGY....... | 12,185 | 12,409 | 12,918 | 1.8 | 4.1 |
| SOCIAL SCIENCES...... | 29,897 | 29,667 | 29,910 | -. 8 | - 8 |
| FOREIGN STUDENTS. | 29,372 | 30,433 | 30,333 | 3.3 | -1.4 |
| ENGINEERING, | 12,173 | 13,004 | 12.751 | 6.8 | -1.9 |
| PHYSICAL SCIENCES.... | 5.783 | 5,971 | 5,828 | 3.3 | -2.4 |
| MATHEMATICAL SCIENCES | 2.206 | 2,341 | 2,335 | 6.1 | -. 3 |
| LIFE SCIENCES....... | 3,945 | 4,000 | 3,872 | 1.4 | -3.2 |
| PSYCHOLOGY.. | 528 | 493 | b26 | -6.6 | 6.7 |
| SnCIAL SCIENCES.......... | 4.737 | 5,124 | 5,021 | 8.2 | -2.0 |
|  | full-time students |  |  |  |  |
| TOTAL............... | 131.935 | 131,902 | 129,939 | 口 | -1.b |
| ENGINEERING........ | 28.793 | 29+534 | 28,045 | 2.6 | -2.0 |
| PhYSICAL SCIENCES. | 29,253 | 28,264 | 27,056 | -3.4 | -4.3 |
| mathematical sciences | 11.349 | 11.500 | 11,008 | 1.3 | -4.3 |
| LIFE SCIENCES... | 24,645 | 24,739 | 24.752 | . 4 | . 1 |
| PSYCHOLOGY... | 11.142 | 11,272 | 11,817 | 1.2 | 4.8 |
| SOCIAL SCIENCES........ | 26,753 | 26,593 | 26,361 | -. 6 | -. 9 |
| U. S. Citizens. | 105,768. | 104,724 | 103,400 | -1.0 | -1.3 |
| ENGINEERING. | 18,617 | 18,841 | 18.581 | 1.2 | -1.4 |
| PHYSICAL SCIENCES...... | 23,719 | 22,612 | 21,560 | -4.7 | -4.7 |
| MATHEMATICAL SCIENCES. | 9.310 | 9.340 | 8,840 | - 3 | -5.4 |
| Life SCiences.... | 20,888 | 20,980 | 2:,056 | . 4 | . 4 |
| PSYCHOLOGY...... | 10,660 | 10,818 | 1:.339 | 1.5 | 4.8 |
| SOCIAL SCIENCES..... | 22.574 | 22.133 | 22.024 | $-2.0$ | -. 5 |
| FOREIGN STUDENTS.. | 26,167 | 27.178 | 26,539 | 3.4 | -2.4 |
| ENGINEERING........ | 10,176 | 10.693 | 10,364 | 5.1 | -3.1 |
| PHYSICAL SCIENCES...... | 5.534 | 5.652 | 5,496 | 2.1 | -2.6 |
| mathematical sciences. | 2,039 | 2,160 | 2,168 | 5.9 | . 4 |
| LIFE SCIENCES....... | 3,757 | 3,759 | 3,696 | . 1 | -1.7 |
| SOCIAL SCIENCFS.......... | 482 | 454 | 478 | -5.8 | 5.3 |
|  | 4,179 | 4,460 | 4.337 | 6.7 | -2.8 |
|  | Part-time Stuotnts |  |  |  |  |
| roral. | 39,636 | 38,393 | 35,364 | -3.1 | -7.9 |
| ENGINEERING | 19,629 | 18,052 | 15,924 | $-8.0$ | -11.8 |
| PHYSICAL SCIENCFS. MATHEMATICAL SCIENCES. | 4,104 | 3,935 3,405 | 3,355 3,033 | -4.1 | -14.7 -10.4 |
| LIFE SCIENCES.......... | 2,935 | 3,173 | 2,855 | 8.1 | -10.0 |
| PSYCHOLOGY... | 1,571 | 1,630 | 1,627 | 3.8 | -. 2 |
| SOCIAL SCIENCES........ | 7,881 | 8,198 | 8.570 | 4.0 | 4.5 |
| U. S. CITIZENS.... | 36,431 | 34,638 | 31,570 | -4.9 | -8.9 |
| engineering............. | 17,632 | 15.741 | 13,537 | -10.7 | -14.0 |
| PMYSICAL SCIENCES....... | 3,855 | 3,616 | 3,023 | -6.2 | -16.4 |
| mathematical sciences. | 3,349 | 3,224 | 2,866 | -3.7 | -11.1 |
| LIFE SCIENCES........... | 2,747 | 2,932 | 2,679 | 6.7 | -8.6 |
| PSYCHOLDGY........... | 1,525 | 1,591 | 1,579 | 4.3 | -. 8 |
| SOCIAL SCIENCES......... | 7,323 | 7.534 | 7,886 | 2.9 | 4.7 |
| foreign stuments.. | 3,205 | 3,755 | 3,794 | 17.2 | 1.0 |
| ENGINEERING. | 1.997 | 2,311 | 2,387 | 15.7 | 3.3 |
| PHYSICAL SCIENCES. | 249 | 319 | 332 | 28.1 | 4.1 |
|  |  |  |  |  |  |





[^23]
$\underset{1969-70}{\substack{\text { PERCENT CHANGE } \\ 1970-71}}$

 $\stackrel{\underset{\sim}{x}}{\substack{x \\ i}}$

 1971
all graduate students



 | $-\quad$ |
| :---: | in

 full－time students | $\circ$ |
| :--- |
| $\stackrel{\circ}{\sigma}$ |
| $\stackrel{0}{0}$ |
|  |

等 구웅
 $\stackrel{\rightharpoonup}{5}$等势
 part－time students
 57，584 $\stackrel{\rightharpoonup}{4}$
$\vdots$
$\vdots$
$\vdots$


$\stackrel{\text { N}}{\stackrel{a}{a}}$
 42.199
 $n$
$\stackrel{n}{\infty}$
$\dot{\infty}$
 $\stackrel{m}{\substack{m \\ \infty \\ \infty \\ \infty}}$ N゙N Anminn ñ
$\stackrel{\rightharpoonup}{2}$
 N



 111．63
 131，935

 16，789

 9，817 area of science тотац．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．

 first year，total．．．．．．．．．．．．．．．．．．．．．

 PSYCHOLOGY．
SOCIAL SCIENCES．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． beyond first year，tofal．．．．．．．．．．．．
 тотад．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． enginering phandial scie．．．．．．．．．．．．．．．．．．．．．．：

 first year，total．．．．．．．．．．．．．．．．．．．


 beyond first year，total．．．．．．．．．．．
 total．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． engineming．iente．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．

 first year，total．．．．．．．．．．．．．．．．．．．．．

 beyond first year，total．．．．．．．．．．．




|  | $\begin{aligned} & N \\ & N \\ & N \\ & N \\ & N \end{aligned}$ | oin mNN undean $+0 N \infty$ <br>  かべのがN | FULL－TIME STUDENTS | $\begin{aligned} & o \\ & 0 \\ & 0 \\ & 0 \\ & 0 \\ & 0 \\ & n \\ & n \end{aligned}$ |  | $\begin{aligned} & 0 \\ & 0 \\ & 0 \\ & 0 \\ & 0 \\ & 0 \end{aligned}$ |  | $$ | が心NNた がなが心の今号 |  | $\begin{aligned} & \dot{6} \\ & m \\ & m \\ & m \\ & m \end{aligned}$ | जnmuno NMmNNた $\lim _{m} m=\infty$ | $\begin{aligned} & \hat{n} \\ & \sim \\ & N \\ & N \end{aligned}$ |  NにGOMN | $\begin{aligned} & \text { N } \\ & \mathbf{y} \\ & \mathbf{N} \\ & \text { N } \end{aligned}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |



| monn | ${ }^{\text {区 }}$ | － | $\cdots$ | mmonnm | ＋ | のuncoun | $\square$ | $*^{\infty} \times \infty$ | 0 |  | 0 | N－mNHO | N－ | mon m |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\cdots \cdots$ | $\stackrel{m}{6}$ |  | \％ | のnctitu | $\pm$ | $\cdots$ | $\stackrel{\square}{\sim}$ |  | 0 |  | $\underset{\sim}{\sim}$ |  | ＋ |  |
| $\cdots *$ | － | －＊ | － |  | ＊ | 回 | $\cdots$ |  | 0 |  | － | $\infty \times \infty$ | $\stackrel{\sim}{*}$ | $\cdots \cdots \cdots+\infty$ |
| ¢ m | $\stackrel{-1}{\sim}$ | NホのはめN | $\cdots$ |  | $\xrightarrow{9}$ | $\Rightarrow-4=m a$ | $\infty$ | べがN「 | 0 | atmor | $\stackrel{0}{\circ}$ | orn m | N | ONNNいす。 |




