DOCUMENT RESUME

ED 152 534 SE 024 012

AUTHOR Harmon, Lindsey R.
TITLE Career Achievements of NSF Graduate Fellows: The Awardees of 1952-1972.
INSTITUTION National Academy of Sciences - National Research Council, Washington, D.C. Commission on Human Resources.
SPONS AGENCY National Endowment for the Humanities (NFAH), Washington, D.C.; National Science Foundation, Washington, D.C.; Office of Education (DHEW), Washington, D.C.
PUB DATE 77
CONTRACT NSF-C-310
NOTE 111p.; Contains marginal legibility in charts and tables

EDRS PRICE MF-$0.83 HC-$6.01 Plus Postage.
DESCRIPTORS *Educational Research; *Fellowships; *Graduate Study; Graduate Surveys; Higher Education; Longitudinal Studies; Professional Recognition; *Science Education; Vocational Development; *Vocational Followup
IDENTIFIERS *National Science Foundation

ABSTRACT

The National Science Foundation (NSF) Graduate Fellows of calendar years 1952-1972 were followed up in this study to determine their subsequent career achievements. Career achievements of these individuals are discussed in terms of the following criteria: doctorate attainment, postdoctoral fellowship awards, faculty membership, dissertation adviser status, migration from Ph.D. institution to employment, research grant awards, postdoctoral employment, and publications and citations. Data on career outcomes are presented in tabular form and occasionally interpreted in graphic displays. Where feasible, comparative data on the corresponding base population of Ph.D.'s is presented. Among the major findings were: (1) 84% of the Fellows of the 1950s had attained doctorates by 1974; (2) the mean time lapse from B.A. to Ph.D. degress for NSF Fellows was about 30% less than for the comparable Ph.D.; and (3) former NSF Fellows are much more frequent contributors to the scientific literature than the typical Ph.D.'s are. (MN)

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Career Achievements of NSF Graduate Fellows:

The Awardees of 1952-1972

U.S. DEPARTMENT OF HEALTH
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Commission on Human Resources

SE 024 012

CAREER ACHIEVEMENTS OF NSF GRADUATE FELLOWS: THE AWARDEES OF 1952-1972

Lindsey R. Harmon
Project Director

A Report to the
NATIONAL SCIENCE FOUNDATION
by the
Commission on Human Resources
NATIONAL RESEARCH COUNCIL

NATIONAL ACADEMY OF SCIENCES
1977

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NOTICE

This report is based on research conducted by the National Research Council with the support of the National Science Foundation, the U.S. Office of Education, and the National Endowment for the Humanities under Contract No. NSF-C310, Task Order 314. However, any opinions, findings, conclusions, or recommendations expressed herein are those of the author and do not necessarily reflect the views of the sponsoring agencies.

Preface

Since 1952 the National Science Foundation has conducted a program of fellowships in the sciences, calling on the National Research Council to arrange for committees of scientists to evaluate the applicants for these fellowships. Of the several fellowship programs sponsored by the NSF, the Graduate Fellowship Program has been the largest. The Foundation in 1975 asked the NRC to examine the career outcomes of those to whom the Graduate Fellowship awards were made. The present report describes the results of this examination.

No attempt is made in this report to evaluate the fellowship program itself. The report is strictly factual in nature and concerned solely with the career outcomes that could readily be ascertained. Some suggestions are made in Appendix 8 concerning a possible evaluative study, should one be made by some other organization.

This study was conducted under the guidance of a panel composed of members of the Board on Human-Resource Data and Analyses and the Board on Fellowships and Associateships, which operated from 1974 to 1977 under the Commission on Human Resources. We are indebted to the panel--Elizabeth Gantt, Monroe Donsker, Winton Manning, and Lee Grodzins, panel chairman--for their work in guiding the preparation of this document. The study was designed and carried out by Lindsey R. Harmon, Project Director, who was ably assisted in the work by Norma Melendez and Susan Henry. We are greatly indebted to them for bringing this work to completion.

Harrison Shull
Chairman
Commission on Human Resources

HIGHLIGHTS

The NSF Graduate Fellows of 1952-1972 calendar years were followed up in this study to determine their subsequent career achievements. The major findings are very briefly summarized below. For details and qualifying comments, a careful reading of the text is recommended.

- 84% of the Fellows of the 1950's had attained doctorates by 1974 (86% of the men and 56% of the women); of the Fellows of subsequent years, the percentages are somewhat lower, depending on the passage of time available for completion of studies.

- The mean BA-to-PhD time lapse for NSF Fellows is about 30% less than for the typical PhD of the same field, sex, and graduation cohort. The variations about these means are also smaller--typically about half as large as for the general population of PhD's.

- BA-to-PhD time lapse for female Fellows is typically longer by 6% to 16% than that for male Fellows. A similar difference by sex characterizes the general PhD population.

- NSF Fellows' plans at PhD include postdoctoral study in about 30% more of the cases than is typical for PhD's in general.

- Approximately 11% of the male NSF Graduate Fellows and 4% of the female Fellows from the 1950's were awarded NSF Postdoctoral Fellowships; these percentages dropped to 5% and 2.5%, respectively, for the Fellows of the mid-1960's and to 1% or less for the late 1960's and early 1970's.

- Approximately one third of the NSF Graduate Fellows have been identified as members of faculties of U.S. colleges and universities in the mid-1970's. This proportion varies by field, by fellowship cohort, and by sex, and may be an underestimation because of the difficulties of determining faculty membership.

- Over one third of the former NSF Graduate Fellows of the earliest cohort (1952-1961) had by 1974 become the dissertation advisers of one or more students who had been granted doctorates at U.S. universities.

- Almost 99% of the NSF Fellows took their doctorate training in Roose-Andersen rated departments, but only about 20% of all Fellows were found, in the mid-1970's, to be employed as faculty members in departments in this category; 12% were so employed in unrated departments, while two-thirds were either not faculty members or could not be so identified.

- Followed up in the surveys of doctoral scientists and engineers in 1973 and 1975, about two-thirds of the former NSF Fellows who had attained doctorates were employed in institutions of higher education; 5% to 6% were employed by the Federal government, 1% by state and local governments, about 20% by business and industry, and about 5% by all other employer categories.

- Teaching and research are the primary work activities most frequently mentioned by the PhD's among former NSF Graduate Fellows--each activity characterizing almost 40% of the group. Administration of research is the third most frequent activity (8% to 9%); a wide variety of other activities characterizes the work of the rest of the group.

- Former NSF Fellows are frequent contributors to the scientific literature--much more so than the typical PhD. The number of publications varies widely by field, cohort, and sex, as does also the number of times their work is cited by others. In a comparable PhD cohort (1960-1964) the NSF Fellows publish nearly 40% more than the average of all science PhD's, and are cited more than twice as often.

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CAREER ACHIEVEMENTS OF NSF GRADUATE FELLOWS:

The Awardees of 1952-1972

Introduction

This report concerns the persons awarded National Science Foundation Graduate Fellowships over the period 1952-1972. There were, in all, 13,278 winners of these Fellowships--11,686 men and 1,592 women. Career achievements of these individuals will be discussed in terms of the following criteria: attainment of the doctorate; award of a postdoctoral fellowship; becoming a faculty member; achieving dissertation adviser status; migration from PhD institution to employment; winning of research grants; employment after the doctorate; and publications and citations. The NSF Fellowship program is still in operation but not enough time has elapsed for substantial numbers of the more recent Fellows to have attained any of the criteria of career accomplishment used in this report. Accordingly, Fellows awarded grants after 1972 have been excluded from this study. Dates throughout are in terms of calendar years.

The data on career outcomes will be presented in tabular form and occasionally interpreted in graphic displays. Where feasible, comparative data on the corresponding base population of PhD's will be presented. However, no statement of policy implications will be attempted. Whenever year of fellowship award is used, it refers to the year of first award, in the event that more than one award was made. No special data collection was attempted for this study. The data resources of the Commission on Human Resources (CHR) of the National Research Council provide information on substantial and usually representative samples of the basic population. The nature of the CHR data, and the extent to which data were available regarding the fellowship-holding population will be described in the report.

Following the description of the objective findings of this report, the data potentials for a further study are described. Such a study, by an organization not involved in the selection process as is the NRC, might be of an evaluative nature, concerned with both the selection of Fellows and with evaluation of the NSF Fellowship program. In this report, the potential parameters for such a study, but not the specific design, are indicated in Appendix 8.

It might be noted, in examining this report, that there is no mention in it of racial/ethnic data. This is due simply to the fact that such data were not collected with respect to the candidates for NSF Fellowships.

Criteria of Career Achievement

1. Attainment of the Doctorate

The first step in the career of a graduate fellow that can be evaluated as a measure of success is the attainment of the doctorate. This is noted via the Doctorate Records File (DRF) of the CHR, which has been maintained for many years under the sponsorship of a number of government agencies. The DRF contains the names of all PhD's (or holders of equivalent third-level degrees) from United States universities from 1920 to the present. The record for each PhD contains information on all degrees held, including the institution granting the degree, the fields, and the years in which granted. For all persons graduating since 1957--which would include almost all of the NSF Graduate Fellows--there is extensive information about plans for the year immediately following award of the doctorate, citizenship, etc. The main use of the DRF for this report, however, will be to tabulate the achievement of the first step after the award of the fellowship--the attainment of the doctorate.

2. Award of a Postdoctoral Fellowship

For those who attain the doctorate, the award of a Postdoctoral Fellowship by the NSF represents another measure of career achievement. Information on this criterion comes from the same source as the original list of NSF Fellows--the Cumulative Index of NSF applicants and awardees. The competition for the postdoctoral fellowships was keen, and an award represents the judgment of a panel of scientists, largely academic, that the individual has displayed a high potential for achievement in research and teaching. Although many other postdoctoral awards are made by other organizations, the NSF awards were the ones available within the limitations of this project.

3. Becoming a Faculty Member

The National Faculty Directory provides an "outside" source of information about academic employment of former NSF Fellows. This directory, available in both book and computer tape form, is assembled by a private organization, and is published yearly. It attempts to include all the faculties of U.S. institutions of higher education, compiled from the catalogs of the institutions, and includes, together with the name, the institution and department of all faculty included. Although there may be omissions and even some errors in the tape transcription, this source of data provides very usable statistics regarding aggregations of individuals.

4. Achieving Dissertation Adviser Status

Some of the NSF Fellows eventually become advisers of PhD candidates in United States universities. Those who do are noted in the Dissertation Adviser File of the CHR, an outgrowth of the DRF. This is made possible by the fact that each new PhD lists the name of his dissertation adviser; these names are then collected into a single file, which provides the career information sought.

5. Migration from PhD Institution to Employment

For those who enter academic employment, a measure of the shift from graduate institution to institution of employment is provided by use of the Roose-Andersen (R-A) ratings published by the American Council on Education in 1970 (see A Rating of Graduate Programs). These departmental ratings apply only to doctorate-granting departments; departments which only recently began granting doctorates are not included; four-year colleges and masters-only institutions also are not included. Use of these ratings thus serves to quantify the inevitable movement of the majority of PhD graduates out of the rated category of institutions into those which have not been rated. To perform this analysis, a tape with the R-A ratings was collated with the CHR tapes which indicated departments (inferred from field of PhD) of graduation and departments of employment (from the National Faculty Directory) for those who were academically employed. By comparing the frequency of the rated departments in the two sources, and the mean rating of those departments within the scope of the Roose-Andersen system, it is possible to chart the movement from the granting of the doctorate to later employment.

6. Winning of Research Grants

The National Institutes of Health and the National Science Foundation award grants in aid of research on a competitive basis, on the strength of peer judgments of the worthiness of the proposed research. A computer tape was secured from each of these agencies, the two tapes were merged, and then searched for data on the award of research grants to the NSF Graduate Fellows. The available data tapes from these two sources were not complete; they covered grants by the NSF for the period 1967-1972, and for the NIH the years 1962-1971. Despite the limitations of coverage, they do provide one additional index of career achievement for these Fellows.

7. Employment after the Doctorate

For those who attain PhD's, whether or not they enter academic employment, it is possible to determine (for a carefully-selected sample) important information with respect to later employment, such as employer category, primary work activity, and salary. This was done by reference to the Comprehensive Roster of Doctoral Scientists and Engineers, which is maintained by the CHR under the sponsorship of the NSF, with the assistance of other government agencies. To ascertain the employment data, a representative sample of persons included in the Comprehensive Roster is followed up each two years and current employment and related data are requested. The Comprehensive Roster thus became the source for a number of the data tables in the present report.

8. Publications and Citations

No single index of achievement can be taken as completely satisfactory; each must be viewed as partial data. One item of data of considerable importance in the scientific and academic world is the number of publications in the scientific literature. A closely related item is the number of citations of these publications by other scientists. A source of information on both of these matters is available from the Institute for Scientific Information (ISI) which searches a very large and inclusive segment of the world's scientific literature, and makes the results available in both printed and computerized form. It was the computer tape from the ISI which furnished the data on publications and citations used in the current follow-up of NSF Fellows.

9. Limitations of Publication and Citation Counts as Career Criteria

Because the names of authors in the ISI data were given in the form of the last name and first and middle initials, a large number of persons appeared with identical names, indistinguishable in the ISI data. To minimize the probability of misinformation from this source, the files of the CHR were reduced to the same format, and all persons with identical names (when so truncated) were eliminated before the publications and citations were counted for the present study. This step necessarily eliminated a number of Fellows with identical names (or names identical with others in the file who were not NSF Fellows) but there is no reason to believe that the remaining cases (termed unique name cases) were in any way a biased sample of the population.

The proportion of Fellows with unique names who appeared in the ISI data could then be used to estimate the proportion of Fellows who had published. Another limitation of these data, of course, is that only first-named authors are included. Again, this is a limitation of great importance where individuals are concerned, but its effect on aggregations, such as the present statistics, is minimal. The same procedure, and the same limitations, applies to the proportions cited in the scientific literature: this is taken as a good estimation of the citations to all NSF Graduate Fellows. Counts of these publications and citations were taken from the ISI data for the years 1961 through 1972 inclusive. Although this particular year span is not necessarily optimal for this particular group of individuals, it constituted the available data source, and the resources for this project did not permit a more closely tailored data set. Attention to finer detail in this matter might well be undertaken if a more exacting analysis is made at some future date.

The several sources of information cited above were used to provide a variety of data regarding the career attainments of the NSF Graduate Fellows of 1952-1972. Not all of the data available in these sources were used in the tabulations described in what follows, due to the limited time and funds available for the analyses.

In the pages that follow, the data available from these sources with regard to the NSF Graduate Fellows will be described. Where available, comparable data regarding the entire population of PhD's, by the same graduation cohorts, will be presented to form a frame of reference for the NSF data. Because the NSF Fellows are a highly-selected group, and because of the fact that they received support during their graduate years, it is recognized that there are complications to the matter of comparisons. Evaluations of the significance of the comparisons with the generality of PhD's therefore will not be attempted here. Comparative data with respect to all of the career achievement criteria were not available, as indicated earlier, because of the limitations of time and funds for this study. Such comparative data with respect to all of the data sources is potentially available, however, should a more searching study later be attempted.

CAREER CRITERION ACHIEVEMENTS BY NSF FELLOWS

Proportion Awarded the Doctorate

Table 1 shows the percentage of Graduate Fellows, by sex and by cohort of first award, who attained the doctorate by 1974, the most recent year for which the DRF was complete at the time these tabulations were made. The data are presented by field of award, by field groups--EMP (Engineering, Mathematics, and the Physical Sciences) and Bio/behavioral--and for the total of all fields combined. The first row of each field set shows the number of awardees; the second row shows the percentage of this number who have attained doctorates. It will be noted immediately that in some fields the numbers of women are so small that the percentages have low reliability; i.e. they cannot be relied upon to indicate significant trends. For the sake of consistency, however, all percentages are shown; the presence of the numbers should serve to make the unreliability evident where N is small. For the latest cohort (1972) the numbers are small even for the men in the separate fields, but in the field groupings they are large enough for good reliability.

Rate of Doctorate Attainment

The data of Table 1 combine all levels of award.* For rates of doctorate attainment, a break-out by level is more informative, and is provided in Appendix 1. Figure 1 was prepared from these appendix figures, and shows the three levels of award separately. As expected, the Terminal year awardees have the highest attainment rates, and reach the maximum rate earliest. It will be noted that the horizontal axis has here been interpreted in two ways, by cohort of first support and by years from first support to 1974. Because of the small number of cases at the Terminal level, the curve is somewhat jagged, but the general level is above the 90% point for the period greater than 10 years after the award, and above the 80% point for the earliest data on the chart.

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* First year fellows are those with less than 1 year of graduate school at the time of award; Terminal fellows are those within 1 year of the PhD at the time of award; Intermediate fellows are all others.

The second line in Figure 1 is for the Intermediate level, which includes all cases between the first year of graduate study and the terminal year. It reaches a high point just below 95%, and is consistently above the 80% point after 8 years beyond the first award. The third line is for the First-year people; here we see that the percentage of PhD attainment rises quite rapidly, passing the 50% point (which represents median performance) at five years, and reaches a maximum of about 80% at 15 years after the first award. Unfortunately, there are not available any general normative data against which to compare this performance, as there is no roster of beginning graduate students whose rate of progress might serve as a norm. The most nearly comparable data regarding the general population of graduate students are based on the successful cases only--those who have attained the doctorate. Data on this group may be found in Doctorate Recipients from U.S. Universities, 1958-1966; more up-to-date data will be forthcoming soon in the report A Century of Doctorates.

Baccalaureate-to-Doctorate Time Lapse

Table 2 shows the baccalaureate-to-doctorate time lapse data for the NSF Graduate Fellows who had attained the doctorate by 1974. The data in this table are by year of PhD, rather than by year of first award. There are two reasons for this change in cohort definition. The first is that only PhD cohort data are available for comparison. The second is that if award-cohort data were shown, there would be a bias in the data, inasmuch as only the most rapid of the recent cohorts would have graduated, as compared to almost all of the older cohorts who might ever be expected to earn PhD's. The intervening years would be expected to show a rather steady trend which would, however, be largely artifactual. As it is, the data are presented by field and by sex, as these factors have been shown in previous research to have a strong influence on rate of doctorate attainment. In Table 3 the baccalaureate-to-doctorate data for all PhD's are presented for comparison purposes. No evaluation is here attempted of the reasons why the time lapse is much less in the case of the NSF Fellows than for the generality of PhD's in the same fields. Studies of this question were made by the NAS Office of Scientific Personnel and published as Technical Reports #14 (January 1959) and #18 (March 1961) regarding NSF Fellowship applicants and awardees of the 1950's.

Table 1

Percentage of NSF Graduate Fellows of 1952-1972 Attaining PhD's by 1974, by Cohort of First Award, Sex, and Field of Application

Field of Application		Men 1952-61	Men 1962-66	Men 1967-71	Men 1972	Men Total	Women 1952-61	Women 1962-66	Women 1967-71	Women 1972	Women Total	Both Sexes 1952-61	Both Sexes 1962-66	Both Sexes 1967-71	Both Sexes 1972	Both Sexes Total
Mathematics	N*	516	743	691	64	2014	34	55	70	1	160	550	798	761	65	2174
	PhD %	81.8	75.5	53.4	7.8	67.4	52.9	52.7	40.0		46.9	80.0	73.9	52.2	7.7	65.9
Physics	N	987	643	454	36	2120	19	14	14	1	48	1006	657	468	37	2168
	PhD %	88.1	87.7	53.7	5.6	79.2	68.4	57.1	28.6		52.1	87.8	87.1	53.0	5.4	78.6
Chemistry	N	907	510	393	34	1844	72	37	44	5	158	979	547	437	39	2002
	PhD %	93.8	91.6	66.9	8.8	85.9	55.6	75.7	61.4		60.1	91.0	90.5	66.4	7.7	83.9
Geosciences	N	274	159	137	18	588	9	9	10	4	32	283	168	147	22	620
	PhD %	87.6	86.8	46.7		75.2	33.3	66.7	10.0		31.3	85.9	85.7	44.2		72.9
Engineering	N	748	627	472	85	1932	1	9	7	3	20	749	636	479	88	1952
	PhD %	73.1	71.3	47.9	9.4	63.6		44.4	28.6		30.0	73.0	70.9	47.6	9.1	63.2
EMP Total**	N	3432	2682	2147	237	8498	135	124	145	14	418	3567	2806	2292	251	8916
	PhD %	85.4	81.2	54.3	7.6	74.0	54.8	60.5	42.8		50.5	84.2	80.3	53.6	7.2	72.9
Biosciences	N	788	469	492	79	1828	207	201	225	44	677	995	670	717	123	2505
	PhD %	89.5	87.4	61.0	3.8	77.6	56.0	57.2	47.1	2.3	49.9	82.5	78.4	56.6	3.3	70.1
Psychology	N	98	143	132	31	404	43	50	90	16	199	141	193	222	47	603
	PhD %	92.9	82.5	59.1	3.2	71.3	48.8	56.0	47.8	6.3	46.7	79.4	75.6	54.5	4.3	63.2
Soc Sci & Oth	N	98	329	446	83	956	28	63	177	30	298	126	392	623	113	1254
	PhD %	89.8	73.9	40.8	2.4	53.9	67.9	46.0	30.5	3.3	34.6	84.9	69.4	37.9	2.7	49.3
Bio/Beh Total	N	984	941	1070	193	3188	278	314	492	90	1174	1262	1255	1562	283	4362
	PhD %	89.8	81.9	52.3	3.1	69.7	56.1	54.8	41.3	3.3	45.5	82.4	75.1	48.8	3.2	63.2
GRAND TOTAL	N	4416	3623	3217	430	11686	413	438	637	104	1592	4829	4061	3854	534	13278
	PhD %	86.4	81.4	53.7	5.6	72.8	55.7	56.4	41.6	2.9	46.8	83.7	78.7	51.7	5.1	69.7

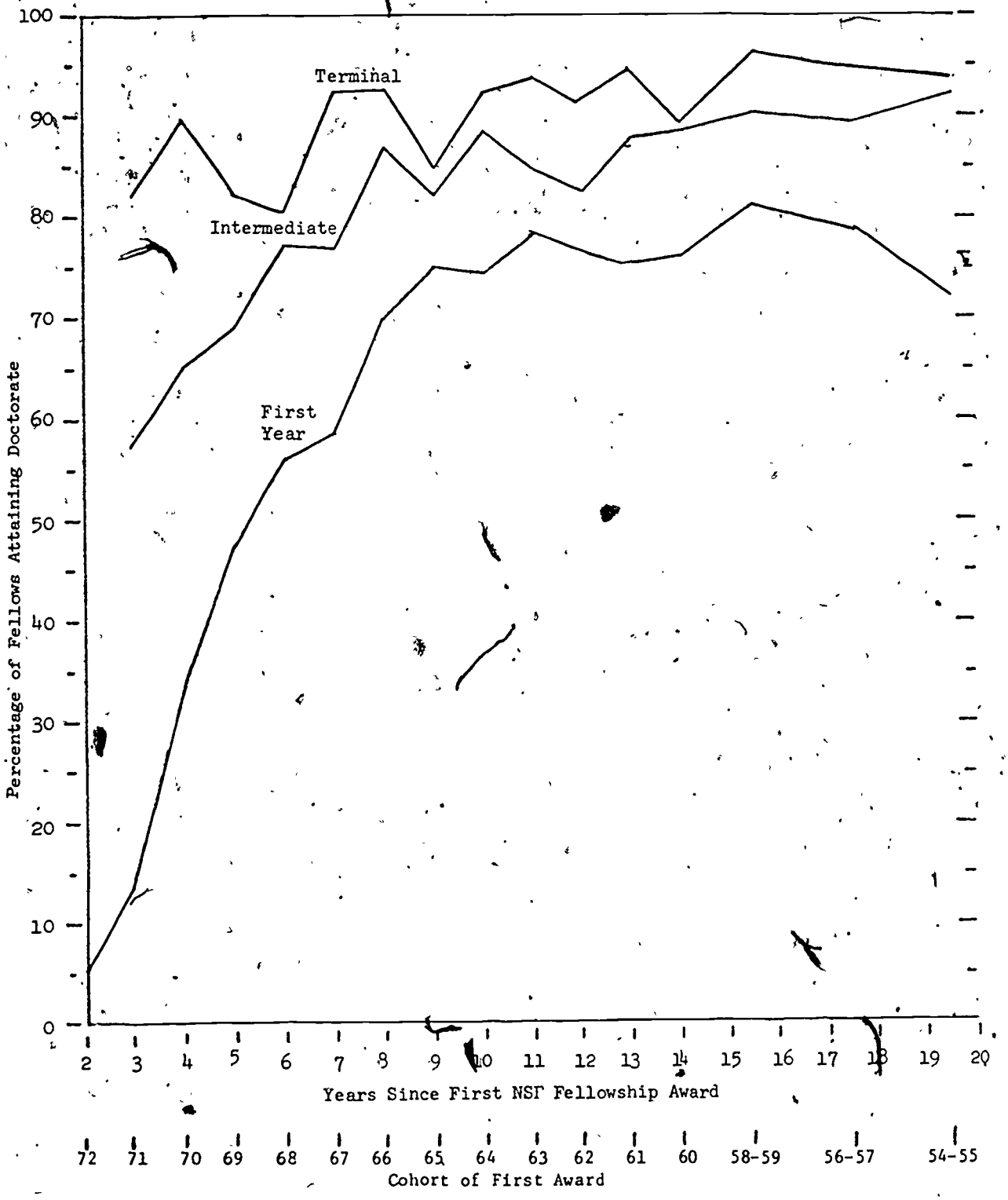
* N stands for number of awardees; PhD % is percent attaining doctorates.

** EMP stands for Engineering, Mathematics, and Physical Sciences.

SOURCE: NRC, Commission on Human Resources

Figure 1

Doctorate Attainment as a Function of Years Since First NSF Award, For First Year, Intermediate, and Terminal Fellows



* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources

Table 2

Baccalaureate-to-Doctorate Time Lapse in Years for NSF Fellows of 1952-1972, by Field, Sex, and PhD Cohort

	MEN						WOMEN						BOTH SEXES					
	1950 -54	1955 -59	1960 -64	1965 -69	1970 -74	TOTAL	1950 -54	1955 -59	1960 -64	1965 -69	1970 -74	TOTAL	1950 -54	1955 -59	1960 -64	1965 -69	1970 -74	TOTAL
Mathematics																		
Number*	19	96	219	510	467	1311	--	3	5	27	36	71	19	99	224	537	503	1382
Mean	--	4.83	5.02	5.13	5.47	5.20	--	--	--	5.15	5.92	5.70	--	4.83	5.08	5.13	5.50	5.22
S.D.	--	2.09	2.00	2.05	2.19	2.10	--	--	--	2.05	2.50	2.60	--	2.06	2.13	2.05	2.22	2.13
Physics																		
Number	47	231	386	549	440	1653	--	2	2	11	11	26	47	233	388	560	451	1679
Mean	4.56	5.33	5.73	5.85	6.11	5.78	--	--	--	--	--	6.12	4.56	5.32	5.74	5.86	6.11	5.79
S.D.	1.73	1.66	1.85	2.04	2.23	2.02	--	--	--	--	--	1.51	1.73	1.65	1.84	2.03	2.22	2.01
Chemistry																		
Number	69	327	341	404	393	1534	--	12	17	26	34	89	69	339	358	430	427	1623
Mean	4.25	4.44	5.12	4.96	5.25	4.93	--	--	--	5.75	5.28	5.36	4.25	4.45	5.13	5.01	5.25	4.95
S.D.	2.13	1.52	2.03	1.71	1.55	1.76	--	--	--	2.83	2.37	2.25	2.13	1.51	2.01	1.80	1.63	1.79
Geosciences																		
Number	11	68	117	127	103	426	1	1	1	6	3	12	12	69	118	133	106	438
Mean	--	5.76	6.30	6.57	6.60	6.32	--	--	--	--	--	--	--	5.78	6.28	6.50	6.68	6.32
S.D.	--	2.42	2.63	2.59	2.93	2.66	--	--	--	--	--	--	--	2.40	2.62	2.58	3.05	2.69
Engineering																		
Number	18	116	268	382	340	1124	--	--	--	2	2	4	18	116	268	384	342	1128
Mean	--	5.22	5.73	5.87	5.73	5.70	--	--	--	--	--	--	--	5.22	5.73	5.86	5.73	5.70
S.D.	--	2.19	2.58	3.02	2.33	2.63	--	--	--	--	--	--	--	2.19	2.58	3.02	2.32	2.63
Life Sciences																		
Number	59	256	277	344	416	1352	7	37	34	105	124	307	66	293	311	449	540	1659
Mean	5.36	5.92	6.59	6.29	6.12	6.19	--	7.85	7.03	6.55	6.46	6.69	5.33	6.17	6.64	6.35	6.20	6.28
S.D.	2.35	2.81	2.91	3.19	2.54	2.85	--	5.05	4.14	4.44	2.78	3.87	2.29	3.24	3.06	3.52	2.60	3.07
Psychology																		
Number	7	36	51	94	101	289	--	9	5	26	52	92	7	45	56	120	153	381
Mean	--	6.13	5.53	5.43	5.32	5.47	--	--	--	5.54	6.04	5.91	--	5.92	5.74	5.45	5.57	5.58
S.D.	--	3.44	2.12	2.14	2.05	2.29	--	--	--	2.63	3.65	3.40	--	3.31	2.55	2.24	2.71	2.61
Social Sciences																		
Number	3	10	36	137	233	419	--	6	5	17	46	74	3	16	41	154	279	493
Mean	--	--	6.75	6.31	6.93	6.69	--	--	--	--	7.80	7.78	--	--	6.71	6.57	7.08	6.86
S.D.	--	--	2.27	2.66	3.26	2.99	--	--	--	--	3.27	3.75	--	--	2.25	3.11	3.27	3.14
Grand Total**																		
Number	235	1143	1706	2584	2543	8211	8	70	71	226	322	697	243	1213	1777	2810	2865	8908
Mean	4.72	5.22	5.72	5.69	5.90	5.67	--	6.59	7.13	6.27	6.45	6.46	4.75	5.30	5.78	5.74	5.96	5.73
S.D.	2.22	2.23	2.36	2.50	2.42	2.42	--	4.16	5.36	3.80	3.11	3.72	2.22	2.40	2.56	2.63	2.52	2.55

* Number is the number for a given cohort who had attained the doctorate by 1974.

** Grand Total includes some Fellows who subsequently switched to a non-science field.

SOURCE: NRC, Commission on Human Resources

Table 3

Normative Data from the Doctorate Records File: Mean and S.D. of Baccalaureate-to-Doctorate Time Lapse in Years

	MEN					WOMEN					BOTH SEXES				
	1950 -54	1955 -59	1960 -64	1965 -69	1970 -74	1950 -54	1955 -59	1960 -64	1965 -69	1970 -74	1950 -54	1955 -59	1960 -64	1965 -69	1970 -74
Mathematics															
Mean	8.06	8.20	7.93	6.96	7.57	9.40	12.07	9.72	8.37	8.43	8.13	8.38	8.04	7.04	7.64
S.D.	4.82	4.66	4.51	3.78	3.66	4.95	7.81	7.15	4.78	4.96	4.83	4.92	4.73	3.86	3.79
Physics															
Mean	7.35	7.41	7.56	7.26	7.63	7.97	9.00	9.98	7.43	7.95	7.36	7.45	7.59	7.27	7.64
S.D.	3.69	3.60	3.39	3.27	3.36	4.23	4.57	5.23	2.95	3.32	3.71	3.63	3.44	3.26	3.36
Chemistry															
Mean	6.65	6.39	6.82	6.58	6.81	7.87	8.57	7.45	7.56	7.49	6.70	6.49	6.86	6.65	6.68
S.D.	3.53	3.28	3.49	3.50	3.35	4.73	5.82	4.24	4.63	4.07	3.60	3.47	3.54	3.60	3.43
Geosciences															
Mean	8.09	8.16	8.71	8.73	9.14	--	--	--	10.22	9.21	8.14	8.19	8.74	8.76	9.14
S.D.	4.78	4.42	4.55	4.25	4.80	--	--	--	6.38	5.34	4.86	4.47	4.58	4.31	4.82
Engineering															
Mean	7.79	8.27	8.20	8.23	8.57	--	--	8.54	8.00	8.81	7.80	8.30	8.20	8.23	8.57
S.D.	3.95	4.43	4.35	4.50	4.49	--	--	3.11	4.18	4.73	4.00	4.49	4.35	4.50	4.49
Life Sciences															
Mean	8.07	8.11	8.60	8.38	8.22	9.51	10.47	10.27	9.19	9.05	8.20	8.32	8.76	8.49	8.35
S.D.	4.71	4.36	4.34	4.47	4.26	5.63	6.21	5.89	5.78	5.75	4.82	4.61	4.54	4.67	4.53
Psychology															
Mean	7.79	8.24	8.55	7.94	7.77	10.90	11.89	11.59	10.62	9.76	8.18	8.83	9.13	8.54	8.32
S.D.	4.78	4.55	4.68	4.65	4.53	6.51	7.80	7.47	7.26	6.79	5.14	5.39	5.46	5.45	5.33
Social Sciences															
Mean	10.36	10.62	10.39	9.80	9.64	12.32	13.76	13.41	12.53	11.01	10.51	10.87	10.65	10.08	9.84
S.D.	5.70	5.81	5.72	5.70	5.39	6.55	7.92	8.26	8.09	7.08	5.80	6.07	6.03	6.05	5.67

SOURCE: NRC, Commission on Human Resources

Plans at PhD: An Early Indicator of Probable Outcomes

As mentioned earlier, data on actual employment in the years following award of the doctorate are available for only a sample of the Fellows. However, previous studies* have indicated that the information provided on the Survey of Earned Doctorates with regard to plans for the first year after graduation is a reliable indicator of what will actually occur. Furthermore, as data on plans are available for all PhD's, not just a sample, it seems justifiable to examine these data as early indicators. Table 4 shows in brief outline what the plans at PhD were for those NSF Fellows who attained the doctorate. These data may be compared with those for the total of all PhD's published annually in the Summary Reports of the DRF, and to be published soon in A CENTURY OF DOCTORATES. Table 4 combines all fields and both sexes; detailed data by field and sex are given in Table 5.

