

SUBSIDIES FOR GRADUATE STUDENTS:

Stipend Support in Thirty-Seven Fields of Study, 1962-1963

by

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## PREFACE

Because manpower for scientific and technical fields is today considered to be in short supply, advanced training in these fields and financial aid for higher education are issues currently undergoing close scrutiny within the federal government. To meet the need for up-to-date information on the sources and types of support available to graduate students, the effects of stipend holding on academic progress and patterns of employment, and other aspects of graduate education, the National Science Foundation asked the National Opinion Research Center to conduct a large-scale survey covering these topics in Spring, 1963. This constitutes the first report on some of the major and preliminary findings to emerge out of that effort.

The report concerns the financial, academic and employment circumstances of students enrolled in American graduate schools in Spring, 1963, for study in thirty-seven fields. These fields cover the Physical Sciences, Life Sciences, Behavioral Sciences, Engineering and several of the Humanities. The data were taken from self-administered questionnaires completed by 20,114 graduate students sampled from 130 graduate schools. (See Appendix IV for a copy of the questionnaire.) The sample was designed to be representative of students enrolled for study at accredited degree-granting institutions in the following fields:

Physical Science

Astronomy  
 Chemistry  
 General Physical Science  
 Geography  
 Geology and Geophysics  
 Mathematics  
 Metallurgy  
 Meteorology  
 Oceanography  
 Physics  
 All other earth and  
 physical sciences

Humanities

English  
 History

Engineering

Chemical Engineering  
 Civil Engineering  
 Electrical Engineering  
 Mechanical Engineering  
 All other engineering

Behavioral Science

Anthropology  
 Economics  
 Psychology  
 Sociology

Life Science

Agriculture  
 Anatomy  
 Biochemistry  
 Biophysics  
 Botany  
 Forestry  
 General Biology  
 Genetics  
 Microbiology  
 Pathology  
 Pharmacology  
 Physiology  
 Zoology  
 All other biology fields

Social Work\*

A description of the sample design appears in Appendix I, which also includes a list of participating institutions and rates of cooperation by school and by field of study. Some 82 per cent of the eligible students completed usable questionnaires by the time the forms were processed for this first report.

The study population consists of students enrolled for graduate

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\* Social Work was excluded from the analysis presented in the text of the report. This field was included in the tabulations presented in Appendix III for the thirty-seven fields.

study during the Spring Term, 1963, for the purpose of securing advanced degrees. Postdoctoral students who were enrolled for study were excluded from the analysis, as were students who had not met the usual requirements for graduate standing or did not intend to become formal candidates for a graduate degree. The text of the report and the tables accompanying the text are based on a composite field classification. The five composite fields are: Engineering, Physical Sciences, Life Sciences, Behavioral Sciences, and Humanities. The procedures employed in preparing this self-weighted subsample are described in the statement on sample design. Selected tabulations are presented in Appendix III, based on the thirty-seven detailed field listings. Others are in preparation and will be available to interested readers on request.

The report is organized as follows:

- Chapter I. Academic and Employment Field Characteristics--compares the five composite fields of study in the Sciences, Engineering and the Humanities in terms of student characteristics such as degree programs and type of employer in jobs held during the 1962-1963 academic year.
- Chapter II. Stipend Holding In American Graduate Schools--considers the social, academic and employment circumstances that attend the holding of a stipend during the 1962-1963 academic year as well as variations in type and source of stipend support.
- Chapter III. Enrollment For Graduate Study and Stipend Support--describes the academic, social and employment contingencies that are attached to full-time study, and assesses the role of stipends in permitting students currently pursuing graduate study on a part-time basis to enter full-time study.

Large scale surveys are made possible through the concerted efforts of many people. We would have to list most of the roster to

identify each individual staff member at the National Opinion Research Center who at some point had a hand in this survey. Mention should be made, however, of the invaluable assistance provided by Jacob J. Feldman, Seymour Sudman and especially Harold Levy in constructing the financial inventory that was utilized in the survey. An early version of the questionnaire was administered to several groups of graduate students thanks to the cooperation offered by Professor Leo A. Goodman, the University of Chicago, and Hans O. Mauksch, Dean of the Division of Liberal Studies, Illinois Institute of Technology. Editorial assistance was provided by John Allswang and the onerous task of typing text, tables and appendices was performed by Lillian Rochon and Toshiko Takahashi.

S.W.

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**CHAPTER I**

**ACADEMIC AND EMPLOYMENT FIELD CHARACTERISTICS**

Because of the inadequate supply of scientific and technical manpower much research is underway on the development of careers in scientific and professional occupations. At the National Opinion Research Center alone, a number of studies have documented the differences among college students that give rise to the choice of those career fields which entail graduate or professional study beyond the baccalaureate.<sup>1</sup> These studies have delineated those social, psychological and demographic variables which bear on the selection of one rather than another career field in occupations involving advanced study. And the financial circumstances of persons in the midst of their graduate studies in the arts and sciences have been described as well.<sup>2</sup>

The topic of how graduate students finance their training is important from the following perspective: Assuming that the nation's manpower requirements necessitate substantial growth among the scientific, professional and technical components of the labor force, then the financial factor in graduate education may be the one point of intervention that is most easily manipulated for the purpose of facilitating the rapid completion of graduate degree programs. We know that social and intellectual factors importantly shape career choice; there is very little that the policy planner can do, however, about the social class origins, religious backgrounds or academic potentials of college graduates currently entering the labor force or standing on the threshold of graduate

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<sup>1</sup>Publications to date include: James A. Davis, Great Aspirations: Volume One, Career Decisions and Educational Plans During College (National Opinion Research Center, Report No. 90, 1963) (Litho); Norman Miller, One Year After Commencement: An Interim Report on the 1961-1962 Graduate School Enrollment and the Future Career Plans of the 1961 College Graduating Class (National Opinion Research Center, Report No. 93) (Litho); Andrew M. Greeley, Religion and Career: A Study of College Graduates (New York: Sheed and Ward, 1963); and Seymour Warkov, Lawyers in the Making: The 1961 Entrants to American Law Schools (National Opinion Research Center, Report No. 96, 1963) (Litho).

<sup>2</sup>James A. Davis, Stipends and Spouses: The Finances of American Arts and Science Graduate Students (Chicago: The University of Chicago Press, 1962).

study. But a society with a steadily increasing gross national product may well give attention to the role of scholarships, fellowships and other kinds of financial support in attracting students to study programs in fields of scarce manpower supply and moving them through graduate school as rapidly as possible after they have been accepted for advanced study.

Government agencies whose mission it is to foster the development of manpower adequate to the educational and research needs of this decade have developed fellowship programs for graduate students in scientific fields of study. Fellowships and other forms of stipend support have become an important but by no means sole source of income for a majority of graduate students. In his 1957 survey of arts and science students, Davis found that one in four graduate students in arts and science fields depended on his spouse's employment for support. Furthermore, he found that fields of study differed substantially in the chances of their students securing stipend support and in the types of stipend provided when such support was forthcoming.<sup>3</sup>

The current pattern of stipend support varies by field of study; academic experiences and employment patterns also differ extensively among the students in various fields of study. If we are to comprehend these differences in financial support in the spring of 1963 among students enrolled in the fields selected for study in the present survey, then it is important to consider their financial conditions in the light of prevailing academic arrangements and employment patterns. In this chapter we will document some of these differences among the composite fields of study and set the stage for subsequent analysis of materials that describe stipend support for graduate study.

#### An Academic Portrait of the Fields of Study

Properly to assess the current academic circumstances of the students enrolled for graduate study requires some understanding of their academic "origins." At this time information is available on

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<sup>3</sup>Davis, Stipends and Spouses, pp. 58-73.

certain academic background characteristics, such as undergraduate grade point average, field of bachelor's degree, whether the undergraduate degree was taken at the school in which student is presently enrolled, and the time gap between the receipt of the bachelor's degree and entry to graduate school. Are the several composite fields recruiting students for graduate study who differ, to take one example, on the basis of their undergraduate performance?

Table 1.1 shows that one quarter of the entire sample had an undergraduate grade point average (GPA) of A or A-; another one in four reported a GPA of B+, while one in three scored an average of B or B-. Only one in ten of the students in these fields averaged C+, and a handful were enrolled for graduate study in Spring, 1963, despite an undergraduate GPA of C. Nor surprisingly, academic performance at the undergraduate level determines to a considerable extent whether a student is likely to be enrolled for advanced study in the fields under consideration in this survey.

TABLE 1.1

UNDERGRADUATE GRADE POINT AVERAGE BY  
COMPOSITE FIELD OF GRADUATE STUDY

Grade Point Average	Engineering	Physical Science	Humanities	Behavioral Science	Life Science	Total All Fields
A, A- . . . .	28%	27%	26%	20%	18%	25%
B+ . . . . .	23	24	27	27	22	24
B, B- . . . .	36	36	35	37	41	37
C+ . . . . .	10	10	9	11	14	11
C . . . . .	2	3	3	3	4	3
Less than C	*	*	*	1	*	*
Total Per Cent**	99	100	100	99	99	100
N . . . . .	1,568	1,796	940	1,146	1,169	6,619
NA, no BAC	57	41	25	28	44	195
Total N	1,625	1,837	965	1,174	1,213	6,814

\* Less than one-half of one per cent.

\*\* Due to rounding error, percentages vary from 99 to 101.

While not taking into account differences in quality of the undergraduate institution, the table does demonstrate differences among the five composite fields in their recruitment of talented students. The highest proportion of students whose undergraduate GPA was A or A- was enrolled in Engineering (28 per cent), the Physical Sciences (27 per cent) and the Humanities (26 per cent), while the remaining fields did not fare as well in drafting students from the top quarter of the sample: in the Behavioral Sciences only 20 per cent and in the Life Sciences only 18 per cent did A or A- work as undergraduates. Presumably talent and stipend support for graduate study in these fields should go hand in hand; later, it will be shown that this is not necessarily the case.

There is a widely shared belief in higher education that it is beneficial for undergraduates to move on to another institution so as to gain exposure to a variety of intellectual perspectives other than those celebrated at the undergraduate school. Nor is this wisdom honored in the breach since we find that three out of four students in this sample were in fact studying at institutions other than the one in which the bachelor's degree was taken. Institutional mobility occurred most frequently among students enrolled for graduate study in the Physical Sciences last spring: fully 80 per cent had left their alma maters to take a graduate degree at another school. Engineering graduate students were least likely to have moved, but even two out of three students in this composite group were no longer at the institutions granting their bachelor's degree (Table 1.2).

The fact that the overwhelming majority of students in these fields of study experienced institutional mobility does not imply discontinuity in field of study, however. On the contrary: the undergraduate major is the best predictor available of what one is likely to be studying at the graduate level. Table 1.3 shows that close to eight out of ten students in the sample were still in the same general field of study pursued at the undergraduate level.

TABLE 1.2

UNDERGRADUATE ORIGINS BY COMPOSITE  
FIELD OF GRADUATE STUDY

Undergraduate School and Graduate School	Physical Science	Life Science	Behavioral Science	Humanities	Engineering	Total All Fields
Different . .	80%	74%	74%	73%	68%	74%
Same . . . .	20	26	26	27	33	26
Total Per cent	100	100	100	100	101	100
N . . =	1,799	1,172	1,153	941	1,576	6,641
NA, no BAC =	38	41	21	24	49	173
Total N =	1,837	1,213	1,174	965	1,625	6,814

TABLE 1.3

FIELD OF UNDERGRADUATE MAJOR BY COMPOSITE  
FIELD OF GRADUATE STUDY

Field of Undergraduate Major	Engineering	Physical Science	Humanities	Life Science	Behavioral Science	Total All Fields
Engineering	92%	11%	*%	2%	3%	26%
Physical Science .	6	80	2	12	4	26
Humanities . .	*	1	76	2	12	14
Life Science	*	2	1	74	5	14
Behavioral Science .	*	1	8	*	65	13
Education . .	*	3	11	6	4	5
Health . . .	-	*	*	3	1	1
Other . . .	1	1	2	1	7	2
Total Per cent	99	99	100	100	101	101
N . . =	1,615	1,831	956	1,201	1,170	6,773
NA, no BAC =	10	6	9	12	4	41
Total N =	1,625	1,837	965	1,213	1,174	6,814

Nevertheless, field differences were found in the proportion of students whose composite undergraduate field of study coincided with their graduate field in Spring, 1963. The lowest turnover in fields of study occurred among Engineers: 92 per cent of this group of graduate students had received their bachelor's degree in the same field. Physical Science ranked second in homogeneity of field origins with some eight out of ten completing their undergraduate work in a Physical Science field of study. Of the remainder, 10 per cent had Engineering backgrounds, another 3 per cent took Education degrees in Natural Science fields of study, and the rest were scattered among other undergraduate fields. The Humanities ranked third among the five composite fields in the proportion taking an undergraduate degree in their present field of study (76 per cent), with one in ten moving in from Education and close to one in ten shifting from a Behavioral Science field. Similarly, three out of four students undertaking graduate work in the Life Science fields last spring were in the same composite field of study in college. Of the remainder, some 12 per cent were formerly in the Physical Sciences (almost all concentrated in Chemistry) and 6 per cent were formerly in Education (with specialties in Natural Sciences). It is noteworthy that the Behavioral Science field of graduate study last spring contained the highest proportion of students with undergraduate origins in other fields of study: 12 per cent of the Behavioral Science students in graduate schools reported a Humanities field as their major during college, "other" fields accounted for 7 per cent (the bulk were Law or pre-Law), and 5 per cent had switched from the Life Sciences. In sum, when the composition of the five broad fields of graduate study is characterized by the undergraduate field of study, the Behavioral Sciences especially were accessible to students from other fields while Engineering was the most inbred of the fields included in this survey. More important, the vast majority of these students maintained their undergraduate field of study at the graduate level. Thus continuity rather than change seems to characterize the program of study when a comparison is made between bachelor's and post-bachelor's field of study.

If higher education is seen as a pipeline that channels America's manpower into a variety of occupational and professional streams (and the above findings support this point of view), then a delay of one year or more in initiating graduate study after the completion of the undergraduate program may indicate that there are obstructions to the most efficient utilization of the system. In reply to a question asking, "How many calendar years elapsed between the time you received your bachelor's degree and the start of your graduate studies?" close to two out of three (62 per cent) reported that graduate study was initiated during the calendar year immediately following completion of the bachelor's program. Table 1.4 shows that the remaining one in three experienced a hiatus of at least one year: 9 per cent of the sample circled "one year" and another 7 per cent indicated that two years elapsed before graduate study had begun. A time lapse of four years or less accounts for 85 per cent of the sample, with the remainder taking five or more years off from formal study before beginning graduate level study.

TABLE 1.4

HIATUS BETWEEN BAC AND START OF GRADUATE SCHOOL BY  
COMPOSITE FIELD OF GRADUATE STUDY

Length of Hiatus	Physical Science	Behavioral Science	Life Science	Humanities	Engineering	Total All Fields
Less than 1 year	68%	66%	61%	58%	57%	62%
1 year	8	9	8	12	10	9
2 years	6	6	8	8	9	7
3 years	5	4	5	6	6	5
4 years	4	3	3	3	4	4
5-9 years	6	7	9	8	10	8
10 or more years	4	6	5	6	5	5
Total						
Per cent	101	101	99	101	101	100
N . . =	1,802	1,152	1,172	944	1,582	6,652
NA, no BAC	35	22	41	21	43	162
Total N =	1,837	1,174	1,213	965	1,625	6,814

Physical Science and Behavioral Science students were somewhat more likely to enter graduate school less than one year after receiving their bachelors' degrees than were students in other fields, while Humanities and Engineering students were less likely to do so. Inspection of Table 1.4 shows that Physical Science, furthermore, had the lowest proportion of students reporting a hiatus of five years or more (10 per cent), while the remaining fields had almost identical proportions of students who were out of school for this amount of time (about 15 per cent in each field).

Variations by field of study notwithstanding, the majority of students in all fields of graduate study covered in this survey--

- were engaged in graduate study at an institution other than the one in which the bachelor's degree was taken;
- continued in the same general field of study in which the undergraduate degree was secured; and
- initiated graduate study within twelve months after completing their undergraduate studies.

#### Academic Characteristics, Spring, 1963

We have shown that graduate students in the sciences, engineering and certain of the humanities can be measured by a yardstick of their bachelor's degree origins. The outcome: on the whole these students experienced institutional mobility, continuity in fields of study and relatively uninterrupted study activity in the transition from college to graduate school. What about their academic circumstances last spring? How many students in the five composite fields were working for the doctorate? What was their enrollment status? In this section we will describe these and other characteristics that concern their collective academic activity at the time the survey was in the field.

Table 1.5 shows that one in three students in the sample were carrying a full course load in a program that permitted "full-time" study; another three in ten were carrying less than a full course load in this type of program, and two in ten considered their enrollment for

graduate study primarily in terms of thesis work, independent research and the like. Furthermore, some 14 per cent said they were enrolled for work at a night school or in a program that did not permit full-time study. According to these students, a great majority were not registered for full-time course work during the spring term.

TABLE 1.5  
SPRING, 1963 REGISTRATION BY COMPOSITE  
FIELD OF GRADUATE STUDY

Enrollment Status	Behavioral Science	Life Science	Physical Science	Humanities	Engineering	Total All Fields
Full course load or greater . .	43%	37%	35%	30%	28%	34%
Less than full course load . . .	30	31	27	36	27	30
No courses; thesis or independent research only . . .	22	27	24	19	18	22
Night school or other program in which full-time study is impossible . . .	5	5	14	15	26	14
Correspondence courses	*	*	-	*	*	*
Total						
Per cent	100	100	100	100	99	100
N . . =	1,159	1,181	1,790	937	1,588	6,625
NA . . =	15	32	47	28	37	159
Total N =	1,174	1,213	1,837	965	1,625	6,814

Substantial field differences in the pattern of course work occurred: Engineering and the Humanities were less likely to have students carrying a full course load, but close to one-half of the students in the Behavioral Science field were in this category. The most striking field differences pertained to night school attendance or enrollment in a program that precluded full-time study: some 26 per cent of the Engineering students reported this to be the case in contrast with 15 per cent in the Humanities, 14 per cent in the Physical Sciences and only 5 per cent in the Life and Behavioral Sciences. Whether or not students described their enrollment in terms of course work, the fact is that a number of academic requirements often are faced simultaneously by the student at any one point in his graduate career. It is not unusual for students to take one or more courses, prepare for comprehensive examinations and also allocate time for the development of thesis proposals during any given term. Table 1.6 shows that some three out of four (77 per cent) of the students were taking "courses or seminars" and over four in ten (43 per cent) were engaged in "research for and preparation of my thesis." One in five was preparing for comprehensive or "qualifying" examinations and some 15 per cent were working at their foreign language requirements. Because of their frequent enrollment in night school programs, it is not surprising to learn that Engineering students were less likely than others to be involved in comprehensives or taking language examinations.

Differences in enrollment status and in the kinds of academic requirements that these graduate students were facing last spring should be reflected in the amount of time allocated to study. In reply to the question, "On the average, how many hours a week were you engaged in academic study this term? Include thesis work, courses, practicum, study time, etc. required for the degree." Table 1.7 indicates that there was a broad spread in the amount of time graduate students committed to academic study: at the one extreme, one in ten gave less than ten hours a week to his academic work, and at the other, another one in ten students spent an average of seventy hours a week or more in these activities. Students at each end of the time band obviously lived in different worlds; to say that both groups are "graduate students" hardly captures their respective life styles.

TABLE 1.6

DEGREE REQUIREMENTS BEING WORKED ON SPRING TERM 1963  
BY COMPOSITE FIELD OF GRADUATE STUDY

Degree Requirements	Physical Science	Engineering	Life Science	Behavioral Science	Humanities	Total All Fields
Courses or seminars . . . . .	74%	80%	72%	78%	79%	77%
Preparing for qualifying comprehensive exams. . . . .	23	12	17	23	21	19
Language exams	16	9	19	16	16	15
Research for and preparation of thesis . . . . .	46	36	59	42	28	43
Other . . . . .	2	2	4	4	3	3
None . . . . .	*	*	-	-	*	*
N . . . =	1,828	1,608	1,210	1,166	958	6,770
NA . . =	9	17	3	8	7	44
Total N =	1,837	1,625	1,213	1,174	965	6,814

NOTE: Adds to more than 100 per cent because of multiple responses.

TABLE 1.7

HOURS PER WEEK IN ACADEMIC STUDY BY  
COMPOSITE FIELD OF GRADUATE STUDY

Hours Per Week in Academic Study	Per cent Working					
	Engineering	Humanities	Physical Science	Behavioral Science	Life Science	Total All Fields
Less than 10 . . . . .	15	12	9	7	4	10
10 - 19 . . . . .	20	18	13	12	10	15
20 - 39 . . . . .	22	26	22	27	19	23
40 - 59 . . . . .	26	28	34	35	33	31
60 - 69 . . . . .	9	10	13	13	18	13
More than 69 . . . . .	7	6	9	6	15	9
Total Per cent	99	100	100	100	99	101
N . . . =	1,603	952	1,813	1,162	1,200	6,730
NA . . =	22	13	24	12	13	84
Total N =	1,625	965	1,837	1,174	1,213	6,814

Across the board, one-fourth of the sample gave less than twenty hours a week to graduate study, close to one-fourth (23 per cent) worked twenty to thirty-nine hours weekly, about three in ten reported forty to fifty-nine hours of academic work per week, and another 22 per cent gave "full time" and then some to their graduate work by spending an average of sixty hours per week or more on academic activity.

Composite differences in the allocation of time to academic work were consistent with what was discerned on enrollment and academic requirements: Engineering students were least likely to give substantial amounts of time to academic work. Some 15 per cent of the students enrolled for graduate work in this field last spring gave less than ten hours per week to academic work and over one-third studied less than twenty hours weekly. One-third of the Life Science students studied an average of sixty hours weekly or more, followed, in descending order, by students in the Physical Sciences, Behavioral Sciences, Humanities and Engineering. Thus, fields differ substantially in the amount of time their graduate students devoted to academic endeavor. As we will see later, current levels of fellowship, scholarship and other types of financial support for graduate study importantly influence the types of enrollment that prevail in each of these composite fields.

Despite the variation in course loads, academic requirements, on which students were working last spring, and the amount of time that they were allocating to their graduate study, the great majority of these students were working toward the same goal: a doctorate. Fully 77 per cent of the sample said they were aiming at a doctorate in their present or future study program. Save for a handful who were enrolled for a "first professional degree," the remainder expected the Master's as their terminal degree. Variations by field of study have a familiar ring: one-third of the Engineering students and one-fourth of those in the Humanities expected to stop at the Master's level in contrast with 18 per cent in the Physical Sciences, 14 per cent in the Life Sciences and only 13 per cent in the Behavioral Sciences (Table 1.8).

TABLE 1.8

HIGHEST DEGREE EXPECTED BY COMPOSITE  
FIELD OF GRADUATE STUDY

Highest Degree Expected	Per cent Expecting Degree					
	Behavioral Science	Life Science	Physical Science	Humanities	Engineering	Total All Fields
First professional . . .	*	3	*	*	1	1
Master's . . .	13	14	18	25	37	22
Doctorate . .	87	82	81	74	62	77
Other . . . . .	*	*	*	*	*	*
Total Per cent	100	99	99	99	100	100
N . . =	1,156	1,202	1,802	947	1,589	6,696
NA . =	18	11	35	18	36	118
Total N =	1,174	1,312	1,837	965	1,625	6,814

With the exception of Engineering, students in every field who were expecting the doctorate as their highest degree were more likely to report that the degree was to be taken in their present field of study than was the case among the students aiming for the Master's as the terminal degree. According to Table 1.9, 72 per cent of the Behavioral Science students expecting the Master's (to take one example) will take this highest degree in a Behavioral Science field, while the corresponding percentage among students in this field who expected the doctorate is 91. As for Engineering students, few of them switched in from other undergraduate fields and hardly any expected to transfer to other fields to take their highest degree: 97 per cent of those seeking the Master's and 92 per cent of those aiming for the doctorate expected their highest degree in Engineering.

Ignoring for the moment whether the highest degree expected is a doctorate or a Master's, Table 1.10 shows that only 14 per cent of the sample expected to receive their terminal degree during 1963. By the



end of 1964, however, about four in ten should be through with their graduate study. Skipping to the end of 1966, two out of ten students will be without the highest degree they expect to receive in graduate school. Interestingly, there are only minor differences by field when students are compared across the board in terms of expected duration of graduate study.

TABLE 1.10

DATE OF HIGHEST DEGREE EXPECTED AND  
COMPOSITE FIELD OF GRADUATE STUDY

Date of Highest Degree Expected	Physical Science	Engineering	Life Science	Behavioral Science	Humanities	Total All Fields
1963 . . .	15%	17%	14%	14%	10%	14%
1964 . . .	25	25	25	25	21	24
1965 . . .	23	21	23	25	21	23
1966 . . .	17	16	17	17	19	17
1967 . . .	9	7	8	9	10	9
1968 . . .	5	6	7	5	8	6
1969 . . .	2	2	2	2	3	2
1970 . . .	4	4	2	2	6	4
After 1970 . . .	1	2	1	1	3	1
Total Per cent	101	100	99	100	101	100
N . . =	1,679	1,470	1,106	1,080	822	6,157
NA . . =	158	155	107	94	143	657
Total N =	1,837	1,625	1,213	1,174	965	6,814

When fields are further broken down by the highest degree expected (as shown in Table 1.11), the following results obtain:

1. Life and Behavioral Science students expecting to terminate their graduate study with the Master's degree indicated that they would secure the degree at a more rapid pace than students in the remaining fields of study (21 per cent in both cases). By the end of 1964, only one in five students in



these two fields will still be working for the Master's degree. In contrast, from 32 to 37 per cent of the students in the Physical Sciences, Engineering and the Humanities said they would not have their terminal Master's by the end of 1964.

2. The pattern by composite field among students seeking the doctorate was quite different. Close to one-third of the students in every field except the Humanities expected to secure this degree by the end of 1964; but only one-fifth of the Humanities students aiming for the doctorate as their highest degree will finish so soon. The gap between the Humanities and the remaining fields of study in time taken to complete the doctoral program will persist through the calendar years of 1965 and 1966.

In sum, the great majority of graduate students in the five composite fields was enrolled for course work during the spring term but less than a majority was involved in course work on a full-time basis. A substantial minority of the Engineering students was enrolled in a night school program or some other program that eliminated the possibility of full-time study. About one-half of these graduate students in the five composite fields said that they were giving forty hours or more to academic affairs, but students in the Humanities and Engineering were less likely than others to devote that much time to study. Almost 40 per cent of the students expected to receive their terminal degree by the end of 1964. Furthermore, a great majority of all students expected to continue graduate studies up to the doctorate, although a significant minority of those in Engineering and in the Humanities anticipated their Master's degrees being terminal.

Given these variations in academic circumstances it is clear that a substantial number of graduate students were committing much of their time to non-academic pursuits and these centered primarily around employment. In the section that follows we will document some of the conditions of graduate student employment during the 1963-1964 academic year.

Employment Characteristics, Spring, 1963

Conditions of employment, like academic programs of study, differed significantly among students from one to another of the five composite fields. Minimal involvement in academic study within any given field probably implied major commitments to employment beyond the academic pale, i.e., non-stipend employment. By non-stipend employment we mean any form of employment other than that required by virtue of holding a duty stipend, be it a research assistantship or a teaching assistantship, or the occasional job of only a few days duration. Table 1.12 shows that over one-half of the sample (57 per cent) was involved in non-stipend employment during the 1962-1963 academic year. How much time was spent in this employment? In which field? For what kind of employer? Involving what kind of work?

TABLE 1.12

NON-STIPEND EMPLOYMENT AND COMPOSITE  
FIELD OF GRADUATE STUDY

Non-Stipend Employment	Engineering	Humanities	Behavioral Science	Physical Science	Life Science	Total All Fields
Yes . . . . .	71%	61%	58%	52%	42%	57%
No . . . . .	29	39	42	48	58	43
Total Percent	100	100	100	100	100	100
N . . . =	1,618	962	1,174	1,835	1,211	6,800
NA . . =	7	3	-	2	2	14
Total N =	1,625	965	1,174	1,837	1,213	6,814

As seen in Table 1.12, Engineering students reported the highest rate of non-stipend employment of any group in the sample--seven out of ten were so employed. Similarly, six out of ten students in the Humanities had such employment during the 1962-1963 academic year in contrast with only four out of ten Life Science students. In fact, rates of non-stipend employment in these five composite fields of study have almost

the same rank order as found in Table 1.7--the percentage of each field committing less than twenty hours weekly to academic study. Thus, the less time allocated to study, the higher the rate of non-stipend employment in each field.

Two factors should be considered in describing the employment pattern: the number of hours of employment per week and the number of months of employment during the period under study. These two aspects of employment were combined in Table 1.13 as follows: students employed thirty-five hours or more per week were classified as working full-time; and the duration of full-time employment was trichotomized:

- (1) regular full-time employment (10 to 12 months during the period of June, 1962 through July, 1963);
- (2) sporadic full-time employment (4 to 9 months); and
- (3) occasional full-time employment (3 months or less).

TABLE 1.13

EXTENT OF NON-STIPEND EMPLOYMENT AND COMPOSITE  
FIELD OF GRADUATE STUDY

Extent of Non-Stipend Employment	Engineering	Physical Science	Humanities	Life Science	Behavioral Science	Total All Fields
Regular full-time:						
10-12 months	54%	36%	36%	29%	29%	40%
Sporadic full-time:						
4-9 months	10	11	15	13	12	11
Occasional full-time:						
3 months or less	36	53	49	59	60	50
Total Per cent	100	100	100	101	101	101
N . . . =	1,134	943	577	503	676	3,833
Not employed any months for 35 hrs./week . . . =	475	879	379	706	489	2,928
NA on employment . . . =	16	15	9	4	9	53
Total N =	1,625	1,837	965	1,213	1,174	6,814

Among the students reporting non-stipend employment, about four in ten were in regular full-time employment during the twelve months under consideration. Thus, a substantial minority of the total sample of students enrolled for graduate study (23 per cent) undertook study programs after a full day's work was delivered to their employer. When employed, one student in ten worked from four to nine months on a full-time basis and one out of every two enrolled for graduate study in Spring, 1963, reporting some form on non-stipend employment, held a full-time job that was probably seasonal (i.e., requiring thirty-five hours or more weekly for three months or less during the twelve month period). In the main, graduate students with full-time employment held this kind of job either on a regular basis or seasonal basis; very few moved in and out of full-time employment sporadically.

The highest proportion of students with regular full-time employment among the employed was found among Engineering students: some 54 per cent were so employed as were over one-third (36 per cent) each in the Physical Sciences and the Humanities, in contrast with 29 per cent in both the Life and Behavioral Sciences. Since there were no field differences in the incidence of sporadic full-time employment, fields of study that were low on rates of regular full-time employment were high on occasional employment, with Behavioral Science and Life Science students most frequently reporting this form of non-stipend employment.

In which fields were these graduate students employed? Considering the jobs held longest during the period under study, the field with the highest rate of non-stipend employment was Engineering (33 per cent), followed by the Physical Sciences (18 per cent). (Table 1.14.) There were substantial differences in the extent of concentration of employment in one's field of study. Some 91 per cent of the Engineering students with non-stipend employment, followed by 65 per cent of the Life Science students, were working in their field of study. Two-thirds of the Physical Science students also held jobs in their own fields. The linkage between field of study and field of non-stipend employment was weaker in the Behavioral Sciences: only 57 per cent of these students were in Behavioral Science fields of employment. And the most extensive

movement beyond one's field of study occurred in the Humanities, with fully seven out of ten students holding non-stipend employment in fields other than the Humanities.<sup>4</sup>

TABLE 1.14

FIELD OF NON-STIPEND EMPLOYMENT AND  
COMPOSITE FIELD OF GRADUATE STUDY

Field of Non-Stipend Employment	Per cent Having Employment					
	Physical Science	Engineer- ing	Life Science	Behavioral Science	Humanities	Total All Fields
Physical Science	64	5	5	2	1	18
Engineering . .	14	91	2	2	2	33
Health Field . .	1	*	9	2	1	2
Life Science . .	4	*	65	4	3	10
Education . . .	8	*	12	4	34	9
Behavioral Science . . . .	2	1	3	57	8	11
Humanities . . .	2	1	1	6	30	6
Other . . . . .	5	2	4	24	22	10
Total Per cent	100	100	101	101	101	99
N . . =	848	1,094	440	574	470	3,426
No employment =	879	475	706	489	379	2,829
NA . =	110	56	67	111	116	460
Total N =	1,837	1,625	1,213	1,174	965	6,814

<sup>4</sup>Note that employment refers to the job held longest during the twelve month period under study. Two-thirds of the sample were working at this longest-held job at the time they returned their completed questionnaires last spring or summer. Among those not at this job when completing the questionnaire, 178 were working at different jobs. It is our impression that the remainder were not working because they were preparing for or in the midst of term examinations at the time they received the mail questionnaire.

The few Engineering students who held employment in a non-Engineering field had jobs in the Physical Science fields (5 per cent). Physical Science students reciprocated by taking jobs in Engineering (14 per cent) and another 8 per cent of them held positions that they classified as "Education." The greatest concentration of Life Science students with non-stipend employment outside of their field of study occurred in Education (12 per cent taught Natural Science subjects) and, not surprisingly, 9 per cent found employment in related Health fields. When Behavioral Science students found employment outside of Behavioral Science fields, their most frequent destination was Business or Commerce.<sup>5</sup>

The distribution of students in the Humanities by field of employment during 1962-1963 was completely at variance with the other composite fields. First, only a minority classified their jobs as in the Humanities (30 per cent) while 34 per cent gave Education as their field of employment. Because the composite field of Humanities in this survey is comprised of History and English, the bulk of these students secured teaching positions at the secondary level in these subjects. In sum, the five composite fields of study differed in the extent to which field of employment corresponded with field of study and in the pattern of employment by field when the job was secured in a different field.

Who were the employers of graduate students in these fields last year? Table 1.15 shows that the most frequently mentioned employer was a "private company": one in three (35 per cent) worked for this type of employer and another one in five secured non-stipend employment at the "college or university at which I am enrolled." Research organizations

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<sup>5</sup> Inspection of their allocation by detailed field (not shown) revealed that fully 13 per cent were in such business and industrial fields of employment as advertising, marketing, business administration, industrial relations and the like. If combined, fully 24 per cent of the employed were in "Business and Other" fields of employment. The remainder were distributed widely among various fields of employment.

and the Federal government each employed another one in ten graduate students and 8 per cent held jobs in elementary or secondary schools or school systems. Table 1.15 shows that Engineering students especially worked for private employers, the pattern among Physical Science students was close to the over-all distribution, Life Science students with non-stipend employment were frequently in academic settings, the Behavioral Science pattern was more closely allied to that in the Life Sciences than to that in Engineering or Physical Sciences, and Humanities students were in three cases out of ten in secondary level teaching. A more detailed inspection of this table shows that close connections are discernible between the field of study and the context for non-stipend employment, just as there were linkages between field of study and other academic and employment characteristics.