| SOURCE OF MAJOR SUPPORT | 1969 |
| :---: | :---: |
| ALL SOURCES OF MAJOR SUPPORT + TOTAL | 135.935 |
| U.S. SOlirces, total | 129,864 |
| U.S. GOVERNMENT | 48,373 |
| INSTITUTIONAL SUPPO | 47,445 |
| SELF-SUPPDET... | 24,123 |
| all other u.s. SOURCES | 9.923 |
| FOREIGN SOURCES, TOTAL. | 2,071 |
| U.S. Citizens | 105,768 |
| U.S. SOURCES, TOTAL | 105,730 |
| U.S. GOVERNMENT. | 41,898 |
| INSTITUTIDNAL SUPPOR | 36,902 |
| SELF-SUPPORT. | 19,421 |
| ALL CTHER U.S. SOURCES | 7,509 |
| FOREIGN SOURCES, TOTAL. | 38 |
| FOREIGN STUDENTS.. | 26,167 |
| U.S. SOURCES, TOTAL | 24.134 |
| U.S. GOVERNMENT. | 6.475 |
| INSTITUTIONAL SUPPOR | 10,543 |
| SELF-SUPPORT.. | 4,702 |
| ALL OTHER U.S. SOURCE | 2,414 |
| FOREIGN SOURCES, TOTAL | 2.033 |
| fellowships and traineeships, tutal. | 38.972 |
| U.S. SOURCES, TOTAL | 37,778 |
| U.S. GOVERNMENT | 26,671 |
| INSTITUTIONAL SUPPOR | 6,777 |
| ALL OTHER U.S. SOURCES |  |
| FOREIGN SOURCES, TOTAL.. | 1.194 |
| U.S. Citizens . | 34.011 |
| U.S. SOURCES, total | 33.976 |
| U.S. GOVERNMENT. | 25,938 |
| INSTITUTIONAL SUFPOR | 4,916 |
| SELF-SUPPOKT. | - |
| ALL OTHER U.S. SOURCES | 3,122 |
| FOREIGN SOURCES, TOTAL | 35 |
| FOREIGN STUOENTS. | 4,961 |
| U.S. SOURCES, YOTAL | 3,802 |
| U.S. GOVERNMENT | 733 |
| INSTITUTIONAL SUPPORT | 1,861 |
| SELF-SUPPORT.. | 0 |
| ALL OTHER U.S. SDURCES | 1,208 |
| FOREIGN SOURCES, TOTAL | 1,159 |
| RESEARCH ASSISTANTSHIPS, TOTAL | 28.506 |
| U.S. SOURCES, TOTAL | 28,456 |
| U.S. GOVERNMENT.. | 18,641 |
| INSTITUTIONAL SUPPORT | 7,700 |
| SELF-SUPPORT...... | 0 |
| ALL OTHER U.S. SOURCES | 2.115 |
| FOREIGN SOURCES, TOTAL | 50 |
| U.S. Citizens . | 20,094 |
| U.S. SOURCES, TOTAL | 20.092 |
| U.S. GOVERNMENT. | 13,238 |
| INSTITUTIONAL SUPPORT | 5,388 |
| SELF-SUPPORT. |  |
| all other U.S. Sources | 1,466 |
| FOREIGN SGURCES, TOTAL. | 2 |
| FOREIGN STUDENTS. | 8,412 |
| U.S. SOURCES, toral | 8,364 |
| U.S. GOVERNMENT.. | 5.403 |
| INSTITUTIONAL SUPP | 2,312 |
| SELF-SUPPORT...... | 0 |
| ALL OTHER U.S. SOURCES | 649 |
| FOREIGN SOURCES, TOTAL............. | 48 |

TABLE $\mathbf{c - 1 7 A}$. FULL-TIME GRADUATE STUDENTS IN SCIENCE DOCTURATE UEPARTMENTS REPORTING CONSISTENILY FUR THREE YEARS,
BY SOURCE AND TYPE OF MAJOR SUPP(IRT AND CITIZENSHIP, IG69-71 (CUNTINUEO)


[^24]



## SOIJRCE OF MAJOR SUPPORT

 ALL SOURCES DF. MAJMR SUPPURT, TUTAL........ u.s. Citizens .....................................

 fgreign studenis..................................

 fellowships ant traineeships, total........






 research assistantships, tutir.................


 U.s. Citizens ........................................

 fIREIGN Studentis...................................
 ERIC
table c- 17b. full-time graduate students in engineering doctarate oepartments reporting consisiently for three years,

| percent change |  |
| :---: | :---: |
| 1969-70 | 1970-71 |
| 5.1 | -0.8 |
| 3.1 | -.e |
| -8.8 | 3.2 |
| b.b | 4 |
| * | * |
| 7.4 | 4.3 |
| 7.4 | 4.3 |
| + | + |
| 7.5 | 3.7 |
| * | * |
| 1.9 | -8.3 |
|  |  |
| 1.9 | -8.3 |
| 2.8 | -7.9 |
| + | \# |
| --- | --- |
| 7.7 | 6.0 |
| 8.7 | 6.3 |
| 1.8 | -8.6 |
| -13.9 | 10.5 |
| 16.9 | 17.2 |
| -5.8 | -24.9 |
| -8.9 | -. 7 |
| 5.4 | 3.0 |
| 5.4 | 3.0 |
| 1.4 | -11.1 |
| -20.2 | . 8 |
| 15.4 | 19.3 |
| -6.4 | -26.2 |
| 11.8 | 11.0 |
| 15.7 | 12.7 |
| 8.6 | 26.1 |
| 4.5 | 31.9 |
| 18.8 | 14.5 |
| -3.4 | $-14.9$ |




| SOURCE OF MAJOR SUPPORT | 1969 |
| :---: | :---: |
| TEACHING ASSISTARSTSHIPS, TQTAL.............. | 3,951 |
| U.S. SOIJRCES, TOTAL | 3,951 |
| U.S. GOVERNMENT... | 68 |
| INSTITUTIONAL SUPPIRT | 3,861 |
| SELF-SUPPCRT...... | 0 |
| ALL OTHER U.S. SOURCES................... | 22 |
| Foreign sources, total...................... | 0 |
| U.S. CITIZENS ................................ | 2.317 |
| H.S. SOURCES, TOTAL. | 2,317 |
| U.S. GOVERNMENT. | 26 |
|  | 2,276 |
| ALL OTHER U.S. SOURCES........................ | 15 |
| firefgn smurces, total... | 0 |
| FOREIGN STUDENTS............................. | 1,634 |
| U.S. SOIJRCES, TOTAL. | 1.634 |
| U.S. Gavernment... | 42 |
| INSTITUTIONAL SUPPORT..................... | 1,585 |
| SELF-SUPPDRT.............................. | 0 |
| ALL OTHER U.S. SOURCES | 7 0 |
| OThER TYPES OF MAJOR SUPPORT, TOTAL. | 8,797 |
| U.S. SOURCES, total | 8,291 |
| U.S. GOVERNMENT... | 1.262 |
| INSTITUTIONAL SUPPORT | 433 |
| SELF-SUPPORT... | 5,023 |
| ALL OTHER U.S. SOURCES.................. | 1,573 |
| FOREIGN SOURCES, tOTAL...................... | 506 |
| U.S. CITIZENS ............................... | 5,625 |
| U.S. SOURCES, TOTAL........................ | 5,625 |
| U.S. GOVERNMENT....... | 1,181 |
| INSTITUTIONAL SUPPORT | 322 |
| SELF-SUPPORT.. | 2.816 |
| FOREIGN SOURCES, SOURCES.................... | $\begin{array}{r} 1,306 \\ 0 \end{array}$ |
| FOREIGN STUDENTS............................. | 3,172 |
| U.S. SOURCES, TOTAL. | 2.666 |
| U.S. GDVERNMENT.. | 81 |
| INSTITUTIONAL SUPPORT. | 111 |
| SELF-SUPPORT.. | 2,207 |
| ALL OTHER U.S. SOURCES................... | 267 |
| FOREIGN SOURCES , TOTAL | 506 |

* percent change is not shown hhen base is 50 or less.

|  |
| :---: |
|  |



0
0
0
0
$n$
$n$
$n$
$n$
$n$
$n$


$\stackrel{\infty}{\stackrel{\infty}{N}}$


all sources of major support, total........
 $\vdots$
$\vdots$
$\vdots$
$\vdots$
$\vdots$
$\vdots$
$\vdots$
$\vdots$
$\vdots$
$\vdots$
$\vdots$
$\vdots$
$\vdots$
 u.s. citizens ............................... $\qquad$


 foreign students............................... u.s. SOURCES, TOTAL, ...........................

 fellowships and traineeships, tutal........ U.S. sources, total........................

 u.s. citizens ...............................


 foreign students.............................. u.s. sources, total.........................

 RESEARCH ASSISTANTSHIPS, TOTAL...............


 u.s. citizens ................................

 FOREIGN STUDENTS......................................

table c- litc. full-time graduate students in phisical science doctorale oepartments reporting cunsistently fur three years,


| $\begin{aligned} & \stackrel{\sim}{山} \\ & \frac{\rightharpoonup}{2} \\ & \stackrel{\rightharpoonup}{z} \end{aligned}$ | $\underset{\sim}{2}$ |  |  | N |  | $\begin{aligned} & \text { N } \\ & N \\ & N \\ & N \end{aligned}$ | $\begin{aligned} & \stackrel{P}{N} \underset{\sim}{N} \vec{N}^{\circ} \otimes 0 \\ & \stackrel{N}{N} \end{aligned}$ | $\begin{aligned} & \text { ron } \\ & \dot{m} \\ & \dot{m} \end{aligned}$ |  | $\begin{aligned} & \underset{\sim}{2} \\ & \stackrel{y}{*} \end{aligned}$ |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |

$\square$

$$
\begin{aligned}
& c \\
& \stackrel{c}{c} \\
& m \\
& m \\
& m
\end{aligned}
$$

$$
\sin _{0}^{ \pm} \mathrm{m}
$$

$$
m_{m}^{m} \underset{\sim}{n}
$$

[^25]
TABLE C- 17D. FULL -TIME GRADUATE STUDENTS IN MATHEMATICAL SCIENCE DUCTDRATE DEPARTMENTS REPORTING CONSISTENTLY FUR THREE YEARS,


 TEACHING ASSISTANTSHIPS, TOTAL................


 U.S. Citizens .............................................. U.S. SOURCES, TOTAL . . . . . . . . . . . . . . . . . . . . . .
U. S. GOVERNMENT. . . . . .

 FOREIGN STUDENTS..................................... U.S. SOURCES, TOTAL..................................


 other types of major support, total........


 UsS. CITIZENS ..........................................

 FOREIGN SOURER ES SOURCES............................. FOREIGN STUDENTS.........................................

 * percent change is not shown when ba

## SOURCE OF MAJOR SUPPORT

 — $\square$

$m$
0
$\infty$
$\infty$
$\infty$
SOURCE OF MAJOR SUPPORT
all Sources of major support, total........U.S. CITIZENS ........................................
$\qquad$ U.S. GOVERNMENT. FOLLIGN SOURCES, TOTAL....................................... FOREIGN STUOENTS.......................................
 fellowships and traineeships, total........

 U.S. Citizens ........................................

 FOREIGN STUDENTS...................................
 research assistantships, total...............
 U.S. citizens .......................................


table c-1TE. full-time graduate students in life science ductorate oepariments repurt ing




[^26]
11.272



| 0 |
| :--- |
|  |


 $\stackrel{\circ}{\stackrel{\circ}{\sim}}$

10,660


$\stackrel{\sim}{n}$



u.s. citizens ...............................
11.5. SOURCES, TOTAL $\ldots \ldots \ldots \ldots \ldots \ldots \ldots .$.


foreign students...............................
w.s. SOURCES, TOTAL . ..........................


fellowships and traineeships, total........
11.5. SOURCES, TOTAL.........................


u.s. citizens ................................





 researeh assistantships, total.............


 u.s. citizens .................................


 foreign students.............................