Table 4

NSF Fellows' Plans at PhD, All Fields Combined

		Cohort of PhD					
		1960-64	65-68	69-70	71-72	73-74	Total
Postdoctoral Training	Number	509	574	390	464	329	2266
	Percent	28.5	25.9	31.9	36.6	32.8	30.2
Academic Employment	Number	674	956	463	469	386	2948
	Percent	37.8	43.1	37.9	37.0	38.4	39.3
Nonacademic Employment	Number	531	579	299	251	223	1883
	Percent	29.7	26.1	24.5	19.8	22.2	25.1
Other, and Plans Unknown	Number	71	110	70	83	66	400
	Percent	4.0	5.0	5.7	6.6	6.6	5.3
NSF Fellows with PhD's since 1960		1785	2219	1222	1267	1004	7497

It is immediately evident that Table 4, and Table 5 (p.13) do not include all the NSF Fellows who have graduated. The data begin only with the 1960 graduation cohort because the Doctorate Records File does not contain data on these plans for the Fellows who have graduated earlier. The cohorts shown, it will be noted, are not all of equal length: the first is a five-year cohort; the next includes 4 years, the rest are two years each. The reason is that the

* Mobility of PhD's, Before and After the Doctorate, National Academy of Sciences, 1971

Table 5

Postdoctoral Plans of NSF Fellows, by Field, Sex, and Cohort of PhD, 1960-1974

		MEN						WOMEN						BOTH SEXES					
		1960 -64	1965 -68	1969 -70	1971 -72	1973 -74	TOTAL	1960 -64	1965 -68	1969 -70	1971 -72	1973 -74	TOTAL	1960 -64	1965 -68	1969 -70	1971 -72	1973 -74	GRAND TOTAL
FIELD OF PHD - MATHEMATICS																			
POSTDOC TRAINING	N*	35	39	28	26	13	141	1			1	2	4	36	39	28	27	15	145
	V	15.8	10.1	12.2	12.6	8.1	11.7	20.0			7.7	13.3	5.9	15.9	9.5	11.5	12.3	8.6	11.4
ACADEMIC EMPL	N	142	277	164	140	104	827	3	16	10	11	11	51	145	293	174	151	115	878
	V	64.0	71.4	71.3	67.6	65.0	68.5	60.0	76.2	71.4	84.6	73.3	75.0	63.9	71.6	71.3	68.6	65.7	68.9
NONACAD EMPL	N	35	53	25	26	32	171	1	2	1		1	5	36	55	26	26	33	176
	V	15.8	13.7	10.9	12.6	20.0	14.2	20.0	9.5	7.1		6.7	7.4	15.9	13.4	10.7	11.8	18.9	13.8
OTHER/UNKNOWN PLANS	N	10	19	13	15	11	68		3	3	1	1	8	10	22	16	16	12	76
	V	4.5	4.9	5.7	7.2	6.9	5.6		14.3	21.4	7.7	6.7	11.8	4.4	5.4	6.6	7.3	6.9	6.0
TOTAL	N	222	388	230	207	160	1207	5	21	14	13	15	68	227	409	244	220	175	1275
PHYSICS																			
POSTDOC TRAINING	N	104	130	92	119	79	524		2		5	1	8	104	132	92	124	80	532
	V	26.9	29.0	44.0	59.5	57.7	37.9		16.7		62.5	50.0	32.0	26.7	28.6	43.8	59.6	57.6	37.8
ACADEMIC EMPL	N	162	168	35	33	14	412		2	1	3	1	7	162	170	36	36	15	419
	V	41.9	37.4	16.7	16.5	10.2	29.8		16.7	100.0	37.5	50.0	28.0	41.6	36.9	17.1	17.3	10.8	29.8
NONACAD EMPL	N	105	123	63	37	31	359	1	5				6	106	128	63	37	31	365
	V	27.1	27.4	30.1	18.5	22.6	26.0	50.0	41.7				24.0	27.2	27.8	30.0	17.8	22.3	25.9
OTHER/UNKNOWN PLANS	N	16	28	19	11	13	87	1	3				4	17	31	19	11	13	91
	V	4.1	6.2	9.1	5.5	9.5	6.3	50.0	25.0				16.0	4.4	6.7	9.0	5.3	9.4	6.5
TOTAL	N	387	449	209	200	137	1382	2	12	1	8	2	25	389	461	210	208	139	1407
CHEMISTRY																			
POSTDOC TRAINING	N	135	139	80	94	70	518	8	8	6	1	5	28	143	147	86	95	75	546
	V	39.5	41.7	48.2	56.0	52.6	45.4	47.1	38.1	60.0	6.7	33.3	35.9	39.8	41.5	48.9	51.9	50.7	44.8
ACADEMIC EMPL	N	85	99	36	28	24	272	3	9		6	5	23	88	108	36	34	29	295
	V	24.9	29.7	21.7	16.7	18.0	23.8	17.6	42.9		40.0	33.3	29.5	24.5	30.5	20.5	18.6	19.6	24.2
NONACAD EMPL	N	111	86	37	32	32	298	5	4	3	3	4	19	116	90	40	35	36	317
	V	32.5	25.8	22.3	19.0	24.1	26.1	29.4	19.0	30.0	20.0	26.7	24.4	32.3	25.4	22.7	19.1	24.3	26.0
OTHER/UNKNOWN PLANS	N	11	9	13	14	7	54	1		1	5	1	8	12	9	14	19	8	62
	V	3.2	2.7	7.8	8.3	5.3	4.7	5.9		10.0	33.3	6.7	10.3	3.3	2.5	8.0	10.4	5.4	5.1
TOTAL	N	342	333	166	168	133	1142	17	21	10	15	15	78	359	354	176	183	148	1220
GEOSCIENCES																			
POSTDOC TRAINING	N	24	23	19	18	6	90	1	1		1		3	25	24	19	19	6	93
	V	20.5	21.9	43.2	34.0	20.7	25.9	100.0	20.0		100.0		30.0	21.2	21.8	41.3	35.2	20.0	26.0
ACADEMIC EMPL	N	36	49	8	18	9	120		2			1	3	36	51	8	18	10	123
	V	30.8	46.7	18.2	34.0	31.0	34.5		40.0			100.0	30.0	30.5	46.4	17.4	33.3	33.3	34.4
NONACAD EMPL	N	53	31	14	17	12	127		2	2			4	53	33	16	17	12	131
	V	45.3	29.5	31.8	32.1	41.4	36.5		40.0	100.0			40.0	44.9	30.0	34.8	31.5	40.0	36.6
OTHER/UNKNOWN PLANS	N	4	2	3		2	11							4	2	3		2	11
	V	3.4	1.9	6.8		6.9	3.2							3.4	1.8	6.5		6.7	3.1
TOTAL	N	117	105	44	53	29	348	1	5	2	1	1	10	118	110	46	54	30	358

* V means vertical percentage, based on the total number (N) within each field.

SOURCE: NRC, Commission on Human Resources

Table 5 (continued)

Postdoctoral Plans of NSF Fellows, by Field, Sex, and Cohort of PhD, 1960-1974

		MEN						WOMEN						BOTH SEXES					
		1960 -64	1965 -68	1969 -70	1971 -72	1973 -74	TOTAL	1960 -64	1965 -68	1969 -70	1971 -72	1973 -74	TOTAL	1960 -64	1965 -68	1969 -70	1971 -72	1973 -74	GRAND TOTAL
ENGINEERING																			
POSTDOC TRAINING	N*	23	33	17	17	17	107							23	33	17	17	17	107
	V	8.6	11.0	9.9	11.4	15.7	10.7							8.6	10.9	9.9	11.4	15.5	10.7
ACADEMIC EMPL	N	81	71	38	35	25	250			1			1	81	71	39	35	25	251
	V	30.2	23.6	22.2	23.5	23.1	25.1			100.0			25.0	30.2	23.5	22.7	23.5	22.7	25.1
NONACAD EMPL	N	158	180	112	94	62	606		1			2	3	158	181	112	94	64	609
	V	59.0	59.8	65.5	63.1	57.4	60.8		100.0			100.0	75.0	59.0	59.9	65.1	63.1	58.2	60.8
OTHER/UNKNOWN PLANS	N	6	17	4	3	4	34							6	17	4	3	4	34
	V	2.2	5.6	2.3	2.0	3.7	3.4							2.2	5.6	2.3	2.0	3.6	3.4
TOTAL	N	268	301	171	149	108	997		1	1		2	4	268	302	172	149	110	1001
LIFE SCIENCES																			
POSTDOC TRAINING	N	131	129	96	116	91	563	18	46	29	41	25	159	149	175	125	157	116	722
	V	47.1	49.0	57.5	59.8	65.9	54.1	51.4	58.2	65.9	67.2	53.2	59.8	47.8	51.2	59.2	61.6	62.7	55.3
ACADEMIC EMPL	N	100	84	51	50	30	315	8	20	9	10	12	59	108	104	60	60	42	374
	V	36.0	31.9	30.5	25.8	21.7	30.3	22.9	25.3	20.5	16.4	25.5	22.2	34.5	30.4	28.4	23.5	22.7	28.6
NONACAD EMPL	N	38	41	15	14	10	118	4	6	3	4	5	22	42	47	18	18	15	140
	V	13.7	15.6	9.0	7.2	7.2	11.3	11.4	7.6	6.8	6.6	10.6	8.3	13.4	13.7	8.5	7.1	8.1	10.7
OTHER/UNKNOWN PLANS	N	9	9	5	14	7	44	5	7	3	6	5	26	14	16	8	20	12	70
	V	3.2	3.4	3.0	7.2	5.1	4.2	14.3	8.9	6.8	9.8	10.6	9.8	4.5	4.7	3.8	7.8	6.5	5.4
TOTAL	N	278	263	167	194	138	1040	35	79	44	61	47	266	313	342	211	255	185	1306
PSYCHOLOGY																			
POSTDOC TRAINING	N	16	15	7	14	9	61	1	4	4	4	5	18	17	19	11	18	14	79
	V	31.4	20.8	17.9	33.3	20.9	24.7	20.0	18.2	36.4	20.0	20.0	21.7	30.4	20.2	22.0	29.0	23.6	23.9
ACADEMIC EMPL	N	26	47	26	22	24	145	2	11	5	12	17	47	28	58	31	34	41	192
	V	51.0	65.3	66.7	52.4	55.8	58.7	40.0	50.0	45.5	60.0	68.0	56.6	50.0	61.7	62.0	54.8	68.3	58.2
NONACAD EMPL	N	7	8	5	3	7	30	2	5	1	4	3	15	9	13	6	7	10	45
	V	13.7	11.1	12.8	7.1	16.3	12.1	40.0	22.7	9.1	20.0	12.0	18.1	16.1	13.8	12.0	11.3	16.7	13.6
OTHER/UNKNOWN PLANS	N	2	2	1	3	3	11		2	1			3	2	4	2	3	3	14
	V	3.9	2.8	2.6	7.1	7.0	4.5		9.1	9.1			3.6	3.6	4.3	4.0	4.8	4.4	4.2
TOTAL	N	51	72	39	42	43	247	5	22	11	20	25	83	56	94	50	62	68	330
SOCIAL SCIENCES																			
POSTDOC TRAINING	N	9	5	3	6	2	25	2		1		2	5	11	5	4	6	4	30
	V	25.0	5.0	3.8	6.3	2.1	6.1	40.0		10.0		9.5	7.4	26.8	4.4	4.5	5.2	3.4	6.3
ACADEMIC EMPL	N	17	68	59	69	72	285		10	8	16	17	51	17	78	67	85	89	336
	V	47.2	67.3	74.7	71.9	74.2	69.7		76.9	80.0	84.2	81.0	75.0	41.5	68.4	75.3	73.9	75.4	70.4
NONACAD EMPL	N	7	21	15	14	17	74	3	3	1	2	1	10	10	24	16	16	18	84
	V	19.4	20.8	19.0	14.6	17.5	18.1	60.0	23.1	10.0	10.5	4.8	14.7	24.4	21.1	18.0	13.9	15.3	17.6
OTHER/UNKNOWN PLANS	N	3	7	2	7	6	25				1	1	2	3	7	2	8	7	27
	V	8.3	6.9	2.5	7.3	6.2	6.1				5.3	4.8	2.9	7.3	6.1	2.2	7.0	5.9	5.7
TOTAL	N	36	101	79	96	97	409	5	13	10	19	21	68	41	114	89	115	118	477

* V means vertical percentage, based on the total number (N) within each field.

SOURCE: NRC, Commission on Human Resources

numbers in the earlier cohorts were rather small in individual fields, and, in any case, greater interest centers on the time trends during the more recent years.

Four categories of plans are provided: (1) for all types of postdoctoral training, whether in a fellowship, traineeship, or associateship; (2) for immediate employment in an academic setting, here interpreted to mean any institution of higher education, from junior college to university; (3) nonacademic employment, which means any other category of employer than higher education; ~~and~~ (4) other plans uncertain on the part of the graduate, or that the item was left blank.

Comparison with All Graduates

To provide some context for interpretation of the data of Table 5, two additional tables, showing the most nearly comparable data on all doctorate-level graduates are given. These tables, deriving from the Doctorate Records File, are excerpted from the forthcoming book, A CENTURY OF DOCTORATES. The data on post-PhD plans, given in Table 6, include the same cohorts of graduation as Table 5, and the same fields of doctorate, except that in Table 6 the social sciences field group is divided into economics/econometrics and all other social sciences. Under "plans" categories, postdoctoral training is the same in both tables. Employment categories are slightly different however; hence Table 7 is provided, showing employer categories as a proportion of all planning immediate employment.

Winning NSF Postdoctoral Fellowships

Turning from plans to actual achievement, the next step up the career ladder, for a portion of the PhD's, is the award of an NSF Postdoctoral Fellowship. The relevant data, by cohort and sex, are given in Table 8. Data on women are scanty in Table 8, except for the total and two most general sub-fields, EMP (engineering, mathematics, and the physical sciences) and Bio/behavioral (the life sciences, social sciences, and psychology). However, within these groupings they show the same trend as the data for men. For both sexes, as would be expected, the percentage of postdoctoral fellowships varies directly with the years since the first award of a graduate fellowship.

PhD Plans, by Field, Sex, and Cohort: PhD's of 1960-1974

	Men						Women						BOTH SEXES					
	1960 -64	1965 -68	1969 -70	1971 -72	1973 -74	TOTAL 60-74	1960 -64	1965 -68	1969 -70	1971 -72	1973 -74	TOTAL 60-74	1960 -64	1965 -68	1969 -70	1971 -72	1973 -74	TOTAL 60-74
PHD FIELD - MATHEMATICS																		
POSTDOC STUDY	8.5	6.3	8.3	9.2	8.9	8.1	5.4	4.1	4.4	12.5	7.4	7.0	8.3	6.2	8.1	9.4	8.8	8.0
EMPLOYMENT	85.5	87.4	85.5	82.3	81.6	84.7	87.7	85.8	87.4	81.3	83.9	84.9	85.7	87.4	85.6	82.2	81.8	84.7
MILITARY SVC	2.0	1.8	2.0	2.5	1.4	1.9							1.0	1.7	1.8	2.3	1.2	1.8
OTHER PLANS	.1	.2	.2	.2	.2	.2	3.1	3.0	2.5	2.6	3.3	2.9	.3	.4	.3	.3	.5	.4
UNKNOWN	3.2	4.1	4.0	5.9	7.9	5.1	3.8	7.1	5.7	3.6	5.4	5.2	3.9	4.3	4.1	5.7	7.6	5.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PHYSICS																		
POSTDOC STUDY	16.6	23.7	37.1	42.8	44.4	31.3	8.6	16.8	41.7	42.9	44.8	33.1	16.5	23.6	37.2	42.8	44.4	31.4
EMPLOYMENT	76.0	68.3	53.8	45.9	43.3	59.3	74.1	73.9	52.1	45.5	40.0	55.5	75.9	68.5	53.7	45.8	43.2	59.2
MILITARY SVC	2.9	2.8	2.4	2.1	3.0	2.6							2.8	2.7	2.3	2.1	2.9	2.6
OTHER PLANS	.2	.1	.3	.3	.3	.2	3.4	.8		2.7		1.2	.2	.1	.3	.3	.3	.2
UNKNOWN	4.4	5.2	6.4	9.0	9.0	6.5	13.8	8.4	6.3	8.9	14.4	10.2	4.5	5.1	6.4	9.0	9.2	6.6
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
CHEMISTRY																		
POSTDOC STUDY	28.0	29.7	36.7	49.6	46.4	35.4	29.1	33.5	37.9	45.4	45.0	38.1	25.2	30.0	36.8	49.3	46.3	35.6
EMPLOYMENT	70.3	64.1	57.5	42.2	44.7	58.2	63.7	60.5	51.8	41.8	43.7	52.5	69.9	63.9	57.0	42.2	44.6	57.7
MILITARY SVC	1.9	3.2	2.4	2.9	1.9	2.5				.3		.1	1.8	2.9	2.2	2.6	1.7	2.3
OTHER PLANS	.1	.1	.1	.2	.1	.1	3.2	2.4	2.7	1.6	1.3	2.2	.2	.2	.3	.3	.2	.3
UNKNOWN	2.8	3.0	3.3	5.2	6.9	3.9	4.1	3.6	7.6	10.9	10.1	7.1	2.9	3.0	3.6	5.7	7.5	4.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
GEOSCIENCES																		
POSTDOC STUDY	8.2	11.7	20.6	21.5	21.8	15.9	11.1	8.8	28.9	34.2	23.2	22.8	8.2	11.6	20.9	21.9	21.8	16.0
EMPLOYMENT	85.3	81.7	73.5	71.2	68.7	77.0	66.7	82.4	65.8	50.0	69.6	66.8	85.1	81.7	73.2	70.5	68.8	76.8
MILITARY SVC	1.8	2.5	2.4	2.8	1.8	2.3							1.8	2.4	2.3	2.7	1.7	2.2
OTHER PLANS	.1		.1	.1	.2	.1	11.1	2.9	2.6	2.6		2.7	.2	.1	.2	.2	.2	.2
UNKNOWN	4.6	4.1	3.4	4.5	7.5	4.8	11.1	5.9	7.6	13.2	7.1	7.6	4.7	4.2	3.4	4.8	7.5	4.9
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ENGINEERING																		
POSTDOC STUDY	4.9	5.2	8.3	12.9	13.1	8.6	11.8	8.3	7.1	4.8	11.8	9.3	4.9	5.3	8.3	12.9	13.1	8.6
EMPLOYMENT	88.4	87.0	84.6	78.6	75.1	83.0	85.3	80.6	85.7	78.6	81.2	81.8	88.4	86.9	84.6	77.6	75.2	83.0
MILITARY SVC	4.0	4.3	4.1	4.3	3.8	4.1							4.0	4.3	4.0	4.3	3.7	4.1
OTHER PLANS	.1	.1	.2	.3	.1	.1		6.3	3.6	2.4	1.2	2.7	.1	.1	.2	.3	.1	.2
UNKNOWN	2.6	3.4	2.8	4.9	7.9	4.2	2.9	2.8	3.6	14.3	5.8	6.2	2.6	3.4	2.8	4.9	7.8	4.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
LIFE SCI TOT																		
POSTDOC STUDY	21.7	27.6	35.8	37.3	36.6	31.3	29.0	34.6	46.3	46.4	49.1	42.4	22.4	28.7	37.2	39.7	38.8	32.8
EMPLOYMENT	73.9	67.0	57.7	54.9	54.4	62.2	64.1	57.3	46.0	43.7	39.4	49.1	72.9	65.7	56.3	53.3	51.8	60.4
MILITARY SVC	2.0	2.3	2.3	1.7	1.5	2.0	.2			.1	.2	.1	1.8	2.0	2.0	1.5	1.3	1.7
OTHER PLANS	.2	.3	.1	.2	.1	.2	3.0	2.4	2.0	1.6	1.0	1.9	.5	.6	.4	.4	.3	.4
UNKNOWN	2.3	2.9	3.9	5.9	7.4	4.3	7.8	3.8	5.7	8.2	9.9	6.6	2.4	3.0	4.1	6.2	7.8	4.6
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PSYCHOLOGY																		
POSTDOC STUDY	10.4	13.2	13.4	12.4	12.2	12.3	10.0	10.9	13.1	13.4	14.2	12.6	10.3	12.7	13.3	12.7	12.8	12.4
EMPLOYMENT	84.2	82.3	80.3	78.1	77.0	80.0	82.7	82.0	81.3	78.2	76.3	79.7	83.9	80.6	80.6	78.1	76.8	79.9
MILITARY SVC	2.6	3.1	2.7	3.2	3.1	2.9	.1			.1	.2	.1	2.1	2.4	2.1	2.4	2.2	2.2
OTHER PLANS	.3	.1	.2	.5	.4	.3	4.0	2.0	1.3	1.8	.9	1.8	1.0	.5	.5	.9	.5	.7
UNKNOWN	2.5	3.3	3.4	5.9	7.3	4.5	3.2	5.1	4.3	6.4	8.3	5.9	2.7	3.7	3.6	6.0	7.6	4.8
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ECON E-METRC																		
POSTDOC STUDY	1.6	2.3	2.6	4.4	4.2	2.9	2.1	.8	4.0	2.3	3.5	2.5	1.6	2.2	2.7	4.2	4.1	2.8
EMPLOYMENT	93.0	90.7	89.5	80.7	88.4	90.3	88.7	90.3	88.0	94.7	87.4	89.9	92.0	90.7	89.4	89.2	89.4	90.3
MILITARY SVC	1.2	1.5	2.4	1.0	.5	1.3							1.2	1.4	2.3	1.0	.4	1.2
OTHER PLANS		.1		.1	.2	.1	3.1	4.0	1.0	1.5	1.4	2.2	.2	.3	.1	.2	.3	.2
UNKNOWN	4.2	5.4	5.5	5.8	6.7	5.4	6.2	4.8	7.0	1.5	7.7	5.4	4.3	5.4	5.6	5.5	6.8	5.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
OTHER SOC SCIS																		
POSTDOC STUDY	3.9	3.2	4.5	4.3	4.5	4.1	3.8	4.2	7.8	5.1	7.2	5.9	3.8	3.3	4.9	4.4	5.0	4.4
EMPLOYMENT	89.0	89.6	88.5	87.2	84.8	87.7	85.2	86.1	85.1	84.5	83.2	84.5	88.6	89.2	88.0	86.7	84.5	87.2
MILITARY SVC	1.6	1.8	2.0	1.6	.9	1.5	.3			.1		.1	1.5	1.6	1.8	1.3	.7	1.3
OTHER PLANS	.1	.2	.1	.2	.2	.2	5.5	3.1	2.0	1.7	1.0	2.2	.7	.6	.4	.4	.4	.5
UNKNOWN	5.4	5.3	4.9	6.9	9.6	6.6	5.2	6.6	5.1	8.6	8.6	7.4	5.4	5.4	4.9	7.1	9.4	6.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: NRC, Commission on Human Resources

Table 7

Percentage Distribution of Planned Employer Categories, for New PhD's by Field, Sex, and Cohort of PhD

(Data from Doctorate Records File)

	MEN						WOMEN						BOTH SEXES					
	1960-64	1965-68	1969-70	1971-72	1973-74	TOTAL 60-74	1960-64	1965-68	1969-70	1971-72	1973-74	TOTAL 60-74	1960-64	1965-68	1969-70	1971-72	1973-74	TOTAL 60-74
PHD FIELD - MATHEMATICS																		
COLL/UNIV	68.6	74.5	81.8	81.7	72.7	75.9	78.1	78.7	95.7	84.6	74.9	81.8	69.2	74.7	82.7	81.9	72.9	74.3
BUS/IND	14.1	11.1	11.7	8.8	13.4	11.7	5.3	3.5	2.2	5.1	8.4	5.0	13.6	10.6	11.0	8.5	12.4	11.2
U.S. GOVT	3.4	2.5	2.0	3.8	4.3	3.5		.6		1.9	3.0	1.3	3.2	2.6	1.9	3.7	4.2	3.1
US ST/LOC GOV	.3	.1	.3	.2	.2	.2					.5	.1	.3	.1	.3	.2	.3	.2
NON-PROFIT	2.9	1.9	2.1	1.2	1.3	1.4	1.8	1.8		.6	1.5	1.2	2.8	1.9	1.9	1.1	1.3	1.8
OTHER OR UNK	10.8	9.7	2.1	4.4	8.1	7.5	14.9	14.0	2.2	7.7	11.8	10.6	11.0	10.1	2.1	4.6	10.5	7.6
TOTAL EMPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
- PHYSICS																		
COLL/UNIV	48.3	47.4	41.9	45.5	33.7	45.6	51.2	58.0	70.0	48.6	51.0	59.7	48.4	47.9	44.6	46.2	34.4	45.7
BUS/IND	25.1	23.3	31.7	21.6	31.2	25.3	14.0	4.5	6.0	7.8	17.6	9.2	25.0	22.9	31.0	21.1	32.7	25.3
U.S. GOVT	8.0	10.3	4.7	11.0	16.4	11.4	4.7	4.5	4.0	5.9	5.9	4.9	8.0	10.6	9.6	16.6	16.4	11.3
US ST/LOC GOV	.3	.2	1.0	.3		.3							.2	.2	1.4	.3	.3	.4
NON-PROFIT	5.0	3.3	5.0	2.9	2.9	3.9			4.0			.7	4.9	3.4	5.0	2.8	2.8	3.8
OTHER OR UNK	13.2	14.9	6.3	13.6	15.0	13.1	30.2	33.0	16.0	17.6	25.5	25.4	13.5	15.3	8.5	13.9	15.5	13.4
TOTAL EMPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
- CHEMISTRY																		
COLL/UNIV	22.9	26.0	29.7	35.7	23.9	26.6	39.7	45.4	62.6	61.0	37.0	48.4	23.7	27.2	32.2	37.8	25.2	28.1
BUS/IND	58.9	54.5	59.8	45.0	58.7	54.6	27.4	20.9	20.5	14.5	38.2	24.8	57.1	54.2	56.8	42.8	56.6	54.4
U.S. GOVT	4.0	4.1	3.5	6.2	5.2	4.3	6.4	2.1	4.2	4.5	3.6	4.1	4.1	3.9	3.6	6.1	5.1	4.3
US ST/LOC GOV	.3	.4	.0	1.9	1.0	.7			1.1		.6	.3	.3	.3	.8	1.0	1.0	.7
NON-PROFIT	2.3	1.7	2.2	2.0	1.8	2.0	2.3	2.8	2.1	1.9	1.8	2.3	2.3	1.7	2.2	2.0	1.8	2.0
OTHER OR UNK	11.5	11.4	4.0	9.2	9.3	9.7	24.4	28.7	10.0	13.0	18.8	20.2	12.2	12.5	4.5	9.5	10.3	10.4
TOTAL EMPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
- GEOSCIENCES																		
COLL/UNIV	38.5	45.8	52.3	51.6	41.8	45.4	50.0	50.0	56.0	73.7	59.0	57.2	38.7	45.9	52.4	52.1	42.7	45.7
BUS/IND	23.1	21.7	25.2	21.6	24.2	22.9		3.6	4.0	10.5	20.5	9.8	22.8	21.4	24.5	21.4	24.1	22.6
U.S. GOVT	14.1	13.1	9.4	11.9	14.6	12.8		21.4	16.0	10.5		9.8	14.0	13.2	9.7	11.3	13.9	12.7
US ST/LOC GOV	2.4	2.1	3.4	3.6	4.7	3.0			8.0			1.6	2.4	2.1	3.6	3.5	4.4	3.0
NON-PROFIT	3.0	3.5	3.5	1.6	1.7	2.2			8.0		2.6	2.4	3.0	3.4	3.6	1.5	1.8	2.2
OTHER OR UNK	18.8	13.5	7.3	9.7	13.9	13.6	50.0	25.0	8.0	5.3	17.9	18.7	18.1	13.5	7.3	9.6	13.2	13.8
TOTAL EMPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
- ENGINEERING																		
COLL/UNIV	39.7	34.3	32.6	32.0	25.6	33.2	31.0	24.1	54.2	54.5	53.6	45.7	39.7	34.2	32.7	32.1	26.0	33.3
BUS/IND	42.1	43.6	51.0	46.0	54.0	46.4	24.1	37.9	29.2	21.2	24.6	26.6	42.0	43.6	50.9	45.9	51.8	46.7
U.S. GOVT	3.3	6.1	5.0	10.2	9.3	6.7	6.9	3.4	4.2	9.1	11.6	7.8.2	3.1	6.1	4.0	10.2	9.3	6.8
US ST/LOC GOV	.3	.3	1.1	1.0	.9	.7					1.4	.5	.2	.3	1.1	1.0	.9	.7
NON-PROFIT	3.3	3.7	3.7	2.5	3.3	3.4	3.4	3.4		3.0	3.4	2.2	3.5	3.7	3.7	2.6	3.2	3.4
OTHER OR UNK	11.3	12.0	5.6	8.3	6.9	9.7	34.5	31.0	12.5	12.1	3.2	16.8	11.4	12.1	5.6	8.3	6.9	9.2
TOTAL EMPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
- LIFE SCI TOT																		
COLL/UNIV	51.2	53.2	65.7	61.2	54.2	56.3	63.8	60.9	75.5	72.7	65.6	66.9	52.3	54.1	66.7	62.4	55.8	57.5
BUS/IND	10.7	9.9	12.6	11.0	15.6	11.6	3.0	3.2	5.9	3.6	6.5	4.0	10.1	9.2	11.8	10.1	14.3	11.8
U.S. GOVT	10.3	9.9	6.4	6.8	8.2	8.9	4.9	4.2	3.0	4.2	4.4	4.2	9.6	9.2	6.0	6.3	7.7	8.4
US ST/LOC GOV	2.0	1.9	3.6	2.8	3.5	2.6	1.6	1.7	3.0	1.5	2.7	2.1	2.0	1.9	3.5	2.7	3.4	2.6
NON-PROFIT	2.8	3.0	2.9	3.6	4.1	3.2	5.5	6.1	4.3	6.4	4.9	5.5	3.1	3.4	3.0	3.9	4.2	3.5
OTHER OR UNK	23.1	22.5	8.7	12.8	14.4	17.3	21.3	23.0	17.2	11.5	16.0	17.3	23.0	22.2	8.8	12.6	14.6	17.3
TOTAL EMPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
- PSYCHOLOGY																		
COLL/UNIV	46.4	58.0	63.4	55.9	48.7	54.4	47.0	48.0	55.7	54.7	49.4	50.9	46.5	55.8	61.5	56.3	48.9	53.5
BUS/IND	7.0	5.0	5.5	3.6	5.1	5.3	1.4	2.0	1.3	2.4	2.5	2.0	6.0	4.4	4.4	3.3	4.3	4.5
U.S. GOVT	10.0	5.5	3.3	4.7	4.6	5.8	5.7	3.8	7.8	3.5	3.2	3.7	9.2	5.1	3.2	4.4	4.2	5.3
US ST/LOC GOV	13.8	12.2	12.2	15.7	14.1	13.6	15.5	11.8	15.3	11.6	14.5	12.8	13.2	12.2	12.8	14.7	14.1	13.4
NON-PROFIT	9.4	5.2	8.9	9.3	14.0	9.6	11.1	12.2	11.9	11.5	13.5	12.2	9.7	9.0	9.6	9.9	13.9	10.5
OTHER OR UNK	13.4	11.1	6.9	9.7	13.4	11.1	14.3	22.2	13.0	15.3	17.4	16.5	15.5	13.5	8.4	11.4	14.6	12.9
TOTAL EMPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
- ECON & METRC																		
COLL/UNIV	62.1	64.5	77.0	72.0	69.2	68.0	59.3	62.5	72.7	71.0	71.6	69.2	62.0	64.4	76.7	71.9	69.8	68.1
BUS/IND	5.9	5.0	5.2	6.0	6.5	5.7	2.3	5.4	5.7	8.1	3.2	5.0	5.8	5.0	5.4	6.4	6.1	5.6
U.S. GOVT	8.6	7.3	5.3	6.0	5.0	7.5	9.3	8.0	6.8	5.6	8.8	7.7	8.6	7.2	5.4	7.8	8.0	7.5
US ST/LOC GOV	.9	.7	1.0	1.2	1.5	1.0	1.6		2.1	.4	.4	.9	1.0	.7	1.0	1.1	2.1	1.1
NON-PROFIT	4.1	3.6	5.7	4.2	3.9	4.0	1.6	.9	6.8	7.3	2.4	4.7	4.3	3.6	5.8	4.5	3.8	4.1
OTHER OR UNK	18.3	18.7	5.9	9.6	13.3	13.5	20.9	23.2	5.7	7.3	3.2	12.5	18.4	19.1	5.9	8.2	10.0	13.4
TOTAL EMPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
- OTHER SOC SCIS																		
COLL/UNIV	71.4	78.0	85.9	85.6	74.8	80.2	66.2	77.6	87.1	81.9	80.5	79.7	71.1	77.9	84.0	83.2	77.1	80.2
BUS/IND	1.8	1.8	3.2	2.1	2.9	2.4	1.0	1.5	1.4	1.2	1.3	1.3	1.7	1.7	3.0	2.0	2.4	2.2
U.S. GOVT	5.4	3.0	1.5	2.4	3.1	3.1	2.9	2.2	.7	1.7	2.5	1.9	5.1	2.9	1.2	2.5	2.9	2.9
US ST/LOC GOV	2.0	1.7	1.9	1.6	2.7	2.0	3.8	1.0	2.4	3.2	2.3	2.5	2.1	1.6	2.0	1.7	2.4	2.1
NON-PROFIT	3.7	2.9	3.2	2.9	3.9	3.2	5.4	3.2	3.6	4.3	4.1	4.1	3.7	2.9	3.1	3.2	3.8	3.3
OTHER OR UNK	15.7	12.6	4.2	5.1	15.7	9.1	20.5	14.5	4.3	7.8	9.8	12.4	16.2	12.7	4.2	5.5	9.1	9.3
TOTAL EMPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: NRC, Commission on Human Resources, A CENTURY OF DOCTORATES

Table 8

Percentage of Predoctoral Fellows Awarded NSF Postdoctoral Fellowships, by Field, Sex, and Cohort of Predoctoral Award

Field of Application		Men 1952-61	Men 1962-66	Men 1967-71	Men 1972	Men Total	Women 1952-61	Women 1962-66	Women 1967-71	Women 1972	Women Total	Both Sexes 1952-61	Both Sexes 1962-66	Both Sexes 1967-71	Both Sexes 1972	Both Sexes Total
Mathematics	N*	516	743	691	64	2014	34	55	70	1	160	550	798	761	65	2174
	P-D %	12.2	2.8	.4		4.3	2.9				.6	11.6	2.6	.4		4.0
Physics	N	987	643	454	36	2120	19	14	14	1	48	1006	657	468	37	2168
	P-D %	14.1	5.1	1.1		8.3	5.3		7.1		4.2	13.9	5.0	1.3		8.3
Chemistry	N	907	510	393	34	1844	72	37	44	5	158	979	547	437	39	2002
	P-D %	14.7	11.0	2.8		10.8	2.8		2.3		1.9	13.8	10.2	2.7		10.1
Geosciences	N	274	159	137	18	588	9	9	10	4	32	283	168	147	22	620
	P-D %	6.2	6.9	.7		4.9		11.1			3.1	6.0	7.1	.7		4.8
Engineering	N	748	627	472	85	1932	1	9	7	3	20	749	636	479	88	1952
	P-D %	2.8	1.6	.2		1.7						2.8	1.6	.2		1.6
EMP Total	N	3432	2682	2147	237	8498	135	124	145	14	418	3567	2806	2292	251	8916
	P-D %	10.9	4.9	1.0		6.2	3.0	.8	1.4		1.7	10.6	4.7	1.0		6.0
Biosciences	N	788	469	492	79	1828	207	201	225	44	677	995	670	717	123	2505
	P-D %	13.1	7.7	1.6		8.0	3.4	3.5			2.1	11.1	6.4	1.1		6.4
Psychology	N	98	143	132	31	404	43	50	90	16	199	141	[illegible]	222	47	603
	P-D %	10.2	4.2	.8		4.2	9.3	2.0			2.5	9.9	3.6	.5		3.6
Soc Sci & Oth	N	98	329	446	83	956	28	63	177	30	298	126	392	623	113	1254
	P-D %	12.2	1.2	.2		1.8	7.1	3.2	.6		1.7	11.1	1.5	.3		1.8
Bio/Beh Total	N	984	941	1070	193	3188	278	314	492	90	1174	1262	1255	1562	283	4362
	P-D %	12.7	4.9	.9		5.7	4.7	3.2	.2		2.0	10.9	4.5	.7		4.7
GRAND TOTAL	N	4416	3623	3217	430	11686	413	438	637	104	1592	4829	4061	3854	534	13278
	P-D %	11.3	4.9	1.0		6.0	4.1	2.5	.5		1.9	10.7	4.6	.9		5.6

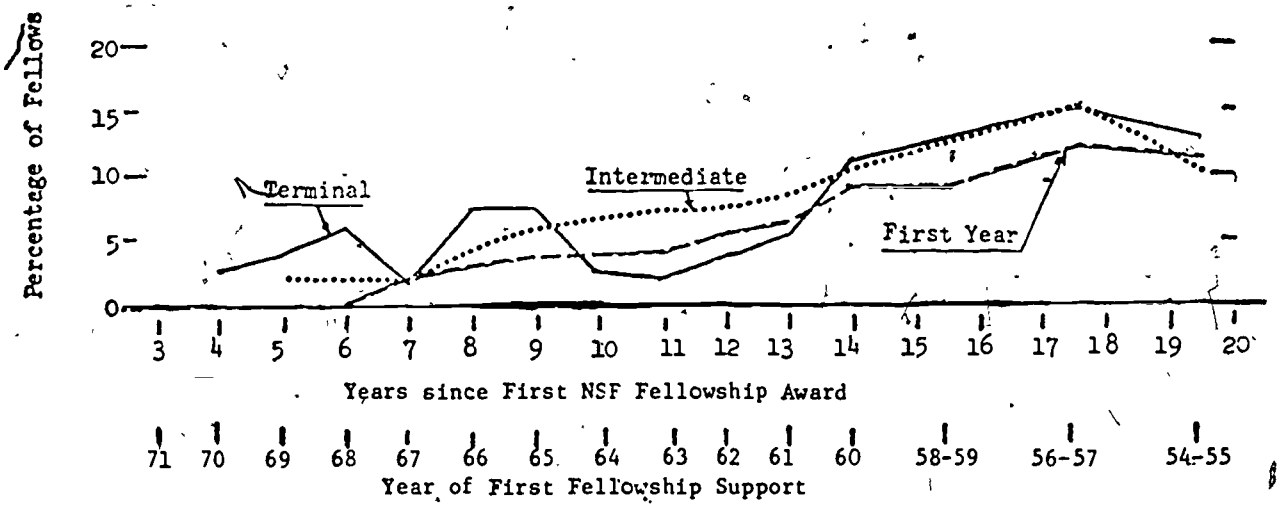
* N is the total of awardees in the given field, cohort, and sex group; P-D % is the percentage of this group who were awarded NSF Postdoctoral Fellowships.

