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U. S. Department of Education
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Working Paper Series

Financial Aid Profile of Graduate Students in Science and Engineering

Working Paper No. 2000-11 March 2000

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Financial Aid Profile of Graduate Students in Science and Engineering

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U.S. Department of Education
Office of Educational Research and Improvement
National Center for Education Statistics

March 2000

Working Paper prepared for the National Science Foundation, Science Resources Division

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Introduction

This report profiles the financial aid received by U.S. graduate students majoring in science and engineering who were enrolled in U.S. postsecondary institutions[1] in the 1995–96 academic year. It is primarily based on data from the 1995–96 National Postsecondary Student Aid Study (NPSAS:96), the fourth in a series of surveys conducted by the U.S. Department of Education. Each NPSAS survey represents all postsecondary students enrolled in the survey year, and its purpose is to provide detailed information on how students and their families pay for education and to describe demographic and other characteristics of those enrolled. The report also uses data from the Baccalaureate and Beyond Study (B&B:93/94) of recent college graduates. The B&B cohort, derived from NPSAS:93, was followed up in 1994, approximately one year after they graduated.

The report begins with a brief profile of the enrollment characteristics of U.S. science and engineering graduate students. Then questions are answered about how science/engineering graduate students financed their education, including their borrowing history and employment status, with occasional comparisons to graduate students in the arts and humanities. The next section of the report answers questions about baccalaureate recipients' plans for graduate school and their cumulative borrowing. Finally, answers are provided to questions about the demographic characteristics and educational history of science/engineering graduate students, with relevant comparisons to graduate students in the arts/humanities.

The data on which this report is based differ from those collected annually by the National Science Foundation in the Survey of Graduate Students and Postdoctorates in Science and Engineering[2] (NSF graduate student survey), which compiles data from almost 12,000 graduate departments at about 600 institutions on the numbers of science/engineering graduate students enrolled.[3] Since the data collected in the NSF graduate student survey are aggregated numbers in defined categories, the information requested and supplied necessarily concerns the enrollment status and characteristics of students as commonly recorded by departments and institutions. The

[1]The population of NPSAS:96 institutions includes postsecondary institutions in the 50 states, the District of Columbia, and Puerto Rico. Unlike the NSF graduate student survey, it excludes Guam and exclusively military institutions.

[2]The National Institutes of Health cosponsored the NSF graduate student survey in 1995.

[3]National Science Foundation, Division of Science Resources Studies, *Graduate Students and Postdoctorates in Science and Engineering: Fall 1995 (N*SF 97–312) (Arlington, VA, 1997).

NSF graduate student survey is also limited to fields of study within science, engineering, and health.

Because this report is based on data pertaining to individual students in nationally representative samples, a broader range of information was available based on additional data sources, such as student interviews and financial aid records. Thus, information similar to that obtainable from the NSF graduate student survey can be amplified and placed in context with additional data about such student characteristics as types and amounts of financial aid received currently and cumulatively; the nature and extent of employment; age; parents' education; marital and dependents status; type of high school and baccalaureate institution attended; and so on. Moreover, this report compares graduate students in science/engineering with an equivalent group in the arts/humanities.

Data sources

There are two sources of data for this report: the 1995–96 National Postsecondary Student Aid Survey (NPSAS:96) and the Baccalaureate and Beyond Study (B&B:93/94). The most current comprehensive, nationwide study of students enrolled in all types of postsecondary institutions, NPSAS:96 combines student interview data, institution-reported registration and financial aid data, institutional characteristics matched from the Integrated Postsecondary Education Data System (IPEDS), student background and financial information on applicants for aid who completed federal financial aid forms, and longitudinal loan data for federal loan recipients from the National Student Loan Data System (NSLDS). The plans of baccalaureate recipients for graduate education and the effect of undergraduate borrowing were based on B&B:93/94, which provides data about the education and work experiences of students who received bachelor's degrees during the 1992–93 academic year, and were surveyed in the B&B First Follow-up, which was conducted in 1994.

The table estimates presented in the report were produced using the NPSAS:96 and B&B:93/94 Data Analysis Systems (DASs). The DAS is a microcomputer application that provides public access to National Center for Education Statistics (NCES) surveys by allowing users to generate their own tables from the NPSAS:96 or B&B data. The DAS application calculates standard errors adjusted for the complex sampling design used in NPSAS and B&B surveys. These standard errors are used to test the statistical significance of differences between selected estimates. Differences between groups mentioned in the text are statistically significant at the 95 percent confidence level, except for about a dozen differences that are significant at the 90 percent confidence level, which are identified in footnotes. For more information about the DAS, see appendix B of this report.

Population studied

This report does not include data about all students enrolled at the postbaccalaureate level. Nonresident aliens (i.e., foreign citizens in the United States on temporary visas) were excluded from the population studied for two reasons. Much of the analysis focused on financial aid, which in many federally sponsored programs is not available to international students. Also, the number and proportion of nonresident aliens in the NPSAS:96 sample were lower than comparable aggregate enrollment statistics from the Integrated Postsecondary Education Data System (IPEDS) and the NSF graduate student survey.[4] These differences may in part be attributable to the request in NPSAS:96 for the federal financial aid eligibility of non-U.S. citizens, rather than their immigration/visa status.

For this report, two disciplinary subgroups of U.S. graduate students were specifically identified: those in science and engineering and those in arts and humanities. Science/engineering graduate students were defined in a way that would be as consistent as possible with the parameters of the NSF graduate student survey. NCES degree program and major field of study data were examined in detail to ensure inclusion of only matriculated students in master's and doctoral degree programs in NSF science/engineering disciplines, which exclude education, business, and exclusively first-professional degree programs (e.g., law, medicine, pharmacy, and so on). Health fields were excluded from this report. Major field of study categories within science/engineering identified in this report are consistent with NSF discipline codes, and are described in greater detail in a glossary of variables used in this report (see appendix A). These categories are as follows:

- Natural sciences and mathematics: agricultural sciences, biological sciences, computer sciences, earth sciences, mathematical sciences, and physical sciences;
- Social sciences and psychology; and
- Engineering: chemical engineering, civil engineering, electrical engineering, mechanical engineering, other engineering.

Analyses do not disaggregate these three major fields in greater detail because of the small size of the NPSAS sample of graduate students.

[4]In NPSAS:96, 4 percent (94,800) of all postbaccalaureate students were identified as nonresident aliens, while in the 1995 IPEDS fall enrollment survey, nonresident aliens (186,800) represented 9 percent of total postbaccalaureate enrollment. In NPSAS:96, 10 percent (50,500) of science and engineering graduate students were identified as nonresident aliens, while in the fall 1995 NSF graduate student survey, nonresident aliens (98,500) represented 23 percent of science and engineering graduate students.

To serve as a comparison group, arts and humanities graduate students were defined in a way that would make them as parallel as possible to their counterparts in science and engineering. Because the enrollment intensity and demographic characteristics of graduate students in academic disciplines differ from those in professional fields,[5] fields such as education were not included in the comparison group. Specifically, nonprofessional fields of study outside science/engineering were identified in which doctoral-level students were enrolled and in which there were full-time students among NPSAS:96 respondents. These criteria were met by the following fields:

- Area studies
- Art history/fine arts
- Communications
- English Language and literature/letters
- History
- Music
- Philosophy

The categories in this report are consistent with those used by NSF to summarize graduate student survey findings. In this report, "classification of institution" refers to an aggregation of categories based on the Carnegie Foundation's Classification of Institutions of Higher Education.[6] The National Science Foundation displays selected graduate student survey results using the Carnegie classification.[7] Similarly, consistent with the terminology used in NSF publications, the category of institutional control designated as "private" includes two NCES categories: private, not-for-profit and private, for-profit.

Sample size

The extent of analysis in this report was limited by the sample size of the NPSAS:96 data available pertaining to graduate students in the fields studied. In most cases, analyses in this re-

[5]For a description of differences among graduate students in academic disciplines and professional fields, see, for example, S. Choy and R. Moskovitz, *Student Financing of Graduate and First-Professional Education, 1995-96: With profiles of students in selected degree programs* (NCES 98-083; Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 1998).

[6]Carnegie Foundation for the Advancement of Teaching, *A Classification of Institutions of Higher Education, 1994 Edition* (Princeton, NJ: 1994). Definitions of institutional groupings based on Carnegie classifications and numbers of pertinent institutions that participated in NPSAS:96 are included in the Glossary, appendix A. Two specialized institutions were reclassified: one from Medical Schools/Medical Centers to Research Universities II/Doctoral Universities, and the other from Schools of Engineering/Technology to Master's/Baccalaureate institutions.

[7]National Science Foundation, Division of Science Resources Studies, *Graduate Students and Postdoctorates in Science and Engineering: Fall 1996* (NSF 98–307) (Arlington, VA: 1998), 56.

port examine each of the variables of interest by major field of study, classification of institution, and control of institution separately. It is often possible that two or all of these three factors in combination would more adequately explain the status or behavior being studied. For example, differences found among the three institutional classifications may be accounted for by variation in the proportions of individuals majoring in fields of study at institutions in the three classifications, which would be evident in analyses examining both major field and institutional classification simultaneously. However, analyses examining two or all three of the aforementioned factors were not included in this report because of insufficient cell sizes. For example, there would be an insufficient number of cases to produce reliable estimates for engineering students in Master's/Baccalaureate institutions (maximum n=18), and often (depending on the completeness of data available for a given variable) for engineering students in Research II/Doctoral Universities (maximum n=46). Similarly, for institutional control, there would often be an insufficient number of cases of engineering students in private institutions (maximum n=38).

Moreover, even in the analyses included in this report, there were sometimes barely enough cases to generate an estimated average amount or percentage distribution, which resulted in standard errors of estimate so large that apparent differences were often not statistically significant. In most cases, if apparently large differences in tables are not mentioned in the text, they were found not to be measurably different.

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Graduate Students in Science and Engineering: Institutional and Enrollment Characteristics

In 1995–96, over 300,000 U.S. citizens and permanent residents were enrolled as graduate students in science and engineering fields at institutions in the U.S. and Puerto Rico. Figure 1 and table 1 show that almost one-half (48 percent) of these graduate students attended institutions classified as Research University I, or major research universities; one-third of the students were enrolled at institutions classified as Research University II/Doctoral University, and almost one-fifth (19 percent) attended institutions classified as Master's/Baccalaureate. Of all U.S. science/engineering graduate students, more were enrolled in public rather than private institutions (72 percent versus 28 percent), as indicated in table 2. Overall, a majority (55 percent versus 45 percent) of these graduate students was enrolled part time (table 3).

Did the profile of science and engineering graduate students differ according to the type of institution in which they were enrolled?

Table 2 shows that U.S. science/engineering graduate students attending institutions classified as Research University I in 1995–96 were more likely to be at a public institution (80 percent) than were those attending institutions classified as either Research II/Doctoral University or Master's/Baccalaureate (65 percent and 63 percent, respectively).[1] Figure 1 displays these percentages as distributed among science/engineering graduate students in each institutional classification. The proportion of graduate students enrolled in institutions classified as Master's/Baccalaureate was higher for those in social sciences and psychology (28 percent) than for those in natural sciences and mathematics or engineering (16 percent and 10 percent, respectively), as shown in table 1. Women graduate students in science/engineering were more likely to attend Master's/Baccalaureate institutions than were their male counterparts (26 percent versus 15 percent).

[1]The smaller difference is significant at only the 90 percent confidence level.

Did science and engineering graduate students differ according to their attendance pattern or degree level?

Table 3 indicates that among U.S. graduate students, the proportion enrolled full time was higher at Research University I than at Research University II/Doctoral University or Master's/Baccalaureate institutions, both for science/engineering majors (57 percent versus 34 and 32 percent) as well arts/humanities majors (54 percent versus 33 and 25 percent). Figure 1 displays these percentages among science/engineering graduate students in each institutional classification.

In terms of degree level, more graduate students were enrolled in master's degree programs than were seeking doctoral degrees at the institutions in which they were enrolled, both in science/engineering (64 versus 36 percent) and in arts/humanities (66 versus 34 percent), as shown in table 3. While among science/engineering graduate students there was no measurable difference in the proportions seeking doctoral degrees at institutions classified as Research University I compared with those classified as Research University II/Doctoral University (48 percent versus 36 percent),[2] among arts/humanities graduate students, almost twice as many were pursuing doctoral degrees at Research I institutions as at Research University II/Doctoral University institutions (57 percent versus 24 percent). In science/engineering, men were more likely to be seeking doctoral degrees than women (42 percent versus 28 percent), although there was no such difference in arts/humanities (37 percent versus 33 percent).

[2]Difference is significant at only the 90 percent confidence level.

Financing Graduate Education

There are two major considerations in how students finance their postsecondary education: the cost of enrollment and the student's financial resources. The former is composed of tuition and other expenses, and typically varies markedly because of lower tuition charges at public (tax subsidized) compared with private institutions. It is for this reason that institutional control is included as a standard category in the following summary of findings. For graduate students, financial resources are usually composed of the income of the student and the student's spouse while enrolled. Both the cost to the student and the student's financial resources affect attendance intensity (part time or full time). Students enrolled full time have higher educational expenses than part-time students, and usually have lower incomes (because they are unable to work full time in positions of significant responsibility) unless they have a spouse who has such a job. Thus, because of the importance of attendance intensity in financial aid analysis, the financial aid descriptive data in this report are presented either in pairs of tables (one for all students—regardless of attendance intensity, and another for students enrolled full time for the full year) or for full-time/full-year students only.[1]

The fall 1995 NSF graduate student survey collected the aggregate number of full-time graduate students receiving various "mechanisms of support" (fellowships, traineeships, assistantships, and so on) for each of various "sources of support" (specific federal agencies and non-federal sources). NPSAS:96 data for sampled individuals include more detailed categories of financial aid (such as tuition waivers, loans, employment, and so on);[2] the history of borrowing (for federal loans); the amounts of various forms of aid; and the individual's demographic and enrollment characteristics and the characteristics of the institution attended. These last two types of data provide the basis for the answers to general questions about how science/engineering graduate students financed their education. The answers to almost all the following questions focus on three enrollment and institutional characteristics: major field of study, classification of institution, and control of institution.

[1]Among all graduate and first-professional students, although part-time enrollees outnumbered full-time ones, financial aid was received by more full-time students. Almost three times as many students enrolled full-time for the full-year versus part-time part-year received any aid. However, because employer aid was received by almost three times as many part-time as full-time full-year students, employer aid data for both all students and part-time or part-year students is presented (table 8). See S. Choy, *Student Financing of Graduate and First-Professional Education, 1995-96* (NCES 98-083) (Washington, DC: U.S. Department of Education, National Center for Education Statistics, 1998).