TABLE C- 1TF. FULL-TIME GRADUATE STUDENTS IN PSYCHULUGY DUCTORATE UEPARTMENTS REPORTING CUNSISIENTLY FUR THREE YEARS,
BY SUURCE AND TYPE UF MAJUK SUNPURT ANUCIIJZENSHIP, $196 母-71$
PERCENI CHANGE



 OTHER TYPES OF MAJOR SUPPORT, TUTAL.......
 U.S. CITIZENS ......................................

$$
\begin{aligned}
& \text { U.S. SOURCES, TOTAL . . . . . . . . . . . . . . . . . . . . . } \\
& \text { U.S. GOVERNMENT. . } \\
& \text { JNSTITUTI }
\end{aligned}
$$

FORE IGM STUDENTS . . . . . . . . . . . . . . . . . . . . . . . . .

$$
\begin{aligned}
& \text { U.S. SOURCES, TRTAL . . . . . . . . . . . . . . . . . . . . . . } \\
& \text { U.S. }
\end{aligned}
$$

[^27]



 fellowships and traineeships, total........

 FOREIGN SOURCES, TOTAL............................. U.5. CITiZENS ........................................


 FDREIGN STUDENTS.......................................
 RESEARCH ASSISTANTSHIPS, TOTAL...............


 FDREIGN STUDENTS......................................
 ERIC
table．c－17G．FILL－TIME GRADUATE STUDENTS in SUCIAL SLIENCE DOCTORATE UEPARTMENTS REPORTING CUNSISIENTLY FUR THREE YEARS，
PERCENT CHANGE

| $\begin{gathered} \underset{\sim}{2} \\ \stackrel{1}{2} \\ \underset{-}{2} \end{gathered}$ | $\begin{aligned} & q \\ & \dot{i} \end{aligned}$ |  | ? | $\because \pi x^{4}$ | $\begin{aligned} & 0 \\ & \infty \\ & i \end{aligned}$ | $\begin{array}{llll\|} 0 & 4 & 4 \\ 0 & \vdots \\ i & j & \end{array}$ |  | $\mathfrak{M}$ | $\stackrel{?}{n}$ |  | $\begin{aligned} & \text { N } \\ & j \end{aligned}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\underset{\sim}{\sim}$ |  | $\stackrel{?}{-}$ |  | $\stackrel{N}{\sim}$ | ${\underset{\sim}{N}}^{4} \dot{m}{ }^{\# 1}$ |  | ＊ーが，NT ふiN N | N | ~MMOL |  |  |
| $\underset{\sim}{\pi}$ | $\stackrel{\infty}{\rightrightarrows}$ |  |  |  | $\underset{\sim}{N}$ | $\underset{\sim}{N} \underset{\sim}{\sim}$ | $\begin{aligned} & \text { ion } \\ & \vdots \\ & \vdots \end{aligned}$ |  | $\begin{aligned} & \text { N } \\ & \text { M } \\ & \text { on } \end{aligned}$ |  | N $\sim$ $=$ |  |



table c- 18A. full-time graduate stuoents in science ductorate oefartments rep orting cunsistentiy fur three years.
percent change

1971
229,939
40,069
89,870
103,400
32,228
71,172
26,539
7,841
18,698
32,988
4,280
23,708



 \begin{tabular}{l}
$\ddagger$ <br>
\multirow{2}{*}{} <br>
\multirow{2}{*}{}

 $\underset{\sim}{\sim} \underset{\sim}{n} \underset{\sim}{n} \underset{\sim}{\infty} \underset{\sim}{\infty} \underset{\sim}{n}$ $\stackrel{n}{\tilde{\tilde{n}}}$ 

$\underset{\sim}{n}$ <br>
$\dot{\sim}$ <br>
$\underset{\sim}{x}$ <br>
$\underset{\sim}{n}$ <br>
\hline
\end{tabular} $\underset{\sim}{\sim}$

194,724
 36,453
11,213 $\stackrel{3}{\underset{\sim}{n}}$ 31,376 9,467
21,904
 28,500 $\stackrel{\text { n }}{\stackrel{\rightharpoonup}{n}}$ 19,977
 $\underset{\sim}{\sim}$ 0
$\stackrel{0}{0}$
$\underset{\sim}{m}$


6961 131,935
 $\stackrel{\underset{\sim}{c}}{\stackrel{\rightharpoonup}{\infty}}$
105,768
 26.167 9,108
17,059
N
$\stackrel{y}{\text { N }}$
+
 $\stackrel{\stackrel{y}{m}}{\stackrel{m}{n}}$ 34,011
9,800
24,211
 $\stackrel{\circ}{0}$
$\underset{\sim}{~}$
$\underset{\sim}{~}$

20.094 $c$
0
0
0
0
0
0
0
0 $\underset{\infty}{\sim}$

 | $\infty$ |
| :--- |
| $\stackrel{\infty}{\circ}$ |
| $\stackrel{+}{\circ}$ | m

ín
í 25.079
 all sciences, total..........................
 Citizenship
FIRST-YEAR STUDENTS
BEYOND-FIRST-YEAR STUDENTS.................. foreign students, total..................
 fellowships and traineeships, hutal....
first-year students............................
 u. s. citizens, total................. FIRST-YEAR STUDENTS...................
GEYONT-FIRST-YEAR STUDENS........ foreign sthuents, tutal...............
 research assistantships, tatal......... first-year students..................... beyond-first-year students........... u. s. citizens, total................. FIRST-YEAR STUDENTS.................. foreign students, mtal.................
 teaching assistantships, tetal......... first-year students.................... bevino-first-year students............ U. s. citizens. total................... FIRST-YEAR STUNENTS
BEYOND-FIRST-YEAR STUOENTS.............. foreign stuments. total................






table c－18b．full－time graduate students in engineering docturate departments reporting cunsistently fur three years，

| percent change |  |
| :---: | ---: |
| $1969-70$ | $1970-71$ |
|  |  |
| 2.6 | -2.0 |
| 4.7 | -4.7 |

 $\stackrel{\infty}{i}$
 3
 $\stackrel{3}{3}$ $\stackrel{m}{0}$


$\stackrel{\underset{\sim}{n}}{\stackrel{\sim}{2}} \underset{\substack{2 \\ \sim}}{\sim}$ $\stackrel{\stackrel{y}{*}}{\stackrel{y}{n}}$豙 웅 $\stackrel{\circ}{\sim} \stackrel{\circ}{\circ}$
 $\stackrel{\circ}{\circ}$

 M
$\dot{\infty}$
$\dot{N}$ $\stackrel{n}{n}$

 ～～～ | on |
| :--- |
| on |
| b |
| 1 |

 7,083
2,951 $\stackrel{\sim}{\sim}$ 5,736
2,417
3,319
1,347
534
813
8,824
2,246
6,578
 $\stackrel{n}{n} \underset{\sim}{m}$

 $\underset{\sim}{n}$ | $\stackrel{N}{n}$ | $\underset{\sim}{\sim}$ |
| :---: | :---: | :---: |
| $\underset{\sim}{\sim}$ | $\underset{\sim}{\infty}$ | $\stackrel{N}{\infty}$ $\stackrel{5}{\substack{~ \\ \sim \\ ~}}$

 －$\stackrel{\text { nN }}{\sim}$

$\stackrel{\circ}{\circ}$
1969
28,793
11.189
17.604
17.604
18,617
7,091
11,526
10.176
4,098
6,078

先き $\begin{array}{ccc} \pm & N \\ \underset{\infty}{\sim} & \underset{\sim}{\sim} & \tilde{\sim} \\ \underset{\sim}{\sim}\end{array}$ $\stackrel{\sim}{\tilde{m}} \stackrel{1}{0}$ | $\stackrel{4}{0}$ |
| :---: |
| $\substack{4 \\ 4 \\ \hline}$ |気留 ำに － $\stackrel{m}{\underset{m}{5}}$ $\stackrel{\sim}{n}$ $\underset{\underset{\sim}{\sim}}{\underset{\sim}{\infty}} \underset{\sim}{0}$

出品
 4，810
 beyond－first－year students．．．．．．．．．．．．．．．．．
 type of major support
fellowships and traineeships，total．．．． first－year students．．．．．．．．．．．．．．．．．．．．． beyond－first－year students．．．．．．．．．．．． U．s．citizens，total．．．．．．．．．．．．．．．．． FIRST－YEAR STUDENTS．．．．．．．．．．．．．．．
BEYONDEFIRST－YEAR STUDENTS．．．．．．． forieign students，total．．．．．．．．．．．．．．．
 research assistantships，total．．．．．．．．． first－year students．．．．．．．．．．．．．．．．．．．． beyond－first－year students．．．．．．．．．．．． u．s．citizens，total．．．．．．．．．．．．．．．．．
 foreign students，tutal．．．．．．．．．．．．．．．． FIRST－YEAR STUDENTS．．．．．．．．．．．．．．．．． teaching assistantships，total．．．．．．．．． first－year students．．．．．．．．．．．．．．．．．．．．． beyond－first－year students．．．．．．．．．．．． i．s．citizens，total．．．．．．．．．．．．．．．．．
 foreign students，tutal．．．．．．．．．．．．．．．
 other types of major support，total．． fiber types of major support，iotal．．．
first－mear students．．．．．．．．．．．．．．．．．．．