SOURCE: NRC, Commission on Human Resources

The largest numbers, and hence the most stable data in Table 8 are given in the bottom line. Here we see that for all fields combined, 11.3% of the earliest (1952-1961) cohort of men have received NSF Postdoctoral Fellowships, as compared with 4.1% of the women. In award cohort 1962-66, the percentages are 4.9% for the men and 2.5% for the women. In the 1967-71 award cohort, only 1.0% of the men and 0.5% of the women have won NSF Postdoctoral Fellowships. The 1972 awardees did not have time to have won postdoctorals. Overall, for both sexes combined, 5.6% of the former NSF predoctoral Fellows have also become Postdoctoral Fellows. As can be seen in Figure 2, the differences by level of predoctoral fellowship are rather small, and tend to vanish over time, as the Level 1 Fellows have time to attain the doctorate and apply for these Fellowships.

Figure 2

Percentage of Predoctoral Fellows Awarded NSF Postdoctoral Fellowships, by Level,* as a Function of Years since First Fellowship Award



* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources

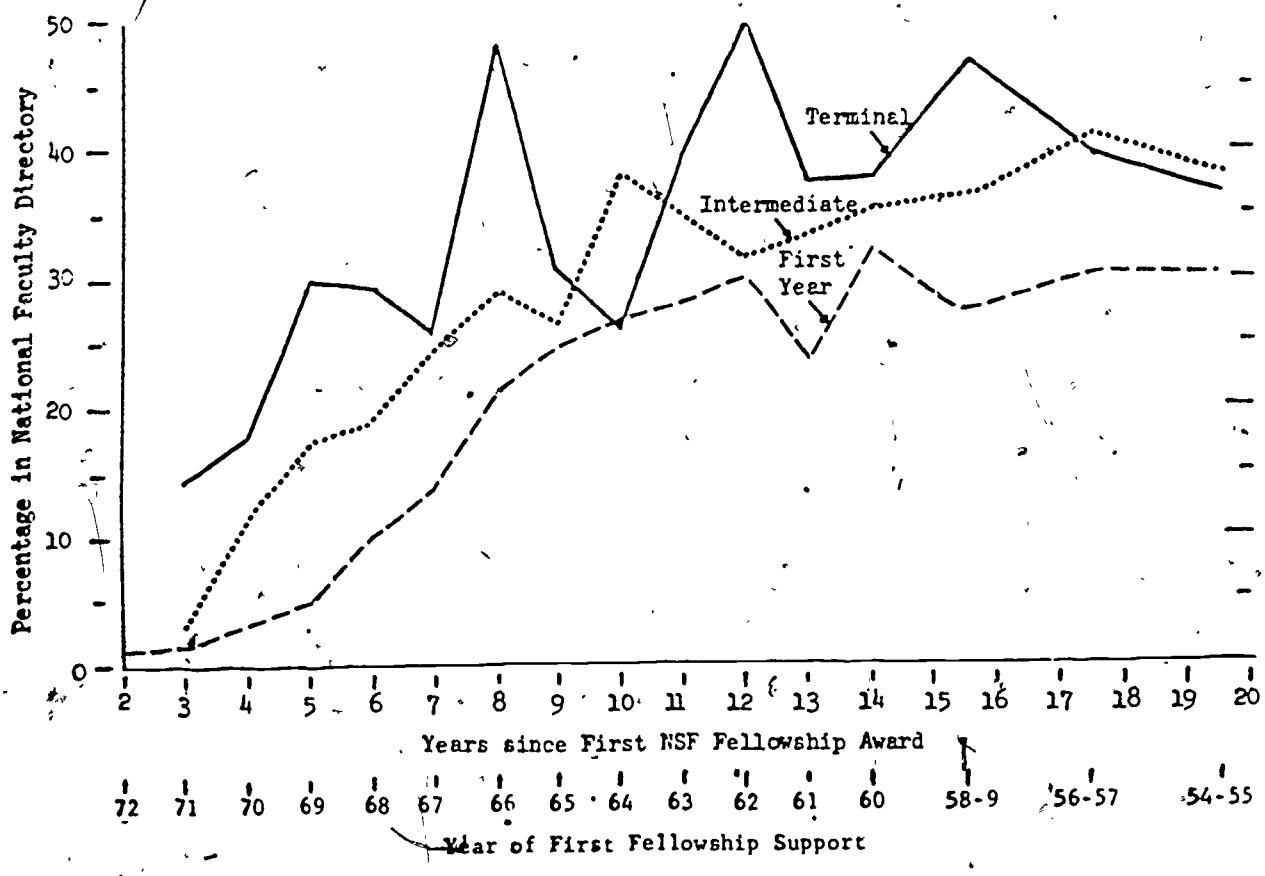
Figure 2 shows graphically the time trends in award of NSF postdoctoral fellowships, by level of award. Because it was drawn from the data of Appendix 2, it also provides more detailed cohorts than are provided in Table 8. The horizontal axis is interpreted both in terms of cohort years and in years since first award, to facilitate understanding.

Attainment of Faculty Status

For those NSF Fellows who chose to enter academic employment, the most comprehensive information on faculty status comes from the National Faculty Directory (NFD) of 1975. Judging by this criterion, about 30% of the Terminal level Fellows were on college or university faculties in the United States within five years of first award. This percentage rises with the passage of time, as shown in Figure 3, but fluctuates rather widely, partly because of the small numbers of cases, but more than would be expected on the basis of random variations. For Fellows at the Intermediate level, where the numbers are larger, the curve is somewhat more regular. It reaches the 30% level about 8 years after the first award, and climbs another 10 percentage points, to 40%, or the equivalent of the Terminal level, about 18 years after the first award of a Fellowship. The curve for the First Year Fellows is rather smooth, and is asymptotic to 30% 12 years after the first award--never reaching the level of the Intermediate

Figure 3

Percentage of NSF Fellows at Each Level* Attaining Faculty Status, as Shown by Inclusion in the 1975 National Faculty Directory



* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources

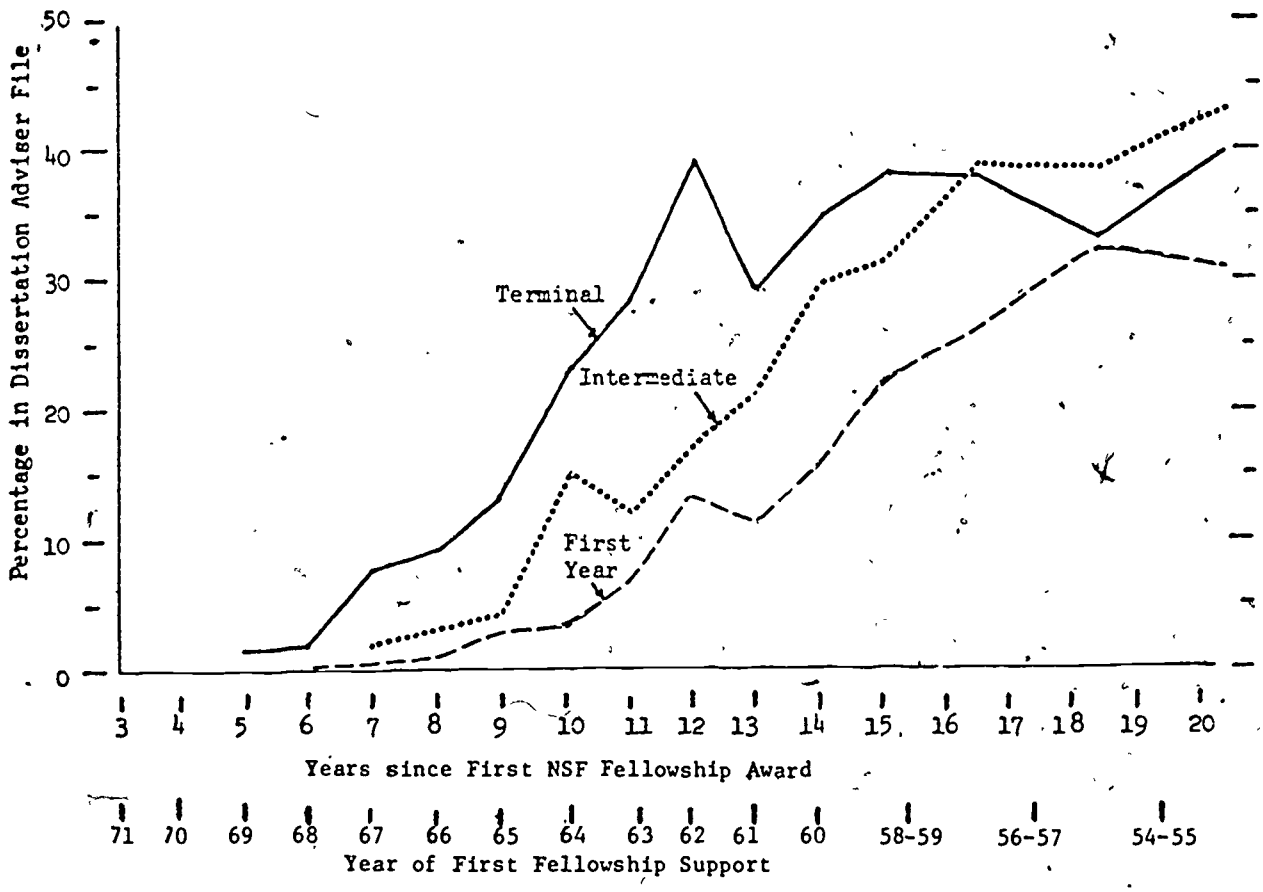
or Terminal Fellows. It is reasonable to note that by the time large numbers of the First-Year Fellows attained the doctorate, the number of opportunities for faculty positions was decreasing, and no upward swing has been noted in recent years. It is also true, of course, that a smaller proportion of the First-Year Fellows have attained the doctorate, as shown in Table 1 and Figure 1. Table 9 presents the faculty data by sex, by cohort, and by field of Fellowship.

Attaining Dissertation Adviser Status

For Fellows on university faculties, a further criterion of career achievement is that of becoming the dissertation adviser of a PhD candidate. It takes time, of course, for these candidates to attain the doctorate, so the

Figure 4

Attainment of Dissertation Adviser Status by NSF Fellows, by Level*



* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources

Table 9

Proportion of NSF Fellows Attaining Faculty Status, as Shown by the 1975 National Faculty Directory

Field of Application		Men 1952-61	Men 1962-66	Men 1967-71	Men 1972	Men Total	Women 1952-61	Women 1962-66	Women 1967-71	Women 1972	Women Total	Both Sexes 1952-61	Both Sexes 1962-66	Both Sexes 1967-71	Both Sexes 1972	Both Sexes Total
Mathematics	N*	516	743	691	64	2014	34	55	70	1	160	550	798	761	65	2174
	%	42.4	41.6	12.2		30.4	20.6	20.0	5.7		13.8	41.1	40.1	11.6		29.2
Physics	N	987	643	454	36	2120	19	14	14	1	48	1006	657	468	37	2168
	%	30.4	24.6	5.5	5.6	22.9	10.5	21.4	7.1		12.5	30.0	24.5	5.6	5.4	22.6
Chemistry	N	907	510	393	34	1844	72	37	44	5	158	979	547	437	39	2002
	%	30.0	28.8	7.9		24.4	9.7	18.9	11.4		12.0	28.5	28.2	8.2		23.4
Geosciences	N	274	159	137	18	588	9	9	10	4	32	283	168	147	22	620
	%	32.5	29.6	10.9		25.7	22.2				6.3	32.2	28.0	10.2		24.7
Engineering	N	748	627	472	85	1932	1	9	7	3	20	749	636	479	88	1952
	%	21.5	12.3	6.1	3.5	14.0		11.1			5.0	21.5	12.3	6.1	3.4	13.9
EMP Total	N	3432	2682	2147	237	8498	135	124	145	14	418	3567	2806	2292	251	8916
	%	30.3	27.5	8.6	2.1	23.2	13.3	17.7	6.9		12.0	29.7	27.1	8.5	2.0	22.6
Biosciences	N	788	469	492	79	1828	207	201	225	44	677	995	670	717	123	2505
	%	45.1	35.6	10.4	1.3	31.4	16.4	12.9	1.3		9.3	39.1	28.8	7.5	.8	25.4
Psychology	N	98	143	132	31	404	43	50	90	16	199	141	193	222	47	603
	%	41.8	44.1	15.9		30.9	16.3	22.0	12.2		14.6	34.0	38.3	14.4		25.5
Soc Sci & Oth	N	98	329	446	83	956	28	63	177	30	298	126	392	623	113	1254
	%	46.9	38.9	18.6		26.9	32.1	19.0	13.6		15.1	43.7	35.7	17.2		24.1
Bio/Beh Total	N	984	941	1070	193	3188	278	314	492	90	1174	1262	1255	1562	283	4362
	%	44.9	38.0	14.5	.5	30.0	18.0	15.6	7.7		11.7	39.0	32.4	12.[illegible]	.4	25.1
GRAND TOTAL	N	4416	3623	3217	430	11686	413	438	637	104	1592	4829	4061	3854	534	13278
	%	33.6	30.3	10.5	1.4	25.0	16.5	16.2	7.5		11.7	32.1	28.7	10.0	1.1	23.4

* N means number of Fellows; % means percentage of these N in National Faculty Directory.

SOURCE: NRC, Commission on Human Resources

Table 10

Attainment of Dissertation Adviser Status by NSF Fellows, by Cohort of First Award, Sex, and Field

Field of Application		Men 1952-61	Men 1962-66	Men 1967-71	Men 1972	Men Total	Women 1952-61	Women 1962-66	Women 1967-71	Women 1972	Women Total	Both Sexes 1952-61	Both Sexes 1962-66	Both Sexes 1967-71	Both Sexes 1972	Both Sexes Total
Mathematics	N*	516	743	691	64	2014	34	55	70	1	160	550	798	761	65	2174
	%	36.2	11.2	.9		13.7	5.9	1.8			1.9	34.4	10.5	.8		12.8
Physics	N	987	643	454	36	2120	19	14	14	1	48	1006	657	468	37	2168
	%	35.2	7.8			18.7	10.5	7.1			6.3	34.7	7.8			18.5
Chemistry	N	907	510	393	34	1844	72	37	44	5	158	979	547	437	39	2002
	%	32.7	15.3			20.3		2.7			.6	30.3	14.4			18.8
Geosciences	N	274	159	137	18	588	9	9	10	4	32	283	168	147	22	620
	%	27.0	7.5	.7		14.8						26.1	7.1	.7		14.0
Engineering	N	748	627	472	85	1932	1	9	7	3	20	749	636	479	88	1952
	%	22.6	7.5	1.7		11.6						22.6	7.4	1.7		11.5
EMP Total	N	3432	2682	2147	237	8498	135	124	145	14	418	3567	2806	2292	251	8916
	%	31.3	10.1	.7		16.0	3.0	2.4			1.7	30.2	9.7	.7		15.3
Biosciences	N	788	469	492	79	1828	207	201	225	44	677	995	670	717	123	2505
	%	42.6	9.8	.8		21.1	5.3	.5			1.8	34.9	7.0	.6		15.9
Psychology	N	98	143	132	31	404	43	50	90	16	199	141	193	222	47	603
	%	44.9	22.4	3.0		19.8	9.3	2.0			2.5	34.0	17.1	1.8		14.1
Soc Sci & Oth	N	98	329	446	83	956	28	63	177	30	298	126	392	623	113	1254
	%	41.8	14.0	1.6		9.8	3.6	6.3			1.7	33.3	12.8	1.1		7.9
Bio/Beh Total	N	984	941	1070	193	3188	278	314	492	90	1174	1262	1255	1562	283	4362
	%	42.8	13.2	1.4		17.6	5.8	1.9			1.9	34.6	10.4	1.0		13.3
GRAND TOTAL	N	4416	3623	3217	430	11686	413	438	637	104	1592	4829	4061	3854	534	13278
	%	33.9	10.9	.9		16.4	4.8	2.1			1.8	31.4	9.9	.8		14.7

* N means number of Fellows; % means percentage of these N in Dissertation Adviser File.

SOURCE: NRC, Commission on Human Resources

criterion available to use has a built-in time lag. Table 10 shows the proportion of NSF Fellows who have been the advisers of PhD's graduating up to and including 1974. Figure 4 shows graphically, by level of award, the rate at which the NSF Fellows attain the criterion of inclusion in the CHR Dissertation Adviser File. This figure is based on the data of Appendix 4, where data are available by the same detailed cohorts as were used for Figure 3 in presenting the faculty status data.

Figure 4, like Figure 3, shows the time axis in terms of years since first award, as well as by cohort of first award. Approximately 40% of the Terminal awardees have had advisees who graduated within 11 years after the first award to a Terminal Fellow, and this proportion averages around 35% in the later years, although it fluctuates somewhat, apparently at random because of the limited number of cases. The same percentage level is attained by the Intermediate Fellows 15 years after the first award. For the First-year Fellows, the time lapse is about 18 years before the curve becomes asymptotic at a level about 10 percentage points lower--i.e. at about 30%. Perhaps a longer-term follow-up might show a rise in this proportion, but the time scale available at present does not allow reliable statistics for a significantly longer period.

Academic Milieu Before and After the Doctorate

Most NSF Fellows enjoy the option of taking their fellowships at the university of their choice. One of the results of the exercise of this option is that a large proportion take their graduate training in institutions of high prestige. These same institutions cannot possibly employ as many new PhD's as they graduate, hence the majority of their graduates must seek employment in institutions of lesser standing or outside the academic realm entirely. One way of measuring the extent of this shift is to use the Roose-Andersen ratings of the departments of doctoral training, and of later employment.* In the present tabulations, the major emphasis is on inclusion of the departments within the "Roose-Andersen rated" category. For those within this category, the mean and standard deviation of the Roose-Andersen ratings

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* See A RATING OF GRADUATE PROGRAMS, published by The American Council on Education, 1970. These ratings represent a summary of the assessments provided by 4000 faculty members in 37 disciplines at 131 major institutions. In the Roose-Andersen scale, 5.00 is the highest possible score; 4.01-5.00 means "Distinguished"; 3.01-4.00 means "Strong"; 2.51-3.00 means "Good"; and 2.00-2.50 means "Adequate Plus".

Table 11A

Roose-Andersen Ratings of Department of PhD, by Level and Cohort of Award, 1952-1972 NSF Graduate Fellows, Both Sexes and All Fields Combined

		Level of Fellowship Award											
		First Year			Intermediate			Terminal			Total, All Levels		
Cohort of Award ⇨		1952-1966	1967-1972	Total	1952-1966	1967-1972	Total	1952-1966	1967-1972	Total	1952-1966	1967-1972	Total
Total Rated Departments	N	3998	1131	5129	2260	585	2845	923	249	1172	7181	1965	9146
	%	99.1	98.5	99.0	99.3	95.9	98.6	99.4	96.5	98.7	99.2	97.5	98.8
Unrated Departments	N	36	17	53	16	25	41	6	9	15	58	51	109
	%	.9	1.5	1.0	.7	4.1	1.4	.6	3.5	1.3	.8	2.5	1.2
Grand Total	N	4034	1148	5182	2276	610	2886	929	258	1187	7239	2016	9255
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean Rating** of Departments		4.02	4.12	4.04	3.74	3.75	3.74	3.57	3.44	3.54	3.87	3.92	3.88
S.D. of Rating** of Departments		.75	.68	.74	.79	.78	.79	.80	.79	.80	.79	.77	.78

Table 11B

Roose-Andersen Ratings of Departments of Employment, from National Faculty Directory, 1952-1972 NSF Graduate Fellows by Level* and Cohort of Award

		Level of Fellowship Award											
		First Year			Intermediate			Terminal			Total, All Levels		
Cohort of Award ⇨		1952-1966	1967-1972	Total	1952-1966	1967-1972	Total	1952-1966	1967-1972	Total	1952-1966	1967-1972	Total
Total Rated Departments	N	857	107	964	567	69	636	240	44	284	1664	220	1884
	%	21.2	9.3	18.6	24.9	11.3	22.0	25.8	17.1	23.9	23.0	10.9	20.4
Unrated Departments	N	517	58	575	298	56	354	139	25	164	954	139	1093
	%	12.8	5.1	11.1	13.1	9.2	12.3	15.0	9.7	13.8	13.2	6.9	11.8
Total Academic	N	1374	165	1539	865	125	990	379	69	448	2618	359	2977
	%	34.1	14.4	29.7	38.0	20.5	34.3	40.8	26.7	37.7	36.2	17.8	32.2
Nonacad. & Unknown	N	2660	983	3643	1411	485	1896	550	189	739	4621	1657	6278
	%	65.9	85.6	70.3	62.0	79.5	65.7	59.2	73.3	62.3	63.8	82.2	67.8
Grand Total	N	4034	1148	5182	2276	610	2886	929	258	1187	7239	2016	9255
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean Rating** of Departments		3.07	3.11	3.07	2.93	2.98	2.94	2.90	2.89	2.90	3.00	3.03	3.00
S.D. of Rating** of Departments		.96	1.09	.97	.94	.99	.94	.95	.94	.95	.95	1.03	.96

* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

** Means and standard deviations calculated on basis of rated departments only.

SOURCE: NRC, Commission on Human Resources

are presented for the purpose of documenting the shift to unrated departments. It should be noted here that this use of the ratings does not imply acceptance of the ratings as measures of quality; they are prestige measures, and it is this characteristic of the departments of doctorate and of subsequent employment that is documented in Tables 11A and 11B, respectively.

Almost all of the NSF Fellows graduate from departments within the Roose-Andersen rated set; the mean departmental rating is above 4.0. When followed up through the National Faculty Directory, it is found, as shown in Table 11B, that only about 20% are employed in "R-A-rated" departments, and that the mean rating for these departments is about 3.0. The total known to be employed in academic settings, from the NFD tabulations, is slightly under one third of all NSF Fellows; about 12% are employed in departments outside the Roose-Andersen category, including, no doubt, some which are undergraduate departments only. Two thirds of the total are either in nonacademic settings, or their departments of employment are unknown. This is undoubtedly a lower bound figure, as individuals with ambiguous names were eliminated from the count, and the National Faculty Directory cannot be assumed to have complete and accurate coverage. Still, the trend from high-prestige institutions to elsewhere is quite apparent, and also quite inevitable.

Awards of Research Grants

A criterion of career achievement based on peer judgment is award of grants in aid of research by NSF and NIH.* Data from both of these sources were obtained on tape, and combined for the present tabulations, shown in Table 12, by field of application, by sex, and by cohort of first award. It should be noted that this criterion is relevant primarily to the academically employed; those who go into industry cannot avail themselves of this source of funds and hence this criterion of career achievement. The results for both sexes combined are portrayed graphically in Figure 5, by level of award. (The data by level are given in Appendix 5.) The graphs in

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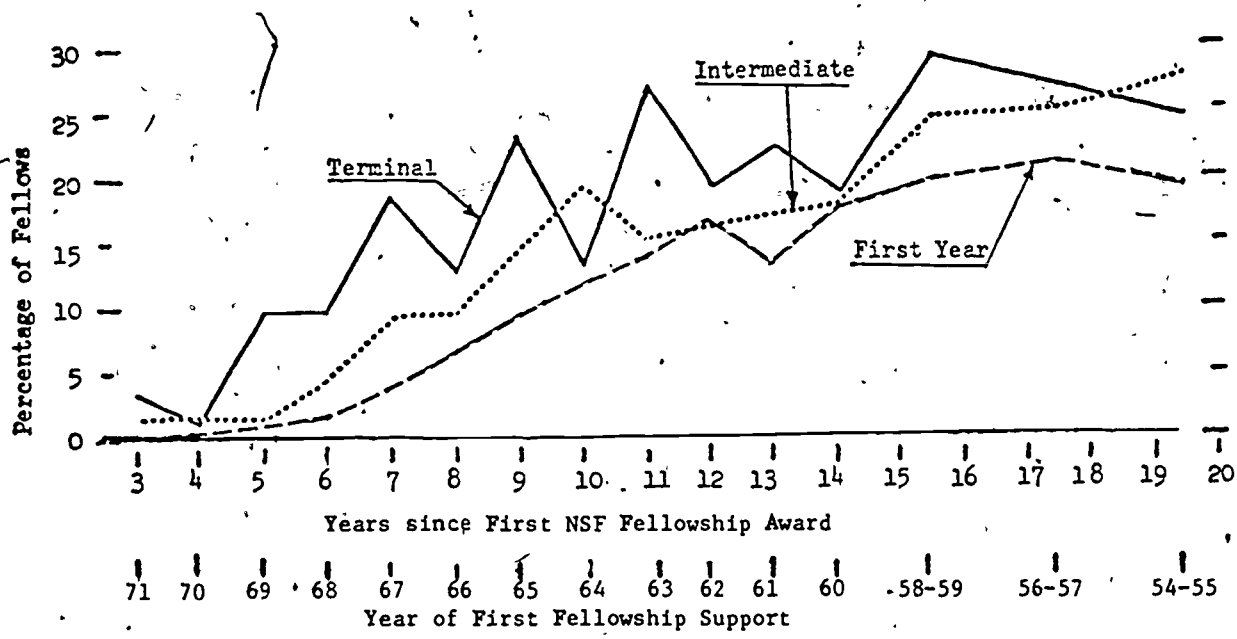
* The available record of NIH grants covered the years 1962 to 1971; the NSF grants covered the period 1967-1972.

Figure 5

Percentage of Predoctoral Fellows Winning Research Grants from NSF or NIH, by Level,* as a Function of Years since First Award



* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources

Figure 5 show a rather steady rise for a period of 15 years after the first award for all three levels. In the case of Level 2 (Intermediate Fellowships) the curve continues to rise over a period of 20 years. However, in the case of both the intermediate and terminal levels of award, the number of cases for the early cohorts (more than 15 years after first award) is rather small, and the data points not highly reliable so that the apparent trends cannot be depended upon to represent a continuing trend (as for Level 2) or a reversal (as for Level 3).

In Table 12, although the data for women are scanty, they follow time trends that are similar to those for men, but at a much lower level. That is, research grants are awarded to women with a far lower frequency than they are awarded to men. The field and time trends are shown most reliably in the set of columns to the right, both sexes combined. There are field differences within the EMP group (from a high of 15.5% in geosciences to a low of

Table 12

Percentage of NSF Fellows Winning Research Grants from NSF or NIH,* by Cohort, Field, and Sex

Field of Application		Men 1952-61	Men 1962-66	Men 1967-71	Men 1972	Men Total	Women 1952-61	Women 1962-66	Women 1967-71	Women 1972	Women Total	Both Sexes 1952-61	Both Sexes 1962-66	Both Sexes 1967-71	Both Sexes 1972	Both Sexes Total
Mathematics	N**	516	743	691	64	2014	34	55	70	1	160	550	798	761	65	2174
	%	21.1	13.3	3.9		11.7	5.9	5.5			3.1	20.2	12.8	3.5		11.0
Physics	N	987	643	454	36	2120	19	14	14	1	48	1006	657	468	37	2168
	%	16.7	6.4	1.5		10.0						16.4	6.2	1.5		9.8
Chemistry	N	907	510	393	34	1844	72	37	44	5	158	979	547	437	39	2002
	%	23.2	16.3	1.5		16.2	2.8	2.7			1.9	21.7	15.4	1.4		15.1
Geosciences	N	274	159	137	18	588	9	9	10	4	32	283	168	147	22	620
	%	20.4	20.8	4.4		16.2		11.1			3.1	19.8	20.2	4.1		15.5
Engineering	N	748	627	472	85	1932	1	9	7	3	20	749	636	479	88	1952
	%	11.4	8.0	2.3		7.6						11.3	7.9	2.3		7.5
EMP Total	N	3432	2682	2147	237	8498	135	124	145	14	418	3567	2806	2292	251	8916
	%	18.2	11.4	2.7		11.6	3.0	4.0			2.2	17.6	11.1	2.5		11.2
Biosciences	N	788	469	492	79	1828	207	201	225	44	677	995	670	717	123	2505
	%	41.0	26.4	3.9		25.5	11.1	5.0	1.3		5.3	34.8	20.0	3.1		20.0
Psychology	N	98	143	132	31	404	43	50	90	16	199	141	193	222	47	603
	%	28.6	17.5	4.5		14.6	11.6		2.2		3.5	23.4	13.0	3.6		10.9
Soc Sci & Oth	N	98	329	446	83	956	28	63	177	30	298	126	392	623	113	1254
	%	31.6	10.6	.9		7.3	10.7	1.6	1.7		2.3	27.0	9.2	1.1		6.1
Bio/Beh Total	N	984	941	1070	193	3188	278	314	492	90	1174	1262	1255	1562	283	4362
	%	38.8	19.6	2.7		18.7	11.2	3.5	1.6		4.3	32.7	15.5	2.4		14.8
GRAND TOTAL	N	4416	3623	3217	430	11686	413	438	637	104	1592	4829	4061	3854	534	13278
	%	22.8	13.5	2.7		13.5	8.5	3.7	1.3		3.7	21.6	12.5	2.4		12.4

* The available record of NIH grants covered the years 1962 to 1971; the NSF grants covered the period 1967-1972.

** N means number of Fellows; % means percentage of these N with research grants.

SOURCE: NRC, Commission on Human Resources

7.5% in engineering) but the overall average is 11.2% for these fields, as compared with 20.0% in the life sciences, 10.9% in psychology, and 6.1% in the social sciences. Overall, for all fields and cohorts combined, the lower right-hand figure shows that 12.4% of the NSF Graduate Fellows were awarded research grants by the NIH and NSF combined. There is a strong time trend, as is to be expected, as these awards are cumulative, the older graduates having had more time to apply for and win awards, and because, with more research experience, they are able to present more convincing protocols for evaluation. In the oldest cohort, 21.6% won research grants; in the 1962-66 cohort the percentage was 12.5, in the 1967-71 cohort, 2.4; the 1972 awardees had not had time to apply during the period covered.

Employment After the Doctorate

Extensive information, on a sampling basis, regarding the employment of those NSF Fellows who have earned PhD's is available from the surveys of the Roster of Doctoral Scientists and Engineers for 1973 and 1975. The data from this source include employment status in the follow-up years, and employer category, primary work activity, and data on salaries, for those employed. As will be seen, the data for both years are highly similar in the general levels of percentages and in patterns across fields; data for both years are given for the sake of completeness, and to give some idea of the stability of these data over time. For data on the numbers of NSF Fellows, and their response rates in the Comprehensive Roster samples of 1973, see Appendix 6. For comparable data regarding the 1975 survey, see Appendix 7.

The data reported in Tables 13 to 24 are similar in format, and the row categories are parallel in content, to those in the 1973 and 1975 Profile reports on the Comprehensive Roster surveys. The latter thus can form a basis of reference for consideration of the data of this report. It is to be expected that a number of differences between the NSF Fellows and the general population of PhD's would be found, because of the selection, and

self-selection, of NSF Fellows. However, no verbal comparisons will be attempted in this report, as it is not intended to be evaluative.