Because of their advanced level of educational attainment and life cycle position (the median age of the graduate students in this sample is 26.5 and a majority are married), it is clear that there are economic pressures that induce them to secure employment while in the midst of their formal program of study. In addition, many have long term career commitments that impel them to get practical experience in their anticipated career field while in graduate school. To learn something about the fit between their non-stipend employment and the expected career field, respondents were asked whether:

- This is . . . (circle one) the kind of job I wanted in my anticipated career field
- a job which is relevant to my anticipated career field but not the kind I want
  - a job that has nothing to do with my anticipated career field

As shown in Table 1.16, roughly four students in ten among those with non-stipend employment had secured a desirable job in their anticipated career field and an equal number had employment in their anticipated career field although it was not the kind they preferred. For one student in five, field of employment was entirely unrelated to their anticipated career field. The latter circumstance was faced by fully four in ten

TABLE 1.15

NON-STIPEND EMPLOYER AND COMPOSITE  
FIELD OF GRADUATE STUDY

Field of Employment	Physical Science	Engineering	Life Science	Behavioral Science	Humanities	Total All Fields
Self-employed . . . .	2%	1%	2%	4%	5%	3%
Private company . . .	39	59	13	19	17	35
Professional partnership . . . . .	1	1	*	1	2	1
Research organization/institute . .	14	12	11	8	3	10
College or university at which enrolled . . . . .	17	17	32	20	17	19
Another college or university	8	3	9	11	8	7
Jr. college or technical institute . .	1	1	1	1	2	1
Elementary or secondary school or school system . .	7	*	11	4	30	8
Hospital, clinic, church, welfare or other non-profit organization . . . . .	2	*	10	17	7	6
Federal government	11	9	11	10	6	10
State or local government . . . .	3	3	6	7	4	4
Other . . . . .	3	2	3	9	6	4
N . . . . =	942	1,134	499	675	574	3,824
NA . . . . =	895	491	714	499	391	2,990
Total N . =	1,837	1,625	1,213	1,174	965	6,814

Note: Totals to more than 100 per cent due to multiple responses.

students in the Humanities but only 6 per cent of those in Engineering. Not only did nine out of ten Engineering students hold career-relevant employment last year, but over one-half also found "the kind of job I want."

TABLE 1.16

## TYPE OF JOB AND COMPOSITE FIELD OF GRADUATE STUDY

Type of Job	Engineering	Physical Science	Life Science	Humanities	Behavioral Science	Total All Fields
"The kind I want in my anticipated career field" . . . .	52%	44%	37%	31%	27%	41%
"Relevant to my anticipated career, but not the kind I want" . . . .	42	36	41	29	45	39
"Has nothing to do with my anticipated career" . . . .	6	20	21	40	28	20
Total Per cent	100	100	99	100	100	100
N . =	1,120	923	485	560	669	3,757
No employment, NA . =	505	914	728	405	505	3,057
Total N =	1,625	1,837	1,213	965	1,174	6,814

The experience in the Physical and Life Sciences conformed to the over-all pattern, but the Behavioral Science students were least likely (27 per cent) to have had employment of the kind they wanted in their long term career field. However, they were far more likely than students in the Humanities to have held employment relevant for their career field even if it was not exactly the job they wanted. Earlier we showed that Engineering students were most likely to hold full-time regular employment. Now it is evident that the Engineering graduate field of

study harbored students last spring who were most likely to be integrated vis-a-vis work and careers. We will see that this employment pattern has implications for policy formation concerning stipend support for graduate education.

We are unable at this time to report the amount of income graduate students derived from their employment last year, but information is on hand concerning their monthly earnings before taxes from the highest paid regular job ever held of at least six months duration. Whether or not they were employed at this highest paid regular full-time job last spring, composite field differences in the peak earnings of these graduate students are probably an important indicator of the field's capacity to induce students to commit their time to full-time study. The man who earned more than \$10,000 annually is not too likely to enter full-time study with a fellowship providing \$2,000 and tuition.

Table 1.17 shows that the bottom quarter of the sample reporting this type of employment had peak earnings of less than \$400 monthly before taxes. Another one in three had peak monthly earnings of \$400 to \$599. The remainder were earning at least \$600 monthly before taxes resulting in a salary rate from their major employment of no less than \$7,200 annually. Among the roughly four in ten students in the sample who were at this level of earnings in their highest paid regular full-time employment, one quarter were earning anywhere from \$600 to \$799 monthly and some 16 per cent were paid from \$800 to over \$1,000 monthly. In fine, the salary profile of graduate students in the sciences, engineering and two of the humanities who ever had full-time employment of more than six months duration hardly promotes the image of struggling, impoverished scholars living from hand to hand.

Field differences in peak earnings were varied: one-third of the Engineering students attained peak earnings of \$800 per month or more as did 17 per cent of the Physical Science students as compared with 9 per cent in the Behavioral Sciences, 5 per cent in the Humanities and 4 per cent in the Life Sciences. The opposite was true in the rank ordering

of the fields in the percentage earning under \$400 monthly. Thus Engineering stood head and shoulders above the other fields in the peak earnings of students who ever had stable, full-time employment.

TABLE 1.17

MONTHLY INCOME FROM HIGHEST PAID REGULAR JOB  
AND COMPOSITE FIELD OF GRADUATE STUDY

Monthly Income	Engineering	Physical Science	Behavioral Science	Humanities	Life Science	Total All Fields
\$800 or more .	34%	17%	9%	5%	4%	16%
\$600 - \$799 .	39	30	20	13	15	26
\$400 - \$599 .	17	33	38	46	47	34
Less than \$400	10	21	34	36	34	25
Total Per cent	100	101	101	100	100	101
N . . . =	1,073	881	674	607	644	3,879
NA, including never held a job . . . . =	552	956	500	358	569	2,935
Total N =	1,625	1,837	1,174	965	1,213	6,814

In addition, there were indications that the Engineering students were holding the job yielding peak earnings more frequently than were students in other fields. Table 1.18 shows that some 71 per cent of the Engineering students ever having regular full-time jobs of more than six months duration were at the job while enrolled for graduate study last spring and at their peak earnings. About one-half (51 per cent) of the Physical Science students were similarly situated as were 45 per cent of those in the Humanities but only one-third of those in the Life and Behavioral Sciences. In total, one-half of those graduate students reporting full-time regular employment in a job of more than six months duration, were enjoying their best job last spring.

TABLE 1.18

FIELD OF HIGHEST PAID REGULAR FULL-TIME JOB  
AND COMPOSITE FIELD OF GRADUATE STUDY

Highest Paid Regular Full-Time Job	Engineering	Physical Science	Humanities	Life Science	Behavioral Science	Total All Fields
Job now holding	71%	51%	45%	35%	35%	50%
Current field, but different job . . . . .	12	14	10	16	12	13
Not in current field . . . . .	6	18	21	25	32	19
None of the above . . . . .	11	17	25	24	21	19
Total Per cent	100	100	101	100	100	101
N . . . =	1,089	883	620	656	686	3,934
No job and NA =	536	954	345	557	488	2,880
Total N =	1,625	1,837	965	1,213	1,174	6,814

A majority of American graduate students enrolled for study in the sciences, engineering and the humanities reported some form of non-stipend employment during the 1962-1963 academic year, but the chances of doing so varied extensively by field of study. Among the Engineering students so employed more than one-half worked at their jobs on a full-time regular basis, but this was least likely to occur among Life and Behavioral Science students. Field of employment typically coincided with field of study last spring. Employed Engineering students were more likely to be at career relevant work in jobs yielding peak earnings than were students in other fields.

In this chapter were presented some of the academic and employment characteristics of graduate students enrolled in graduate programs in five composite fields of study last spring. Whether students received stipends in the form of scholarships, fellowships, teaching assistantships or research assistantships last year, whether field of study affected a student's chances of securing stipend support, and how stipend holding related to some of employment and academic characteristics described above are topics to be considered in the chapter that follows.

CHAPTER II

STIPEND HOLDING IN AMERICAN GRADUATE SCHOOLS

Because of growing enrollment in higher education and expanding manpower needs in educational institutions and industrial enterprises, a number of questions have been raised about the character of financial support for graduate education, particularly in the sciences and engineering. The first question concerns the extent, types and sources of stipend support currently available for graduate study. In his 1958 survey of traditional arts and science graduate fields, Davis found that two-thirds of the students received some sort of a stipend, that stipends were the most important source of income available to graduate students when measured in terms of total dollars, and, furthermore, that the distribution of stipends was primarily determined by stage of training, type of school and division of study.<sup>1</sup> Have any changes occurred in the intervening five years in the pattern of stipend support? Were talented students in the Behavioral Sciences and the Humanities, for example, still far less likely to receive support than their counterparts in the Natural Sciences? Another question concerns the students enrolled in the Engineering fields of study last spring. How did they fare in comparison with students in other fields? A detailed financial picture was provided in Davis' 1958 survey for the arts and science fields, but Engineering has not had similar coverage to date. Furthermore, it is not certain whether the pattern of support would be different if foreign nationals were excluded from analysis of the data because they comprise a substantial minority of students enrolled for graduate study in American schools. Our data show that some 18 per cent of the students in the composite field of Engineering last spring were foreign nationals, as were 17 per cent of those in the Life Sciences, 12 per cent in the Physical Sciences and 10 per cent in the Behavioral Sciences. In contrast, foreign nationals comprised only 3 per cent of students in the two Humanities fields of History and English. The tabular materials to be presented in this chapter and the one that follows will be limited to American citizens attending graduate school in the spring term of 1963. Support for foreign students undertaking advanced academic study in American universities may be a topic deserving additional study, but the

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<sup>1</sup> Davis, Stipends and Spouses, Chapter 6.

population in focus consists of the seventeen students in every twenty in these five composite fields of study who are American citizens.

### Extent of Stipend Holding

A majority of the American graduate students enrolled for advanced study in the five composite fields were recipients of some form of stipend support during the 1962-1963 academic year.<sup>2</sup> Sixty-six per cent held at least one stipend last year but there were substantial differences in the extent of stipend holding depending on the composite field of study (Table 2.1). The Life Science field, with four out of five students receiving this form of support, ranked highest, followed by Physical Sciences (three out of four), Behavioral Sciences (two out of three), Engineering (six out of ten) and the Humanities (less than one out of two). Clearly, composite field of study was a critical determinant of stipend support. The mere fact that a student had elected to take graduate work in the Life Sciences and enrolled for study in this field almost guaranteed him some form of support, while the student in History or English, by the same token, cut his chances in half by committing himself to either of these fields.

TABLE 2.1

#### STIPEND HOLDING BY COMPOSITE FIELD OF GRADUATE STUDY

Field of Graduate Study	First Stipend	Second Stipend	Third Stipend	N
Life Science . . . . .	80%	20%	4%	1,004
Physical Science . . . . .	74	24	5	1,614
Behavioral Science . . . . .	63	20	4	1,055
Engineering . . . . .	61	16	3	1,325
Humanities . . . . .	46	11	2	931
Total Per cent All Fields . . . . .	66	19	3	5,929
N . . . . .				= 5,929
NA Stipend . . . . .				= 7
Aliens . . . . .				= 878
Total N . . . . .				= 6,814

<sup>2</sup> See Question #29, page 7 of the questionnaire in the Appendix for definitions and instructions to the respondent.

Stipend holding was not necessarily a one-shot event during the academic year: some 19 per cent of the sample held a second stipend during the twelve-month period and another 3 per cent were holding a third. Thus, one in four students in the Physical Science fields held a second stipend, as did one in five in the Life and Behavioral Science fields and only one in eight in Engineering and one in nine in the Humanities.

#### Types of Stipends

The types of stipends available to students in higher education can be roughly classified as follows: Non-duty stipends are those requiring no services from the recipient. A non-duty stipend with a value equal to or less than the amount of a student's tuition and fees is a scholarship, while a non-duty stipend of an amount covering tuition plus a cash grant is a fellowship. Duty stipends are mainly teaching assistantships (TA) and research assistantships (RA). What types of stipends did the students in the five composite fields of study hold last year? When more than one stipend was obtained, what was the pattern of stipend holding?

Table 2.2 presents a number of findings in condensed form for the entire sample of students, i.e., all fields combined:

1. Some 15 per cent of the sample received a non-duty stipend in the form of a scholarship equal to or less than tuition. One in five students (21 per cent) had a non-duty stipend that was a fellowship covering tuition plus a cash grant. Another one in five (20 per cent) of the students received a duty stipend in the form of a research assistantship, and about the same proportion (22 per cent) held teaching assistantships.
2. Slightly under one-half (48 per cent) held single stipends of the following types: scholarships (9 per cent); fellowships (13 per cent); research assistantships (13 per cent); and teaching assistantships (13 per cent).

3. About 19 per cent of the sample were recipients of two or more stipends. The scholarship, the RA and the TA were the most frequently held second stipends (each type was held by 5 per cent of the sample), while another 4 per cent had fellowships.
4. If the student held a second stipend, the chances were less than half that the second stipend would be of the same type as the first one: 19 per cent held a second one, but only 7 per cent had seconds that were of exactly the same type as the first. If, however, we contrast duty with non-duty stipends, then 11 per cent held second stipends that were of the same type as the first, i.e., nearly two out of three second stipends were similar in type to the first one.

Specifically:

- a) If the first (and, by definition, highest value) stipend was a scholarship, then the second also consisted of a scholarship and the remaining types of stipends were virtually absent;
- b) When the first stipend was a fellowship, however, the second stipend was fairly evenly distributed among the four types;
- c) If the RA was the first stipend, then the student was not at all likely to hold a fellowship but, as likely as not, held another RA or a TA or a scholarship; and
- d) If the TA was the stipend with the highest value, then again the second stipend was almost uniformly distributed among all four types.

Field Differences in Types of Stipends Held

Table 2.3 shows that there are substantial differences in the types of stipends students were likely to hold, depending on their composite field of study:

TABLE 2.2

TYPE OF FIRST STIPEND BY TYPE OF SECOND STIPEND  
HELD BY AMERICAN GRADUATE STUDENTS

Type of First Stipend	Type of Second Stipend					Total		
	None	Scholarship	Fellowship	RA	TA	First	First & Second	
Scholarship . . . . .	9%	2%	*%	*%	*%	11%	15%	
Fellowship . . . . .	13	1	2	1	2	19	21	
RA . . . . .	13	1	*	2	1	17	20	
TA . . . . .	13	1	1	2	1	18	22	
Total Per cent Second Stipend	48	5	4	5	5	66		
No Stipend . . . . .							=	34%
N . . . . .							=	5,929
NA Stipend Holding . . . . .							=	7
Aliens . . . . .							=	878
Total N . . . . .							=	6,814

\* Less than one-half of one per cent.

NOTE: Because of rounding errors, percentages do not always add to the figure shown in total. Totals are recalculated on basis of N's. This applies hereafter.

TABLE 2.3

COMPOSITE FIELD OF GRADUATE STUDY AND TYPE OF STIPEND HELD  
(Per cent holding as either first or second stipend)

Field	Type of Stipend				N	NA on First and/or Second	Total	
	Scholarship	Fellowship	RA	TA				
Life Science . . . . .	9	29	31	23	975	29	1,004	
Physical Science . . . . .	14	21	24	32	1,590	24	1,614	
Behavioral Science . . . . .	11	24	24	17	1,033	22	1,055	
Engineering . . . . .	24	17	17	13	1,299	26	1,325	
Humanities . . . . .	13	13	4	21	909	22	931	
Total . . . . .					5,806	123	5,929	
NA Stipend Holding . . . . .							=	7
Aliens . . . . .							=	878
Total N . . . . .							=	6,814

Scholarships: Close to one in four students in Engineering held stipends covering all or part of their tuition bills. This form of support was less frequently available in the remaining fields of study: in each of them roughly one in ten held scholarships.

Fellowships: The Life Sciences outstripped the other fields in gaining this form of stipend support: about three out of ten students in this field received a cash grant exceeding the entire tuition bill. Next in line were the Behavioral Sciences, where one in four (24 per cent) held a fellowship during the year under study. Humanities ranked at the bottom in this form of stipend support, 13 per cent of the sample in this field receiving a fellowship.

Research Assistantships: As shown above, the Life Sciences ranked at the top in terms of the proportion holding fellowships. This field also overshadowed the others in securing duty stipends entailing research duties. About one-fourth of the students in both the Physical and Behavioral Sciences held RA's as did 17 per cent of the Engineering students. This form of support rarely flowed into the Humanities: only 4 per cent held an RA.

Teaching Assistantships: The most heavily endowed field securing stipends that required teaching duties was Physical Science: close to one in three (32 per cent) held a TA. Humanities, for a change, received its "expected" share of these stipends on the basis of the total sample distribution (21 per cent), while only 17 per cent of the students in the Behavioral Sciences and 13 per cent in Engineering held TA's in the academic year of 1962-1963.

The dominant form of support thus varied by field, ranging from scholarships in Engineering to TA's in the Physical Sciences and the Humanities.<sup>3</sup> In sum, the Life Science pattern of stipend support leaned toward fellowships and RA's. Engineers were underrepresented in holding every type of stipend save the scholarships as noted above. Behavioral Science was low on scholarships and TA's but made up for it in securing fellowships and RA's. Humanities ranked low on all forms of support except for TA's.

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<sup>3</sup> Tables 2.4a-2.4e contain the more detailed information on types of first and second stipends held in each of the five fields.

TABLE 2.4

TYPE OF FIRST STIPEND BY TYPE OF SECOND STIPEND, AMERICAN  
GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS OF STUDY

## a) Per cent in Physical Science

Type of First Stipend	Type of Second Stipend					Total	
	No 2nd Stipend	Scholarship	Fellowship	RA	TA	First	First & Second
Scholarship . . .	7	1	-	*	*	9	14
Fellowship . . .	11	1	2	1	3	19	21
RA . . . . .	14	1	1	2	2	19	24
TA . . . . .	18	2	2	3	2	27	32
Total Per cent Second	50	6	5	6	7	74	

No Stipend . . . . . = 26%

NA on First and/or Second . . . = 24

N . . . . . = 1,590

Total N . . . . . = 1,614

## b) Per cent in Engineering

Scholarship . . .	17	3	-	*	*	21	24
Fellowship . . .	11	1	1	2	2	16	17
RA . . . . .	10	2	1	1	1	14	17
TA . . . . .	8	1	*	1	1	10	13
Total Per cent Second	46	7	2	4	3	61	

No Stipend . . . . . = 39%

NA on First and/or Second . . . = 26

N . . . . . = 1,299

Total N . . . . . = 1,325

## c) Per cent in Life Science

Scholarship . . .	5	1	*	*	-	7	9
Fellowship . . .	20	1	2	1	2	27	29
RA . . . . .	22	1	1	2	2	28	31
TA . . . . .	14	1	1	2	1	19	23
Total Per cent Second	61	4	5	5	5	80	

No Stipend . . . . . = 80%

NA on First and/or Second . . . = 29

N . . . . . = 975

Total N . . . . . = 1,004

TABLE 2.4--Continued

## d) Per cent in Behavioral Science

Type of First Stipend	Type of Second Stipend					Total	
	No 2nd Stipend	Scholarship	Fellowship	RA	TA	First	First & Second
Scholarship . . .	5	1	-	*	*	6	11
Fellowship . . .	16	1	2	2	1	22	24
RA . . . . .	14	2	1	3	1	21	24
TA . . . . .	9	1	1	2	1	15	17
Total Per cent Second	44	5	3	7	4	63	

No Stipend . . . . . = 37%  
 NA on First and/or Second . . . = 22  
 N . . . . . = 1,033  
 Total N . . . . . = 1,055

## e) Per cent in Humanities

Scholarship . . .	9	1	*	-	*	11	13
Fellowship . . .	8	1	1	-	2	12	13
RA . . . . .	3	*	*	*	-	4	4
TA . . . . .	15	1	1	*	2	20	21
Total Per cent Second	36	4	2	1	3	46	

No Stipend . . . . . = 54%  
 NA on First and/or Second . . . = 22  
 N . . . . . = 909  
 Total N . . . . . = 931

NOTE: Excluded from the above are the third stipends of triple stipend holders. These are distributed as follows: (N's are reported.)

Composite Field of Graduate Study	Type of Third Stipend (Per cent)				
	Scholarship	Fellowship	RA	TA	NA
Physical Science . . .	16	11	24	15	9
Engineering . . . . .	22	5	2	6	5
Life Science . . . . .	9	7	13	4	2
Behavioral Science . .	8	7	11	10	5
Humanities . . . . .	5	5	5	2	4

Totals: N in five composite fields = 5,929  
 NA Stipend Holding . . . . . = 7  
 Aliens . . . . . = 878  
 Grand Total N . . . . . = 6,814

### Sources of Stipend Support

Students were asked to identify not only the type of stipend secured, but also the granting agency providing their stipend. The precoded format included nine agencies or special agency programs within the U.S. Federal Government, and seven other non-federal donors such as private foundations, industrial or business firms, state or local governments, the graduate school the student was attending and the like. A category--"the school I am attending but I do not know the primary source"--was included because it is sometimes the case that the university is administering funds coming from another source that the recipient of the stipend is unable to identify.

### Source of First Stipend

A detailed breakdown of sources for the first stipend (i.e., the one with the highest value) by field and donor is presented in Table 2.5. Two-thirds of the stipend holders secured their support from a source other than the federal government and the remainder held stipends that they knew to come from a federal agency. While the current public debate on the role of the federal government in higher education fosters the impression that stipends flow largely from federal coffers, support for graduate level training in these five composite fields apparently comes also from a variety of sources that are non-federal in character.

The federal government sector was prominently identified with providing graduate student support in some fields, but not in others. Close to one-half of the students in the Life Sciences (46 per cent) held a first stipend that came from federal agencies, as did about four in ten (39 per cent) of the stipend holders in the Behavioral Sciences, one-third (37 per cent) in the Physical Sciences, three in ten (29 per cent) in Engineering, and only one in ten in the Humanities.

The most prominent source appears to be "the school I am attending"--more than one out of three (38 per cent) recipients in the sample gave this as their donor, and another 7 per cent received a stipend through their schools from an unknown source. Putting the two



together, we see that close to seven in ten (68 per cent) of the Humanities recipients were supported through their schools, as were close to one-half (47 per cent) of the stipend holders in the Physical Sciences; this was also the case for over four in ten in each of the Life and Behavioral Science fields, and about one in three in Engineering.

Another striking finding consists of the following: one in ten students secured stipends through "an industrial or business firm or corporation," and these stipends mostly flowed into Engineering. About one-third of the recipients in this field held stipends from this source (probably their employers), as did one-tenth of those in the Physical Sciences. Support from this source was rare in other fields. Another 4 per cent of the first stipend holders in the sample secured their support from private foundations or philanthropic organizations, and 5 per cent reported that state or local government agencies provided some form of support.

Among the federal agencies, one of the two most frequently mentioned as the stipend source was the National Science Foundation: one in ten stipend holders got support from NSF last year. Fields varied considerably in their reliance on this agency for support: three in twenty in each of the Physical and Life Science fields held stipends from NSF in contrast with 7 per cent of the recipients in Engineering and 5 per cent of those in Behavioral Sciences.

The second major donor of stipends among the federal agencies is the Public Health Service (PHS): 9 per cent of the holders of at least one stipend in the sample secured their stipends through one of the PHS programs. Specifically, 4 per cent mentioned a National Institutes of Health Training Grant and Traineeship Program, while another 3 per cent mention the NIH Fellowship Program. The Life Sciences, especially, relied on this source. Some 14 per cent in the Life Sciences mentioned the NIH Training Grant and Traineeship Program and a total of 23 per cent mentioned its parent organization, the Public Health service. Twenty per cent of the recipients enrolled for study in the Behavioral Sciences last spring indicated the Public Health Service as the donor of a stipend,

with 9 per cent specifically mentioning a Fellowship from NIH. A far smaller proportion of those in the Physical Sciences (3 per cent) secured support from PHS, as did 2 per cent of the stipend holders in Engineering.

The Office of Education was mentioned by 4 per cent of the sample and it was mainly with reference to the National Defense Education Act. About 8 per cent in the Humanities mentioned the NDEA. Indeed, the Humanities' major patron in the federal government consisted of this program administered by the Office of Education. An OE stipend was also mentioned by 7 per cent of the Behavioral Sciences sample, 3 per cent in each of the Physical and Life Sciences, and 2 per cent of the recipients in engineering.

Some 3 per cent of the sample identified the Department of Defense as their benefactor. Support from this source evidently was directed at the Physical Science field and Engineering: some 4 per cent in the former and 6 per cent in the latter field mentioned this source, and most are probably full-time career military officers or RA's on contracts secured from this agency. The Atomic Energy Commission also provided stipend support for graduate study in the Physical Sciences and Engineering: 7 per cent of the students in the Physical Sciences and 3 per cent of those in Engineering were enrolled for graduate study in these fields with stipend support from the AEC.

The nation has been promised a number of benefits from the race to the moon that is being conducted under the auspices of the National Aeronautics and Space Administration, but it was too early for stipend support for graduate education in the sciences and engineering in 1963 to be one of them. One recipient in one-hundred secured a stipend for study last year from NASA. Among the Engineering students, about 3 per cent held NASA stipends, as did 1 per cent of the Physical Science students.

While the Veterans Administration has been prominently identified with support for education since World War II, there is virtually no stipend holding in these five composite fields that is currently coming from this agency. Since respondents were instructed to exclude the GI Bill from VA stipend giving, a number of the graduate students

currently studying under the GI Bill may have circled "other Federal Government." Nevertheless, only 3 per cent of the stipend holders mentioned this non-specific federal source. Support for graduate education in the five fields of study from the VA, with or without the GI Bill, has faded away.

First Stipend: Field, Source and Type

Having sketched the pattern of stipend holding in the composite fields of study first according to the distribution of two types of stipends among the sample, and then by source of the first stipend held by recipients, we can ask the following kinds of questions: were the stipends held in the Physical Sciences primarily fellowships from government agencies and TA's from universities, or were different stipend arrangements prevalent in this and other fields of graduate study?

Inspection of the five panels in Table 2.6 reveals that the fields differed in the extent to which concentration of kinds--i.e., source-types--of stipends prevailed. Both the Humanities and the Physical Science fields, for example, showed a specific form of concentration among the stipend holders: in each of these fields, over one-third of the recipients held TA's from the university in which they were enrolled. In the Behavioral Sciences, the same kind of stipend arrangement was reported by one-fifth of the recipients.

TABLE 2.6

SOURCE AND TYPE OF FIRST STIPEND, AMERICAN GRADUATE STUDENTS,  
IN COMPOSITE FIELD OF GRADUATE STUDY

a) Per cent of Physical Science stipend holders

Source of Stipend	Type of Stipend				TA
	Scholarship	Fellowship	RA	TA	
Atomic Energy Commission . . . . .	*	*	6	*	
Department of Defense . . . . .	*	*	3	-	
National Science Foundation . . . . .	1	11	3	-	
Veterans Administration (excluding GI Bill) . . . . .	-	*	-	-	
National Aeronautics and Space Administration . . . . .	*	*	*	*	
Office of } National Defense Education Act . . . . .	*	3	-	*	
Education } Other Office of Education . . . . .	-	-	-	-	
National Institutes of Health . . . . .	*	*	*	-	
Public Health } Fellowship Program . . . . .	*	*	*	-	
Service } NIH Training Grant and . . . . .	-	*	*	-	
Traineeship Program . . . . .	-	*	*	*	
Other Public Health Service . . . . .	*	*	*	*	
Other Federal Government . . . . .	1	*	1	*	
Private Foundation, Philanthropic Organizations, . . . . .	*	2	1	*	
etc. . . . .	6	2	1	*	
Industrial or Business Corporation or Firm . . . . .	1	2	7	29	
Directly from the school I am now attending . . . . .	*	*	2	4	
The school I am attending, but I do not know . . . . .	*	*	*	1	
the primary source . . . . .	*	*	*	-	
State or Local Government (U.S.) . . . . .	-	*	*	*	
Foreign Government or other foreign source . . . . .	*	*	*	*	
Other . . . . .	*	*	*	*	
N . . . . .				= 1,184	
NA . . . . .				= 15	
No Stipends . . . . .				= 415	
Total N . . . . .				= 1,614	

NOTE: In this table per cents do not total 100 due to large number of cells in which there is less than 1%. These are shown by \*. A dash (-) indicates no cases in the cell.

TABLE 2.6--Continued  
b) Per cent of Engineering Stipend Holders

Source of Stipend	Type of Stipend			TA
	Scholarship	Fellowship	RA	
Atomic Energy Commission . . . . .	*	*	*	-
Department of Defense . . . . .	2	*	3	-
National Science Foundation . . . . .	*	5	2	-
Veterans Administration (excluding GI Bill) . . . . .	*	-	-	-
National Aeronautics and Space Administration . . . . .	2	*	*	-
Office of National Defense Education Act . . . . .	-	2	*	-
Education } Other Office of Education . . . . .	-	*	-	-
Public Health } National Institutes of Health	-	*	-	*
Service } Fellowship Program . . . . .	-	*	-	-
NIH Training Grant and } Traineeship Program . . . . .	-	*	*	-
Other Public Health Service . . . . .	-	*	*	-
Other Federal Government . . . . .	1	*	2	-
Private Foundation, Philanthropic Organization, etc. . . . .	*	3	*	-
Industrial or Business Corporation or Firm . . . . .	22	8	2	*
Directly from the school I am now attending . . . . .	3	2	8	14
The school I am attending, but I do not know the primary source . . . . .	*	*	2	2
State or Local Government (U.S.) . . . . .	1	*	*	*
Foreign Government or other foreign source . . . . .	-	-	-	-
Other . . . . .	*	*	*	*
N . . . . .	=	=	=	801
NA . . . . .	=	=	=	18
No Stipend . . . . .	=	=	=	506
Total N . . . . .	=	=	=	1,325

TABLE 2.6--Continued

c) Per cent of Life Science stipend holders

Source of Stipend	Type of Stipend			
	Scholarship	Fellowship	RA	TA
Atomic Energy Commission . . . . .	-	*	*	-
Department of Defense . . . . .	*	*	-	-
National Science Foundation . . . . .	*	10	4	*
Veterans Administration (excluding GI Bill) . . . . .	-	-	-	-
National Aeronautics and Space Administration . . . . .	-	-	*	-
Office of National Defense Education Act . . . . .	-	2	*	-
Education { Other Office of Education . . . . .	-	-	-	-
{ National Institutes of Health				
Public Health { Fellowship Program . . . . .	*	4	1	-
Service { NIH Training Grant and				
{ Traineeship Program . . . . .	-	9	3	2
Other Public Health Service . . . . .	-	*	2	*
Other Federal Government . . . . .	*	*	2	-
Private Foundation, Philanthropic Organization,				
etc. . . . .	-	*	*	*
Industrial or Business Corporation or Firm . . . . .	*	*	2	*
Directly from the school I am now attending . . . . .	2	2	10	18
The school I am attending, but I do not know				
the primary source . . . . .	*	1	6	3
State or Local Government (U.S.) . . . . .	3	*	2	*
Foreign Government or other foreign source . . . . .	-	-	-	-
Other . . . . .	-	-	*	*
N . . . . .		= 790		
NA . . . . .		= 19		
No Stipend . . . . .		= 195		
Total N . . . . .		= 1,004		

TABLE 2.6--Continued  
 d) Per cent of Behavioral Science stipend holders

Source of Stipend	Type of Stipend			
	Scholarship	Fellowship	RA	TA
Atomic Energy Commission . . . . .	-	-	-	-
Department of Defense . . . . .	*	*	1	-
National Science Foundation . . . . .	-	3	2	-
Veterans Administration (excluding GI Bill) . . . . .	*	*	1	*
National Aeronautics and Space Administration . . . . .	-	-	*	-
Office of National Defense Education Act . . . . .	*	5	-	-
Education } Other Office of Education . . . . .	-	*	*	-
Public Health } National Institutes of Health	*	7	1	*
Service } Fellowship Program . . . . .	*	5	1	*
NIH Training Grant and	-	1	2	-
Traineeship Program . . . . .	*	*	3	-
Other Public Health Service . . . . .	*	4	1	-
Other Federal Government . . . . .	1	1	*	-
Private Foundation, Philanthropic Organization,	4	4	12	19
etc. . . . .	*	*	4	-
Industrial or Business Corporation or Firm . . . . .	1	1	*	-
Directly from the school I am now attending . . . . .	4	4	12	19
The school I am attending, but I do not know	*	*	4	2
the primary source . . . . .	1	1	2	1
State or Local Government (U.S.) . . . . .	1	1	2	1
Foreign Government or other foreign source . . . . .	-	-	-	-
Other . . . . .	1	*	1	*
N . . . . .		= 661		
NA . . . . .		= 13		
No Stipend . . . . .		= 381		
Total N . . . . .		= 1,055		

TABLE 2.6--Continued  
e) Per cent of Humanities stipend holders

Source of Stipend	Type of Stipend			
	Scholarship	Fellowship	RA	TA
Atomic Energy Commission . . . . .	-	-	-	-
Department of Defense . . . . .	*	*	-	-
National Science Foundation . . . . .	-	-	-	-
Veterans Administration (excluding GI Bill) . . . . .	-	-	-	-
National Aeronautics and Space Administration . . . . .	*	7	*	*
Office of National Defense Education Act . . . . .	-	-	-	-
Education				
Other Office of Education . . . . .	-	-	-	-
National Institutes of Health				
Fellowship Program . . . . .	-	-	*	-
NIH Training Grant and				
Traineeship Program . . . . .	-	-	-	-
Other Public Health Service . . . . .	-	-	-	-
Other Federal Government . . . . .	*	*	*	-
Private Foundation, Philanthropic Organization,				
etc. . . . .	1	7	*	*
Industrial or Business Corporation or Firm . . . . .	*	*	-	-
Directly from the school I am now attending . . . . .	11	7	6	37
The school I am attending, but I do not know				
the primary source . . . . .	1	2	*	2
State or Local Government (U.S.) . . . . .	7	2	-	*
Foreign Government or other foreign source . . . . .	-	-	-	-
Other . . . . .	*	*	*	*
N . . . . .		= 424		
NA . . . . .		= 16		
No Stipend . . . . .		= 491		
Total N . . . . .		= 931		
Totals: Total, All Fields . . . . .		= 5,929		
NA Stipend Holding . . . . .		= 7		
Aliens . . . . .		= 878		
Total N . . . . .		= 6,814		

Specifically, kinds of stipend by field:Life Sciences:

- 21 per cent - a university TA
- 16 per cent - a university RA
- 13 per cent - NIH fellowship
- 10 per cent - NSF fellowship
- 4 per cent - NSF research assistantship
- 4 per cent - NIH research assistantship
- The remainder are scattered by source-type.

Physical Sciences:

- 33 per cent - a university TA
- 9 per cent - a university RA
- 11 per cent - NSF fellowship
- 6 per cent - AEC research assistantship
- 6 per cent - a scholarship from business/industry
- Each of the remainder is less than 5 per cent by source-type.

Behavioral Sciences:

- 16 per cent - a university RA
- 21 per cent - a university TA
- 12 per cent - NIH fellowship
- 4 per cent - university fellowship
- 4 per cent - university scholarship
- 4 per cent - fellowship from a private foundation, etc.
- 5 per cent - NDEA fellowship
- The remainder are scattered.