[2]Types of financial aid data in NPSAS:96 include: scholarships, fellowships, tuition waivers, and employer aid (summarized in grants); loans (federal "Stafford" and other); assistantships; and work study.

What was the average tuition charged science and engineering graduate students?

Major field of study. U.S. science/engineering graduate students in 1995–96 were charged similar amounts of tuition and fees in natural sciences and mathematics, social sciences and psychology, and engineering.[3] As shown in table 4, average tuition and fees for those in science/engineering were about $7,600 for full-time students enrolled for the full year and $2,800 for students attending part time or for part of the year.

Classification of institution. Average tuition and fees for full-time science/engineering graduate students were higher at institutions classified as Research University I (major research universities) ($8,400) than at institutions classified as Research II/Doctoral University or Master's/Baccalaureate ($6,100 at both).

Control of institution. The average tuition and fees at private institutions differed markedly from those at public institutions for both full-time and part-time science/engineering graduate students. The average amount of tuition and fees at private institutions was about double that of public institutions, both for full-time graduate students ($12,900 versus $5,700*)* and for part-time students ($4,700 versus $2,000). Table 4 also indicates that among arts/humanities graduate students, there were similar differences in the average amount of tuition and fees paid by those attending private versus public institutions.

What proportion of science and engineering graduate students received financial aid, and in what amounts?

Major field of study. Similar proportions of U.S. graduate students in 1995–96 received financial aid in natural sciences and mathematics, social sciences and psychology, and engineering.[4] As indicated in table 5, the proportion of all science/engineering graduate students who received any aid was 54 percent, and the average amount was about $10,100. For students enrolled full time for the full year, as displayed in table 6, the proportion receiving any aid was 83 percent, and the average amount was approximately $11,900.

Classification of institution. Among all science/engineering graduate students (i.e., both full-time and part-time students), those enrolled at Research University I institutions were more likely to receive any financial aid (65 percent) than their counterparts at institutions classified as Research University II/Doctoral University (44 percent). Among arts/humanities graduate stu-

[3]Difference is significant at only the 90 percent confidence level.
[4]Ibid.

dents, there was a similar relationship between institutional classification and aid received. These variations may be partly related to the differing composition of full- and part-time graduate enrollments at institutions with these classifications (table 3). Even among science/engineering graduate students (enrolled full time for the full year), however, the total amount of financial aid received was higher at Research University I institutions than at Master's/Baccalaureate institutions ($13,000 versus $9,300), as shown in table 6.

Control of institution. For science/engineering graduate students enrolled full time for the full year at private institutions, the average amounts they received of all aid ($15,200), loans ($12,000), and grants ($10,800) in 1995–96 were higher than the average amounts received at public institutions. These variations, observable in figure 2 and table 6, largely reflect the differences in tuition and fees between private and public institutions (table 1).

What type of financial aid did science and engineering graduate students receive?

Major field of study. Table 6 and figure 3 show that in 1995–96, full-time, full-year U.S. science/engineering graduate students were more likely to take out a loan if studying in social sciences and psychology (51 percent) than in natural sciences and mathematics (22 percent) or engineering (17 percent). This may be partly related to the fact that social sciences and psychology graduate students were more likely to enroll in institutions classified as Master's/Baccalaureate (where borrowing was more likely, as discussed below) than were engineering or natural sciences and mathematics students (28 percent versus 10 percent and 16 percent respectively), as presented in table 1. Social sciences and psychology graduate students were also less likely to obtain assistantships, as mentioned on page 13 and shown in table 9.

Classification of institution. Science/engineering graduate students enrolled full time for the full year were most likely to take out loans if enrolled at Master's/Baccalaureate institutions (70 percent), were less likely if enrolled at institutions classified as Research University II/Doctoral University (41 percent), and least likely to do so at Research University I institutions (23 percent). For full-time, full-year graduate students in science/engineering, the average amount of grants[5] received was higher at Research University I institutions ($9,400) than at institutions classified as Research University II/Doctoral University ($3,900). The fact that a higher percentage also received aid without loans at Research University I institutions compared with Research University II/Doctoral University institutions, as displayed in figure 4 (see page 14),

[5]Grants include scholarships, fellowships, tuition waivers, and employer aid.

may suggest that relatively higher grant amounts received at Research University I institutions resulted in a relatively lower need to take out loans.

Control of institution. Although the proportions of full-time, full-year science/engineering graduate students receiving any aid, loans, or grants did not differ between public and private institutions, at private institutions the average amounts of total aid ($15,200), loans ($12,000), and grants ($10,800) were higher than at public institutions ($10,800, $7,800, and $6,200, respectively). These variations in aid amounts were probably related to the differences in tuition and fees at private and public institutions as identified above.

What proportion of science and engineering graduate students received tuition waivers or employer aid?

Major field of study. Similar proportions of U.S. graduate students in 1995–96 received tuition waivers in natural sciences and mathematics, social sciences and psychology, and engineering. Table 7 shows that 20 percent of all science/engineering graduate students received tuition waivers, which averaged about $2,900, and among those enrolled full time for the full year, one-third received tuition waivers, averaging about $3,000. The proportion of graduate students receiving tuition waivers was higher in science/engineering than in arts/humanities, both among all students (21 percent versus 5 percent), and for those enrolled full time for the full year (33 percent versus 4 percent).

Classification of institution. All science/engineering graduate students (i.e., both full-time and part-time students) were most likely to receive tuition waivers at Research University I institutions (31 percent), were less likely if enrolled at institutions classified as Research University II/Doctoral University (9 percent), and least likely at Master's/Baccalaureate institutions (1 percent), as indicated in table 7. This pattern may be partially related to the prevalence of assistantships, which are often offered with tuition waivers, as displayed in table 9. Table 8 shows that the proportions of graduate students receiving employer aid did not vary significantly among the three classifications of institutions.[6]

Control of institution. Although the proportion of science/engineering graduate students (regardless of attendance intensity/pattern) who received tuition waivers was similar at public and private institutions,[7] part-time or part-year graduate students were about twice as likely to report receiving employer aid at private rather than at public institutions (33 percent versus 15 percent), as shown in table 8.

[6]Differences are significant at only the 90 percent confidence level.

[7]Difference is significant at only the 90 percent confidence level.

What proportion of science and engineering graduate students had assistantships, and what was the average amount they received?

Major field of study. Figure 3 and table 9 show that the proportion of full-time, full-year graduate students in 1995–96 who had any assistantship was higher in natural sciences and mathematics (48 percent) than in social sciences and psychology or engineering (28 percent and 23 percent, respectively).[8] Although the average amount of all assistantships among full-time, full-year graduate students did not differ measurably between science/engineering and arts/humanities,[9] the average amount of teaching assistantships for students in science/engineering was lower than that for their counterparts in arts/humanities ($6,800 versus $9,000).[10]

Classification of institution. Science/engineering graduate students enrolled full time for the full year at Research University I institutions were more likely to have any assistantship (51 percent) than those at institutions classified as Research University II/Doctoral University or Master's/Baccalaureate (22 percent and 10 percent, respectively). Similarly, full-time, full-year arts/humanities graduate students were more likely to have any assistantship at Research University I institutions than at Master's/Baccalaureate institutions (50 percent versus 11 percent). Since one criterion of an institution's classification (based on the Carnegie Foundation's Classification of Institutions of Higher Education[11]) is the amount of federal (primarily research) support, institutions receiving higher amounts of external research funding may be expected to have higher proportions of research assistants.

Control of institution. As shown in table 9, full-time, full-year graduate students at public institutions were about twice as likely to have an assistantship as those at private institutions in science/engineering (42 percent versus 19 percent), but not in arts/humanities. Among science/engineering students, this tendency may be partially related to the higher proportion of them enrolled in public institutions that were classified as Research University I rather than Master's/Baccalaureate (table 2).

[8]The smaller difference is significant at only the 90 percent confidence level.
[9]Difference is significant at only the 90 percent confidence level.
[10]Ibid.
[11]Refer to appendix A for a detailed definition of institutional classification.

To what extent did science and engineering graduate students obtain loans and other financial aid?

Major field of study. In 1995–96, U.S. graduate students (regardless of attendance intensity/pattern) were more likely to receive aid without loans (in other words, less likely to borrow) in engineering (52 percent) or natural sciences and mathematics (49 percent) than in social sciences and psychology (28 percent), as shown in table 10. In contrast, the receipt of loans alone or packaged with other aid was more prevalent among social sciences and psychology students (17 percent and 14 percent, respectively) than among those in engineering (7 percent and 4 percent, respectively) or natural sciences and mathematics (10 percent and 6 percent, respectively). Table 11 and figure 3 demonstrate that science/engineering graduate students enrolled full time for the full year exhibited the same pattern: they were more likely to be aided without loans (i.e., less likely to borrow) in engineering or natural sciences and mathematics (64 percent and 65 percent, respectively) than in social sciences and psychology (38 percent). Again, the receipt of loans and other aid or loans only was more common among those in social sciences and psychology (32 percent and 19 percent, respectively) than among those in engineering (12 percent and 5 percent, respectively) or natural sciences and mathematics (17 percent and 5 percent, respectively). This pattern may be partly related to the relatively higher proportion of social sciences and psychology graduate students enrolled in Master's/Baccalaureate institutions (table 1).

Classification of institution. Full-time, full-year science/engineering graduate students were most likely to receive aid without loans at Research University I institutions (65 percent), less likely at institutions classified as Research University II/Doctoral University (42 percent), and least likely at Master's/Baccalaureate institutions (11 percent). On the other hand, full-time, full-year science/engineering graduate students were more likely to receive aid exclusively in the form of loans at Master's/Baccalaureate institutions (41 percent) than at institutions classified as Research University I (5 percent) or Research University II/Doctoral University (9 percent). As shown in table 10, there was a similar pattern for all science/engineering graduate students (both full-time and part-time): aid without loans was most likely to be received at Research University I institutions (55 percent), less likely at Research II/Doctoral University institutions (35 percent), and least likely at Master's/Baccalaureate institutions (20 percent). However, aid in the form of loans only was more likely to be received at Master's/Baccalaureate institutions (20 percent) than at institutions classified as Research University I or Research University II/Doctoral University (5 percent and 7 percent, respectively). This pattern may be partially related to the greater availability at Research University I institutions of grants (table 6) and assistantships (table 9).

Control of institution. Full-time, full-year graduate students in science/engineering were about twice as likely to receive no financial aid at private institutions than at public institutions

(23 percent versus 10 percent), as indicated in table 11. This tendency may be partially related to the higher proportion of science/engineering graduate students enrolled in public institutions that were classified as Research University I rather than in Master's/Baccalaureate (80 percent versus 63 percent), which is displayed in table 2.

What was the borrowing history of science and engineering graduate students?

Major field of study. Table 12 shows that U.S. students in social sciences and psychology were more likely to have ever obtained loans as graduate students (45 percent) than were those in engineering or natural sciences and mathematics (21 percent and 29 percent, respectively). Likewise, those in social sciences and psychology were more likely to have ever borrowed as undergraduate or graduate students (63 percent) than those in engineering or natural sciences and mathematics (43 percent and 49 percent, respectively). Lower proportions of science/engineering graduate students ever obtained loans as graduate students (33 percent) than did arts/humanities students (46 percent). Figure 5 displays the average cumulative amount ever borrowed as an undergraduate or graduate student, ranging from under $13,000 for graduate students in engineering to over $20,000 for those in arts/humanities. Among science/engineering students, the average cumulative amount ever borrowed was higher for those in social sciences and psychology ($18,200) than for those in engineering ($12,900). Average cumulative borrowing was higher for those in arts/humanities ($20,300) than for those in science/engineering ($16,100*).*

Classification of institution. Although the proportions of science/engineering students who ever borrowed at any level were similar among the three classifications of institutions,[12] the average cumulative amount ever borrowed as a graduate student was lower for those at Master's/Baccalaureate institutions ($13,400) than for those at institutions classified as Research University I or Research University II/Doctoral University ($19,000 and $18,600, respectively).[13] This pattern may be partially related to the greater likelihood of part-time attendance at Master's/Baccalaureate than at Research I or II institutions, as shown in table 3.

Control of institution. Table 12 shows that the proportions of science/engineering graduate students who ever borrowed as undergraduate or graduate students did not differ significantly at public compared to private institutions.[14] However, the average cumulative amount borrowed

[12]Differences are significant at only the 90 percent confidence level.

[13]The smaller difference is significant at only the 90 percent confidence level.

[14]Difference is significant at only the 90 percent confidence level.

was higher at private than at public institutions ($18,900 versus $15,100).[15] The latter difference is probably related to tuition and fee differences (table 4).

What proportion of science and engineering graduate students worked while enrolled, and how much did they work per week?

Major field of study. Table 13 shows that about 8 out of 10 U.S. graduate students in 1995–96 reported working while enrolled in natural sciences and mathematics (78 percent), social sciences and psychology (84 percent), and engineering (86 percent), as well as in arts/humanities (81 percent). The average number of hours per week these students worked was almost the equivalent of full-time employment (33 weekly hours in science/engineering; 31 hours in arts/humanities). Included among these working students were those with research and teaching assistantships.

Classification of institution. Graduate students in science/engineering were more likely to work full time (at least 35 hours per week) if enrolled at institutions classified as Master's/Baccalaureate than at Research University I institutions (57 percent versus 37 percent). Among arts/humanities graduate students, while 1 out of 3 did not work while enrolled at Research University I institutions, only 1 out of 20 did not work while enrolled at Master's/Baccalaureate institutions. These differences (particularly for arts/humanities students) may partially explain the greater likelihood of part-time attendance among graduate students at Master's/Baccalaureate institutions (table 3).

Control of institution. The proportion of science/engineering graduate students working part time (1–34 hours) was lower at private institutions than at public institutions (26 percent versus 45 percent), as displayed in table 13.

Were science and engineering graduate students who worked while enrolled primarily students working to meet expenses or employees enrolled in school?

Major field of study. Table 14 summarizes responses to the question, "While you were enrolled and working, would you say you were primarily a student working to meet expenses or an employee who's decided to enroll in school?" Of U.S. graduate students (regardless of attendance intensity) who worked while enrolled in 1995–96, about 7 out of 10 of those who majored in natural sciences and mathematics and in social sciences and psychology considered themselves students working to meet expenses. Of those who majored in engineering, about half were em-

[15] Ibid.

ployees enrolled in school and half were students working to meet expenses. Examination in greater detail presented in table 15 reveals that among those who considered themselves primarily students working to meet expenses, a higher proportion of part-time or part-year graduate students were majoring in natural sciences and mathematics at Research University I institutions (67 percent) than at institutions classified as Research University II/Doctoral University or Master's/Baccalaureate (both 38 percent).[16] Figure 6 displays these major field of study percentages according to the proportion within each institutional classification who considered themselves primarily students working to meet expenses.