Employment Status

The format of Table 13, which deals with employment status, will be described in some detail, as it will serve as a model for the following tables. The Fellows are sorted into columns based on field of fellowship award. In this respect, the fields differ from those in the 1973 and 1975 Profile reports, which are sorted by field of doctorate. However, as there was only a minimum of field-switching across the categories used here, the differences are not particularly important. In Table 13, the row categories refer to employment status: full-time employed, part-time employed, postdoctoral training, not employed and seeking employment, not employed and not seeking, and "other, and no report". It should be noted that there is not a strict comparability between the category "not employed and seeking employment" and the usual definition of "unemployment rate", because the data here are based on the entire population, including those not seeking employment and those whose employment status is unknown. If the latter categories were pro-rated, the correction would raise the unemployment rate shown here slightly, but not enough to bring it up to 1.0%. For purposes of comparison with the data for the generality of PhD's, the reader is referred to the 1976 CHR publication, Employment Status of PhD Scientists and Engineers, 1973 and 1975, by Maxfield, Ahern, and Spisak.

From Sample to Population

A word of explanation is needed regarding the symbols N, WN, H, and V, which apply to the several lines under each row category. The symbol N means the actual number of respondents in the CR sample who were NSF Fellows. The symbol WN refers to the weighted number--the actual N multiplied by the weight designed to inflate the figures to approximately the original population. These weights were designed for the whole CR population, rather than the NSF ~~sample~~ but are presumed to be a good approximation for this sub-sample. The percentages reported below the WN figure are based in the weighted numbers. The symbol H is for the horizontal percentages, V is for vertical percentages. A word should

Table 13

Employment Status in 1973 of NSF Graduate Fellows of 1952-1972

Employment Status, 1973	*	Field of Graduate Fellowship										
		Math	Phys	Chem	Earth	Engr	EMP TOTAL	Biosc	Psych	SocSc	BIO/BEH TOTAL	GRAND TOTAL
Employed Full-Time	N	162	193	155	60	104	674	237	47	44	328	1002
	WN	1198	1575	1275	464	1029	5541	1392	406	308	2106	7647
	H	15.7	20.6	16.7	6.1	13.5	72.5	18.2	5.3	4.0	27.5	100.0
	V	91.4	88.7	86.6	94.9	93.0	90.0	83.3	84.8	86.0	84.0	88.3
Employed Part-Time	N	6	2	7	2	1	18	14	5	1	20	38
	WN	13	23	15	8	8	67	58	23	9	90	157
	H	8.3	14.6	9.6	5.1	5.1	42.7	36.9	14.6	5.7	57.3	100.0
	V	1.0	1.3	1.0	1.6	.7	1.1	3.5	4.8	2.5	3.6	1.8
Postdoctoral Appointment	N	4	16	13	1		34	25	1	3	29	63
	WN	31	121	89	1		242	131	3	29	163	405
	H	7.7	29.9	22.0	.2		59.8	32.3	.7	7.2	40.2	100.0
	V	2.4	6.8	6.0	.2		3.9	7.8	.6	8.1	6.5	4.7
Not Employed: Seeking Employment	N	1	2	4	1	2	10	4			4	14
	WN	1	17	21	10	12	61	16			16	77
	H	1.3	22.1	27.3	13.0	15.6	79.2	20.8			20.8	100.0
	V	.1	1.0	1.4	2.0	1.1	1.0	1.0			.6	.9
Not Employed: Not Seeking Employment	N	4	2	5		3	14	5	2		7	21
	WN	21	12	11		18	62	21	21		42	104
	H	20.2	11.5	10.6		17.3	59.6	20.2	20.2		40.4	100.0
	V	1.6	.7	.7		1.6	1.0	1.3	4.4		1.7	1.2
Other, and No Report	N	6	4	7	1	4	22	13	3	3	19	41
	WN	47	28	61	6	40	182	53	26	12	91	273
	H	17.2	10.3	22.3	2.2	14.7	66.7	19.4	9.5	4.4	33.3	100.0
	V	3.6	1.[illegible]	4.1	1.2	3.6	3.0	3.2	5.4	3.4	3.6	3.2
Total, All Categories	N	183	219	191	65	114	772	298	58	51	407	1179
	WN	1311	1776	1472	489	1107	6155	1671	479	358	2508	8663
	H	15.1	20.5	17.0	5.6	12.8	71.0	19.3	5.5	4.1	29.0	100.0
	V	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* N means actual number of respondents; WN means weighted number (see text for explanation); H means horizontal percentage; V means vertical percentage.

SOURCE: NRC, Commission on Human Resources

Table 14

Employment Status in 1975 of NSF Graduate Fellows of 1952-1972

Employment Status, 1975		Field of Graduate Fellowship										
		Math	Phys	Chem	Earth	Engr	EMP TOTAL	Biosc	Psych	SocSc	BIO/BEH TOTAL	GRAND TOTAL
Employed Full-Time	N*	185	197	177	61	112	732	264	53	59	376	1108
	WN	1325	1596	1398	451	1112	5882	1566	439	507	2512	8394
	H	15.8	19.0	16.7	5.4	13.2	70.1	18.7	5.2	6.0	29.9	100.0
	V	95.3	86.0	93.0	96.6	91.7	91.5	85.2	87.3	95.5	87.4	90.2
Employed Part-Time	N	9	1	4	2	1	17	16	5	1	22	39
	WN	45	1	17	15	11	89	54	28	3	85	174
	H	25.9	.6	9.8	8.6	6.3	51.1	31.0	16.1	1.7	48.9	100.0
	V	3.2	.1	1.1	3.2	.9	1.4	2.9	5.6	.6	3.0	1.9
Postdoctoral Appointment	N	2	26	10		4	42	16	2	2	20	62
	WN	12	203	66		63	344	102	22	9	133	477
	H	2.5	42.6	13.8		13.2	72.1	21.4	4.6	1.9	27.9	100.0
	V	.9	10.9	4.4		5.2	5.4	5.5	4.4	1.7	4.6	5.1
Not Employed: Seeking Employment	N	1	6	2	1	1	11	8	1	3	12	23
	WN	6	32	13	1	9	61	43	2	12	57	118
	H	5.1	27.1	11.0	.8	7.6	51.7	36.4	1.7	10.2	48.3	100.0
	V	.4	1.7	.9	.2	.7	.9	2.3	.4	2.3	2.0	1.3
Not Employed: Not Seeking Employment	N	2	2	4		2	10	12	1		13	23
	WN	3	13	9		10	35	56	12		68	103
	H	2.9	12.6	8.7		9.7	34.0	54.4	11.7		66.0	100.0
	V	.2	.7	.6		.8	.5	3.0	2.4		2.4	1.1
Other, and No Report	N		1			1	2	3			3	5
	WN		11			7	18	18			18	36
	H		30.6			19.4	50.0	50.0			50.0	100.0
	V		.6			.6	.3	1.0			.6	.4
Total, All Categories	N	199	233	197	64	121	814	319	62	65	446	1260
	WN	1391	1856	1503	467	1212	6429	1839	503	531	2873	9302
	H	15.0	20.0	16.2	5.0	13.0	69.1	19.8	5.4	5.7	30.9	100.0
	V	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* N means actual number of respondents; WN means weighted number (see text for explanation); H means horizontal percentage; V means vertical percentage.

SOURCE: NRC, Commission on Human Resources

Table 15

Employment Status of U.S. Doctoral Scientists and Engineers in 1973 and 1975

1930-72 UNITED STATES DOCTORAL SCIENTISTS AND ENGINEERS

15 A EMPLOYMENT STATUS BY FIELD OF DOCTORATE -- 1973

YEAR OF DOCTORATE AND 1973 EMPLOYMENT STATUS		FIELD OF DOCTORATE										
1930-72 DOCTORATES		ALL FIELDS	MATH	PHYS	CHEM	EARTH	ENGIN	BIOSC	PSYCH	SOCSC	NONSC	UNK
TOTAL POPULATION	N	244921	13571	22340	39270	7595	35067	61111	24483	32353	8935	195
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
EMPLOYED FULL-TIME	%											
SCIENCE		82.7	89.2	83.5	80.1	68.1	90.2	81.6	79.5	76.6	84.3	75.9
NON-SCIENCE		4.6	2.2	3.9	5.6	2.3	3.7	3.0	4.9	10.3	.0	4.6
EMPLOYED PART-TIME	%											
SCIENCE		2.6	1.6	2.1	2.1	2.1	1.3	2.7	5.8	2.8	3.7	5.1
NON-SCIENCE		.3	.1	.5	.5	.2	.1	.3	.3	.5	.0	1.0
POSTDOCTORAL	%	2.4	.7	4.1	3.6	1.9	.8	4.2	1.1	.8	.5	1.0
NOT EMPLOYED	%											
SEEKING		1.1	1.4	1.4	1.6	.7	.8	1.0	1.1	.8	.8	.0
NOT SEEKING		.6	.6	.5	.8	.1	.3	.9	.6	.5	.4	.6
RETIRED	%	2.6	2.0	2.1	3.4	2.0	1.0	3.0	2.1	2.1	4.4	2.6
OTHER/NO REPORT	%	3.2	2.4	2.0	2.4	2.7	1.9	3.4	4.7	4.5	9.8	6.7

15 B Employment Status of Doctoral Scientists and Engineers, 1975

A. Individuals Receiving Doctorates During 1930-1974

1975 Employment Status	All Fields	Field of Doctorate									
		Math	Phys	Chem	Earth	Engr	Biosc	Psych	SocSc	Nonsc	No Report
Total Population N	279,351	15,989	25,085	43,248	8,813	41,228	70,577	29,435	39,273	5,519	184
Employed Full-Time											
Science	83.7%	89.4%	83.2%	80.8%	87.8%	91.3%	81.6%	83.5%	79.3%	85.0%	97.3%
Nonscience	4.7	3.5	4.4	5.8	3.0	3.6	2.4	4.3	10.5	.0	.0
Employed Part-Time											
Science	2.4	1.9	1.6	1.8	3.3	1.2	2.5	5.6	2.3	3.8	.0
Nonscience	.3	.2	.4	.5	.2	.1	.2	.4	.6	.0	.0
Postdoctoral	3.0	.7	4.7	4.1	1.4	.9	5.6	1.5	.9	.2	.0
Not Employed											
Seeking Employment	.9	.6	1.5	1.0	1.0	.7	1.0	.8	.9	.4	.0
Not Seeking	.9	.7	1.0	1.0	.3	.4	1.4	.9	.5	.4	.0
Retired	3.7	2.9	2.9	4.6	2.9	1.5	4.6	2.6	4.4	9.6	2.7
Other	.2	.1	.2	.2	.0	.1	.2	.1	.2	.3	.0
No Report	.2	.1	.1	.1	.1	.1	.2	.3	.3	.2	.0

Sources; DOCTORAL SCIENTISTS AND ENGINEERS IN THE UNITED STATES 1973 (1975) PROFILE, Commission on Human Resources, NRC

be said about the reliability of these percentages. They are only as reliable as would be indicated by the original N's, not the WN. Thus they are not high for those rows where the data are sparse. In the case of part-time employment, for example, the N's range from 1 to 14 for individual fields; it is apparent that in many of these fields even a single additional case would greatly change the percentage.

Examination of the data of Table 13 shows that the full-time employed are 88.3% of the NSF Fellows in this sample, varying by field from a low of 83.3% in the life sciences to a high of 94.9% in the earth sciences. Part-time employment is low, with an overall total of 1.8%, and a high of 4.8% in psychology (not a highly reliable figure). Postdoctoral study occupies 63 individuals, or 4.7% of the total; the percentages within the several fields vary greatly, but in only a few fields is the number high enough for reasonable reliability (e.g. physics with 6.8%, chemistry with 6.0%, and life sciences with 7.8%). The proportion not employed and seeking employment is very low, as mentioned above--0.9%, and varying slightly across the several fields, but with N's too small to make field differences meaningful. The category of not employed and not seeking employment is slightly larger, 1.2% for the total, again varying across fields, but without reliable differences. None of the NSF Fellows have retired, a not unexpected finding because most of them are still rather young. The final row, "other, and no report" accounts for those who did not respond to this item on the questionnaire, or whose responses could not be coded into the above categories. This number was rather small (41 cases or 3.2%). As will be seen by reference to Table 14, this number is vanishingly small in 1975, presumably because experience with the 1973 questionnaire resulted in improved procedures for questionnairing and coding. The data of Table 14 follow the same pattern as described above, with minor variations that are due to variations to questionnaire procedure, respondent differences, and changing times.

As mentioned earlier, the data in Tables 13 and 14 were set up to be parallel in format to those in the Comprehensive Roster Profile reports. Table 15 presents data from the 1973 and 1975 Profile reports for the purpose of comparison with the data on former NSF Fellows. There are a few differences, based on graduation cohorts, as the total PhD population data include people

who graduated as early as 1930, although the numbers for the early years were relatively small. There is also one difference in the employment status categories, based principally on the fact that the NSF Fellows are relatively young. None of them were within the "retired" category, which claims about 2.6% of the 1973 respondents and 3.7% of the 1975 respondents, as given in the Profile reports.

Employer Categories

The categories of employers of NSF Fellows, as of 1973, are shown in Table 16, again in terms of the fields of fellowship support. Most of these former Fellows are employed in academe--an overall percentage of 67.4, varying from a high of 92.9% in mathematics to a low of 38.2% in engineering. It will be noted that this percentage is far higher than that provided by Table 9, from the National Faculty Directory data. Probably the difference is to be accounted for largely in terms of a more accurate identification of the individuals involved; in the case of the Comprehensive Roster, mis-identification is practically zero, as all of the records, with necessary identifying data, were maintained in the CHR. The difference does not in any way invalidate the principal finding derived from the NFD comparison, which was concerned with the shifting from institutions and departments of doctorate education to departments of employment after graduation. The category "educational institutions" include elementary schools and high schools, but in actuality very few, if any, NSF Fellows are employed in educational institutions other than colleges and universities. The Federal Government employs 6.1% of the NSF Fellows, with percentage variations by field that are not highly reliable because of the sampling errors inherent in small numbers of cases, although those fields with 10 or more in Federal employment have reasonably reliable percentages. State and Local governments employ very few--only 1% for all fields combined. Hospitals and clinics employ still fewer, but in the fields to be expected --chemistry, life sciences, and psychology. Non-profit organizations employ 3.6%, while business and industry employs almost 20%, concentrated in the EMP fields. The category "other and no report" is rather small for this item, and, as will be seen by reference to Table 17, which reports the 1975 data, almost vanishes.* The pattern of employer categories is very similar in

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* Questionnaire and coding improvements largely account for this change. Many self-employed were thereby moved to the business/industry category, accounting for perhaps half of the business/industry increase from 1973 to 1975.

Employer Categories in 1973 of NSF Graduate Fellows of 1952-1972

1973 Employer Categories 1/		Field of Graduate Fellowship: Math	Phys	Chem	Earth	Engr	EMP TOTAL	Biosc	Psych	SocSc	BIO/BEH TOTAL	GRAND TOTAL
Educational Institutions	N 2/	157	120	97	35	42	451	197	45	38	280	731
	WN	1126	978	750	253	396	3503	1123	379	255	1757	5260
	H	21.4	18.6	14.3	4.8	7.5	66.6	21.3	7.2	4.8	33.4	100.0
	V	92.9	61.2	58.1	53.6	38.2	62.4	77.4	87.9	80.4	79.9	67.4
Federal Government	N	1	14	9	10	5	39	17	1	1	19	58
	WN	11	120	71	78	58	338	116	10	12	138	476
	H	2.3	25.2	14.9	16.4	12.2	71.0	24.4	2.1	2.5	29.0	100.0
	V	.9	7.5	5.5	16.5	5.6	6.0	8.0	2.3	3.8	6.3	6.1
State and Local Government	N	1	2	1	4		8	3			3	11
	WN	10	14	7	31		62	16			16	78
	H	12.8	17.9	9.0	39.7		79.5	20.5			20.5	100.0
	V	.8	.9	.5	6.6		1.1	1.1			.7	1.0
Hospitals and Clinics	N			1			1	3	1		4	5
	WN			3			3	19	8		27	30
	H			10.0			10.0	63.3	26.7		90.0	100.0
	V			.2			.1	1.3	1.9		1.2	.4
Other Nonprofit Organizations	N	1	13	3		7	24	6	2	3	11	35
	WN	2	113	27		69	211	36	16	18	70	281
	H	.7	40.2	9.6		24.6	75.1	12.8	5.7	6.4	24.9	100.0
	V	.2	7.1	2.1		6.7	3.8	2.5	3.7	5.7	3.2	3.6
Business and Industry 3/	N	6	46	50	12	49	163	16	2	2	20	183
	WN	52	373	422	101	492	1440	84	13	20	117	1557
	H	3.3	24.0	27.1	6.5	31.6	92.5	5.4	.8	1.3	7.5	100.0
	V	4.3	23.3	32.7	21.4	47.4	25.7	5.8	3.0	6.3	5.3	19.9
Other, and No Report 3/	N	2		1	1	2	6	9	1	1	11	17
	WN	11		11	9	22	53	57	5	12	74	127
	H	8.7		8.7	7.1	17.3	41.7	44.9	3.9	9.4	58.3	100.0
	V	.9		.9	1.9	2.1	.9	3.9	1.2	3.8	3.4	1.6
Total, All Categories	N	168	195	162	62	105	692	251	52	45	348	1040
	WN	1212	1598	1291	472	1037	5610	1451	431	317	2199	7809
	H	15.5	20.5	16.5	6.0	13.3	71.8	18.6	5.5	4.1	28.2	100.0
	V	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ includes elementary and secondary schools as well as higher educational institutions

2/ N means actual number of respondents; WN means weighted number (see text for explanation); H means horizontal percentage; V means vertical percentage

3/ See footnote, page 35

SOURCE: NRC, Commission on Human Resources

Table 17

Employer Categories in 1975 of NSF Graduate Fellows of 1952-1972

1975 Employer Categories		Field of Graduate Fellowship										
		Math	Phys	Chem	Earth	Engr	EMP TOTAL	Biosc	Psych	SocSc	BIO/BEH TOTAL	GRAND TOTAL
Educational Institutions *	N **	171	127	101	37	44	480	227	50	48	325	805
	WN	1211	1042	739	278	429	3699	1307	408	404	2119	5818
	H	20.8	17.9	12.7	4.8	7.4	63.6	22.5	7.0	6.9	36.4	100.0
	V	88.5	65.2	52.3	59.8	38.2	62.0	80.5	87.4	79.5	81.5	67.9
Federal Government	N	3	10	7	11	5	36	15	2	1	18	54
	WN	21	59	50	75	56	261	99	13	18	130	391
	H	5.4	15.1	12.8	19.2	14.3	66.8	25.3	3.3	4.6	33.2	100.0
	V	1.5	3.7	3.5	16.1	5.0	4.4	6.1	2.8	3.5	5.0	4.6
State and Local Government	N	2	2	2	4		10	3			3	13
	WN	15	12	18	28		73	19			19	92
	H	16.3	13.0	19.6	30.4		79.3	20.7			20.7	100.0
	V	1.1	.8	1.3	6.0		1.2	1.2			.7	1.1
Hospitals & Clinics	N		1	1		1	3	5	2		7	10
	WN		16	10		7	33	29	16		45	78
	H		20.5	12.8		9.0	42.3	37.2	20.5		57.7	100.0
	V		1.0	.7		.6	.6	1.8	3.4		1.7	.9
Other Nonprofit Organizations	N	8	10	5		5	28	12	2	6	20	48
	WN	45	93	49		46	233	71	13	35	119	352
	H	12.8	26.4	13.9		13.1	66.2	20.2	3.7	9.9	33.8	100.0
	V	3.3	5.8	3.5		4.1	3.9	4.4	2.8	6.9	4.6	4.1
Business and Industry	N	10	48	65	11	58	192	17	2	5	24	216
	WN	77	376	546	84	585	1668	95	17	51	163	1831
	H	4.2	20.5	29.8	4.6	31.9	91.1	5.2	.9	2.8	8.9	100.0
	V	5.6	23.5	38.7	18.1	52.1	28.0	5.8	3.6	10.0	6.3	21.4
Other, and No Report	N							1			1	1
	WN							4			4	4
	H							100.0			100.0	100.0
	V							.2			.2	
Total, All Categories	N	194	198	181	63	113	749	280	58	60	398	1147
	WN	1369	1598	1412	465	1123	5967	1624	467	508	2599	8566
	H	16.0	18.7	16.5	5.4	13.1	69.7	19.0	5.5	5.9	30.3	100.0
	V	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* includes elementary and secondary schools as well as higher educational institutions

** N means actual number of respondents; WN means weighted number (see text for explanation); H means horizontal percentage; V means vertical percentage.

SOURCE: NRC, Commission on Human Resources

Table 18

Employer Categories of U.S. Doctoral Scientists and Engineers in 1973 and 1975

1930-72 UNITED STATES DOCTORAL SCIENTISTS AND ENGINEERS

18 A TYPE OF EMPLOYER BY FIELD OF EMPLOYMENT FOR FULL-TIME AND PART-TIME EMPLOYED DOCTORAL SCIENTISTS AND ENGINEERS EXCLUDING POSTDOCTORAL APPOINTEES -- 1973

YEAR OF DOCTORATE AND TYPE OF 1973 EMPLOYER		FIELD OF EMPLOYMENT									
1930-72 DOCTORATES		ALL FIELDS	MATH	PHYS	CHEM	EARTH	ENGIN	BIOSC	PSYCH	SOCSC	NONSC
EMPLOYED POPULATION	N	220790	14979	16164	26736	10109	34317	53849	24365	25924	10901	3446
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
EDUCATIONAL INSTITUTIONS *	%	58.0	79.4	55.8	37.0	50.2	35.6	67.0	61.3	83.3	55.6	40.2
FEDERAL GOVERNMENT	%	8.7	4.6	15.0	5.9	19.8	9.0	11.1	4.3	5.0	7.4	5.0
STATE/LOCAL GOV'T.	%	1.6	.4	.2	.6	4.1	.7	1.8	3.9	1.6	2.4	2.0
HOSPITAL/CLINIC	%	2.5	.2	.4	.7	.0	.1	3.3	13.3	.1	.7	.8
OTHER NON-PROFIT ORGANIZATIONS	%	3.5	1.8	4.7	2.1	4.4	3.6	2.8	4.4	4.2	6.3	3.0
BUSINESS/INDUSTRY **		22.6	12.3	22.1	52.0	19.4	48.5	11.8	5.4	3.6	22.8	27.7
OTHER/NO REPORT **	%	3.1	1.2	1.8	1.7	2.1	2.4	2.2	7.4	2.1	4.8	21.3

18B Type of Employer by Field of Employment for Full-Time and Part-Time Employed Doctoral Scientists and Engineers Excluding Postdoctoral Appointees, 1975

A. Individuals Receiving Doctorates During 1930-1974

1975 Employer	All Fields	Field of Employment									
		Math	Phys	Chem	Earth	Engr	Biosc	Psych	SocSc	Nonsc	No Report
Employed Population N	254,643	16,682	16,866	31,582	11,863	41,398	60,415	28,531	31,056	12,894	3,356
Educational Institution *	57.7%	78.7%	61.0%	38.3%	48.7%	34.7%	66.7%	58.2%	81.5%	57.6%	46.7%
Federal Government	8.3	5.2	12.4	5.2	19.1	8.9	11.1	4.2	6.3	5.2	4.2
State/Local Gov't	1.7	.2	•	.6	3.7	.8	2.1	3.9	2.2	2.4	1.6
Hospital/Clinic	2.8	.1	.5	1.0	.0	•	3.1	16.2	.1	.5	2.5
Other Non-Profit Organization	3.4	1.4	4.4	2.4	4.2	2.9	2.8	3.2	5.0	6.0	7.9
Business/Industry	25.9	14.4	21.9	52.5	24.2	52.6	14.1	14.1	4.8	28.1	29.8
Other/No Report	.2	•	.0	•	.0	•	.1	.2	.1	.2	7.3

* Includes Elementary and Secondary Schools as well as Colleges and Universities

** See footnote, page 35.

SOURCES: DOCTORAL SCIENTISTS AND ENGINEERS IN THE UNITED STATES 1973 (1975) PROFILE, Commission on Human Resources, NRC

1975 to the pattern of 1973; and no attempt will be made to account for the sources of differences found.

As with the data on employment status, data on employer categories from the 1973 and 1975 Profile reports are available in Table 18, but limited to the vertical percentage figures.

Primary Work Activity

The purpose of the NSF Fellowships was to prepare the Fellows for careers in research and/or teaching. Table 19 (for 1973) and Table 20 (for 1975) indicate that a majority of them are so employed--almost evenly divided between these two functions as primary work activity. The administration of research occupies 8.7% in 1973 and 8.2% in 1975--a negligible difference. About 3% are employed in administration of activities other than research and development, and about 1.5% are employed as consultants or in rendering various professional services. Design and development occupies significant numbers in chemistry and engineering, but overall the percentage is only 4.4%. Miscellaneous other industry/business oriented functions occupy 1% of the group, with small but unreliable field differences. Table 21 presents parallel data for the general PhD population from the Profile reports.

Salaries in 1973 and 1975

Salary data are given in Table 22 for 1973 and in Table 23 for 1975. The same field categories are used as in the preceding tables, but the rows are used to depict means and percentiles. Data for both sexes combined are given in terms of two PhD cohorts, 1950-1966 and 1967-71 for the 1973 survey; in 1975 the younger cohort includes the graduates of 1972 and 1973 as well as 1967-1971. The data on salaries of women were too sparse to permit reliable percentiles in the separate cohorts, but are sufficient for some fields for the total of the two cohorts combined. Hence the bottom portion of Tables 22 and 23 gives data separated by sex in mathematics, the EMP Total, the life sciences, and the social sciences, as well as the Bio/behavioral total. Where the number of cases for a given field was smaller than 20, means and percentiles were not calculated. The data shown are "adjusted salary" figures; that is,

Primary Work Activity in 1973 of NSF Graduate Fellows of 1952-1972

Primary Work Activity, 1973		Field of Graduate Fellowship										
		Math	Phys	Chem	Earth	Engr	EMP TOTAL	Biosc	Psych	SocSc	BIO/BEH TOTAL	GRAND TOTAL
Teaching	N *	100	58	70	21	31	280	108	27	24	159	439
	WN	690	445	539	157	289	2120	620	215	147	982	3102
	H	22.2	14.3	17.4	5.1	9.3	68.3	20.0	6.9	4.7	31.7	100.0
	V	56.9	27.8	41.8	33.3	27.8	37.8	42.7	50.2	46.2	44.7	39.7
Research	N	52	88	63	26	37	266	106	18	14	138	404
	WN	394	739	518	200	388	2239	614	149	113	876	3115
	H	12.6	23.7	16.6	6.4	12.5	71.9	19.7	4.8	3.6	28.1	100.0
	V	32.5	46.2	40.2	42.4	37.3	39.9	42.3	34.8	35.5	39.9	39.9
Administration of Research	N	2	30	16	7	12	67	15	3	3	21	88
	WN	21	232	130	58	107	548	74	30	27	131	679
	H	3.1	34.2	19.1	8.5	15.8	80.7	10.9	4.4	4.0	19.3	100.0
	V	1.7	14.5	10.1	12.3	10.3	9.8	5.1	7.0	8.5	6.0	8.7
Administration, Other	N	3	1	2	4	5	15	12			12	27
	WN	27	12	16	28	52	135	76			76	211
	H	12.8	5.7	7.6	13.3	24.6	64.0	36.0			36.0	100.0
	V	2.2	.8	1.2	5.9	5.0	2.4	5.2			3.5	2.7
Consulting, Prof. Services	N	2	2	1		2	7	2	4		6	13
	WN	20	19	9		22	70	14	34		48	118
	H	16.9	16.1	7.6		18.6	59.3	11.9	28.8		40.7	100.0
	V	1.6	1.2	.7		2.1	1.2	1.0	7.9		2.2	1.5
Design and Development	N	3	15	3	1	14	36					36
	WN	24	146	25	8	141	344					344
	H	7.0	42.4	7.3	2.3	41.0	100.0					100.0
	V	2.0	9.1	1.9	1.7	13.6	6.1					4.4
Reporting, Marketing, Production, Inspection	N		1	3	1	2	7	2		1	3	10
	WN		7	29	11	19	66	10		3	13	79
	H		8.9	36.7	13.9	24.1	83.5	12.7		3.8	16.5	100.0
	V		.4	2.2	2.3	1.8	1.2	.7		.9	.6	1.0
Other, and No Report	N	6		4	2	2	14	6		3	9	23
	WN	37		24	10	21	92	43		28	71	163
	H	22.7		14.7	6.1	12.9	56.4	26.4		17.2	43.6	100.0
	V	3.1		1.9	2.1	2.0	1.6	3.0		8.8	3.2	2.1
Total, All Categories	N	168	195	162	62	105	692	251	52	45	348	1040
	WN	1213	1600	1290	472	1039	5614	1451	428	318	2197	7811
	H	15.5	20.5	16.5	6.0	13.3	71.9	18.6	5.5	4.1	28.1	100.0
	V	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* N means actual number of respondents; WN means weighted number (see text for explanation); H means horizontal percentage; V means vertical percentage.

SOURCE: NRC, Commission on Human Resources

Table 20

Primary Work Activity in 1975 of NSF Graduate Fellows of 1952-1972

Primary Work Activity, 1975		Field of Graduate Fellowship										
		Math	Phys	Chem	Earth	Engr	EMP TOTAL	Biosc	Psych	SocSc	BIO/BEH TOTAL	GRAND TOTAL
Teaching	N*	124	53	67	25	25	294	124	34	28	186	480
	WN	835	414	502	188	242	2181	722	273	247	1242	3423
	H	24.4	12.1	14.7	5.5	7.1	63.7	21.1	8.0	7.2	36.3	100.0
	V	60.9	25.9	35.5	40.4	21.5	36.5	44.5	58.2	48.3	47.7	39.9
Research	N	53	98	68	24	37	280	115	19	19	153	433
	WN	394	807	562	173	379	2315	641	157	142	947	3262
	H	12.1	24.7	17.2	5.3	11.6	71.0	19.9	4.8	4.4	29.0	100.0
	V	28.8	50.5	39.7	37.2	33.7	38.8	39.9	33.5	27.8	36.4	38.0
Administration of Research	N	4	24	17	6	18	69	16	2	1	19	88
	WN	38	176	138	47	175	574	100	15	10	125	699
	H	5.4	25.2	19.7	6.7	25.0	82.1	14.3	2.1	1.4	17.9	100.0
	V	2.8	11.0	9.8	10.1	15.6	9.6	6.2	3.2	2.0	4.8	8.2
Administration, Other	N	4	3	5	7	6	25	10		3	13	38
	WN	24	28	44	48	55	199	65		18	83	282
	H	8.5	9.9	15.6	17.0	19.5	70.6	23.0		6.4	29.4	100.0
	V	1.8	1.8	3.1	10.3	4.9	3.3	4.0		3.5	3.2	3.3
Consulting, Prof. Services	N			6		1	7	3	2	3	8	15
	WN			45		9	54	12	18	30	60	114
	H			39.5		7.9	47.4	10.5	15.8	26.3	52.6	100.0
	V			3.2		.8	.9	.7	3.8	5.9	2.3	1.3
Design and Development	N	7	17	7	1	23	55	1		1	2	57
	WN	70	137	61	9	235	512	8		7	15	527
	H	13.3	26.0	11.6	1.7	44.6	97.2	1.5		1.3	2.8	100.0
	V	5.1	8.6	4.3	1.9	20.9	8.6	.5		1.4	.6	6.1
Reporting, Marketing, Production, Inspection	N			7			7	3		2	5	12
	WN			45			45	24		30	54	99
	H			45.5			45.5	24.2		30.3	54.5	100.0
	V			3.2			.8	1.5		5.9	2.1	1.2
Other, and No Report	N	2	3	4		3	12	8	1	3	12	24
	WN	9	36	18		28	91	45	6	27	78	169
	H	5.3	21.3	10.7		16.6	53.8	26.6	3.6	16.0	46.2	100.0
	V	.7	2.3	1.3		2.5	1.5	2.8	1.3	5.3	3.0	2.0
Total, All Categories	N	194	198	181	63	113	749	280	58	60	398	1147
	WN	1370	1598	1415	465	1123	5971	1624	469	511	2604	8575
	H	16.0	18.6	16.5	5.4	13.1	69.6	18.9	5.5	6.0	30.4	100.0
	V	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* N means actual number of respondents; WN means weighted number (see text for explanation); H means horizontal percentage; V means vertical percentage.

SOURCE: NRC, Commission on Human Resources

Table 21.