Engineering:

- 22 per cent - scholarship from private business/industry
- 16 per cent - a university TA
- 10 per cent - a university RA
- 5 per cent - NSF fellowship
- 8 per cent - fellowship from business/industry
- 3 per cent - university scholarship
- The remainder are below 5 per cent by source-type.

Humanities:

- 39 per cent - university TA
- 12 per cent - university scholarship
- 9 per cent - university fellowship
- 6 per cent - university RA
- 7 per cent - scholarship from state or local government
- 7 per cent - NDEA fellowship
- 7 per cent - fellowship from a private foundation, etc.
- The remainder are dispersed; none comprises 5 per cent or more of this composite field.

First and Second Stipends: Field, Source and Type

Table 2.7 shows the kinds of stipends held by the sample of students in each of the five composite fields. In each panel of the table, the four top ranking source-types found in that field for the first stipend were cross-tabulated by the same four source-types for the second stipend of all multiple stipend holders. The data were percentaged across the entire sample while the previous table summarized the information for stipend holders only.

Life Sciences: Table 2.7c shows that one in five (20 per cent) of the students in the Life Sciences held a university TA as their first and/or second stipend. It shows, furthermore, that 17 per cent held this kind of stipend as their first (and most valuable) stipend, 12 per cent were single stipend holders, and 4 per cent of the sample held the university TA as their second stipend.

Another 15 per cent received a university research assistantship as their first or second stipend, one in ten (9 per cent) held a fellowship from NSF, and another one in ten (12 per cent) had secured fellowships from NIH. Over one-third (37 per cent) of the sample held stipends of various kinds that ranked in frequency below these top four stipends classified jointly by source and type.

Physical Sciences: Three in ten students in the Physical Sciences composite field held university TA's. One-fourth (25 per cent) held this kind of stipend as their first and 6 per cent reported the university TA as their second stipend. Some 17 per cent of the sample were single stipend holders who held TA's at the school they were attending during the twelve month period under study in this survey. Another one in ten secured fellowship support from NSF to pursue advanced studies in the Physical Sciences; 8 per cent held university RA's as their first or second stipends, and 4 per cent received scholarships from an industrial or business corporation or firm. Another one in three students (37 per cent) in the sample of the Physical Science fields of study held a wide variety of stipends that provided support less frequently than these four when classified by source and type together.

TABLE 2.7

STIPENDS (SOURCE TYPE) HELD MOST FREQUENTLY BY AMERICAN GRADUATE  
STUDENTS IN FIVE COMPOSITE FIELDS OF STUDY

(Per cent holding stipend)

## a) Physical Sciences

First Stipend	Second Stipend						Total	
	None	TA from school	Fellowship from NSF	RA from school	Scholarship from industry	All other	First	First and second
TA from school . . . . .	17	1	1	1	*	5	25	30
Fellowship from NSF . . . . .	5	1	1	*	-	1	9	10
RA from school . . . . .	4	1	*	*	-	1	6	8
Scholarship from industry . . . . .	4	-	-	-	*	*	4	4
All other . . . . .	20	3	*	1	-	5	30	37
Total per cent second . . . . .	50	6	2	2	*	12	74	

No Stipend . . . . . = 26%

N . . . . . = 1,590

NA . . . . . = 24

Total N . . . . . = 1,614

## b) Engineering

First Stipend	None	Scholarship from industry	TA from school	RA from school	Fellowship from industry	All other	First	First and second
Scholarship from industry . . . . .	11	2	-	*	-	-	13	14
TA from school . . . . .	7	-	*	*	-	1	10	12
RA from school . . . . .	5	*	*	*	*	*	6	8
Fellowship from industry . . . . .	4	*	*	*	*	1	5	5
All other . . . . .	19	*	2	1	*	5	27	30
Total Per cent second . . . . .	47	3	3	2	*	8	62	

No Stipend . . . . . = 39%

N . . . . . = 1,299

NA . . . . . = 26

Total N . . . . . = 1,325

TABLE 2.7--Continued

## c) Life Science

First Stipend	Second Stipend						Total	
	None	TA from school	RA from school	Fellowship from NIH	Fellowship from NSF	All other	First	First and second
TA from school .	12	1	1	*	1	2	17	20
RA from school .	11	*	*	-	-	1	13	15
Fellowship from NIH . . . . .	8	1	*	*	-	1	11	12
Fellowship from NSF . . . . .	6	1	*	-	1	1	8	9
All other . .	23	2	1	*	*	5	32	37
Total per cent-second . . . . .	63	4	2	1	2	10	81	

No Stipend . . . . . = 20%

N . . . . . = 975

NA . . . . . = 29

Total N . . . . . = 1,004

## d) Behavioral Science

First Stipend	None	TA from school	RA from school	Fellowship from NIH	Fellowship from NDEA	All other	First	First and second
TA from school .	8	1	1	-	*	3	14	16
RA from school .	7	*	*	-	-	2	10	13
Fellowship from NIH . . . . .	6	*	1	-	-	1	8	8
Fellowship from NDEA . . . . .	2	*	*	-	*	1	3	4
All other . .	21	1	1	*	*	5	29	36
Total per cent-second . . . . .	45	3	4	*	*	11	64	

No Stipend . . . . . = 37%

N . . . . . = 1,033

NA . . . . . = 22

Total N . . . . . = 1,055

TABLE 2.7--Continued

## e) Humanities

First Stipend	Second Stipend						Total	
	None	TA from school	Scholarship from school	Fellowship from foundation	Fellowship from school	All other	First	First and second
TA from school . .	15	2	1	*	*	1	19	21
Scholarship from school . . .	4	*	1	*	-	*	6	8
Fellowship from foun- dation . .	3	*	*	*	-	*	3	4
Fellowship from school . .	3	1	*	-	*	-	4	5
All other	11	1	1	-	*	2	15	16
Total per cent-- second .	37	4	3	*	1	3	47	
No Stipend . . . . .							=	54%
N . . . . .							=	909
NA . . . . .							=	22
Total N . . . . .							=	931
Total All Fields . . . . .							=	5,929
NA Stipend Holding . . . . .							=	7
Aliens . . . . .							=	878
Total N . . . . .							=	6,814

Behavioral Sciences: Table 2.7d shows that some 16 per cent of the sample in the Behavioral Science fields of study held a university TA as their first and/or second stipend; another 13 per cent of these students secured RA's at the school they were attending. The university TA was held by 14 per cent of the sample as their first stipend (and the one with the highest value) while 8 per cent were single stipend holders with this kind of stipend. Less than one in ten (8 per cent) held NIH fellowships as the first or second stipend, and the remainder secured stipends of various kinds that were held by less than one student in twenty in the sample enrolled for study in Behavioral Science when the stipends were classified by source and type.

Engineering: In the Engineering field, yet another pattern of support prevailed last year, according to Table 2.7b. The most frequently held stipend, either first or second, was a scholarship from an industrial firm or business: 14 per cent of the sample in this composite field of study secured this form of support during the 1962-1963 academic year. Another 12 per cent reported that a university TA provided support, 8 per cent held a university RA and 5 per cent received fellowship support from business or industry. Three in ten students held other forms of support that were less frequently reported than these top four kinds.

Humanities: We have already shown that the Humanities labored under a handicap in contrast to the scientific and engineering fields of study. When secured, support was provided primarily by the school in which the graduate student was enrolled: 21 per cent of the sample in this composite field held a university TA as their first or second stipend and another 8 per cent had received a scholarship from their university. The one in five students holding a university TA was accounted for as follows: 19 per cent had this kind of stipend support as their first stipend, 4 per cent as their second, 2 per cent held two university TA's, and 15 per cent of the sample were single stipend holders with this form of support. The remaining source types were held in less than one in twenty cases.

### Cash Value of All Stipends

Information is available at this time on the cash value of all stipends secured during the 1962-1963 academic year.<sup>4</sup> Table 2.8 shows that some four in ten students in the Life and Physical Sciences held stipends with a total cash value of at least \$2,500 (Physical Sciences--40 per cent; Life Sciences--45 per cent). In the Behavioral Sciences, 31 per cent, and in Engineering, 27 per cent of the students held stipends with cash values of \$2,500 or more, while only 15 per cent of those in the Humanities did as well. The advantages accruing to students in the Life and Physical Sciences, when compared to the other fields included in this study, is shown again by computing the median cash value of the stipends held. In the Life Sciences the median cash value was \$2,700; in the Physical Sciences--\$2,646. The median cash value in the Behavioral Sciences was somewhat lower, amounting to \$2,350, and it was even lower in Engineering--\$2,200. Not only were students in the Humanities fields of English and History least likely to have held stipends last year, but when they were received, their median cash value was also the lowest of any of these fields--about \$2,000. Since tuition and fees were charged against the cash value of stipends, it is evident that stipends alone hardly bespeak of affluence for most graduate students.<sup>5</sup>

### Some Academic Correlates of Stipend Holding

Whether or not a graduate student managed to secure a stipend to assist him in his pursuit of a graduate degree depended on several academic factors, of which field of study was only one, albeit a very important one. Presumably, other academic considerations entered into the picture as well. In this section of the chapter, we will examine

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<sup>4</sup> See Question #29D for the item.

<sup>5</sup> Data are not available at this time on other sources of income. Since one-half of these students are married, additional income was provided by working spouses. We will examine this and other aspects of graduate student finances in the final report later this year.

TABLE 2.8

CASH VALUE OF ALL STIPENDS HELD AND COMPOSITE FIELD OF GRADUATE STUDY, AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS

(Per cent holding stipend)

Composite Field of Study	Cash Value of all Stipends										Median Value (Approx.)	N
	None	Less than \$999	\$1,000-\$1,499	\$1,500-\$2,499	\$2,500-\$2,999	\$3,000-\$4,999	\$5,000-\$7,999	\$8,000 or more				
Life Science . . .	19	11	4	20	16	26	3	*			\$2,700	996
Physical Science .	25	11	4	19	12	26	2	*			\$2,646	1,595
Behavioral Science	36	8	5	20	11	17	3	*			\$2,350	1,042
Engineering . . .	38	21	4	10	8	15	3	1			\$2,200	1,300
Humanities . . . .	53	12	3	17	6	9	*	-			\$2,000	916
Total per cent-- all fields .	33	13	4	17	11	19	2	*				5,849

NA . . . . . = 87  
 Total . . . . . = 5,936  
 Aliens . . . . . = 878  
 Total N . . . . . = 6,814

the role of academic performance and academic progress in graduate study as factors shaping a student's chances of securing stipend support in the five composite fields of study.

#### Field, Academic Performance and Stipend Holding

If the students' self-reported current grade-point average (GPA) is taken as an indicator of the kind of performance that counts in these matters, then Table 2.9 shows that academic performance did indeed affect the distribution of stipends. Among the students in the sample who reported a grade point average for graduate courses completed at the time they returned their questionnaires, 74 per cent of those reporting A or A- also held a stipend during the last academic year, as did two-thirds of those attaining a B+ average; on the other hand, this percentage declined to 57 among the students reporting a B average or lower in course work for which grades were received. When field of study is considered in examining this relationship, we see that achievement makes less of a difference in some fields and more in others. For example, the Life Science students scoring B or less did almost as well as their colleagues who averaged A or A- (87 versus 79 per cent); this situation was found as well in Engineering (although the absolute level of stipend holding for each GPA category was lower in Engineering than in Life Sciences). Reading across the table, we see that GPA importantly affected the chances of stipend holding in both the Behavioral Sciences and the Humanities (in each case there was a difference of some 25 percentage points in stipend holding between the high and low GPA category).

Reading down the columns, the rank ordering of fields was quite stable in the percentage holding stipends in each GPA group: Life Sciences was the highest, followed by the Physical Sciences, the Behavioral Sciences, then Engineering and, finally, the Humanities. There was one slight variation at the lower end of the GPA scale: Engineers scoring B or less did as well as their fellow Engineering students scoring B+; and Engineers and Behavioral Science students switched ranks in the order of stipend holding in the bottom GPA group. Nevertheless,

the conclusion to be drawn is that academic performance only affected the chances of stipend holding in a secondary way. The outcome was that poor students in the Life Sciences did better than the very best students in the Behavioral Sciences and Engineering in securing a stipend and they completely outstripped the very best students in the Humanities in gaining access to this source of income.

TABLE 2.9

COMPOSITE FIELD OF GRADUATE STUDY, GRADE POINT AVERAGE,  
AND STIPEND HOLDING; AMERICAN GRADUATE  
STUDENTS IN FIVE COMPOSITE FIELDS

(Per cent holding a stipend)

Composite Field of Study	Grade Point Average			N
	A, A-	B+	B or less	
Life Science . . . .	87 (365)	79 (342)	75 (291)	998
Physical Science . .	82 (582)	77 (459)	64 (562)	1,603
Behavioral Science .	73 (471)	62 (352)	47 (225)	1,048
Engineering . . . . .	69 (530)	58 (396)	55 (397)	1,323
Humanities . . . . .	57 (393)	49 (281)	30 (252)	926
Total per cent-- all fields . .	74 (2,341)	66 (1,830)	57 (1,727)	5,898
NA GPA . . . . .				= 31
NA Stipend . . . . .				= 7
Aliens . . . . .				= 878
Total N . . . . .				= 6,814

Field, Academic Progress and Stipend Holding

The measure of academic progress to be employed in this analysis is the one constructed by Davis for his 1958 study. His "Index of Academic Stage" combined years of study and academic progress, and located

the graduate student in his movement toward a graduate degree in a system that lacks the structural clarity found in high school and college.

The index yields four stages of study:

- Stage I: First year student, regardless of degree sought or type of academic work.
- Stage II: Master's candidates who have completed one or more years of graduate work.
- Stage III: Ph.D. candidates who have completed a year or more of graduate study, but who are not working on their theses.
- Stage IV: Ph.D. candidates who have completed a year or more of graduate study and are working on their theses.<sup>6</sup>

Table 2.10 shows that Stage importantly influenced chances of securing stipend support during the 1962-1963 academic year. Among first year students (Stage I), some 56 per cent held a stipend, the percentage steadily rising with each Stage and culminating in a rate of stipend holding of 84 per cent among the doctoral candidates working on their dissertation (Stage IV). There were stable and systematic field differences in stipend holding at each Stage, with Life Sciences always ranking highest and Humanities lowest. Thus, nine out of ten Stage IV Life Science and Physical Science students at one extreme, reported that a stipend was available in contrast to one in three (34 per cent) Humanities students at Stage I at the other extreme. That choice of field of study was a more important determinant of stipend holding than Stage is shown by the finding that even the Life Science neophyte (Stage I) had a slightly better chance of holding a stipend than did the most advanced graduate student in the Humanities.

#### Field, Stage and GPA

Putting together the three variables of field of study, academic progress (measured by the Stage Index) and academic performance (given by the current grade point average in graduate study), Table 2.11 shows

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<sup>6</sup>Davis, Stipends and Spouses, p. 19.



TABLE 2.11

COMPOSITE FIELD OF GRADUATE STUDY, GRADE POINT AVERAGE,  
STAGE OF STUDY, AND STIPEND HOLDING; AMERICAN  
GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS

(Per cent holding stipend)

Composite Field of Study	Grade Point Average	Stage of Study			
		1	2	3	4
Life Science . . . . .	A,A-	83 (93)	84 (91)	85 (34)	92 (140)
	B+	70 (71)	71 (109)	93 (44)	85 (108)
	B or Less	66 (116)	80 (84)	70 (20)	92 (50)
Physical Science . . . . .	A,A-	75 (130)	77 (118)	81 (102)	90 (221)
	B+	73 (103)	71 (136)	70 (67)	92 (143)
	B or Less	52 (219)	61 (184)	72 (68)	90 (80)
Engineering . . . . .	A,A-	60 (162)	64 (130)	71 (91)	87 (134)
	B+	65 (134)	46 (126)	61 (62)	74 (54)
	B or Less	52 (223)	55 (129)	* (17)	* (18)
Behavioral Science . . . . .	A,A-	60 (88)	67 (119)	83 (77)	79 (140)
	B+	40 (93)	55 (89)	77 (98)	65 (69)
	B or Less	44 (107)	36 (61)	65 (37)	* (18)
Humanities . . . . .	A,A-	41 (118)	51 (108)	75 (91)	73 (70)
	B+	39 (84)	41 (97)	66 (62)	66 (32)
	B or Less	26 (160)	28 (61)	* (16)	* (8)

N . . . . .	= 5,757
NA Grades . . . . .	= 22
NA Stage . . . . .	= 141
NA Grades & Stage . . . . .	= 9
NA Stipend . . . . .	= 7
Aliens . . . . .	= 878
Total N . . . . .	= 6,814

NOTE: \* indicates base is too small for percentaging.

The relationships in the Physical Science field between Stage and GPA can be formulated as follows: with each downward step in talent, Stage played an increasingly important role in securing stipend support; and with each successive Stage of study, performance as measured by current GPA was increasingly less important in stipend holding. The Life Science and Physical Science fields were similar in the pattern demonstrated to hold for stipend support.

Engineering apparently operated in a different fashion: the relationship was curvilinear at each Stage when students were classified by GPA. At Stage I, students reporting a GPA of B+ did slightly better in getting a stipend than their counterparts who reported a GPA of A or A-, while the B+ category in the remaining three Stages of study did not succeed in getting stipends as frequently as their colleagues with both higher or lower GPA's. However, the usual relationship obtained when the influence of talent was assessed at each level of academic progress; advanced students invariably reported stipend support more frequently than those at early stages of the game at each level of academic performance.

In broad outline, Stage and GPA both made a difference in the Behavioral Science field as well. But, Stage was more important at some points and less so at others. Thus, the brightest students always secured more stipends than the poorer students at each Stage; and students in Stages III and IV did better than those in Stages I and II.

The Humanities, operating under conditions of relative scarcity, showed the sharpest differences among the five fields in rates of stipend holding when Stage and GPA were jointly considered; Three out of four talented students in advanced stages of study held a stipend in contrast with one out of four of the poorest students in their first year of graduate study. Differences by Stage were more important than differences by GPA, but GPA differences were quite marked in Stage III where a premium was evidently placed on performance among students involved in doctoral work.

In sum, there were distinctive field differences at each Stage and GPA category. Thus, over eight out of ten (83 per cent) of the Stage I Life Science students who reported a GPA of A or A- in their graduate work held a stipend, while the Humanities student with identical academic characteristics held a stipend in only four cases out of ten, and so forth. In the main, the effects of Stage and GPA within most fields were additive, with the academically superior students at advanced stages of study most likely, and the beginning student of lesser ability least likely, to have stipend support.

#### Type of First Stipend, by Field and Stage

It has been demonstrated that whether or not a graduate student held a stipend depended heavily on field and Stage of study. In this section, we will see that type of stipend secured depended on these same factors. Table 2.12 shows that, across the board, students were less likely to have scholarships with a value equal to or less than their tuition bill as they advanced through their academic studies; they were somewhat more likely to have a fellowship paying their tuition bill and providing a cash grant as their first stipend as they moved into Stage III; and they were also more likely to have a duty stipend entailing research during the final stage of advanced study. Interestingly, duty stipends entailing teaching increased from Stage I through Stage III, but dropped again in level of frequency among students in Stage IV.

Students in Engineering were most likely to hold a scholarship at Stage I (44 per cent); they also outstripped the other fields in holding scholarships at Stages II and III, but show little difference from advanced students in the Humanities by the time they reach Stage IV. Some 21 per cent of those in the Physical Science fields, 13 per cent in the Life Sciences, and 17 per cent in Behavioral Sciences also held a scholarship as beginning students, but this type of first stipend largely disappeared by the time these students were located in their advanced stages of study. Students in the Humanities were twice as likely as those in the Behavioral Sciences to hold scholarships at every stage of study. Within each field, however, chances of holding this type of stipend were reduced substantially as students moved through the system.

TABLE 2.12

TYPE OF FIRST STIPEND, STAGE OF STUDY AND COMPOSITE FIELD OF GRADUATE STUDY; AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS

Composite Field of Study	Stage of Study							
	a) Per cent of stipend holders holding a scholarship				b) Per cent of stipend holders holding a fellowship			
	1	2	3	4	1	2	3	4
Physical Science	21	18	17	4	22	18	33	30
Engineering . . .	44	38	31	12	19	19	32	42
Life Science . . .	13	7	6	2	28	29	40	40
Behavioral Science	17	11	8	7	27	32	33	45
Humanities . . .	29	31	17	16	29	28	19	32
Composite Field of Study	c) Per cent of stipend holders holding a research assistantship				d) Per cent of stipend holders holding a teaching assistantship			
	1	2	3	4	1	2	3	4
Physical Science	15	22	20	41	42	42	40	35
Engineering . . .	20	21	13	38	17	21	24	8
Life Science . . .	36	33	28	41	23	32	26	17
Behavioral Science	37	30	30	31	19	26	29	17
Humanities . . .	8	7	6	5	34	34	58	47

e) Summary of tables 2.12a-2.12d: Type of first stipend and stage of study for all fields combined

Type of First Stipend	Per cent of stipend holders			
	Stage of Study			
	1	2	3	4
Scholarship . . . . .	26	20	13	6
Fellowship . . . . .	24	24	31	27
Research assistantship . .	22	24	21	36
Teaching assistantship . .	27	32	35	30
Total Per cent . .	99	100	100	99

TABLE 2.12--Continued

Composite Field of Study	f) Numerical bases for percentages in Tables 2.12a through 2.12d			
	Stage of Study			
	1	2	3	4
Physical Science . . . .	286	296	180	401
Engineering . . . . .	293	206	114	169
Life Science . . . . .	197	218	81	264
Behavioral Science . . .	147	148	197	166
Humanities . . . . .	118	108	114	75
All Fields Combined	1,041	976	686	1,075

N . . . . .	= 3,778
NA Type Stipend . . . . .	= 81
NA Stage . . . . .	= 82
No Stipend . . . . .	= 1,988
NA Stipend . . . . .	= 7
Aliens . . . . .	= 878
Total N . . . . .	= 6,814

The second type of non-duty stipend available to students, the fellowship, was available most readily at the early stages of study to students in the Life and Behavioral Sciences, and the Humanities: about three in ten stipend holders in each of these fields, as compared with some two in ten in Engineering and the Physical Sciences, were recipients of fellowships. At Stage IV, Engineering stood abreast of the Life and Behavioral Sciences: some four in ten in these fields were fellowship holders; only three in ten of the stipend holders in Physical Sciences and Humanities held this type of stipend. Since the fellowship permits the student to meet his academic requirements unhampered by stipend duties which may or may not contribute to his graduate program, and since this type of support provides a cash grant to boot, students in this category were presumably provided with the best opportunity for rapid completion of the degree program.

Research assistantships were rare in the Humanities: less than one student in ten had this type of support at each stage. Again, both the Life and Behavioral Sciences were more likely to hold RA's than their Engineering and Physical Science counterparts in the early stages of study. At Stage IV, however, about four in ten stipend holders in Engineering, Physical Science and Life Science secured RA's in contrast with three out of ten stipend holders in the Behavioral Science fields of study. In both Engineering and the Physical Sciences, there was a rise in this type of stipend holding when first year students were compared with those working on their doctoral dissertations.

The field and Stage pattern in the holding of teaching assistantships was different: in each field save the Humanities the proportion of stipend holders with TA's was lowest at Stage IV. In Engineering, Life Science and Behavioral Science, the relationship appeared to be curvilinear--TA's were relatively infrequent at Stage I, more frequently held at Stages II and III, and then dropped again at the last Stage of advanced study. In the Physical Sciences, some four in ten stipend holders held the TA at every stage but the last one; only one in four were TA's at the time they were working on dissertations for the doctorate. In the Humanities, about one in three were Teaching Assistants in the early stages of study, close to six in ten at Stage III, and almost one in two at Stage IV, if they had any form of stipend support.

In sum, field-stage differences in types of stipends held are shown in the panel below which indicates the most frequently mentioned stipend held at the first and the last stages of study in each of the fields.

<u>Field</u>	<u>Stage I</u>	<u>Stage IV</u>
Physical	TA	RA
Engineering	Scholarship	Fellowship
Life	RA	RA
Behavioral	RA	Fellowship
Humanities	TA	TA



Field differences in types of duties performed if the first (or only) stipend was a RA or TA are substantial. One-half of the Engineers mentioned "research," as did one-half of the duty stipend holders in the Life and Behavioral Sciences, but only one-third of the duty stipend holders in the Physical Sciences were required to work on a research project directed by somebody else. Since the core work in the Humanities primarily entails solo effort, only 8 per cent of the graduate students holding a duty stipend in History or English reported this type of "research" duty. On the other hand, over one-half (61 per cent) of the students holding duty stipends in the Humanities were required to instruct undergraduate sections as compared with one-third of the Physical Science and Behavioral Science duty stipend holders and one-fourth of those in Engineering and the Life Sciences. A related teaching function showed yet another distribution: about one-third of these students in the Physical and Life Sciences and Engineering were required to lead discussion or laboratory sections, as were one-fifth of these in the Humanities and 18 per cent of the Behavioral Science students holding duty stipends. In sum, the division of graduate student labor depended heavily on field of study.

#### Family Role and Non-Stipend Employment

Whether or not a graduate student received a stipend during the 1962-1963 academic year depended heavily on a variety of academic factors. These were, primarily, field of study and then stage of study and academic performance. There are, however, non-academic factors that should be considered in any evaluation of the pattern of stipend support for graduate study. Probably the most critical of these concerns the obligations of some 55 per cent of the sample who were married and the 66 per cent of the married who were parents. The variables of sex, marital status and the presence of children were combined by Davis into a Family Role Index for his 1958 survey of graduate students finances.<sup>7</sup> This Index was employed in Table 2.14 to show the extent of stipend holding in each field.

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<sup>7</sup>Stipends and Spouses, op. cit., pp. 32-33.

TABLE 2.14

STIPEND HOLDING, FAMILY ROLE AND COMPOSITE FIELD OF GRADUATE STUDY;  
AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS

(Per cent holding a stipend)

Composite Field of Study	Family Role					
	Male			Female		
	Bachelor	Husband	Father	Single woman	Wife	Mother
Life Science	85 (280)	85 (150)	75 (311)	84 (134)	83 (30)	79 (71)
Physical Science . .	82 (579)	78 (320)	65 (530)	72 (112)	77 (26)	43 (28)
Engineering .	70 (389)	65 (248)	56 (668)	* (1)	* (2)	* (2)
Behavioral Science . .	71 (277)	69 (190)	59 (332)	71 (128)	50 (38)	45 (56)
Humanities . .	50 (258)	52 (108)	50 (185)	47 (198)	51 (63)	29 (85)
Total--per cent all fields	73 (1,783)	72 (1,016)	61 (2,026)	66 (573)	62 (159)	49 (242)
<p>N . . . . . = 5,799  NA Family Role . . . . . = 130  NA Stipend . . . . . = 7  Aliens . . . . . = 878  Total N . . . . . = 6,814</p>						

Male bachelors and husbands were equally likely (over seven in ten), but fathers somewhat less likely (61 per cent), to hold stipends. Thus, students with the greatest financial need held stipends less frequently than bachelors unencumbered by family burdens or husbands without children who may have had working wives. The financial returns from non-stipend employment presumably dissuaded fathers from applying for stipends. Female graduate students showed the same pattern albeit with rates of stipend holding below that found among males of similar status. For example, 73 per cent of the male bachelors were stipend recipients in comparison with 66 per cent of the female bachelors, etc.

Differences between fathers and the other male students in the extent of stipend holding occurred in every field except the Humanities where Family Role made no difference at all. This was not the case among women, however; only one in four mothers (29 per cent) undertaking study in the Humanities held stipends, in contrast with one-half of those who were single or wives without children. Single women in the Behavioral Sciences were as likely to secure stipend support as were male bachelors in this field, but wives and mothers were less likely than husbands and fathers to do so.

In the Physical Science field bachelors and fathers fared better than single women and mothers, but wives without children received stipend support as frequently as did husbands. It was only in the Life Sciences that women in every Family Role category held stipends as often as their male counterparts. In sum, graduate students with the most pressing financial "need," i.e., fathers and mothers, were somewhat less likely to receive stipend support than were other students enrolled for graduate work in 1962-1963, although there were variations that reflect the over-all availability of support in each individual field of study.

While it is impossible to unravel cause and effect in the relationship between non-stipend employment and stipend holding in a survey of this design, it is evident from Table 2.15 that the two variables were closely connected; close to nine out of ten (87 per cent) students reporting no employment during the past academic year held some kind of stipend, while two-thirds (67 per cent) of the students who held some form of non-stipend employment during the same period also had a stipend. The more striking finding concerns the students who held regular full-time employment (i.e., 35 hours or more per week for at least 10 months during the year): their rate of stipend holding was only 32 per cent. Differences by field further accentuate the relationship: virtually everybody in the Life Sciences not reporting employment held a stipend (94 per cent); only one in five students in the Humanities and the Behavioral Sciences with full-time regular employment also reported stipends as a source of income last year.

TABLE 2.15

STIPEND HOLDING, NON-STIPEND EMPLOYMENT AND COMPOSITE  
FIELD OF GRADUATE STUDY; AMERICAN GRADUATE  
STUDENTS IN FIVE COMPOSITE FIELDS

(Per cent holding a stipend)

Composite Field of Study	Employment		
	Not employed	Employed	
		Less than regular full-time	Regular full-time
Life Science . . . . .	94 (546)	77 (320)	34 (138)
Physical Science . . . . .	93 (707)	74 (572)	36 (335)
Engineering . . . . .	91 (294)	76 (435)	36 (590)
Behavioral Science . . . . .	83 (415)	64 (453)	21 (187)
Humanities . . . . .	68 (358)	41 (370)	22 (203)
Total--per cent all fields . . . . .	87 (2,320)	67 (2,156)	32 (1,452)

N . . . . . = 5,929  
 NA Stipend . . . . . = 7  
 Aliens . . . . . = 878  
 Total N . . . . . = 6,814

Considering the sample as a whole, family role influenced the rate of stipend holding among women after the effects of full-time regular employment were removed from consideration, but this was not the case among male graduate students. Table 2.16 shows that eight out of ten men in each Family Role category not reporting employment last year held stipends; and one in three men--bachelors, husbands and fathers alike--who had full-time regular employment also held stipends. In contrast, 76 per cent of the single women not involved in full-time regular

employment held stipends but only 52 per cent of the mothers did as well. And even among the women with full-time regular employment, unmarried women did slightly better than mothers in securing this form of support (30 per cent versus 18 per cent).

TABLE 2.16

## STIPEND HOLDING, FAMILY ROLE AND NON-STIPEND EMPLOYMENT

(Per cent American graduate students holding a stipend)

Employment	Family Role					
	Male			Female		
	Bachelor	Husband	Father	Single Woman	Wife	Mother
Regular full-time . . .	32 (232)	34 (199)	33 (837)	30 (122)	* (11)	18 (22)
Less than regular, including none . . .	80 (1,551)	81 (817)	81 (1,189)	76 (451)	64 (148)	52 (220)
N . . . . .						= 5,799
NA Family Role . . . . .						= 130
NA Stipend . . . . .						= 7
Aliens . . . . .						= 878
Total N . . . . .						= 6,814

Nor is this the entire story. Table 2.17 shows that although the likelihood of full-time regular employment depended heavily on the availability of stipends, family roles operated differently among men and women in determining this form of employment behavior. Thus: among the men without stipend support last year, one in three bachelors held full-time regular employment in contrast with seven in ten fathers. Even among the male stipend holders over one-fifth (22 per cent) of the fathers also had full-time regular employment; only one in twenty bachelors

(6 per cent) did likewise. In comparison, some 44 per cent of the single women without stipend support worked 35 hours a week or more for at least ten months last year, but marriage substantially reduced this mode of employment if stipend support was absent.

TABLE 2.17

## STIPEND HOLDING FAMILY ROLE AND EMPLOYMENT

(Per cent American graduate students with regular full-time employment)

Stipend Holding	Family Role					
	Male			Female		
	Bachelor	Husband	Father	Single Women	Wife	Mother
Yes . . . . .	6 (1,310)	9 (732)	22 (1,329)	10 (387)	4 (98)	3 (118)
No . . . . .	33 (473)	46 (284)	72 (787)	44 (195)	11 (61)	15 (124)
N . . . . . = 5,799 NA Family Role . . . . . = 130 NA Stipend . . . . . = 7 Aliens . . . . . = 878 Total N . . . . . = 6,814						

In sum: stipend support and full-time regular employment typically operated as alternative arrangements for most students enrolled for graduate study; both were reported frequently, however, among male students who were fathers.

Stipend Holding: 1958 and 1963

In this last section, we address the question: Have any changes taken place in the extent of stipend holding in the fields for which information was gathered both in Davis' 1958 survey and again in Spring, 1963? And did any changes occur among stipend holders at these two points in the type of stipend support they were able to secure?

The field classification employed in the present report closely resembles the earlier classification of graduate departments and divisions. Thus direct comparisons can be made for the Behavioral Sciences and the Natural Sciences (a combination of Physical and Life Sciences), but Davis' coverage of the Humanities was somewhat more comprehensive (our two fields of English and History comprise two-thirds of his Humanities division). Since the Engineering fields of study were not included in the first survey, our information provides a new baseline for measuring changes in this hitherto neglected field. The punched cards employed at NORC in the preparation of the 1958 study were retabulated, foreign nationals were excluded, and the Humanities were limited to the two fields of English and History to ensure comparability.

Table 2.18 shows that almost identical proportions of the students in the Life Sciences held stipends in 1958 and in 1963: some 77 per cent of these students six years ago and 80 per cent last spring were recipients of some form of support for their graduate study. The rate of stipend holding in the Behavioral Science fields also showed very little change: in 1958, 61 per cent and 63 per cent five years later. Surprisingly, the rate of stipend holding in the Physical Sciences has declined slightly: 79 per cent formerly as against 74 per cent last year. It is possible that differences in study design account for this differential.<sup>8</sup> It is safe to say that rate of stipend holding certainly did not shoot up in this field, despite the post-Sputnik rush to support education and research in the sciences. Finally, the two Humanities fields registered a dip from the 1958 rate of 56 per cent to last year's rate of 46 per cent. It is clear that the two Humanities fields--History

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<sup>8</sup>One difference concerns the composition of the Physical Sciences group in the two surveys: comparison shows that Mathematicians, for example, comprise 30 per cent of the present group but only 20 per cent of the 1958 group of Physical Science students. Furthermore, the rate of stipend holding among Mathematicians was 73.3 per cent in 1958, while these students among the composite Physical Science group in 1963 reported stipend holding to the extent of 67.1 per cent. Variations such as these could deflate the rate in 1963 without signifying a genuine decline in the extent of stipend holding among Physical Science students during the five year interval.

and English--included for study in this survey have not derived any benefits in terms of an increase in the rate of graduate student stipend holding.