| U. S. citizens, total. | 18,617 | 18,841 |
| :---: | :---: | :---: |
| first-year stuoents. | 7,091 | 7,803 |
| heyond-first-year students........... | 11.526 | 11,038 |
| foreign students, total................ | 10,176 | 10,693 |
| first-year students....................... BEYOND-FIRST-YEAR STUDENTS | $4,098$ $6,078$ | $3,907$ |
| E OF Major support |  |  |
| fellowships and traineeships, total... | 7.571 | 7,083 |
| First-year students.. | 2,864 | 2,951 |
| heyono-first-year students........... | 4.707 | 4,132 |
| u. S. citizens, total................ | 6,171 | 5.736 |
| first-year students. BEYOND-FIRST-YEAR STUDENTS.......... | $\begin{aligned} & 2,240 \\ & 3,931 \end{aligned}$ | $\begin{aligned} & 2,417 \\ & 3,319 \end{aligned}$ |
| foreign students, total.............. | 1.400 | 1,347 |
| BEYOND-FIRST-YEAR STOD |  | 813 |
| research assistantships, total........ | 8,474 | 8,824 |
| First-year students.................. | 2,122 | 2,246 |
| beyond-first-year students........... | 0.352 | 6.578 |
| U. S. Citizens, total................ | 4.504 | 4,688 |
| first-year students. BEYOND-FIRST-YEAR STUDENTS........... | $\begin{aligned} & 1,157 \\ & 3,347 \end{aligned}$ | $\begin{aligned} & 1,365 \\ & 3,323 \end{aligned}$ |
| foreign students, tutal.............. | 3,970 | 4,136 |
| first-year students.................... bEYOND-FIRST-YEAR STUDENTS......... | $\begin{array}{r} 965 \\ 3,005 \end{array}$ | $\begin{array}{r} 881 \\ 3,255 \end{array}$ |
| teaching assistantships, total......... | 3,951 | 4,154 |
| First-year students.................... | 1,393 | 1,327 |
| beyond-first-year students........... | 2,558 | 2,827 |
| U. S. citizens . total................. | 2,317 | 2,489 |
| first-year students.................. BEYOND-FIRST-YEAR STUDENTS......... | $\begin{array}{r} 839 \\ 1,478 \end{array}$ | $\begin{array}{r} 924 \\ 1,565 \end{array}$ |
| foreign students, total.............. | 1,634 | 1,665 |
| first-year students. geyond-first-year students......... | $\begin{array}{r} 554 \\ 1.080 \end{array}$ | $\begin{aligned} & 403 \\ & 1,262 \end{aligned}$ |
| other types of major support, total... | 8,797 | 9,473 |
| first-year students.................. | 4,810 | 5,186 |
| beyond-first-year students. | 3,987 | 4.287 |
| u. s. citizens, total................ | 5,625 | 5,928 |
| First-rear students..................... beyond-first-year students......... | $\begin{aligned} & 2,855 \\ & 2,770 \end{aligned}$ | $\begin{aligned} & 3,097 \\ & 2,831 \end{aligned}$ |
| foreign students, total.............. | 3,172 | 3:545 |
| first-year students. $\qquad$ beyono-first-year students. | $\begin{aligned} & 1,955 \\ & 1,217 \end{aligned}$ | 2,089 1,456 |

TABLE C-18C. FULL-TIME GRADUATE SYUDENTS IN PHYSICAL SCIENCE DOCTORATE DEPARTMENTS REPDRTING CONSISTENTLY FOR THREE YEARS, $\qquad$

$$
\dot{B} \dot{B}
$$

$$
\dot{B}
$$

\% $\because$
$\mathfrak{i}$

$\because$ : $\%$ 88
 $\stackrel{7}{7}$ 3 3 \% ${ }^{10.1}$
1971 27,056
6.609 6.609 20,447 21,560
5,316
16.244
5,496
1,293
4.203

 $\stackrel{\substack{\infty \\ N \\ \infty}}{\infty}$ $\stackrel{\infty}{\sim} \underset{\sim}{\sim}$ | $a$ |
| :--- |
| $\substack{0 \\ \vdots \\ \vdots \\ \hline}$ |


 ت5
$\stackrel{\rightharpoonup}{0}$ $\begin{array}{ll}0 \\ 0 & \overrightarrow{0} \\ \stackrel{0}{0} \\ \underset{m}{0} & \vdots\end{array}$ $\stackrel{\substack{i \\ \stackrel{n}{n} \\ i \\ i}}{i}$
 222•2 1970 28,264 7,066 21,198
22,612
5,617
16,995
5,652
1,449
4,203
.958
.535
.428
.213
.318
.895
745
217
528 $\circ$
$\infty$
$\infty$
$\infty$
$\infty$ $\stackrel{n}{\circ}$ $\hat{m}$
$\dot{\infty}$
$\dot{\infty}$
 $\stackrel{\infty}{\sim} \stackrel{\infty}{\stackrel{m}{i}} \underset{=}{-}$
 N
0
0
0 $\stackrel{\sim}{\tilde{\omega}} \underset{\sim}{\sim}$

1969 29,253 7,795 21,458
23,719 に范
6,878
 $\stackrel{\infty}{\stackrel{\infty}{N}}$ $\underset{\substack{m \\ m}}{\substack{n \\ \infty}}$ $\underset{\infty}{\stackrel{n}{n}} \stackrel{n}{\stackrel{n}{=}} \underset{\sim}{\underset{=}{=}}$ Non
 N $\stackrel{\rightharpoonup}{a}$ of
$\stackrel{y}{0}$
$i$
$n$ $\stackrel{4}{\stackrel{4}{*}}$

 ITEM all sciences, total........................... first-year students......................... beyond-first-yfar studenis.............. Citizenship . s. citizens, total...................... fireign students, total....................
 TYPE OF MAJOR SUPPORT fellowships and traineeships, total... first-year students.................... beyond-first-year students........... u. 5. citizens, total.................
 foreign students; total................... FIRST-YEAR STIDENTS.................... BEYDND-FIRST-YEAR STUDENTS.......... research assistantships, total......... first-year students..................... beyond-first-year students........... u. s. gitizens, total................... FIRST-YEAR STUDENTS...................
BEYONi-FIRST-YEAR STUDENTS........ fogeign students, toral................
 teaching assistantships, tutal......... FIRSt-Year students....................... beyond-first-yEar students........... u. s. citizens, rotal.................. FIRST-YEAR STUOENTS $\ldots \ldots \ldots \ldots \ldots$
BEYOND-FIRST-YEAR STUDENTS............. foreign students, tutal...............
等





- less than 0.05 percent change.
table c- 18D. full-time graduate stuments in mathematical science goctorate depariments reporting consistently for three years.









table c-18b. full-time graduate students in life science doctorate departments reporting cunststently fur three years,
1969-70 1970-71


 $\stackrel{\sim}{i}$
percent change

$\qquad$
$\qquad$
〒
$\because \underset{i}{7}=\underset{i}{j}$
 $\stackrel{F}{a}$ 1971
24,752
7,090 17,662 17,662 21,056
6,103
14,953
3,696
987
2,709 7,407
1,564

 $\stackrel{\tilde{n}}{\stackrel{N}{n}}$ | $m$ |
| :---: |
|  |
| in |
| in | $\stackrel{n}{\infty} \underset{\sim}{n} \underset{\sim}{n}$ $\stackrel{\circ}{\stackrel{\circ}{n}} \stackrel{\circ}{\infty}$ $\stackrel{i n}{n}$

 $\stackrel{\infty}{\underset{\sim}{\sim} \underset{\sim}{\sim}}$ $\underset{\substack{n \\ \stackrel{n}{+} \\ i \\ n}}{ }$
 $\underset{\sim}{*}$
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 BEYOND-FIRST-YEAR STUDENTS............... citizenship
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 tYPE TF MAJOR SUPPIRT－
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BEYOND－FIRST－YEAR STUDENTS．．．．．．．．．． research assistantships，total．．．．．．．．． first－year students．．．．．．．．．．．．．．．．．．．．．． beyond－first－year students．．．．．．．．．．．． U．．s．citizens，total．．．．．．．．．．．．．．．．．．
 foreign stuoents，tural．．．．．．．．．．．．．．．． FIRST－YEAR STUDENTS．．．．．．．．．．．．．．．．．．．．
BEYOND－FIRST－YEAR STUDENTS．．．．．．．． teaching assistantships，total．．．．．．．．． faching assistantships，total．．．．．．．．．． beyond－first－year stunents．．．．．．．．．．． u．s．citizens，total．．．．．．．．．．．．．．．．．．



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 TYPE OF MAJOR SUPPORT fellowships and traineeships, total... first-year students.................... beyond-first-year students............
u. s. citizens, total.................. FIRST-YEAR STUDENTS..................
BEYDND-FIRST-YEAR STUDENTS........ foreign students, total.................
 research assistantships, total......... first-year students..................... beyond-first-year students........... u. s. citizens, total................... FIRST-YEAR STUDENTS....................
BEYOND-FIRST-YEAR STUDENTS........ foreign students, total............... FIRST-YEAR STUDENTS...................
BEYOND-FIRST-YEAR STUDENTS........ teaching assistantships, total......... first-year students....................... beyond-First-year students........... u. s. citizens, total.................
 foreign students, total................ First-year students...................
BEYOND-FIRST-YEAR STUDENTS......... other types of major support, total... first-year students..................... beyond-first-year students........... u. s. citizens, total.................. FIRST-YEAR STUDENTS...................
BEYOND-FIRST-YEAR STUDENT foreign students, total................ FIRST-YEAR STUDENTS.................
BEYOND-FIRST-YEAR STUDENTS.........


[^28]
## APPENDIX D

## Instructions and Consolidated Departmental Data Sheets (NSF Form 345) Doctorate Departments

Table Page
D-1. All sciznces, 2,990 Jepartments ..... 82
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D -3. Physical sciences, 524 departments ..... 84
D-4. Mathematical sciences, 214 departments ..... 85
D--5. Life sciences, 924 departments ..... 86
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D-8. Public institutions ..... 89
D-9. Private institutions ..... 90

## instructions for completing the departmental data sheet

Fui fur ther information on the Graduate Traineeship Program, refer t6 the Announcement (E 71-G-5). Completed copies of the Departmental Lata Sheet should be forwarded to the designated Co. ordinatung Dificial at the instizution. Copies of the form should be prepared in sufficient numbers and in time so that the institution san complete its review and forward three (3) copies (reproductions of the original, not carbonsl of each sheet being submitted, to reach the Nutional Science Foundation not later than October 16, 1971.

Item 5-
Give the numbers of degrees conferred between 7/1/70 and 6/30/71. Under A insert the number of bachelor's degrees (include five year professional degreesl. Under B insert the number of master's degrees lexcluding degrees in the teaching of science e.g. M.A.s.). Under C insert the number of master's degrees in the teaching of science (e.g. M.A.T.). Under $D$ incerr the number of doctoral degrees. Degrees awarded joinlly oy two ur more departments should be recorded on one departmental data sheet only.