Primary Work Activity of U.S. Doctoral Scientists and Engineers in 1973 and 1975

1930-72 UNITED STATES DOCTORAL SCIENTISTS AND ENGINEERS

21 A PRIMARY WORK ACTIVITY BY FIELD OF EMPLOYMENT FOR FULL-TIME AND PART-TIME EMPLOYED DOCTORAL SCIENTISTS AND ENGINEERS EXCLUDING POSTDOCTORAL APPOINTEES -- 1973

YEAR OF DOCTORATE AND 1973 PRIMARY WORK ACTIVITY		FIELD OF EMPLOYMENT										
1930-72 DOCTORATES		ALL FIELDS	MATH	PHYS	CHEM	EARTH	ENGIN	BIOSC	PSYCH	SOCSC	NONSC	UNK
EMPLOYED POPULATION	N	220790	14979	16164	26736	10109	34317	53849	24365	25924	10901	3446
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
TEACHING	%	37.0	60.6	35.3	28.2	31.5	25.0	32.8	37.7	64.3	30.5	21.0
RESEARCH	%	25.2	17.5	42.2	33.7	31.0	22.7	36.3	10.7	12.4	4.9	11.6
ADMINISTRATION OF	%											
-RESEARCH/DEVELOPMENT		12.8	5.6	11.7	19.2	16.9	21.3	11.4	6.7	6.2	14.7	11.7
-OTHER		5.5	3.8	1.8	3.3	4.9	4.7	3.3	8.1	6.3	22.5	11.4
CONSULTING/PROF. SERVICES	%	5.1	1.7	1.0	1.2	2.8	3.4	3.2	25.3	1.8	5.7	2.1
DESIGN/DEVELOPMENT	%	3.8	4.8	3.1	4.0	1.6	14.6	.8	.7	.5	2.3	1.2
REPORT/MARKETING/ PRODUCTION/INSPECTION	%	1.6	.4	.5	3.0	1.5	1.6	1.4	.3	1.0	4.7	5.7
OTHER/NO REPORT	%	9.1	5.7	4.5	7.4	9.7	6.7	10.8	10.5	7.5	14.7	35.2

21 B Primary Work Activity by Field of Employment for Full-Time and Part-Time Employed Doctoral Scientists and Engineers Excluding Postdoctoral Appointees, 1975

A. Individuals Receiving Doctorates During 1930-1974

1975 Primary Work Activity	All Fields	Field of Employment									
		Math	Phys	Chem	Earth	Engr	Biosc	Psych	SocSc	Nonsc	No Report
Employed Population N	254,643	16,682	16,866	31,582	11,863	41,398	60,415	28,531	31,056	12,894	3,356
Teaching	36.8%	60.7%	34.9%	28.0%	29.6%	22.3%	33.9%	38.7%	63.6%	31.3%	22.1%
Research	25.8	17.3	43.9	34.7	35.6	23.1	37.5	10.1	13.2	5.5	10.9
Administration of:											
-Research/Development	14.5	6.4	11.6	22.1	16.5	22.7	13.0	8.8	8.0	16.0	14.8
-Other	6.3	4.0	1.8	3.6	6.6	6.4	4.0	8.3	6.6	24.9	12.1
Consulting/Prof. Services	6.2	2.0	.9	1.5	4.6	4.2	4.3	29.8	2.0	5.3	6.1
Design/Development	4.5	6.9	3.5	4.4	1.5	16.7	1.1	.7	.5	1.9	1.4
Report/Marketing/ Production/Inspection	1.9	.5	.7	3.1	1.7	1.8	1.7	.5	1.7	5.7	7.4
Other/No Report	4.0	2.1	2.6	2.6	4.0	2.8	4.5	3.1	4.3	9.3	25.2

SOURCE: DOCTORAL SCIENTISTS AND ENGINEERS IN THE UNITED STATES 1973 (1975) PROFILE, Commission on Human Resources, NRC

Table 22

Salaries in 1973 of NSF Graduate Fellows of 1952-1972, by Field of Graduate Fellowship and Cohort of PhD

	Mathematics	Physics	Chemistry	Geol Scis	Engineering	EMP Total	Life Scis	Psychology	Social Scis	Bio/Beh Total	GRAND TOTAL
CY PhD 1950 to 1966, Men & Women Combined											
Mean	$23,408	$23,990	$22,068	$21,552	$25,801	$23,435	$22,324	$24,144	*	$22,763	$23,257
Percentile											
10th	$17,126	16,780	16,424	15,162	17,462	16,726	15,876	18,400		16,177	16,573
25th	$18,724	19,232	18,436	17,622	20,059	18,691	18,294	21,237		18,873	18,728
50th	$22,624	23,410	21,867	20,355	24,142	22,556	21,361	23,507		22,097	22,422
75th	$25,867	27,432	24,782	24,800	27,905	26,334	25,009	25,700		25,361	26,070
90th	$31,525	32,261	28,382	31,508	33,832	31,569	29,400	31,458		29,681	31,305
CY PhD 1967 to 1971, Men & Women Combined											
Mean	$15,173	$16,489	$16,367		$19,944	$16,863	$15,419		$16,958	$15,729	$16,532
Percentile											
10th	$11,064	10,793	11,731		15,962	11,407	11,015		11,080	10,874	11,244
25th	$12,734	12,466	14,505		18,057	13,767	13,528		13,102	13,087	13,559
50th	$15,238	15,272	16,625		19,828	16,586	16,171		16,728	16,097	16,415
75th	$17,306	20,490	18,383		22,627	19,819	17,985		18,685	18,043	18,850
90th	$19,069	23,577	20,434		23,917	22,816	18,693		26,483	19,537	22,035
CY PhD 1950 to 1972 Total, Men											
Mean	$18,895	$20,882	$20,811	$20,387	$23,121	$20,806	$20,319	$20,147	$20,102	$20,256	$20,667
Percentile											
10th	$11,869	11,871	15,173	14,683	16,387	13,081	14,528	11,895	13,200	13,496	13,169
25th	$14,748	15,464	17,400	17,110	18,431	16,525	16,643	15,329	16,267	16,302	16,461
50th	$17,650	20,557	20,026	18,894	21,346	19,807	19,003	20,669	20,025	19,139	19,640
75th	$22,299	25,212	23,759	23,561	25,389	24,065	23,006	23,740	24,914	23,444	23,911
90th	$26,559	30,304	27,164	26,293	31,011	28,983	26,774	27,792	27,173	27,058	28,442
CY PhD 1950 to 1972 Total, Women											
Mean	$15,315					$16,437	$15,410		$14,052	$15,631	$15,867
Percentile											
10th	$10,789					10,970	10,141		10,195	10,324	10,504
25th	$12,047					12,654	11,927		11,445	11,889	12,102
50th	$14,144					15,506	14,905		13,528	14,497	14,765
75th	$17,350					18,700	17,981		16,486	18,315	18,483
90th	$23,150					23,450	24,583		20,050	24,700	24,500
CY PhD 1950 to 1972 Total, Men & Women Combined											
Mean	$18,732	$20,846	$20,708	$20,344	$23,121	$20,713	$19,812	$20,001	$18,421	$19,634	$20,415
Percentile											
10th	$11,763	11,871	15,010	14,646	16,387	12,954	13,057	11,703	11,397	12,290	12,760
25th	$14,482	15,450	17,280	17,099	18,431	16,414	16,098	15,079	14,097	15,667	16,166
50th	$17,534	20,489	19,961	18,869	21,346	19,702	18,712	20,200	17,414	18,662	19,353
75th	$22,195	25,185	23,713	23,394	25,389	23,990	22,738	23,848	21,798	23,101	23,794
90th	$26,382	30,264	27,223	26,207	31,011	28,857	26,632	29,270	26,793	26,891	28,262

* Percentiles not calculated when original N was less than 20.

SOURCE: NRC, Commission on Human Resources

Table 23

Salaries in 1975 of NSF Graduate Fellows of 1952-1972, by Field of Graduate Fellowship and Cohort of PhD

	Mathematics	Physics	Chemistry	Geol Scis	Engineering	EMP Total	Life Scis	Psychology	Social Scis	Bio/Beh Total	GRAND TOTAL
CY PhD 1950 to 1966, Men & Women Combined											
Mean	$26,088	$28,308	$26,181	$24,652	$29,937	$27,305	$25,317	$27,662	*	$25,810	$26,889
Percentile											
10th	$18,862	20,144	19,049	18,714	20,060	19,271	18,259	21,138		18,787	19,202
25th	$20,695	23,434	21,301	20,589	23,080	21,883	21,359	23,617		21,676	21,806
50th	$24,966	27,463	25,570	23,667	29,272	26,023	24,537	27,385		25,139	25,704
75th	$29,641	32,243	29,421	28,444	34,087	30,563	28,475	30,533		29,187	30,217
90th	$36,214	38,994	37,426	30,903	36,847	36,807	33,302	34,659		33,408	36,280
CY PhD 1967 to 1973, Men & Women Combined											
Mean	$17,547	$19,869	$19,403	$20,645	$22,657	$19,689	$17,414	$16,979	$19,642	$17,970	$19,126
Percentile											
10th	$11,953	13,885	15,556	15,016	17,402	14,195	11,058	10,336	13,072	11,513	13,093
25th	$15,203	16,684	17,073	15,838	18,872	16,740	15,065	15,394	16,191	15,515	16,220
50th	$18,110	19,328	18,802	22,325	22,041	19,108	17,822	16,756	18,468	17,725	18,663
75th	$20,112	22,988	22,434	24,806	25,950	22,658	20,797	18,554	21,825	20,914	22,193
90th	$22,175	26,445	24,276	25,508	29,463	25,877	22,936	23,715	26,317	24,331	25,450
CY PhD 1950 to 1974 Total, Men											
Mean	$20,783	$24,263	$24,091	$22,471	$26,085	$23,677	$22,609	$23,060	$20,823	$22,339	$23,315
Percentile											
10th	$13,251	15,525	17,276	15,076	18,243	15,827	14,918	15,282	12,980	14,356	15,511
25th	$16,594	18,723	19,330	18,600	20,187	18,668	18,093	16,908	16,303	17,462	18,417
50th	$19,680	23,531	23,218	22,689	24,421	22,495	22,209	23,403	19,246	21,928	22,319
75th	$23,406	28,594	26,950	25,415	30,007	27,836	25,799	28,200	24,950	26,089	27,221
90th	$29,474	34,306	31,567	28,852	35,950	33,134	30,565	31,425	30,796	30,842	32,204
CY PhD 1950 to 1974 Total, Women											
Mean	$17,687		$19,626			$18,725	$17,727		$18,017	$17,940	$18,158
Percentile											
10th	$11,700		12,268			12,254	10,691		10,950	11,017	11,360
25th	$15,575		15,169			15,363	15,183		15,283	15,161	15,229
50th	$17,450		18,450			17,950	17,832		17,450	17,728	17,792
75th	$19,617		22,658			21,700	20,341		21,200	20,541	20,657
90th	$25,050		27,400			25,750	24,950		24,900	27,250	26,250
CY PhD 1950 to 1974 Total, Men & Women Combined											
Mean	$20,619	$24,210	$23,923	$22,443	$26,065	$23,550	$21,960	$22,138	$20,298	$21,656	$22,981
Percentile											
10th	$13,176	15,466	17,064	15,060	18,225	15,687	13,975	14,039	12,584	13,469	15,239
25th	$16,428	18,698	19,171	18,575	20,170	18,580	17,579	16,557	16,179	16,949	18,168
50th	$19,525	23,488	23,036	22,646	24,406	22,350	21,606	22,169	18,882	21,226	21,937
75th	$22,926	28,573	26,896	25,405	30,000	27,686	25,477	27,657	24,609	25,616	26,891
90th	$29,399	34,211	31,520	28,857	35,925	33,015	30,194	31,292	30,396	30,571	31,826

* Percentiles not calculated when original N was less than 20.

SOURCE: NRC, Commission on Human Resources

Table 24

Salaries of U.S. Doctoral Scientists and Engineers in 1973 and 1975

1930-72 UNITED STATES DOCTORAL SCIENTISTS AND ENGINEERS

24 A SALARY RANGE BY FIELD OF EMPLOYMENT FOR FULL-TIME EMPLOYED DOCTORAL SCIENTISTS AND ENGINEERS — 1973

YEAR OF DOCTORATE AND 1973 ANNUAL SALARY*		FIELD OF EMPLOYMENT										
1930-72 DOCTORATES		ALL FIELDS	MATH	PHYS	CHEM	EARTH	ENGIN	BIOSC	PSYCH	SOCSC	NONSC	UNK
FULL-TIME EMPLOYED POPULATION	N	213613	14750	15832	26157	9835	33745	52323	22739	25025	10258	2949
LOWER DECILE	$	14,250	13,040	13,680	14,670	13,850	16,100	13,310	14,200	13,840	13,660	13,020
LOWER QUARTILE	$	16,990	16,250	16,930	17,240	16,840	18,730	16,460	16,700	16,650	17,440	17,260
MEDIAN	$	20,890	19,790	21,150	21,160	20,730	22,490	19,940	20,010	20,160	22,700	22,220
UPPER QUARTILE	$	25,590	24,550	25,920	25,140	25,030	27,060	24,770	24,710	25,010	29,430	28,490
UPPER DECILE	$	31,750	30,610	31,320	31,160	32,290	33,110	30,590	30,290	31,150	36,660	35,330
1968-71 DOCTORATES	N	58924	4999	4105	5717	2869	10838	13220	6786	7496	2268	646
LOWER DECILE	$	11,960	11,680	11,380	11,460	11,950	15,430	11,190	12,380	12,340	10,990	10,300
LOWER QUARTILE	$	15,220	14,560	14,120	14,910	15,140	17,060	13,800	15,390	15,380	14,590	13,600
MEDIAN	$	17,640	17,120	17,170	17,270	17,710	19,770	16,680	17,560	17,640	17,570	16,990
UPPER QUARTILE	$	20,230	19,480	19,870	19,600	20,610	22,820	19,020	19,730	19,890	20,890	19,690
UPPER DECILE	$	23,780	22,850	23,290	22,720	23,780	24,670	22,210	23,780	24,220	24,730	23,320

*ACADEMIC YEAR SALARIES HAVE BEEN MULTIPLIED BY 11/9 TO ADJUST TO A FULL-YEAR SCALE.

24 B Salary by Field of Employment for Full-Time Employed Doctoral Scientists and Engineers, 1975

Individuals Receiving Doctorates During 1930-1974

1975 Annual Salary	All Fields	Field of Employment									
		Math	Phys	Chem	Earth	Engr	Biosc	Psych	SocSc	Nonsc	No Report
10th Percentile	$16,111	$15,224	$16,417	$16,585	$16,489	$18,707	$15,[illegible]8	$15,655	$15,650	$14,855	$14,947
25th Percentile	18,862	17,962	19,436	19,514	18,930	21,418	18,248	18,181	18,077	18,956	18,871
50th Percentile (Median)	23,126	21,790	23,641	23,885	23,382	25,133	22,164	22,020	21,992	24,260	24,171
75th Percentile	28,568	26,742	28,768	28,933	28,673	30,072	27,559	26,850	27,702	31,883	30,763
90th Percentile	35,165	33,202	34,102	35,565	[illegible],650	36,162	34,283	33,291	33,919	40,184	37,797

Sources: DOCTORAL SCIENTISTS AND ENGINEERS IN THE UNITED STATES 1973 (1975) PROFILE, Commission on Human Resources, NRC

for those in academic employment the reported salary was multiplied by 11/9 to adjust for the shortened work year; summer earnings were not included, except for those persons who reported working on a 12-month salary basis. As mentioned earlier, these salary figures can be compared with those for the general PhD population reported in the Profile reports of the Comprehensive Roster for 1973 and 1975; the same salary adjustments were used in both of those reports and the present report. Table 24, excerpted from these sources, gives data as nearly comparable as possible for the NSF total figures. A serious limitation on comparability exists, however, because of a significant difference in employer categories. A higher proportion of former NSF Fellows are academically employed, and academic salaries tend to be lower than those in business and industry, which employ a higher proportion of the general science/engineering PhD population.

In addition, comparison with the general population of PhD's is difficult because identical cohort sets are not available. There are the expected age (cohort) differences in both sets of figures. When some allowance for age is made, as in comparing the 1973 salaries of the 1967-71 NSF cohort with the 1968-71 general PhD population medians (Table 22 versus Table 24A) the NSF data show lower median values, field by field.

Publications and Citations

It is through publications in the scientific literature that the achievements of scientists are primarily made known to the scientific community, and it is through citations to these publications that the impact of a given scientist's contributions can most conveniently be measured. This is not to suggest that these two measures, publication counts and counts of citations, constitute an all-inclusive or sufficient criterion of scientific accomplishment, but only to indicate the general significance of the final two criteria which are available, as described below.

Counts of Publications

The counts of publications were made from tapes secured from the Institute for Scientific Information, which regularly surveys a broad and comprehensive list of publications in the world's scientific literature. On the ISI tapes (which, unfortunately for the present report, list first-named authors only), each individual is listed by last name, and first and second initial. For this reason, persons with the same last name and initials cannot be distinguished by computer techniques. Tabulations from these tapes must therefore be limited

to those with unique names in the CHR files, which, combining several sources, include over a half-million PhD's and MD's. Approximately half of these people have unique names, when abbreviated to conform to the ISI format. Because of slight differences in this format for the publications index, as compared with the citations index, the percentage of "unique names" varies slightly in the two tables presented below, for publications and citations data respectively. In both cases, however, the general arrangement of the data, and the types of information presented, are parallel.

The mean number of publications and citations of the NSF Fellows, by sex, are shown in Table 25, by field and by cohort of doctorate degree. The first row under each field gives the mean number of publications over the 1961-1972 period; the second row gives the mean number of citations during the same period. The data for women are sparse; means based on fewer than 10 cases are enclosed in parentheses to provide a caution regarding unreliability. Marked field differences are apparent, and the time trends are strongly evident. For purposes of comparison, the means and standard deviations of the corresponding data for the general population, secured from other tabulations incidentally available in the CHR, are provided in Table 26. The only difference here is that the cohort of the 1950's is divided into two five-year periods, whereas the entire decade was combined in the case of the NSF data in order to make the numbers larger and the resulting data more reliable. The skewness of the distributions of publications and citations counts is evidenced in the very large standard deviations, typically much larger than the means.

Potential Additional Data

The data reported herein do not constitute the entire range of possible data that could be derived from the data banks of the Commission on Human Resources, because of the possibilities of taking data as inter-related sets. For example, the ratio of citations to publications could be calculated, or the data herein re-interpreted in terms of the norm of number of publications or citations for a given graduation cohort, or for those of a given age, etc. However, as it was not the purpose of this report to be evaluative, but only to provide a set of descriptive statistics, such further elaboration and correlational studies is left to future researchers. In Appendix 8 to this report there is a more extensive description of data that are available to use for analytical studies, and an account of some of the limitations of these data for such purposes.

Table 25

Mean Number of Publications and Citations in the 1961-1972 Scientific Literature by NSF Graduate Fellows, by Field of Application, Sex, & Cohort of PhD

	MEN					WOMEN				
	50-59	60-64	65-69	70-74	No PhD	50-59	60-64	65-69	70-74	No PhD
MATHEMATICS										
Publications	5.9	6.5	4.2	1.0	.5		(10.0)*	.8	.4	1.4
Citations	89.3	30.3	8.4	1.1	1.0		(44.7)	4.6	.1	2.4
PHYSICS										
Publications	13.2	11.1	9.0	3.1	1.8		(.5)	(5.4)	(1.0)	.2
Citations	219.7	123.2	56.2	9.0	10.5	(5.0)		(46.2)	(7.3)	.1
CHEMISTRY										
Publications	12.2	11.3	7.2	2.8	1.5		4.4	2.4	1.9	.3
Citations	158.4	125.4	57.9	8.8	12.9	(6.9)	58.8	17.2	4.1	4.0
GEOSCIENCES										
Publications	4.7	7.6	4.2	2.8	.5			(1.0)		(.1)
Citations	69.1	59.4	23.8	7.7	3.0	(6.0)		(1.8)		(.1)
ENGINEERING										
Publications	6.0	6.7	4.6	1.3	.5	(5.0)				2.4
Citations	66.8	48.9	21.4	2.9	1.3	(8.0)			(5.0)	1.9
LIFE SCIENCES										
Publications	11.2	9.8	6.6	2.8	1.5	6.9	6.0	3.0	1.5	1.3
Citations	[illegible].1	111.6	51.5	7.6	8.3	31.1	50.9	21.3	6.3	6.0
PSYCHOLOGY										
Publications	6.2	6.9	4.4	1.5	1.1	(2.8)	(.3)	.8	1.6	.7
Citations	150.2	59.2	32.9	3.5	3.1	(7.2)	(10.7)	6.3	1.8	2.2

*Parentheses surround values calculated on fewer than 10 cases.

SOURCE: NRC. Commission on Human Resources

Table 26

Publication and Citation Norms Based on
All PhD's 1950-73, from DRF:
Means and Standard Deviations by Field, Sex, and Cohort of PhD

	MEN					WOMEN				
	50-54	55-59	60-64	65-69	70-73	50-54	55-59	60-64	65-69	70-73
Publications										
MATHEMATICS										
Mean	3.7	5.0	5.2	3.4	1.1	1.3	3.7	2.3	1.8	.5
S.D.	6.3	8.9	7.2	5.7	3.4	3.1	11.4	5.7	5.1	1.6
PHYSICS										
Mean	8.3	10.2	10.5	7.1	3.5	2.8	5.7	3.9	3.5	2.4
S.D.	13.3	14.8	13.0	9.4	6.0	6.7	10.3	6.0	5.4	6.5
CHEMISTRY										
Mean	7.1	7.8	7.3	4.5	2.6	3.1	2.3	3.3	2.4	1.6
S.D.	16.9	15.6	12.0	6.7	4.7	10.0	6.9	6.5	5.1	3.7
GEOSCIENCES										
Mean	3.7	4.2	4.8	3.0	2.0	(.2)*	(1.7)	(.8)	2.8	1.2
S.D.	7.2	8.2	8.2	5.0	5.1	(.6)	(4.0)	(1.6)	4.2	1.7
ENGINEERING										
Mean	4.1	4.8	5.1	3.3	1.5	(2.0)	(.6)	(1.8)	1.5	1.1
S.D.	9.3	9.5	8.8	5.9	4.2	(4.0)	(.8)	(3.6)	3.2	2.1
LIFE SCIENCES										
Mean	9.5	9.5	8.6	5.7	2.6	3.2	3.4	3.8	2.8	1.7
S.D.	17.3	15.7	12.7	8.5	5.2	7.1	7.0	7.0	5.3	3.6
PSYCHOLOGY										
Mean	3.2	3.5	4.0	2.7	1.2	1.5	.9	1.2	1.1	.6
S.D.	6.7	7.9	7.1	5.4	3.1	4.5	3.0	3.4	3.6	2.1
Citations										
MATHEMATICS										
Mean	46.3	31.4	17.2	5.4	2.0	10.9	7.7	7.7	2.5	.7
S.D.	121.1	71.2	39.5	17.3	26.5	25.1	19.7	23.0	9.2	4.1
PHYSICS										
Mean	113.0	111.9	73.2	30.2	7.7	21.5	38.8	20.3	18.4	2.5
S.D.	233.0	204.4	129.4	55.8	49.1	36.4	56.9	39.6	51.4	5.7
CHEMISTRY										
Mean	80.0	68.7	46.7	18.4	5.4	35.6	23.7	20.3	10.2	4.2
S.D.	230.4	172.3	99.9	40.3	18.6	110.5	65.5	48.4	22.7	17.1
GEOSCIENCES										
Mean	38.7	43.6	29.5	12.5	4.7	(17.9)	(5.3)	(4.1)	9.9	1.7
S.D.	72.9	98.7	57.5	29.2	16.0	(42.0)	(9.9)	(8.7)	23.7	3.4
ENGINEERING										
Mean	32.9	34.8	24.2	9.9	3.7	(5.0)	(5.2)	(4.9)	5.2	1.8
S.D.	86.3	100.6	60.2	25.0	25.8	(7.0)	(11.7)	(8.0)	10.9	7.1
LIFE SCIENCES										
Mean	91.4	71.5	50.8	22.4	5.8	38.7	40.5	28.7	14.5	4.0
S.D.	220.0	160.1	105.4	66.6	33.8	96.3	190.3	66.5	60.1	16.3
PSYCHOLOGY										
Mean	39.1	32.8	20.3	7.6	1.8	7.5	6.3	4.4	3.2	1.1
S.D.	98.7	90.9	45.9	23.4	10.0	20.9	21.5	15.3	13.4	4.9

*Parentheses surround values calculated on fewer than 20 cases.

SOURCE: NRC, Commission on Human Resources

Appendix

Included in this appendix are a number of tables that would make the text unduly cumbersome, but which provide valuable additional data regarding the program. In addition, Appendix 8 describes the data that are available in CHR that might be useful in an additional and more comprehensive and analytical evaluative study of the NSF Fellowship program. The nature of the data sources, and some of their limitations, are described, but this appendix does not attempt to design the study which might be made with these data. The reason is that it is assumed that an independent agency which was not involved in any way in the original selection process, would conduct the study and would wish to determine the design parameters, as well as conduct the study. This appendix report is therefore limited to a description of currently available evidence.

The several appendix tables described below have been referenced in the text of the report; a recapitulation of their content is given here for ready reference. Appendix Tables 1-5 provide data by level of award (first-year, intermediate, terminal), whereas the text tables provided data only for all three levels combined. Level 1 (first year) includes college seniors and those with less than a full year of graduate training. Level 3 (Terminal) includes those judged by their graduate departments to be within one year of attaining the doctorate. Level 2 (Intermediate) includes all others.

Appendix 1 provides data on PhD graduations.

Appendix 2 provides data on the award of NSF postdoctoral fellowships.

Appendix 3 provides data on inclusions in the National Faculty Directory.

Appendix 4 provides data on inclusions in the Dissertation Adviser File.

Appendix 5 provides data on research grants by NSF and NIH.

Appendix 6 and Appendix 7 provide data for 1973 and 1975, respectively, of the Comprehensive Roster follow-up study. The data show, by field, sex, and cohort, the number of NSF Fellows included in the CR follow-up samples, the number of respondents, and the response rates for these fellows. For reference purposes, the reader is referred to the 1973 and 1975 Profile reports to compare the response rates of these Fellows with those of the general run of PhD's. The differences are small, but are in the direction that indicates that the Fellows responded at least as well as the average.

Doctorate Attainment, by Cohort and Level of NSF Graduate Fellowship Award: First Year Level*

COHORT OF FIRST AWARD

FLD OF APPLIC	PHD?		1952-53	1954-55	1956-57	1958-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	TOTAL
MATHEMATICS	YES	N	26	27	52	68	38	72	89	92	76	66	99	72	55	62	62	25	5	986
		%	76.5	71.1	81.3	81.9	71.7	74.2	77.4	75.4	66.7	75.9	60.7	57.1	50.0	45.3	44.0	32.5	8.1	60.8
	NO	N	8	11	12	15	15	25	26	30	38	21	64	54	55	75	79	52	57	637
		%	23.5	28.9	18.8	18.1	28.3	25.8	22.6	24.6	33.3	24.1	39.3	42.9	50.0	54.7	56.0	67.5	91.9	39.2
	TOTAL	N	34	38	64	83	53	97	115	122	114	87	163	126	110	137	141	77	62	1623
PHYSICS	YES	N	61	96	89	138	69	87	107	78	78	53	89	48	46	44	25	2	2	1112
		%	78.2	87.3	83.2	89.6	81.2	85.3	84.9	83.0	87.6	88.3	84.8	63.2	60.5	49.4	31.3	4.9	5.9	73.8
	NO	N	17	14	18	16	16	15	19	16	11	7	16	28	30	45	55	39	32	394
		%	21.8	12.7	16.8	10.4	18.8	14.7	15.1	17.0	12.4	11.7	15.2	36.8	39.5	50.6	68.8	95.1	94.1	26.2
	TOTAL	N	78	110	107	154	85	102	126	94	89	60	105	76	76	89	80	41	34	1506
CHEMISTRY	YES	N	75	98	82	99	48	53	70	56	52	59	71	44	46	47	37	5	3	945
		%	85.2	88.3	83.7	90.0	82.8	84.1	87.5	87.5	88.1	86.8	92.2	75.9	68.7	63.5	48.1	15.2	8.3	77.4
	NO	N	13	13	16	11	10	10	10	8	7	9	6	14	21	27	40	28	33	276
		%	14.8	11.7	16.3	10.0	17.2	15.9	12.5	12.5	11.9	13.2	7.8	24.1	31.3	36.5	51.9	84.8	91.7	22.6
	TOTAL	N	88	111	98	110	58	63	80	64	59	68	77	58	67	74	77	33	36	1221
GEOSCIENCES	YES	N	12	7	14	25	11	15	13	8	12	8	17	5	6	5	2	1		161
		%	70.6	50.0	66.7	80.6	78.6	88.2	86.7	88.9	80.0	66.7	85.0	55.6	75.0	29.4	6.7	7.7		57.1
	NO	N	5	7	7	6	3	2	2	1	3	4	3	4	2	12	28	12	20	121
		%	29.4	50.0	33.3	19.4	21.4	11.8	13.3	11.1	20.0	33.3	15.0	44.4	25.0	70.6	93.3	92.3	100.0	42.9
	TOTAL	N	17	14	21	31	14	17	15	9	15	12	20	9	8	17	30	13	20	282
ENGINEERING	YES	N	35	37	66	85	40	50	61	48	52	48	71	48	32	20	17	11	8	719
		%	66.0	43.5	75.0	72.0	64.5	61.7	61.4	68.6	60.5	60.8	62.8	52.7	43.2	35.1	25.8	16.9	9.3	53.0
	NO	N	18	48	22	33	22	31	32	22	34	31	42	43	42	37	49	54	78	638
		%	34.0	56.5	25.0	28.0	35.5	38.3	38.6	31.4	39.5	39.2	37.2	47.3	56.8	64.9	74.2	83.1	90.7	47.0
	TOTAL	N	53	85	88	118	62	81	83	70	86	79	113	91	74	57	66	65	86	1357
EMP TOTAL	YES	N	209	265	303	415	206	277	330	282	270	234	347	217	185	178	143	44	18	3923
		%	77.4	74.0	80.2	83.7	75.7	76.9	78.8	78.6	74.4	76.5	72.6	60.3	55.2	47.6	36.3	19.2	7.6	65.5
	NO	N	61	93	75	81	66	83	89	77	93	72	131	143	150	196	251	185	220	2066
		%	22.6	26.0	19.8	16.3	24.3	23.1	21.2	21.4	25.6	23.5	27.4	39.7	44.8	52.4	63.7	80.8	92.4	34.5
	TOTAL	N	270	358	378	496	272	360	419	359	363	306	478	360	335	374	394	229	238	5989
BIOSCIENCES	YES	N	39	46	58	72	33	57	57	47	61	62	77	43	59	55	30	3	3	802
		%	67.2	69.7	72.5	72.7	76.7	68.7	68.7	77.0	77.2	74.7	76.2	64.2	62.8	57.3	28.8	3.9	2.6	57.8
	NO	N	19	20	22	27	10	26	26	14	18	21	24	24	35	41	74	73	112	586
		%	32.8	30.3	27.5	27.3	23.3	31.3	31.3	23.0	22.8	25.3	23.8	35.8	37.2	42.7	71.2	96.1	97.4	42.2
	TOTAL	N	58	66	80	99	43	83	83	61	79	83	101	67	94	96	104	76	115	1388
PSYCHOLOGY	YES	N	1	4	8	9	5	8	16	18	22	14	25	21	18	9	19	2	2	201
		%	50.0	44.4	66.7	64.3	71.4	66.7	69.6	81.8	75.9	66.7	67.6	61.8	69.2	40.9	50.0	5.9	4.8	52.3
	NO	N	1	5	4	5	2	4	7	4	7	7	12	13	8	13	19	32	40	183
		%	50.0	55.6	33.3	35.7	28.6	33.3	30.4	18.2	24.1	33.3	32.4	38.2	30.8	59.1	50.0	94.1	95.2	47.7
	TOTAL	N	2	9	12	14	7	12	23	22	29	21	37	34	26	22	38	34	42	384
SOC SCI & OTH	YES	N	1	2	6	6	5	9	18	13	25	34	38	18	19	21	28	10	3	256
		%	100.0	100.0	100.0	60.0	83.3	75.0	69.2	68.4	67.6	70.8	50.0	37.5	41.3	32.8	23.0	10.0	2.7	34.9
	NO	N				4	1	3	8	6	12	14	38	30	27	43	94	90	107	477
		%				40.0	16.7	25.0	30.8	31.6	32.4	29.2	50.0	62.5	58.7	67.2	77.0	90.0	97.3	65.1
	TOTAL	N	1	2	6	10	6	12	26	19	37	48	76	48	46	64	122	100	110	733
BIO/BEH TOTAL	YES	N	41	52	72	87	43	74	91	78	108	110	140	82	96	85	77	15	8	1259
		%	67.2	67.5	73.5	70.7	76.8	69.2	68.9	76.5	74.5	72.4	65.4	55.0	57.8	46.7	29.2	7.1	3.0	50.3
	NO	N	20	25	26	36	13	33	41	24	37	42	74	67	70	97	187	195	259	1246
		%	32.8	32.5	26.5	29.3	23.2	30.8	31.1	23.5	25.5	27.6	34.6	45.0	42.2	53.3	70.8	92.9	97.0	49.7
	TOTAL	N	61	77	98	123	56	107	132	102	145	152	214	149	166	182	264	210	267	2505
GRAND TOTAL	YES	N	250	317	375	502	249	351	421	360	378	344	487	299	281	263	220	59	26	5182
		%	75.5	72.9	78.8	81.1	75.9	75.2	76.4	78.1	74.4	75.1	70.4	58.7	56.1	47.3	33.4	13.4	5.1	61.0
	NO	N	81	118	101	117	79	116	130	101	130	114	205	210	220	293	438	380	479	3312
		%	24.5	27.1	21.2	18.9	24.1	24.8	23.6	21.9	25.6	24.9	29.6	41.3	43.9	52.7	66.6	86.6	94.9	39.0
	TOTAL	N	331	435	476	619	328	467	551	461	508	458	692	509	501	556	658	439	505	8494

* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources

Doctorate Attainment, by Cohort and Level of NSF Graduate Fellowship Award: Intermediate Level*