TABLE 2.18

STIPEND HOLDING AT TWO POINTS IN TIME; AMERICAN  
GRADUATE STUDENTS IN SELECTED FIELDS

(Per cent holding a stipend)

Field of Study	Date	
	1958	1963
Life Science . . . . .	77 (287)	80 (1,004)
Physical Science . . . . .	79 (804)	74 (1,614)
Behavioral Science . . . . .	61 (497)	63 (1,055)
Humanities . . . . .	56 (524)	46 (931)

Statements concerning rates of stipend holding, of course, tell us nothing about the numbers of graduate students in the several composite fields who held stipends in 1958 and in 1963. In point of fact, more students were holding stipends last year than in 1958, but these are fields of expanding enrollments. Hence, the rate could remain stable or decline somewhat despite an absolute increase in the number of students who secured stipend support last spring.

Furthermore, the types of stipends available to recipients shifted in each of the four composite fields for which comparisons were possible. As seen in Table 2.19, the type of change and the number of changes depended on field of study.<sup>9</sup> Arbitrarily assuming that a percentage

<sup>9</sup>The reader is cautioned that comparisons with the preceding table are not possible because the 1963 data on types of support secured by recipients of one or two stipends had to be adapted to the typology of stipends employed in the earlier study. For a description of the typology, see Davis, op. cit., pp. 59 and 199.

difference of at least five points probably signified an increase or a decline (depending on the direction of change), then the Behavioral Sciences and the Humanities fields experienced the most extensive change in the character of stipend holding during the five year interval, while the Physical Sciences fields were least affected. Our data suggest that even in the latter field, there has occurred an increase in the likelihood of holding an RA if support was received. On the other hand stipend holders in the Life Sciences were more likely to have a duty-free stipend in 1963 than in 1958 but less likely to receive a Teaching Assistantship as their first or second stipend. Duty-free stipends declined somewhat in the Behavioral Sciences, and Teaching Assistantships declined substantially in this composite field of study but this was offset by the increasing likelihood of securing a Research Assistantship. Each of the three shifts in rates in the two Humanities fields was also substantial: while Research Assistantships increased in this composite field, both duty-free stipends and Teaching Assistantships were less likely to be the form of support available to stipend holders in 1963 than in 1958.

TABLE 2.19

TYPES OF STIPENDS HELD AT TWO POINTS IN TIME;  
AMERICAN GRADUATE STUDENTS IN SELECTED FIELDS

(Per cent holding various types as either  
first or second stipend)

Field	Year	Type of Stipend			N
		Duty free	Research Assistant	Teaching Assistant	
Physical Science . . . . .	1958	37	20	43	635
	1963	35	26	39	
Life Science . . . . .	1958	32	33	34	221
	1963	39	36	25	
Behavioral Science . . . . .	1958	47	20	32	305
	1963	41	36	23	
Humanities . . . . .	1958	52	2	47	293
	1963	39	22	39	

In summary, this chapter has described stipend support for graduate study in five composite fields. The extent of stipend holding as well as the sources, types and total dollar value of all stipends held by graduate students were analyzed and compared among the composite fields of Life Sciences, Physical Sciences, Behavioral Sciences, Engineering, and the two Humanities fields of History and English. Rates of stipend holding and the types of stipends that were secured by students reporting different grade point averages in graduate course work and at varying stages of study were documented. Also, stipend holding was examined in relation to employment and family role. And comparisons were made among certain fields in the proportion of students holding stipends and in the types of stipends secured in 1958 and in 1963. One aspect of graduate education thus far deferred concerns the interrelationship of enrollment patterns and stipend support; this will be considered in the next chapter.

CHAPTER III  
ENROLLMENT FOR GRADUATE STUDY  
AND STIPEND SUPPORT

Part-Time and Full-Time Study  
Patterns of Enrollment

According to a report issued by the President's Science Advisory Committee, one of the barriers to graduate education in the fields of Engineering, Mathematics and Physical Science has been the limited stipend support available to students seeking the doctorate in these fields of study:

Faced with a choice between a starting salary above \$7,000 and a very much smaller stipend with graduate study, many highly qualified college graduates in EMP, especially those with family responsibilities and those who incurred debts as undergraduates, decide they cannot afford to select graduate education. And many who do undertake it now must extend their study over extra years by combining part-time study with part-time jobs, deferring their availability for full-time professional employment.

Stipends for graduate study must be of sufficient number and size to attract more students into advanced training, and to allow more of them to undertake full-time instead of part-time graduate study with a correspondingly shortened interval to obtain a Ph.D.<sup>1</sup>

In this chapter, we will report on some findings that provide additional benchmarks for evaluating this recommendation. How many students in the sample were enrolled for part-time study in the sciences and engineering? What was the pattern of employment, last year among part-time students? What did part-time students say it would take in the way of financial support to enable them to convert to full-time study?

Measuring Part-Time Study

The structure of higher education at the graduate level lacks the coherence found at the lower strata of the educational system. Course requirements and the number of years of formal study vary from school to school; the number of courses a student holding a teaching assistantship may take varies by school; the proportions of research and

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<sup>1</sup>Meeting Manpower Needs in Science and Technology. Report Number One: Graduate Training in Engineering, Mathematics and the Physical Sciences. Washington, D.C.: The White House, Dec., 12, 1962, p. 8.

formal course work vary from field to field as well as from school to school. Consequently, notions of what comprises full-time study are vague or difficult to transform into operational measures.<sup>2</sup>

Important policy questions have been raised concerning the role of additional stipend support as a means for increasing the number of doctorate holders in certain scientific fields and engineering. To meet the need for information bearing on this issue and to provide additional documentation for this aspect of graduate education, an attempt was made to identify students who were studying last spring on a "full-time" basis. An Enrollment Index was constructed employing the following items:<sup>3</sup>

1. Program of Study, Spring Term, 1963

Some 86 per cent of the students were enrolled in a program in which full-time study was possible. The remainder were enrolled in night school or some other program in which full-time study was impossible.

2. Course Load, Spring Term, 1963

Combining responses to two questions asking, "What is considered a full course load at your school and how many courses are you taking this term?"--33 per cent of the sample of American graduate students in the five fields were enrolled for a number of courses equal to or greater than that considered a full course load, while 67 per cent were enrolled for less than a full course complement at their schools.

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<sup>2</sup>Consider, for example, the definition of Full-Time / Part-Time employed in Office of Education surveys of enrollment for advanced degrees: "With respect to students enrolled for advanced degrees, a full-time is one whose academic load--in terms of course work or other required activity (such as thesis)--is at least 75 per cent of that normally recommended for such students. Time spent by teaching fellows should be included only if such teaching is performed as a requirement for a degree. Employment which is not a part of the prescribed activity for an advanced degree should not be counted as part of the time spent on graduate work. A part-time student is one who is carrying an academic schedule lighter than that of a full-time student. (Note: the definitions in this paragraph are provided for guidance rather than rigid application.)" Enrollment for Advanced Degrees, Fall, 1960, OE-54019-60 Circular No. 674, page 478. In the three OE surveys for Fall, 1960, 1962 and 1963, the proportion of students enrolled full-time in all fields of study combined was about 40 per cent.

<sup>3</sup>These are items no. 4, 6 and 7 of the questionnaire in the Appendix.

3. Allocation of Time for Study, Spring Term, 1963

One-half of the students (50 per cent) gave an average of less than forty hours per week to their academic study (including course work, thesis work, study time, etc.) and one-half averaged forty hours per week or more for study.

The three components of the index correlated as expected. According to Table 3.1a, some 37 per cent of the students who were enrolled in a program that permitted full-time study were enrolled for courses that were equal to or greater in number than the full course load at their schools. In contrast, only 12 per cent of the students who were enrolled at a night school or in a program that did not permit full-time study said that they were enrolled for full course load. Table 3.1b shows that 59 per cent of the students enrolled in programs permitting full-time study were giving an average of forty hours or more to their academic activity, while 6 per cent of those enrolled in a night school, etc., were committing this amount of time to their academic study. The third panel of the table (3.1c) shows that, among students with a course load equal to or greater than a full course load at their schools, seven out of ten spent at least 40 hours per week in study; among those with less than a full course load, however, only four in ten averaged forty or more hours of weekday study.

In constructing the Enrollment Index, each of the three variables was assigned a score as follows:

Variable	Score	
	1	0
Program of Study	Permits full-time study	Night school or full-time study impossible
Course Load	Equal to or greater than full course load at the school	Less than full course load at the school
Hours of Study per Week	Forty hours or more	Less than forty hours

TABLE 3.1

THE ENROLLMENT INDEX

(Type of program and course load and hours studied weekly)

Type of Program	a) Per cent reporting a course load equal to or greater than that required by the school	b) Per cent studying 40 hours or more a week
Program permitting full-time study	37 (4,770)	59 (4,863)
Night school or program in which full-time study is impossible	12 (833)	6 (891)

N . . . . .	= 5,603	N . . . . .	= 5,754
NA Program . . .	= 93	NA Program . . .	= 108
NA Course Load . . .	= 214	NA Hours . . . . .	= 63
NA Both . . . . .	= 26	NA Both . . . . .	= 11
Aliens . . . . .	= <u>878</u>	Aliens . . . . .	= <u>878</u>
Total N . . . . .	= 6,814	Total N . . . . .	= 6,814

c) Course load and hours studied per week

Course Load	Per cent studying 40 or more hours a week
Course load is equal to or greater than that required by the school . . . . .	70 (1,897)
Course load is less than that required by the school . . . . .	41 (3,755)

N . . . . .	= 5,652
NA Course Load . . . . .	= 210
NA Hours . . . . .	= 44
NA Both . . . . .	= 30
Aliens . . . . .	= <u>878</u>
Total N . . . . .	= 6,814

TABLE 3.1--Continued

## d) Construction of the Enrollment Index

## I. Distribution of cases and scores\*

Type of Program	Course Load	Hours of Study	
		40 or more a week	Less than 40 a week
Permits full-time study:	Equal to or greater than required	1,317 (3)	451 (2)
	Less than required	1,461 (2)	1,511 (1)
Full-time study not possible (night school, etc.):	Equal to or greater than required	1 (2)	103 (1)
	Less than required	43 (1)	675 (0)

\*Score is given in parentheses in each cell.

N = 5,562

Assignment of cases for which there was partial information:

	<u>Score</u>	<u>N</u>
Program permitting full-time study, 40 hrs. or more study time . . . . .	2	70
Program permitting full-time study, full course load or more . . . . .	2	6
Night school, etc., more than 40 hrs. of study time . . .	1	5
Program permitting full-time study, less than 40 hrs. study time . . . . .	1	26
Night school, etc., less than 40 hrs. of study time . . .	0	64
Night school, etc., less than full course load . . . . .	0	<u>16</u>
		187

## II. Distribution of scores

<u>Score</u>	<u>N</u>	<u>Per cent</u>
3	1,317	23
2	1,989	35
1	1,688	29
0	<u>755</u>	<u>13</u>
	5,749	100

NA Type of Program . . . . .	=	90
NA 2 out of 3 Items . . . . .	=	<u>97</u>
Total . . . . .	=	5,936
Aliens . . . . .	=	<u>878</u>
Total N . . . . .	=	6,814

In each case, a score of "0" indicated the likelihood of "part-time" enrollment last spring. As shown in Table 3.1d, the Index has a range from 0 to 3, and each score included from 13 to 35 per cent of the cases. For the analyses reported here, full-time students are those who scored 2 or 3, while students scoring 0 or 1 are part-time. If the Enrollment Index is used to classify the enrollment status last spring of American graduate students in the five composite fields, then 58 per cent were engaged in full-time study with the remainder studying part-time.

#### Enrollment by Field

Substantial field differences in the percentage of students engaged in full-time study were found to exist. Table 3.2 shows that Life Science students were the most likely to be studying full-time (72 per cent), followed by two-thirds (64 per cent) of the students in the Behavioral Sciences and 61 per cent of those in the Physical Science composite field of study. One-half (50 per cent) of the students in the Humanities were full-time students as measured by the Enrollment Index and only a minority (40 per cent) of the Engineering graduate students were enrolled for full-time work. Enrollment statistics reported in the Office of Education survey are also given in the table.<sup>4</sup> Differences in definition notwithstanding, the distribution of students engaged in full-time study in the fields for which comparisons are possible showed close correspondence from one survey to another, with the exception of the Behavioral Science field where the difference in proportions of full-time students approached ten percentage points.

#### Field, Enrollment and Stipend Holding

Some 82 per cent of the graduate students in the five composite fields who were full-time students during the 1962-1963 Spring Term received a stipend last year, while only 47 per cent of those in part-time study did so. Field differences held up even when enrollment status was

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<sup>4</sup>Enrollment for Advanced Degrees Fall, 1960, OE-54019-60, Circular No. 674, pp. 50-52.

taken into consideration; nine out of ten full-time students in the Life Science field held a stipend in contrast with two out of three Humanities students of similar enrollment status. About as many part-time students in the Life Sciences held stipends as did full-time students in the Humanities (Table 3.3). The fields maintained their rank order in the percentage holding stipends, so that part-time students in the Humanities were least likely to have this form of support (32 per cent).

TABLE 3.2

FULL-TIME ENROLLMENT FOR ADVANCED DEGREES, AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS, 1960 AND 1963

(Per cent enrolled full-time)

Composite Field of Study	Survey	
	Office of Education survey of enrollment for advanced degrees, Fall, 1963*	NORC survey of graduate student finances
Life Science . . . . .	65	72 (972)
Engineering . . . . .	40	40 (1,291)
Physical Science . . . . .	59	61 (1,561)
Social (Behavioral) Science . . . . .	55	64 (1,037)
Psychology . . . . .	49	
English and Journalism History . . . . .	48	50 (888)
	N . . . . .	= 5,749
	NA Enrollment . . . . .	= 187
	Aliens . . . . .	= <u>878</u>
	Total N . . . . .	= 6,814

\* Table 20, pp. 50-52.

TABLE 3.3

FIELD OF GRADUATE STUDY, ENROLLMENT STATUS AND STIPEND HOLDING;  
AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS

(Per cent holding a stipend)

Composite Field of Study	Enrollment	
	Full-time	Part-time
Life Science . . . . .	89 (695)	62 (277)
Physical Science . . . . .	88 (954)	54 (606)
Engineering . . . . .	83 (519)	48 (770)
Behavioral Science . . . . .	77 (661)	42 (376)
Humanities . . . . .	64 (447)	32 (440)
Total all fields . . . . .	82 (3,276)	47 (2,469)
N . . . . .	= 5,745	
NA on Enrollment or Stipend . . . . .	= 191	
Aliens . . . . .	= 878	
Total N . . . . .	= 6,814	

Type of First Stipend

When full-time students held stipends, their first stipend was most likely to be a fellowship (36 per cent). Close to three in ten (29 per cent) of the stipend holders among the full-time students held RA's, another 27 per cent held TA's and less than one in ten (8 per cent) received stipends in the form of scholarships.<sup>5</sup> Stipend holders among part-time students, on the other hand, were most likely to be

<sup>5</sup> Certain graduate schools do not permit students with RA's and TA's to enroll for a full course load. Such students would be classified as full-time on the basis of the Enrollment Index only if they were at schools in which full-time study was possible and they were averaging at least forty hours a week on academic work (dissertations, language requirements, comprehensive exams and the like).

recipients of scholarships that covered part or all of their tuition but provided no cash grant for living expenses. Three in ten were TA's, another two in ten were RA's and only 12 per cent held fellowships as their first stipend (Table 3.4).

TABLE 3.4

COMPOSITE FIELD OF STUDY, ENROLLMENT STATUS AND TYPE OF FIRST STIPEND; AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS  
(Per cent holding various types of stipends among stipend holders)

Composite Field of Study	Enrollment Status	Type of First Stipend				Total Per cent	N
		Scholarship	Fellowship	RA	TA		
Life Science . . .	Full-time	5	37	37	22	101	604
	Part-time	19	22	29	31	101	170
Physical Science	Full-time	4	31	30	36	101	833
	Part-time	35	11	16	38	100	320
Engineering . . .	Full-time	14	39	30	17	100	428
	Part-time	58	11	16	15	100	357
Behavioral Science . . .	Full-time	7	41	32	21	101	500
	Part-time	23	13	32	32	100	154
Humanities . . . .	Full-time	17	36	9	39	99	279
	Part-time	36	8	7	48	99	135
Total all fields . .	Full-time	8	36	29	27	100	2,644
	Part-time	38	12	19	30	99	1,136

N . . . . . = 3,780  
 Inapplicable or NA . . . . . = 2,156  
 Aliens . . . . . = 878  
 Total N . . . . . = 6,814

The highest percentage of scholarships among full-time stipend holders occurred in the Humanities (17 per cent); this form of support went least frequently to the Physical Science stipend holders of similar enrollment status (4 per cent). Part-time students with stipends in the form of scholarships were most frequently found among Engineering stipend

holders (58 per cent) and least frequently among those in Life Sciences (19 per cent). Field differences in fellowship support among full-time students with stipends were modest, ranging from a high of 41 per cent in the Behavioral Sciences to a low of 31 per cent in the Physical Sciences. Even 22 per cent of the Life Science stipend holders enrolled on a part-time basis, as opposed to 8 per cent of those in the Humanities, held fellowships as their first stipends.

As for field differences involving duty stipends, the Humanities were at the top of the bottom, depending on the type of stipend held. Both full-time and part-time stipend holders in the Humanities were least likely of students in any of the fields to hold a RA (9 per cent and 7 per cent respectively) and they were most likely to be holding a TA (39 per cent and 48 per cent respectively). Some 37 per cent of the Life Science full-time students holding stipends were RA's; the field with the highest proportion of part-time students performing research duties for stipend support was the Behavioral Sciences (32 per cent). TA's were the type of duty stipends received least frequently among stipend holders studying on a full-time basis in the Engineering composite field (17 per cent) and the same field also ranked at the bottom among part-time students holding TA's (15 per cent).

#### Source of First Stipend

Close to four in ten full-time students with stipends secured their support from the Federal government while only one in four (23 per cent) of the part-time students had such support (Table 3.5). About 11 per cent of full-time stipend holders identified their source as the National Science Foundation, and 12 per cent, a Public Health Service (PHS) program or agency. Seven per cent of part-time students mentioned NSF, and 4 per cent, the PHS.

Six in ten stipend holders studying on a full-time basis identified a non-Federal source, the percentage increasing to 77 for the part-time stipend holders. Some 46 per cent of the former and 42 per cent of the latter identified their schools as the source (this included the recipients who were uncertain of the donor but knew that the school was administering the program.

TABLE 3.5

FIELD OF STUDY, ENROLLMENT, AND SOURCE OF FIRST STIPEND; AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS

(Per cent receiving stipend from various sources among stipend holders)

Composite Field of Study	Enrollment	Source of First Stipend										Total non-Federal gov't	Total per cent	N
		National Science Foundation	Public Health Service	All other Federal gov't	Total Federal gov't	All school sources	Business firm or corp.	Other						
Life Science	Full-time	15	25	8	48	41	2	9	52	100	604			
	Part-time	18	15	4	37	48	4	11	63	100	170			
Physical Science	Full-time	16	4	20	41	49	5	6	59	100	833			
	Part-time	14	2	12	27	43	22	8	73	100	320			
Engineering	Full-time	11	4	23	38	40	14	8	62	100	428			
	Part-time	2	1	16	19	22	52	6	81	100	357			
Behavioral Science	Full-time	6	22	14	42	43	1	12	57	99	500			
	Part-time	1	10	13	23	55	5	16	77	100	154			
Humanities	Full-time	-	-	13	13	67	-	20	87	100	279			
	Part-time	-	1	4	4	68	3	25	96	100	135			
Total all fields	Full-time	11	12	16	39	46	4	10	60	99	2,644			
	Part-time	7	4	11	23	42	24	11	77	100	1,136			

N . . . . . = 3,780  
 NA Type . . . . . = 78  
 NA Enrollment . . . . . = 187  
 NA Stipend, Not Applicable . . . . . = 1,891  
 Aliens . . . . . = 878  
 Total N . . . . . = 6,814

Major differences in source of non-federal stipends were seen in business and industry: 4 per cent of the full-time students and 24 per cent of the part-time students received their stipend support from this source.

Some 48 per cent of the full-time and 37 per cent of the part-time Life Science stipend holders received federal support. More than four in ten full-time stipend holders in the Physical and Behavioral Science fields also secured their stipends from a federal source. Among full-time students in Engineering, 38 per cent had federal stipends, but only 13 per cent of the full-timers in the Humanities were in the same boat. Widespread field differences also obtain among part-time students: As mentioned above, Life Science ranked highest and Humanities again placed at the bottom (only 4 per cent in the latter field holding stipends received them from a federal source). The Public Health Service supported one quarter of the full-time stipend holders in the Life Sciences, 22 per cent in the Behavioral Sciences of similar enrollment status, and 15 per cent of the part-time students with stipends in the Life Sciences. The National Science Foundation provided support to 15 per cent of the full-time and 18 per cent of the part-time stipend holders in the Life Sciences. NSF was also the source of 16 per cent of the first stipends held by full-time students with stipends in the Physical Sciences, and 14 per cent of the first stipends of part-time students in the same field. In Engineering, 11 per cent of those who were studying full-time and 2 per cent of those part-time with stipend support received their first stipends from NSF.

University support ranged from a high of 68 per cent among part-time stipend holders in the Humanities to a low of 22 per cent among part-time stipend holders in Engineering. Among the full-time students with university administered stipends, Humanities again ranked at the top--67 per cent, as compared with 40 per cent among Engineering students. The bulk of business and industrial stipend support was channeled into Engineering: fully 52 per cent of all part-time and 14 per cent of all full-time students with stipends in this field secured their assistance

from this source. The remainder went to the Physical Sciences--5 per cent of the full-time students and 22 per cent of the part-time students in this field secured their stipends from business or industry.

### Some Correlates of Enrollment Status

We have shown that two things account for much of the variation in stipend holding: field of study and enrollment status. Furthermore, in each field, the types of stipends secured and the agencies providing the stipends were easily differentiated by introducing enrollment status as a control variable. In this section of the chapter, additional information is presented on some of the conditions that account for differences in enrollment status.

#### Field and Stage of Study

Table 3.6 shows that the proportion of full-time students in the sample increased with just about every successive advance in graduate study. Less than one-half of the students (46 per cent) in the sample who were in Stage I (having completed less than a year of graduate study) were enrolled full-time, but among advanced students working for the doctorate and writing dissertations (Stage IV) over three out of four (77 per cent) were full-time students.

At the extremes, only 32 per cent of Stage I students in Engineering were full-time as compared to 83 per cent of the Stage IV students in Life Sciences. Within each field there was a steady increase in the proportion of full-time students, and the field differences at each stage steadily decreased with each successive advance in the program of the study. At Stage I, some 30 percentage points separated the highest field (Life Sciences) from the lowest field (Engineering), but at Stage IV, the percentage difference was reduced to 15 points (Life Sciences--83 per cent full-time; Behavioral Sciences--68 per cent full-time). Field differences in full-time enrollment from Stage I to Stage IV were also considerable: percentage differences were slightest in Behavioral Sciences, where only 14 percentage points separated Stage I from Stage

IV in the proportion studying full-time; in the Life Science field there was a 21 per cent difference; and so on. The most striking increase occurred in Engineering: there was a more than two-fold increase in the percentage engaged in full-time study from the first to the final stages of graduate study.

TABLE 3.6

STAGE OF STUDY, FIELD, AND ENROLLMENT STATUS; AMERICAN  
GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS

(Per cent enrolled full-time)

Composite Field of Study	Stage of Study			
	1	2	3	4
Life Science . . . . .	62 (272)	67 (278)	71 (93)	83 (290)
Physical Science . . . . .	49 (438)	55 (424)	61 (231)	82 (439)
Engineering . . . . .	32 (506)	34 (371)	45 (167)	70 (203)
Behavioral Science . . . . .	54 (283)	65 (267)	69 (251)	68 (225)
Humanities . . . . .	42 (350)	43 (253)	65 (162)	71 (103)
Total all fields . . . . .	46 (1,849)	52 (1,593)	62 (904)	77 (1,260)
N . . . . .	= 5,606			
NA Enrollment . . . . .	= 187			
NA Stage of Study . . . . .	= 143			
Aliens . . . . .	= 878			
Total N . . . . .	= 6,814			

Field and Current Grade Point Average

In addition to the increase in full-time enrollment as students progressed in their graduate study, as shown above, Table 3.7 indicates that students reporting a current GPA of A or A- were also more frequently enrolled as full-time students than those having course work graded below B+; 64 per cent of the top students and only 46 per cent

of those performing at the B level or below were enrolled on a full-time basis in the 1963 Spring term. This relationship was found in each of the five fields of study, but the trend was especially pronounced in the Humanities, Engineering and the Physical Sciences. In the Physical Sciences, for example, 70 per cent of those with a current GPA of A or A-, but only 47 per cent of those scoring below B+, were full-time students. The relationship was weaker in the Behavioral Sciences and negligible in the Life Sciences. In the latter, for example, 73 per cent of those averaging A or A- were full-time, but so too were 69 per cent of those averaging B or less. Engineering showed the lowest rate of full-time enrollment for A or A- students (50 per cent), and among Engineers who averaged B+ or less, the rate of full-time enrollment dropped lowest of all (28 per cent). Thus, the poorest students in the Life Sciences were much more likely to be enrolled for full-time study than the best students in the Humanities and Engineering.

TABLE 3.7

FIELD OF STUDY, GRADE POINT AVERAGE, AND ENROLLMENT STATUS;  
AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS

(Per cent enrolled full-time)

Field of Study	Grade Point Average		
	A,A-	B+	B or less
Life Science . . . . .	73 (356)	73 (328)	69 (264)
Behavioral Science . . . . .	68 (464)	62 (345)	59 (207)
Physical Science . . . . .	70 (571)	65 (440)	47 (504)
Humanities . . . . .	59 (374)	51 (271)	33 (192)
Engineering . . . . .	50 (522)	38 (387)	28 (341)
Total all fields . . . . .	64 (2,287)	58 (1,771)	46 (1,508)
N . . . . .	= 5,566		
NA Enrollment . . . . .	= 187		
NA GPA . . . . .	= 183		
Aliens . . . . .	= 878		
Total N . . . . .	= 6,814		

With the three academic variables--field of study, stage of study and current GPA--put together, Table 3.8 shows that academic performance made a difference in the likelihood of full-time enrollment only after Stage of study was taken into account. Thus, the poorest advanced students in the sample were in full enrollment more frequently (62 per cent) than the best students in early phases of graduate work (53 per cent). Again, field differences were paramount: even the poorest Life Science students in early Stages of study were on a full-time basis more frequently (66 per cent) than the very best Engineering students in advanced study (63 per cent). And the graduate student having all three "favorable" attributes (study in Life Sciences, advanced Stage of study and a high current GPA) was enrolled full-time in eight cases out of ten; conversely, the beginning student in Engineering with a low GPA was enrolled full-time in only one case out of four.

Among students in advanced Stages of study, field differences in full-time enrollment generated a spread of 18 percentage points between the top and bottom ranking fields for students with a GPA of A or A-; among the B+ students, the spread increased to 32 points (separating Engineering from Life Sciences), and the differences were of the order of 17 percentage points among the poorest students in these fields at advanced Stages of study. For the beginning students, on the other hand, the gap between fields steadily increased with each step down in academic performance, the spreads being 25, 29 and 41 percentage points respectively. In effect, the heavily supported fields had students in full-time enrollment at early Stages of study even when these students were performing below the level attained by a majority of their peers.

#### Stipend Holding

In Table 3.8, we saw that well over one-half of the top (i.e., current GPA B+ or better) students in early stages of study in Engineering and the Humanities were enrolled for graduate study on a part-time basis. In Physical Science fields of study, four in ten of the students in early Stages of study with top grades were on a part-time basis as measured by the Index of Enrollment. If the nation's supply of manpower

TABLE 3.8

FIELD OF STUDY, STAGE OF STUDY, CURRENT GRADE POINT AVERAGE,  
AND ENROLLMENT STATUS; AMERICAN GRADUATE  
STUDENTS IN FIVE COMPOSITE FIELDS

(Per cent enrolled full-time)

Composite Field of Study	Stage of Study Index*					
	Beginning			Advanced		
	Current Grade Point Average					
	A,A-	B+	B or less	A,A-	B+	B or less
Life Science . . .	64 (184)	62 (179)	66 (174)	81 (172)	82 (148)	71 (68)
Behavioral Science . . . .	63 (206)	60 (181)	55 (151)	71 (259)	62 (165)	67 (54)
Physical Science	59 (244)	58 (236)	40 (363)	76 (322)	72 (208)	60 (144)
Humanities . . . .	47 (224)	45 (180)	29 (175)	72 (155)	59 (91)	* (19)
Engineering . . .	39 (290)	33 (258)	25 (305)	63 (223)	50 (115)	54 (35)
Total all fields	53 (1,148)	50 (1,034)	40 (1,168)	73 (1,131)	67 (727)	62 (320)

N . . . . . = 5,528

NA Enrollment . . . . . = 187

NA Others . . . . . = 221

Aliens . . . . . = 878

Total N . . . . . = 6,814

\* Beginning = Stages I and II.

Advanced = Stages III and IV.

with doctorates in these fields of study is to be significantly increased in the near future, then it may well be the case that stipends will enable many students in the above categories to engage in full-time graduate study. To test this notion, the data were reanalyzed with stipend holding introduced as an additional control variable. The results are presented in Table 3.9.

The best predictor of full-time enrollment is whether a graduate student holds a stipend. Controlling for academic stage and GPA, rates of full-time study are at least twice as high for stipend holders than for others. Among stipend holders, Stage of study and GPA both make a difference, with the former more influential. Among advanced students without stipend support, GPA makes a slight difference. No pattern was found among the beginning students in full-time enrollment.

The effects of stipend holding were maintained for every field, but there were some variations by field in the pattern of full-time enrollment:

Life Sciences: Among the stipend holders, Stage of study and current GPA still make a difference in full-time enrollment. Within each academic category, however, stipend holders are twice as likely as their non-stipend holding counterparts to be in full-time study. Among students in early Stages of study, only stipend holding influences full-time enrollment. It is interesting to note that there were too few students in advanced study without stipends to make comparisons.

Physical Sciences: The rate of full-time study was at least twice as high for stipend holders as for students without this form of support in every academic category. The pattern is similar to that found in the Life Sciences. As a result, the lowest GPA students in early Stages of study with stipend support were more frequently (54 per cent) enrolled full-time than the highest GPA advanced Stage students who lacked stipends (37 per cent).

TABLE 3.9

FIELD OF STUDY, STIPEND HOLDING, STAGE OF STUDY, CURRENT GRADE  
POINT AVERAGE, AND ENROLLMENT STATUS; AMERICAN  
GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS

(Per cent enrolled full-time)

Composite Field of Study	Stipend Holding	Stage of Study Index					
		Beginning			Advanced		
		Current Grade Point Average					
		A,A-	B+	B or less	A,A-	B+	B or less
Physical Science . . .	Yes	67 (188)	67 (170)	54 (208)	85 (281)	80 (176)	68 (117)
	No	30 (56)	33 (66)	23 (155)	37 (41)	28 (32)	26 (27)
Engineering .	Yes	53 (180)	42 (143)	37 (167)	71 (181)	67 (78)	59 (29)
	No	16 (110)	21 (115)	11 (138)	29 (42)	16 (37)	* (6)
Life Sciences	Yes	70 (153)	75 (126)	74 (133)	84 (156)	86 (131)	73 (60)
	No	32 (31)	30 (53)	39 (41)	* (16)	* (17)	* (8)
Behavioral Science . . .	Yes	76 (133)	69 (96)	81 (62)	80 (210)	70 (118)	86 (36)
	No	38 (73)	49 (85)	37 (89)	33 (49)	43 (47)	* (18)
Humanities . .	Yes	67 (101)	62 (73)	33 (48)	79 (117)	72 (60)	* (9)
	No	30 (123)	34 (107)	27 (127)	53 (38)	35 (31)	* (10)
Total all fields . . .	Yes	66 (755)	62 (608)	55 (618)	80 (945)	77 (563)	70 (251)
	No	28 (393)	33 (426)	24 (550)	38 (186)	33 (164)	32 (69)

N . . . . . = 5,528  
 NA Enrollment . . . . . = 187  
 NA Other . . . . . = 221  
 Aliens . . . . . = 878  
 Total N . . . . . = 6,814

Behavioral Sciences: Again, stipend holders attended graduate school on a full-time basis more frequently than the others in every Stage and GPA classification, but, unlike the above two fields, there was no relationship between full-time attendance and Stage or GPA.

Humanities: Stipend holders in every category were twice as likely to be full-time students. In the Humanities, students with better grades attended full-time more frequently than others, with the exception of advanced students with poor grades; academic stage also made a difference, the more advanced students more likely to be full-time attenders.

Engineering: The rates of full-time enrollment were even more sensitive to stipend holding in this field than in the other four composite fields of study, with a four-fold difference observed in the academic category of advanced students with a B+ GPA. Both Stage of study and GPA contributed to differences in full-time enrollment when the effects of stipends were taken into account, resulting in a range from a low of 11 per cent full-time among B or B- beginning students, to a high of 71 per cent among A or A- students in advanced study.

These findings are useful in assessing the potential for moving part-time students into full-time graduate study provided that stipend support is available. If students with GPA's of A or A- currently studying part-time comprise the reservoir of talent particularly requiring motivation for commitment to full-time study, then Table 3.9 suggests that increased stipend support is the answer. Indeed, increased stipend support should raise rates of full-time enrollment at all stages of graduate study. However, there may be a ceiling on the impact of an infusion of stipends into these graduate fields of study; note that even among stipend holders in early stages of graduate study, rates of full-time enrollment range from a high of 76 per cent in the Behavioral Sciences to a low of 53 per cent in Engineering. Is it the lack of stipends that accounted for the finding that only one in two stipend holders in this

academic category of Engineering students studied full-time last spring? Perhaps non-academic factors such as family role and the pattern of non-stipend employment should be considered as well.

### Field and Family Role

Knowing that a majority of the sample was married, and that a substantial minority of the men and women enrolled for graduate study in Spring, 1963, were parents of at least one child as well, there is good reason to expect that full-time study last spring also depended on the family role of the graduate student. And it did. Table 3.10 shows that bachelors were most likely to be in full-time study (68 per cent), followed by husbands (65 per cent) and then fathers (47 per cent). Single and married women, however, were enrolled full-time to the same extent (over one-half in each case), but mothers were least likely of all to be studying full-time last spring (only 31 per cent).

Consider, however, the field differences among the men: in each field, fathers were less likely to be enrolled full-time than were bachelors or husbands, but the fathers who happened to be working for advanced degrees in the Life Sciences were more likely to be full-time students than the bachelors in Engineering. Field of study importantly shaped the chances of studying full-time despite the over-all relationship between family role and enrollment status. This held true for women as well as men. In each field, mothers were less likely to be full-time than other female students, but mothers in the Life Sciences were full-time more frequently than single women in the Humanities or Physical Sciences.

The influence of field is further noted when the following is considered: within each family role category, women were less likely to be full-time students than men in that field, but all the women in the Life Science field were slightly more likely to be enrolled full-time than were their male counterparts in the Humanities or Engineering.