Classification of institution. Table 14 indicates that science/engineering graduate students regardless of attendance intensity) at institutions classified as Master's/Baccalaureate were more likely to consider themselves employees enrolled in school, rather than students working to meet expenses, than their counterparts at Research University I institutions (52 percent versus 23 percent). Likewise, arts/humanities graduate students were more likely to consider themselves employees enrolled in school at Master's/Baccalaureate institutions (62 percent) than at institutions classified as Research University II/Doctoral University (22 percent) or Research University I (16 percent). These differences (particularly for arts/humanities students) may be partially attributable to the greater likelihood of part-time attendance among graduate students at Master's/Baccalaureate institutions, as presented in table 3. Examination in greater detail presented in table 16 reveals that a higher proportion of part-time or part-year graduate students considered themselves students working to meet expenses at Research University I institutions than at institutions classified as Master's/Baccalaureate (71 percent versus 47 percent).[17]

Thus, there was a disproportionately large group of part-time/part-year science/engineering graduate students at Research University I institutions who considered themselves primarily students rather than employees, and disproportionately more of these students were majoring in natural sciences and mathematics. If these students were not in the dissertation phase of their programs, this may suggest that these students would have preferred to be enrolled full time for the full year, and if so, that lack of financial resources may have been be one reason for their part-time/part-year enrollment status.[18] Table 17 shows the relative percentage and amounts of grants received by these students. The proportion of part-time/part-year science/engineering graduate students at Research I institutions receiving the most preferred type of aid, grants, was about one-quarter of that received by their full-time/full-year counterparts (14 percent versus 51

[16]The smaller difference is significant at only the 90 percent confidence level.

[17]The smaller difference is significant at only the 90 percent confidence level.

[18]It is unlikely that many of these part-time students were employed in assistantships. For example, among all graduate and first-professional students, assistantships were held by 20 percent of full-time full-year and 2 percent of part-time part-year students. See Choy, *Student Financing of Graduate and First-Professional Education, 1995-96*.

percent). While the sample size of this study does not allow examination of this group of students in greater depth, these initial findings may suggest an area deserving further research.

Graduate Education Plans and Cumulative Borrowing of Baccalaureate Recipients

To explore the variation in the borrowing history of graduate students found in NPSAS:96 data further, this study analyzed a cohort of 1992–93 bachelor's degree recipients (B&B:93/94) to examine factors related to the decision of students receiving bachelor's degrees to continue their education at the postbaccalaureate level within the year after graduating. Although the B&B:93/94 data reflect an earlier time period than that of NPSAS:96, the analyses sought to explore general patterns. Of particular interest was the effect of students' financial considerations on their plans to attend graduate or professional school.

What proportion of science and engineering bachelor's degree recipients applied to graduate school?

As shown in table 18, of U.S. bachelor's degree recipients in 1992–93, three-fourths considered applying to graduate or professional school within a year of graduating. However, the percentage who applied for postbaccalaureate studies was higher for those with a bachelor's degree in science or engineering than for those with a bachelor's degree in arts/humanities (38 percent versus 33 percent).

Classification of institution. Unlike the institutional classification used in analyses of graduate students elsewhere in this report, this analysis distinguishes Baccalaureate I (liberal arts) institutions from other Master's/Baccalaureate institutions, in recognition of the greater importance of liberal arts colleges at the undergraduate level. Among science/engineering students, those obtaining bachelor's degrees from Master's/Baccalaureate II institutions were less likely to apply to graduate school (33 percent) than those graduating from institutions classified as Baccalaureate I (liberal arts) or Research University I (48 percent and 41 percent, respectively). However, applicants from Baccalaureate I (liberal arts) institutions were less likely to be accepted (76 percent) than those from institutions classified as Research University I or Research University II/Doctoral University (90 percent each). For arts/humanities students, there were no such differences in application and acceptance rates among institutional classifications.

Was undergraduate debt a factor in the decision to apply to graduate school?

A number of work-related factors were cited as the primary reason for not applying to graduate school. Table 19 shows that among 1992-93 U.S. bachelor's degree recipients in science/engineering (and arts/humanities) who did not apply to graduate or professional school, but had considered applying, the most frequently selected primary reason for not applying was work-related.[1] Although debt or other financial concerns were not the most cited reasons for not applying to graduate or professional school, figure 7 shows that the higher the amount of total undergraduate debt, the greater the likelihood of indicating "too much undergraduate debt" as the primary reason for not applying. This pattern was found for baccalaureate recipients in science/engineering (in which undergraduate debt was identified by 1 percent for those who had no record of borrowing to 18 percent for those with a total debt of $20,000 or more), as well as for those in arts/humanities. Furthermore, among science/engineering graduates, those who had ever borrowed as undergraduates were more likely to indicate a cost-related reason for not applying ("cost too much," "not worth it," "can't afford it") (14 percent) than were those who had never borrowed (8 percent).

[1]Work-related reasons included: "Not necessary for career; working and happy with current job; want work experience before attending graduate school; need to work and save money for graduate school; job responsibilities too demanding."

Demographic Characteristics

In addition to information concerning financial aid, and institutional and enrollment characteristics, NPSAS:96 collected a wide range of information about the demographic characteristics and educational history of graduate students.

Did the profile of science and engineering graduate students differ by demographic characteristics?

Gender. Table 20 shows that women represented a lower proportion of U.S. graduate students in science/engineering than in arts/humanities (42 percent versus 57 percent). Within science/engineering, graduate students were almost three times more likely to be women in social sciences and psychology (54 percent) than in engineering (19 percent). A higher proportion of science/engineering graduate students were women at institutions classified as Master's/Baccalaureate (56 percent) than at institutions classified as Research University I (39 percent) or Research University II/Doctoral University (37 percent). There were no such gender differences among institutional classifications for arts/humanities graduate students. Table 21 indicates that men in science/engineering were more likely than women to have previously received master's degrees (43 percent versus 29 percent),[1] which is consistent with the higher proportion of men than women seeking doctoral degrees in science and engineering mentioned on page 6 and displayed in table 3.

Race–ethnicity. Graduate students in science/engineering were about twice as likely to be Asian/Pacific Islander (15 percent) as those in arts/humanities (7 percent), as shown in table 20. Within science/engineering, U.S. graduate students in engineering were three times more likely to be Asian/Pacific Islander (25 percent) than those in social sciences and psychology (8 percent). In science/engineering, there were gender differences in graduate student enrollment among racial–ethnic groups. Underrepresented minority[2] graduate students were more likely to be women (67 percent) than were Asian/Pacific Islander or white, non-Hispanic graduate students (38 percent for both). Table 21 indicates that Asian/Pacific Islander science/engineering graduate students were less likely to be enrolled in the same institution where they obtained their bachelor's degree than white, non-Hispanic (7 percent versus 21 percent).

[1]Difference is significant at only the 90 percent confidence level.

[2]Underrepresented minority includes American Indian/Alaskan Native, Hispanic, and black, non-Hispanic.

Parents' education. Table 22 shows that science/engineering graduate students who were members of an underrepresented minority group were more likely to have parents with no more than a high school diploma than those who were white, non-Hispanic (42 percent versus 22 percent).[3] Among science/engineering graduate students, those enrolled in Research University I institutions were almost twice as likely to have parents with graduate or first-professional degrees as those enrolled in institutions classified as Master's/Baccalaureate (46 percent versus 24 percent).[4] Similarly, among arts/humanities graduate students, those enrolled in institutions classified as Research University I or Research University II/Doctoral University were at least seven times more likely to have parents with advanced degrees (62 percent and 49 percent) than their counterparts enrolled in institutions classified as Master's/Baccalaureate (7 percent). Conversely, arts/humanities graduate students enrolled at Master's/Baccalaureate institutions were about five times more likely to have parents with no more than a high school diploma than those at Research University I institutions (10 percent versus 54 percent).

Age. Table 23 shows that graduate students in science/engineering were less likely to be age 36 or older than those in arts/humanities (18 percent versus 27 percent). Graduate students whose parents were less educated tended to be older. For example, among graduate students in science/engineering, those whose parents had no more than a high school diploma (28 percent) were almost twice as likely to be age 36 or over as were those whose parents had graduate or first-professional degrees (15 percent).[5] This was even more evident for arts/humanities graduate students. For example, those whose parents had no more than a high school diploma (46 percent) were almost seven times as likely to be age 36 or over as were those whose parents had advanced degrees (7 percent).

Dependents status. As shown in table 24, science/engineering graduate students (who tended to be younger, as indicated above) were less likely to have dependents than those in arts/humanities (21 percent versus 30 percent). The marital/dependents status of U.S. graduate students varied among the three classifications of institutions in which they were enrolled. For example, those in science/engineering attending institutions classified as Research University I were more likely to be unmarried without dependents (70 percent) than those at Research University II/Doctoral University institutions (56 percent) or Master's/Baccalaureate institutions (55 percent). Similarly, arts/humanities graduate students were more likely to be unmarried without

[3]Difference is significant at only the 90 percent confidence level.
[4]Ibid.
[5]Ibid.

dependents at Research University I and Research University II/Doctoral University institutions (59 percent and 55 percent) than at Master's/Baccalaureate institutions (35 percent).[6]

Did the financial aid profile of science and engineering graduate students differ by demographic characteristics?

Gender. The average amount of any assistantships in 1995–96 among full-time, full-year U.S. graduate students in science/engineering was lower for women than for men ($7,900 versus $10,200), as shown in table 9.

Race–ethnicity. Science/engineering graduate students who were Asian/Pacific Islander were less likely to receive an aid package of both loans and other aid than those who were white, non-Hispanic or those from an underrepresented minority group.[7] This was the case for all full- and part-time students (3 percent versus 14 percent and 13 percent, respectively) and for those enrolled full time for the full year (3 percent versus 26 percent and 30 percent, respectively), as indicated in table 10 and table 11.

Figure 8 and table 12 show that the proportion of all science/engineering graduate students who ever borrowed as graduate students was lowest for Asian/Pacific Islanders (15 percent), higher for white, non-Hispanics (34 percent), and highest for those from an underrepresented minority group (54 percent).[8] Similarly, the proportion who had ever borrowed as undergraduate or graduate students was lowest for Asian/Pacific Islanders (25 percent), higher for white, non-Hispanics (56 percent), and highest for those from an underrepresented minority group (73 percent). These patterns may be related in part to differences in the proportions of racial/ethnic groups in major fields of study. For example, graduate students in engineering—a field with the lowest proportion of borrowers (table 6 and figure 3)—were more likely to be Asian/Pacific Islander (table 20).

Parents' education. Table 13 shows that science/engineering graduate students whose parents' highest level of education was a graduate or first-professional degree were less likely to work full time (i.e., 35 or more hours per week) than were those whose parents had a lower level of education (28 percent versus 51 percent and 52 percent).[9] This may be related in part to the higher proportion of science/engineering graduate students at institutions classified as Research University I whose parents' highest educational level was a postbaccalaureate degree rather than

[6]The smaller difference is significant at only the 90 percent confidence level.

[7]Underrepresented minority includes American Indian/Alaskan Native; Hispanic; and black, non-Hispanic.

[8]The smaller difference is significant at only the 90 percent confidence level.

[9]Differences are significant at only the 90 percent confidence level.

a high school diploma or less (60 percent versus 40 percent), as shown in table 1. It has been noted previously that higher proportions of science/engineering graduate students received financial aid and received higher average amounts of aid at Research I compared to other institutions.

Summary and Conclusions

Field of study was related to how graduate students who were U.S. citizens or permanent residents financed their education. For example, those enrolled full time for the full year 1995–96 in natural sciences and mathematics were more likely to obtain an assistantship than those in engineering or social sciences and psychology. Compared to their counterparts in other science and engineering fields, graduate students in social sciences and psychology were more likely to borrow, both as undergraduate and graduate students, and they were least likely to receive financial aid without loans. At the same time, when comparing graduate students in science and engineering to those in arts and humanities, science/engineering students were less likely to borrow, and borrowed lower amounts. Science/engineering graduate students were also more likely to receive tuition waivers.

Examining the types of institutions attended, U.S. graduate students in science/engineering (as well as in arts/humanities) who were enrolled in institutions classified as Research University I (major research universities) were more likely than their counterparts enrolled elsewhere to receive financial aid and less likely to work full time. Among graduate students enrolled full time for the full year, those at Research University I institutions were most likely to receive assistantships, less likely to borrow, and received the highest amounts of total aid and grant aid. In contrast, science/engineering graduate students at Master's/Baccalaureate institutions were more likely to borrow and to receive only loans as financial aid.

The analysis also explored the relationship between undergraduate debt and plans for graduate school attendance among 1992–93 bachelor's degree recipients. Among baccalaureate recipients in science/engineering (as well as in arts/humanities) who did not apply to graduate or professional school, the most frequently selected primary reason for not applying was work-related. Although debt or other financial concerns were not the most cited reasons for not applying to graduate or professional school, the higher the amount of total undergraduate debt, the greater the likelihood of indicating "too much undergraduate debt" as the primary reason for not applying. For example, undergraduate debt was cited as a reason for not applying by only 5 percent of science/engineering baccalaureate recipients who had borrowed less than $5,000 and by 18 percent of those with a total debt of $20,000 or more.

Different patterns of financing education were observed depending on the racial/ethnic group of the student and the educational level of the student's parents. For example, compared to

U.S. science/engineering graduate students who were white, non-Hispanic or from an underrepresented minority group, those who were Asian/Pacific Islander were less likely to have taken out loans both at the graduate level and cumulatively at either the undergraduate or graduate level. Students whose parents' highest educational level was a graduate or first-professional degree were less likely to work full time while enrolled than were those whose parents had lower levels of education.

A disproportionately large group of science/engineering graduate students who were employed while enrolled part time or part year considered themselves primarily students working to meet expenses rather than employees enrolled in school at Research University I compared to Master's/Baccalaureate institutions, and disproportionately more of these students were majoring in natural sciences and mathematics. This may suggest that these students would have preferred to be enrolled full time for the full year, and if so, that lack of financial resources may have been one reason for their part-time/part-year enrollment status. The proportion of part-time/part-year science/engineering graduate students at Research I institutions receiving the most preferred type of aid, grants, was about one-quarter of that received by their full-time/full-year counterparts.