COHORT OF FIRST AWARD

FLD OF APPLIC	PHD?		1952-53	1954-55	1956-57	1958-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	TOTAL
MATHEMATICS	YES	N	28	15	15	26	18	14	31	18	19	9	49	17	19	19	14	8		319
		%	100.0	78.9	93.8	86.7	81.8	66.7	83.8	85.7	86.4	75.0	81.7	63.0	65.5	65.5	58.3	88.9		78.6
	NO	N		4	1	4	4	7	6	3	3	3	11	10	10	10	10	1		87
		%		21.1	6.3	13.3	18.2	33.3	16.2	14.3	13.6	25.0	18.3	37.0	34.5	34.5	41.7	11.1		21.4
	TOTAL	N	28	19	16	30	22	21	37	21	22	12	60	27	29	29	24	9		406
PHYSICS	YES	N	54	46	38	35	22	27	25	30	20	14	50	12	8	19	14	2		416
		%	100.0	93.9	90.5	92.1	91.7	90.0	86.2	88.2	100.0	87.5	90.9	85.7	72.7	90.5	58.3	40.0		89.3
	NO	N		3	4	3	2	3	4	4		2	5	2	3	2	10	3		50
		%		6.1	9.5	7.9	8.3	10.0	13.8	11.8		12.5	9.1	14.3	27.3	9.5	41.7	60.0		10.7
	TOTAL	N	54	49	42	38	24	30	29	34	20	16	55	14	11	21	24	5		466
CHEMISTRY	YES	N	61	58	43	52	20	49	26	22	27	17	60	19	26	16	20	9		525
		%	98.4	98.3	93.5	94.5	90.9	96.1	86.7	95.7	93.1	89.5	96.8	90.5	89.7	80.0	90.9	69.2		93.3
	NO	N	1	1	3	3	2	2	4	1	2	2	2	2	3	4	2	4		38
		%	1.6	1.7	6.5	5.5	9.1	3.9	13.3	4.3	6.9	10.5	3.2	9.5	10.3	20.0	9.1	30.8		6.7
	TOTAL	N	62	59	46	55	22	51	30	23	29	19	62	21	29	20	22	13		563
GEOSCIENCES	YES	N	17	18	18	28	13	17	15	15	10	9	17	10	9	8	6	2		212
		%	100.0	94.7	100.0	93.3	92.9	89.5	83.3	93.8	90.9	90.0	94.4	76.9	75.0	53.3	54.5	50.0		86.5
	NO	N		1		2	1	2	3	1	1	1	1	3	3	7	5	2		33
		%		5.3		6.7	7.1	10.5	16.7	6.3	9.1	10.0	5.6	23.1	25.0	46.7	45.5	50.0		13.5
	TOTAL	N	17	19	18	30	14	19	18	16	11	10	18	13	12	15	11	4		245
ENGINEERING	YES	N	24	20	16	33	24	38	30	28	20	19	43	12	8	14	21	4		354
		%	88.9	95.2	72.7	91.7	88.9	84.4	83.3	84.8	80.0	82.6	91.5	85.7	66.7	73.7	84.0	44.4		84.1
	NO	N	3	1	6	3	3	7	6	5	5	4	4	2	4	5	4	5		67
		%	11.1	4.8	27.3	8.3	11.1	15.6	16.7	15.2	20.0	17.4	8.5	14.3	33.3	26.3	16.0	55.6		15.9
	TOTAL	N	27	21	22	36	27	45	36	33	25	23	47	14	12	19	25	9		421
EMP TOTAL	YES	N	184	157	130	174	97	145	127	113	96	68	219	70	70	76	75	25		1826
		%	97.9	94.0	90.3	92.1	89.0	87.3	84.7	89.0	89.7	85.0	90.5	78.7	75.3	73.1	70.8	62.5		86.9
	NO	N	4	10	14	15	12	21	23	14	11	12	23	19	23	28	31	15		275
		%	2.1	6.0	9.7	7.9	11.0	12.7	15.3	11.0	10.3	15.0	9.5	21.3	24.7	26.9	29.2	37.5		13.1
	TOTAL	N	188	167	144	189	109	166	150	127	107	80	242	89	93	104	106	40		2101
BIOSCIENCES	YES	N	64	81	56	52	30	46	37	36	32	17	63	23	43	30	43	17	1	671
		%	88.9	89.0	87.5	86.7	90.9	90.2	82.2	81.8	94.1	81.0	80.8	85.2	87.8	68.2	68.3	65.4	100.0	83.6
	NO	N	8	10	8	8	3	5	8	8	2	4	15	4	6	14	20	9		132
		%	11.1	11.0	12.5	13.3	9.1	9.8	17.8	18.2	5.9	19.0	19.2	14.8	12.2	31.8	31.7	34.6		16.4
	TOTAL	N	72	91	64	60	33	51	45	44	34	21	78	27	49	44	63	26	1	803
PSYCHOLOGY	YES	N	4	15	10	9	3	10	8	6	7	5	7	4	4	6	16	8		122
		%	100.0	93.8	100.0	90.0	60.0	83.3	80.0	75.0	87.5	71.4	87.5	80.0	100.0	100.0	69.6	61.5		81.9
	NO	N		1		1	2	2	2	2	1	2	1	1			7	5		27
		%		6.3		10.0	40.0	16.7	20.0	25.0	12.5	28.6	12.5	20.0			30.4	38.5		18.1
	TOTAL	N	4	16	10	10	5	12	10	8	8	7	8	5	4	6	23	13		149
SOC SCI & OTH	YES	N		3	13	19	7	16	17	17	21	21	34	19	17	16	37	10		267
		%		100.0	81.3	86.4	87.5	88.9	73.9	70.8	77.8	77.8	77.3	63.3	60.7	50.0	52.9	38.5		67.1
	NO	N			3	3	1	2	6	7	6	6	10	11	11	16	33	16		131
		%			18.8	13.6	12.5	11.1	26.1	29.2	22.2	22.2	22.7	36.7	39.3	50.0	47.1	61.5		32.9
	TOTAL	N		3	16	22	8	18	23	24	27	27	44	30	28	32	70	26		398
BIO/BEH TOTAL	YES	N	68	99	79	80	60	72	62	59	60	43	104	46	64	52	96	35	1	1060
		%	89.5	90.0	87.8	87.0	87.0	88.9	79.5	77.6	87.0	78.2	80.0	74.2	79.0	63.4	61.5	53.8	100.0	78.5
	NO	N	8	11	11	12	6	9	16	17	9	12	26	16	17	30	60	30		290
		%	10.5	10.0	12.2	13.0	13.0	11.1	20.5	22.4	13.0	21.8	20.0	25.8	21.0	36.6	38.5	46.2		21.5
	TOTAL	N	76	110	90	92	46	81	78	76	69	55	130	62	81	82	156	65	1	1350
GRAND TOTAL	YES	N	252	256	209	254	137	217	189	172	156	111	323	116	134	128	171	60	1	2886
		%	95.5	92.4	89.3	90.4	88.4	87.9	82.9	84.7	88.6	82.2	86.8	76.8	77.0	68.8	65.3	57.1	100.0	83.6
	NO	N	12	21	25	27	18	30	39	31	20	24	49	35	40	58	91	45		565
		%	4.5	7.6	10.7	9.6	11.6	12.1	17.1	15.3	11.4	17.8	13.2	23.2	23.0	31.2	34.7	42.9		16.4
	TOTAL	N	264	277	234	281	155	247	228	203	176	135	372	151	174	186	262	105	1	3451

* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources

Doctorate Attainment, by Cohort and Level of NSF Graduate Fellowship Award: Terminal Level*

COHORT OF FIRST AWARD

FLD OF APPLIC	PHD?		1952-53	1954-55	1956-57	1958-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	TOTAL
MATHEMATICS	YES	N	19	6	3	4	3	6	5	5	2	1	29	8	9	12	8	6		126
		%	95.0	85.7	100.0	80.0	75.0	100.0	100.0	100.0	100.0	50.0	93.5	100.0	81.8	92.3	100.0	75.0		91.3
	NO	N	1	1		1	1					1	2		2	1		2		12
		%	5.0	14.3		20.0	25.0					50.0	6.5		18.2	7.7		25.0		8.7
	TOTAL	N	20	7	3	5	4	6	5	5	2	2	31	8	11	13	8	8		138
PHYSICS	YES	N	65	23	6	10	9	8	7	5	5	1	10	8	3	9	8			177
		%	94.2	85.2	75.0	90.9	90.0	100.0	100.0	100.0	100.0	100.0	90.9	100.0	100.0	81.8	100.0			92.2
	NO	N	4	4	2	1	1						1			2				15
		%	5.8	14.8	25.0	9.1	10.0						9.1			18.2				7.8
	TOTAL	N	69	27	8	11	10	8	7	5	5	1	11	8	3	11	8			192
CHEMISTRY	YES	N	54	34	24	18	7	16	6	7	7	3	12	3	2	5	11			209
		%	98.2	100.0	100.0	100.0	100.0	88.9	85.7	100.0	100.0	100.0	100.0	75.0	66.7	100.0	100.0			97.2
	NO	N	1					2	1					1	1					6
		%	1.9					11.1	14.3					25.0	33.3					2.8
	TOTAL	N	55	34	24	18	7	18	7	7	7	3	12	4	3	5	11			215
GEOSCIENCES	YES	N	16	10	8	6	1	7	5	4	2	5	4	2	1	6	2			79
		%	88.9	100.0	88.9	100.0	50.0	100.0	83.3	66.7	100.0	83.3	100.0	66.7	50.0	75.0	100.0			86.8
	NO	N	2		1		1		1	2		1		1	1	2				12
		%	11.1		11.1		50.0		16.7	33.3		16.7		33.3	50.0	25.0				13.2
	TOTAL	N	18	10	9	6	2	7	6	6	2	6	4	3	2	8	2			91
ENGINEERING	YES	N	19	24	7	9	7	13	10	8	8	3	12	11	7	15	4	3		160
		%	90.5	100.0	87.5	90.0	100.0	92.9	100.0	100.0	100.0	100.0	100.0	100.0	77.8	88.2	80.0	100.0		94.1
	NO	N	2		1	1		1							2	2	1			10
		%	9.5		12.5	10.0		7.1							22.2	11.8	20.0			5.9
	TOTAL	N	21	24	8	10	7	14	10	8	8	3	12	11	9	17	5	3		170
EMP TOTAL	YES	N	173	97	48	47	27	50	33	29	24	13	67	32	22	47	33	9		751
		%	94.5	95.1	92.3	94.0	90.0	94.3	94.3	93.5	100.0	86.7	95.7	94.1	78.6	87.0	97.1	81.8		93.2
	NO	N	10	5	4	3	3	3	2	2		2	3	2	6	7	1	2		55
		%	5.5	4.9	7.7	6.0	10.0	5.7	5.7	6.5		13.3	4.3	5.9	21.4	13.0	2.9	18.2		6.8
	TOTAL	N	183	102	52	50	30	53	35	31	24	15	70	34	28	54	34	11		806
BIOSCIENCES	YES	N	82	41	29	22	3	10	11	5	5	5	10	4	8	21	17	10		283
		%	95.3	93.2	100.0	100.0	100.0	90.9	91.7	100.0	83.3	83.3	83.3	80.0	88.9	84.0	94.4	90.9		93.1
	NO	N	4	3				1	1		1	1	2	1	1	4	1	1		21
		%	4.7	6.8				9.1	8.3		16.7	16.7	16.7	20.0	11.1	16.0	5.6	9.1		6.9
	TOTAL	N	86	44	29	22	3	11	12	5	6	6	12	5	9	25	18	11		304
PSYCHOLOGY	YES	N	4	10	4	4	1	3	3	5	2	2	6	3		5	4	2		58
		%	100.0	90.9	80.0	100.0	100.0	100.0	100.0	83.3	100.0	100.0	85.7	100.0		71.4	80.0	100.0		89.2
	NO	N		1	1					1			1			2	1			7
		%		9.1	20.0					16.7			14.3			28.6	20.0			10.8
	TOTAL	N	4	11	5	4	1	3	3	6	2	2	7	3		7	5	2		65
SOC SCI & OTH	YES	N	3		7	3	2	5	4	6	4	2	18	11	11	10	7	2		95
		%	100.0		100.0	100.0	66.7	100.0	66.7	100.0	66.7	66.7	90.0	91.7	78.6	66.7	63.6	50.0		79.8
	NO	N		1			1		2		2	1	2	1	3	5	4	2		24
		%		100.0			33.3		33.3		33.3	33.3	10.0	8.3	21.4	33.3	36.4	50.0		20.2
	TOTAL	N	3	1	7	3	3	5	6	6	6	3	20	12	14	15	11	4		119
BIO/BEH TOTAL	YES	N	89	51	40	29	6	18	18	16	11	9	34	18	19	36	28	14		436
		%	95.7	91.1	97.6	100.0	85.7	94.7	85.7	94.1	78.6	81.8	87.2	90.0	82.6	76.6	82.4	82.4		89.3
	NO	N	4	5	1		1	1	3	1	3	2	5	2	4	11	6	3		52
		%	4.3	8.9	2.4		14.3	5.3	14.3	5.9	21.4	18.2	12.8	10.0	17.4	23.4	17.6	17.6		10.7
	TOTAL	N	93	56	41	29	7	19	21	17	14	11	39	20	23	47	34	17		488
GRAND TOTAL	YES	N	262	148	88	76	33	68	51	45	35	22	101	50	41	83	61	23		1187
		%	94.9	93.7	94.6	96.2	89.2	94.4	91.1	93.8	92.1	84.6	92.7	92.6	80.4	82.2	89.7	82.1		91.7
	NO	N	14	10	5	3	4	4	5	3	3	4	8	4	10	18	7	5		107
		%	5.1	6.3	5.4	3.8	10.8	5.6	8.9	6.3	7.9	15.4	7.3	7.4	19.6	17.8	10.3	17.9		8.3
	TOTAL	N	276	158	93	79	37	72	56	48	38	26	109	54	51	101	68	28		1294

* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources

NSF Postdoctoral Awards, by Cohort and Level of NSF Graduate Fellowship Awards: First Year Level*

COHORT OF FIRST AWARD

FLD OF APPLIC	NSF F?		1952-53	1954-55	1956-57	1958-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	TOTAL
MATHEMATICS	YES	N	6	7	9	9	6	4	5	5	3	1	1	1						57
		%	17.6	18.4	14.1	10.8	11.3	4.1	4.3	4.1	2.6	1.1	.6	.8						3.5
	NO	N	28	31	55	74	47	93	110	117	111	86	162	125	110	137	141	77	62	1566
		%	82.4	81.6	85.9	89.2	88.7	95.9	95.7	95.9	97.4	98.9	99.4	99.2	100.0	100.0	100.0	100.0	100.0	96.5
	TOTAL	N	34	38	64	83	53	97	115	122	114	87	163	126	110	137	141	77	62	1623
PHYSICS	YES	N	13	19	18	11	9	9	6	5	4	3	3	2	1					103
		%	16.7	17.3	16.8	7.1	10.6	8.8	4.8	5.3	4.5	5.0	2.9	2.6	1.3					6.8
	NO	N	65	91	89	143	76	93	120	89	85	57	102	74	75	89	80	41	34	1403
		%	83.3	82.7	83.2	92.9	89.4	91.2	95.2	94.7	95.5	95.0	97.1	97.4	98.7	100.0	100.0	100.0	100.0	93.2
	TOTAL	N	78	110	107	154	85	102	126	94	89	60	105	76	76	89	80	41	34	1506
CHEMISTRY	YES	N	11	15	19	16	8	6	6	5	8	4	7	6						109
		%	12.5	13.5	17.3	14.5	13.8	9.5	7.5	7.8	13.6	5.9	9.1	10.3						8.9
	NO	N	77	96	81	94	50	57	74	59	51	64	70	52	67	74	77	33	36	1112
		%	87.5	86.5	82.7	85.5	86.2	90.5	92.5	92.2	86.4	94.1	90.9	89.7	100.0	100.0	100.0	100.0	100.0	91.1
	TOTAL	N	88	111	98	110	58	63	80	64	59	68	77	58	67	74	77	33	36	1221
GEOSCIENCES	YES	N				5		1	2	1	1		2							12
		%				16.1		5.9	13.3	11.1	6.7		10.0							4.3
	NO	N	17	14	21	26	14	16	13	8	14	12	18	9	8	17	30	13	20	270
		%	100.0	100.0	100.0	83.9	100.0	94.1	86.7	88.9	93.3	100.0	90.0	100.0	100.0	100.0	100.0	100.0	100.0	95.7
	TOTAL	N	17	14	21	31	14	17	15	9	15	12	20	9	8	17	30	13	20	282
ENGINEERING	YES	N	3	1	5	3	1		3		1	1								18
		%	5.7	1.2	5.7	2.5	1.6		3.6		1.2	1.3								1.3
	NO	N	50	84	83	115	61	81	80	70	85	78	113	91	74	57	66	65	86	1339
		%	94.3	98.8	94.3	97.5	98.4	100.0	96.4	100.0	98.8	98.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.7
	TOTAL	N	53	85	88	118	62	81	83	70	86	79	113	91	74	57	66	65	86	1357
EMP TOTAL	YES	N	33	42	49	44	24	20	22	16	17	9	13	9	1					299
		%	12.2	11.7	13.0	8.9	8.8	5.6	5.3	4.5	4.7	2.9	2.7	2.5	.3					5.0
	NO	N	237	316	329	452	248	340	397	343	346	297	465	351	334	374	394	229	238	5690
		%	87.8	88.3	87.0	91.1	91.2	94.4	94.7	95.5	95.3	97.1	97.3	97.5	99.7	100.0	100.0	100.0	100.0	95.0
	TOTAL	N	270	358	378	496	272	360	419	359	363	306	478	360	335	374	394	229	238	5989
BIOSCIENCES	YES	N	2	6	9	10	6	8	5	2	3	7	5	1		1				69
		%	3.4	9.1	11.3	10.1	14.0	9.6	6.0	3.3	3.8	8.4	5.0	1.5		1.0				4.7
	NO	N	56	60	71	89	37	75	78	59	76	76	96	66	94	95	104	76	115	1323
		%	96.6	90.9	88.8	89.9	86.0	90.4	94.0	96.7	96.2	91.6	95.0	98.5	100.0	99.0	100.0	100.0	100.0	95.3
	TOTAL	N	58	66	80	99	43	83	83	61	79	83	101	67	94	96	104	76	115	1388
PSYCHOLOGY	YES	N				2		1	4				3							7
		%				14.3		8.3	4.3				8.1							1.8
	NO	N	2	9	12	12	7	11	22	22	29	21	34	34	26	22	38	34	42	377
		%	100.0	100.0	100.0	85.7	100.0	91.7	95.7	100.0	100.0	100.0	91.9	100.0	100.0	100.0	100.0	100.0	100.0	98.2
	TOTAL	N	2	9	12	14	7	12	23	22	29	21	37	34	26	22	38	34	42	384
SOC SCI & OTH	YES	N							1	1		1		1						5
		%		50.0					3.8	5.3		2.1		2.1						.7
	NO	N	1	1	6	10	6	12	25	18	37	47	76	47	46	64	122	100	110	728
		%	100.0	50.0	100.0	100.0	100.0	100.0	96.2	94.7	100.0	97.9	100.0	97.9	100.0	100.0	100.0	100.0	100.0	99.3
	TOTAL	N	1	2	6	10	6	12	26	19	37	48	76	48	46	64	122	100	110	733
BIO/BEH TOTAL	YES	N	2	7	9	12	6	9	7	3	3	8	8	2		1				77
		%	3.3	9.1	9.2	9.8	10.7	8.4	5.3	2.9	2.1	5.3	3.7	1.3		.5				3.1
	NO	N	59	70	89	111	50	98	125	99	142	144	206	147	166	181	264	210	267	2428
		%	96.7	90.9	90.8	90.2	89.3	91.6	94.7	97.1	97.9	94.7	96.3	98.7	100.0	99.5	100.0	100.0	100.0	96.9
	TOTAL	N	61	77	98	123	56	107	132	102	145	152	214	149	166	182	264	210	267	2505
GRAND TOTAL	YES	N	35	49	58	56	30	29	29	19	20	17	21	11	1	1				376
		%	10.6	11.3	12.2	9.0	9.1	6.2	5.3	4.1	3.9	3.7	3.0	2.2	.2	.2				4.4
	NO	N	296	386	418	563	298	438	522	442	489	441	671	498	500	555	658	439	505	8118
		%	89.4	88.7	87.8	91.0	90.9	93.8	94.7	95.9	96.1	96.3	97.0	97.8	99.8	99.8	100.0	100.0	100.0	95.6
	TOTAL	N	331	435	476	618	328	467	551	461	508	458	692	509	501	556	658	439	505	8494

* See footnote on page 6 for definition of "Level of fellowship." Terminal and Intermediate levels of fellowship were discontinued after 1971.

NSF Postdoctoral Awards, by Cohort and Level of NSF Graduate Fellowship Awards: Intermediate Level*

			COHORT OF FIRST AWARD																
FLD OF APPLIC	NSF F?		1952-53	1954-55	1956-57	1958-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	TOTAL
MATHEMATICS	YES	N	7	3	2	2	1	1	2	2	1			1						22
		%	25.0	15.8	12.5	6.7	4.5	4.8	5.4	9.5	4.5			3.7						5.4
	NO	N	21	16	14	28	21	20	35	19	21	12	60	26	29	29	24	9		384
		%	75.0	84.2	87.5	93.3	95.5	95.2	94.6	90.5	95.5	100.0	100.0	96.3	100.0	100.0	100.0	100.0		94.6
	TOTAL	N	28	19	16	30	22	21	37	21	22	12	60	27	29	29	24	9		406
PHYSICS	YES	N	11	9	6	5	5		5	1	1		4	1	1					49
		%	20.4	18.4	14.3	13.2	20.8		17.2	2.9	5.0		7.3	7.1	9.1					10.5
	NO	N	43	40	36	33	19	30	24	33	19	16	51	13	10	21	24	5		417
		%	79.6	81.6	85.7	86.8	79.2	100.0	82.8	97.1	95.0	100.0	92.7	92.9	90.9	100.0	100.0	100.0		89.5
	TOTAL	N	54	49	42	38	24	30	29	34	20	16	55	14	11	21	24	5		466
CHEMISTRY	YES	N	6	6	12	9	4	9	3	5	3	4	6			2				69
		%	9.7	10.2	26.1	16.4	18.2	17.6	10.0	21.7	10.3	21.1	9.7			10.0				12.3
	NO	N	56	53	34	46	18	42	27	18	26	15	56	21	29	18	22	13		494
		%	90.3	89.8	73.9	83.6	81.8	82.4	90.0	78.3	89.7	78.9	90.3	100.0	100.0	90.0	100.0	100.0		87.7
	TOTAL	N	62	59	46	55	22	51	30	23	29	19	62	21	29	20	22	13		563
GEOSCIENCES	YES	N	2	2		3	1	1	2	1	1	2				1				16
		%	11.8	10.5		10.0	7.1	5.3	11.1	6.3	9.1	20.0				6.7				6.5
	NO	N	15	17	18	27	13	18	16	15	10	8	18	13	12	14	11	4		229
		%	88.2	89.5	100.0	90.0	92.9	94.7	88.9	93.8	90.9	80.0	100.0	100.0	100.0	93.3	100.0	100.0		93.5
	TOTAL	N	17	19	18	30	14	19	18	16	11	10	18	13	12	15	11	4		245
ENGINEERING	YES	N			2	1		1		1	2	1								8
		%			9.1	2.8		2.2		3.0	8.0	4.3								1.9
	NO	N	27	21	20	35	27	44	36	32	23	22	47	14	12	19	25	9		413
		%	100.0	100.0	90.9	97.2	100.0	97.8	100.0	97.0	92.0	95.7	100.0	100.0	100.0	100.0	100.0	100.0		98.1
	TOTAL	N	27	21	22	36	27	45	36	33	25	23	47	14	12	19	25	9		421
E&P TOTAL	YES	N	26	20	22	20	11	12	12	10	8	7	10	2	1	3				164
		%	13.8	12.0	15.3	10.6	10.1	7.2	8.0	7.9	7.5	8.8	4.1	2.2	1.1	2.9				7.8
	NO	N	162	147	122	169	98	154	138	117	99	73	232	87	92	101	106	40		1937
		%	86.2	88.0	84.7	89.4	89.9	92.8	92.0	92.1	92.5	91.3	95.9	97.8	98.9	97.1	100.0	100.0		92.2
	TOTAL	N	188	167	144	189	109	166	150	127	107	80	242	89	93	104	106	40		2101
BIOSCIENCES	YES	N	14	6	8	10	4	7	4	5	3	1	4	1	3					70
		%	19.4	6.6	12.5	16.7	12.1	13.7	8.9	11.4	8.8	4.8	5.1	3.7	6.1					8.7
	NO	N	58	85	56	50	29	44	41	39	31	20	74	26	46	44	63	26	1	733
		%	80.6	93.4	87.5	83.3	87.9	86.3	91.1	88.6	91.2	95.2	94.9	96.3	93.9	100.0	100.0	100.0	100.0	91.3
	TOTAL	N	72	91	64	60	33	51	45	44	34	21	78	27	49	44	63	26	1	803
PSYCHOLOGY	YES	N		2	2	2			1		1					1				9
		%		12.5	20.0	20.0			10.0		12.5					16.7				6.0
	NO	N	4	14	8	8	5	12	9	8	7	7	8	5	4	5	23	13		140
		%	100.0	87.5	80.0	80.0	100.0	100.0	90.0	100.0	87.5	100.0	100.0	100.0	100.0	83.3	100.0	100.0		94.0
	TOTAL	N	4	16	10	10	5	12	10	8	8	7	8	5	4	6	23	13		149
SOC SCI & OTH	YES	N			4	4	1	2					2							13
		%			25.0	18.2	12.5	11.1					4.5							3.3
	NO	N		3	12	18	7	16	23	24	27	27	42	30	28	32	70	26		385
		%		100.0	75.0	81.8	87.5	88.9	100.0	100.0	100.0	100.0	95.5	100.0	100.0	100.0	100.0	100.0		96.7
	TOTAL	N		3	16	22	8	18	23	24	27	27	44	30	28	32	70	26		398
BIO/BEH TOTAL	YES	N	14	8	14	16	5	9	5	5	4	1	6	1	3	1				92
		%	18.4	7.3	15.6	17.4	10.9	11.1	6.4	6.6	5.8	1.8	4.6	1.6	3.7	1.2				6.8
	NO	N	62	102	76	76	41	72	73	71	65	54	124	61	78	81	156	65	1	1258
		%	81.6	92.7	84.4	82.6	89.1	88.9	93.6	93.4	94.2	98.2	95.4	98.4	96.3	98.8	100.0	100.0	100.0	93.2
	TOTAL	N	76	110	90	92	46	81	78	76	69	55	130	62	81	82	156	65	1	1350
GRAND TOTAL	YES	N	40	28	36	36	16	21	17	15	12	10	16	3	4	4				256
		%	15.2	10.1	15.4	12.8	10.3	8.5	7.5	7.4	6.8	5.9	4.3	2.0	2.3	2.2				7.4
	NO	N	224	249	198	245	139	226	211	188	164	127	356	148	170	182	262	105	1	3195
		%	84.8	89.9	84.6	87.2	89.7	91.5	92.5	92.6	93.2	94.1	95.7	98.0	97.7	97.8	100.0	100.0	100.0	92.6
	TOTAL	N	264	277	234	281	155	247	228	203	176	135	372	151	174	186	262	105	1	3451

* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRS, Commission on Human Resources

NSF Postdoctoral Awards, by Cohort and Level of NSF Graduate Fellowship Awards: Terminal Level*

COHORT OF FIRST AWARD

FLD OF APPLIC	NSF F?		1952-53	1954-55	1956-57	1958-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	TOTAL
MATHEMATICS	YES	N	2	3	1	1							1				1			9
		%	10.0	42.9	33.3	20.0							3.2				12.5			6.5
	NO	N	18	4	2	4	4	6	5	5	2	2	30	8	11	13	7	8		129
		%	90.0	57.1	66.7	80.0	100.0	100.0	100.0	100.0	100.0	100.0	96.8	100.0	100.0	100.0	87.5	100.0		93.5
	TOTAL	N	20	7	3	5	4	6	5	5	2	2	31	8	11	13	8	8		138
PHYSICS	YES	N	13	6	2	3	1						1	1						27
		%	18.8	22.2	25.0	27.3	10.0						9.1	12.5						14.1
	NO	N	56	21	6	8	9	8	7	5	5	1	10	7	3	11	8			166
		%	81.2	77.8	75.0	72.7	90.0	100.0	100.0	100.0	100.0	100.0	90.9	87.5	100.0	100.0	100.0			85.9
	TOTAL	N	69	27	8	11	10	8	7	5	5	1	11	8	3	11	8			192
CHEMISTRY	YES	N	2	3	4	3	2	2	1	1	1		2		2	2				25
		%	3.6	8.8	16.7	16.7	28.6	11.1	14.3	14.3	14.3		16.7		66.7	40.0				11.6
	NO	N	53	31	20	15	5	16	6	6	6	3	10	4	1	3	11			190
		%	96.4	91.2	83.3	83.3	71.4	88.9	85.7	85.7	85.7	100.0	83.3	100.0	33.3	60.0	100.0			88.4
	TOTAL	N	55	34	24	18	7	18	7	7	7	3	12	4	3	5	11			215
GEOSCIENCES	YES	N		1	1															2
		%		10.0	11.1															2.2
	NO	N	18	9	8	6	2	7	6	6	2	6	4	3	2	8	2			89
		%	100.0	90.0	88.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0			97.8
	TOTAL	N	18	10	9	6	2	7	6	6	2	6	4	3	2	8	2			91
ENGINEERING	YES	N		3			1						1			1				6
		%		12.5			14.3						8.3			5.9				3.5
	NO	N	21	21	8	10	6	14	10	8	8	3	11	11	9	16	5	3		164
		%	100.0	87.5	100.0	100.0	85.7	100.0	100.0	100.0	100.0	100.0	91.7	100.0	100.0	94.1	100.0	100.0		96.5
	TOTAL	N	21	24	8	10	7	14	10	8	8	3	12	11	9	17	5	3		170
EMP TOTAL	YES	N	17	16	8	7	4	2	1	1	1		5	1	2	3	1			69
		%	9.3	15.7	15.4	14.0	13.3	3.8	2.9	3.2	4.2		7.1	2.9	7.1	5.6	2.9			8.6
	NO	N	166	86	44	43	26	51	34	30	23	15	65	33	26	51	33	11		737
		%	90.7	84.3	84.6	86.0	86.7	96.2	97.1	96.8	95.8	100.0	92.9	97.1	92.9	94.4	97.1	100.0		91.4
	TOTAL	N	183	102	52	50	30	53	35	31	24	15	70	34	28	54	34	11		806
BIOSCIENCES	YES	N	8	3	4	4		1	1			1	2		1	1	1			26
		%	9.3	6.8	13.8	18.2		9.1	8.3			16.7	16.7		11.1		5.6			8.6
	NO	N	78	41	25	18	3	10	11	5	6	5	10	5	8	25	17	11		278
		%	90.7	93.2	86.2	81.8	100.0	90.9	91.7	100.0	100.0	83.3	83.3	100.0	88.9	100.0	94.4	100.0		91.4
	TOTAL	N	86	44	29	22	3	11	12	5	6	6	12	5	9	25	18	11		304
PSYCHOLOGY	YES	N		3	2							1								6
		%		27.3	40.0							50.0								9.2
	NO	N	4	8	3	4	1	3	3	6	2	1	7	3		7	5	2		59
		%	100.0	72.7	60.0	100.0	100.0	100.0	100.0	100.0	100.0	50.0	100.0	100.0		100.0	100.0	100.0		90.8
	TOTAL	N	4	11	5	4	1	3	3	6	2	2	7	3		7	5	2		65
SOC SCI & OTH	YES	N	1					1					1			1				4
		%	33.3					20.0					5.0			6.7				3.4
	NO	N	2	1	7	3	3	4	6	6	6	3	19	12	14	14	11	4		115
		%	66.7	100.0	100.0	100.0	100.0	80.0	100.0	100.0	100.0	100.0	95.0	100.0	100.0	93.3	100.0	100.0		96.6
	TOTAL	N	3	1	7	3	3	5	6	6	6	3	20	12	14	15	11	4		119
BIO/BEH TOTAL	YES	N	9	6	6	4		2	1			2	3		1	1	1			36
		%	9.7	10.7	14.6	13.8		10.5	4.8			18.2	7.7		4.3	2.1	2.9			7.4
	NO	N	84	50	35	25	7	17	20	17	14	9	36	20	22	46	33	17		452
		%	90.3	89.3	85.4	86.2	100.0	89.5	95.2	100.0	100.0	81.8	92.3	100.0	95.7	97.9	97.1	100.0		92.6
	TOTAL	N	93	56	41	29	7	19	21	17	14	11	39	20	23	47	34	17		488
GRAND TOTAL	YES	N	26	22	14	11	4	4	2	1	1	2	8	1	3	4	2			105
		%	9.4	13.9	15.1	13.9	10.8	5.6	3.6	2.1	2.6	7.7	7.3	1.9	5.9	4.0	2.9			8.1
	NO	N	250	136	79	68	33	68	54	47	37	24	101	53	48	97	66	28		1189
		%	90.6	86.1	84.9	86.1	89.2	94.4	96.4	97.9	97.4	92.3	92.7	98.1	94.1	96.0	97.1	100.0		91.9
	TOTAL	N	276	158	93	79	37	72	56	48	38	26	109	54	51	101	68	28		1294

*See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NSC, Commission on Human Resources

Inclusion in National Faculty Directory of NSF Graduate Fellows, by Cohort and Level of Award: First Year Level*