TABLE 3.10

FIELD OF STUDY, FAMILY ROLE, AND ENROLLMENT STATUS; AMERICAN  
GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS

(Per cent enrolled full-time)

Composite Field of Study	Life Role					
	Males			Females		
	Bachelor	Husband	Father	Single woman	Wife	Mother
Life Science . . .	79 (275)	80 (146)	67 (297)	65 (130)	80 (30)	56 (68)
Behavioral Science . . . .	71 (270)	73 (188)	57 (328)	71 (126)	60 (38)	28 (54)
Physical Science	74 (565)	67 (308)	50 (513)	49 (107)	52 (23)	18 (28)
Humanities . . . .	64 (245)	74 (105)	45 (181)	43 (185)	45 (62)	18 (78)
Engineering . . .	52 (382)	43 (242)	32 (646)	* (1)	* (2)	* (2)
Total all fields . . . .	68 (1,737)	65 (989)	47 (1,965)	56 (549)	57 (155)	31 (230)
N . . . . . = 5,625						
NA Enrollment . . . . . = 187						
NA Life Role . . . . . = 124						
Aliens . . . . . = 878						
Total N . . . . . = 6,814						

Field and Non Stipend Employment

Having shown that full-time students received some form of stipend support nearly twice as frequently as part-time students, it is to be expected that enrollment status and the employment experience reported by the students last year would also be interdependent. According to Table 3.11 less than one-half (47 per cent) of the full-time

students in the sample were employed last year, whereas close to four-fifths (78 per cent) of the part-time students took some form of non-stipend employment during that time period. Full-time Life Science students were least likely (35 per cent) to have been employed, while 62 per cent of the Engineering students of like enrollment status reported some form of employment. Among the part-time students, the percentages ranged from 68 in the Life Sciences to 88 in Engineering. While the range in percentage differences among part-time students in the high and low fields was somewhat reduced in comparison with differences occurring among full-time students, it was substantial nonetheless. Almost as many full-time students in Engineering reported non-stipend employment as did part-time students in the Life Sciences.

Furthermore, level of enrollment for academic study was influenced by hours of work per week. The second panel of Table 3.11 shows the percentage employed on a full-time regular basis, i.e., 35 or more hours per week for 10 or more months during the year. Only 5 per cent of the students enrolled for full-time study also maintained full-time regular employment; these high energy individuals were fairly evenly distributed by field of study. Among the students enrolled on a part-time basis, however, we see that some 50 per cent had full-time regular employment. This type of employment was especially prevalent among students in Engineering, where 69 per cent were full-time workers most of the calendar year, as were close to one-half (47 per cent) of the part-time students in the Physical Sciences. In the Life Sciences, however, only three part-time students in ten had full-time regular employment.

In sum: stipend holding made a substantial difference in the rates of full-time enrollment in the five composite fields of graduate study, but family roles and non-stipend employment--including work on a full-time basis throughout the year--also were important correlates of full-time attendance. Since the fields varied in the proportion of their graduate students in full-time regular employment, and also in the extent to which students were responsible for the economic welfare of spouses and children, we should assess the limits that extra-academic

roles may impose on a policy of stipend support aimed at increasing the number of full-time graduate students in these fields of study.

TABLE 3.11

FIELD OF STUDY, ENROLLMENT STATUS, AND EMPLOYMENT 1962-1963;  
AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS

(Per cent in employment category)

Composite Field of Study	Enrollment Status	Employment		N
		Any type of non-stipend employment	Regular full-time employment	
Life Science . . . . .	Full-time	35	5	695
	Part-time	68	31	276
Physical Science . . .	Full-time	43	3	954
	Part-time	75	47	606
Humanities . . . . .	Full-time	47	3	447
	Part-time	75	40	439
Behavioral Science . .	Full-time	52	4	661
	Part-time	75	41	376
Engineering . . . . .	Full-time	62	8	518
	Part-time	88	69	769
Total all fields . . .	Full-time	47	5	3,275
	Part-time	78	50	2,466
N . . . . . = 5,741				
NA Enrollment . . . . . = 187				
NA Employment . . . . . = 8				
Aliens . . . . . = 878				
Total N . . . . . = 6,814				

Readiness for Full-time Study

Field of Study

To measure the availability of graduate students for full-time study, the questionnaire included the following item:

"What is the least it would take to get you into graduate studies full-time?"

Students classified as part-time on the basis of the Enrollment Index answered as follows:

	%
Tuition scholarship . . . . .	1
Tuition scholarship plus \$500 stipend with no obligations . .	1
Tuition scholarship plus \$1,000 stipend with no obligations .	4
Tuition scholarship plus \$2,000 stipend with no obligations .	14
Tuition scholarship plus \$3,000 stipend with no obligations .	14
Tuition scholarship plus \$4,000 stipend with no obligations .	22
None of the above . . . . .	44

We see that over one-half (56 per cent) of the students classified as part-time attenders last Spring would enroll on a full-time basis provided that stipend support in the form of scholarships and cash grants of specific amounts were to become available to them. Tuition scholarships plus duty-free cash grants with a value of less than \$2,000 would barely make a dent; only 6 per cent circled anything less than this sum. Some 14 per cent of these part-time students would study on a full-time basis provided a \$2,000 fellowship came their way; another 14 per cent could be recruited to full-time study provided the cash value of the stipend amounted to \$3,000; and over one in five (22 per cent) of those studying part-time last spring would be enrolled full-time if the cash grant amounted to \$4,000. On the face of it, substantial numbers of part-time students expressed willingness to move into full-time studies if somebody was willing to offer support in the form of cash grants amounting up to \$4,000. Presumably, even more part-time students could be induced to study full-time if the sum was set higher than \$4,000.

There are important field differences, however, in the readiness to undertake full-time study under the conditions set forth (Table 3.12). Over one-half (52 per cent) of those in Engineering would not consider full-time study even with stipends offering cash grants of \$4,000, nor would 44 per cent of Physical Science students or 43 per cent of those in the Behavioral Science composite field. Proportionately fewer students in Humanities and Life Science fields registered this reluctance to engage in full-time study--36 per cent among the former and 31 per cent among the

latter. Further, Engineering students were the least inclined to study full-time if the stipend amount was \$2,000 or less (15 per cent), while part-time students in the Humanities were most likely (29 per cent) to be so inclined.

TABLE 3.12

FIELD OF STUDY AND STIPEND REQUIREMENTS FOR FULL-TIME ENROLLMENT;  
PART-TIME AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS  
(Per cent requiring stipends in various amounts)

Composite Field of Study	Stipend Required for Full-time Enrollment						N
	Tuition expenses and cash grant amounting to . . .				None of the above would get me to go full-time	Total Per cent	
	Less than \$2,000	\$2,000	\$3,000	\$4,000			
Physical Science . .	5	14	14	23	44	100	496
Engineering .	4	11	10	24	52	101	690
Life Science	5	16	23	25	31	100	214
Behavioral Science . .	7	18	13	19	43	100	308
Humanities .	14	15	16	20	36	101	377
Total all fields .	6	14	14	22	44	100	2,085

N . . . . . = 2,085  
 NA Amount . . . . . = 358  
 NA Enrollment . . . . . = 187  
 Full-time: Not Applicable . . . . . = 3,306  
 Aliens . . . . . = 878  
 Total N . . . . . = 6,814

Field and Family Role

The most important factor in addition to field of study that accounted for part-time student willingness to undertake full-time study

if stipends with a cash value of up to \$4,000 were made available, was found to be Family Role. Table 3.13 shows that bachelors in the sample were most likely and fathers least likely to be ready to study full-time with stipend support. (See panel f of this table.) Across the board, readiness for full-time study decreased with each step into the web of family involvement: among both men and women the percentage of students saying "none of the above," to a stipend of at least \$4,000 for full-time study, increased when bachelors were compared with spouses, and spouses were compared with parents. Thus 27 per cent of the single men but 54 per cent of the fathers were reluctant to study full-time under the conditions of stipend support set by the questionnaire item. And 33 per cent of the single women as compared with 57 per cent of the mothers also indicated unwillingness to enter full-time study for their graduate degree even if this form of support were forthcoming.

Furthermore, the amount necessary to recruit these part-time students to full-time study depended on their family roles. Some 60 per cent of the bachelors would study full-time if stipends with a value of less than \$4,000 were offered, but only 16 per cent of the fathers in the sample would do so. Similarly, more single women than mothers would study full-time under these conditions, and twice as many mothers as fathers would study full-time if the lesser amount (i.e., under \$4,000) were made available. In effect, both the cost of full-time study as well as willingness to undertake full-time study were importantly determined by the part-time graduate student's family role last spring.

Substantial field differences persisted among students in the family role category of father. The percentage of fathers in each of the fields saying "none of the above" to stipends with values of at least \$4,000 ranged from a high of 62 per cent among those in Engineering down to only 36 per cent among those in the Humanities. This difference by field in the readiness of fathers in part-time study to consider full-time enrollment undoubtedly reflects the salary structure available in each of the fields for those who are employed on a full-time regular basis.

TABLE 3.13

FIELD OF STUDY, FAMILY ROLE, AND STIPEND REQUIREMENTS FOR FULL-TIME ENROLLMENT;  
PART-TIME AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS

(Per cent requiring stipends in various amounts)

Composite Field of Study	Family Role	Stipend Required for Full-time Enrollment			None of the above would get me to go full-time	Total Per cent	N
		Tuition expenses and cash grant amounting to . . .		\$4,000			
		Less than \$4,000	\$4,000				
a) Engineering	Male: Bachelor	52	15	33	100	160	
	Husband	34	25	41	100	125	
	Father	11	27	62	100	399	
	Female: Single	*	*	*	*	1	
	Wife	-	-	-	-	-	
	Mother	*	*	*	*	2	
b) Physical Science	Male: Bachelor	64	11	25	100	97	
	Husband	37	23	41	101	89	
	Father	16	31	53	100	228	
	Female: Single	46	11	43	100	46	
	Wife	*	*	*	*	6	
	Mother	18	23	59	100	22	
c) Life Science	Male: Bachelor	77	5	19	101	40	
	Husband	66	17	17	100	21	
	Father	18	39	43	100	85	
	Female: Single	69	13	18	100	42	
	Wife	*	*	*	*	3	
	Mother	*	*	*	**	16	

TABLE 3.13--Continued

d) Behavioral Science	Male:	Bachelor	61	17	22	100	57	
		Husband	52	15	33	100	39	
		Father	20	28	52	100	118	
	Female:	Single	52	18	30	100	34	
		Wife	*	*	*	*	10	
		Mother	27	3	70	100	36	
	e) Humanities	Male:	Bachelor	62	10	28	100	72
			Husband	54	14	32	100	22
			Father	30	34	36	100	91
		Female:	Single	45	21	35	101	92
		Wife	34	19	47	100	32	
		Mother	42	9	49	100	55	
f) Total all fields	Male:	Bachelor	60	13	27	100	427	
		Husband	41	21	38	100	292	
		Father	16	30	54	100	925	
	Female:	Single	50	17	33	100	212	
		Wife	33	18	49	100	51	
		Mother	33	10	57	100	131	
	N . . . . . = 2,038							
	Full-time . . . . . = 3,306							
	NA one or more items. . . . . = 592							
	Aliens . . . . . = 878							
Total N . . . . . = 6,814								

Panels a) through e) in Table 3.13 indicate that family role differentiated among those who would be available for full-time study in each of the five fields. Also, in each field the cost of full-time study steadily increased with each increment in family responsibility among the male students.

#### Reasons for Not Studying Full-Time

Some 44 per cent of the students classified as part-time on the basis of the Enrollment Index reported that they would not register for full-time study even if a stipend with a cash grant of \$4,000 would be offered to them (Table 3.12). An open-ended question soliciting reasons for not going full-time under these conditions yielded the following:

On the face of it, reasons for not considering full-time study appear to reflect the circumstances of graduate student life: over one-fourth (28 per cent) explicitly mentioned family and economic obligations such as "I'm already in debt \$6,000," "the payments on the house are too great," and the like. Another 15 per cent stated that \$4,000 would not be sufficient to permit them to study on a full-time basis but did not pinpoint their family or other economic responsibilities. Close to one in five (19 per cent) indicated a preference for part-time study--"prefer to take school at my own pace" or "I'm not in that much of a hurry"--signifying that they are exercising a choice for part-time study rather than being kept from full-time enrollment. About 14 per cent indicated that their work experience was as important in training for their careers as the formal program of study, and 5 per cent stated that aside from considerations of career training, a change to full-time study would entail the loss of tenure or seniority at the job they currently held (Table 3.14).

Again, the most useful variable in interpreting these reasons for not studying full-time, even if stipend support of \$4,000 were offered, is that of the graduate student's family role. According to Table 3.15, there was one pattern of reasons that characterized bachelors and another pattern for fathers. Thus, bachelors more than twice as

frequently as fathers (26 per cent versus 11 per cent) mentioned the training value of their present employment for their long-run careers. In addition, bachelors were more than twice as likely as fathers (32 per cent versus 13 per cent) to express a preference for part-time study in terms of personal convenience, pace of study, etc. Conversely, 37 per cent of the fathers mentioned family or economic obligations and another 21 per cent said that \$4,000 would not be sufficient to meet their current needs, while only one bachelor in twenty gave either of these reasons for not studying full-time.

TABLE 3.14

REASONS FOR NOT ENROLLING FOR FULL-TIME STUDY UNDER ANY  
STIPEND CONDITIONS: PART-TIME AMERICAN GRADUATE  
STUDENTS WHO WOULD NOT GO FULL-TIME

Reason	Per cent
Employment	
Job is as important as school for career . . . . .	14
Would loose tenure, security . . . . .	5
Prefer job to school . . . . .	11
Family or economic obligations . . . . .	28
\$4,000 and tuition expenses are not enough . . . . .	15
Prefer to study part-time . . . . .	19
Will finish school work this year . . . . .	6
Will finish school work soon . . . . .	10
Will study full-time in the future . . . . .	2
Quitting school . . . . .	1
Miscellaneous other . . . . .	6
<hr/>	
N . . . . .	= 857
NA on reasons . . . . .	= 57
NA Enrollment . . . . .	= 187
Not Applicable . . . . .	= 4,835
Aliens . . . . .	= <u>878</u>
Total N . . . . .	= 6,814

Note: Multiple responses were permitted.

TABLE 3.15

FAMILY ROLE AND REASONS FOR NOT ENROLLING FOR FULL-TIME STUDY; PART-TIME AMERICAN GRADUATE STUDENTS WHO WOULD NOT GO FULL-TIME

(Per cent giving these reasons)

Reasons	Family Role					
	Males			Females		
	Bachelor	Husband	Father	Single woman	Wife	Mother
<b>Job:</b>						
Training and career . . . . .	26	18	11	23	28	7
Tenure, security . . . . .	5	4	5	11	-	3
Other . . . . .	14	14	11	17	-	5
<b>Family and economic obligations . . . . .</b>	4	14	37	3	12	48
\$4,000 not enough . . . . .	5	16	21	5	-	-
Prefer not to go full-time . . . . .	32	16	13	22	32	38
All other . . . . .	32	38	18	30	32	15
<b>Total per cent . . . . .</b>	118	120	116	111	108	116
<b>N . . . . . =</b>	105	103	478	64	24	71
	Total . . . . . =					845
	NA Life Role . . . . . =					55
	NA Reasons . . . . . =					14
	Inapplicable . . . . . =					4,835
	NA Enrollment . . . . . =					187
	Aliens . . . . . =					878
	<b>Total N . . . . . =</b>					<b>6,814</b>

Similarly, mothers were less likely than single women or wives without children to mention the training value of their current employment, but mothers did mention their family and/or economic duties as precluding full-time study. While these relationships were similar to those found among the men when family role comparisons were examined, it is interesting to note that sex roles had opposite effects on the

likelihood of viewing part-time study as a preference rather than a necessity: among men it was the bachelor who most often could afford to "prefer" part-time study, but among the females the single women were less likely than married women to think of part-time study as preferable.

We have seen that there were a number of obstacles standing in the way of full-time study in the Spring of 1963. Fields of study differed in the extent and level of stipend support and in the proportion already studying full-time or committed to full-time regular employment. The materials presented in this chapter indicate the potential use for additional stipend support among students enrolled for part-time graduate study.

The research completed to date has raised as many questions as it has answered. While documentation has been provided concerning the stipend factor in financing graduate education, we know that there are a number of non-stipend sources of income, upon which students characteristically rely, which have not been described in this first report. How much income did students typically derive last year from non-stipend employment? Was there a working spouse and what proportion of the total income came from this source? Correlatively, the pattern of expenditures last year needs careful study. What was the ratio of academic to non-academic expenditure, and how did it vary among students at different income levels, at various stages of academic progress, and in the several composite fields of study?

There is also reason to expect that the support pattern varied by type of graduate school as well as by field of graduate study. For example, did students at private institutions have the same chances of securing certain kinds of stipend support as did those who happened to be enrolled in public institutions? An analysis of institutional differences in graduate education is warranted. And finally, what are the variables--financial, academic and social--that contribute to delay in completing the terminal degree program? These topics will be considered in our final report to the National Science Foundation.

APPENDIX I

SAMPLING METHOD FOR STUDY OF FINANCES  
OF GRADUATE STUDENTS\*

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\* This appendix was prepared by Seymour Sudman, Director of  
Sampling, National Opinion Research Center.

## 1. Sample Design

This study can best be understood as primarily intended to provide detailed information about the financial conditions of graduate students in 37 separate fields. Each field was sampled at a different sampling rate so that sufficient cases would be available in each field. It should be clear that this was not intended to be an efficient sample of graduate schools as such, but of the 37 graduate fields of prime interest. Since different sampling methods were used for different fields, one should really describe each field separately. Since this would become too burdensome on the reader, fields are grouped by the type of sampling used.

## 2. Fields with 100 Per cent Sampling

Some fields had so few students that all students in the field were included in the sample. That is, a school which had five or more students in a field was included in the sample for this field even though it was not sampled for any other fields. Generally, these small schools were contacted by mail rather than personal methods. The 13 fields which were sampled at the 100 per cent rate and the sample sizes of these fields are listed below:

<u>Field</u>	<u>Total Sample Size</u>
Biophysics	282
Forestry	710
Astronomy	328
Metallurgy	245
Meteorology	356
Oceanography	234
All other physical sciences	502
General Physical Science	196
Anatomy	338
Genetics	438
Pathology	212
Pharmacology	323
Physiology	695

### 3. Engineering Fields

Five of the fields were in engineering. These fields were sampled separately. The estimated initial sample size for each of the engineering fields was set at 1,250 students to allow for separate analyses of day and evening students, as well as to allow for some non-return and unuseable questionnaires. From the 129 universities offering graduate work in engineering, 43 selections were made with probabilities proportionate to the total number of students (both full and part-time) enrolled in the following four fields: civil, chemical, electrical and mechanical engineering. Fourteen schools fell into the sample with certainty. The source of data about engineering schools was Engineering Enrollments and Degrees, 1960, Circular 638, of the U.S. Department of Health, Education and Welfare.

The number of students and the sampling rate varied by field and school. For 14 schools which fell into the sample with certainty, the sampling interval for each field was the total number of students enrolled in the United States in that field divided by 1,250. These sampling rates for the five fields are given below:

Chemical Engineering	1: 2.43
Civil Engineering	1: 3.14
Electrical Engineering	1: 9.50
Mechanical Engineering	1: 4.86
Other Engineering	1: 8.08

For the other engineering schools selected, the average sample size per school was 25. The actual sample size selected for a school was 25 times the ratio:

$$\frac{\text{Percentage of U.S. Enrollment in Field in School S}}{\text{Percentage of U.S. Enrollment in All Four Fields in School S}}$$

### 4. Science and Humanities Fields

The sampling method for the remaining 18 Science and Humanities fields was similar to that used in drawing the engineering student sample. The estimated initial sample size for each field was set at 800 to allow for a separate analysis of full-time students,

if required. The selection of schools was made with probabilities proportional to total students enrolled in the Biological and Physical Sciences and in Mathematics. Seventy-two selections were made and 15 schools fell into the sample with certainty. (Some of these schools were also in the engineering school sample.) The source of data for sampling these fields was the Survey of Students Enrolled for Advanced Degrees: Fall, 1961, Publication OE-54009-61 of the U.S. Office of Education.

For the 15 schools which fell into this sample with certainty, the sampling interval for each field was the total number of students in the United States enrolled in that field divided by 800. These sampling rates are shown at the end of this draft.

For the other schools selected, the average sample size per school was 10. The actual sample size selected for a school was 10 times the ratio:

$$\frac{\text{Percentage of U.S. Enrollment in Field in School S}}{\text{Percentage of U.S. Enrollment in All Science Fields in School S}}$$

For some fields, this sampling method led to total samples which were smaller than the required 800 sample. In these cases, the total sample was raised by applying a flat ratio of:

$$\frac{800}{\text{Total Sample Initially Selected}}$$

to the sample drawn at each school.

In some schools, the required sample for some fields is larger than the total number of students in the fields at that school. For these schools, all graduate students in the fields are selected, and weights will be applied in tabulating the results to increase the samples at these schools to their proper size. This weighting is responsible for the five per cent difference between the unweighted sample size of 20,114 and the weighted sample of 21,189.

There is the possibility of growth or decline in enrollments from 1961 to 1962. Although sampling rates for each field at each

school are computed based on the 1961 enrollment figures, the sample is self-adjusting for any increases or declines in enrollment.

Sampling Rates by Field for Science Schools Selected with Certainty

Agriculture	1: 4.19
Biology	1: 3.17
Botany	1: 1.69
Zoology	1: 2.85
All other biological science	1: 5.25
Microbiology	1: 2.46
Biochemistry	1: 2.32
English	1:17.35
Geography	1: 1.07
Mathematics and Statistics	1:15.84
Chemistry	1:14.25
Physics	1:12.71
Geology and Geophysics	1: 3.23
Psychology	1: 7.17
Anthropology	1: 1.42
Economics	1: 5.31
History	1: 9.82
Sociology	1: 3.90

5. Social Work

The same sampling procedure and the same schools as sampled for the science and humanities fields were used to sample Social Work graduate students, but the over-all sample size was increased to 1,100 so that a special analysis could be made of part-time students. The over-all sampling rates at schools selected with certainty was 1: 5.64.

6. Sampling Within Schools

Where local representatives had been hired at the large schools, the sampling within schools was done locally using sampling instructions

prepared in the Chicago office. Where no local representatives were hired, the entire lists of students in the required fields were obtained from the schools and the sampling was done in Chicago. In either case, a systematic sample was used. After the sampling interval had been computed, a random start was made using a random number table, and the numbers of the students to be sampled were printed using an IBM 1620 computer. These listings were then used to record the names and addresses of the students selected. A copy of the sampling instructions is attached as Appendix II.

#### 7. Sample Execution

The total sample selected for this study consisted of 24,553 graduate students. The total number of returns received in time for processing was 20,114 or 82 per cent of those designated. Cooperation rates by field and school varied only slightly around this average of 82 per cent with the largest differences being in the smallest fields. Table A on the next page gives the selected samples, the actual returns and the cooperation rates by field. Table B gives the same data by school.

Some readers may be interested in the techniques used to achieve such a high rate of return on an extremely difficult self-administered questionnaire. First, it should be pointed out that graduate students form an elite population and are better able to understand a difficult questionnaire than would be a sample of the general population. The major argument used to persuade this group to respond was, of course, the fact that this information was to be used by the federal government in developing its program of financial aid to graduate students. Thus, it was to the general self-interest of the group to respond.

A combination of mail, phone, personal and telegraphic contacts was used to reach respondents. Initial contacts were by mail either from NORC's Chicago office or locally. At the large schools a special representative was hired to do the mailing and follow-up work locally. At smaller schools, both mailing and follow-up were done from Chicago.

TABLE A  
COOPERATION RATES BY DETAILED FIELD OF STUDY

Field	Sample	Returns	Cooperation Rate
Agriculture . . . . .	756	649	86
General Biology . . . . .	733	581	79
Botany . . . . .	636	545	86
Zoology . . . . .	756	622	82
Microbiology . . . . .	682	576	84
Biochemistry . . . . .	627	554	88
Biophysics . . . . .	282	236	84
Anatomy . . . . .	338	279	83
Genetics . . . . .	438	394	90
Pathology . . . . .	212	167	79
Pharmacology . . . . .	323	281	87
Physiology . . . . .	695	569	81
All other biology . . . . .	571	499	87
Social Work . . . . .	1,105	859	78
English . . . . .	700	534	76
Forestry . . . . .	710	599	84
Geography . . . . .	608	510	84
Mathematics . . . . .	720	588	82
General Physical Science . . . . .	196	170	87
Astronomy . . . . .	328	278	85
Chemistry . . . . .	778	666	86
Metallurgy . . . . .	245	222	91
Meteorology . . . . .	356	291	82
Physics . . . . .	727	611	84
Geology and Geophysics . . . . .	657	514	78
Oceanography . . . . .	234	199	85
Other earth and physical science . . . . .	502	327	65
Psychology . . . . .	898	771	86
Anthropology . . . . .	774	590	76
Economics . . . . .	1,026	822	80
History . . . . .	760	594	78
Sociology . . . . .	772	635	82
Chemical Engineering . . . . .	969	800	83
Civil Engineering . . . . .	1,015	838	83
Electrical Engineering . . . . .	1,231	987	80
Mechanical Engineering . . . . .	1,220	970	80
Other engineering . . . . .	973	792	81
Gross Total . . . . .	24,553	20,114	82

TABLE B

## COOPERATION RATES BY GRADUATE SCHOOL

School	Sample	Returns	Cooperation Rate
University of Calif. (Berkeley)	1,016	791	78
University of Minnesota . . . .	797	729	91
University of Wisconsin . . . .	709	643	91
University of Michigan . . . .	670	564	84
University of Illinois . . . .	604	563	93
Ohio State University . . . .	547	481	88
Columbia University . . . .	527	396	75
University of California at Los Angeles . . . . .	485	370	76
University of Washington . . . .	483	400	83
Michigan State University of Agriculture . . . . .	460	361	78
Syracuse University . . . . .	449	337	75
University of Pennsylvania . . . .	448	337	75
University of North Carolina at Chapel Hill . . . . .	421	316	75
Massachusetts Institute of Technology . . . . .	417	334	80
Purdue University . . . . .	415	393	95
New York University . . . . .	408	283	69
Yale University . . . . .	407	331	81
University of Texas . . . . .	402	328	82
University of Maryland . . . . .	382	335	88
Hunter College . . . . .	380	281	74
Cornell University . . . . .	361	276	76
Oregon State College . . . . .	359	312	87
Polytechnic Institute of Brooklyn . . . . .	359	240	67
University of Tennessee . . . . .	350	295	84
Pennsylvania State University	324	302	93
The State University of Rutgers	318	259	81
University of Oregon . . . . .	313	262	84
State University of Iowa . . . .	312	288	92
Catholic University of America	306	233	76
University of Chicago . . . . .	297	242	81
University of Kansas . . . . .	297	264	89
Wayne State University . . . . .	296	237	80
University of Missouri . . . . .	294	217	74
Harvard University . . . . .	290	199	69
University of Pittsburgh . . . .	288	237	82
Tulane University of Louisiana	287	223	78
University of Kentucky . . . . .	275	234	85
Iowa State University . . . . .	272	252	93

TABLE B--Continued

School	Sample	Returns	Cooperation Rate
Northeastern University . . .	270	223	83
Adelphi College . . . . .	266	167	63
University of Utah . . . . .	266	203	76
University of Massachusetts .	255	215	84
St. Louis University . . . . .	253	233	92
University of Notre Dame . . .	250	202	81
Union College and University	246	165	67
Western Reserve University . .	245	213	87
University of New Mexico . . .	213	166	78
Okla. State Univ. of A. and A.S.	200	142	71
Case Institute of Technology	198	176	89
University of Southern California . . . . .	193	143	74
University of Arizona . . . . .	190	163	86
University of Cincinnati . . . .	188	169	90
Stanford University . . . . .	179	137	77
Brandeis University . . . . .	178	130	73
Johns Hopkins University . . . .	172	149	87
Louisiana State University and Agricultural and Mechanical College . . . . .	158	136	86
California Institute of Technology . . . . .	154	147	95
Montana State College . . . . .	153	143	93
Rensselaer Polytechnic Institute . . . . .	152	117	77
Georgia Institute of Technology	149	102	68
Brown University . . . . .	148	136	92
Princeton University . . . . .	148	105	71
Florida State University . . . .	143	120	84
Newark College of Engineering	139	102	73
North Dakota Agricultural College . . . . .	137	128	93
San Francisco State College	131	117	89
University of Houston . . . . .	130	114	88
University of Mississippi . . . .	130	124	96
University of New Hampshire . .	127	106	83
Miami University (Ohio) . . . . .	124	99	80
University of Detroit . . . . .	123	101	82
Rice University . . . . .	116	107	92
Washington University (Mo.) . . .	109	95	87
Temple University . . . . .	108	87	81
City College of New York . . . .	106	68	64
University of California at Davis . . . . .	103	92	89

TABLE B--Continued

School	Sample	Returns	Cooperation Rate
Drexel Institute of Technology Agricultural and Mechanical College of Texas . . . . .	102	74	73
Illinois Institute of Technology	101	85	84
University of Tulsa . . . . .	97	85	88
Worcester Polytechnic Institute	90	81	90
Stevens Institute of Technology	89	81	91
Colorado State University . . .	88	74	84
Auburn University . . . . .	79	69	87
Canisius College . . . . .	75	61	81
University of California at La Jolla . . . . .	75	54	72
Indiana State Teachers College	72	67	93
State University of Utah . . . .	71	63	89
New Mexico State University of Agriculture, Engineering and Science . . . . .	69	55	80
Southern Methodist University	65	54	83
Villanova University . . . . .	63	54	86
Indiana University . . . . .	61	47	77
Georgetown University . . . . .	59	50	85
Queens College . . . . .	53	40	75
Louisiana Polytechnic Institute	47	37	79
Marquette University . . . . .	43	34	79
The Rockefeller Institute . . . .	41	30	73
St. Josephs College . . . . .	38	29	76
Ohio University . . . . .	38	29	76
Duke University . . . . .	37	31	84
University of Buffalo . . . . .	35	33	94
Texas Womans University . . . . .	34	27	79
Kansas State Teachers College.	33	26	79
Medical College of Virginia. . .	30	30	100
University of Rhode Island . . .	30	23	77
University of Denver . . . . .	30	22	73
George Washington University . .	27	23	85
	26	21	81
<u>Schools with sample sizes of less than 20:</u>			
University of Idaho . . . . .	17	12	71
University of Georgia . . . . .	15	13	87
University of Miami . . . . .	14	13	93
University of Puerto Rico . . . .	13	7	54
University of Florida . . . . .	13	8	62
Montana State University . . . .	12	10	83

TABLE B--Continued

School	Sample	Returns	Cooperation Rate
San Jose State College . . . . .	12	11	85
Drake University . . . . .	11	9	82
New Mexico Institute of Mining	10	7	70
Northern Illinois University .	10	7	70
Trenton State College . . . . .	10	7	70
Indiana State College . . . . .	9	7	78
United States Naval Postgraduate School . . . . .	6	5	83
Virginia Polytechnic Institute	6	4	67
University of Maine . . . . .	5	5	100
San Diego State College . . . . .	5	4	80
Bowling Green State University	4	4	100
University of Colorado . . . . .	4	3	75
Kansas State College of Pittsburg	2	1	50
Central Missouri State College	1	0	0
Long Beach State College . . . . .	1	1	100
Drury College . . . . .	0	-	-
Lawrence College . . . . .	0	-	-
Total All Schools . . . . .	24,553	20,114	82

The personal representatives who were hired at the largest schools were trained by phone and mail. The special instructions used for these representatives are attached as Appendix II, Section B. The pay schedule used for these representatives had a bonus feature which increased the salary as the percentage completed increased.

For schools which were handled directly from Chicago the first mailing was followed by two additional mailings to students who did not respond, the second by Special Delivery and the third by Certified Mail.

In the final month of the field operation, all refusals were handled from the Chicago office. A special Night Letter was telegraphed to all outstanding cases asking for their cooperation. At the same time, another copy of the questionnaire was mailed by Special Delivery. This Night Letter method was extremely successful, eliciting replies

from one-third of those who had not yet responded. As a final step the departmental chairmen were asked to send Night Letters to non-respondents urging them to return a completed questionnaire. This tactic was also quite effective. The chairmen also identified sampled students who were not enrolled during the study period.

8. The Self-Weighted Subsample

The five composite fields were assembled as follows: after the sample was weighted up to 21,189, the N for each detailed field was multiplied by its field weight. The product was then multiplied by the reciprocal of the weight for the largest field in the sample (this field was English with a weight of 16.7) to determine the number of cases that were to be selected from each detailed field (see Table C). An IBM 1620 computer was employed to secure this quota and Table D shows that there was close correspondence between the number of cases expected per composite field and the number actually extracted.

TABLE C

## COMPOSITE FIELD WEIGHTING

Field	Weight	School Weighted N	Product	Product multi- plied by reciprocal of 16.7 (.05988) gives field quota	Field quota expressed as a fraction of 50 cases in the weighted deck
General Physical Science . . . . .	1.1	170	187.0	11.20	3
Other earth and physical science	1.0	327	327.0	19.58	3
Astronomy . . . . .	1.0	278	278.0	16.65	3
Chemistry . . . . .	14.4	686	9,878.4	591.52	43
Physics . . . . .	13.5	611	8,248.5	493.92	40
Geography . . . . .	1.8	659	1,186.2	71.03	5
Geology and Geo- physics . . . . .	3.7	574	2,123.8	127.17	11
Oceanography . . . . .	1.0	199	199.0	11.92	3
Metallurgy . . . . .	1.0	222	222.0	13.29	3
Meteorology . . . . .	1.0	291	291.0	17.42	3
Mathematics . . . . .	15.2	588	8,937.6	535.18	46
Other engineering	10.0	796	7,960.0	476.64	30
Civil Engineering	3.2	937	2,998.4	179.54	10
Chemical Engineer- ing . . . . .	2.4	949	2,277.6	136.38	7
Electrical Engineer- ing . . . . .	9.3	1,023	9,513.9	569.69	28
Mechanical Engineer- ing . . . . .	5.0	1,068	5,340.0	319.76	15
All other biology	3.4	550	1,870.0	111.98	10
Anatomy . . . . .	1.4	279	390.6	23.39	4
General Biology . . . . .	5.0	894	4,470.0	267.66	15
Biochemistry . . . . .	2.9	674	1,954.6	117.04	9
Botany . . . . .	2.2	692	1,522.4	91.16	7
Biophysics . . . . .	1.1	236	259.6	15.54	3
Genetics . . . . .	1.1	394	433.4	25.95	3
Microbiology . . . . .	2.2	799	1,757.8	105.26	7
Pathology . . . . .	1.2	167	200.4	11.99	4
Pharmacology . . . . .	1.5	281	421.5	25.24	4
Zoology . . . . .	3.2	695	2,224.0	133.17	10
Agriculture . . . . .	5.0	680	3,400.0	203.59	15
Forestry . . . . .	1.0	599	599.0	35.87	3
Psychology . . . . .	13.0	773	10,036.0	600.96	39
Anthropology . . . . .	1.7	684	1,159.4	69.42	5
Economics . . . . .	7.2	859	6,184.8	370.35	22
Sociology . . . . .	4.5	659	2,965.5	177.57	13
English . . . . .	16.7	546	9,118.2	545.99	50
History . . . . .	12.1	614	7,429.4	444.87	36
Social Work . . . . .	5.7	863	4,919.1	294.56	17

TABLE D

NUMBER OF CASES EXPECTED AND OBSERVED IN FIVE  
COMPOSITE FIELDS, SELF-WEIGHTED  
SUBSAMPLE

Composite Field	Expected Number of Cases	Observed Number of Cases
Physical Science . . . . .	1,909	1,901
Engineering . . . . .	1,683	1,684
Life Science . . . . .	1,215	1,245
Behavioral Science . . . . .	1,218	1,213
Humanities . . . . .	991	985
Total . . . . .	7,016	7,028

**APPENDIX II**

APPENDIX II  
Section A

NATIONAL OPINION RESEARCH CENTER  
University of Chicago

SAMPLING INSTRUCTIONS

A. Checking the Fields

This massive study of graduate student finances covers 37 different graduate fields at 131 universities; the expected sample size is about 25,000. Not all fields are taught at all schools. Enclosed is a "List of Fields Included" (green). From it you can determine which fields are scheduled for inclusion at your school. (According to 1961 information they were taught at your school.) Your first step is to check this green list for correctness. If you cannot find one of the fields at your school, check the following possibilities:

1. The field is listed under a different name in your school. Consult the enclosed list of field definitions to see how the field at your school should be classified.
2. The field is taught in your school, but at a different location. (For example, some biological science fields may be taught at medical schools which are in a different city.) If this is the case, notify us immediately on Form 1 so that arrangements can be made to sample at the other location.
3. The field may have been discontinued since 1961. If you discover this then no sampling for that field will be required. Let us know on Form 1.
4. If none of the above, then there is the possibility of an error either on our part or yours. Please call immediately for further instructions.