In conclusion, the way in which students financed their graduate education varied primarily by major field of study and type of institution in 1995–96. Assuming that financing a graduate education through grants and part-time assistantships (often related to the student's studies) would be preferable to taking out loans and working full time, graduate students in natural sciences and mathematics and those attending institutions classified as Research University I were more likely to receive preferable forms of financial aid, such as grants and assistantships. Graduate students in social sciences and psychology and those attending Master's/Baccalaureate institutions were less likely to obtain such financial aid packages. At the same time, science/engineering graduate students as a whole received more preferable forms of financial aid than their counterparts in the arts/humanities. That is, they were less likely to borrow and more likely to receive financial aid in the form of grants and assistantships.

Tables

Table 1—Percentage distribution of U.S. graduate students in selected fields according to classification of institution where enrolled, by selected institutional and demographic characteristics: 1995–96

	Research University I	Research University II/ Doctoral University	Master's/ Baccalaureate
Major field of study			
Science and engineering, total	47.9	32.7	19.4
Natural sciences and mathematics[1]	50.8	33.6	15.6
Social sciences and psychology	39.8	32.0	28.2
Engineering	57.5	32.2	10.3
Arts and humanities	47.7	30.5	21.8
	Science and engineering students		
Control of institution			
Public	53.4	29.7	16.9
Private	33.9	40.4	25.7
Gender			
Male	49.9	35.4	14.6
Female	45.1	28.9	26.0
Race–ethnicity			
White, non-Hispanic	48.7	31.7	19.6
Asian/Pacific Islander	45.9	35.9	18.2
Underrepresented minority[2]	50.4	28.0	21.6
Parents' highest educational level			
High school diploma or less	39.5	37.6	22.9
Postsecondary, including bachelor's degree	49.3	27.4	23.4
Graduate or first-professional degree	59.6	25.7	14.7
	Arts and humanities students		
Control of institution			
Public	47.9	30.8	21.3
Private	47.0	29.8	23.2
Gender			
Male	47.5	31.5	21.0
Female	47.8	29.8	22.5
Race–ethnicity			
White, non-Hispanic	47.0	31.1	21.9
Asian/Pacific Islander	—	—	—
Underrepresented minority[2]	36.8	34.0	29.3

Table 1—Percentage distribution of U.S. graduate students in selected fields according to classification of institution where enrolled, by selected institutional and demographic characteristics: 1995–96 —Continued

	Research University I	Research University II/ Doctoral University	Master's/ Baccalaureate
Parents' highest educational level			
High school diploma or less	29.0	38.0	33.0
Postsecondary, including bachelor's degree	40.1	36.7	23.2
Graduate or first-professional degree	70.8	25.7	3.6

—Too few cases for a reliable estimate.

[1]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[2]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 2—Percentage distribution of U.S. graduate students in selected fields according to control of sample institution, by selected institutional and demographic characteristics: 1995–96

	Public	Private
Major field of study		
Science and engineering, total	71.8	28.2
Natural sciences and mathematics[1]	73.5	26.5
Social sciences and psychology	69.5	30.5
Engineering	72.8	27.2
Arts and humanities	70.7	29.3
	Science and engineering students	
Classification of institution		
Research University I	80.0	20.0
Research University II/Doctoral University	65.2	34.8
Master's/Baccalaureate	62.6	37.4
Gender		
Male	69.2	30.8
Female	75.5	24.5
Race–ethnicity		
White, non-Hispanic	72.3	27.7
Asian/Pacific Islander	63.8	36.2
Underrepresented minority[2]	74.6	25.4
Parents' highest educational level		
High school diploma or less	75.0	25.0
Postsecondary, including bachelor's degree	76.9	23.1
Graduate or first-professional degree	76.9	23.1
	Arts and humanities students	
Classification of institution		
Research University I	71.1	28.9
Research University II/Doctoral University	71.3	28.7
Master's/Baccalaureate	68.9	31.1
Gender		
Male	64.9	35.1
Female	75.2	24.8
Race–ethnicity		
White, non-Hispanic	73.0	27.1
Asian/Pacific Islander	—	—
Underrepresented minority[2]	69.5	30.5

Table 2—Percentage distribution of U.S. graduate students in selected fields according to control of sample institution, by selected institutional and demographic characteristics: 1995–96 —Continued

	Public	Private
Parents' highest educational level		
High school diploma or less	84.4	15.7
Postsecondary, including bachelor's degree	82.1	17.9
Graduate or first-professional degree	66.6	33.4

—Too few cases for a reliable estimate.

[1]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[2]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 3—Percentage distribution of U.S. graduate students in selected fields according to degree program/ degree expected at sample institution and attendance pattern, by selected institutional and demographic characteristics: 1995–96

	Degree program/degree expected at sample institution		Attendance pattern in 1995–96	
	Master's degree	Doctoral degree	Full-time	Part-time
Major field of study				
Science and engineering, total	63.9	36.1	44.6	55.4
Natural sciences and mathematics[1]	64.6	35.4	44.4	55.6
Social sciences and psychology	60.8	39.2	45.9	54.1
Engineering	68.4	31.6	42.6	57.4
Arts and humanities	65.6	34.4	41.2	58.9
Science and engineering students				
Control of institution				
Public	63.9	36.1	45.7	54.3
Private	64.0	36.0	41.9	58.2
Classification of institution				
Research University I	51.9	48.2	57.2	42.8
Research University II/Doctoral University	64.0	36.0	33.6	66.5
Master's/Baccalaureate	93.5	6.5	31.8	68.2
Gender				
Male	58.1	41.9	43.6	56.4
Female	72.0	28.0	46.0	54.0
Race–ethnicity				
White, non-Hispanic	63.1	36.9	42.2	57.8
Asian/Pacific Islander	64.3	35.7	42.9	57.1
Underrepresented minority[2]	68.9	31.1	56.5	43.6
Parents' highest educational level				
High school diploma or less	61.0	39.0	44.3	55.7
Postsecondary, including bachelor's degree	68.4	31.6	41.2	58.8
Graduate or first-professional degree	53.8	46.2	52.2	47.8
Arts and humanities students				
Control of institution				
Public	69.3	30.7	40.2	59.8
Private	56.7	43.3	43.5	56.5
Classification of institution				
Research University I	43.4	56.6	54.2	45.8
Research University II/Doctoral University	76.4	23.6	32.5	67.5
Master's/Baccalaureate	99.0	1.0	24.7	75.3

Table 3—Percentage distribution of U.S. graduate students in selected fields according to degree program/ degree expected at sample institution and attendance pattern, by selected institutional and demographic characteristics: 1995–96—Continued

	Degree program/degree expected at sample institution		Attendance pattern in 1995–96	
	Master's degree	Doctoral degree	Full-time	Part-time
Gender				
Male	63.2	36.8	40.5	59.5
Female	67.5	32.5	41.7	58.3
Race–ethnicity				
White, non-Hispanic	64.7	35.3	41.0	59.0
Asian/Pacific Islander	—	—	—	—
Underrepresented minority[2]	76.5	23.6	39.4	60.6
Parents' highest educational level				
High school diploma or less	70.4	29.6	42.3	57.7
Postsecondary, including bachelor's degree	70.4	29.6	50.9	49.1
Graduate or first-professional degree	42.0	58.0	54.5	45.5

—Too few cases for a reliable estimate.

[1]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[2]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 4—Average amount of tuition and fees and total student budget for U.S. graduate students in selected fields, by selected institutional and demographic characteristics: 1995–96

	Full-time, full-year		Part-time or part-year
	Tuition and fees[1]	Total student budget[2]	Tuition and fees
Major field of study			
Science and engineering, total	$7,581	$18,175	$2,801
Natural sciences and mathematics[3]	6,893	18,011	2,666
Social sciences and psychology	7,966	18,206	2,794
Engineering	8,080	18,427	3,073
Arts and humanities	9,021	20,226	2,510
	Science and engineering students		
Control of institution			
Public	5,683	15,962	2,011
Private	12,882	24,374	4,736
Classification of institution			
Research University I	8,407	19,642	2,928
Research University II/Doctoral University	6,131	15,780	3,061
Master's/Baccalaureate	6,072	15,215	2,133
Gender			
Male	7,821	18,661	3,010
Female	7,243	17,491	2,509
Race–ethnicity			
White, non-Hispanic	7,247	17,874	2,448
Asian/Pacific Islander	9,040	19,528	4,566
Underrepresented minority[4]	7,736	18,926	2,642
Parents' highest educational level			
High school diploma or less	4,323	15,764	2,872
Postsecondary, including bachelor's degree	6,933	18,095	2,485
Graduate or first-professional degree	8,991	20,531	2,605
	Arts and humanities students		
Control of institution			
Public	5,771	16,748	2,042
Private	15,424	27,118	3,844
Classification of institution			
Research University I	9,566	21,697	2,914
Research University II/Doctoral University	—	—	2,680
Master's/Baccalaureate	—	—	1,821

Table 4—Average amount of tuition and fees and total student budget for U.S. graduate students in selected fields, by selected institutional and demographic characteristics: 1995–96—Continued

	Full-time, full-year		Part-time or part-year
	Tuition and fees[1]	Total student budget[2]	Tuition and fees
Gender			
Male	$8,766	$20,201	$2,550
Female	9,243	20,247	2,481
Race–ethnicity			
White, non-Hispanic	8,524	19,221	2,472
Asian/Pacific Islander	—	—	—
Underrepresented minority[4]	—	—	—
Parents' highest educational level			
High school diploma or less	—	—	2,099
Postsecondary, including bachelor's degree	—	—	—
Graduate or first-professional degree	12,927	23,022	4,083

—Too few cases for a reliable estimate.

[1]Excludes students attending more than one institution.

[2]Includes tuition and fees, books and supplies, housing and meals, and transportation and personal expenses. Based on institutional estimates and adjusted for attendance status.

[3]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[4]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 5—Percentage of all U.S. graduate students in selected fields receiving various types of financial aid and average amount received, by selected institutional and demographic characteristics: 1995–96

	Any aid		Loans		Grants[1]	
	Percent	Average amount	Percent	Average amount	Percent	Average amount
Major field of study						
Science and engineering, total	53.9	$10,133	20.5	$8,698	32.7	$5,256
Natural sciences and mathematics[2]	55.7	10,211	15.1	7,767	33.7	4,672
Social sciences and psychology	55.1	10,806	31.5	9,289	28.0	6,012
Engineering	48.3	8,536	10.6	7,995	39.7	5,227
Arts and humanities	58.4	12,260	31.4	9,091	35.6	5,863
		Science and engineering students				
Control of institution						
Public	55.8	9,438	19.3	7,554	31.2	4,220
Private	49.2	12,142	23.6	11,084	36.6	7,505
Classification of institution						
Research University I	65.3	11,262	16.3	8,928	36.7	6,986
Research University II/Doctoral University	44.0	9,122	20.2	9,385	32.9	3,512
Master's/Baccalaureate	42.4	7,606	31.4	7,656	22.6	2,598
Gender						
Male	52.8	10,129	17.2	9,253	34.4	5,410
Female	55.5	10,139	25.1	8,164	30.3	5,012
Race–ethnicity						
White, non-Hispanic	54.3	10,161	22.1	9,112	33.6	4,984
Asian/Pacific Islander	45.5	9,869	10.8	—	26.6	—
Underrepresented minority[3]	61.1	10,733	25.1	7,730	33.5	5,403
Parents' highest educational level						
High school diploma or less	65.6	8,496	23.3	7,931	45.1	2,643
Postsecondary, including bachelor's degree	51.6	10,577	18.9	8,271	43.4	4,426
Graduate or first-professional degree	63.1	11,612	18.6	8,378	45.3	7,380
		Arts and humanities students				
Control of institution						
Public	59.3	11,350	33.3	8,322	33.8	5,002
Private	56.2	14,576	26.8	11,392	40.0	7,617
Classification of institution						
Research University I	72.8	$14,239	35.9	$9,128	41.4	$8,400
Research University II/Doctoral University	54.2	10,387	30.9	9,864	40.1	2,969
Master's/Baccalaureate	33.0	7,024	22.2	7,452	16.6	—

Table 5—Percentage of all U.S. graduate students in selected fields receiving various types of financial aid and average amount received, by selected institutional and demographic characteristics: 1995–96 —Continued

	Any aid		Loans		Grants[1]	
	Percent	Average amount	Percent	Average amount	Percent	Average amount
Gender						
Male	56.9	12,748	29.9	10,078	35.3	6,453
Female	59.6	11,900	32.6	8,393	35.8	5,415
Race–ethnicity						
White, non-Hispanic	57.7	11,886	31.4	9,097	35.4	5,601
Asian/Pacific Islander	—	—	—	—	—	—
Underrepresented minority[3]	64.6	—	41.0	—	40.1	—
Parents' highest educational level						
High school diploma or less	54.2	—	22.6	—	41.7	—
Postsecondary, including bachelor's degree	49.2	14,420	32.3	—	45.6	—
Graduate or first-professional degree	91.4	12,352	40.4	8,801	54.9	7,857

—Too few cases for a reliable estimate.

[1]Grants include scholarships, fellowships, tuition wivers, and employer aid.