Item6-
A full-time graduate student is defined here as a bona tide graduate student lnot a regular statf member. e.g., an instructor) who is enpeged entirely in truining activities in his field of science; these ectivities may embrace any approprate combination of study, teaching, and research. (Some institutions use the phrase "geogrephical full-time student" to describe such students).

A fitst-year giaduate 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 af 1971. All other students should be considered beyond first leves.

Insert in each appropriate box the number of students who are simulteneously $(a)$ full-time graduate students (defined abovel, (b) enrolied in an advanced degree program, and (c) receiving a total stipend of $\$ 1200$ or more•nót counting tuition and excluding parsonal, family and loan sources-dusing the 1971 -1972 academic year.

All students meeting criteria $(a)$ and $\{b)$, but not ( $c$ ), should bed counted Under "Self, Loans and Family." Full-time graunam students working for an advanced degree who are emplovees of another organization, on teave of atisence, and whose major support is pu vited by their emptoyer, slould be listed by type of tmoluyer [e.9., industry). If a graoilate student recelves stipend support from more than ore sout it, choose the major source. For cases of two or more equivaler.t sources choose one major source category so llial usirig only wiole numbers the departmental data sheet will give a reasonably accurate average support picture for the department

Care should the used in listing support sources accurately so inat students (c,articularly research assistants) supported under U. S Government grants are listed under the appropriate U. S. Govern ment agency le.g. stuctents supported on a 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 Vear and Bevond First. Thus every tull. time graduate student enrolled for an advanced degret is counted only once by major solircte of support and once again in a separate brpakou: by level (First Yeas or Beyond First) of study.

## Item 8-

These students are ofteri catled "special" or "non-degree" students. "Special" or "non-degree" students are those students possessing an
undergraduate degree who are anrolled in one or more gradua courses in the department fall 1971, but who are not tintolled for an actranced degree (they have not been admitter to graduate schoul!

## Item 9-

The numbers of graduate students who are working for advantert degrees, but who are not pursuing graduate work full-time ar: enumerated under the four entries for part-time. Do not inclutit "special" students whe are not enralled for advanced degrees lgiven in item 8) or students who have ieft your institulion but are coni pleting their these; white angaged in uther activitics

Item 10-
For items A, B, and C, only faculty of araidemic rank of instructoi or above, who are significantly involved (i.s., teaching one or more courses or seminars andlor directing the research of one or more students) in the graduate and/or undergraduate aradenim program of the department as of the Fall 1971 should be coutitard, including faculty on sabbatical leave who are expected to return. Visitıng 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 whic are staff fincluding the department head) of academic rank instructor or above with a fulltime appointment in the department and whose major responsibilities are with the academic programs of the department. (A faculty mem. ber should be counted as full-time in only one departmentl. Under $B$, give the number of faculty included under $A$ who do not teach any regularly scheduled courses (research professors, research associates of professorial academic rank, etc.l. Under C, give the number of taculty included under A who are significantly involved in the graduate academic progrann of the department li.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-1ime graduate faculty (part-time in this department), defined io include all faculty who are significantly involved in the graduate academic program (see C, above) but whose major responsibilitins or activities are outside the department. Part-time will ustally include senior university administrators ldeans, etc.l affiliate or adjunct professors (from other departments or outside the universityl, professors emeriti, experiment laboratory or extension servict staff, thuseum $\mathbf{5 t a f f}$, etc.

Item 11-
Postdoctorats or Research Associates include individuals with a doc. torate lincludiag foreign degrees that are nquivalent to U.S. doctorates) who devote full-time to research activities or study in the department under temporary appointments carrying no academic jank (instructor or sbove). Such appointments are usually for a specific time period. They may contribute to the academic program through semunars, lectures, or working with graduate students. Their postdoctoral activities have an element of additional training for them.

Uncier $A$, give the total number of Postdoctorals and/or Research Associates as defined above, as of the Fall of 1971. Of this number enter under $B$ the number who are teaching one or more reguterly scheduled courses; under $C$, give the number of Postdoctorals and/or Rusearch Associates (defined abovel who received their doctorates in 1966 or later.

9. Part time graduate students enrolled for advanced degrees Fall 1971 by level of study; do not include "special" students.

| U.S. CITIZENS |  |  | FOREIGN | TOTAL |
| :---: | :---: | :---: | :---: | :---: |
| 1st vear | Beyond 1st | 1st vear | Beyond 1st | Part time |
| 13,096 | 22,528 | 1,541 | 2,667 | 39,832 |

10. Numbers of faculty members:

|  |  |  |  |
| :---: | :---: | :---: | :---: |
| FULL.TIME | DEPARTMENTAL | FACULTY | PART TIME |
| Total | Nonteaching | Graduate | Graduate |
| 57.363 | 2.749 | 48,826 | 9,226 |

11. Number of Postdoctorals/Research Associates:

| Total | Teaching | Recent Doctorals |
| :---: | :---: | :---: |
| 9.250 | 886 | 6.548 |



on 37.550
uition, but Government
(8) nerforming some regular teaching activity but who do not receive the ir major support from a graduate teaching assistantship 8,976.
(C) receiving suppert from more than one source, exclusive of sell. loans, and family 8,782 .
8. Number of "special" students enrofted for graduate course work (full- or part.time) in this department who are not enrolled for an advanced degree 8,919.


## NATIONAL SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1972 DEPARTMENTAL DATA SHEET <br> (NOTE: BEFORE FILLING OUT PLEASE READ THE INSTRUCTIONS ON THE REVERSE)

1. Name and address of institution: 224 Doctorate-granting Institutions Applying in the 1972 GTP.
2. Department (or unit) covered by this data sheet: 664 Engineering Doctorate Departments
3. Person in Department (or unit) preparing this form: Name


Title $\qquad$ SUMMAF
4. Highest degree offered in the Fall of 1971 (CHECK ONE ONLY) Masters $\square$
5. Number of degrees grantcd $7 / 1 / 70$ through $6 / 30 / 71$ : BS 27.165 also BA, etc. MS $\quad 12,069$
also MA. etc. (Ex.
MÁT, etc.) Ph.D. $X$

$$
\text { MAT } 174
$$

$$
\text { Ph.D. } \quad 3,720
$$

Ph.D. D.Sc., 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 1971 (see item 6-instructions) |  |  | U.S. GOVERNMENT (EXCLUDING LDANS) |  |  |  |  |  |  |  |  |  | OTHER U.S. (NON U.S. GOVERNMEN |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | (a) | USDA <br> (b) | DOD <br> (c) | HEW |  |  | NASA <br> (g) | NSF <br> (h) | Other U.S. Government | U.s. <br> Govern- <br> ment <br> Sub- <br> total <br> ( $\mathrm{B}-\mathrm{i}$ ) | This <br> Insti- <br> tution <br> and <br> State <br> and <br> local <br> govern- <br> ment <br> (j) | Privata nonprofit foundations <br> (k) | Industry <br> (1) | Self loans, and family <br> (m) | Other <br> (n) |
|  |  |  | ndea <br> (d) |  |  | PHS (NIH) <br> (e) | OTHER HEW <br> (t) |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| TYPES OF SUPPORT |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fellowships and | United States |  | 175 | 2 | 107 | 695 | 640 | 125 | 203 | 1,089 | 636 | 3.672 | 739 | 299 | 762 |  | 28 |
| Traineeships | Foreign |  |  |  | 5 | 6 | 38 | 4 | 26 |  | 74 | 153 | 431 | 126 | 92 |  | 36 |
| Graduate Research | United States |  | 208 | 31 | 1.018 | 7 | 194 | 34 | 374 | 795 | 641 | 3,302 | 1,355 | 122 | 329 |  | 48 |
| Assistantships | Foreign | 4 | 163 | 14 | 813 | 4 | 126 | 17 | 239 | 771 | 523 | 2.670 | 945 | 83 | 206 |  | 15 |
| Graduate Teaching | United States |  |  |  |  |  | 2 |  |  | 34 | 17 | 53 | 2.691 | 7 | 4 |  | 3 |
| Assistantships | Foreign |  |  |  |  |  | 4 |  |  | 8 | 15 | 27 | 1.575 | 2 | 4 |  | 1 |
| Other Than | United States |  | 6 | 8 | 626 | 1 | 11 |  | 33 | 5 | 454 | 1.144 | 276 | 17 | 726 | 4.087 | 207 |
| Above | Foreign | 8 | 1 |  | 23 |  | 1 |  | 2 | 8 | 81 | 116 | 166 | 29 | 84 | 3,180 | 118 |
| Total | United States | 9 | 389 | 41 | 1,751 | 703 | 847 | 159 | 610 | 1.923 | 1.748 | 8.171 | 5.061 | 445 | 1.821 | 4.087 | 286 |
| Total | Forsign | 10 | 164 | 14 | 841 | 10 | 169 | 21 | 267 | 787 | 693 | 2,966 | 3.117 | 240 | 386 | 3.180 | 170 |
| TOTALS |  | 11 | 553 | 55 | 2.592 | 713 | 1.016 | 180 | 877 | 2,710 | 2.441 | 11,137 | 8,178 | 685 | 2,207 | 7.267 | 456 |

7. The number of students included in the above table (item 6 ) who are:
(A) supported with full tuition from this institution $\mathbf{7 . 1 4 5}$. 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 maior support from a graduate teaching assistantship 1,112.
(C) receiving support from more than one source, exclusive of self, loans, and family 1,761 .
8. Part-time graduate students enrolled for advanced degrees

Fall 1971 by level of study; do not inelude "special" students.

## SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1972

 DEPARTMENTAL DATA SHEET re filling out please read the instructions on the reverselEoctorate-granting Institutions Applying in the 1972 GTP. ata sheet: 664 Engineering Doctorate Departments
$\qquad$
371 (CHECK ONE ONLY) Masters $\square$ Ph.D. X
$\begin{aligned} & \text { BS } \begin{aligned} & 27,165 \text { MS } 12,069 \\ & \text { also BA, etc. }\end{aligned} \text { also MA. etc. (Ex. } \\ & \text { MAT, etc.) }\end{aligned}$
MAT $\quad 174$
MAT., etc.
Ph.D. $\quad 3,720$
Ph.D. D.Sc., etc.
Table D. 2
SUMMARY OF RESPONSES FOR FALL 1971

|  | U.S. GOVERNMENT (EXCLUOING LOANS) |  |  |  |  |  |  |  |  |  | OTHER U.S. (NON U.S. GOVERNMENT) |  |  |  |  |  | Forsign sources | ALL SOURCES |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | AEC | USDA | HEW |  |  |  | NASA | NSF | Dther U. S. Guvernment | U.s. <br> Government Subtotal |  |  |  |  |  |  |  |  |  |  |
|  |  |  | DOD | NDEA <br> (d) | PHS <br> (NIH) | OTHER HEW |  |  |  |  | tution and <br> State and local government | Private nonprofit founda tions | Industry | Self loans, and famity. | Other | Other U.S. Sub. totals |  | Total | First year | Beyond first |
|  | (a) | (b) | (c) |  | (e) | (3) | (g) | (h) | (i) | ( $\mathrm{a}-\mathrm{i}$ ) | (j) | (k) | (1) | (m) | ( n ) | (j-n) | (0) | (p) | (a) | (r) |
| 1 | 175 | 2 | 107 | 695 | 640 | 125 | 203 | 1,089 | 636 | 3.672 | 739 | 299 | 762 |  | 28 | 1.828 | 14 | 5.514 | 2,309 | 3.205 |
| 2 |  |  | 5 | 6 | 38 | 4 | 26 |  | 74 | 153 | 431 | 126 | 92 |  | 36 | 685 | 435 | 1.273 | 540 | 733 |
| 3 | 208 | 31 | 1.018 | 7 | 194 | 34 | 374 | 795 | 641 | 3,302 | 1,355 | 122 | 329 |  | 48 | 1,854 |  | 5.156 | 1.736 | 3.420 |
| 4 | 163 | 14 | 813 | 4 | 126 | 17 | 239 | 771 | 523 | 2,670 | 945 | 83 | 206 |  | 15 | 1,249 | 11 | 3.930 | 727 | 3.203 |
| 5 |  |  |  |  |  |  |  |  | 17 |  | 2.691 | 7 |  |  | 3 | 2.705 |  | 2.758 | 1,066 | 1,692 |
|  |  |  |  |  |  |  |  | 8 | 15 | 27 | 1,575 | 2 | 4 |  | 1 | 1,582 |  | 1.609 | 350 | 1.259 |
| 1 |  | 8 | 626 | 1 | 11 |  | 33 | 5 | 454 | 1.144 | 276 | 17 | 726 | 4,087 | 207 | 5.313 |  | 6,457 | 3.151 | 3,306 |
| 3 | 1 |  | 23 |  | 1 |  | 2 | 8 | 81 | 116 | 166 | 29 | 84 | 3,180 | 118 | 3,577 | 512 | 4,205 | 2,140 | 2,065 |
| 9 | 389 | 41 | 1.751 | 703 | 847 | 159 | 610 | 1,923 | 1.748 | 8.171 | 5,061 | 445 | 1,821 | 4,087 | 286 | 11.700 | 14 | 19.885 | 8,262 | 11,623 |
| 3 | 164 | 14 | 841 | 10 | 169 | 21 | 267 | 787 | 693 | 2,966 | 3,117 | 240 | 386 | 3,180 | 170 | 7.093 | 958 | 11.017 | 3,757 | 7.260 |
| , | 553 | 55 | 2.592 | 713 | 1,016 | 180 | 877 | 2.710 | 2.441 | 11.137 | 8,178 | . 685 | 2,207 | 7,267 | 456 | 18.793 | 972 | 30,902 | 12,019 | 18,883 |

above table (item 6) who are: his institution 7.145 . harging no tuition, but om the U.S. Government
(B) performing some regular teaching activity but who do not receive their maior support from a graduate teaching assistantship 1,112.
(C) receiving support from more than one source, exclusive of self, loans, and family 1,761.
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 2,920


> NATIONAL SCIENCE FOUNDATION GRADUATE YRAINEESHIPS FOR 1972 DEPARTMENTAL DATA SHEET
> (NOTE: BEFORE FILLING OUT PLEASE READ THE INSTRUCTIONS ON THE REVERSEI

1. Name and address of institution: 224 Doctorate granting Institutions Applying in the 1972 GTP
2. Department (or unit) covered by this data sheet: 524 Physical Sciences Doctorate Depariments
3. Person in Department (or unit) preparing this form: Name $\qquad$
MS 4,175
also MA, etc. IEk.
Title Ph.D. $\bar{X}$ MAT 375
MAT., eIc.

Highest degree offered in the Fall of 1971 (CFicCK ONE ONLY| Masters
Number of degrees granted $7 / 1 / 70$ through $6 / 30 / 71$ : BS 8.922 also BA. ete. also MA, etc. IEk

Ph.D. 4.235 Ph.D. O.Sc., etc.

7. The number of students included in the above table fitem 61 who are:
$\langle A|$ supported with full tuition from this institution 9.792 . Include students in institutions charging no tuition, but not those whose tuition comes fiom 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 2,254.
(C) receiving support from more than one source, exclusive of self, loans, and family 2,467.
9. Part-time graduate students enrolled f.2r advanced degrees Fall 1971 by ir.vel of study; do not inclute "special" student.

|  | U.S. CITIZENS |  | FOREIGN |  |
| :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} 1 \text { st year } \\ 728 \end{gathered}$ | $\begin{gathered} \text { Beyond ist } \\ 2,565 \end{gathered}$ | $\begin{gathered} 1 \text { st year } \\ 143 \end{gathered}$ | Bey and 15 |
| 11. Number o' Postdoctorals/Research Associates: |  |  |  |  |
|  | Total | Teaching |  | Recent Doctorals |
|  | 3,998 | 405 |  | 3,085 |

10. Numbers of faculty members:

| FULL.TIME | DEPARTMENTAL | FACULTY | PART TIME |
| :---: | :---: | :---: | :---: |
| Total | Nonteaching | Graduate | Graduate |
| 10,919 | 352 | 9.710 | 1.013 |



## NATIONAL SCIENCE FOUNDATION G\{ADUATE TRAINEESHIPS FOR 1972 DEPARTMENTAL DATA SHEET <br> (note: before filling out please read the instructions on the reverse)

1. Name and address of institution: 224 Doctorate-granting Institutions Applying in the 1972 GTP.
2. Department (or unit) covered by this data sheet: 214 Mathematical Sciences Doctorate Departments
3. Person in Department (or unit) preparing this form: Name $\qquad$ Title

SUMMA
4. Highest degree offered in the Fall of 1971 (CHECK ONE ONLY) Masters
5. Number of degrees granted $7 / 1 / 70$ through $6 / 30 / 71$ :

$$
8 S \quad 8,373
$$

also BA, etc.
MS 3,053
also MA, etc. (Ex. MAT 615

Ph.D. 1.231 MAT, etc.) MAT., etc.

Ph.D, D.Sc., etc.

7. The number of students included in the above table (item 6) who are
(A) supported with full tuition from this institution 3,836 . 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 seme regular teaching activity but who do not receive their maior support from a graduate teaching assistantship 664.
(C) receiving support from more than one source, exclusive of self, loans, and family 818.
9. Part-time graduate students enrolled for advanced degrees Fall 1971 by level of study; do not include "special" students.

| - | U. S. CITIZENS |  | FOREIGN |  | TOTAL <br> Part time |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1st year | 8eyond 1st 2.124 | 1st year | Beyond 1st 125 |  |
|  | 1,363 | 2.124 | 71 | 125 | 3,683 |

11. Number of Postdoctorals/Research Associates:

| Total | Teaching | Recent Doctorals |
| :---: | :---: | :---: |
| 236 | 66 | 148 |

10. Numbers of faculty members:

| FULL.TIME | DEPARTMENTAL. FACULTY | PART TIME |  |
| :---: | :---: | :---: | :---: |
| Total | Nonteaching | Graduate | Graduate |
| 6.000 | 51 | 4.962 | 512 |

AL SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1972
DEPARTMENTAL DATA SHEET Fore filling out please read the instructions on the reverse)
224 Doctorate.granting Institutions Applying in the 1972 GTP. Fdata sheet: 214 Mathematical Sciences Doctorate Departments
paring this form: Name .
Title
Table D-4
SUMMARY OF RESPONSES FOR FALL 1971

Ph.D. 1,231
Ph.D, D.Sc., etc.

ALL SOUACES

B. Number of "special" students enrolled for graduate course work (full- or part-time) in this department who are not enrolled for an advanced degree 1,265.
$\begin{array}{ll} \\ m \text { this institution } & \text { 3. } \mathrm{B} 36\end{array}$ charging no tuition, but from the U.S. Government
(B) performing some regular teaching activity but who do not receive their maior support from a graduate teaching assistantship 664.
(C) receiving support from more than one source, exclusive of self, loans, and family 818.

## 10. Numbers of faculty members:

| FULL-TIME | DEPARTMENTAL | FACULTY | PART TIME |
| :---: | :---: | :---: | :---: |
| Total | Nanteaching | Graduate | Graduate |
| 6,000 | 51 | 4.962 | 512 |

## NATIONAL SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1972 DEPARTMENTAL DATA SHEET <br> (NOTE: BEFORE FILLING OUT PLEASE READ THE INSTRUCTIONS ON THE REVERSE)

1. Name and address of institution: 224 Doctorate-granting Institutions Applying in the 1972 GTP
2. Departmerit (or unit) covered by this data sheet: 924 Life Sciences Doctorate Departments
3. Person in Dapartment (or unit) preparing this form: Name $\qquad$ Title
4. Highest degree offered in the Fall of 1971 (CHECK ONE ONLY) Masters $\square$
5. Number of cegrees granted 7/1/70 through 6/30/71: BS 20,140

MS 4,426 MAT 374 MAT.. etc.