COHORT OF FIRST AWARD

FLD OF APPLIC	NFD?		1952-53	1954-55	1956-57	1958-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	TOTAL
MATHEMATICS	YES	N	11	18	26	33	20	37	46	42	40	40	48	22	17	9	5	1		415
		%	32.4	47.4	40.6	39.8	37.7	38.1	40.0	34.4	35.1	46.0	29.4	17.5	15.5	6.6	3.5	1.3		25.6
	NO	N	23	20	38	50	33	60	69	80	74	47	115	104	93	128	136	76	62	1208
		%	67.6	52.6	59.4	60.2	62.3	61.9	60.0	65.6	64.9	54.0	70.6	82.5	84.5	93.4	96.5	98.7	100.0	74.4
	TOTAL	N	34	38	64	83	53	97	115	122	114	87	163	126	110	137	141	77	62	1623
PHYSICS	YES	N	21	38	27	43	26	18	32	28	19	8	24	5	5	4		1	2	301
		%	26.9	34.5	25.2	27.9	30.6	17.6	25.4	29.8	21.3	13.3	22.9	6.6	6.6	4.5		2.4	5.9	20.0
	NO	N	57	72	80	111	59	84	94	66	70	52	81	71	71	85	80	40	32	1205
		%	73.1	65.5	74.8	72.1	69.4	82.4	74.6	70.2	78.7	86.7	77.1	93.4	93.4	95.5	100.0	97.6	94.1	80.0
	TOTAL	N	78	110	107	154	85	102	126	94	89	60	105	76	76	89	80	41	34	1506
CHEMISTRY	YES	N	22	35	31	28	19	14	27	16	17	15	14	10	4	3	1			256
		%	25.0	31.5	31.6	25.5	32.8	22.2	33.8	25.0	28.8	22.1	18.2	17.2	6.0	4.1	1.3			21.0
	NO	N	66	76	67	82	39	49	53	48	42	53	63	48	63	71	76	33	36	965
		%	75.0	68.5	68.4	74.5	67.2	77.8	66.3	75.0	71.2	77.9	81.8	82.8	94.0	95.9	98.7	100.0	100.0	79.0
	TOTAL	N	88	111	98	110	58	63	80	64	59	68	77	58	67	74	77	33	36	1221
GEOSCIENCES	YES	N	2	2	7	9	3	6	3	3	5	4	4	1	1					50
		%	11.8	14.3	33.3	29.0	21.4	35.3	20.0	33.3	33.3	33.3	20.0	11.1	12.5					17.7
	NO	N	15	12	14	22	11	11	12	6	10	8	16	8	7	17	30	12	20	232
		%	88.2	85.7	66.7	71.0	78.6	64.7	80.0	66.7	66.7	66.7	80.0	88.9	87.5	100.0	100.0	100.0	100.0	82.3
	TOTAL	N	17	14	21	31	14	17	15	9	15	12	20	9	8	17	30	13	20	282
ENGINEERING	YES	N	6	13	24	24	16	8	10	9	7	11	11	7	3	3	3	1	3	159
		%	11.3	15.3	27.3	20.3	25.8	9.9	12.0	12.9	8.1	13.9	9.7	7.7	4.1	5.3	4.5	1.5	3.5	11.7
	NO	N	47	72	64	94	46	73	73	61	79	68	102	84	71	54	63	64	83	1198
		%	88.7	84.7	72.7	79.7	74.2	90.1	88.0	87.1	91.9	86.1	90.3	92.3	95.9	94.7	95.5	98.5	96.5	88.3
	TOTAL	N	53	85	88	118	62	81	83	70	86	79	113	91	74	57	66	65	86	1357
EMP TOTAL	YES	N	62	106	115	137	84	83	118	98	88	78	101	45	30	19	9	3	5	1181
		%	23.0	29.6	30.4	27.6	30.9	23.1	28.2	27.3	24.2	25.5	21.1	12.5	9.0	5.1	2.3	1.3	2.1	19.7
	NO	N	208	252	263	359	188	277	301	261	275	228	377	315	305	355	385	226	233	4808
		%	77.0	70.4	69.6	72.4	69.1	76.9	71.8	72.7	75.8	74.5	78.9	87.5	91.0	94.9	97.7	98.7	97.9	80.3
	TOTAL	N	270	358	378	496	272	360	419	359	363	306	478	360	335	374	394	229	238	5989
BIOSCIENCES	YES	N	17	24	25	30	16	20	27	17	22	19	17	6	5	1	2	2	1	251
		%	29.3	36.4	31.3	30.3	37.2	24.1	32.5	27.9	27.8	22.9	16.8	9.0	5.3	1.0	1.9	2.6	.9	18.1
	NO	N	41	42	55	69	27	63	56	44	57	64	84	61	89	95	102	74	114	1137
		%	70.7	63.6	68.8	69.7	62.8	75.9	67.5	72.1	72.2	77.1	83.2	91.0	94.7	99.0	98.1	97.4	99.1	81.9
	TOTAL	N	58	66	80	99	43	83	83	61	79	83	101	67	94	96	104	76	115	1388
PSYCHOLOGY	YES	N	1	2	3	4	2	2	11	6	14	5	12	5	6	2	1	1		77
		%	50.0	22.2	25.0	28.6	28.6	16.7	47.8	27.3	48.3	23.8	32.4	14.7	23.1	9.1	2.6	2.9		20.1
	NO	N	1	7	9	10	5	10	12	16	15	16	25	29	20	20	37	33	42	307
		%	50.0	77.8	75.0	71.4	71.4	83.3	52.2	72.7	51.7	76.2	67.6	85.3	76.9	90.9	97.4	97.1	100.0	79.9
	TOTAL	N	2	9	12	14	7	12	23	22	29	21	37	34	26	22	38	34	42	384
SOC SCI & OTH	YES	N			2		4	5	10	8	13	12	19	14	9	7	9	1		113
		%			33.3		66.7	41.7	38.5	42.1	36.1	25.0	25.0	29.2	19.6	10.9	7.4	1.0		15.4
	NO	N	1	2	4	10	2	7	16	11	24	36	57	34	37	57	113	99	110	620
		%	100.0	100.0	66.7	100.0	33.3	58.3	61.5	57.9	64.9	75.0	75.0	70.8	80.4	89.1	92.6	99.0	100.0	84.6
	TOTAL	N	1	2	6	10	6	12	26	19	37	48	76	48	46	64	122	100	110	733
BIO/BEH TOTAL	YES	N	18	26	30	34	22	27	48	31	49	36	48	25	20	10	12	4	1	441
		%	29.5	33.8	30.6	27.6	39.3	25.2	36.4	30.4	33.8	23.7	22.4	16.8	12.0	5.5	4.5	1.9	.4	17.6
	NO	N	43	51	68	89	34	80	84	71	96	116	166	124	146	172	252	206	266	2064
		%	70.5	66.2	69.4	72.4	60.7	74.8	63.6	69.6	66.2	76.3	77.6	83.2	88.0	94.5	95.5	98.1	99.6	82.4
	TOTAL	N	61	77	98	123	56	107	132	102	145	152	214	149	166	182	264	210	267	2505
GRAND TOTAL	YES	N	180	132	145	171	106	110	166	129	137	114	149	70	50	29	21	7	6	1622
		%	24.2	30.3	30.5	27.6	32.3	23.6	30.1	28.0	27.0	24.9	21.5	13.8	10.0	5.2	3.2	1.6	1.2	19.1
	NO	N	251	303	331	448	222	357	385	332	371	344	543	439	451	527	637	432	499	6872
		%	75.8	69.7	69.5	72.4	67.7	76.4	69.9	72.0	73.0	75.1	78.5	86.2	90.0	94.8	96.8	98.4	98.8	80.9
	TOTAL	N	331	435	476	619	328	467	551	461	508	458	692	509	501	556	658	439	505	8494

* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE. NRC, Commission on Human Resources

Inclusion in National Faculty Directory of NSF Graduate Fellows, by Cohort and Level of Award: Intermediate Level*

COHORT OF FIRST AWARD

FLD OF APPLIC	NFD?		1952-53	1954-55	1956-57	1958-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	TOTAL
MATHEMATICS	YES	N	15	7	9	14	10	8	15	11	12	6	33	6	6	6	1	1		160
		%	53.6	36.8	56.3	46.7	45.5	38.1	40.5	52.4	54.5	50.0	55.0	22.2	20.7	20.7	4.2	11.1		39.4
	NO	N	13	12	7	16	12	13	22	10	10	6	27	21	23	23	23	8		246
		%	46.4	63.2	43.8	53.3	54.5	61.9	59.5	47.6	45.5	50.0	45.0	77.8	79.3	79.3	95.8	88.9		60.6
	TOTAL	N	28	19	16	30	22	21	37	21	22	12	60	27	29	29	24	9		406
PHYSICS	YES	N	17	20	18	13	7	13	10	9	7	1	11			2	3			131
		%	31.5	40.8	42.9	34.2	29.2	43.3	34.5	26.5	35.0	6.3	20.0			9.5	12.5			28.1
	NO	N	37	29	24	25	17	17	19	25	13	15	44	14	11	19	21	5		335
		%	68.5	59.2	57.1	65.8	70.8	56.7	65.5	73.5	65.0	93.8	80.0	100.0	100.0	90.5	87.5	100.0		71.9
	TOTAL	N	54	49	42	38	24	30	29	34	20	16	55	14	11	21	24	5		466
CHEMISTRY	YES	N	15	14	12	19	10	16	7	7	11	9	15	6	5	2	1			149
		%	24.2	23.7	26.1	34.5	45.5	31.4	23.3	30.4	37.9	47.4	24.2	28.6	17.2	10.0	4.5			26.5
	NO	N	47	45	34	36	12	35	23	16	18	10	47	15	24	18	21	13		414
		%	75.8	76.3	73.9	65.5	54.5	68.6	76.7	69.6	62.1	52.6	75.8	71.4	82.8	90.0	95.5	100.0		73.5
	TOTAL	N	62	59	46	55	22	51	30	23	29	19	62	21	29	20	22	13		563
GEOSCIENCES	YES	N	4	10	8	8	6	7	5	6	2	1	5	3	2	3	2			72
		%	23.5	52.6	44.4	26.7	42.9	36.8	27.8	37.5	18.2	10.0	27.8	23.1	16.7	20.0	18.2			29.4
	NO	N	13	9	10	22	8	12	13	10	9	9	13	10	10	12	9	4		173
		%	76.5	47.4	55.6	73.3	57.1	63.2	72.2	62.5	81.8	90.0	72.2	76.9	83.3	80.0	81.8	100.0		70.6
	TOTAL	N	17	19	18	30	14	19	18	16	11	10	18	13	12	15	11	4		245
ENGINEERING	YES	N	8	10	7	12	6	6	7	7	4	4	3	4	2	2				79
		%	29.6	47.6	31.8	33.3	22.2	13.3	19.4	21.2	40.0	17.4	6.4	28.6	16.7	10.5				18.8
	NO	N	19	11	15	24	21	39	29	26	24	19	44	10	10	17	25	9		342
		%	70.4	52.4	68.2	66.7	77.8	86.7	80.6	78.8	96.0	82.6	93.6	71.4	83.3	89.5	100.0	100.0		81.2
	TOTAL	N	27	21	22	36	27	45	36	33	25	23	47	14	12	19	25	9		421
EMP TOTAL	YES	N	59	61	54	66	39	50	44	40	33	21	67	19	15	15	7	1		591
		%	31.4	36.5	37.5	34.9	35.8	30.1	29.3	31.5	30.8	26.3	27.7	21.3	16.1	14.4	6.6	2.5		28.1
	NO	N	129	106	90	123	70	116	106	87	74	59	175	70	78	89	99	39		1510
		%	68.6	63.5	62.5	65.1	64.2	69.9	70.7	68.5	69.2	73.8	72.3	78.7	83.9	85.6	93.4	97.5		71.9
	TOTAL	N	188	167	144	189	109	166	150	127	107	80	242	89	93	104	106	40		2101
BIOSCIENCES	YES	N	40	38	28	24	11	18	16	18	17	4	21	7	5	5	8			260
		%	55.6	41.8	43.8	40.0	33.3	35.3	35.6	40.9	50.0	19.0	26.9	25.0	10.2	11.4	12.7			32.4
	NO	N	32	53	36	36	22	33	29	26	17	17	57	20	44	39	55	26	1	543
		%	44.4	58.2	56.3	60.0	66.7	64.7	64.4	59.1	50.0	81.0	73.1	74.1	89.8	88.6	87.3	100.0	100.0	67.6
	TOTAL	N	72	91	64	60	33	51	45	44	34	21	78	27	49	44	63	26	1	803
PSYCHOLOGY	YES	N		5	5	3		5	4	3	5	4	3	3		4	2	1		47
		%		31.3	50.0	30.0		41.7	40.0	37.5	62.5	57.1	37.5	60.0		66.7	8.7	7.7		31.5
	NO	N	4	11	5	7	5	7	6	5	3	3	5	2	4	2	21	12		102
		%	100.0	68.8	50.0	70.0	100.0	58.3	60.0	62.5	37.5	42.9	62.5	40.0	100.0	33.3	91.3	92.3		68.5
	TOTAL	N	4	16	10	10	5	12	10	8	8	7	8	5	4	6	23	13		149
SOC SCI & OTH	YES	N		1	9	9	5	9	8	10	12	7	17	8	13	8	13	1		130
		%		33.3	56.3	40.9	62.5	50.0	34.8	41.7	44.4	25.9	38.6	26.7	46.4	25.0	18.6	3.8		32.7
	NO	N		2	7	13	3	9	15	14	15	20	27	22	15	24	57	25		268
		%		66.7	43.8	59.1	37.5	50.0	65.2	58.3	55.6	74.1	61.4	73.3	53.6	75.0	81.4	96.2		67.3
	TOTAL	N		3	16	22	8	18	23	24	27	27	44	30	28	32	70	26		398
BIO/BEH TOTAL	YES	N	40	44	42	36	16	32	28	31	34	15	41	18	18	17	23	2		437
		%	52.6	40.0	46.7	39.1	34.8	39.5	35.9	40.8	49.3	27.3	31.5	29.0	22.2	20.7	14.7	3.1		32.4
	NO	N	36	66	48	56	30	49	50	45	35	40	89	44	63	65	133	63	1	913
		%	47.4	60.0	53.3	60.9	65.2	60.5	64.1	59.2	50.7	72.7	68.5	71.0	77.8	79.3	85.3	96.9	100.0	67.6
	TOTAL	N	76	110	90	92	46	81	78	76	69	55	130	62	81	82	156	65	1	1350
GRAND TOTAL	YES	N	99	105	96	102	55	82	72	71	67	36	108	37	33	32	30	3		1028
		%	37.5	37.9	41.0	36.3	35.5	33.2	31.6	35.0	38.1	26.7	29.0	24.5	19.0	17.2	11.5	2.9		29.8
	NO	N	165	172	138	179	100	165	156	132	109	99	264	114	141	154	232	102	1	2423
		%	62.5	62.1	59.0	63.7	64.5	66.8	68.4	65.0	61.9	73.3	71.0	75.5	81.0	82.8	88.5	97.1	100.0	70.2
	TOTAL	N	264	277	234	281	155	247	228	203	176	135	372	151	174	186	262	105	1	3451

* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources

Inclusion in National Faculty Directory of NSF-Graduate Fellows, by Cohort and Level of Award: Terminal Level*

COHORT OF FIRST AWARD

FLD OF APPLIC	NFO?		1952-53	1954-55	1956-57	1958-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	TOTAL
MATHEMATICS	YES	N	7	5		2	2	2	4	3		1	19	4	2	5	2	1		59
		%	35.0	71.4		40.0	50.0	33.3	80.0	60.0		50.0	61.3	50.0	18.2	38.5	25.0	12.5		42.8
	NO	N	13	2	3	3	2	4	1	2	2	1	12	4	9	8	6	7		79
		%	65.0	28.6	100.0	60.0	50.0	66.7	20.0	40.0	100.0	50.0	38.7	50.0	81.8	61.5	75.0	87.5		57.2
	TOTAL	N	20	7	3	5	4	6	5	5	2	2	31	8	11	13	8	8		138
PHYSICS	YES	N	22	8	2	6	2	1	5		2		5	2		3	1			59
		%	31.9	29.6	25.0	54.5	20.0	12.5	71.4		40.0		45.5	25.0		27.3	12.5			30.7
	NO	N	47	19	6	5	8	7	2	5	3	1	6	6	3	8	7			133
		%	68.1	70.4	75.0	45.5	80.0	87.5	28.6	100.0	60.0	100.0	54.5	75.0	100.0	72.7	87.5			69.3
	TOTAL	N	69	27	8	11	10	8	7	5	5	1	11	8	3	11	8			192
CHEMISTRY	YES	N	11	11	5	8	2	7	4	3	2	1	6	1	1	2				64
		%	20.0	32.4	20.8	44.4	28.6	38.9	57.1	42.9	28.6	33.3	50.0	25.0	33.3	40.0				29.8
	NO	N	44	23	19	10	5	11	3	4	5	2	6	3	2	3	11			151
		%	80.0	67.6	79.2	55.6	71.4	61.1	42.9	57.1	71.4	66.7	50.0	75.0	66.7	60.0	100.0			70.2
	TOTAL	N	55	34	24	18	7	18	7	7	7	3	12	4	3	5	11			215
GEOSCIENCES	YES	N	8	5	3	1		2	2	3		2	2		1	2				31
		%	44.4	50.0	33.3	16.7		28.6	33.3	50.0		33.3	50.0		50.0	25.0				34.1
	NO	N	10	5	6	5	2	5	4	3	2	4	2	3	1	6	2			60
		%	55.6	50.0	66.7	83.3	100.0	71.4	66.7	50.0	100.0	66.7	50.0	100.0	50.0	75.0	100.0			65.9
	TOTAL	N	18	10	9	6	2	7	6	6	2	6	4	3	2	8	2			91
ENGINEERING	YES	N	5	4	4	1	2	5	2		3		3		1	2		1		33
		%	23.8	16.7	50.0	10.0	28.6	35.7	20.0		37.5		25.0		11.1	11.8		33.3		19.4
	NO	N	16	20	4	9	5	9	8	8	5	3	9	11	8	15	5	2		137
		%	76.2	83.3	50.0	90.0	71.4	64.3	80.0	100.0	62.5	100.0	75.0	100.0	88.9	88.2	100.0	66.7		80.6
	TOTAL	N	21	24	8	10	7	14	10	8	8	3	12	11	9	17	5	3		170
EMP TOTAL	YES	N	53	33	14	18	8	17	17	9	7	4	35	7	5	14	3	2		246
		%	29.0	32.4	26.9	36.0	26.7	32.1	48.6	29.0	29.2	26.7	50.0	20.6	17.9	25.9	8.8	18.2		30.5
	NO	N	130	69	38	32	22	36	18	22	17	11	35	27	23	40	31	9		560
		%	71.0	67.6	73.1	64.0	73.3	67.9	51.4	71.0	70.8	73.3	50.0	79.4	82.1	74.1	91.2	81.8		69.5
	TOTAL	N	183	102	52	50	30	53	35	31	24	15	70	34	28	54	34	11		806
BIOSCIENCES	YES	N	39	16	19	15	3	6	6	2	2	3	2	2	3	7	1			126
		%	45.3	36.4	65.5	68.2	100.0	54.5	50.0	40.0	33.3	50.0	16.7	40.0	33.3	28.0	5.6			41.4
	NO	N	47	28	10	7		5	6	3	4	3	10	3	6	18	17	11		178
		%	54.7	63.6	34.5	31.8		45.5	50.0	60.0	66.7	50.0	83.3	60.0	66.7	72.0	94.4	100.0		58.6
	TOTAL	N	86	44	29	22	3	11	12	5	6	6	12	5	9	25	18	11		304
PSYCHOLOGY	YES	N	2	9	1	2	1	1		4			3	1		3	3			30
		%	50.0	81.8	20.0	50.0	100.0	33.3		66.7			42.9	33.3		42.9	60.0			46.2
	NO	N	2	2	4	2		2	3	2	2	2	4	2		4	2	2		35
		%	50.0	18.2	80.0	50.0		66.7	100.0	33.3	100.0	100.0	57.1	66.7		57.1	40.0	100.0		53.8
	TOTAL	N	4	11	5	4	1	3	3	6	2	2	7	3		7	5	2		65
SOC SCI & OTH	YES	N	1		3	2	2	3	5	4	1	1	13	4	7	6	5	2		59
		%	33.3		42.9	66.7	66.7	60.0	83.3	66.7	16.7	33.3	65.0	33.3	50.0	40.0	45.5	50.0		49.6
	NO	N	2	1	4	1	1	2	1	2	5	2	7	8	7	9	6	2		60
		%	66.7	100.0	57.1	33.3	33.3	40.0	16.7	33.3	83.3	66.7	35.0	66.7	50.0	60.0	54.5	50.0		50.4
	TOTAL	N	3	1	7	3	3	5	6	6	6	3	20	12	14	15	11	4		119
BIO/BEH TOTAL	YES	N	42	25	23	19	6	10	11	10	3	4	18	7	10	16	9	2		215
		%	45.2	44.6	56.1	65.5	85.7	52.6	52.4	58.8	21.4	36.4	46.2	35.0	43.5	34.0	26.5	11.8		44.1
	NO	N	51	31	18	10	1	9	10	7	11	7	21	13	13	31	25	15		273
		%	54.8	55.4	43.9	34.5	14.3	47.4	47.6	41.2	78.6	63.6	53.8	65.0	56.5	66.0	73.5	88.2		55.9
	TOTAL	N	93	56	41	29	7	19	21	17	14	11	39	20	23	47	34	17		488
GPANO TOTAL	YES	N	95	58	37	37	14	27	28	19	10	8	53	14	15	30	12	4		461
		%	34.4	36.7	39.8	46.8	37.8	37.5	50.0	39.6	26.3	30.8	48.6	25.9	29.4	29.7	17.6	14.3		35.6
	NO	N	181	100	56	42	23	45	28	29	28	18	56	40	36	71	56	24		833
		%	65.6	63.3	60.2	53.2	62.2	62.5	50.0	60.4	73.7	69.2	51.4	74.1	70.6	70.3	82.4	85.7		64.4
	TOTAL	N	276	158	93	79	37	72	56	48	38	26	109	54	51	101	68	28		1294

* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources

Dissertation Adviser Status, by Cohort and Level of NSF Graduate Fellowship Award: First Year Level*

COHORT OF FIRST AWARD

FLD OF APPLIC	ADV?		1952-53	1954-55	1956-57	1958-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	TOTAL
MATHEMATICS	YES	N	14	12	25	20	17	16	17	18	9	6	6	2	1					163
		%	41.2	31.6	39.1	24.1	32.1	16.5	14.8	14.8	7.9	6.9	3.7	1.6	.9					10.0
	NO	N	20	26	39	63	36	81	98	104	105	81	157	124	109	137	141	77	62	1460
		%	58.8	68.4	60.9	75.9	67.9	83.5	85.2	85.2	92.1	93.1	96.3	98.4	99.1	100.0	100.0	100.0	100.0	90.0
	TOTAL	N	34	38	64	83	53	97	115	122	114	87	163	126	110	137	141	77	62	1623
PHYSICS	YES	N	33	48	35	41	12	15	15	11	4		3							217
		%	42.3	43.6	32.7	26.6	14.1	14.7	11.9	11.7	4.5		2.9							14.4
	NO	N	45	62	72	113	73	87	111	83	85	60	102	76	76	89	80	41	34	1289
		%	57.7	56.4	67.3	73.4	85.9	85.3	88.1	88.3	95.5	100.0	97.1	100.0	100.0	100.0	100.0	100.0	100.0	85.6
	TOTAL	N	78	110	107	154	85	102	126	94	89	60	105	76	76	89	80	41	34	1506
CHEMISTRY	YES	N	26	42	32	31	20	14	15	12	4	2	4							202
		%	29.5	37.8	32.7	28.2	34.5	22.2	18.8	18.8	6.8	2.9	5.2							16.5
	NO	N	62	69	66	79	38	49	65	52	55	66	73	58	67	74	77	33	36	1019
		%	70.5	62.2	67.3	71.8	65.5	77.8	81.3	81.3	93.2	97.1	94.8	100.0	100.0	100.0	100.0	100.0	100.0	83.5
	TOTAL	N	88	111	98	110	58	63	80	64	59	68	77	58	67	74	77	33	36	1221
GEOSCIENCES	YES	N	4	1	4	6		1	1	2	1									20
		%	23.5	7.1	19.0	19.4		5.9	6.7	22.2	6.7									7.1
	NO	N	13	13	17	25	14	16	14	7	14	12	20	9	8	17	30	13	20	242
		%	76.5	92.9	81.0	80.6	100.0	94.1	93.3	77.8	93.3	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	92.9
	TOTAL	N	17	14	21	31	14	17	15	9	15	12	20	9	8	17	30	13	20	282
ENGINEERING	YES	N	5	14	22	29	10	7	5	6	3	5	1	1	1		1			111
		%	9.4	16.5	25.0	24.6	16.1	8.0	6.0	8.6	3.5	6.3	1.8	1.1	1.4		1.5			8.2
	NO	N	48	71	66	89	52	74	78	64	83	74	111	90	73	57	66	64	86	1246
		%	90.6	83.5	75.0	75.4	83.9	91.4	94.0	91.4	96.5	93.7	98.2	98.9	98.6	100.0	100.0	98.5	100.0	91.8
	TOTAL	N	53	85	88	118	62	81	83	70	86	79	113	91	74	57	66	65	86	1357
EMP TOTAL	YES	N	82	117	118	127	59	53	53	49	21	13	15	3	2		1			713
		%	30.4	32.7	31.2	25.6	21.7	14.7	12.6	13.6	5.8	4.2	3.1	.8	.6		.4			11.9
	NO	N	188	241	260	369	213	307	366	310	342	293	463	357	333	374	394	228	238	5276
		%	69.6	67.3	68.8	74.4	78.3	85.3	87.4	86.4	94.2	95.8	96.9	99.2	99.4	100.0	100.0	99.6	100.0	88.1
	TOTAL	N	270	358	378	496	272	360	419	354	363	306	478	360	335	374	394	229	238	5989
BIOSCIENCES	YES	N	16	15	33	31	10	17	6	4	1	1	1							135
		%	27.6	22.7	41.3	31.3	23.3	20.5	7.2	6.6	1.3	1.2	1.0							9.7
	NO	N	42	51	47	68	33	66	77	57	78	82	100	67	94	96	104	76	115	1253
		%	72.4	77.3	58.8	68.7	76.7	79.5	92.8	93.4	98.7	98.8	99.0	100.0	100.0	100.0	100.0	100.0	100.0	90.3
	TOTAL	N	58	66	80	99	43	83	83	61	79	83	101	67	94	96	104	76	115	1388
PSYCHOLOGY	YES	N		2	2	2	3	3	2	5	6		2	2						28
		%		22.2	16.7	14.3	42.9	25.0	8.7	22.7	20.7		6.4	2.9						7.3
	NO	N	2	7	10	12	4	9	21	17	23	21	35	33	26	22	38	34	42	356
		%	100.0	77.8	83.3	85.7	57.1	75.0	91.3	77.3	79.3	100.0	94.6	97.1	100.0	100.0	100.0	100.0	100.0	92.7
	TOTAL	N	2	9	12	14	7	12	23	22	29	21	37	34	26	22	38	34	42	384
SOC SCI & OTH	YES	N			1	1	1	1	2	4	6	1	2	1		1				21
		%			16.7	10.0	16.7	8.3	7.7	21.1	16.2	2.1	2.6	2.1		1.6				2.9
	NO	N	1	2	5	9	5	11	24	15	31	47	74	47	46	63	122	100	110	712
		%	100.0	100.0	83.3	90.0	83.3	91.7	92.3	78.9	83.8	97.9	97.4	97.9	100.0	98.4	100.0	100.0	100.0	97.1
	TOTAL	N	1	2	6	10	6	12	26	19	37	48	76	48	46	64	122	100	110	733
BIO/BEH TOTAL	YES	N	16	17	36	34	14	21	10	13	13	2	5	2		1				184
		%	26.2	22.1	36.7	27.6	25.0	19.6	7.6	12.7	9.0	1.3	2.3	1.3		.5				7.3
	NO	N	45	60	62	89	42	86	122	89	132	150	209	147	166	181	264	210	267	2321
		%	73.8	77.9	63.3	72.4	75.0	80.4	92.4	87.3	91.0	98.7	97.7	98.7	100.0	99.5	100.0	100.0	100.0	92.7
	TOTAL	N	61	77	98	123	56	107	132	102	145	152	214	149	166	182	264	210	267	2505
GRAND TOTAL	YES	N	98	134	154	161	73	74	63	62	34	15	20	5	2	1		1		897
		%	29.6	30.8	32.4	26.0	22.3	15.8	11.4	13.4	6.7	3.3	2.9	1.0	.4	.2		.2		10.6
	NO	N	233	301	322	458	255	393	488	399	474	443	672	504	499	565	658	438	505	7597
		%	70.4	69.2	67.6	74.0	77.7	84.2	88.6	86.6	93.3	96.7	97.1	99.8	99.6	99.8	100.0	99.8	100.0	89.4
	TOTAL	N	331	435	476	619	328	467	551	461	508	458	692	509	501	566	658	439	505	8494

* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources

Dissertation Adviser Status, by Cohort and Level of NSF Graduate Fellowship Award: Intermediate Level*

COHORT OF FIRST AWARD

FLD OF APPLIC	ADV?		1952-53	1954-55	1956-57	1958-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	TOTAL
MATHEMATICS	YES	N	17	11	10	11	8	8	9	6	3	2			1			1		87
		%	60.7	57.9	62.5	36.7	36.4	38.1	24.3	28.6	13.6	16.7			3.4			11.1		21.4
	NO	N	11	8	6	19	14	13	28	15	19	10	60	27	28	29	24	8		319
		%	39.3	42.1	37.5	63.3	63.6	61.9	75.7	71.4	86.4	83.3	100.0	100.0	96.6	100.0	100.0	88.9		78.6
	TOTAL	N	28	19	16	30	22	21	37	21	22	12	60	27	29	29	24	9		406
PHYSICS	YES	N	27	26	20	16	7	10	10	3			1							120
		%	50.0	53.1	47.6	42.1	29.2	33.3	34.5	8.8			1.8							25.8
	NO	N	27	23	22	22	17	20	19	31	20	16	54	14	11	21	24	5		346
		%	50.0	46.9	52.4	57.9	70.8	66.7	65.5	91.2	100.0	100.0	98.2	100.0	100.0	100.0	100.0	100.0		74.2
	TOTAL	N	54	49	42	38	24	30	29	34	20	16	55	14	11	21	24	5		466
CHEMISTRY	YES	N	13	14	15	15	11	17	9	6	6	5								111
		%	21.0	23.7	32.6	27.3	50.0	33.3	30.0	26.1	20.7	26.3								19.7
	NO	N	49	45	31	40	11	34	21	17	23	14	62	21	29	20	22	13		452
		%	79.0	76.3	67.4	72.7	50.0	66.7	70.0	73.9	79.3	73.7	100.0	100.0	100.0	100.0	100.0	100.0		80.3
	TOTAL	N	62	59	46	55	22	51	30	23	29	19	62	21	29	20	22	13		563
GEOSCIENCES	YES	N	6	8	7	8	6	5	2	1	1		1	1						46
		%	35.3	42.1	38.9	26.7	42.9	26.3	11.1	6.3	9.1		5.6	7.7						18.8
	NO	N	11	11	11	22	8	14	16	15	10	10	17	12	12	15	11	4		199
		%	64.7	57.9	61.1	73.3	57.1	73.7	88.9	93.8	90.9	100.0	94.4	92.3	100.0	100.0	100.0	100.0		81.2
	TOTAL	N	17	19	18	30	14	19	18	16	11	10	18	13	12	15	11	4		245
ENGINEERING	YES	N	8	12	7	17	6	9	5	6	3	2	2	1						78
		%	29.6	57.1	31.8	47.2	22.2	20.0	13.9	18.2	12.0	8.7	4.3	7.1						18.5
	NO	N	19	9	15	19	21	36	31	27	22	21	45	13	12	19	25	9		343
		%	70.4	42.9	68.2	52.8	77.8	80.0	86.1	81.8	88.0	91.3	95.7	92.9	100.0	100.0	100.0	100.0		81.5
	TOTAL	N	27	21	22	36	27	45	36	33	25	23	47	14	12	19	25	9		421
EMP TOTAL	YES	N	71	71	59	60	38	49	35	22	13	9	4	2	1			1		442
		%	37.8	42.5	41.0	35.4	34.9	29.5	23.3	17.3	12.1	11.3	1.7	2.2	1.1			2.5		21.0
	NO	N	117	96	85	122	71	117	115	105	94	71	238	87	92	104	106	39		1659
		%	62.2	57.5	59.0	64.6	65.1	70.5	76.7	82.7	87.9	88.8	98.3	97.8	98.9	100.0	100.0	97.5		79.0
	TOTAL	N	188	167	144	189	109	166	150	127	107	80	242	89	93	104	106	40		2101
BIOSCIENCES	YES	N	34	43	23	24	10	10	6	2	4	2	8	1						168
		%	47.2	47.3	35.9	40.0	30.3	19.6	13.3	4.5	11.8	9.5	11.5	3.7						20.9
	NO	N	38	48	41	36	23	41	39	42	30	19	69	26	49	44	63	26	1	635
		%	52.8	52.7	64.1	60.0	69.7	80.4	86.7	95.5	88.2	90.5	88.5	96.3	100.0	100.0	100.0	100.0	100.0	79.1
	TOTAL	N	72	91	64	60	33	51	45	44	34	21	78	27	49	44	63	26	1	803
PSYCHOLOGY	YES	N		5	2	6		7	4	5		2	1							32
		%		31.3	20.0	60.0		58.3	40.0	62.5		28.6	12.5							21.5
	NO	N	4	11	8	4	5	5	6	3	8	5	7	5	4	6	23	13		117
		%	100.0	68.8	80.0	40.0	100.0	41.7	60.0	37.5	100.0	71.4	87.5	100.0	100.0	100.0	100.0	100.0		78.5
	TOTAL	N	4	16	10	10	5	12	10	8	8	7	8	5	4	6	23	13		149
SOC SCI & OTH	YES	N		1	7	12	1	7	4	7	4	7	2	2	2					56
		%		33.3	43.8	54.5	12.5	38.9	17.4	29.2	14.8	25.9	4.5	6.7	7.1					14.1
	NO	N		2	9	10	7	11	19	17	23	20	42	28	26	32	70	26		342
		%		66.7	56.3	45.5	87.5	61.1	82.6	70.8	85.2	74.1	95.5	93.3	92.9	100.0	100.0	100.0		85.9
	TOTAL	N		3	16	22	8	18	23	24	27	27	44	30	28	32	70	26		398
BIO/BEH TOTAL	YES	N	34	49	32	42	11	24	14	14	8	11	12	3	2					256
		%	44.7	44.5	35.6	45.7	23.9	29.6	17.9	18.4	11.6	20.0	9.2	4.8	2.5					19.0
	NO	N	42	61	58	50	35	57	64	62	61	44	118	59	79	82	156	65	1	1094
		%	55.3	55.5	64.4	54.3	76.1	70.4	82.1	81.6	88.4	80.0	90.8	95.2	97.5	100.0	100.0	100.0	100.0	81.0
	TOTAL	N	76	110	90	92	46	81	78	76	69	55	130	62	81	82	156	65	1	1350
GRAND TOTAL	YES	N	105	120	91	109	49	73	49	36	21	20	16	5	3			1		698
		%	39.8	43.3	38.9	38.8	31.6	29.6	21.5	17.7	11.9	14.8	4.3	3.3	1.7			1.0		20.2
	NO	N	159	157	143	172	106	174	179	167	155	115	356	146	171	186	262	104	1	2753
		%	60.2	56.7	61.1	61.2	68.4	70.4	78.5	82.3	88.1	85.2	95.7	96.7	98.3	100.0	100.0	99.0	100.0	79.8
	TOTAL	N	264	277	234	281	155	247	228	203	176	135	372	151	174	186	262	105	1	3451

* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources

Dissertation Adviser Status, by Cohort and Level of NSF Graduate Fellowship Award: Terminal Level*

COHORT OF FIRST AWARD

FLD OF APPLIC	ADV?		1952-53	1954-55	1956-57	1958-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	TOTAL
MATHEMATICS	YES	N	6	5	2	2	2	3	1	4			2		1					29
		%	30.0	71.4	66.7	40.0	50.0	50.0	20.0	80.0			9.7		9.1					21.0
	NO	N	14	2	1	3	2	3	4	1	2	2	28	8	10	13	8	8		109
		%	70.0	28.6	33.3	60.0	50.0	50.0	80.0	20.0	100.0	100.0	90.3	100.0	90.9	100.0	100.0	100.0		79.0
	TOTAL	N	20	7	3	5	4	6	5	5	2	2	31	8	11	13	8	8		138
PHYSICS	YES	N	34	13	1	3	5	3	2		1		1							63
		%	49.3	48.1	12.5	27.3	50.0	37.5	28.6		20.0		9.1							32.8
	NO	N	35	14	7	8	5	5	5	5	4	1	10	8	3	11	8			129
		%	50.7	51.9	87.5	72.7	50.0	62.5	71.4	100.0	80.0	100.0	90.9	100.0	100.0	100.0	100.0			67.2
	TOTAL	N	69	27	8	11	10	8	7	5	5	1	11	8	3	11	8			192
CHEMISTRY	YES	N	17	12	4	8	2	4	3	4	5	2	2							63
		%	30.9	35.3	16.7	44.4	28.6	22.2	42.9	57.1	71.4	66.7	16.7							29.3
	NO	N	38	22	20	10	5	14	4	3	2	1	10	4	3	5	11			152
		%	69.1	64.7	83.3	55.6	71.4	77.8	57.1	42.9	28.6	33.3	83.3	100.0	100.0	100.0	100.0			70.7
	TOTAL	N	55	34	24	18	7	18	7	7	7	3	12	4	3	5	11			215
GEOSCIENCES	YES	N	7	4	3	2		2	1		1	1								21
		%	38.9	40.0	33.3	33.3		28.6	16.7		50.0	16.7								23.1
	NO	N	11	6	6	4	2	5	5	6	1	5	4	3	2	8	2			70
		%	61.1	60.0	66.7	66.7	100.0	71.4	83.3	100.0	50.0	83.3	100.0	100.0	100.0	100.0	100.0			76.9
	TOTAL	N	18	10	9	6	2	7	6	6	2	6	4	3	2	8	2			91
ENGINEERING	YES	N	7	3	2	2	2	7	2	3	1		2	2	1	1				35
		%	33.3	12.5	25.0	20.0	28.6	50.0	20.0	37.5	12.5		16.7	18.2	11.1	5.9				20.6
	NO	N	14	21	6	8	5	7	8	5	7	3	10	9	8	16	5	3		135
		%	66.7	87.5	75.0	80.0	71.4	50.0	80.0	62.5	87.5	100.0	83.3	81.8	88.9	94.1	100.0	100.0		79.4
	TOTAL	N	21	24	8	10	7	14	10	8	8	3	12	11	9	17	5	3		170
EMP TOTAL	YES	N	71	37	12	17	11	19	9	11	8	3	8	2	2	1				211
		%	38.8	36.3	23.1	34.0	36.7	35.8	25.7	35.5	33.3	20.0	11.4	5.9	7.1	1.9				26.2
	NO	N	112	65	40	33	19	34	26	20	16	12	62	32	26	53	34	11		595
		%	61.2	63.7	76.9	66.0	63.3	64.2	74.3	64.5	66.7	80.0	88.6	94.1	92.9	98.1	100.0	100.0		73.8
	TOTAL	N	183	102	52	50	30	53	35	31	24	15	70	34	28	54	34	11		806
BIOSCIENCES	YES	N	36	18	12	10	2	3	6	3	1		1	1	2					95
		%	41.9	40.9	41.4	45.5	66.7	27.3	50.0	60.0	16.7		8.3	20.0	22.2					31.3
	NO	N	50	26	17	12	1	8	6	2	5	6	11	4	7	25	18	11		209
		%	58.1	59.1	58.6	54.5	33.3	72.7	50.0	40.0	83.3	100.0	91.7	80.0	77.8	100.0	100.0	100.0		68.8
	TOTAL	N	86	44	29	22	3	11	12	5	6	6	12	5	9	25	18	11		304
PSYCHOLOGY	YES	N	3	8	2	2		1		2	1	2	1	2		1				25
		%	75.0	72.7	40.0	50.0		33.3		33.3	50.0	100.0	14.3	66.7		14.3				38.5
	NO	N	1	3	3	2	1	2	3	4	1		6	1		6	5	2		40
		%	25.0	27.3	60.0	50.0	100.0	66.7	100.0	66.7	50.0		85.7	33.3		85.7	100.0	100.0		61.5
	TOTAL	N	4	11	5	4	1	3	3	6	2	2	7	3		7	5	2		65
SOC SCI & OTH	YES	N	1		5	1	1	2	1	3	1	1	5				1			22
		%	33.3		71.4	33.3	33.3	40.0	16.7	50.0	16.7	33.3	25.0				9.1			18.5
	NO	N	2	1	2	2	2	3	5	3	5	2	15	12	14	15	10	4		97
		%	66.7	100.0	28.6	66.7	66.7	60.0	83.3	50.0	83.3	66.7	75.0	100.0	100.0	100.0	90.9	100.0		81.5
	TOTAL	N	3	1	7	3	3	5	6	6	6	3	20	12	14	15	11	4		119
BIO/BEH TOTAL	YES	N	40	26	19	13	3	6	7	8	3	3	7	3	2	1	1			142
		%	43.0	46.4	46.3	44.8	42.9	31.6	33.3	47.1	21.4	27.3	17.9	15.0	8.7	2.1	2.9			29.1
	NO	N	53	30	22	16	4	13	14	9	11	8	32	17	21	46	33	17		346
		%	57.0	53.6	53.7	55.2	57.1	68.4	66.7	52.9	78.6	72.7	82.1	85.0	91.3	97.9	97.1	100.0		70.9
	TOTAL	N	93	56	41	29	7	19	21	17	14	11	39	20	23	47	34	17		488
GRAND TOTAL	YES	N	111	63	31	30	14	25	16	19	11	6	15	5	4	2	1			353
		%	40.2	39.9	33.3	38.0	37.8	34.7	28.6	39.6	28.9	23.1	13.8	9.3	7.8	2.0	1.5			27.3
	NO	N	165	95	62	49	23	47	40	29	27	20	94	49	47	99	67	28		941
		%	59.8	60.1	66.7	62.0	62.2	65.3	71.4	60.4	71.1	76.9	86.2	90.7	92.2	98.0	98.5	100.0		72.7
	TOTAL	N	276	158	93	79	37	72	56	48	38	26	109	54	51	101	68	28		1294

* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources.