[2]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[3]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 6—Among U.S. graduate students enrolled full time for the full year in selected fields, the percentage receiving various types of financial aid and average amount received, by selected institutional and demographic characteristics: 1995–96

	Any aid		Loans		Grants[1]	
	Percent	Average amount	Percent	Average amount	Percent	Average amount
Major field of study						
Science and engineering, total	82.8	$11,889	33.4	$8,834	51.6	$7,549
Natural sciences and mathematics[2]	85.8	11,623	22.4	7,511	55.9	6,943
Social sciences and psychology	85.5	12,223	50.6	9,186	47.9	7,283
Engineering	71.3	11,619	16.6	—	51.5	—
Arts and humanities	83.1	15,239	44.5	9,511	55.0	8,641
Science and engineering students						
Control of institution						
Public	85.5	10,845	33.8	7,756	49.0	6,154
Private	75.2	15,241	32.4	12,008	59.1	10,813
Classification of institution						
Research University I	84.3	12,956	23.2	9,126	53.6	9,375
Research University II/Doctoral University	81.0	10,303	40.8	9,073	55.5	3,916
Master's/Baccalaureate	78.8	9,255	70.0	8,105	34.7	—
Gender						
Male	80.9	12,164	27.7	9,416	51.9	7,989
Female	85.6	11,528	41.4	8,292	51.2	6,929
Race–ethnicity						
White, non-Hispanic	87.5	12,136	35.6	9,407	50.6	7,800
Asian/Pacific Islander	72.0	—	21.2	—	49.9	—
Underrepresented minority[3]	74.1	11,791	42.7	—	62.1	—
Parents' highest educational level						
High school diploma or less	89.4	10,372	35.4	8,218	66.5	2,657
Postsecondary, including bachelor's degree	81.3	11,162	27.0	—	35.5	—
Graduate or first-professional degree	87.8	13,133	26.0	9,500	74.2	9,193
Arts and humanities students						
Control of institution						
Public	86.2	13,867	52.6	8,972	54.4	7,376
Private	77.1	—	28.4	—	56.1	—

Table 6—Among U.S. graduate students enrolled full time for the full year in selected fields, the percentage receiving various types of financial aid and average amount received, by selected institutional and demographic characteristics: 1995–96—Continued

	Any aid		Loans		Grants[1]	
	Percent	Average amount	Percent	Average amount	Percent	Average amount
Classification of institution						
Research University I	84.1	$16,749	43	$9,271	57	$10,448
Research University II/Doctoral University	—	—	—	—	—	—
Master's/Baccalaureate	—	—	—	—	—	—
Gender						
Male	76.3	16,022	44.4	9,481	55.2	8,805
Female	88.9	14,668	44.6	9,536	54.8	8,501
Race–ethnicity						
White, non-Hispanic	81.2	14,837	44.0	9,528	52.2	8,416
Asian/Pacific Islander	—	—	—	—	—	—
Underrepresented minority[3]	—	—	—	—	—	—
Parents' highest educational level						
High school diploma or less	—	—	—	—	—	—
Postsecondary, including bachelor's degree	—	—	—	—	—	—
Graduate or first-professional degree	100.0	13,936	28.0	—	69.4	—

—Too few cases for a reliable estimate.

[1]Grants include scholarships, fellowships, tuition wivers, and employer aid.

[2]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[3]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 7—The percentage of U.S. graduate students in selected fields receiving tuition waivers and average amount waived, according to attendance pattern, by selected institutional and demographic characteristics: 1995–96

	All		Full-time, full-year	
	Percent	Average amount	Percent	Average amount
Major field of study				
Science and engineering, total	20.2	$2,868	33.3	$2,974
Natural sciences and mathematics[1]	19.0	2,451	33.5	—
Social sciences and psychology	20.3	2,571	31.7	—
Engineering	22.8	—	—	—
Arts and humanities	4.8	—	4.1	—
Science and engineering students				
Control of institution				
Public	21.2	3,308	33.6	3,850
Private	17.2	—	32.6	—
Classification of institution				
Research University I	31.3	2,826	43.3	2,943
Research University II/Doctoral University	8.7	—	10.6	—
Master's/Baccalaureate	1.1	—	—	—
Gender				
Male	18.6	3,115	27.8	—
Female	22.4	2,592	39.6	—
Race–ethnicity				
White, non-Hispanic	17.9	3,003	29.9	3,454
Asian/Pacific Islander	45.4	—	—	—
Underrepresented minority[2]	13.7	—	—	—
Parents' highest educational level				
High school diploma or less	21.4	—	31.4	—
Postsecondary, including bachelor's degree	9.1	—	17.2	—
Graduate or first-professional degree	25.3	—	34.3	—
Arts and humanities students				
Control of institution				
Public	7.6	—	6.3	—
Private	0.5	—	—	—
Classification of institution				
Research University I	7.4	—	4.0	—
Research University II/Doctoral University	2.7	—	—	—
Master's/Baccalaureate	3.1	—	—	—

Table 7—The percentage of U.S. graduate students in selected fields receiving tuition waivers and average amount waived, according to attendance pattern, by selected institutional and demographic characteristics: 1995–96—Continued

	All		Full-time, full-year	
	Percent	Average amount	Percent	Average amount
Gender				
Male	2.4	—	2.1	—
Female	7.0	—	6.4	—
Race–ethnicity				
White, non-Hispanic	4.9	—	4.0	—
Asian/Pacific Islander	—	—	—	—
Underrepresented minority[2]	—	—	—	—
Parents' highest educational level				
High school diploma or less	4.3	—	—	—
Postsecondary, including bachelor's degree	8.1	—	—	—
Graduate or first-professional degree	4.8	—	2.1	—

—Too few cases for a reliable estimate.

[1]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[2]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. "Tuition waivers" are also included in grants.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 8—The percentage of U.S. graduate students in selected fields receiving employer aid and average amount received, according to attendance pattern, by selected institutional and demographic characteristics: 1995–96

	All		Part-time or part-year	
	Percent	Average amount	Percent	Average amount
Major field of study				
Science and engineering, total	14.9	$3,340	19.3	$2,462
Natural sciences and mathematics[1]	12.4	—	16.4	—
Social sciences and psychology	13.6	—	15.6	—
Engineering	23.4	—	30.0	—
Arts and humanities	9.9	—	9.0	—
		Science and engineering students		
Control of institution				
Public	13.8	3,524	15.4	2,247
Private	18.2	—	32.8	—
Classification of institution				
Research University I	12.6	—	14.9	—
Research University II/Doctoral University	18.3	—	24.6	—
Master's/Baccalaureate	17.3	—	21.0	—
Gender				
Male	11.8	2,847	16.9	2,591
Female	19.2	3,743	23.0	—
Race–ethnicity				
White, non-Hispanic	15.5	2,779	18.9	1,887
Asian/Pacific Islander	14.5	—	—	—
Underrepresented minority[2]	11.7	—	15.9	—
Parents' highest educational level				
High school diploma or less	10.4	—	16.8	—
Postsecondary, including bachelor's degree	23.9	3,686	29.5	—
Graduate or first-professional degree	11.2	—	11.3	—
		Arts and humanities students		
Control of institution				
Public	10.5	—	14.1	—
Private	9.0	—	—	—
Classification of institution				
Research University I	10.7	—	7.0	—
Research University II/Doctoral University	10.5	—	12.6	—
Master's/Baccalaureate	6.4	—	4.6	—

Table 8—The percentage of U.S. graduate students in selected fields receiving employer aid and average amount received, according to attendance pattern, by selected institutional and demographic characteristics: 1995–96—Continued

	All		Part-time or part-year	
	Percent	Average amount	Percent	Average amount
Gender				
Male	10.8	—	3.5	—
Female	9.1	—	13.0	—
Race–ethnicity				
White, non-Hispanic	11.1	—	10.3	—
Asian/Pacific Islander	—	—	—	—
Underrepresented minority[2]	—	—	—	—
Parents' highest educational level				
High school diploma or less	11.8	—	—	—
Postsecondary, including bachelor's degree	22.2	—	—	—
Graduate or first-professional degree	6.2	—	12.8	—

—Too few cases for a reliable estimate.

[1]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[2]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. "Employer aid" is also included in grants.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 9—Among U.S. graduate students enrolled full time for the full year in selected fields, the percentage receiving research and teaching assistantships and average amounts received, by selected institutional and demographic characteristics: 1995–96

	Any assistantship[1]		Research assistantship		Teaching assistantship	
	Percent	Average amount	Percent	Average amount	Percent	Average amount
Major field of study						
Science and engineering, total	35.9	$8,739	15.7	$7,477	20.3	$6,809
Natural sciences and mathematics[2]	47.7	9,350	22.4	7,947	27.0	6,862
Social sciences and psychology	28.2	8,054	7.9	—	19.6	7,283
Engineering	22.9	—	14.5	—	6.1	—
Arts and humanities	38.7	7,241	8.9	—	18.9	9,042
Science and engineering students						
Control of institution						
Public	41.9	8,353	18.4	8,047	21.4	6,710
Private	18.9	—	8.0	—	17.2	—
Classification of institution						
Research University I	50.5	9,295	24.7	7,698	28.1	6,746
Research University II/Doctoral University	21.5	7,427	4.7	—	13.5	—
Master's/Baccalaureate	9.9	—	3.3	—	5.1	—
Gender						
Male	39.4	7,883	15.0	8,533	20.3	7,315
Female	31.3	10,186	16.6	—	20.4	6,133
Race–ethnicity						
White, non-Hispanic	34.6	8,074	13.0	8,235	18.6	6,551
Asian/Pacific Islander	50.5	—	33.9	—	41.7	—
Underrepresented minority[3]	30.4	—	18.7	—	10.9	—
Parents' highest educational level						
High school diploma or less	34.6	8,235	13.8	—	19.6	—
Postsecondary, including bachelor's degree	34.6	8,611	15.2	—	19.3	—
Graduate or first-professional degree	37.6	8,291	14.0	—	18.1	—
Arts and humanities students						
Control of institution						
Public	44.4	6,272	7.8	—	26.1	7,510
Private	29.8	—	10.6	—	7.5	—
Classification of institution						
Research University I	50.3	8,189	3.2	—	26.2	9,787
Research University II/Doctoral University	38.0	—	19.2	—	16.9	—
Master's/Baccalaureate	10.6	—	0.0	—	4.7	—

Table 9—Among U.S. graduate students enrolled full time for the full year in selected fields, the percentage receiving research and teaching assistantships and average amounts received, by selected institutional and demographic characteristics: 1995–96—Continued

	Any assistantship[1]		Research assistantship		Teaching assistantship	
	Percent	Average amount	Percent	Average amount	Percent	Average amount
Gender						
Male	35.2	$8,321	1.5	—	14.9	—
Female	41.8	6,443	15.4	—	22.4	—
Race–ethnicity						
White, non-Hispanic	40.7	7,428	9.8	—	19.9	9,239
Asian/Pacific Islander	—	—	—	—	—	—
Underrepresented minority[3]	—	—	—	—	—	—
Parents' highest educational level						
High school diploma or less	35.9	—	3.6	—	31.4	—
Postsecondary, including bachelor's degree	31.6	—	3.0	—	23.2	—
Graduate or first-professional degree	56.9	6,588	17.9	—	16.1	—

—Too few cases for a reliable estimate.

[1]Includes research assistantships, teaching assistantships, and "other" graduate assistantships (including unspecified types). Students who had more than one type of assistatntship are included in more than one category.

[2]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[3]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 10—Percentage distribution of all U.S. graduate students in selected fields according to loans and other aid received in 1995–96, by selected institutional and demographic characteristics

	Aided without loans	Received loans and other aid	Received loans only	Unaided
Major field of study				
Science and engineering, total	41.4	12.0	8.5	38.1
Natural sciences and mathematics[1]	48.8	9.5	5.6	36.1
Social sciences and psychology	28.4	17.5	14.0	40.1
Engineering	51.5	6.8	3.9	37.9
Arts and humanities	33.4	20.9	10.5	35.2
		Science and engineering students		
Control of institution				
Public	43.7	12.6	6.7	37.0
Private	35.7	10.5	13.0	40.8
Classification of institution				
Research University I	54.6	11.4	4.9	29.2
Research University II/Doctoral University	34.7	13.0	7.2	45.1
Master's/Baccalaureate	20.4	11.9	19.6	48.2
Gender				
Male	43.6	10.7	6.6	39.2
Female	38.5	13.9	11.2	36.4
Race–ethnicity				
White, non-Hispanic	41.2	14.2	8.0	36.7
Asian/Pacific Islander	37.8	2.5	8.3	51.4
Underrepresented minority[2]	45.3	12.7	12.4	29.6
Parents' highest educational level				
High school diploma or less	52.7	12.1	11.2	24.0
Postsecondary, including bachelor's degree	55.7	12.3	6.6	25.4
Graduate or first-professional degree	52.6	13.4	5.2	28.8
		Arts and humanities students		
Control of institution				
Public	33.7	21.1	12.2	33.0
Private	32.8	20.5	6.3	40.4
Classification of institution				
Research University I	39.2	25.0	11.0	24.9
Research University II/Doctoral University	35.8	20.8	10.1	33.3
Master's/Baccalaureate	17.6	12.3	9.9	60.2
Gender				
Male	33.2	20.7	9.2	36.9
Female	33.6	21.1	11.4	33.9

Table 10—Percentage distribution of all U.S. graduate students in selected fields according to loans and other aid received in 1995–96, by selected institutional and demographic characteristics —Continued

	Aided without loans	Received loans and other aid	Received loans only	Unaided
Race–ethnicity				
White, non-Hispanic	34.3	20.6	10.8	34.4
Asian/Pacific Islander	—	—	—	—
Underrepresented minority[2]	23.6	29.7	11.3	35.5
Parents' highest educational level				
High school diploma or less	49.8	6.3	16.3	27.6
Postsecondary, including bachelor's degree	36.5	23.7	8.5	31.2
Graduate or first-professional degree	53.4	29.2	11.2	6.2

—Too few cases for a reliable estimate.

[1]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[2]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 11—Percentage distribution of U.S. graduate students enrolled full time for the full year in selected fields, the percentage distribution according to loans and other aid received in 1995–96, by selected institutional and demographic characteristics

	Aided without loans	Received loans and other aid	Received loans only	Unaided
Major field of study				
Science and engineering, total	52.9	22.6	10.8	13.7
Natural sciences and mathematics[1]	64.8	17.2	5.2	12.7
Social sciences and psychology	37.5	32.0	18.6	12.0
Engineering	64.0	11.9	4.7	19.4
Arts and humanities	42.7	36.2	8.3	12.8
		Science and engineering students		
Control of institution				
Public	56.0	23.3	10.5	10.3
Private	44.2	20.7	11.7	23.4
Classification of institution				
Research University I	65.2	17.8	5.4	11.6
Research University II/Doctoral University	42.4	31.8	9.0	16.8
Master's/Baccalaureate	11.4	29.2	40.7	18.6
Gender				
Male	56.3	20.0	7.7	16.0
Female	48.1	26.1	15.3	10.5
Race–ethnicity				
White, non-Hispanic	53.8	26.2	9.5	10.6
Asian/Pacific Islander	56.7	3.2	18.1	22.1
Underrepresented minority[2]	41.7	30.3	12.3	15.6
Parents' highest educational level				
High school diploma or less	58.9	23.9	11.4	5.8
Postsecondary, including bachelor's degree	57.0	19.2	7.8	16.0
Graduate or first-professional degree	71.9	20.9	5.1	2.1
		Arts and humanities students		
Control of institution				
Public	37.0	41.7	11.0	10.4
Private	54.0	25.3	3.1	17.6
Classification of institution				
Research University I	45.0	34.6	8.2	12.3
Research University II/Doctoral University	—	—	—	—
Master's/Baccalaureate	—	—	—	—

Table 11—Percentage distribution of U.S. graduate students enrolled full time for the full year in selected fields, the percentage distribution according to loans and other aid received in 1995–96, by selected institutional and demographic characteristics—Continued

	Aided without loans	Received loans and other aid	Received loans only	Unaided
Gender				
Male	39.4	38.3	6.1	16.1
Female	45.5	34.4	10.2	10.0
Race–ethnicity				
White, non-Hispanic	42.3	34.5	9.5	13.8
Asian/Pacific Islander	—	—	—	—
Underrepresented minority[2]	—	—	—	—
Parents' highest educational level				
High school diploma or less	—	—	—	—
Postsecondary, including bachelor's degree	—	—	—	—
Graduate or first-professional degree	72.0	23.6	4.4	0.0

—Too few cases for a reliable estimate.