Ph.D. 3,821
Ph.D, D.Sc., etc.
also MA, erc. (Ex

7. The number of students included in the above table (item 6 ) who are:
(A) supported with full tuition from this institution $7,195$. 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 soine regular teaching activity but who do not receive their snajor support from a graduate twaching assistanaship 2,893.
C) receiving support from more than one source, exclusive of self, loans, and family 1,955.
9. Part-time graduate students enrolled for advanced degrees fall 1971 by level of study; do not include "special" students.
10. Numbers of faculty members:

FULL-TIME DEPARTMENTAL - FACULTY

| Total | Nonteaching | Graduate | Graduate |
| :---: | :---: | :---: | :---: |
| 15,262 | 1,431 | 12,588 | 4,040 |


(B) perforining some regular teaching activity but who do not receive their maior support from a graduate teaching assistantship 2,893.
(C) receiving support from mor:
than one source, exclusive of self, loans, and family 1,955.
2. Number of "special" students enrolled for this department who are not enrolled for an advanced degree 1,457 .




## NATIONAL SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1972 DEPARTMENTAL DATA SHEET <br> (nOTE: before filling out please read the instructions on the reverse)

1. Name and address of institution: 224 Doctorate-granting Institutions Applying in the 1972 GTP.
2. Department (or unit) covered by this data sheet: 517 Social Sciences Doctorate Departments
3. Pe:son in Department (or unit) preparing this form: Name $\qquad$ Title Ph.D. $X$
Highest degree offered in the Fall of 1971 (CHECK ONE ONLY) Masters

$$
\begin{array}{ll}
\text { MS } \quad 6,784 \\
\text { also MA, etc. (Ex. } \\
\substack{\text { MAT, etc. } 10}
\end{array}
$$

MAT 196
Ph.D. 2,974
Ph.D. O.Sc., etc.
5. Number of degrees granted 7/1/70 through $\mathrm{B} / 30 / 71$ : BS 29,637

| 6. Major support sources (excluding tuition) of ALL Full-Time Graduate Students enrolled for Advanced Degrees (M.S. and Ph.D.) in the Fall 1971 (see item 6-instructions) |  |  | U.S. GOVERNMENT (EXCLUDING LOANS\} |  |  |  |  |  |  |  |  |  | OTHER U.S. (NON U.S. GOVERNMENT) |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | AEC <br> (a) | USOA <br> (b) | DOD <br> (c) | HEW |  |  | NASA <br> (g) | NSF <br> (h) | Other U. S. Govern ment | U.S. Govern ment Subtatal$(a-i)$ | This Institution and State and local govern. ment | Private nor. profit foundotions <br> (k) | Industry <br> (i) | Self loans, and tamily | Other <br> (n) | Other U.S. Subtotals$(j-n)$ |
|  |  |  | NDEA <br> (d) |  |  | PHS (N\|H) <br> (e) | OTHER HEW |  |  |  |  |  |  |  |  |  |  |
| TYPES OF SUPPORT |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fellowships and Traineeships | United States Foreign | 1 |  | 13 3 | 45 14 | 1,404 7 | 1,165 14 | 403 6 | 14 | 873 | 311 280 | 4,228 324 | $\begin{array}{r} 1,913 \\ 520 \end{array}$ | $\begin{aligned} & 750 \\ & 391 \end{aligned}$ | $\begin{aligned} & 23 \\ & 11 \end{aligned}$ |  | 83 50 | 2,769 972 |
| Graduate Research Assistantships | United States Foreign | 3 | 9 3 | 90 21 | 13 4 | 2 | 87 18 | 38 10 | 6 2 | 171 50 | 182 60 | 598 174 | $\begin{array}{r} 1,493 \\ 303 \end{array}$ | $\begin{array}{r} 140 \\ 32 \end{array}$ | 10 3 | : | 11 4 | 1,654 342 |
| Graduate Teaching Assistantships | United States Foreign | $\begin{aligned} & 5 \\ & 6 \end{aligned}$ |  |  |  |  |  | 6 |  | 28 6 | 41 5 | 75 11 | 4,869 770 | 15 4 |  |  | 18 2 | 4,902 776 |
| Other Than <br> Above | United States Foreign | 7 8 |  | 17 | $\begin{array}{r}138 \\ \\ \hline\end{array}$ |  | 10 |  |  | 13 1 | 80 17 | $\begin{array}{r} 258 \\ 20 \end{array}$ | $\begin{array}{r} 535 \\ 80 \end{array}$ | $\begin{aligned} & 38 \\ & 24 \end{aligned}$ | $\begin{array}{r} 81 \\ 5 \end{array}$ | $\begin{aligned} & 9,391 \\ & 1,483 \end{aligned}$ | 321 55 | $\begin{array}{r} 10,366 \\ 1,647 \end{array}$ |
| Total <br> Total | United States Foreign |  | 9 3 | $120$ | $\begin{array}{r} 196 \\ 20 \end{array}$ | $\begin{array}{r} 1,406 \\ 7 \end{array}$ | $1,262$ | $\begin{array}{r} 447 \\ 16 \end{array}$ | $\begin{array}{r} 20 \\ 2 \end{array}$ | $\begin{array}{r} 1,085 \\ 57 \end{array}$ | 614 362 | 5,159 529 | 8,810 1,673 | 943 451 | $\begin{array}{r} 114 \\ 19 \end{array}$ | 9,391 1,483 | 433 111 | $\begin{array}{r} 19,691 \\ 3,737 \end{array}$ |
| TOTALS |  | 11 | 12 | 150 | 216 | 1,413 | 1,294 | 463 | 22 | 1,142 | 376 | 5,688 | 10,483 | 1,394 | 133 | 10,874 | 544 | 23,428 |

7. The number of students included in the above table (item 6) who are:
(A) supported with full tuition from this institution 6,760. include students in institutions charging no tuition, but not those whose tuitior comes from the U. S. Government or a non-institutional source.
(B) performing some,regular teaching activity but who do not receive their maior support from a graduate teaching assistantship 1,045 .
(C) receiving support from more than one source, exclusive of self, loans, and family 1,201 .
8. Number of graduate c this depart an advance
9. Part-time graduate students enrolled for advanced degrees Fall 1971 by level of study; do not include "special" students.


| U. S. CITIZENS |  | FOREIGN |  | TOTAL. |
| :---: | :---: | :---: | :---: | :---: |
| 1st year | Beyond 1st | 1st year | Beyond 1st | Pari. time |
| 2,889 | 6,058 | 189 | 618 | 9,754 |

## 10. Numbers of faculty members:

| FULL-TIME | DEPARTMENTAL | FACULTY | PART TIME |
| :---: | :---: | :---: | :---: |
| Total | Nonteaching | Graduate | Graduate |
| 9,955 | 379 | 8,352 | 1,346 |

SUMMARY OF RE


## NATIONAL SCIENCE FOUNDATION GRADUATE TRAINEESHIPS FOR 1972 DEPARTMENTAL DATA SHEET <br> (note: before filling out please read the instructions on the reverse)

1. Name and address of institution: 2,073 Doctorate-grantirg Institutions Applying in the $\mathbf{1 9 7 2}$ GTP.
2. Department (or unit) covered by this data sheet:

MS 21,123
also MA. etc. (Ex. MAT, etc.)
3. Person in Department (or unit) preparing this form: Name $\qquad$ Title
4. Highest degree offered in the Fall of 1971 (CHECK ONE ONLY) M.7sters

BS 85,818
5. Number of degrees granted $7 / 1 / 70$ through $6 / 30 / 71$ :
afso BA, etc.

MAT 1,340 MAT., etc.

Ph.D. 11,342
Ph.D, D.Sc., etc.
6. Major support sources (excluding tuition) of ALLL Full-Time Graduate Students enrolled for Advanced Degrees, (M.S. and Ph.D.) in the Fall 1971 (see item 6-instructions)


| TYPES OF SUPP |  |
| :--- | :---: |
| Fellowships and |  |
| Traineeships |  |


| Graduate Research Assistantships | United States Foreign | $\begin{aligned} & 3 \\ & 4 \end{aligned}$ | $\begin{aligned} & 934 \\ & 315 \end{aligned}$ | $\begin{aligned} & 656 \\ & 203 \end{aligned}$ | $\begin{array}{r} 1,245 \\ 570 \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Graduate Teaching Assistantships | United States Foreign | $\begin{aligned} & 5 \\ & 6 \end{aligned}$ | , |  |  |
| Other Then <br> Above | United States Foreign | $\begin{aligned} & 7 \\ & 8 \end{aligned}$ | $\begin{array}{r} 12 \\ 2 \end{array}$ | 54 8 | $\begin{array}{r} 794 \\ 16 \end{array}$ |
| Total <br> Total | United States Foreign | $\begin{array}{r} 9 \\ 10 \end{array}$ | $\begin{array}{r} 1,112 \\ 317 \end{array}$ | $\begin{aligned} & 737 \\ & 221 \end{aligned}$ | $\begin{array}{r} 2,264 \\ 6,32 \end{array}$ |
| TOTALS |  | 11 | 1,429 | 958 | 2,866 |

7. The number of students included in the above table (item 6) who are:
(A) supported with full tuition from this institution 25,088. 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 5,268 .
(C) receiving support from more than one source, exclusive o self, loans, and family 5,50
8. Part-time graduate students enrolled for advanced degrees

Fall 1971 by level of study; do not include "special" students.

10. Numbers of faculty members:

| FULL-TIME DEPARTMENTAL | FACULTY | PART TIME |  |
| :---: | :---: | :---: | :---: |
| Total | Monteaching | Graduate | Graduate |
| 41,543 | 2,082 | 34,824 | 6,537 |

11. Number of Postdoctorals/Research Associates:

| Total | Teaching | Recent Doctorals |
| :---: | :---: | :---: |
| 5,201 | 531 | 3,902 |

Doctorategranting Institutions Applying in the 1972 GTP.
$\qquad$ Title

$$
\text { Ph.D. } 11,342
$$

Table D. 8
-AT.. e.c.