We would also like you to check carefully the enclosed green list to see whether the other fields not currently scheduled for this study are now taught at your school. If so, please notify us immediately and we will give you instructions as to how to proceed.

The information which we have about your school was obtained by the Office of Education from information supplied by your registrar's office in 1961. If you have any questions about how a field is defined we suggest that you refer to the sheet of "Field Definitions" (yellow) enclosed. When in doubt, check if you can, with the registrar who should be very familiar with these definitions. Otherwise, call us

immediately. It may be useful to discuss the whole project with the registrar before you start, since he can help you avoid problems of definition. (You have received copies of the letter from the National Science Foundation to the president of your University, which may be helpful in any negotiations you have with the registrar's office.) In general, the registrar's advice will be better than that which we can give you since he is most familiar with his school. If, after discussing this with him, you still have some questions, or if the registrar is unable to help you immediately, do not hesitate to call us.

Here are some examples of problems which might arise and our suggested solutions:

1. Two or more fields which we have designated for sampling based on 1961 information have since been merged into only one field, and there are no longer any distinctions among students as to sub-field.

Solution: Call us immediately or submit Form 1 via special delivery to tell us about the change and the number of graduate students in the new department. We will send you new sampling instructions for that field. Discard the sampling sheets for the separate fields which no longer exist.

2. You find just the opposite of example 1. A field was once taught as part of another field, but recently a new and separate department has been created.

Solution: Sample the remaining students of the old department using the sampling sheets which we have provided. (Note that there will be fewer students than we expected, but this is O.K.) Call us and tell us about the new department and we will send you new sampling instructions for that field.

3. You find that it is possible to earn a graduate degree in a field at either the main campus or at a different campus in a distant city. (The most common example will be medical schools located away from the main campus.)

Solution: We want to sample students on both campuses. Let us know about the other campus and we will decide whether you should contact these students or whether it should be handled by someone else.

In sum, your first step is to be sure you have defined each field at your school so you know precisely how to determine which students are included in the field, and which are excluded.

Please keep in mind that students in different departments are sampled at different rates; therefore, the way that fields are defined is of great importance.

IF IN DOUBT, CALL US FOR INSTRUCTIONS, OR GIVE US A DETAILED DESCRIPTION OF THE SITUATION VIA FASTEST MAIL POSSIBLE.

## B. Finding the Lists

Schools vary greatly in their methods of record keeping. These instructions can, therefore, be only suggestive. You will need to use your ingenuity to discover the easiest way of obtaining the lists of students from which to sample. Generally you are better off using central files if these are already sorted by fields or can easily be sorted. This means that the registrar's office or central files should be consulted first. If the registrar does not have the list available in a convenient way, the next step is to consult the Office of the Dean of the School in which the field you wish to sample is located. Finally, consult the Departmental or Committee files if no central record is kept. Remember that you may offer to reimburse the registrar's office for any expenses incurred.

You can see that you will save a great deal of the time and effort required to travel from one department to another as well as to contact department chairmen and secretaries if you use central files. However, if the central files are not arranged by field or study and if sorting them is a major project then you may be better off visiting the individual departments. Consider the alternatives and select the method which will be easiest for you.

Remember: You need a list--by field--of graduate students from which to sample.

## C. Types of Lists

The list you receive from the registrar or other University official may be in one of a number of different forms. For example, it may simply be a typed list produced by some clerk in his office. Or it may be an IBM "printout" of the students' names and addresses. Or, it might be a file of cards--or even mailing labels.

In any event, you should make certain that the list shows the students grouped by field--e.g., all the biologists in one list, the astronomers in another list, etc. If this is absolutely impossible--that is, if the list mixes all the students together--then whatever list the registrar does give you must give the field of each student so that you may pick out the students you wish to sample among.

The form of the list is very important. Not only can you save yourself a lot of grief, but you can maintain the quality of the sample by thinking through in advance what form of list will be handiest to work with, and in what way you can avoid including students who are outside the population to be sampled.

#### D. Who is Included

This study includes only currently registered graduate students. The students need not be attending full-time. Evening or part-time students are to be included. Students taking no classes, but registered only for thesis research or writing are to be included.

Do not include the following categories of students, however:

1. Undergraduates (even if registered for one or more graduate courses).
2. Graduate students who may still be on departmental lists, but who are not currently registered for any activity. If you use central files, you will probably not find any of these students. Departmental files may include students who have not finished degree requirements, but who are not now registered for any activity. If you use departmental files, and there is no way of telling whether the student is or is not registered currently then he should be included. The principle to follow is that when in doubt as to a student's status, the student should be included in the sample.

#### E. "Sampling Number Sheets" - How You Sample

For each field in the study at your school, we have sent you a Sampling Number Sheet. It tells you which students to select for the sample of that field. It provides room for you to list the name and campus address of the selected students. The Sampling Number Sheet is on two-ply IBM paper. After you have entered the sampled students' names and addresses, one copy is to be kept for your records throughout the study, while the other is to be sent to us immediately for our permanent control record. We have included a manila "Business Reply" envelope for the return of this list of students in your sample.

Make sure that the copy you send to us is legible; if at all possible, type the names and addresses. Note that you have received a packet of these Sampling Number Sheets--there is one series of numbers for each field currently planned for sampling in your school. If you enter the names and addresses of sampled students by ball-point pen, take precaution that the imprint does not pass through a number of carbons onto other sheets. You may find it convenient or necessary to unstaple the pack of Sampling Number Sheets before beginning, keeping as a unit only those pages from the same field.

At some schools there will be fields in which you are to take all students in a field (instead of sampling among them). In such instances the Sampling Number Sheet will say "Select All Students in this field."

More often, however, you will find that you are to sample among the list you have received from the registrar; on the Sampling Number Sheet you will notice two columns of numbers.

The numbers in the first column are merely for your convenience and ours in counting the final sample size which you select. Do not expect that you will use up all these numbers. Based on our 1961 information from the Office of Education we boosted the 1961 enrollments by approximately 50% simply to give you sufficient sampling numbers in case a field had grown rapidly at your school. So, generally, you will be using only about 2/3 of the numbers. In a very few cases you may not have sufficient numbers. In these cases contact us immediately and we will furnish you with additional sampling numbers.

Note that if the expected sample size in a field is over 30 we have continued the series of numbers on the next sheet of the IBM paper. Always be aware that the sampling numbers within a given field may continue on the next sheet of paper.

The numbers in the second column tell you which students in a field to select, if you are not to take them all. For example, if the numbers in the second column of the Sampling Number Sheet were:

1	2
2	5
3	8
4	12
5	15
etc.	etc.

you would simply count down your list of graduate students in that field (which you had previously obtained from the registrar's office) and select for the sample the second name on the list, the fifth name, the eighth name, the twelfth name, and so on. It makes no difference what the order of the names is on the list you are using, as long as you do not arrange them so that you select individual students of your own choosing. An alphabetical listing would be one (but not the only) example of an unbiased order from which to sample.

As another example, consider the field "mathematics," which includes both mathematics and statistics, as it is defined in this study. If you first list all 80 mathematics majors and continue with all 30 statistics majors, sampling this one list of 110 names will be unbiased.

If the list contains the names of students who are to be excluded from this study, make sure you do not count them as you proceed down the list. If, by any chance, there is more than one listing for the same student be sure to count him only once.

Where you can, try to simplify your job. If IBM cards are available you should have these sorted by field and have all undergraduates (and unregistered graduate students) eliminated before you start your sampling. In some cases it might even be possible to have the sampling done by IBM equipment, but generally this will best be done manually since the sample sizes for any field are not too large.

If the list given you can actually be a series of gummed labels-- which IBM equipment can produce from a file of IBM cards-- you can discard the labels of those who do not fall into the sample, and address the questionnaires with the labels of those students who do fall in.

#### F. Summary

In sum then, your sampling task falls into the following steps:

1. Identify the fields scheduled for inclusion in your school, and determine the best way to gain access to a list of graduate students for each field.
  2. Obtain a list of all registered graduate students in each field. This can normally be found in the registrar's office, but on some campuses it may be necessary to go to individual schools or departments.
  3. Sample among the students in each field, using the two-ply "Sampling Number Sheets."
  4. Record the name and campus address of each respondent on these sheets, and forward one copy to NORC. Thus we will know you have completed sampling, and we will have a permanent record of all 25,000 students in the Survey 468 sample.
  5. Do not hesitate to get in touch with us. Phone calls or correspondence directed to Survey 468 will reach their destination quickly.
-

Survey 468  
April, 1963

APPENDIX II  
Section B

NATIONAL OPINION RESEARCH CENTER  
University of Chicago  
5720 Woodlawn Avenue  
Chicago 37, Illinois

SPECIAL INSTRUCTIONS FOR SURVEY 468:

THE FINANCIAL CONCERNS OF GRADUATE STUDENTS

Prepared by  
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and  
Galen Gockel

NATIONAL OPINION RESEARCH CENTER  
University of Chicago

SPECIAL INSTRUCTIONS FOR SURVEY 468

I. BACKGROUND INFORMATION

- A. What is the purpose of this study? This study is primarily, but not exclusively, concerned with the financial situation of graduate students. Most fields included are in the scientific and technical fields, but some of the humanities and social sciences have been represented.

A number of specific areas will be considered:

1. Current studies: The respondent will report on his previous enrollment, present academic status, the values he places on the doctoral degree, his current academic goal, grade point average, etc.
2. Field and career: The study will ask about the respondent's current major field, anticipated career field, the type of employer for whom he expects to work, degree of commitment to his field, etc.
3. Finances: Size and source of stipends, as well as the effects of these, form the central part of this aspect of the questionnaire.
4. Employment and earnings: Extent and type of employment, both past and present, form another important portion of the study.

The respondent will be asked to complete a thorough inventory of income and expenses during the year ending June 30, 1963.

5. Background: Important socio-economic, personal, and family variables form the final portion of the questionnaire.

NORC will submit a report to the National Science Foundation soon with a large number of basic cross-tabulations in each field. The massive task of editing and coding the thousands of questionnaires will begin immediately upon receipt of the first questionnaires from you. Data processing and analysis will proceed throughout the summer.

As the initial letter from Keith R. Kelson of the National Science Foundation to your president indicated, "this information is vitally needed for adequate planning of Foundation and other programs which are designed to assist graduate study in the United States."

- B. What will our procedure be? We will work with a carefully drawn probability sample of some 25,000 graduate students selected from a sample of 130 colleges and universities throughout the country. This group will be asked to complete a questionnaire concerning their past, present, and expected financial situations.

This study will involve no personal interviews with students. All the questionnaires will be self-administered: that is, the student will fill out the questionnaire for himself. Our pretest experiences on this study have shown us that most students respond well to the questionnaire.

The questionnaire taps attitudes and probes problems which are much on students' minds at this stage of their lives, when almost all of them are concerned with future work or study plans. While of course there will be occasional exceptions, we think you will find that most of the graduate students will welcome this opportunity to express their opinions and describe their financial concerns.

- C. Who is the sponsor? This study is sponsored by one of the major agencies of our Federal Government concerned with education, the National Science Foundation. This group is vitally interested in learning all it can about financial problems of graduate students. These findings should help the government in the determining of federal policy toward graduate scholarships and fellowships.

## II. HOW WE HAVE PAVED THE WAY FOR YOU

As you know, the National Science Foundation has sent a letter to the President of your college or university, giving background facts about the nature and purpose of the study and requesting his cooperation. Many of our field representatives will receive from us a Xerox copy of the answer to this letter which their President sent our sponsors in Washington, D. C.

## III. WHAT IS IMPORTANT

We have been most selective in choosing you and the other representatives for this assignment. We feel confident that we have placed in charge mature, intelligent persons whose judgment can be trusted. Many of the instructions which you will read below are merely meant to be suggestive and need not be followed rigidly if you feel that changes are appropriate for your school. Especially at the small institutions,

The method of getting the questionnaires out and back can be simplified at the discretion of the representative. Decisions on minor matters should be modified whenever you feel it is wise to do so. There are, however, three important aspects of this job about which we can allow no variation or choice. (1) You must follow our suggestion in making an all-out effort to insure a high completion rate. (2) Respondents must be assured of complete confidentiality and these assurances must be respected, with absolutely no information about specific persons being released from the filled-out questionnaires. (3) Sampling instructions must be followed to the letter with no substitutions and no deviations whatsoever unless specifically authorized by the Study Director. Here is a further word clarifying each of these points.

- A. Your most important task as our local field representative is to insure a high completion rate. Even though the sample is to be drawn by the best probability sampling techniques available, the response rate will be a major factor in determining the validity of the findings. That is, although the total sample is 25,000 cases, each case which is not completed makes the ones which we do get a little less trustworthy as a sample of students. There is no magic satisfactory number, of course, but 85% is considered par for the course.

Five years ago NORC netted 92.5 per cent in a large sample of graduate students in a similar study with a long 40-page questionnaire. We hope to do as well or better this time. Remember that since no one can go over 100 per cent, we cannot hope to average 85 per cent by compensating low takes in some schools with high takes in others, even if this were statistically justified.

You will be distributing the questionnaires to each respondent. You may arrange to get the questionnaires out to the students, and back from them in the way you think best at your campus, depending upon the local situation. Various methods of distribution include: U.S. mail, campus mail, personal visits, setting up collection points at strategic places such as the library or commons room.

Some students will respond promptly, fill out and mail back to you their schedules. Others will require follow-up work. We enclose the draft of a reminder letter which should get results. In addition, phone calls, visits to the dormitories or notices posted on

bulletin boards may be effective--what is best for the situation at your college will be up to you to decide. (See section VII for detailed suggestions of follow-up procedures.) Under no circumstances are you to use high pressure tactics on the respondents. However, we do expect you to exercise considerable tact, patience, ingenuity and energy to insure a high completion rate. Phone calls and some leg work will probably be required, as well as a follow-up letter. Obviously, there are limits to how much time and effort should be expended on any particular case. When you are not sure, please let us have your questions in a memo or, if urgent, a collect phone call to the Chicago office.

- B. Confidentiality must be maintained. Survey research organizations are able to collect useful data largely because the field representatives can and do assure their respondents that all replies will be held in complete confidence. Confidentiality is the key to confidence. We promise the people who complete questionnaires for us that we will never reveal what they as individuals have told us, but simply publish summary statements to the effect that "   % of the students interviewed think such and such." It is your responsibility as an NORC representative to keep that promise.

If you employ local students to do various kinds of follow-up work such as the collection of completed questionnaires from respondents, be especially careful that your assistants do not violate confidentiality or give the impression through their actions that they are violating confidentiality. The completed questionnaires are to be sealed in envelopes by the respondents. If the question arises, it should be made clear that only the statistical analysts in Chicago actually read the questionnaires. (If you or your assistant checks to make sure that a respondent has entered his name on the completed questionnaire in the presence of the respondent, be sure to explain: "I'm not permitted to read the questionnaires, but I'm supposed to check to make sure that your name is here in case they want to get in touch later on with people who filled out the questionnaire.")

If you or your assistants on the campus are asked about the results, explain that it is not your job to read or analyze the questionnaires so that you have no way of knowing what attitudes respondents are expressing.

- C. Sampling directions must be followed exactly and to the letter. Unless a high proportion of the students in our sample completes our questionnaire, the representativeness

of the schedules we do receive is subject to doubt. But even a high completion rate will not compensate for possible biases unless we studiously avoid any conscious selection of respondents in drawing the sample on each campus. If we permit personal preference or choice or convenience to help decide who will be our respondents, we are not reporting on the attitudes of an actual cross-section of science and engineering graduate students.

An enormous amount of work has gone into developing the sampling procedures for this study. Our whole survey can be no better than the accuracy and representativeness of the sample of students interviewed. If you employ clerks or assistants to help draw the sample, be sure to emphasize the importance of following the sampling procedures precisely and with great care.

#### IV. YOUR JOB AS OUR FIELD REPRESENTATIVE

You will find a detailed step-by-step description of your job in the following pages. Briefly, your job involves: (1) making what arrangements are necessary with university officials to get clearance; (2) obtaining access to the college records and using them either to compile an accurate list of the graduate students in the fields which are to be sampled at your school (following the sampling instructions previously sent you); (3) making sure the questionnaires are returned to you; using phone calls, letters, visits, and other follow-ups; and (4) sending the completed questionnaires and a few brief reports to NORC.

#### V. HOW TO PROCEED: STEP BY STEP (You may have done a few of these already, but we are including some of the steps in case some of you have not completed them.)

##### A. Make preliminary arrangements with the appropriate administrative officials.

1. Be sure you are familiar with the graduate catalogue, the calendar for school vacations, exams, etc., and the official setup. This will help you in talking with the administrative official who will assume, for instance, that you know the university is on the quarter rather than the semester system, that it has a special field program, etc.
2. Appointment to see a Dean or other administrator. When you call him to arrange for your appointment you can refer to the letter from Keith R. Kelson to the President of your institution (two copies of which you now have) and when possible, to the answer he received from your President.

3. Take care of these important matters when you see the Dean:
- a. Be sure to give him your name, address and telephone number in case he wishes to reach you.
  - b. Answer any questions which he asks about this survey or about NORC. If you don't know the answer, tell him you will refer the question to us. Then we will write him, sending a copy of the letter to you.
  - c. Find out whom to see about sampling. Explain that you will want to talk to the person in charge of the graduate files or records. This will usually be the registrar or someone in the registrar's office. (Although you should already have completed your sampling by the time you read this, we mention it as a reminder.)
- B. Check your supplies and make sure you have enough of everything you need. Questionnaires and envelopes are now being sent direct from the printers. Other materials have been enclosed with this instruction manual and mailed to you via air mail. Included is a transmittal sheet, which indicates what should be here. Make sure that we have provided enough questionnaires so that you have one for each student in your sample.
- C. Draw the sample and send a carbon copy of the list of names of sampled students to the Chicago office. Be sure one of these carbons is mailed to us when the students' names have been listed.
- D. Prepare questionnaires for mailing.

Our printer has sent you 9 x 12 manila envelopes in which to distribute the questionnaire to the respondents. The addressing of the questionnaire and the stuffing of the envelopes is a task for which you should hire someone to assist you if so doing will save you a number of days. This would normally be true if your sample size is over about 200-225.

If you do hire someone, please (a) pay them out of your expense advance, (b) pay them at the going rate in your area for similar work (perhaps \$1.35-\$1.60), (c) report this expense on the pink expense form and (d) ask for more expense money. If you have people available who can assist you gratis, this would of course be preferable.

The addressing and stuffing of the questionnaires should be done carefully. It is necessary to have someone

proofread or check the first person's work. The steps are as follows:

1. Use the rubber stamp to return address the questionnaire to you. The imprint should go in the lower box in the back of the questionnaire.
2. Address the questionnaire to the respondent in the upper box on the back of the questionnaire. You may find it most convenient to have perforated labels typed (in duplicate, for a possible second mailing) and affix them to the questionnaire.
3. Write in the two-digit field code after the three-digit school code which appears on the rubber stamp next to your return address. For example in school number 818, we would find the numbers "818-38" entered for a student in Pathology. You will find the two-digit field code presented on the green "List of Fields Included," which you received with your sampling materials. Thus Astronomy is 01, Social Work 96, Civil Engineering 11, etc.

It is extremely important that you enter this code accurately, for it will be punched onto an IBM card exactly as you write it. If you identify a biologist as a mechanical engineer, he will remain thus identified forever.

If you do your addressing directly from the IBM "Sample Number Sheet" your work should be facilitated. Thus you could address and enter the field code for all the students in one field at a time.

4. Affix a 10¢ stamp to the 6 x 9 return envelope.
5. Stuff the 9 x 12 envelopes with the following materials:
  - a. The buff 4-page covering letter and sheet of codes.
  - b. The buff sample financial inventory.
  - c. The 6 x 9 manila window envelope for return of the questionnaire.
  - d. The questionnaire. Ensure that the respondent's name and address are displayed through the window.

E. Distribute questionnaires to respondents. You may make your own decision as to just how to distribute the questionnaires and have them returned to you. We are leaving this up to you because the circumstances vary so widely at different schools, but here are some of the possible methods:

1. U.S. mail. It will cost approximately 10¢ to mail out the questionnaire in an envelope and 10¢ for the sealed questionnaire to be mailed back to you. To mail the questionnaires out and back on every campus would use almost \$7,000 of the funds the government has allocated to this study. We would prefer to spend this large sum of money on the complicated data analysis of the answers obtained rather than on postage. So, while you are not forbidden to use the U.S. mails, please consider the alternatives on your campus and try to save this money if you possibly can.

If you do decide to use postage stamps, buy them out of your expense allowance. Remember that the student can mail back the sealed questionnaire for approximately 10¢. If you ask him to do this be sure to put a postage stamp on the questionnaire return envelope yourself before it is enclosed in an envelope and mailed to the student. Warning: do not enclose a loose stamp with the questionnaire, but affix it properly.

2. A group session. In some previous studies it was found that if students are requested to come to a particular room at a specified time, a majority of them willingly do so and the job of getting the questionnaires filled out is quickly done. If you decide that this system will work on your campus, we suggest you do the following:
  - a. schedule a room conveniently located in some well-known part of your college;
  - b. arrange for a person (yourself or an assistant) to be in charge to answer questions and collect the questionnaires.
3. Campus mail. On some campuses, the mailing out and returning of questionnaires can be done through a campus or dormitory mailing system. Investigate the possibility of utilizing this system at your college.
4. Direct physical delivery. You may find it simplest to take your addressed questionnaires directly to the dormitories and other student housing units yourself and get them into the individual mail boxes.

5. Collection points. On small campuses it is sometimes possible to put a large box in a strategic place, such as a cafeteria or commons room, and ask each student to deposit his questionnaire in this box.
6. Other alternatives. Your own ingenuity may turn up other ideas for effective distribution.

Special note: it is absolutely essential that every questionnaire from your school carry your school serial number for identification purposes. We will use this identifying number at our Chicago office in tallying the questionnaires received from you. Your number, along with your name and address, is on the rubber stamp we are sending you with the questionnaires. You are welcome to keep this rubber stamp after this study is over. After you have filed off the serial number, perhaps it will make a useful memento of this project!

- F. Keep careful records and use every desirable follow-up technique to boost your completion rate. A very important part of your job is to take action to get all possible respondents in your sample to complete their questionnaires. Be sure to keep a careful record of the names of students who mail in the questionnaires. You can check these off on your master list as they arrive. When for some reason a student will not be able to complete his questionnaire, or refuses to do so, record that on a Non-Response Report which we shall provide soon. You should know at any time just who has returned his questionnaire and who has not. The precise method for keeping these records we leave up to you.

We urge you to follow up your first mailing to students with a call or letter one week later to those students from whom you have not heard. (A copy of this follow-up letter is included in your supplies.) Telephone calls to individual students and, when feasible, personal visits will bring results. Allow plenty of time for these vital calls which will make all the difference on your final completion rate. Section VII describes in more detail desirable follow-up techniques which can be used. See Section VI for typical questions about the survey and how to answer them.

- G. Send periodic installments of completed questionnaires to Chicago, following the mailing instructions given in Section X below.
- H. Complete the Non-Response Report and send your reports, bills, etc. to Chicago when the study is over.

## VI. QUESTIONS AND ANSWERS ABOUT THE SURVEY

Here are some of the kinds of questions you may be asked about this survey by your respondents and university officials, and some tentative suggested answers. Don't volunteer lengthy explanations or give more information than seems necessary to satisfy the person asking the question. Always be honest and direct in answering. We have found that needlessly long or apologetic explanations simply make people suspicious. Write us if any difficult questions arise and we will let you know how to handle them.

### Whom are you doing this for?

I represent the National Opinion Research Center at the University of Chicago. NORC is conducting this study under the sponsorship of the National Science Foundation.

### What is NORC?

NORC is a non-profit research organization affiliated with the University of Chicago. We have a national staff of interviewers and field representatives and maintain an office in New York as well as in Chicago. NORC is a fairly large research agency and this study about the financial concerns of graduate students is one of many national surveys now in progress.

### Are all NORC studies like this one?

No. Most of our studies involve personal interviews rather than self-administered questionnaires. And most of our studies involve gathering the attitudes and factual information about a representative general sample of Americans. However, some studies, like this one, are restricted to special groups such as doctors, business leaders, older people, college professors or medical students.

### Why do sponsors want this kind of survey?

The National Science Foundation urgently needs information on what the flow of manpower will be into vital professional, scientific and educational occupations. They feel it is important to obtain data on the career plans and aspirations of graduate students and on the financial situations which have bearing on these plans and aspirations.

### What do I get out of it? Why should I take time to complete the questionnaire?

Do you feel that research which is designed to benefit future college and graduate students is worth your time?

You yourself will get nothing tangible out of this study-- the results probably won't be known in time to change your own post-college career at all! But we hope it will help other people like you in years to come. We are trying to learn more about what would have influenced you, and people like you, during the course of your graduate career, if such information had been available to you. We'll appreciate your helping us and hope you feel it is worthwhile, but you are under no obligation to do so.

#### VII. FOLLOW-UP WORK TO INCREASE YOUR COMPLETION RATE

Our ideal completion rate is 100 per cent and we expect many of the smaller colleges and universities to reach this goal. Below 100 per cent we have no other norm except that 85 per cent is a minimum expectation, and 90 per cent or above would be considered satisfactory. Regarding an individual case, trust your own judgment as to whether a follow-up is worth the time and effort. We would like to feel that a serious attempt has been made to reach each non-respondent.

- A. Phone students who have telephones. The best technique is probably to call them up, saying something like, "Hello, I'm--from the national survey of financial concerns of graduate students. You received a question- from us last week. We have not yet gotten it back from you. We would like you to try to get it filled out and into our hands within the next three days."
- B. Write students who have no telephone. If you can't reach a student by phone, either because his number is not listed or because you can't find him at home, drop him a postcard something like this: "We are sorry that we have not yet received from you the questionnaire which we mailed you a week ago concern- ing the financial concerns of graduate students. We would much appreciate your filling out that question- naire and getting it back to us."
- C. If possible make personal visits to those students who do not respond to a phone call or postcard. However, use your judgment about making such personal calls. If the student lives off campus and an unreasonable expendi- ture of your time and effort would be required to contact him personally, let it go. You are expected to try to contact all the students where distance or other diffi- culties do not unduly hamper your chances of success.

- D. Be diplomatic, persuasive, persistent. Don't ask whether a student will or will not participate, and don't be apologetic about asking him to take the time to fill out the questionnaire. Assume that the students are interested in and recognize the importance of research, for you'll find this is usually the case. Define your task as that of encouraging him to participate, but don't give him the impression that this is something which he is compelled to do. Each student approached in the follow-up has a right to refuse his help, but we have the right to ask it and to expect it in most cases. Don't take a refusal as a personal affront, though. He probably has many demands on his time.
- E. You may routinely mail out additional questionnaires to all non-respondents after you have reached the 70 per cent or 75 per cent mark. In such an instance, try to include a letter from an appropriate dean or administrative official, in which he acknowledges that the university is cooperating with this important endeavor and appeals for the return of the enclosed questionnaire. (A sample draft is enclosed.)
- F. Special procedures for students not in school. Your "mop-up" may uncover a few cases of students who are out of town or students who are ill. When possible, write each of these a note at the best address you can get and send them a questionnaire to fill out and return to you.
- G. Call Chicago for special instructions if you can't get a satisfactory completion rate following normal tactics.

VIII. FOLLOW-UP MAILING TO NON-RESPONDENTS: CONTENTS AND DUPLICATING PROCEDURES.

Each non-respondent to whom you mail a second questionnaire should receive a letter from a Dean or other administrator enclosed with the questionnaire. You are responsible for having the draft of the Dean's letter approved and for having it reproduced for inclusion with the questionnaire, on stationery from the Dean's office if this is possible.

- A. Make arrangements for the Dean's letter when you see the Dean. A mimeographed copy of the kind of letter we think suitable for the Dean or President to send is enclosed. The Dean should be invited to rewrite or to adapt our suggested draft as he sees fit. When you see the Dean you'll have several tasks concerning this letter:

1. Explain to the Dean our aims and find out if he is willing to send out a letter like the enclosed form. If you can imply that this is a courtesy which you assume he will do, and make it perfectly clear that you will be responsible for handling every detail of its distribution, you should find him perfectly willing to cooperate.
2. Get the black letterheads.
3. Arrange to have him sign the letter before duplication.

B. Arrange for duplication. Visit a reliable local letter service and get an estimate of (1) the cost of reproducing the type of letter you have in mind, and (2) the amount of time you must allow for this work. In most cases, it will be faster and more economical to have the letter mimeographed; but if mimeographed letters cannot be made properly on the kind of letterhead the university uses, consider "photo offset" or some other kind of duplication. The job of hand typing the individual letters is much too great, and should be avoided by all means.

#### IX. TIME LIMIT

Please follow the "Field Time Schedule" presented on the separate sheet enclosed for the duration of the field period.

We are prepared to extend into June if the completion rate in any school or in any field is uncomfortably low. However, don't set a June date as a goal by which to finish--you'll probably find that the students have fled campus, and those remaining will be embroiled with exams in June. (If the term actually ends in May, you will have to accelerate the timetable.)

#### X. MAILING INSTRUCTIONS: WHEN AND HOW TO MAIL MATERIALS TO US

- A. Send initial shipments of completed questionnaires to us via railway express (air express from the coastal states) if the size of the package warrants this method. Because the questionnaires contain handwritten materials, postal regulations do not permit use of plain parcel post (4th class mail). However, you do have these options:
- Railway Express
  - Air Express
  - First Class U.S. Mail
  - Air Parcel Post

- B. Use a very sturdy box and cord to wrap your first installments of completed questionnaires. We have provided brown mailing envelopes for your convenience in returning small installments of completed schedules, but these will not be satisfactory for your big earlier installments. For the first days of field work, when many questionnaires will be completed, please be sure to provide yourself with dependable wrapping materials. You can purchase heavy boxes at some stationery stores.
- C. Send three or more packages each week during the first week or so, when completed schedules are coming in rapidly. We shall be watching each school closely and will probably phone you if we don't receive anything for a number of successive days.
- D. After the first few days, send us a packet of completed questionnaires whenever you have an envelope full.
- E. At the end of the field work, please return all the unused questionnaires via parcel post. You can destroy these instructions.
- F. Send all reports and letters via air or first class mail. If any legitimate items or bills which you paid might look unusual to us, please add a note of explanation on your pink Expense Account sheets so that we will not have to write back for details.
- G. You will be paid an honorarium as soon as we receive one-half of the questionnaires in your sample (that is, when our tally shows you have hit the 50 per cent point). The final payment of bonuses will be made at the end of the study when they can be accurately figured, and after you return your record of expenses along with any surplus in your expense account allowance.

XI. WHOM TO CALL OR WRITE IN CHICAGO

- A. Whom to write or call. Direct question as follows: If your school is listed below, address all questions and problems to NORC c/o Mary Dean Jenkins.

University of California (Berkeley)  
 University of Wisconsin  
 Columbia  
 University of Minnesota  
 New York University  
 University of Illinois  
 University of Michigan  
 University of Washington (Seattle)  
 Ohio State

Michigan State  
 Purdue  
 UCLA  
 Pennsylvania  
 Yale  
 North Carolina State College (Raleigh)  
 University of Texas  
 MIT  
 University of Maryland  
 Brooklyn Polytechnic  
 University of Pittsburgh  
 Tulane  
 Hunter

If your school is not on the list above, address your communications to: Mr. Bruce Frisbie.

The proper address is: National Opinion Research Center  
 5720 Woodlawn Avenue  
 Chicago 37, Illinois

- B. When telephone calls are necessary, make them person-to-person collect (PLaza 2-6444, Area Code 312). If the person above is not available, you may ask for Galen Gockel, Field Director of the Center, who should be able to answer most questions.
- C. Write us air mail unless you need an immediate answer. A phone call may be a waste of time if your question needs a great deal of information which we do not have right at hand. Unless there is a distinct advantage in talking things over, or unless you need an immediate answer, please write to us, giving us time to think the problem through. Then we can call you if speed is important.

## XII. A FINAL PLEA

Please reread these instructions after you have launched the preliminary arrangements to make sure that everything is clear and that nothing important has been forgotten. If you don't understand any part of the instructions or if you need help or advice of any kind, please feel free to call us.

We hope you'll enjoy working on this study, which we think can be very important for graduate students in the United States.

Good Luck!

XIII. A.P.S.

You will probably be swamped at the time you address, stuff, and distribute the questionnaires.

Steps taken to facilitate the distribution will pay rich dividends. If spending some money can save just two days at this stage you may gain the time necessary for a respectable completion rate.

To accelerate the addressing and distribution of questionnaires, we urge the following:

- a. Have perforated, gummed labels typed containing each respondent's name and campus address. This can start immediately after your sample is drawn and need not wait for the arrival of the questionnaires. The typist will work directly from your "sampling number sheets."
- b. The 9 x 12 envelopes being sent you contain a window through which the respondent's address will show after the envelope is stuffed. A label--about 1" x 3" and attached to the questionnaire will be far and away the easiest method of addressing the questionnaire.
- c. If there is any chance that a typing or letter service could type these labels by as much as a day faster than you can do it, please incur the expense of such a service, reporting this expense on the pink form.
- d. In any event, proofread the labels carefully. Every one makes mistakes and many will occur in a large typing job. A good deal of grief can be avoided by seeing that names and addresses are accurate.