[1]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[2]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 12—Percentage of all U.S. graduate students in selected fields who ever took out federal loans for undergraduate or graduate education and average cumulative amount borrowed, by selected institutional and demographic characteristics: 1995–96

	Ever borrowed as a graduate		Ever borrowed as an undergraduate		Ever borrowed as an undergraduate or graduate	
	Percent	Average amount	Percent	Average amount	Percent	Average amount
Major field of study						
Science and engineering, total	33.3	$17,669	31.1	$8,639	53.0	$16,149
Natural sciences and mathematics[1]	28.8	17,460	29.5	8,163	49.3	15,098
Social sciences and psychology	44.8	18,714	33.5	8,946	62.5	18,199
Engineering	20.5	14,006	29.7	8,909	42.7	12,922
Arts and humanities	45.5	18,687	32.3	8,993	56.1	20,341
	Science and engineering students					
Control of institution						
Public	33.5	16,667	30.7	8,232	53.7	15,110
Private	32.7	20,279	32.0	9,632	51.4	18,908
Classification of institution						
Research University I	32.2	19,036	28.4	8,889	50.5	17,145
Research University II/Doctoral University	32.7	18,560	35.4	8,150	56.0	15,997
Master's/Baccalaureate	36.9	13,377	30.3	9,024	54.3	14,122
Gender						
Male	28.0	16,689	32.5	8,408	49.9	14,843
Female	40.6	18,620	29.1	9,001	57.4	17,745
Race–ethnicity						
White, non-Hispanic	33.9	17,954	34.6	8,307	56.2	15,933
Asian/Pacific Islander	15.5	—	10.9	—	25.1	12,985
Underrepresented minority[2]	53.6	18,228	38.3	9,287	73.1	18,241
Parents' highest educational level						
High school diploma or less	43.3	14,628	36.2	10,130	69.0	14,491
Postsecondary, including bachelor's degree	35.6	18,723	38.2	8,652	66.6	14,973
Graduate or first-professional degree	38.4	17,415	18.6	7,792	51.8	15,722
	Arts and humanities students					
Control of institution						
Public	46.0	17,209	34.2	8,738	58.0	18,798
Private	44.4	22,380	27.7	9,751	51.5	24,529

Table 12—Percentage of all U.S. graduate students in selected fields who ever took out federal loans for undergraduate or graduate education and average cumulative amount borrowed, by selected institutional and demographic characteristics: 1995–96—Continued

	Ever borrowed as a graduate		Ever borrowed as an undergraduate		Ever borrowed as an undergraduate or graduate	
	Percent	Average amount	Percent	Average amount	Percent	Average amount
Classification of institution						
Research University I	53.6	$20,897	30.0	$7,937	61.2	$22,200
Research University II/Doctoral University	41.2	19,138	36.3	9,820	51.6	22,193
Master's/Baccalaureate	33.7	10,249	31.5	—	51.0	12,858
Gender						
Male	48.2	18,543	35.6	8,831	61.9	19,517
Female	43.4	18,812	29.7	9,142	51.5	21,105
Race–ethnicity						
White, non-Hispanic	47.7	19,468	32.4	9,026	57.9	21,077
Asian/Pacific Islander	—	—	—	—	—	—
Underrepresented minority[2]	50.7	—	53.2	—	71.1	—
Parents' highest educational level						
High school diploma or less	29.6	dash	32.8	—	52.0	16,143
Postsecondary, including bachelor's degree	48.8	17,525	29.5	—	52.6	23,398
Graduate or first-professional degree	37.7	24,887	25.4	—	46.3	24,705

—Too few cases for a reliable estimate.

[1]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[2]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 13—Percentage of U.S. graduate students in selected fields who worked while enrolled, average weekly hours worked, and percentage distribution according to hours worked per week, by selected institutional and demographic characteristics: 1995–96

	Percent who worked	Average weekly hours worked	Average hours worked per week while enrolled		
			0 hours	1–34 hours	35 hours or more
Major field of study					
Science and engineering, total	81.7	32.5	18.3	40.3	41.4
Natural sciences and mathematics[1]	77.7	33.4	22.3	37.6	40.1
Social sciences and psychology	84.8	29.7	15.2	46.7	38.1
Engineering	85.5	35.7	14.5	34.5	50.9
Arts and humanities	80.5	31.2	19.6	43.0	37.5
Science and engineering students					
Control of institution					
Public	83.0	31.5	17.0	45.1	37.9
Private	78.0	35.7	22.0	26.3	51.7
Classification of institution					
Research University I	78.4	33.0	21.6	41.5	36.9
Research University II/Doctoral University	84.4	30.2	15.7	42.8	41.5
Master's/Baccalaureate	89.0	34.8	11.0	31.8	57.3
Gender					
Male	82.5	33.3	17.5	39.0	43.6
Female	80.7	31.4	19.3	42.2	38.6
Race–ethnicity					
White, non-Hispanic	85.3	33.0	14.7	41.2	44.1
Asian/Pacific Islander	60.0	—	40.0	38.7	21.4
Underrepresented minority[2]	75.8	33.6	24.2	33.8	41.9
Parents' highest educational level					
High school diploma or less	83.5	36.3	16.5	32.8	50.7
Postsecondary, including bachelor's degree	91.5	35.1	8.5	39.9	51.6
Graduate or first-professional degree	71.6	27.7	28.4	43.5	28.1
Arts and humanities students					
Control of institution					
Public	88.0	29.8	12.0	46.0	42.0
Private	66.6	—	33.5	37.4	29.1
Classification of institution					
Research University I	67.3	26.2	32.7	46.0	21.3
Research University II/Doctoral University	88.3	33.5	11.7	42.0	46.3
Master's/Baccalaureate	94.9	35.2	5.1	37.6	57.3

Table 13—Percentage of U.S. graduate students in selected fields who worked while enrolled, average weekly hours worked, and percentage distribution according to hours worked per week, by selected institutional and demographic characteristics: 1995–96—Continued

	Percent who worked	Average weekly hours worked	Average hours worked per week while enrolled		
			0 hours	1–34 hours	35 hours or more
Gender					
Male	77.7	35.4	22.3	35.1	42.6
Female	82.7	28.0	17.3	49.4	33.3
Race–ethnicity					
White, non-Hispanic	80.4	31.8	19.6	41.0	39.4
Asian/Pacific Islander	—	—	—	—	—
Underrepresented minority[2]	—	—	—	—	—
Parents' highest educational level					
High school diploma or less	86.2	30.6	13.8	38.9	47.3
Postsecondary, including bachelor's degree	80.4	29.2	19.6	46.4	34.0
Graduate or first-professional degree	73.1	29.0	26.9	46.1	27.1

—Too few cases for a reliable estimate.

[1]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[2]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 14—Percentage distribution of U.S. graduate students in selected fields who worked while enrolled according to primary role, by selected institutional and demographic characteristics: 1995–96

	Student working to meet expenses	Employee enrolled in school
Major field of study		
Science and engineering, total	66.4	33.6
Natural sciences and mathematics[1]	71.9	28.1
Social sciences and psychology	69.7	30.3
Engineering	48.9	51.1
Arts and humanities	73.8	26.2
	Science and engineering students	
Control of institution		
Public	68.1	31.9
Private	61.0	39.1
Classification of institution		
Research University I	76.7	23.3
Research University II/Doctoral University	58.4	41.7
Master's/Baccalaureate	48.5	51.5
Gender		
Male	66.8	33.2
Female	66.0	34.1
Race–ethnicity		
White, non-Hispanic	65.4	34.6
Asian/Pacific Islander	—	—
Underrepresented minority[2]	65.7	34.3
Parents' highest educational level		
High school diploma or less	60.8	39.2
Postsecondary, including bachelor's degree	61.3	38.7
Graduate or first-professional degree	76.7	23.3
	Arts and humanities students	
Control of institution		
Public	75.8	24.2
Private	—	—
Classification of institution		
Research University I	83.9	16.1
Research University II/Doctoral University	77.8	22.2
Master's/Baccalaureate	38.1	61.9
Gender		
Male	62.9	37.1
Female	81.4	18.6

Table 14—Percentage distribution of U.S. graduate students in selected fields who worked while enrolled according to primary role, by selected institutional and demographic characteristics: 1995–96 —Continued

	Student working to meet expenses	Employee enrolled in school
Race–ethnicity		
White, non-Hispanic	72.8	27.2
Asian/Pacific Islander	—	—
Underrepresented minority[2]	—	—
Parents' highest educational level		
High school diploma or less	49.1	50.9
Postsecondary, including bachelor's degree	65.9	34.1
Graduate or first-professional degree	91.1	8.9

—Too few cases for a reliable estimate.

[1]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[2]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. "Primary role" is based on responses to the question, "While you were enrolled and working, would you say you were primarily a student working to meet expenses or an employee who's decided to enroll in school?" Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 15—Among U.S. science and engineering graduate students who considered themselves primarily students working to meet expenses, percentage distribution according to major field of study, by institutional classification and attendance pattern: 1995–96

	Natural sciences and mathematics*	Social sciences and psychology	Engineering
Research University I	51.8	31.3	16.9
Full-time, full-year	37.5	42.5	20.0
Part-time or part-year	66.9	19.5	13.6
Research University II/ Doctoral University	40.1	43.2	16.7
Full-time, full-year	46.8	43.1	10.1
Part-time or part-year	37.7	40.8	21.5
Master's/Baccalaureate	34.8	58.1	7.1
Full-time, full-year	—	—	—
Part-time or part-year	37.6	56.8	5.6

—Too few cases for a reliable estimate.

*Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 16—Percentage distribution of U.S. science and engineering graduate students who worked while enrolled according to primary role, by institutional classification and attendance pattern: 1995–96

	Student working to meet expenses	Employee enrolled in school
Research University I	79.5	20.5
Full-time, full-year	91.0	9.0
Part-time or part-year	71.4	28.6
Research University II/ Doctoral University	65.0	35.0
Full-time, full-year	95.2	4.8
Part-time or part-year	52.8	47.2
Master's/Baccalaureate	51.9	48.1
Full-time, full-year	—	—
Part-time or part-year	46.9	53.1

—Too few cases for a reliable estimate.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 17—Among U.S. science and engineering graduate students who considered themselves primarily students working to meet expenses, percentage receiving grants and average amount received, by institutional classification and attendance pattern: 1995–96

	Received grants	Average amount of grants received
Research University I	32.6	$6,397
Full-time, full-year	50.5	7,331
Part-time or part-year	13.7	—
Research University II/ Doctoral University	26.4	4,154
Full-time, full-year	42.5	—
Part-time or part-year	17.6	—
Master's/Baccalaureate	17.5	1,634
Full-time, full-year	—	—
Part-time or part-year	20.3	—

—Too few cases for a reliable estimate.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 18—Among 1992–93 U.S. bachelor's degree recipients in selected fields, the percentage who applied to graduate or professional school, who were accepted among those who applied, who considered applying among those who did not apply, and who enrolled in 1993–94

	Applied to graduate school	Among those who did not apply, considered graduate school	Accepted if applied	Enrolled in graduate school in 1993–94
	Science and engineering bachelor's degree recipients			
Total	38.0	76.2	88.2	22.6
Borrowing history				
Never borrowed	39.5	75.4	87.1	23.8
Ever borrowed	36.1	76.5	89.7	21.3
Total undergraduate debt				
None	39.5	75.4	87.1	23.8
Less than $5,000	39.3	78.4	88.3	24.0
$5,000–9,999	31.1	74.6	89.9	19.0
$10,000–14,999	34.3	80.5	90.4	18.3
$15,000–19,999	36.5	74.5	91.2	22.9
$20,000 or more	43.5	70.2	90.5	24.2
Grade point average (4.0 scale)				
Less than 3.0	26.4	73.2	85.3	13.6
3.0 or above	47.9	79.4	89.3	30.4
Classification of bachelor's degree-granting institution*				
Research University I	41.3	76.8	90.4	25.7
Research University II/Doctoral University	40.0	76.7	90.1	24.4
Baccalaureate I (Liberal Arts)	48.3	84.0	75.6	24.8
Master's/Baccalaureate II	32.7	74.3	87.5	18.5
	Arts and humanities bachelor's degree recipients			
Total	33.2	76.0	88.4	17.4
Borrowing history				
Never borrowed	35.3	74.6	91.2	17.7
Ever borrowed	31.6	77.8	84.7	16.9
Total undergraduate debt				
None	35.3	74.6	91.2	17.7
Less than $5,000	32.7	80.7	87.9	17.3
$5,000–9,999	35.9	76.1	82.4	18.9
$10,000–14,999	30.7	76.4	83.5	15.0
$15,000–19,999	20.1	81.5	—	12.5
$20,000 or more	28.7	74.0	94.6	17.6
Grade point average (4.0 scale)				
Less than 3.0	22.2	70.7	88.3	10.9
3.0 or above	41.8	81.5	88.2	22.6
Classification of bachelor's degree-granting institution*				
Research University I	37.5	79.3	87.9	19.2
Research University II/Doctoral University	29.2	74.1	90.5	17.9
Baccalaureate I (Liberal Arts)	36.9	83.1	89.7	21.4
Master's/Baccalaureate II	31.9	73.8	87.2	14.9

—Too few cases for a reliable estimate.

*Definitions appear in glossary, appendix A, page A-10.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study First Followup (B&B:93/94), Data Analysis System.