## SUMMARY OF RESPONSES FOR FALL 1971 PUBLIC INSTITUTIONS

$$
\begin{aligned}
& \text { a'so BA, etc. } \quad \text { also MA, etc. (E } \mathrm{K} \text {. } \\
& M A T . \text { etc. })
\end{aligned}
$$

Ph.D. D.Sc.. etc.

ibove table (item 6) who are:
is institution $23,088$.
rourg no tuition, but In the U. S. Government
(B) performing some regular teaching activity but who do not receive their major support from a graduate teaching assistantship 5,268 .
(C) receiving support from more than one source, exclusive of self, toans, and family 5,507 .
8. Number of "special" students enrolled for graduate course work (f.". ne part-time) in this departi: an "ho are not enrolled for an advanced degree 4, b 36 .
Idvanced deg'sen "speciai" stu
ciates:
Recent Do
3,90
ERIC


## CE FOUNDATION GRADUATE TRAINEESHIPS FOR 1972 DEPARTMENTAL DATA SHEET <br> ing out please reao the insiructions on the reverse)

$\mathbb{F}$ granting Institutions Applying in the 1372 GTP.
Table D. 9


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[^0]:    ${ }^{1}$ National Science Foundation, Griduate Student Support and Manpower Resources in Graduate Science Education, Fall 7970 (NSF 71-27) (Washington, D.C. 20402: Supt. of Documents, U. S. Government Printing Office), p. 72.

[^1]:    ${ }^{\text {a }}$ Based on 2,887 matched doctorate departments reporting for both 1970 and 1971. Data for three consecutive years were not available.

[^2]:    ${ }^{2}$ National Science Foundation, Resources for Scientific Activities at Universities and Colleges, 1971 (NSF 72-315) (Washington, D. C. 20402: Supt. of Documents, U. S. Government Printing Office), p. 41.

[^3]:    ${ }^{3}$ Institute of International Education, Open Doon

[^4]:    ${ }^{3}$ Institu:e of Irternational Education, Open Doors, 1972, (New York: IIE Publications Division, 1973).

[^5]:    ${ }^{\mathrm{a}}$ Based on 2,579 doctorate departments reporting for 1969, 1970, ind 1971.
    ${ }^{6}$ NSF traineeships were not awarded in clinical medical fields.
    ${ }^{C}$ History and philosophy departments were not eligible for NSF traineeships.
    SOURCE: National Science Foundation (appendix tables C-17 A thru C-17 Gi.

[^6]:    ${ }^{4}$ National Sc and Colieges 73.300) (Wa Government

[^7]:    ${ }^{4}$ National Science Foundation, Federal Support to Universities and Colleges and Selected Nonprofit Institutions, FY 1971 (NSF 73-300) (Washington, D. C. 20402: Supt. of Documents, U. S. Government Printing Office).

[^8]:    Based on 2,579 doctorate departments reporting for 1969, 1970, and 1971.
    ${ }^{b}$ Less thisin 0.05 pircent change.
    SOURCE: Nationai Science Foundation (appendix rable C.17A).

[^9]:    ${ }^{\text {a }}$ Based on 2,579 doctorate departments reporting for 1969, 1970, and 1971

[^10]:    ansed on 2,879 doctorate depertments reporilin for 10e9, 1970, and 1971.
    Less then 0.5 percent change.
    sOURCE: Natornl scionce Foundation.

[^11]:    ${ }^{\text {anded }}$ Bas the 127 remaining doctorate-granting institutions applying for NSF traineeships.
    ${ }^{6}$ Less than 9.05 percent change.

[^12]:    ${ }^{5}$ Based on 2,579 doctorate departments reporting for 1969, 1970, and 1971.
    ${ }^{6}$ Advance data on Opening Fall Enrollment, 1971 from the Office of Education.
    ${ }^{7}$ Department of Health, Education, and Welfare, Office of Education, Earned Degrees Conferred, various years.

[^13]:    ${ }^{8}$ Based on 2,990 doctorate departments reporting for 1971.
    ${ }^{9}$ National Science Foundation, Graduate Student Support and Manpower Resources in Graduote Science Education, Fall 1965 and Fall 1966 (NSF 68.13)(Washington, D.C. 20402: Supt. of Documents, U.S. Government Printing Office), p. 59.

[^14]:    ${ }^{8}$ Based on 2,990 doctorate departments reporting for 1971.
    ${ }^{9}$ National Science Foundation, Groduate Student Support and Manpower Rescurces in Graduate Science Education, Fall 1965 and Fall 1966 (NSF 68.13)(Washington, D.C. 20402: Supt. of Documents, U.S. Government Printing Office), p. 59.

[^15]:    ${ }^{1}$ National Science Foundation, Groducte Student Support and Manpower Resources in Graduate Science Educotion, Foll 1965 and Foll 1966 (NSF 68-13); Support or Full.Time Graduate Students in the Sclences, Fall 1967 (NSI 69-34); Graduote Student Support and Manpower Resources i/, Graduate Science Edu cation, Fall 1969 (NSF 70-40); and Groducte Student S. pport and Manpower Resources in Graduate Science Educotion, Foll 1970 (NSF 71-27) (Washingion, D. C. 20402: Supt. of Documents, U.S. Government Printing Office).

[^16]:    ${ }^{1}$ National Science Foundation, Graduate Student Support ond Manpower Resources in Graduate Science Education, Fall 1965 and Fall 1966 (NSF 68-13); Support of Full-Time Graduate Students in the Sclences, Fall 1967 (NSF 69-34): Groduate Student Support ond Monpower Resources in Groducte Science Educatiou, Foll 1969 (NSF 70-40); and Graduote Student Support ond Monpower Resources in Graduate Science Education, Fall 1970 (NSF 71.27) (Washington, D. C. 20402: Supt. of Documents, U.S. Gavernment Printing Oifice).

[^17]:    ${ }^{2}$ See appendix $D$ for the instructions used to complete the Departmental Data Sheet (NSF Form 345).

[^18]:    ${ }^{3}$ Department of Health, Education, and Welfare, Office of Education, Students Enrolled for Advonced Degrees, various vears.

[^19]:    ${ }^{4}$ Federal Interagency Committec on Education, Student Support Study Group, Report on Federal Predoctoral Student Support, Port 1 - Fellowships and Troineeships (Washington, D.C.), April 1970.

[^20]:    ${ }^{4}$ Federal Interagency Committee on Education, Student Support Study Group, Report on Federal Predoctoral Student Support, Part 1 - Fellowships and Traineeships (Washington, D.C.), 4 pril 1970.

[^21]:    ${ }^{\text {a }}$ Based on U. S. Office of Education, Students Enrolled for Advanced Degrees, Fall 1970, Summary Data (OE-72-64) (Washington, D. C. 20402: Supt. of Documents, U. S. Government Printing Office). Data for 1971 were not available at time of this report.

[^22]:    ${ }^{1}$ The 224 science doctorate institutions listed here may differ from similar listings published elsewhere for the following principal reasons: (1) Diffeiences in classifying branches, af iliates, or other organizational components of University systems; ( $a$ ) 'arlations 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. Symbolsbehind each name refer to the collowing classifications: 1) "First 20" refer to institutions chosen most frequently by NSF Fellows from 1968 through 1971; 2) D-"Developing" institutions, those which granted seience Ph.D.'s after 1960-61;3) M-"Medical Schools"; 4) 1-"Intermediate", all remaining applicants for traineeships.

[^23]:    
    
    

[^24]:    SOURCE OF MAJOR SUPPORT
    1969

    | TEACHING ASSISTANTSHIPS, TOTAL | 31.221 |
    | :---: | :---: |
    | U.S. SOURCES, TOTAL | 31.221 |
    | U.S. GOVERNMENT | 295 |
    | INSTITUTIONAL SUPPIIRT. | 30.790 |
    | SELF-SUPPORT..... | 0 |
    | ALL OTHER U.S. SOURCES | 136 |
    | FOREIGN SOURCES, TOTAL. | 0 |
    | U.S. CItizens .... | 25.079 |
    | U.S. SOURCES, TOTAL | 25,079 |
    | U.S. GOVERNMENT. | 222 |
    | INSTITUTIONAL SUPPORT | 24,749 |
    | SELF-SUPPORT......... | 0 |
    | ALL DThER U.S. SOURCES | 108 |
    | FOREIGN SDURCES: TOTAL. | 0 |
    | FOREIGN STUDENTS... | 6.142 |
    | U.S. SOURCES. TOTAL | 6,142 |
    | U.S. GOVERNMENT. | 73 |
    | INSTITUTIDNAL SUFPORT | 6,041 |
    | SELF-SUPPORT.......... | 0 |
    | ALL OTHER U.S. SOURCES | 28 |
    | FOREIGN SOURCES, TOTAL. | 0 |
    | nther types of major suppurt, tutal | 33,236 |
    | U.S. SOURCES, total | 32,409 |
    | U.5. GOVERNMENT. | 2,766 |
    | INSTITUTIONAL SUPPORT | 2,178 |
    | SELF-SUPPDRT.... | 24,123 |
    | ALL OTHER U.S. SOURCES | 3,342 |
    | FGREIGN SUURCES, TOTAL.. | 827 |
    | U.S. CITIZENS | 26,584 |
    | U.S. SOURCES. TOTAL | 26,583 |
    | U.S. GOVERNMENT.. | 2,500 |
    | INSTITUTIUNAL SUPPORT | 1,849 |
    | SELF-SUPPORT... | 19,421 |
    | ALL OTHER U.S. SOURCES | 2,813 |
    | FGREIGN SOURCES , TOTAL. | 1 |
    | FOREIGN STUIENTS... | 6,652 |
    | U.S. SOURCES, total | 5,826 |
    | U.S. GOVERNMENT. | 266 |
    | INSTITUTIONAL SUPPORT | 329 |
    | SELF-SUPPORT... | 4.702 |
    | ALL OTHER U.S. SOURCES | 529 |
    | FOREIGN SOURCES, TOTAL. | $8<6$ |

    \# PERCENT CHANGE IS NOT SHOWN WHEN RASE IS 50 oH LESS.

    - LESS THAN 0.05 PERCENT CHANGE.

[^25]:    

[^26]:    * PERCEMT Change is not shown hhen base is 50 or tess.
    a Less than 0.05 Percent change.

[^27]:    \% PERCENT CHANGE IS NOT SHOWN WHEN BASE IS 50 OR less.

    - LESS THAN 0.05 PERCENT CHANGE.

[^28]:    
    196\%-70 1970-71
    3.3
    ~~
    
    
    

    1969
    7.996
    
    
    
     $\vdots$
    $\vdots$
    $\vdots$
    $\vdots$
    $\vdots$
    $\vdots$
    $\vdots$
    $\vdots$
    $\vdots$
    $\vdots$
    $\vdots$
    $\vdots$
    $\vdots$
    $\vdots$
    $\vdots$
    $\vdots$
    
    
    