APPENDIX III

TABLE A

## FIELD OF STUDY, CITIZENSHIP AND STUDENT STATUS

Field of Study	Citizenship			N
	American		Alien	
	Student Status			
	Regular*	Special, Correspondence, Post-doctoral		
<b>Physical Sciences</b>				
General Physical Science	94%	1%	5%	170
All other earth and physical sciences . . . . .	84	3	13	327
Astronomy . . . . .	86	1	13	278
Chemistry . . . . .	85	2	13	686
Physics . . . . .	82	3	15	611
Geography . . . . .	83	1	16	659
Geology and Geophysics . . . . .	86	2	12	574
Oceanography . . . . .	85	1	14	199
Metallurgy . . . . .	90	2	8	222
Meteorology . . . . .	86	4	10	291
Mathematics . . . . .	88	4	8	588
<b>Engineering</b>				
All other engineering . . . . .	79	3	18	796
Civil Engineering . . . . .	71	1	27	937
Chemical Engineering . . . . .	76	1	23	949
Electrical Engineering . . . . .	84	5	11	1,023
Mechanical Engineering . . . . .	80	3	17	1,068
<b>Life Sciences</b>				
All other biology . . . . .	79	-	21	550
Anatomy . . . . .	85	4	11	279
General Biology . . . . .	90	3	7	894
Biochemistry . . . . .	77	2	20	674
Botany . . . . .	84	2	14	702
Biophysics . . . . .	86	1	13	236
Genetics . . . . .	72	1	27	394
Microbiology . . . . .	83	1	16	799
Pathology . . . . .	71	6	23	167
Pharmacology . . . . .	81	1	18	281
Physiology . . . . .	82	3	15	564
Zoology . . . . .	90	1	9	695
Agriculture . . . . .	70	1	29	680
Forestry . . . . .	79	2	19	599
<b>Behavioral Sciences</b>				
Psychology . . . . .	90	5	5	772
Anthropology . . . . .	89	1	10	684
Economics . . . . .	79	1	20	859
Sociology . . . . .	85	2	14	659
<b>Humanities</b>				
English . . . . .	94	2	4	546
History . . . . .	94	2	4	614
<b>Social Work</b>				
Social Work . . . . .	93	3	4	863

\* Note: The remaining tables in this appendix will be based on these students only.

TABLE B

## FIELD OF STUDY AND STIPEND HOLDING

(Per cent Holding None, One, Two or Three Stipends\*)

Field of Study	Number of Stipends				N
	None	One	Two	Three	
<u>Physical Sciences</u>					
General Physical Sciences . . . . .	37 (160)	62 (158)	14 (154)	4 (158)	160
Other earth and physical sciences .	32 (274)	66 (269)	17 (273)	2 (274)	274
Astronomy . . . . .	17 (239)	83 (238)	27 (237)	4 (238)	239
Chemistry . . . . .	19 (576)	81 (572)	30 (571)	8 (573)	578
Physics . . . . .	24 (449)	75 (494)	20 (496)	2 (497)	499
Geography . . . . .	42 (548)	56 (538)	14 (542)	3 (546)	548
Geology and Geophysics	27 (493)	71 (483)	23 (489)	4 (489)	493
Oceanography . . . . .	11 (169)	88 (167)	27 (169)	5 (169)	169
Metallurgy . . . . .	38 (200)	62 (198)	11 (198)	2 (199)	200
Meteorology . . . . .	21 (250)	77 (244)	14 (248)	3 (246)	250
Mathematics . . . . .	32 (516)	67 (508)	20 (510)	3 (510)	517
<u>Engineering</u>					
All other engineering	31 (623)	67 (605)	17 (615)	3 (620)	624
Civil Engineering . .	37 (665)	62 (657)	16 (659)	3 (661)	665
Chemical Engineering	29 (723)	69 (713)	24 (728)	2 (721)	723
Electrical Engineering	44 (858)	55 (844)	12 (845)	3 (849)	858
Mechanical Engineering	41 (850)	58 (839)	15 (846)	3 (845)	851

\* N's differ within rows because of variation in NA's.

TABLE B--Continued

Field of Study	Number of Stipends				N
	None	One	Two	Three	
<u>Life Sciences</u>					
All other biology . . .	19 (430)	79 (421)	21 (424)	4 (427)	431
Anatomy . . . . .	16 (238)	81 (233)	21 (235)	3 (237)	238
General Biology . . .	28 (807)	69 (784)	18 (801)	4 (805)	807
Biochemistry . . . .	8 (521)	90 (514)	22 (517)	2 (520)	521
Botany . . . . .	11 (592)	87 (586)	25 (581)	6 (591)	592
Biophysics . . . . .	9 (203)	91 (202)	28 (203)	7 (202)	203
Genetics . . . . .	11 (283)	87 (275)	22 (281)	3 (283)	283
Microbiology . . . .	13 (662)	85 (651)	16 (658)	3 (659)	663
Pathology . . . . .	27 (118)	71 (116)	14 (116)	3 (117)	118
Pharmacology . . . .	14 (228)	84 (223)	17 (227)	2 (227)	228
Physiology . . . . .	14 (464)	84 (456)	24 (462)	4 (464)	464
Zoology . . . . .	16 (625)	83 (617)	26 (611)	4 (621)	625
Agriculture . . . . .	23 (473)	74 (462)	12 (471)	2 (473)	473
Forestry . . . . .	29 (473)	71 (471)	15 (467)	3 (472)	473
<u>Behavioral Sciences</u>					
Psychology . . . . .	34 (698)	65 (686)	20 (685)	4 (693)	698
Anthropology . . . .	33 (609)	66 (604)	20 (603)	4 (608)	609
Economics . . . . .	38 (679)	61 (673)	17 (676)	3 (678)	679
Sociology . . . . .	37 (559)	62 (553)	18 (553)	3 (556)	559
<u>Humanities</u>					
English . . . . .	54 (513)	43 (500)	10 (506)	2 (511)	514
History . . . . .	53 (576)	46 (570)	9 (571)	1 (572)	577
<u>Social Work</u>					
Social Work . . . . .	23 (797)	74 (776)	13 (789)	2 (795)	798

TABLE C

## FIELD OF STUDY AND TYPE OF FIRST STIPEND

Field of Study	Type of First Stipend				N	No Sti- pends	NA	Total N
	Scholarship & Tuition	Fellowship Tuition + Cash	Research Assistant	Teaching Assistant				
<u>Physical Sciences</u>								
General Physical Sciences . . . . .	13%	70%	6%	11%	99	59	2	160
All other earth and physical sciences . .	29	31	34	6	182	87	5	274
Astronomy . . . . .	13	33	38	17	198	40	1	239
Chemistry . . . . .	10	20	29	42	468	108	4	580
Physics . . . . .	11	24	38	27	373	121	5	499
Geography . . . . .	17	20	13	49	306	232	10	548
Geology and Geophysics.	7	24	25	45	348	135	10	493
Oceanography . . . . .	5	29	59	7	148	19	2	169
Metallurgy . . . . .	32	16	45	7	123	75	2	200
Meteorology . . . . .	22	27	47	5	192	52	6	250
Mathematics . . . . .	19	34	9	38	345	165	8	518
<u>Engineering</u>								
All other engineering .	34	29	23	14	416	191	18	625
Civil Engineering . . .	22	29	25	25	413	246	8	667
Chemical Engineering .	18	39	27	16	501	212	10	723
Electrical Engineering.	44	21	20	15	470	378	12	860
Mechanical Engineering.	40	21	19	19	491	350	11	852
<u>Life Sciences</u>								
All other biology . . .	3	21	58	19	342	81	9	432
Anatomy . . . . .	5	53	12	31	194	39	5	238
General Biology . . . .	12	51	10	27	560	224	23	807
Biochemistry . . . . .	10	42	36	11	471	43	7	521
Botany . . . . .	5	19	31	45	518	68	6	592
Biophysics . . . . .	5	76	16	4	184	18	1	203
Genetics . . . . .	4	40	41	14	245	30	8	283
Microbiology . . . . .	12	30	36	22	566	87	11	664
Pathology . . . . .	18	49	24	10	84	32	2	118
Pharmacology . . . . .	3	61	22	15	192	31	5	228
Physiology . . . . .	7	50	22	21	391	65	8	464
Zoology . . . . .	4	24	24	48	520	97	8	625
Agriculture . . . . .	4	12	76	9	351	111	11	473
Forestry . . . . .	9	20	57	14	335	136	2	473

TABLE C--Continued

Field of Study	Type of First Stipend				N	No Sti- pends	NA	Total N
	Scholarship v Tuition	Fellowship Tuition + Cash	Research Assistant	Teaching Assistant				
<u>Behavioral Sciences</u>								
Psychology . . . . .	10%	34%	35%	22%	452	234	12	698
Anthropology . . . . .	11	47	18	24	400	204	5	609
Economics . . . . .	14	33	32	21	414	259	6	679
Sociology . . . . .	10	30	33	27	345	208	6	559
<u>Humanities</u>								
English . . . . .	23	22	6	49	223	279	13	515
History . . . . .	24	31	11	33	268	304	6	578
<u>Social Work</u>								
Social Work . . . . .	17	75	5	2	594	184	21	799

TABLE D  
FIELD OF STUDY AND SOURCE OF FIRST STIPEND

Field of Study	Per cent. Receiving First Stipend														N	Not Applicable	No Answer	Total						
	Atomic Energy Commission	Department of Defense	National Science Foundation	Veterans Administration	Nat'l. Aeronautics and Space Admn.	Nat'l. Defense Education Act	Office of Educ.	Public Health Serv.	Other Public Health Service	Other Federal Government	Sub-total Federal Government	Private Foundations, Philanthropic Orgn.	Industry, Business, Firm	Directly from School					School, Source Unknown	State or Local Government	Foreign Government	Other	Sub-total Non-Government	
Physical Sciences	4	0	81	0	0	0	0	0	0	85	1	0	9	2	2	0	1	15	99	59	2	160		
Gen. Phys. Sci.																								
All other earth & phys. sci.	5	16	13	0	1	2	0	1	4	43	3	29	16	5	3	0	1	57	182	87	5	274		
Astronomy	2	10	16	0	7	6	0	0	4	44	3	3	38	12	*	0	*	56	198	40	1	239		
Chemistry	8	3	10	0	*	2	4	2	2	34	3	10	42	8	2	0	1	66	468	108	4	580		
Physics	14	8	17	0	2	2	0	1	3	49	3	8	31	7	2	0	1	51	373	121	5	499		
Geography	0	2	3	0	1	7	0	0	1	12	9	0	69	5	3	0	2	88	306	232	10	548		
Geology and Geophysics	1	3	12	*	*	5	0	0	2	24	4	6	54	8	3	0	*	76	348	135	10	493		
Oceanography	6	12	11	0	0	7	0	3	18	59	5	3	18	10	4	0	1	41	148	19	2	169		
Metallurgy	15	8	5	0	7	2	0	0	2	40	5	28	25	1	2	0	0	60	123	75	2	200		
Meteorology	1	35	10	0	3	3	0	0	19	71	6	2	13	5	1	0	2	29	192	52	6	250		
Mathematics	1	3	22	*	*	5	0	0	2	35	3	13	37	7	4	*	*	65	345	165	8	518		
Engineering																								
All other engineering	6	10	6	*	2	2	0	1	4	35	5	29	23	7	1	0	1	65	416	191	18	625		
Civil Engineer'g.	*	6	7	*	0	3	0	3	3	28	5	12	38	7	9	*	1	72	413	246	8	667		
Chemical Engineering	4	1	12	0	3	7	1	1	3	33	5	28	26	7	2	0	*	67	501	212	10	723		
Electrical Engineering	*	7	6	*	4	1	0	0	3	22	2	41	26	6	1	0	2	78	470	378	12	860		
Mechanical Engineering	3	8	6	*	6	2	0	0	2	27	5	33	30	3	1	0	*	73	491	350	11	852		



**APPENDIX IV**

**SURVEY MATERIALS**

UNIVERSITY OF CHICAGO

5720 Woodlawn Avenue, Chicago 37, Illinois

PLaza 2-6444 Area Code 312

PETER H. ROSSI, *Director*

Spring, 1963

Dear Graduate Student:

The National Science Foundation has asked the National Opinion Research Center of the University of Chicago to conduct a national survey of the graduate students in the sciences, engineering and several of the humanities.

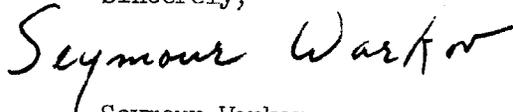
The survey concerns the academic progress and financial circumstances of graduate students. Systematic information is needed on these matters to help shape policies in relation to graduate education.

You are one of 25,000 graduate students enrolled at 130 American universities who has been chosen by scientific selection procedures to participate in this survey. You are asked to contribute approximately forty-five minutes of your time toward the study by answering a questionnaire. The sampling method is designed to give a cross-section of American graduate students in the sciences, engineering and a few other fields. Your answers will remain completely confidential as they will be read only by the research staff. Reports of the study will be based on statistical tables identifying no individual.

Even though some of you are part-time students who do not think of yourselves as "graduate students", please answer every question where appropriate. We hope that all of you will answer as best you can. Although you are only one of 25,000 graduate students in the sample, it is essential that you participate. We urge you to complete the questionnaire so that our findings are representative of all American graduate students in the fields selected for study.

Thank you very much for your help.

Sincerely,



Seymour Warkov  
Senior Study Director

## FIELD LIST

The following field list is to be used in answering some or all of the following questions: 19 - 25, 42 D and I, and 43 D. Each field can be used to describe a field of study or a type of job. Thus, for example, in questions about fields of study, "Mechanical Engineering" means college courses in Mechanical Engineering; in questions about careers, "Mechanical Engineering" means the occupation of mechanical engineers.

When you have chosen from the list, the field or occupation which is your answer to a given question, please write its code number in the boxes. For example, "Mechanical Engineering" is (16).

1	6
---	---

AGRICULTURE

- 45 Agriculture, general
- 45 Agronomy, Field Crops
- 45 Animal husbandry
- 45 Dairy Manufacturing, Dairy Tech.
- 45 Farm Management
- 45 Food Technology
- 45 Horticulture
- 45 Ornamental Horticulture
- 45 Poultry Husbandry
- 45 Soils (Soil Sci., Mgt., & Conservation)
- 45 Agriculture, all other

86 ARCHITECTUREBIOLOGICAL SCIENCES

- 31 Biology, general
- 33 Botany, general
- 41 Zoology, general
- 30 Anatomy and Histology
- 37 Bacteriology, Virology, Mycology, Parasitology, Microbiology
- 32 Biochemistry
- 34 Biophysics
- 3X Cytology
- 3X Ecology
- 3X Embryology
- 35 Entomology
- 36 Genetics
- 3X Nutrition
- 38 Pathology
- 39 Pharmacology
- 40 Physiology
- 3X Plant Pathology
- 3X Biological Sciences, all other

BUSINESS, COMMERCE AND ADMINISTRATION

- 92 Accounting
- 90 Advertising, Public Relations
- 9X Military Service, Military Science
- 97 Secretarial Science (or employed as a secretary)
- 72 Industrial or Personnel Psychology
- 91 All other business and commercial fields (Business Administration, Marketing, Insurance, Finance, Industrial Relations, etc.)
- 93 Public Administration (or employed as government administrator if not covered by other fields)

Education (NOTE: Junior College, College and University Teaching should be coded by Field of Specialization, not as Education)

- 50 Elementary (including Kindergarten and Nursery School)

Secondary--Academic Subject Fields

- 51 English
- 52 Modern Foreign Languages
- 53 Latin, Greek
- 54 History, Social Studies
- 55 Natural Science (General, Physics, Chemistry, Biology, etc.)
- 56 Mathematics

Specialized Teaching Fields

- 57 Physical Education, Health, Recreation
- 58 Music Education
- 59 Art Education
- 60 Education of Exceptional Children (Including Speech Correction)
- 61 Agricultural Education
- 62 Home Economics Education
- 63 Business Education
- 64 Trade and Industrial Education (Vocational)
- 65 Industrial Arts Education (Non-Vocational)
- 66 Counseling and Guidance
- 67 Educational Psychology
- 68 Administration and Supervision
- 6X Education, General and other specialties

Engineering

- 10 Aeronautical
- 11 Civil (including Agricultural, Architectural, Civil, Sanitary)
- 12 Chemical (including Ceramic)
- 13 Electrical
- 14 Engineering Science, Engineering Physics, Engineering Mechanics
- 15 Industrial
- 16 Mechanical (including Naval Architecture and Marine, Welding, Textile)
- 17 Metallurgical
- 18 Mining (including Mining, Geological, Geophysical, Petroleum)
- 1X Engineering, General and other specialties

# SAMPLE FINANCIAL INVENTORY

This enclosure contains a Financial Inventory which was filled out by a graduate student, John Barclay (pseudonym). It illustrates how the Inventory on pages 12 and 13 of the questionnaire is to be completed.

Barclay is a second year graduate student at a private university working for a doctor's degree in chemistry. He is married, the father of one pre-school child. His financial circumstances during the twelve month period of July, 1962 through June, 1963 are as follows:

**INCOMING:** He received a summer (1962) research assistantship paying \$750 and a second stipend—also a research assistantship—worth \$2,500 for the 1962-1963 academic year (\$1,300 for tuition and \$1,200 for living expenses). Gifts from parents and relatives totaling \$500 were received by Barclay and his wife during the twelve month period. In addition, his wife's job paid \$3,600 before taxes. Interest from a savings account and dividends from stock yielded fifty dollars. The final source of income was the sale of stock; it entailed a reduction in assets but it added another \$500 to income. Thus Barclay's total income for the twelve month period was \$7,900.

**OUTGOING:** Barclay's academic expenses amounted to \$1,525. Of this sum \$1,300 was paid out for tuition and fees (this was covered by the second stipend); texts, reference books and journals—\$150; and instruments, equipment, supplies—\$75. His estimated living expenses including rent, clothing and food, came to \$3,400. Barclay bought a new car in April, 1962—before the time period under consideration. Cost of maintaining and operating the car plus depreciation totaled \$500. This does not include the twelve monthly payments which will have been made through June, 1963 during the twelve month period. Each payment was \$70 resulting in a reduction in liabilities of \$840 by the end of June, 1963 (He did not know how much of the payment was for interest and put the entire sum under "reduction in liabilities." This is O.K.) Another \$410 was paid for health and medical care for the family. Other expenses including taxes, entertainment, etc., came to \$1,225. Barclay's total expenses for the twelve month period were \$7,900, a sum which equals his income.

(Over)

**ESTIMATED FINANCES FOR THE YEAR BEGINNING  
JULY 1, 1962 AND ENDING JUNE 30, 1963**

**I N C O M I N G**

**I. YOUR STIPEND INCOME**

ANNUAL AMOUNTS  
IN DOLLARS

TRANSFER THESE  
AMOUNTS, IF ANY,  
FROM  
QUESTION 29D

1st stipend	\$ 750
2nd stipend	\$ 2500
3rd stipend	\$ —
<b>TOTAL</b>	<b>\$ 3250</b>

MAKE LARGE, CLEAR NUMBERS

ESTIMATE FOR THE TIME  
REMAINING TILL  
JUNE 30, 1963

**II. OTHER INCOME**

*Part time and full time work (before taxes)	\$ —
Parents and relatives (gifts)	\$ 500
Spouse's university job (before taxes)	\$ —
Spouse's non-university job (before taxes)	\$ 3600
Spouse's stipends	\$ —
Veterans and GI benefits	\$ —
Income from military service	\$ —
†Other—excluding IV and V below	\$ 50
<b>TOTAL</b>	<b>\$ 4150</b>

APPROXIMATIONS ARE O.K.!

**III. TOTAL OF I AND II** → **\$ 7400**

**IV. REDUCTION IN ASSETS (Amounts):** **\$ 500**  
withdraw savings; sell stock, car, house, property, etc.

**V. ADDITION TO LIABILITIES (Amounts):**

National Defense Education Act loan	\$ —
Other educational loans (e.g., deferred tuition)	\$ —
Other: installment debt, mortgages obtained since July, 1962	\$ —

**TOTAL** → **\$ —**

**VI. TOTAL OF III, IV, AND V** → **\$ 7900**

**NOTE: Total IN (VI) and Total OUT (XII) should be equal.  
If not, please revise the amounts you have entered.**

\*If you have a faculty appointment as instructor, assistant professor, etc., include this salary.  
†Other income includes interest from savings accounts; dividends from stocks and bonds; income from property; royalties; honoraria; consultation and other professional activity.etc.

**ESTIMATED FINANCES FOR THE YEAR BEGINNING  
JULY 1, 1962 AND ENDING JUNE 30, 1963**

**OUTGOING**

**VII. ACADEMIC EXPENSES (SELF)**

ANNUAL AMOUNTS  
IN DOLLARS

**A. TUITION AND FEES**

Covered by stipend	\$ 1300
Covered by cost of education allowances	\$ —
Not covered by above	\$ —
<b>TOTAL</b>	<b>\$ 1300</b>

MAKE LARGE, CLEAR NUMBERS

**B. OTHER ACADEMIC EXPENSES**

ESTIMATE FOR THE TIME  
REMAINING TILL  
JUNE 30, 1963

INCLUDE  
AMOUNTS  
COVERED  
BY STIPEND

Texts, reference books, journals	\$ 150
Instruments, equipment, supplies	\$ 75
Thesis expenses	\$ —
Other, including tutorial costs	\$ —
<b>TOTAL</b>	<b>\$ 225</b>

APPROXIMATIONS ARE O.K.!

**VIII. TOTAL OF VII A AND VII B** → **\$ 1525**

**IX. OTHER EXPENSES (SELF AND DEPENDENTS)**

INCLUDE  
AMOUNTS  
COVERED  
BY STIPEND

*Living expenses	\$ 3400
†Transportation	\$ 500
‡Health and medical care	\$ 410
§Other, excluding X and XI below	\$ 1225

**TOTAL** → **\$ 5535**

**X. ADDITION TO ASSETS (Amounts):**

Amount added to savings: buy stock, total value of house or car purchased since July, 1962, etc. **\$ —**

**XI. REDUCTION IN LIABILITIES (Amounts):**

Amount repaid on loan; principal payments on car or house purchased prior to July, 1962; payments for deferred tuition; time payments, etc. **\$ 840**

**XII. TOTAL OF VIII, IX, X, AND XI** → **\$ 7900**

NOTE: Total IN (VI) and Total OUT (XII) should be equal.  
If not, please revise the amounts you have entered.

\*Housing; food, beverages; personal maintenance; utility bills, etc.

†Local public transportation; operate and maintain own car; travel etc.

‡Self and family; health insurance premiums; medical and dental bills; drugs, etc. Exclude expenses covered by health insurance.

§Entertainment, gifts, contributions; insurance, taxes; purchase of house furnishings and consumer durables; spouse's academic expenses, etc.

**SAMPLE  
FINANCIAL  
INVENTORY**

81 ENGLISH AND JOURNALISM  
English & Literature  
Journalism

80 FINE & APPLIED ARTS  
Art, general  
Music  
Speech & Dramatic Art  
Fine & Applied Art, all other

FOREIGN LANGUAGE & LITERATURE

84 Linguistics  
82 Latin and/or Classical Greek  
84 French  
84 Italian  
84 Portugese  
84 Spanish  
84 Philogy & Lit. of Romance Lang.  
84 German  
84 Other Germanic Languages  
84 Philology & Lit. of Germanic Languages  
84 Arabic  
84 Chinese  
84 Hebrew  
84 Hindi and Urdu  
84 Japanese  
84 Russian  
84 Other Slavic languages  
84 Foreign Languages, all other

46 FORESTRY

04 GEOGRAPHY

HEALTH PROFESSIONS

2X Hospital Administration  
22 Nursing and/or Public Health Nursing  
26 Occupational Therapy  
23 Optometry  
24 Pharmacy  
25 Physical Therapy, Physiotherapy  
2X Public Health  
2X Radiologic Technology  
20 Clinical Dental Science (beyond D.D.S. or  
D.M.D.)  
21 Clinical Medical Sciences (beyond M.D.)  
27 Clinical Veterinary Medical Sci. (beyond  
D.V.M.)  
2X Health Professions, all other

98 HOME ECONOMICS  
Home Economics, general  
Child Development, Family Relations  
Clothing and Textiles  
Foods and Nutrition  
Institution Mgt., Institution Adm.  
Home Economics, all other

95 LAW

88 LIBRARY SCIENCE

MATHEMATICAL SUBJECTS

09 Mathematics  
09 Statistics

PHILOSOPHY

85 Philosophy  
85 Scholastic Philosophy

PHYSICAL SCIENCES

OX Physical Sciences, general  
01 Astronomy  
02 Chemistry  
07 Metallurgy  
08 Meteorology  
OX Pharmaceutical Chemistry  
03 Physics

Earth Sciences

05 Geology  
05 Geophysics  
06 Oceanography  
00 Earth Sciences, all other

Physical Sciences

00 Physical Sciences, all other

PSYCHOLOGY

70 Clinical Psychology  
66 Counseling & Guidance  
71 Social Psychology  
67 Educational Psychology  
72 Industrial & Personal Psychology  
73 General & Experimental Psychology  
74 Other Psychological Fields

SOCIAL SCIENCES

Basic Social Sciences

7X Social Sciences, general  
7X American Civilization, American Culture  
75 Anthropology  
77 Area Studies, Regional Studies  
76 Economics  
83 History  
78 International Relations  
78 Political Science or Government  
79 Sociology  
7X Basic Social Sciences, all other

Applied Social Sciences

76 Agricultural Economics  
78 Foreign Service Programs  
72 Industrial Relations  
93 Public Administration  
96 Social Work, Social Administration  
7X Applied Social Sciences, all other

BROAD GENERAL CURRICULUMS & MISCELLANEOUS FIELDS

80 Arts, general program

Other Fields and Occupations

94 Foreign Service (Code as occupation only,  
not field of study)  
98 Home Economics (Code either as a field of  
study or as an occupation if you mean  
working as a home economist for pay)  
99 Housewife (Code as occupation only, not as  
field of study)  
87 Radio-Television, Communications  
89 Theology, Religion (Employment as a Clergy-  
man or religious worker)

XO Field of Study or Job Which has no Near  
Equivalent in This List (If you use this  
code, please describe your field in a word  
or two under the questions where it applies)

XI Do not expect to be either employed full time  
or to be a Housewife.(Code only for ques-  
tions about careers, not for field of study)

## STIPEND INFORMATION

Questions 29, 34, 35, 40B and 52F refer to source and types of stipends. This includes any scholarship, fellowship, assistantship, or other stipend.

- EXCLUDE** . . . . . loans and gifts from parents, relatives or any other source;  
exclude work performed as an instructor or assistant professor
- INCLUDE** . . . . . waiver or reduction in tuition and fees even if you do not receive the money directly  
include waiver or reduction of tuition and fees under cost of education allowances received by the university
- INCLUDE** . . . . . income from teaching or research in your field of study if paid as a graduate assistant by the school where you are enrolled or an affiliated organization  
include payment in kind, e.g., room and board
- IF** . . . . . the funds are administered by the school you are attending but come from another source, e.g., a Federal agency such as the National Institutes of Health or the National Science Foundation, be sure to enter the code number for the Federal agency providing the funds (do not enter the code number for the school you are attending).
- FOR EXAMPLE** . . . . . If the stipend is a research assistantship from your school, write the code number (52) in the boxes provided, such as:

5	2
---	---

Source of Stipend		Type of Stipend				
		Duty Free Stipend		Stipend Requiring Duties		
		Equal to or less than my tuition bill	For tuition plus cash grant	Research Assistantship	Teaching Assistantship	
U.S. Federal Government (directly or through your school)	Atomic Energy Commission	00	20	40	60	
	Department of Defense	01	21	41	61	
	National Science Foundation	02	22	42	62	
	Veterans Administration (Exclude GI Bill)	03	23	43	63	
	National Aeronautics and Space Administration	04	24	44	64	
	Office of Education	National Defense Education Act	05	25	45	65
		Other Office of Education	06	26	46	66
	Public Health Service	National Institutes of Health Fellowship Program	07	27	47	67
		N.I.H. Training Grant and Traineeship Program	08	28	48	68
	Other PHS		09	29	49	69
Other Federal Government		0X	2X	4X	6X	
Private Foundation, Philanthropic Organization, etc.		10	30	50	70	
Industrial or Business Corporation or Firm		11	31	51	71	
Directly from the school that I am now attending		12	32	52	72	
The school I am attending, but I do not know the primary source		13	33	53	73	
State or local government (U.S.)		14	34	54	74	
Foreign government and other foreign sources		15	35	55	75	
Other		16	36	56	76	

Conducted by:  
National Opinion Research Center  
University of Chicago  
5720 S. Woodlawn Avenue  
Chicago 37, Illinois

Survey 468  
Spring, 1963

**NATIONAL SCIENCE FOUNDATION**  
**STUDY OF GRADUATE STUDENT FINANCES**

**INSTRUCTIONS**  
Please Read Before You Begin

1. Answer every question unless you are specifically instructed that a given question does not apply to you.
2. When answering questions with a limited number of alternatives, please choose the statement which comes closest to describing your circumstances or personal history, even if it does not fit your situation precisely.
3. Select your answer to the questions by CIRCLING the number or letter next to the alternative of your choice. For example:

I am now . . . (Circle one)

A student in high school . . . . . X 73/R

A student in college . . . . . 1

A student in graduate or professional school. (2)

4. The numbers and letters are necessary for processing the data and have been arbitrarily chosen. The numbers in the far right margin (73/R) should be ignored.

**THANK YOU VERY MUCH FOR YOUR HELP**

Budget Bureau Number 99-6306  
Approval Expires October 30, 1963

## YOUR STUDIES

In this section we are interested in finding out about your past, present and future studies.

1. Please indicate the highest degree you now hold, the next degree you expect to receive, and the highest degree you expect to hold eventually:

	None	Bachelor's (Undergraduate) e.g. BA, BS, BE, B Chem Eng.	First Professional, e.g. LLB, MD, etc.	Master's, e.g. MA, MS, MSW, M Civ. Eng.	Doctorate e.g. PhD, EdD, JSD, etc.	
A. Highest degree you now hold (Circle one)	5	6	7	8	9	11/4
B. Next degree you expect to receive (Circle one)	5	6	7	8	9	12/4
C. Highest degree you expect to hold (Circle one)	5	6	7	8	9	13/4

2. What is your best guess as to when you will receive: (If you are not working for a degree, skip to Question 3)

A. The degree for which you are now working?	Month _____ Year 19 _____	14-15/XX 16-17/XX
B. The highest degree you expect to hold?	Month _____ Year 19 _____	18-19/XX 20-21/XX

3. What system does your school use? (Circle one)

Quarter system .....	7	22/6
Trimester system .....	8	
Semester system .....	9	

4. Please indicate which category best describes your enrollment status for each of the following academic terms.  
(Circle one in each of columns A, B, C, and D)

		A (Circle one)	B (Circle one)	C (Circle one)	D (Circle one)
IF QUARTER OR TRIMESTER SYSTEM: →		Summer '62	Fall '62	Winter '63	Spring '63
IF SEMESTER SYSTEM: →		Summer '62	Fall '62	Spring '63	Circle 8 Below
E N R O L L E D	In a program in which "full-time study" is possible and carrying:				
	full course load or greater	0	0	0	0
	less than a full course load	1	1	1	1
	no courses, enrolled only for completion of thesis, independent research, etc.	2	2	2	2
	in night school or other program in which full-time study is impossible:	3	3	3	3
	For correspondence courses	4	4	4	4
OR					
N O T E N R O L L E D B E C A U S E	Interrupting my studies temporarily	5	5	5	5
	No intention of going on further	6	6	6	6
	Completing thesis, doing independent research, etc.	7	7	7	7
	On vacation	8			
	My school is on semester system				8
	Other (Circle and specify)	9	9	9	9
		23/X	24/X	25/X	26/X

5. Which of the following degree requirements are you working on this term? (Circle any that apply)

Taking courses or seminars .....	X	27/Y
Preparing for comprehensive or "qualifying" examinations .....	0	
Language examination .....	1	
Research for and preparation of my thesis .....	2	
Other (Circle and specify) _____	3	
None .....	4	

6. What is considered a full course load at your school and how many courses are you taking this term?  
If load is measured in hours, translate as best you can.  
(Circle one in each column)

	Full Course Load Is: (Circle one)	Number of Courses I Am Taking: (Circle one)
Five courses or more	5	5
Four courses	4	4
Three courses	3	3
Two courses	2	2
One course	1	1
None	0	0
	28/6	29/6

7. On the average, how many hours a week were you engaged in academic study this term? Include courses, thesis work, practicum, study time, etc. required for the degree. (Circle one)

None	Less than 10	10-19	20-29	30-39	40-49	50-59	60-69	More than 69	
0	1	2	3	4	5	6	7	8	30/9

8. Which of the following best describes your primary reason for enrolling in your current study program? (Circle one)

Definitely intend to apply enrollment to a graduate degree .....	X	31/Y
Primary reason not necessarily to get a graduate degree but:		
...to pass certification or other requirements for teaching or counseling in primary or secondary school system .....	0	
...to gain specific "job knowledge" for my present or future employer .....	1	
...to enhance my own knowledge regardless of degree, career, or job benefits .....	2	
...other (Circle and specify) _____	3	

9. How many calendar years elapsed between the time you received your bachelors degree and the start of your graduate studies?  
(Circle one)

Less than 1 year	1 year	2 years	3 years	4 years	5-9 years	10 or more years	
0	1	2	3	4	5	6	32/7

10. During which of the previous academic years were you enrolled for graduate study?  
Circle as many as apply in the first column and one in each of the other columns)

	Prior to June '58	July '58- June '59	July '59- June '60	July '60- June '61	July '61- June '62
Enrolled full time for two or more terms of graduate study	5	X	5	X	5
Enrolled full time for only one term of graduate study	6	0	6	0	6
Not enrolled full time any terms but enrolled part time at least one term of graduate study	7	1	7	1	7
Not enrolled in graduate school during the year	8	2	8	2	8
Had not yet begun my graduate studies	9	3	9	3	9
	33/4	34/Y	35/4	36/Y	37/4

11. Which of the following best describes your progress in academic study? (Circle one)

- I have completed less than one full year of required work for an advanced degree.....X 38/y
- I have completed one or more years of work but I do not expect to receive a doctor's degree by June, 1963.....0
- I expect to complete all doctoral requirements by June, 1963.....1

12. What proportion of course work on your degree will you have completed by June, 1963? (Circle one)

- All of it .....6 39/5
- About three-quarters of my course work .....7
- Half of my course work but less than three-quarters.....8
- Less than half of my course work .....9

13. What are your eventual plans concerning the doctoral degree? (Circle one)

- I definitely plan to get a doctorate .....1 40/0
- I might eventually get a doctorate, but my plans aren't definite.....2
- I do not plan to get a doctorate .....3
- It is too early in my graduate work to have an opinion .....4

14. Given your current aptitudes and interests, how much difference do you think getting a Ph.D. would make in your ability to attain the following? (Circle one in each row)

	A Ph.D. will help . . .			
	a great deal	a moderate amount	hardly any	
A. Holding a job which I enjoy a great deal (Circle one)	7	8	9	41/6
B. Making a contribution to knowledge (Circle one)	X	0	1	42/Y
C. Doing my job very well (Circle one)	3	4	5	43/2
D. Making a good living (Circle one)	7	8	9	44/6
E. Feeling that I know more than almost anybody else about some subject (Circle one)	X	0	1	45/y
F. Attaining a position of authority (Circle one)	3	4	5	46/2
G. Making a contribution to humanity (Circle one)	7	8	9	47/6

15. What is the letter grade that best represents your grade point average so far in your graduate studies? (Circle one)

IF LETTER GRADES ARE NOT GIVEN, translate into letter grades as best you can.