Table 19—Among 1992–93 U.S. bachelor's degree recipients in selected fields the percentage who had considered applying to graduate school but did not apply and gave various reasons for not applying, by selected borrowing and academic characteristics

	Primary reason did not apply to graduate school								
	Too much undergraduate debt	Too much other debt	Not enough financial aid	Cost related[1]	Personal related[2]	Work related[2]	Undecided what to study	Other academic	Other
Science and engineering bachelor's degree recipients									
Total	5.2	4.2	2.7	10.9	20.8	32.5	4.4	2.2	17.3
Borrowing history									
Never borrowed	1.3	3.6	2.7	7.6	22.6	36.9	5.0	2.6	17.7
Ever borrowed	9.4	4.9	2.9	13.5	19.0	28.1	3.3	1.8	17.2
Total undergraduate debt									
None	1.3	3.6	2.7	7.6	22.6	36.9	5.0	2.6	17.7
Less than $5,000	4.6	5.8	4.2	10.6	16.5	29.9	5.5	1.1	21.8
$5,000–9,999	7.3	2.6	2.3	16.7	22.7	24.7	1.7	3.3	18.7
$10,000–14,999	13.1	5.8	4.0	10.9	20.5	29.3	3.1	1.8	11.6
$15,000–19,999	12.5	5.1	0.0	8.5	14.0	36.6	2.9	0.8	19.6
$20,000 or more	18.3	6.5	1.3	24.5	16.9	20.2	2.3	0.0	10.1
Grade point average (4.0 scale)									
Less than 3.0	6.4	4.5	2.8	12.8	17.2	32.8	4.3	2.9	16.3
3.0 or above	4.0	3.9	2.7	8.8	24.6	32.0	4.0	1.4	18.7
Classification of bachelor's degree-granting institution[3]									
Research University I	4.8	4.5	2.5	11.1	17.4	33.7	6.9	2.9	16.2
Research University II/Doctoral University	5.7	3.5	3.2	7.8	22.1	34.4	4.0	2.1	17.3
Baccalaureate I (Liberal Arts)	8.3	3.6	2.3	5.4	12.3	45.0	5.9	3.1	14.0
Master's/Baccalaureate II	5.0	4.5	2.7	12.8	24.2	29.1	2.6	1.6	17.6
Arts and humanities bachelor's degree recipients									
Total	6.3	4.2	2.1	11.0	18.7	32.5	6.2	1.9	17.2
Borrowing history									
Never borrowed	2.1	2.6	2.3	10.2	21.5	33.8	8.0	2.7	16.8
Ever borrowed	10.8	6.0	1.7	11.8	14.9	31.7	4.6	1.3	17.2
Total undergraduate debt									
None	2.1	2.6	2.3	10.2	21.5	33.8	8.0	2.7	16.8
Less than $5,000	7.6	5.0	2.5	12.8	12.9	34.4	2.4	0.3	22.3
$5,000–9,999	14.9	4.2	0.7	8.6	14.8	36.6	5.4	0.9	14.1
$10,000–14,999	11.3	9.9	1.6	13.8	14.7	27.2	5.5	3.8	12.3
$15,000–19,999	7.0	4.2	2.9	16.3	24.2	20.9	4.2	0.0	20.5
$20,000 or more	12.4	8.0	1.4	8.9	11.0	32.1	7.1	1.6	17.5

Table 19—Among 1992–93 U.S. bachelor's degree recipients in selected fields the percentage who had considered applying to graduate school but did not apply and gave various reasons for not applying, by selected borrowing and academic characteristics—Continued

	Primary reason did not apply to graduate school								
	Too much under-graduate debt	Too much other debt	Not enough financial aid	Cost related[1]	Personal related[2]	Work related[2]	Un-decided what to study	Other aca-demic	Other
Grade point average (4.0 scale)									
Less than 3.0	6.8	5.0	2.1	12.6	16.9	31.9	6.5	2.7	15.8
3.0 or above	5.8	3.1	2.2	9.5	20.2	33.1	6.0	1.3	18.7
Classification of bachelor's degree-granting institution[3]									
Research University I	6.5	3.7	0.5	11.0	21.4	30.4	8.8	2.4	15.3
Research University II/Doctoral University	6.3	4.9	4.4	9.6	18.1	32.3	7.7	2.4	14.3
Baccalaureate I (Liberal Arts)	1.9	7.2	1.5	6.8	24.2	28.5	8.8	1.0	20.2
Master's/Baccalaureate II	7.1	3.3	1.9	12.4	16.0	35.3	2.8	1.7	19.5

[1]Cost related includes "cost too much," "not worth it," and "can't afford it" responses.

[2]Definitions appear in glossary, appendix A, page A-11.

[3]Definitions appear in glossary, appendix A, page A-10.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study First Follow-up (B&B:93/94), Data Analysis System.

Table 20—Percentage distribution of U.S. graduate students in selected fields according to gender and race–ethnicity, by selected institutional and demographic characteristics: 1995–96

	Gender		Race–ethnicity of U.S. citizens and permanent residents		
	Male	Female	White, non-Hispanic	Asian/ Pacific Islander	Under-represented minority[1]
Major field of study					
Science and engineering, total	58.4	41.6	70.5	14.8	14.8
Natural sciences and mathematics[2]	58.8	41.3	67.0	15.9	17.1
Social sciences and psychology	45.7	54.3	76.9	8.1	15.0
Engineering	81.4	18.6	65.2	24.8	10.0
Arts and humanities	43.6	56.5	80.6	7.0	12.4
Science and engineering students					
Control of institution					
Public	56.3	43.7	71.0	13.1	15.9
Private	63.9	36.1	69.1	19.0	12.0
Classification of institution					
Research University I	60.9	39.1	71.6	14.1	14.3
Research University II/Doctoral University	63.3	36.7	68.3	16.2	15.5
Master's/Baccalaureate	44.2	55.9	71.3	13.9	14.8
Gender					
Male	(*)	(*)	75.1	15.7	9.2
Female	(*)	(*)	64.0	13.4	22.6
Race–ethnicity					
White, non-Hispanic	62.3	37.7	(*)	(*)	(*)
Asian/Pacific Islander	62.2	37.8	(*)	(*)	(*)
Underrepresented minority[1]	33.0	67.0	(*)	(*)	(*)
Parents' highest educational level					
High school diploma or less	74.4	25.6	73.8	7.9	18.3
Postsecondary, including bachelor's degree	45.3	54.7	84.8	5.7	9.5
Graduate or first-professional degree	59.7	40.3	84.6	8.8	6.6
Arts and humanities students					
Control of institution					
Public	40.0	60.0	83.2	4.6	12.2
Private	52.2	47.8	74.4	12.9	12.7
Classification of institution					
Research University I	43.4	56.6	79.6	8.0	12.4
Research University II/Doctoral University	44.9	55.1	82.1	6.5	11.4
Master's/Baccalaureate	41.9	58.1	80.8	5.6	13.7

Table 20—Percentage distribution of U.S. graduate students in selected fields according to gender and race–ethnicity, by selected institutional and demographic characteristics: 1995–96—Continued

	Gender		Race–ethnicity of U.S. citizens and permanent residents		
	Male	Female	White, non-Hispanic	Asian/ Pacific Islander	Under-represented minority[1]
Gender					
Male	(*)	(*)	85.6	3.7	10.7
Female	(*)	(*)	76.7	9.6	13.7
Race–ethnicity					
White, non-Hispanic	46.3	53.8	(*)	(*)	(*)
Asian/Pacific Islander	—	—	(*)	(*)	(*)
Underrepresented minority[1]	45.6	54.4	(*)	(*)	(*)
Parents' highest educational level					
High school diploma or less	42.7	57.3	90.6	1.6	7.8
Postsecondary, including bachelor's degree	56.8	43.2	91.5	0.0	8.5
Graduate or first-professional degree	35.1	64.9	92.3	3.1	4.6

—Too few cases for a reliable estimate.

*Not applicable.

[1]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

[2]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 21—Percentage of U.S. graduate students in selected fields enrolled in the same institution where they obtained their bachelor's degree and who previously obtained a master's degree, by selected institutional and demographic characteristics: 1995–96

	Same institution where bachelor's degree obtained	Previously obtained a master's degree
Major field of study		
Science and engineering, total	19.3	36.6
Natural sciences and mathematics[1]	14.4	32.1
Social sciences and psychology	20.5	34.8
Engineering	28.7	37.1
Arts and humanities	17.9	28.6
	Science and engineering students	
Control of institution		
Public	23.0	36.8
Private	8.7	36.0
Classification of institution		
Research University I	17.1	43.2
Research University II/Doctoral University	17.2	38.0
Master's/Baccalaureate	30.7	11.0
Gender		
Male	18.0	42.5
Female	21.1	28.5
Race–ethnicity		
White, non-Hispanic	20.5	37.9
Asian/Pacific Islander	7.1	34.3
Underrepresented minority[2]	23.7	28.1
Parents' highest educational level		
High school diploma or less	18.6	45.3
Postsecondary, including bachelor's degree	24.4	32.1
Graduate or first-professional degree	17.3	41.9
	Arts and humanities students	
Control of institution		
Public	27.3	31.9
Private	3.2	23.5
Classification of institution		
Research University I	10.7	52.8
Research University II/Doctoral University	21.9	11.3
Master's/Baccalaureate	27.5	6.1

Table 21—Percentage of U.S. graduate students in selected fields enrolled in the same institution where they obtained their bachelor's degree and who previously obtained a master's degree, by selected institutional and demographic characteristics: 1995–96—Continued

	Same institution where bachelor's degree obtained	Previously obtained a master's degree
Gender		
Male	14.7	37.0
Female	20.8	21.3
Race–ethnicity		
White, non-Hispanic	18.7	30.2
Asian/Pacific Islander	—	—
Underrepresented minority[2]	—	—
Parents' highest educational level		
High school diploma or less	20.3	26.4
Postsecondary, including bachelor's degree	28.4	23.9
Graduate or first-professional degree	17.9	42.1

—Too few cases for a reliable estimate.

[1]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[2]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 22—Percentage distribution of U.S. graduate students in selected fields according to parents' highest educational level, by selected institutional and demographic characteristics: 1995–96

	High school diploma or less	Postsecondary, including bachelor's degree	Graduate or first-professional degree
Major field of study			
Science and engineering, total	24.4	37.8	37.8
Natural sciences and mathematics[1]	22.6	43.0	34.4
Social sciences and psychology	29.3	35.8	35.0
Engineering	19.0	30.3	50.7
Arts and humanities	22.8	27.9	49.4
	Science and engineering students		
Control of institution			
Public	21.5	38.6	39.9
Private	33.1	35.6	31.3
Classification of institution			
Research University I	20.4	33.9	45.7
Research University II/Doctoral University	29.1	41.1	29.9
Master's/Baccalaureate	30.0	45.6	24.4
Gender			
Male	31.4	29.6	39.0
Female	14.8	49.1	36.1
Race–ethnicity			
White, non-Hispanic	21.9	39.1	39.0
Asian/Pacific Islander	26.0	29.1	44.9
Underrepresented minority[2]	42.3	34.1	23.6
	Arts and humanities students		
Control of institution			
Public	29.0	28.3	42.7
Private	9.7	26.8	63.5
Classification of institution			
Research University I	10.4	27.5	62.0
Research University II/Doctoral University	26.7	24.4	48.9
Master's/Baccalaureate	53.6	39.0	7.4
Gender			
Male	22.7	36.9	40.4
Female	22.9	21.1	56.1

Table 22—Percentage distribution of U.S. graduate students in selected fields according to parents' highest educational level, by selected institutional and demographic characteristics: 1995–96 —Continued

	High school diploma or less High	Postsecondary, including bachelor's degree	Graduate or first-professional degree
Race–ethnicity			
White, non-Hispanic	22.5	27.8	49.7
Asian/Pacific Islander	—	—	—
Underrepresented minority[2]	—	—	—

—Too few cases for a reliable estimate.

[1]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[2]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 23—Percentage distribution of U.S. graduate students in selected fields according to age, by selected institutional and demographic characteristics: 1995–96

	25 or under	26–30	31–35	36 or over
Major field of study				
Science and engineering, total	26.5	36.8	18.6	18.2
Natural sciences and mathematics[1]	24.0	37.9	18.0	20.0
Social sciences and psychology	29.4	32.7	19.5	18.5
Engineering	25.9	42.1	18.1	14.0
Arts and humanities	26.1	31.7	15.5	26.7
		Science and engineering students		
Control of institution				
Public	25.9	37.4	19.3	17.4
Private	27.9	35.2	16.9	20.0
Classification of institution				
Research University I	23.7	42.5	20.8	13.0
Research University II/Doctoral University	25.6	35.1	18.0	21.3
Master's/Baccalaureate	35.0	25.3	14.2	25.5
Gender				
Male	22.3	38.4	20.5	18.8
Female	32.3	34.5	16.0	17.2
Race–ethnicity				
White, non-Hispanic	27.4	35.5	18.8	18.3
Asian/Pacific Islander	23.9	39.0	24.6	12.6
Underrepresented minority[2]	24.8	39.0	11.8	24.4
Parents' highest educational level				
High school diploma or less	25.3	30.0	16.5	28.2
Postsecondary, including bachelor's degree	24.8	34.4	19.8	21.0
Graduate or first-professional degree	34.4	33.8	17.4	14.5
		Arts and humanities students		
Control of institution				
Public	26.7	31.5	12.5	29.4
Private	24.8	32.3	22.8	20.1
Classification of institution				
Research University I	20.9	35.5	19.8	23.7
Research University II/Doctoral University	29.9	34.7	9.8	25.7
Master's/Baccalaureate	32.2	19.3	14.0	34.5
Gender				
Male	20.0	35.5	20.1	24.4
Female	30.8	28.8	12.0	28.4

Table 23—Percentage distribution of U.S. graduate students in selected fields according to age, by selected institutional and demographic characteristics: 1995–96—Continued

	25 or under	26–30	31–35	36 or over
Race–ethnicity				
White, non-Hispanic	22.7	32.0	17.5	27.8
Asian/Pacific Islander	—	—	—	—
Underrepresented minority[2]	39.1	34.0	7.3	19.6
Parents' highest educational level				
High school diploma or less	8.5	29.9	15.2	46.4
Postsecondary, including bachelor's degree	34.6	24.0	16.9	24.5
Graduate or first-professional degree	29.0	51.3	12.7	7.0

—Too few cases for a reliable estimate.