Award of NIH or NSF Research Grants, by Cohort and Level of NSF Graduate Fellowships: First Year Level*

COHORT OF FIRST AWARD

FLD OF APPLIC	GRT?		1952-53	1954-55	1956-57	1958-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	TOTAL
MATHEMATICS	YES	N	8	10	12	13	10	14	18	15	20	14	11	7	4	1	2			159
		%	23.5	26.3	18.8	15.7	18.9	14.4	15.7	12.3	17.5	16.1	6.7	5.6	3.6	.7	1.4			9.8
	NO	N	26	28	52	70	43	83	97	107	94	73	152	119	106	136	139	77	62	1464
		%	76.5	73.7	81.3	84.3	81.1	85.6	84.3	87.7	82.5	83.9	93.3	94.4	96.4	99.3	98.6	100.0	100.0	90.2
	TOTAL	N	34	38	64	83	53	97	115	122	114	87	163	126	110	137	141	77	62	1623
PHYSICS	YES	N	19	16	18	23	5	11	12	8	3	3	4	1		1				124
		%	24.4	14.5	16.8	14.9	5.9	10.8	9.5	8.5	3.4	5.0	3.8	1.3		1.1				8.2
	NO	N	59	94	89	131	80	91	114	86	86	57	101	75	106	88	80	41	34	1382
		%	75.6	85.5	83.2	85.1	94.1	89.2	90.5	91.5	96.6	95.0	96.2	98.7	100.0	98.9	100.0	100.0	100.0	91.8
	TOTAL	N	78	110	107	154	85	102	126	94	89	60	105	76	76	89	80	41	34	1506
CHEMISTRY	YES	N	17	30	25	22	17	8	24	9	9	3	6	3						173
		%	19.3	27.0	25.5	20.0	29.3	12.7	30.0	14.1	15.3	4.4	7.8	5.2						14.2
	NO	N	71	81	73	88	41	55	56	55	50	65	71	55	67	74	77	33	36	1048
		%	80.7	73.0	74.5	80.0	70.7	87.3	70.0	85.9	84.7	95.6	92.2	94.8	100.0	100.0	100.0	100.0	100.0	85.8
	TOTAL	N	88	111	98	110	58	63	80	64	59	68	77	58	67	74	77	33	36	1221
GEOSCIENCES	YES	N	2		5	8	1	5	3	3	2	1	3							33
		%	11.8		23.8	25.8	7.1	29.4	20.0	33.3	13.3	8.3	15.0							11.7
	NO	N	15	14	16	23	13	12	12	6	13	11	17	9	8	17	30	13	20	249
		%	88.2	100.0	76.2	74.2	92.9	70.6	80.0	66.7	86.7	91.7	85.0	100.0	100.0	100.0	100.0	100.0	100.0	88.3
	TOTAL	N	17	14	21	31	14	17	15	9	15	12	20	9	8	17	30	13	20	282
ENGINEERING	YES	N	1	7	12	19	7	6	5	8	4	6	7	3	3					88
		%	1.9	8.2	13.6	16.1	11.3	7.4	6.0	11.4	4.7	7.6	6.2	3.3	4.1					6.5
	NO	N	52	78	76	99	55	75	78	62	82	73	106	88	71	57	66	65	86	1269
		%	98.1	91.8	86.4	83.9	88.7	92.6	94.0	88.6	95.3	92.4	93.8	96.7	95.9	100.0	100.0	100.0	100.0	93.5
	TOTAL	N	53	85	88	118	62	81	83	70	86	79	113	91	74	57	66	65	86	1357
EMP TOTAL	YES	N	47	63	72	85	40	44	62	43	38	27	31	14	7	2	2			577
		%	17.4	17.6	19.0	17.1	14.7	12.2	14.8	12.0	10.5	8.8	6.5	3.9	2.1	.5	.5			9.6
	NO	N	223	295	306	411	232	316	357	316	325	279	447	346	328	372	392	229	238	5412
		%	82.6	82.4	81.0	82.9	85.3	87.8	85.2	88.0	89.5	91.2	93.5	96.1	97.9	99.5	99.5	100.0	100.0	90.4
	TOTAL	N	270	358	378	496	272	360	419	359	363	306	478	360	335	374	394	229	238	5989
BIOSCIENCES	YES	N	21	19	25	34	13	22	25	15	13	14	5	3	1	2				212
		%	36.2	28.8	31.3	34.3	30.2	26.5	30.1	24.6	16.5	16.9	5.0	4.5	1.1	2.1				15.3
	NO	N	37	47	55	65	30	61	58	46	66	69	96	64	93	94	104	76	115	1176
		%	63.8	71.2	68.8	65.7	69.8	73.5	69.9	75.4	83.5	83.1	95.0	95.5	98.9	97.9	100.0	100.0	100.0	84.7
	TOTAL	N	58	66	80	99	43	83	83	61	79	83	101	67	94	96	104	76	115	1383
PSYCHOLOGY	YES	N	1	1	2	2	3	1	3	5	3	1	3	1	1	1				28
		%	50.0	11.1	16.7	14.3	42.9	8.3	13.0	22.7	10.3	4.8	8.1	2.9	3.8	4.5				7.3
	NO	N	1	8	10	12	4	11	20	17	26	20	34	33	25	21	38	34	42	356
		%	50.0	88.9	83.3	85.7	57.1	91.7	87.0	77.3	89.7	95.2	91.9	97.1	96.2	95.5	100.0	100.0	100.0	92.7
	TOTAL	N	2	9	12	14	7	12	23	22	29	21	37	34	26	22	38	34	42	384
SOC SCI & OTH	YES	N		1	1	1	1		2	1	6			2						15
		%		50.0	16.7	10.0	16.7		7.7	5.3	16.2			4.2						2.0
	NO	N	1	1	5	9	5	12	24	18	31	48	76	46	46	64	122	100	110	718
		%	100.0	50.0	83.3	90.0	83.3	100.0	92.3	94.7	83.8	100.0	100.0	95.8	100.0	100.0	100.0	100.0	100.0	98.0
	TOTAL	N	1	2	6	10	6	12	26	19	37	48	76	48	46	64	122	100	110	733
BIO/BEH TOTAL	YES	N	22	21	28	37	17	23	30	21	22	15	8	6	2	3				255
		%	36.1	27.3	28.6	30.1	30.4	21.5	22.7	20.6	15.2	9.9	3.7	4.0	1.2	1.6				10.2
	NO	N	39	56	70	86	39	84	102	81	123	137	206	143	164	179	264	210	267	2250
		%	63.9	72.7	71.4	69.9	69.6	78.5	77.3	79.4	84.8	90.1	96.3	96.0	98.8	98.4	100.0	100.0	100.0	89.8
	TOTAL	N	61	77	98	123	56	107	132	102	145	152	214	149	166	182	264	210	267	2505
GRAND TOTAL	YES	N	69	84	100	122	57	67	92	64	60	42	39	20	9	5	2			832
		%	20.8	19.3	21.0	19.7	17.4	14.3	16.7	13.9	11.8	9.2	5.6	3.9	1.8	.9	.3			9.8
	NO	N	262	351	376	497	271	400	459	397	448	416	653	489	492	551	656	439	505	7662
		%	79.2	80.7	79.0	80.3	82.6	85.7	83.3	86.1	88.2	90.8	94.4	96.1	98.2	99.1	99.7	100.0	100.0	90.2
	TOTAL	N	331	435	476	619	328	467	551	461	508	458	692	509	501	556	658	439	505	8494

* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources

Award of NIH or NSF Research Grants, by Cohort and Level of NSF Graduate Fellowships: Intermediate Level*

COHORT OF FIRST AWARD

FLD OF APPLIC	GRT?		1952-53	1954-55	1956-57	1958-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	TOTAL
MATHEMATICS	YES	N	10	7	3	5	3	3	6	3	1	2	8	5	1		1			58
		%	35.7	36.8	18.8	16.7	13.6	14.3	16.2	14.3	4.5	16.7	13.3	18.5	3.4		4.2			14.3
	NO	N	18	12	13	25	19	18	31	18	21	10	52	22	28	29	23	9		348
		%	64.3	63.2	81.3	83.3	86.4	85.7	83.8	85.7	95.5	83.3	86.7	81.5	96.6	100.0	95.8	100.0		85.7
	TOTAL	N	28	19	16	30	22	21	37	21	22	12	60	27	29	29	24	9		406
PHYSICS	YES	N	13	8	9	8	1	1	3	4			2	1		1	1			52
		%	24.1	16.3	21.4	21.1	4.2	3.3	10.3	11.8			3.6	7.1		4.8	4.2			11.2
	NO	N	41	41	33	30	23	29	26	30	20	16	53	13	11	20	23	5		414
		%	75.9	83.7	78.6	78.9	95.8	96.7	89.7	88.2	100.0	100.0	96.4	92.9	100.0	95.2	95.8	100.0		88.8
	TOTAL	N	54	49	42	38	24	30	29	34	20	16	55	14	11	21	24	5		466
CHEMISTRY	YES	N	14	10	7	10	8	13	6	2	9	3	3		2	1				88
		%	22.6	16.9	15.2	18.2	36.4	25.5	20.0	8.7	31.0	15.8	4.8		6.9	5.0				15.6
	NO	N	48	49	39	45	14	38	24	21	20	16	59	21	27	19	22	13		475
		%	77.4	83.1	84.8	81.8	63.6	74.5	80.0	91.3	69.0	84.2	95.2	100.0	93.1	95.0	100.0	100.0		84.4
	TOTAL	N	62	59	46	55	22	51	30	23	29	19	62	21	29	20	22	13		563
GEOSCIENCES	YES	N	2	4	3	6	4	6	5	4	3	2	3	2	1		1			46
		%	11.8	21.1	16.7	20.0	28.6	31.6	27.8	25.8	27.3	20.0	16.7	15.4	8.3		9.1			18.8
	NO	N	15	15	15	24	10	13	13	12	8	8	15	11	11	5	10	4		199
		%	88.2	78.9	83.3	80.0	71.4	68.4	72.2	75.0	72.7	80.0	83.3	84.6	91.7	100.0	90.9	100.0		81.2
	TOTAL	N	17	19	18	30	14	19	18	16	11	10	18	13	12	15	11	4		245
ENGINEERING	YES	N	2	7	4	6	2	2	5	5	3	1	2							39
		%	7.4	33.3	18.2	16.7	7.4	4.4	13.9	15.2	12.0	4.3	4.3							9.3
	NO	N	25	14	18	30	25	43	31	28	22	22	45	14	12	19	25	9		382
		%	92.6	66.7	81.8	83.3	92.6	95.6	86.1	84.8	88.0	95.7	95.7	100.0	100.0	100.0	100.0	100.0		90.7
	TOTAL	N	27	21	22	36	27	45	36	33	25	23	47	14	12	19	25	9		421
EMP TOTAL	YES	N	41	36	26	35	18	25	25	18	16	8	18	8	4	2	3			283
		%	21.8	21.6	18.1	18.5	16.5	15.1	16.7	14.2	15.0	10.0	7.4	9.0	4.3	1.9	2.8			13.5
	NO	N	147	131	118	154	91	141	125	109	91	72	224	81	89	102	103	40		1818
		%	78.2	78.4	81.9	81.5	83.5	84.9	83.3	85.8	85.0	90.0	92.6	91.0	95.7	98.1	97.2	100.0		86.5
	TOTAL	N	188	167	144	189	109	166	150	127	107	80	242	89	93	104	106	40		2101
BIOSCIENCES	YES	N	34	35	26	22	6	11	10	5	11	6	14	4	3		1			188
		%	47.2	38.5	40.6	36.7	18.2	21.6	22.2	11.4	32.4	28.6	17.9	14.8	6.1		1.6			23.4
	NO	N	38	56	38	38	27	40	35	39	23	15	64	23	46	44	62	26	1	615
		%	52.8	61.5	59.4	63.3	81.8	78.4	77.8	88.6	67.6	71.4	82.1	85.2	93.9	100.0	98.4	100.0	100.0	76.6
	TOTAL	N	72	91	64	60	33	51	45	44	34	21	78	27	49	44	63	26	1	803
PSYCHOLOGY	YES	N		5	2	4		2	1	1	2	2	2			1		2		24
		%		31.3	20.0	40.0		16.7	10.0	12.5	25.0	28.6	25.0			16.7		15.4		16.1
	NO	N	4	11	8	6	5	10	9	7	6	5	6	5	4	5	23	11		125
		%	100.0	68.8	80.0	60.0	100.0	83.3	90.0	87.5	75.0	71.4	75.0	100.0	100.0	83.3	100.0	84.6		83.9
	TOTAL	N	4	16	10	10	5	12	10	8	8	7	8	5	4	6	23	13		149
SOC SCI & OTH	YES	N		1	5	8	4	4	2	7	5	4	3	2	1					46
		%		33.3	31.3	36.4	50.0	22.2	8.7	29.2	18.5	14.8	6.8	6.7	3.6					11.6
	NO	N		2	11	14	4	14	21	17	22	23	41	28	27	32	70	26		352
		%		66.7	68.8	63.6	50.0	77.8	91.3	70.8	81.5	85.2	93.2	93.3	96.4	100.0	100.0	100.0		88.4
	TOTAL	N		3	16	22	8	18	23	24	27	27	44	30	28	32	70	26		398
BIO/BEH TOTAL	YES	N	34	41	33	34	10	17	13	13	18	12	19	6	4	1	1	2		258
		%	44.7	37.3	36.7	37.0	21.7	21.0	16.7	17.1	26.1	21.8	14.6	9.7	4.9	1.2	.6	3.1		19.1
	NO	N	42	69	57	58	36	64	65	63	51	43	111	56	77	81	155	63	1	1092
		%	55.3	62.7	63.3	63.0	78.3	79.0	83.3	82.9	73.9	78.2	85.4	90.3	95.1	98.8	99.4	96.9	100.0	80.9
	TOTAL	N	76	110	90	92	46	81	78	76	69	55	130	62	81	82	156	65	1	1350
GRAND TOTAL	YES	N	75	77	59	69	28	42	38	31	34	20	37	14	8	3	4	2		541
		%	28.4	27.8	25.2	24.6	18.1	17.0	16.7	15.3	19.9	14.8	9.9	9.3	4.6	1.6	1.5	1.9		15.7
	NO	N	189	200	175	212	127	205	190	172	142	115	335	137	166	183	258	103	1	2910
		%	71.6	72.2	74.8	75.4	81.9	83.0	83.3	84.7	80.1	85.2	90.1	90.7	95.4	98.4	98.5	98.1	100.0	84.3
	TOTAL	N	264	277	234	281	155	247	228	203	176	135	372	151	174	186	262	105	1	3451

* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources

Award of NIH or NSF Research Grants, by Cohort and Level of NSF Graduate Fellowships: Terminal Level*

FLD OF APPLIC	GRT?		COHORT OF FIRST AWARD 1952-53	1954-55	1956-57	1958-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	TOTAL
MATHEMATICS	YES	N	4	4	1	1	1	2					4	1	2	3				23
		%	20.0	57.1	33.3	20.0	25.0	33.3					12.9	12.5	18.2	23.1				16.7
	NO	N	16	3	2	4	3	4	5	5	2	2	27	7	9	10	8	8		115
		%	80.0	42.9	66.7	80.0	75.0	66.7	100.0	100.0	100.0	100.0	87.1	87.5	81.8	76.9	100.0	100.0		83.3
	TOTAL	N	20	7	3	5	4	6	5	5	2	2	31	8	11	13	8	8		138
PHYSICS	YES	N	20	4	4	2	2	1	1	1				1		1				37
		%	29.0	14.8	50.0	18.2	20.0	12.5	14.3	20.0				12.5		9.1				19.3
	NO	N	49	23	4	9	8	7	6	4	5	1	11	7	3	10	8			155
		%	71.0	85.2	50.0	81.8	80.0	87.5	85.7	80.0	100.0	100.0	100.0	87.5	100.0	90.9	100.0			80.7
	TOTAL	N	69	27	8	11	10	8	7	5	5	1	11	8	3	11	8			192
CHEMISTRY	YES	N	12	8	3	4	1	3	2	4	1	2	1							41
		%	21.8	23.5	12.5	22.2	14.3	16.7	28.6	57.1	14.3	66.7	8.3							19.1
	NO	N	43	26	21	14	6	15	5	3	6	1	11	4	3	5	11			174
		%	78.2	76.5	87.5	77.8	85.7	83.3	71.4	42.9	85.7	33.3	91.7	100.0	100.0	100.0	100.0			80.9
	TOTAL	N	55	34	24	18	7	18	7	7	7	3	12	4	3	5	11			215
GEOSCIENCES	YES	N	3	3	2	1		1	1	1	1	1	1			1	1			17
		%	16.7	30.0	22.2	16.7		14.3	16.7	16.7	50.0	16.7	25.0			12.5	50.0			18.7
	NO	N	15	7	7	5	2	6	5	5	1	5	3	3	2	7	1			74
		%	83.3	70.0	77.8	83.3	100.0	85.7	83.3	83.3	50.0	83.3	75.0	100.0	100.0	87.5	50.0			81.3
	TOTAL	N	18	10	9	6	2	7	6	6	2	6	4	3	2	8	2			91
ENGINEERING	YES	N	3	1	2	1		3		2	2			3		2				19
		%	14.3	4.2	25.0	10.0		21.4		25.0	25.0			27.3		11.8				11.2
	NO	N	18	23	6	9	7	11	10	6	6	3	12	8	9	15	5	3		151
		%	85.7	95.8	75.0	90.0	100.0	78.6	100.0	75.0	75.0	100.0	100.0	72.7	100.0	88.2	100.0	100.0		88.8
	TOTAL	N	21	24	8	10	7	14	10	8	8	3	12	11	9	17	5	3		170
EMP TOTAL	YES	N	42	20	12	9	4	10	4	8	4	3	6	5	2	7	1			137
		%	23.0	19.6	23.1	18.0	13.3	18.9	11.4	25.8	16.7	20.0	8.6	14.7	7.1	13.0	2.9			17.0
	NO	N	141	82	40	41	26	43	31	23	20	12	64	29	26	47	33	11		669
		%	77.0	80.4	76.9	82.0	86.7	81.1	88.6	74.2	83.3	80.0	91.4	85.3	92.9	87.0	97.1	100.0		83.0
	TOTAL	N	183	102	52	50	30	53	35	31	24	15	70	34	28	54	34	11		806
BIOSCIENCES	YES	N	36	15	11	10	2	4	5	2	1	2	6	2	3	2		1		102
		%	41.9	34.1	37.9	45.5	66.7	36.4	41.7	40.0	16.7	33.3	50.0	40.0	33.3	8.0		9.1		33.6
	NO	N	50	29	18	12	1	7	7	3	5	4	6	3	6	23	18	10		202
		%	58.1	65.9	62.1	54.5	33.3	63.6	58.3	60.0	83.3	66.7	50.0	60.0	66.7	92.0	100.0	90.9		66.4
	TOTAL	N	86	44	29	22	3	11	12	5	6	6	12	5	9	25	18	11		304
PSYCHOLOGY	YES	N	3	4	1	2				1		1		1		1				14
		%	75.0	36.4	20.0	50.0				16.7		50.0		33.3		14.3				21.5
	NO	N	1	7	4	2	1	3	3	5	2	1	7	2		6	5	2		51
		%	25.0	63.6	80.0	50.0	100.0	100.0	100.0	83.3	100.0	50.0	100.0	66.7		85.7	100.0	100.0		78.5
	TOTAL	N	4	11	5	4	1	3	3	6	2	2	7	3		7	5	2		65
SOC SCI & OTH	YES	N	2		1	2	1	2	2	2			2	2						16
		%	66.7		14.3	66.7	33.3	40.0	33.3	33.3			10.0	16.7						13.4
	NO	N	1	1	6	1	2	3	4	4	6	3	18	10	14	15	11	4		103
		%	33.3	100.0	85.7	33.3	66.7	60.0	66.7	66.7	100.0	100.0	90.0	83.3	100.0	100.0	100.0	100.0		86.6
	TOTAL	N	3	1	7	3	3	5	6	6	6	3	20	12	14	15	11	4		119
BIO/BEH TOTAL	YES	N	41	19	13	14	3	6	7	5	1	3	8	5	3	3		1		132
		%	44.1	33.9	31.7	48.3	42.9	31.6	33.3	29.4	7.1	27.3	20.5	25.0	13.0	6.4		5.9		27.0
	NO	N	52	37	28	15	4	13	14	12	13	8	31	15	20	44	34	16		356
		%	55.9	66.1	68.3	51.7	57.1	68.4	66.7	70.6	92.9	72.7	79.5	75.0	87.0	93.6	100.0	94.1		73.0
	TOTAL	N	93	56	41	29	7	19	21	17	14	11	39	20	23	47	34	17		488
GRAND TOTAL	YES	N	83	39	25	23	7	16	11	13	5	6	14	10	5	10	1	1		269
		%	30.1	24.7	26.9	29.1	18.9	22.2	19.6	27.1	13.2	23.1	12.8	18.5	9.8	9.9	1.5	3.6		20.8
	NO	N	193	119	68	56	30	56	45	35	33	20	95	44	46	91	67	27		1025
		%	69.9	75.3	73.1	70.9	81.1	77.8	80.4	72.9	86.8	76.9	87.2	81.5	90.2	90.1	98.5	96.4		79.2
	TOTAL	N	276	158	93	79	37	72	56	48	38	26	109	54	51	101	68	28		1294

* See footnote on page 6 for definition of level of fellowship. Terminal and Intermediate levels of fellowship were discontinued after 1971.

SOURCE: NRC, Commission on Human Resources

Appendix 6

NSF Graduate Fellows in Comprehensive Roster Survey Sample, 1973,
By Cohort, with Response Rates, by Field and Sex

Field of Fellowship	MEN 52-61	MEN 62-66	MEN 67-71	MEN Total 52-71	WOMEN 52-61	WOMEN 62-66	WOMEN 67-71	WOMEN Total 52-71	SEXES COMBINED 52-61	SEXES COMBINED 62-66	SEXES COMBINED 67-71	SEXES COMBINED Total 52-71
Mathematics												
CR Sample	81	88	21	190	17	21	8	46	98	109	29	236
Respondents	61	70	17	148	11	16	8	35	72	86	25	183
Response %	75	80	81	78.0	65	76	100	76	74	79	86	77.5
Physics												
CR Sample	160	82	16	258	11	5	1	17	171	87	17	275
Respondents	126	65	13	204	9	5	1	15	135	70	14	219
Response %	79	79	81	79.1	82	100	100	88	79	81	82	79.6
Chemistry												
CR Sample	116	52	11	179	30	12	8	50	146	64	19	229
Respondents	103	43	9	155	18	10	8	36	121	53	17	191
Response %	89	83	32	86.6	60	83	100	72	83	83	90	83.4
Geo-Sciences												
CR Sample	39	17	6	62	3	5	-	8	42	22	6	70
Respondents	38	15	5	58	2	5	-	7	40	20	5	65
Response %	97	88	83	93.5	67	100	-	88	95	91	83	92.9
Engineering												
CR Sample	67	48	13	128	-	2	-	2	67	50	13	130
Respondents	61	40	12	113	-	1	-	1	61	41	12	114
Response %	91	83	92	88.3	-	50	-	50	91	82	92	87.7
Life Sciences												
CR Sample	175	78	12	265	51	38	10	99	226	116	22	364
Respondents	147	65	11	223	39	27	9	75	186	92	20	298
Response %	84	83	92	84.2	77	71	90	76	82	79	91	81.9
Psychology												
CR Sample	20	21	5	46	12	7	5	24	32	28	10	70
Respondents	19	17	4	40	8	6	4	18	27	23	8	58
Response %	95	81	80	87.0	75	86	80	75	84	82	80	82.9
Social Sciences												
CR Sample	11	19	3	33	8	7	12	27	19	26	15	60
Respondents	9	14	2	25	7	7	12	26	16	21	14	51
Response %	82	74	67	75.8	88	100	100	96	84	81	93	85.0
TOTAL, ALL FIELDS												
CR Sample	669	405	87	1161	132	97	44	273	801	502	131	1434
Respondents	564	329	73	966	94	77	42	213	658	406	115	1179
Response %	84.3	81.2	83.9	83.2	71.2	79.4	95.5	78.0	82.1	80.9	87.8	82.2

SOURCE: NRC, Commission on Human Resources

Appendix 7

NSF Graduate Fellows in Comprehensive Roster Survey Sample, 1975,
by Cohort, with Response Rates, by Field and Sex

Field of Fellowship	MEN 52-61	MEN 62-66	MEN 67-71	MEN Total 52-71	WOMEN 52-61	WOMEN 62-66	WOMEN 67-71	WOMEN Total 52-71	SEXES COMBINED 52-61	SEXES COMBINED 62-66	SEXES COMBINED 67-71	SEXES COMBINED Total 52-71
Mathematics												
CR Sample	80	93	42	215	16	23	16	55	96	116	58	270
Respondents	59	68	30	157	13	16	13	42	72	84	43	199
Response %	74	73	71	73.0	81	70	81	76.4	75	72	74	73.7
Physics												
CR Sample	157	87	39	283	11	6	3	20	168	93	42	303
Respondents	117	70	29	216	9	5	3	17	126	75	32	233
Response %	75	81	74	76.3	82	83	100	85.0	75	81	71	76.9
Chemistry												
CR Sample	111	53	32	196	30	12	10	52	141	65	42	248
Respondents	94	42	23	159	19	9	10	38	113	51	33	197
Response %	85	79	72	81.1	63	75	100	73.1	80	79	79	79.4
Geo-sciences												
CR Sample	38	18	11	67	3	5	1	9	41	23	12	76
Respondents	32	14	10	56	2	5	1	8	34	19	11	64
Response %	84	78	91	83.6	67	100	100	88.9	83	73	92	84.2
Engineering												
CR Sample	67	51	28	146	-	2	-	2	67	53	28	148
Respondents	54	44	21	119	-	2	-	2	54	46	21	121
Response %	81	86	75	81.5	-	100	-	100.0	81	87	75	81.8
Life Sciences												
CR Sample	174	80	37	291	48	41	23	112	222	121	60	403
Respondents	134	67	26	227	39	34	19	92	173	101	45	319
Response %	77	84	70	78.0	81	83	83	82.1	78	84	75	79.2
Psychology												
CR Sample	19	21	7	47	11	7	10	28	30	28	17	75
Respondents	17	17	6	40	8	6	8	22	25	23	14	62
Response %	90	81	86	85.1	73	86	80	78.6	83	82	82	82.7
Social Sciences												
CR Sample	11	21	11	43	7	9	18	34	18	30	29	77
Respondents	9	16	11	36	6	8	15	29	15	24	26	65
Response %	82	76	100	83.7	86	89	83	85.3	83	80	90	84.4
TOTAL, ALL FIELDS												
CR Sample	657	424	207	1288	126	105	81	312	783	529	288	1600
Respondents	516	338	156	1010	96	85	69	250	612	423	225	1260
Response %	78.5	79.7	75.4	78.4	76.2	81.0	85.2	80.1	78.2	80.0	78.1	78.8

SOURCE: NRC, Commission on Human Resources

Appendix 8

Some Suggested Parameters for a More Comprehensive Study

This report is not intended as an evaluative report, but merely as a descriptive statistical report of the career outcomes, as shown by a set of available criteria, for a particular group of people supported by the NSF. It is deemed inappropriate for the NRC to undertake an evaluative study, because the NRC has itself been involved in the process of selection of the NSF Fellows. It is appropriate, however, to outline some of the possibilities of such a study, without prejudice to the freedom of any evaluative body to extend or modify the suggestions described below. These suggestions are offered only with a view to showing the potential scope of a study which could be effected, based on available data and on a data-collection procedure which has already been used effectively in previous follow-up studies of NSF Fellows and non-awarded applicants for NSF Fellowships.

It is assumed that an agency with capabilities for social science research, quite independent of the Commission on Human Resources, might conduct the evaluative study, if one is to be made. Because many of the data sources are within CHR, this organization would be expected to be called upon for statistical tabulations.

It is suggested than an evaluative study might well include in its scope, in addition to the NSF Graduate Fellows described in the present statistical report, candidates for NSF Graduate Fellowships who did not attain awards. In addition. there were candidates, both awarded and non-awarded, in additional programs, including the Cooperative Fellowship program of the 1950's and early 1960's. There has, more recently, been the NSF Traineeship program; its awardees could well be included in a more comprehensive study. In addition to these additional programs, there is the whole postdoctoral level, not included in the present study, which might be included in a more searching and evaluative study, for comparison with the results of the predoctoral candidates and awardees. In addition, it is entirely probably that consideration of the amount of support, in terms of years, or dollars, would relate significantly to the evaluation of outcomes.

Technical Reports

For whatever value they might have in the design of a further study, there is available in the CHR a series of 26 Technical Reports on Fellowship Selection Techniques, issued by the Office of Scientific Personnel over the years 1953-1967.

Limitations of CHR Data

The present statistical study used only sources already available in the data banks of the Commission on Human Resources. It is not possible, within this limited framework, to obtain all of the kinds of information that would be important in a more comprehensive and evaluative study. It is not possible, for example, to determine the reasons for individuals' decisions, nor their satisfaction with whatever outcomes may have been their lot. It is possible to secure only a limited view of the opinions of others regarding the evaluation of the individuals involved or their work products (i.e. the citation records give indirect evidence of the evaluations of others, but only in a limited way). It is not possible to study the impact of the several programs on the academic community, or the wider community outside of academe. All of these broader sources, and kinds of evidence should, it is felt, be included in a more comprehensive and evaluative study. This would obviously require questionnaire surveys, a procedure not used in the current study.

Comparative and Normative Data

In addition to additional programs within the National Science Foundation, and additional types of evidence as indicated above, it is potentially possible to obtain data regarding persons supported in other programs, such as those of the National Institutes of Health and the Office of Education, for purposes of comparison. In addition, it is possible to set up as a frame of reference, for many of the kinds of evidence, a base-line founded on the normal experience of the general run of PhD's, whatever their sources and amounts of support, by field of doctorate, by sex, and by cohort of graduation. It is not suggested that these other groups would serve as "controls" in the sense that the term is used in laboratory science. It is not deemed possible in field research of the kind here involved, to set up such controls. Yet there are undoubtedly variations from one agency to another that may be important in attempting to evaluate the results of the work of any one agency. And the generality of PhD's forms a convenient framework, keeping in mind all the while that it refers only to those who have succeeded in attaining the doctorate; there are always others supported by any agency who do not attain PhD's, but whose career outcomes would be important to a comprehensive study.