(Circle one)	A	A-	B+	B	B-	C+	C	C-	Less than C-	No grades received yet	
	0	1	2	3	4	5	6	7	8	9	48/X

16. IF YOU HAVE A MASTER'S DEGREE, ANSWER A, B, AND C BELOW; IF YOU DO NOT HAVE A MASTER'S DEGREE, SKIP TO QUESTION 17.

A. When did you receive it? 49-50/RR  
 Month \_\_\_\_\_ Year 19 \_\_\_\_\_ 51-52/RR

B. Where did you receive this degree? (Circle one)  
 The school I'm now attending .....1 53/R  
 A different school .....2

C. IF DIFFRENT: Please write its name and location below.

School	City	State (Country if non-U.S.)

17. IF YOU HAVE A BACHELOR'S DEGREE, ANSWER A, B, C, AND D BELOW: IF YOU DO NOT HAVE A BACHELOR'S DEGREE, SKIP TO QUESTION 18.

A. When was your (last) bachelor's degree obtained?

54-55/RR

Month \_\_\_\_\_ Year 19 \_\_\_\_\_

56-57/RR

B. Where did you receive this degree? (Circle one)

The school I am now attending ..... 1  
A different school ..... 2

58/R

C. IF A DIFFERENT SCHOOL, please write its name and location below.

School	City	State (Country if non-U.S.)

D. What was your over-all (cumulative) grade point average for work leading to this bachelor's degree?

IF LETTER GRADES WERE NOT GIVEN, translate into letter grades as best you can.

A	A-	B+	B	B-	C+	C	C-	D+	D or less
(Circle one) 0	1	2	3	4	5	6	7	8	9

59/R

18. Are you.... (Circle any which apply)

60/2

- an alien studying in this country on a non-immigrant visa ..... 1
- a member of a religious order which maintains you ..... 2
- in the military service (full-time career) ..... 3
- an unclassified and "special" student, i.e., you have not met the usual requirements for graduate standing, or you do not intend to become a formal candidate for a degree beyond the bachelor's ..... 4
- a student enrolled exclusively in courses conducted by correspondence, by radio, or television ..... 5
- a holder of a doctorate and doing postdoctoral work ..... 6
- none of the above ..... 7

## FIELDS AND CAREERS

The list of fields on pages 2 and 3 in the covering letter is to be used in answering Questions 19 through 25, 42D and I and 43D. As you choose the field from the list which is your answer to one of the questions below, please write the two numbers or letters of that field in the double box at the right of that question. For example, if "Mechanical Engineering" best describes your current major field, write its code number (16) in the double box at the end of Question 19, thus:

1	6
---	---

- |   |   |  |  |          |
|---|---|--|--|----------|
| 19. Your current major field of study?  | <table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table> |  |  | 61-62/XX |
|   |   |  |  |          |
| 20. Your undergraduate major field of study?  | <table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table> |  |  | 63-64/XX |
|   |   |  |  |          |
| 21. If you now hold Master's degree, in which field? (Write "yy" in the double box if you do not hold Master's degree)  | <table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table> |  |  | 65-66/XX |
|   |   |  |  |          |
| 22. If you now hold a doctorate, in which field? (Write "yy" in the double box if you do not hold a doctor's degree)  | <table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table> |  |  | 67-68/XX |
|   |   |  |  |          |
| 23. Major field for highest degree you expect to hold?  | <table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table> |  |  | 69-70/XX |
|   |   |  |  |          |
| 24. Your anticipated career field? (Please give the code number for what you expect to be your long-run career and ignore any stop-gap job, or temporary military service which might precede it) | <table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table> |  |  | 71-72/XX |
|   |   |  |  |          |

IF YOU ARE A WOMAN: Use code number for "Housewife" (99) only if you do not expect to work at all.

IN ADDITION to writing the code number in the double box, please describe your anticipated career field in a few words below.

25. A. What if you were free to choose any professional or graduate field from the list, ignoring obstacles such as finances, time for training, admission requirements, etc.. Would you still choose the field just listed?

Yes, I would still strongly prefer it to any other (Circle "X" and skip to Question 26).....X  
 I could be tempted by one or more alternatives.....0  
 No, I would prefer one or more alternatives .....1

73/Y

B. Which of these alternative fields would you like the most?  
 (Please indicate the field in the double box)

--	--

74-75/RR

26. A. After completing your studies, which of the following do you expect as your first employer? as your long-run future employer?  
 (Circle one in each column)

Begin Deck 2

	First Employer	Long-run Career Employer
I plan to be self-employed, or in business owned by my family	Y	Y
Private company	X	X
Professional partnership	0	0
Research organization or institute	1	1
College or University	2	2
Junior College or Technical Institute	3	3
Elementary or Secondary School or School System	4	4
Hospital, Clinic, Church, Welfare, or other non-profit organization	5	5
Federal Government (U.S.) (Other than above)	6	6
State or Local Government (Other than above)	7	7
Other (Circle and specify)	8	8
Do not expect employment	9	9
	11/R	12/R

B. Is the employment described in "A" above located....

	First	Long-run
in the United States?	8	8
in a foreign country?	9	9
	13/7	14/7

C. The following activities cut across a number of specific jobs. Which ones do you anticipate will be an important part of your long-run career work? (Circle any which apply)

Teaching .....2 15/1  
 Research and development.....3  
 Administration or management .....4  
 Service to patients or clients .....5  
 None of the above .....6

27. Which of these characteristics would be very important to you in picking a job or career? (Circle as many as apply)

Making a lot of money.....X 16/Y  
 Opportunities to be original and creative.....0  
 Opportunities to be helpful to others or useful to society.....1  
 Avoiding a high pressure job which takes too much out of you.....2  
 Living and working in the world of ideas.....3  
 Freedom from supervision in my work.....4  
 Opportunities for moderate but steady progress rather than the chance of  
 of extreme success or failure.....5  
 A chance to exercise leadership.....6  
 Opportunity to work with people rather than things.....7  
 None of the above .....8

28. A. In the long run, would you rather be known and respected.... (Circle one)

where you work .....X 17/Y  
 (OR)  
 among people in your profession .....0

B. In the long run, would you rather be respected by.. (Circle one)

clients (students, customers) you serve .....5 18/4  
 (OR)  
 people (colleagues) with whom you work.....6



31. Did having a stipend this year lead you to do any of the following? (Circle as many as apply)

- Shift field of specialization to area where more or better stipends were available .....Y 42/R
- Attend this university although I preferred a different one .....X
- Choose a master's thesis topic which didn't represent my real interest .....0
- Choose a doctoral thesis topic which didn't represent my real interest .....1
- Enroll part time although I would have preferred full-time studies .....2
- Enabled me to start graduate work sooner than otherwise possible .....3
- Allowed me to do the kind of research I really wanted .....4
- Choose this university from equally attractive ones .....5
- Take too long to get my degree because of duties attached to my stipend .....8
- None of the above .....9

32. A. In order to hold any of your stipends and receive installments of the grant, are you required to maintain a specified grade point average? (Circle one)

- No .....7 43/R
- Don't know .....8
- Yes .....9

B. IF YES: What is it? If letter grades are not given, translate as best you can. (Circle one)

A	A-	B+	B	B-	C+	C or less	Don't know
0	1	2	3	4	5	6	9

44/R

33. IF YOU HAVE A STIPEND THIS YEAR, SKIP TO QUESTION 34.

Did not having a stipend this year lead you to do any of the following: (Circle as many as apply)

- Shift field of specialization to area where more stipends were available .....Y 45/R
- Attend this university although I preferred a different one .....X
- Choose a master's thesis topic which didn't represent my real interest .....0
- Choose a doctoral thesis topic which didn't represent my real interest .....1
- Enroll part time although I would have preferred full-time studies .....2
- Delay graduate study after getting the bachelor's degree .....6
- Drop out of graduate school temporarily .....7
- Take too long to get my degree because of need for part-time work .....8
- None of the above .....9

34. Did you decline any stipend that you were offered for the academic year 1962-1963? (See page 4 of covering letter for a set of code numbers that describe stipends by source and type.)

IF NO: Write "YY" in the double box.

--	--

46-47/XX

IF YES: Enter the code number for the one you were offered. (If you were offered more than one, give the code number for the "best" one.)

35. Did you apply for any stipend during the academic years 1962-1963 for which you were not accepted?

IF NO: Write "YY" in the double box.

--	--

48-49/XX

IF YES: Enter its code number. (If more than one rejection, give the code number for one stipend you would have preferred.)

36. A. Did you have a stipend for graduate study between July 1961 and June 1962? (Circle one)

- Yes, I always had one (Circle "0" and answer Column (A) below) .....0 50/X
- No, I never had one (Circle "1" and answer Column (B) below) .....1
- I was an undergraduate student during this period. (Circle "2" and skip to Question 37) .....2

B. What did getting (not getting) a stipend between July, 1961 and June, 1962 lead you to do? (Circle any which apply)

	July, 1961-June, 1962	
	(A) Getting a stipend	(B) Not getting stipend
Shift field of specialization to area where more or better stipends were available	Y	Y
Attend this university although I preferred a different one	X	X
Choose a master's thesis topic which didn't represent my real interest	0	0
Choose a doctoral thesis topic which didn't represent my real interest	1	1
Enroll part time although I would have preferred full-time studies	2	2
Enabled me to start graduate work sooner than otherwise possible	3	3
Allowed me to do the kind of research I really wanted	4	4
Choose this university from equally attractive ones	5	5
Delay graduate study after getting the bachelor's degree	6	6
Drop out of graduate school temporarily	7	7
Take too long to get my degree because of need for part-time work	8	8
None of the above	9	9

51/R

52/R

## YOUR PLANS NEXT YEAR

37. What will you be doing this Fall? (Circle as many as apply)
- |  |   |      |
|--|---|------|
| Working as a research assistant .....  | 0 |      |
| Working as a teaching assistant .....  | 1 | 53/X |
| Working full time at a type of job I expect to be my long-run career field .....                                     | 2 |      |
| In the military service (full-time active duty) .....  | 3 |      |
| Working full time at civilian job which will probably not be my long-run career .....                                | 4 |      |
| Housewife .....  | 5 |      |
| Graduate study in an arts and science field (physical science, biological science, social science, humanities) ..... | 6 |      |
| Graduate study in a professional field (engineering, education, agriculture, social work, law, medicine, etc.) ..... | 7 |      |
| Working part time other than as research or teaching assistant .....   | 8 |      |
| Other (Circle and Specify) .....   | 9 |      |

38. How definite are the plans encircled in Question 37? (Circle one)
- |  |   |      |
|--|---|------|
| Quite definite .....                         | X |      |
| Fairly definite, but subject to change ..... | 0 | 54/Y |
| Quite indefinite .....                       | 1 |      |

39. A. Which of the following best describes your studies during the coming year (1963-64)?  
Will continue studies in ... (Circle one)
- |  |   |      |
|--|---|------|
| same field, same school .....            | 5 |      |
| *same field, different school .....      | 6 | 55/4 |
| *different field, same school .....      | 7 |      |
| *different field, different school ..... | 8 |      |
| *will not be enrolled next year .....    | 9 |      |

- B. If you plan to go to school in the coming year: Will you go ... (Circle one)
- |                  |   |      |
|------------------|---|------|
| full-time? ..... | 1 |      |
| part-time? ..... | 2 | 56/0 |

- C. If not enrolled next year: Why? (Circle any which apply)
- |  |   |      |
|--|---|------|
| Work for degree will be completed (Circle and skip to Question 42) ..... | 6 |      |
| Studying in absentia .....   | 7 | 57/5 |
| *Interrupting my studies temporarily .....                               | 8 |      |
| *Quitting my studies short of the degree .....                           | 9 |      |

- D. Why are you making the changes indicated (\*) in A and C above?
- |  |  |      |
|--|--|------|
|  |  | 58/Y |
|  |  | 59/Y |

40. A. Are you getting a stipend next year?
- |  |   |      |
|--|---|------|
| Yes .....  | 2 |      |
| No (Circle "3" and skip to Question 41) .....    | 3 | 60/1 |
| Maybe (Circle "4" and skip to Question 41) ..... | 4 |      |

- B. IF YES: See page 4 of the covering letter for a set of code numbers that describe stipends by source and type.
- |  |   |  |  |          |
|--|---|--|--|----------|
| (1) First stipend? If you have two or more, enter the code number of the one that has the highest value. | <table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table> |  |  | 61-62/RR |
|  |   |  |  |          |
| (2) Second stipend?<br>IF YES: Enter its code number.<br>IF NONE: Write "yy" in the double box           | <table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table> |  |  | 63-64/RR |
|  |   |  |  |          |
| (3) Third stipend?<br>IF YES: Enter its code number.<br>IF NONE: Write "yy" in the double box            | <table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table> |  |  | 65-66/RR |
|  |   |  |  |          |

- C. Please estimate the total amount you will receive from each stipend during the period July, 1963 through June, 1964. Include your estimate of the value of a tuition scholarship, or reduction or waiver in tuition or fees (even if you received no money), income from teaching or research in your field if you were paid as a graduate assistant by the school or affiliated organization where you are enrolled.
- |                       |    |  |          |
|-----------------------|----|--|----------|
| (1) My first stipend  | \$ |  | 67-68/RR |
| (2) My second stipend | \$ |  | 69-70/RR |
| (3) My third stipend  | \$ |  | 71-72/RR |

41. Will getting (not getting) a stipend influence your plans for next year? Yes ..... 8 73/7  
 No ..... 9

IF YES: What is the influence?

74/X

75/X

**YOUR EMPLOYMENT AND EARNINGS:  
 JULY, 1962 THROUGH JUNE, 1963**

Begin  
 Deck 3

42. A. Do (Did) you have employment other than that connected with a stipend during this academic year, i.e., June, 1962 through July, 1963? (Circle one)

EXCLUDE... occasional jobs of only a few days' duration

INCLUDE... self-employment

INCLUDE... summer 1962 employment

Yes ..... 1 11/0

No (Circle "2" and skip to Question 43) ..... 2

B. How many months during the 12-month period were you working ...

35 hours per week or more? Months: \_\_\_\_\_ 12-13/XX

20 - 34 hours per week? Months: \_\_\_\_\_ 14-15/XX

10 - 19 hours per week? Months: \_\_\_\_\_ 16-17/XX

Fewer than 10 hours per week? Months: \_\_\_\_\_ 18-19/XX

(Please make total equal 12 months)

C. Was there more than one job? (Circle one)

Yes ..... 1 20/0

No ..... 2

IF YES: Consider the job you held longest during the twelve month period as the one you are describing below in parts D through H.

D. What field best describes this job? (Inside the covering letter is a list of fields of employment and study. Enter the code number that best describes your job.)

--	--

21-22/XX

E. This is... (Circle one) the kind of job I want in my anticipated career field. .... 4 23/3

a job which is relevant to my anticipated career field but not the kind I want. .... 5

a job which has nothing to do with my anticipated career field. .... 6

F. Which of the following best describes your employer? (Circle any which apply)

I am self-employed, or in business owned by my family. .... Y 24/R

Private company ..... X

Professional partnership ..... 0

Research organization or institute ..... 1

College or University at which I am enrolled ..... 2

Another college or university ..... 3

Junior College or Technical Institute ..... 4

Elementary or secondary school or school system ..... 5

Hospital or clinic, church, welfare, or other non-profit organization ..... 6

Federal Government (U.S.) (Other than above) ..... 7

State or Local Government (Other than above) ..... 8

Other (Circle and specify) ..... 9

G. Which of the following duties best describe the job? (Circle any which apply)

Teaching ..... X 25/Y

Research and development ..... 0

Administration and management ..... 1

Service to patients or clients ..... 2

Other (Circle and specify) ..... 3

H. Are you currently working on this job? (Circle one)

Yes (Circle "5" and skip to Question 43) ..... 5 26/4

No ..... 6

I. Do you have a job at which you currently working? Exclude duties connected with a stipend.

Yes ..... 8 27/R

No ..... 9

IF YES: What field best describes your current job? (Enter the code number in the double box.)

--	--

28-29/RR



**ESTIMATED FINANCES FOR THE YEAR BEGINNING  
JULY 1, 1962 AND ENDING JUNE 30, 1963**

**I N C O M I N G**

**I. YOUR STIPEND INCOME**

ANNUAL AMOUNTS  
IN DOLLARS

TRANSFER THESE  
AMOUNTS, IF ANY,  
FROM  
QUESTION 29D

1st stipend	\$
2nd stipend	\$
3rd stipend	\$
<b>TOTAL</b> →	\$

MAKE LARGE, CLEAR NUMBERS

ESTIMATE FOR THE TIME  
REMAINING TILL  
JUNE 30, 1963

**II. OTHER INCOME**

*Part time and full time work (before taxes)	\$
Parents and relatives (gifts)	\$
Spouse's university job (before taxes)	\$
Spouse's non-university job (before taxes)	\$
Spouse's stipends	\$
Veterans and GI benefits	\$
Income from military service	\$
†Other—excluding IV and V below	\$
<b>TOTAL</b> →	\$

APPROXIMATIONS ARE O.K.!

**III. TOTAL OF I AND II**

→ \$

**IV. REDUCTION IN ASSETS (Amounts):**

withdraw savings; sell stock, car, house, property, etc.

\$

**V. ADDITION TO LIABILITIES (Amounts):**

National Defense Education Act loan	\$
Other educational loans (e.g., deferred tuition)	\$
Other: installment debt, mortgages obtained since July, 1962	\$
<b>TOTAL</b> →	\$

→ \$

**VI. TOTAL OF III, IV, AND V**

→ \$

**NOTE:** Total IN (VI) and Total OUT (XII) should be equal.  
If not, please revise the amounts you have entered.

\*If you have a faculty appointment as instructor, assistant professor, etc., include this salary.  
†Other income includes interest from savings accounts; dividends from stocks and bonds; income from property; royalties; honoraria; consultation and other professional activity, etc.

**ESTIMATED FINANCES FOR THE YEAR BEGINNING  
JULY 1, 1962 AND ENDING JUNE 30, 1963**

**O U T G O I N G**

**VII. ACADEMIC EXPENSES (SELF)**

ANNUAL AMOUNTS  
IN DOLLARS

**A. TUITION AND FEES**

Covered by stipend	\$
Covered by cost of education allowances	\$
Not covered by above	\$
<b>TOTAL</b> →	\$

MAKE LARGE, CLEAR NUMBERS

**B. OTHER ACADEMIC EXPENSES**

ESTIMATE FOR THE TIME  
REMAINING TILL  
JUNE 30, 1963

INCLUDE  
AMOUNTS  
COVERED  
BY STIPEND

Texts, reference books, journals	\$
Instruments, equipment, supplies	\$
Thesis expenses	\$
Other, including tutorial costs	\$
<b>TOTAL</b> →	\$

APPROXIMATIONS ARE O.K.!

**VIII. TOTAL OF VII A AND VII B** → \$

**IX. OTHER EXPENSES (SELF AND DEPENDENTS)**

INCLUDE  
AMOUNTS  
COVERED  
BY STIPEND

*Living expenses	\$
†Transportation	\$
‡Health and medical care	\$
§Other, excluding X and XI below	\$

**TOTAL** → \$

**X. ADDITION TO ASSETS (Amounts):**

Amount added to savings: buy stock, total value of house or car purchased since July, 1962, etc. \$

**XI. REDUCTION IN LIABILITIES (Amounts):**

Amount repaid on loan; principal payments on car or house purchased prior to July, 1962; payments for deferred tuition; time payments, etc. \$

**XII. TOTAL OF VIII, IX, X, AND XI** → \$

**NOTE: Total IN (VI) and Total OUT (XII) should be equal.  
If not, please revise the amounts you have entered.**

\*Housing; food, beverages; personal maintenance; utility bills, etc.

†Local public transportation; operate and maintain own car; travel etc.

‡Self and family: health insurance premiums; medical and dental bills; drugs, etc. Exclude expenses covered by health insurance.

§Entertainment, gifts, contributions; insurance, taxes; purchase of house furnishings and consumer durables; spouse's academic expenses, etc.

47. What is the least it would take to get you into graduate studies full-time? (Circle only one)

- Doesn't apply to me as I am now studying full time ..... 2
- Tuition scholarship ..... 3
- Tuition scholarship plus \$500 stipend with no obligations ..... 4
- Tuition scholarship plus \$1,000 stipend with no obligations ..... 5
- Tuition scholarship plus \$2,000 stipend with no obligations ..... 6
- Tuition scholarship plus \$3,000 stipend with no obligations ..... 7
- Tuition scholarship plus \$4,000 stipend with no obligations ..... 8
- None of the above would get me to go full time ..... 9

44/1

---

IF "NONE OF THE ABOVE": Why not?

45/R

# BACKGROUND AND GENERAL INFORMATION

48. What is your sex? (Circle one)

Male ..... 1      46/0  
 Female ..... 2

A. ANSWER IF FEMALE:

In the long run which one of the following do you really prefer and which one do you realistically expect? (Circle one in each column)

	Really prefer (Circle one)	Realistically expect (Circle one)
Housewife only	5	X
Housewife with occasional employment	6	0
Housewife for a few years, employment later	7	1
Housewife with regular employment	8	2
Employment only	9	3
	47/R	48/R

B. ANSWER IF MALE:

Have you ever served on full-time active duty in the armed services? (Circle one)

Yes ..... 8      49/R  
 No ..... 9

IF YES: For how many years? (Circle one)

Less than one ..... 0      50/R  
 One ..... 1  
 Two ..... 2  
 Three ..... 3  
 Four or More ..... 4

C. ANSWER IF MALE:

How has your present military status affected your plans for future education?  
 (Circle as many as apply)

Not at all ..... 5      51/R  
 An influence toward:  
   postponing entry into my graduate studies ..... 6  
   beginning my graduate studies sooner ..... 7  
   interrupting my graduate studies ..... 8  
   not hurrying through my graduate studies ..... 9

49. Your date of birth:

Month	Day	Year
-------	-----	------

52-53/XX

50. Are you a U.S. citizen? (Circle one)

Yes, U.S. born ..... X      54/Y  
 Yes, naturalized ..... 0  
 No, but I expect to stay in the U.S. .... 1  
 No, and I do not expect to stay in the U.S. .... 2

51. Your racial background: (Circle one)

White (Caucasian) ..... 5      55/4  
 Negro ..... 6  
 Oriental ..... 7  
 American Indian ..... 8  
 Other (Circle and specify) ..... 9

52. What is your current marital status? (Circle one)

- Single, no definite plans to be married at present .....X 56/Y
- Single, have definite plans to be married before Sept. 1, 1963.....0
- Single, have definite plans to be married after Sept. 1, 1963.....1
- Widowed, Divorced, Separated .....2
- Married, no previous marriage .....3
- Married, a previous marriage .....4

IF EVER MARRIED:

A. In what year were you first married? 19 \_\_\_\_\_

57-58/RR

B. How many children do you have now (Circle one)

- None .....0 59/R
- One .....1
- Two .....2
- Three .....3
- Four or more .....4

C. What is the age of the oldest child? (Fill in box.)

IF YOU HAVE NO CHILDREN: enter "YY":

60-61/RR

IF NOW MARRIED AND NOT WIDOWED, DIVORCED OR SEPARATED, Answer D, E and F.

D. What is your spouse currently doing? (Circle any which apply)

- Working at University .....4 62/R
- Working elsewhere .....5
- Military service (full-time active duty) .....6
- Housewife, mother .....7
- Going to school .....8
- Other (Circle and specify) .....9

E. IF YOUR SPOUSE IS GOING TO SCHOOL: For what degree? (Circle one)

- Bachelor's .....X 63/R
- Master's .....0
- Doctor's .....1
- None of the above .....2

F. If your spouse has a stipend this year:

Which? (Enter the code number from the back of covering letter that best describes the stipend with the highest value.)

64-65/RR

Estimate its total value

\$

53. How many persons (excluding yourself) receive 50 per cent or more of their financial support from you? (INCLUDE spouse, children, others). Write the number in the box.

Number of dependents:

66/Y

54. Where were you living when you were graduated from high school and where do you live now? (Circle one in each column)

		Home State at High School Graduation (Circle one)	Now Living (Circle one)
NEW ENGLAND	Conn., Maine, Mass., N.H., R.I., Vt.	X	X
MIDDLE ATLANTIC	N.J., N.Y., Pa.	0	0
EAST NORTH CENTRAL	Ill., Ind., Mich., Ohio, Wis.	1	1
WEST NORTH CENTRAL	Iowa, Kan., Minn., Mo., Nebr., N.D., S.D.	2	2
SOUTH ATLANTIC	Del., D.C., Md., Fla., Ga., N.C., S.C., Va, W.Va.	3	3
EAST SOUTH CENTRAL	Ala., Ky., Miss., Tenn.	4	4
WEST SOUTH CENTRAL	Ark., La., Okla., Texas	5	5
MOUNTAIN	Ariz., Colo., Ida., Mont., Nev., N.Mex., Utah, Wyo.	6	6
WEST	Calif., Ore., Wash., Alaska, Hawaii	7	7
CANADA		8	8
OTHER (Circle and specify)		9	9
		67/Y	68/Y

55. Please indicate both the religion in which you were reared and your present religious preference. (Circle one in each row)

	Protestant	Roman Catholic	Jewish	Other	None	
A. Religion in which you were reared (Circle one)	X	0	1	2	3	69/Y
B. Present religious preference (Circle one)	5	6	7	8	9	70/4

56. A. Where did you live when you were graduated from high school? (Circle one)

Farm	A town (not a suburb of a larger place) with a population of		A city or its suburbs (not part of a larger area) with a population of			A major population center with a total area population of		
	Less than 2,500	2,500 to 9,999	10,000 to 24,999	25,000 to 49,999	50,000 to 99,999	100,000 to 249,999	250,000 to 999,999	1,000,000 or more
1	2	3	4	5	6	7	8	9

71/0

B. Were you living . . . (Circle one)

in the central city . . . . . X 72/Y  
 suburb . . . . . 0  
 other . . . . . 1

57. Where do you live? (Circle one)

With my parents . . . . . 2 73/1  
 University dormitory . . . . . 3  
 University-owned apartment . . . . . 4  
 University pre-fab or trailer . . . . . 5  
 Room or apartment rented from a private landlord . . . . . 6  
 Single-family house, rented . . . . . 7  
 Single-family house, owned . . . . . 8  
 Other (Circle and Specify) . . . . . 9

58. Please indicate your parents' highest educational attainment at the time you were graduated from high school.  
(Circle one in each column)

	Mother	Father
8th grade or less	4	Y
Part high school	5	X
High school graduate	6	0
Part college	7	1
College graduate	8	2
Graduate or professional degree	9	3
	74/3	75/4

59. Which of the following categories best describes the usual occupation of your father when you were graduated from high school? (Circle one)

Professional	1	76/0
Proprietor or manager	2	
Sales (Other than sales manager or administrator)	3	
Clerical	4	
Skilled worker	5	
Semi-skilled worker	6	
Service worker	7	
Unskilled worker	8	
Farmer or farm worker	9	
Retired (Circle & indicate pre-retirement occupation above)	Y	77/R
Deceased (Circle & indicate above occupation before his death)	X	

60. Which of the following was the appropriate income category for your parents at the time you were graduated from high school. Consider annual income from all sources before taxes. (Circle one)

Less than \$5,000 per year	3	78/2
\$5,000 — \$7,499	4	
\$7,500 — \$9,999	5	
\$10,000 — \$14,999	6	
\$15,000 — \$19,999	7	
\$20,000 and over	8	
I have no idea	9	

61. A. Please write the name of the institution which you are attending:

Institution	City	State

B. In what school, college, or division (e. g., College of Engineering, College of Medicine, Graduate School of Arts and Sciences) are you enrolled?

\_\_\_\_\_

C. In what department of that organizational unit?

\_\_\_\_\_

62. Your replies to this questionnaire are completely confidential, and absolutely no information of any kind about specific persons will be released to your school or anyone else. Your sealed questionnaire will be read only by the research staff in Chicago. Because we hope to follow up some of the students in the sample to learn more about graduate students, we must ask you the following:

**PLEASE PRINT**

**A. YOUR NAME**

First Name	Middle Name	Last Name
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**B. YOUR MOST LIKELY ADDRESS A YEAR FROM NOW**

Name of residence hall, department, company, etc., if any
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Street Address
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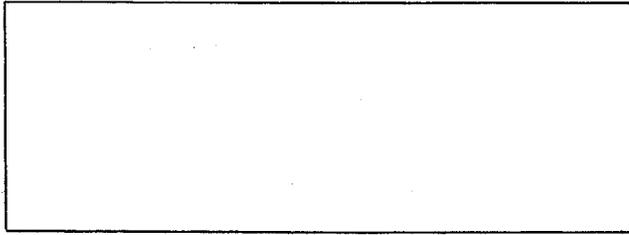
City or Town	Zone	State or County
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**C. NAME AND ADDRESS OF SOMEONE WHO WILL KNOW WHERE YOU ARE OR COULD FORWARD A LETTER TO YOU IF YOU WERE NOT AT THE ADDRESS YOU LISTED ABOVE**

First Name	Middle Name	Last Name
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Street Address
----------------

City or Town	Zone	State or County
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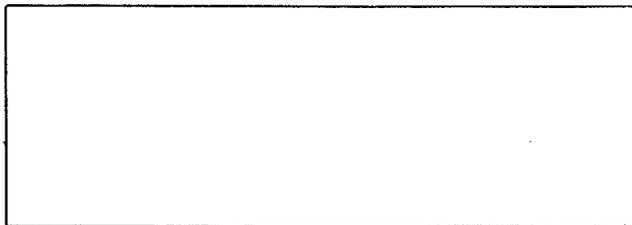


### **INSTRUCTIONS FOR RETURNING QUESTIONNAIRE**

1. Please fold back on this line.

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2. Insert in envelope. (If you have been provided with a "window envelope", make sure that the address below is displayed.)



**APPENDIX V**

## UNIVERSE ESTIMATES

The percentage distributions among the five composite fields of graduate study, as presented in the text, will provide sufficient information concerning the allocation of stipends in these fields of study for many readers of this report. Others may wish to estimate the number of American graduate students holding stipends during the 1962-1963 academic year, the number who secured various types of stipends, the number receiving stipend support from various sources, and the like. Universe estimates are feasible for the thirty-seven detailed fields of study and for the five composite fields, given the total number of American graduate students enrolled for advanced degrees in each of these fields. This was calculated from two sources: (1) the proportion of American graduate students seeking an advanced degree in each field as reported in Appendix III, Table A; and (2) total enrollment figures for each of the fields (save Engineering), as shown in the Office of Education Survey of Students Enrolled For Advanced Degrees: Fall, 1962. Enrollment figures for the Engineering fields were derived from the OE survey of Engineering Enrollments and Degrees 1961 (Table B). This information is presented below:

TABLE A.  
ESTIMATED ENROLLMENT OF AMERICAN GRADUATE STUDENTS  
SEEKING ADVANCED DEGREES IN THIRTY-SEVEN FIELDS OF  
STUDY, 1962-1963

Detailed and Composite Field	Enrollment Fall 1962	Per Cent American Graduate Students Seeking Advanced Degrees	Enrollment, American Graduate Students
General Physical Science	486	94	456
All other earth and physical sciences	238	84	200
Astronomy	423	86	364
Chemistry	12,309	85	10,463
Physics	11,005	82	9,024
Geography	1,281	83	1,063
Geology and Geophysics	2,489	86	2,141
Oceanography	238	85	202
Metallurgy	201	90	181
Meteorology	374	86	322
Mathematics	14,121	88	12,426
<b>TOTAL: PHYSICAL SCIENCES</b>			<b>36,942</b>

TABLE A --Continued

Detailed and Composite Field	Enrollment Fall 1962	Per Cent American Graduate Students Seeking Advanced Degrees	Enrollment, American Graduate Students
All other engineering	13,016	79	10,283
Civil Engineering	3,985	71	2,829
Chemical Engineering	3,323	76	2,525
Electrical Engineering	13,377	84	11,203
Mechanical Engineering	7,131	80	5,704
<b>TOTAL: ENGINEERING</b>			<b>32,544</b>
All other biology	2,734	79	2,160
Anatomy	573	85	487
General Biology	3,658	90	3,292
Biochemistry	2,006	77	1,545
Botany	1,398	84	1,174
Biophysics	352	86	302
Genetics	570	72	410
Microbiology	2,155	83	1,787
Pathology	286	71	203
Pharmacology	538	81	436
Physiology	1,061	82	870
Zoology	2,437	90	2,193
Agriculture	4,282	70	2,997
Forestry	713	79	563
<b>TOTAL: LIFE SCIENCES</b>			<b>18,419</b>
Psychology	11,344	90	10,210
Anthropology	1,338	89	1,191
Economics	6,429	79	5,079
Sociology	3,924	85	3,335
<b>TOTAL: BEHAVIORAL SCIENCES</b>			<b>19,815</b>
English	15,985	94	15,026
History	10,671	94	10,030
<b>TOTAL: HUMANITIES</b>			<b>25,056</b>
Social Work	7,256	93	6,748
<b>TOTAL: SOCIAL WORK</b>			<b>6,748</b>

Universe estimates of the number of stipend holders for each of the thirty-seven fields of study and for the five composite fields can be prepared given the information in the preceding table. For example, the above table shows that a total of 2,829 American graduate students were seeking degrees in Civil Engineering, while Table 2 of Appendix III shows that 62 per cent of American graduate students seeking advanced degrees in Civil Engineering held at least one stipend during the 1962-1963 academic year. We estimate that the number of American graduate students working for advanced degrees in Civil Engineering in the Spring term, 1963, and who held at least one stipend during the 1962-1963 academic year, was  $(.62)(2829)=1754$ .

Similarly, Table 2.1 in the text of this report shows that 80 per cent of the students in the Life Science composite field had some form of stipend support: of the 18,419 American students seeking advanced degrees in this composite field of study a total of 14,735 held at least one stipend during the academic year of 1962-1963.

Assume that an estimate is needed of the number of Stage I American graduate students holding stipends in the Engineering composite field.\* Table 2.10 shows that Stage I American graduate students seeking advanced degrees in Engineering comprised 519/1280 or 40.5 per cent of the students in this field, and that 58 per cent of the Stage I Engineering students held at least one stipend during the period under study.

Universe estimate of the Stage I American graduate students in the composite field of Engineering:  $(.405)(32,544)=13,180$

Universe estimate of State I American graduate students in the composite field of Engineering holding at least one stipend:  $(.58)(13,180)=7,644$

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\*These are First Year Students