[1]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[2]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 24—Percentage distribution of U.S. graduate students in selected fields according to dependents and marital status, by selected institutional and demographic characteristics: 1995–96

	No dependents		Student has dependents
	Unmarried	Married	
Major field of study			
Science and engineering, total	62.1	16.8	21.1
Natural sciences and mathematics[1]	63.6	17.2	19.2
Social sciences and psychology	60.5	16.8	22.8
Engineering	62.3	16.1	21.6
Arts and humanities	52.4	17.2	30.4
Science and engineering students			
Control of institution			
Public	62.6	17.2	20.2
Private	60.8	15.9	23.3
Classification of institution			
Research University I	69.6	14.0	16.4
Research University II/Doctoral University	55.5	19.7	24.8
Master's/Baccalaureate	54.9	19.0	26.1
Gender			
Male	62.6	14.2	23.3
Female	61.5	20.5	18.0
Race–ethnicity			
White, non-Hispanic	62.9	16.1	21.0
Asian/Pacific Islander	56.2	21.2	22.6
Underrepresented minority[2]	61.3	17.8	21.0
Parents' highest educational level			
High school diploma or less	56.0	25.9	18.2
Postsecondary, including bachelor's degree	64.3	20.0	15.7
Graduate or first-professional degree	74.4	15.6	9.9
Arts and humanities students			
Control of institution			
Public	51.0	18.8	30.2
Private	55.7	13.3	31.0
Classification of institution			
Research University I	58.6	16.8	24.6
Research University II/Doctoral University	54.9	12.9	32.3
Master's/Baccalaureate	35.3	24.2	40.5

Table 24—Percentage distribution of U.S. graduate students in selected fields according to dependents and marital status, by selected institutional and demographic characteristics: 1995–96—Continued

	No dependents		Student has dependents
	Unmarried	Married	
Gender			
Male	51.2	14.1	34.8
Female	53.3	19.6	27.1
Race–ethnicity			
White, non-Hispanic	51.2	18.2	30.6
Asian/Pacific Islander	—	—	—
Underrepresented minority[2]	55.6	15.9	28.5
Parents' highest educational level			
High school diploma or less	47.0	14.9	38.1
Postsecondary, including bachelor's degree	64.8	16.2	19.1
Graduate or first-professional degree	72.3	14.1	13.6

—Too few cases for a reliable estimate.

[1]Natural sciences and mathematics include physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[2]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 25—Summary of selected findings according to major field of study

Characteristic of U.S. graduate students	Source table	Science and engineering: Natural sciences & mathematics	Science and engineering: Social sciences & psychology	Science and engineering: Engineering	Science and engineering: Total	Arts and humanities: Total
Borrowed in 1995–96*	6	22.4%	50.6%	16.6%	33.4%	44.5%
Had an assistantship in 1995–96*	9	47.7%	28.2%	22.9%	35.9%	38.7%
Received financial aid without loans in 1995–96*	11	64.8%	37.5%	64.0%	52.9%	42.7%
Average cumulative amount ever borrowed as an undergraduate or graduate student	12	$15,100	$18,200	$12,920	$16,150	$20,340

*Among graduate students enrolled full time for the full year 1995–96.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Table 26—Summary of selected findings according to classification and control of institution

Characteristic of U.S. science and engineering graduate students	Source table	Classification of institution: Research University I	Classification of institution: Research Univ II/ Doctoral University	Classification of institution: Master's/ Baccalaureate	Control of institution: Public	Control of institution: Private
Borrowed in 1995–96*	6	23.2%	40.8%	70.0%	33.8%	32.4%
Had an assistantship in 1995–96*	9	50.5%	21.5%	9.9%	41.9%	18.9%
Received financial aid without loans in 1995–96*	11	65.2%	42.4%	11.4%	56.0%	44.2%
Worked full time while enrolled in 1995–96	13	36.9%	41.5%	57.3%	37.9%	51.7%
Average amount of grant aid received in 1995–96*	6	$6,986	$3,512	$2,598	$4,220	$7,505

*Among graduate students enrolled full time for the full year 1995–96.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

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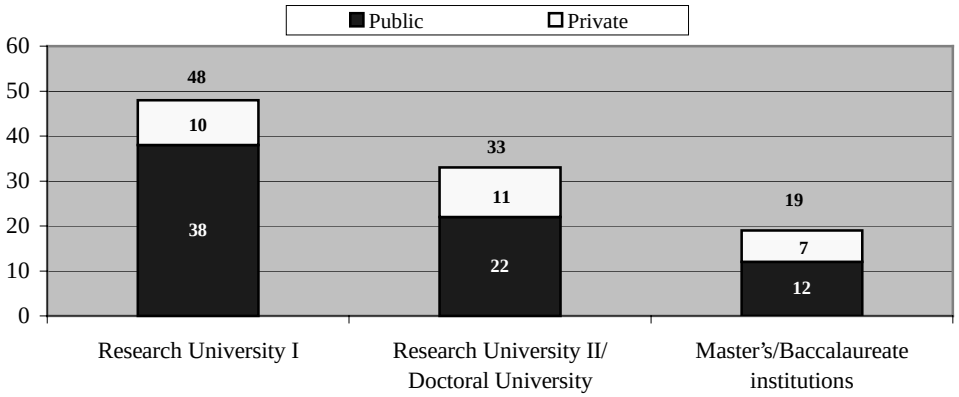
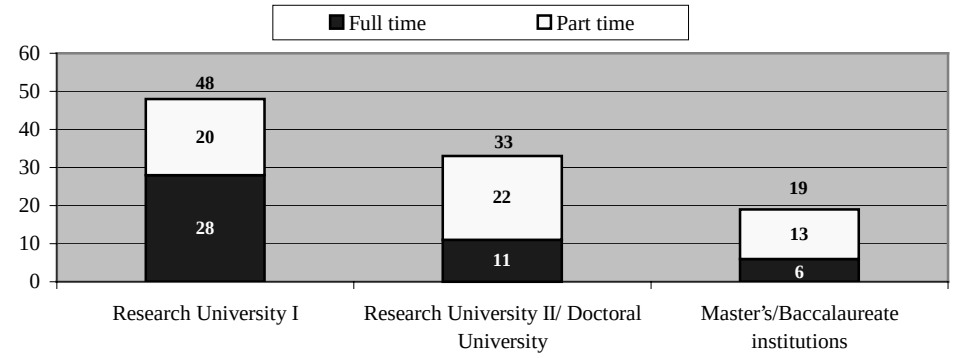
Figures

Figure 1—Percentage distribution of U.S. graduate students in science and engineering according to control of institution, attendance pattern, and degree program/degree expected, by classification of institution: 1995–96

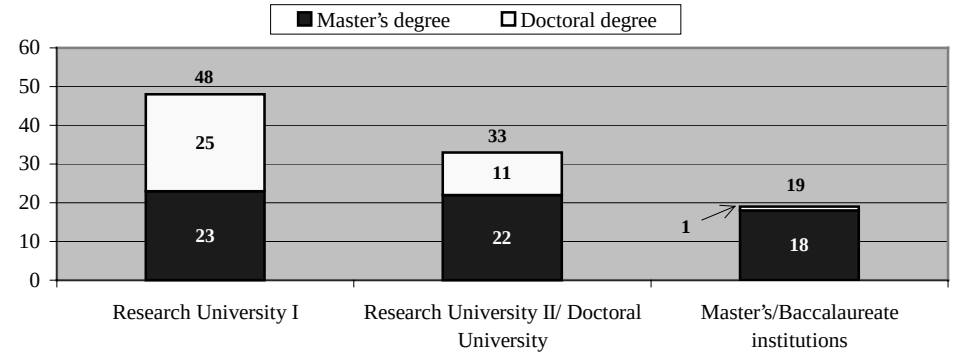
Control of institution



Attendance pattern



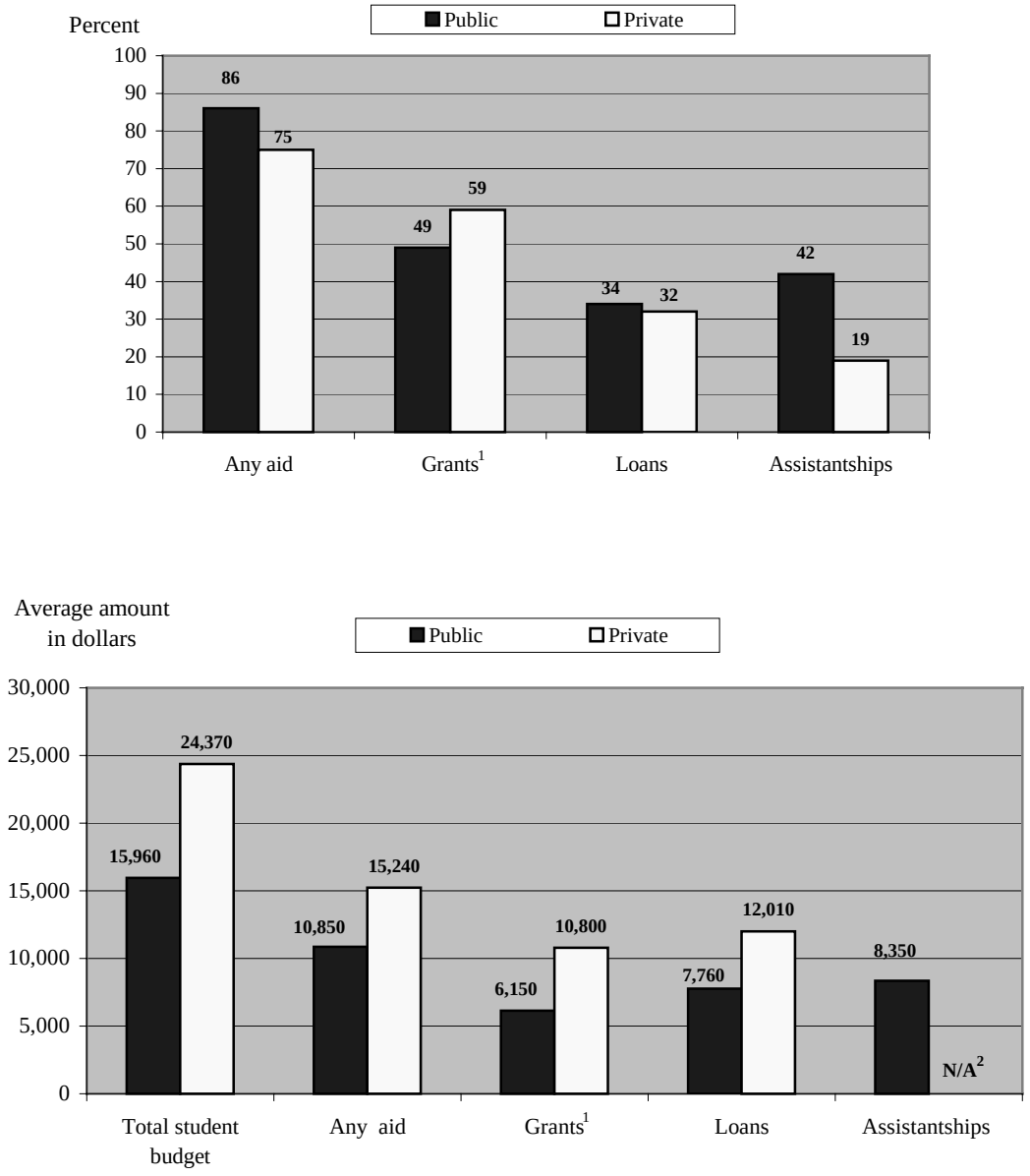
Degree program/degree expected at sample institution



NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study First Follow-up (B&B:93/94), Data Analysis System.

Figure 2—Among U.S. science and engineering graduate students enrolled full time for the full year, the percentage receiving various types of financial aid and average amounts received, by control of institution: 1995–96



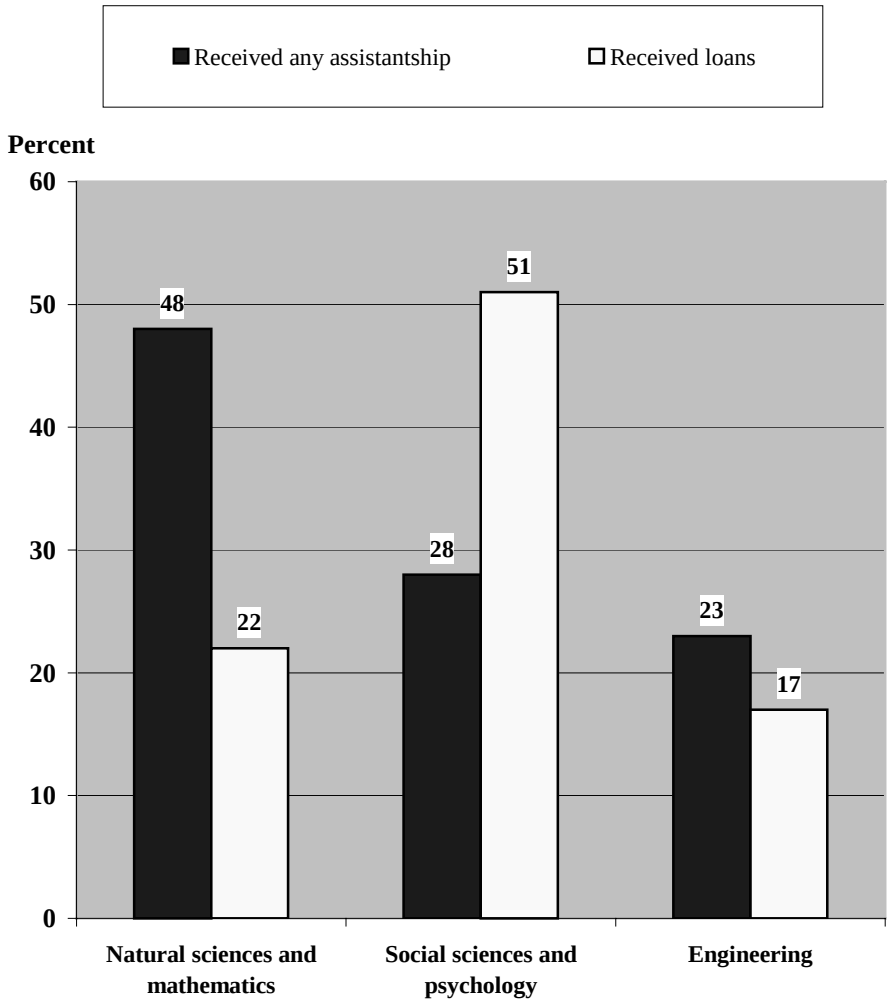
[1]Grants include scholarships, fellowships, tuition waivers, and employer aid.

[2]Too few cases for a reliable estimate.

NOTE: "U.S. science and engineering graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study First Follow-up (B&B:93/94), Data Analysis System.

Figure 3—Among U.S. graduate students in science and engineering enrolled full time for the full year, the percentage receiving any assistantships or loans, by major field of study: 1995–96

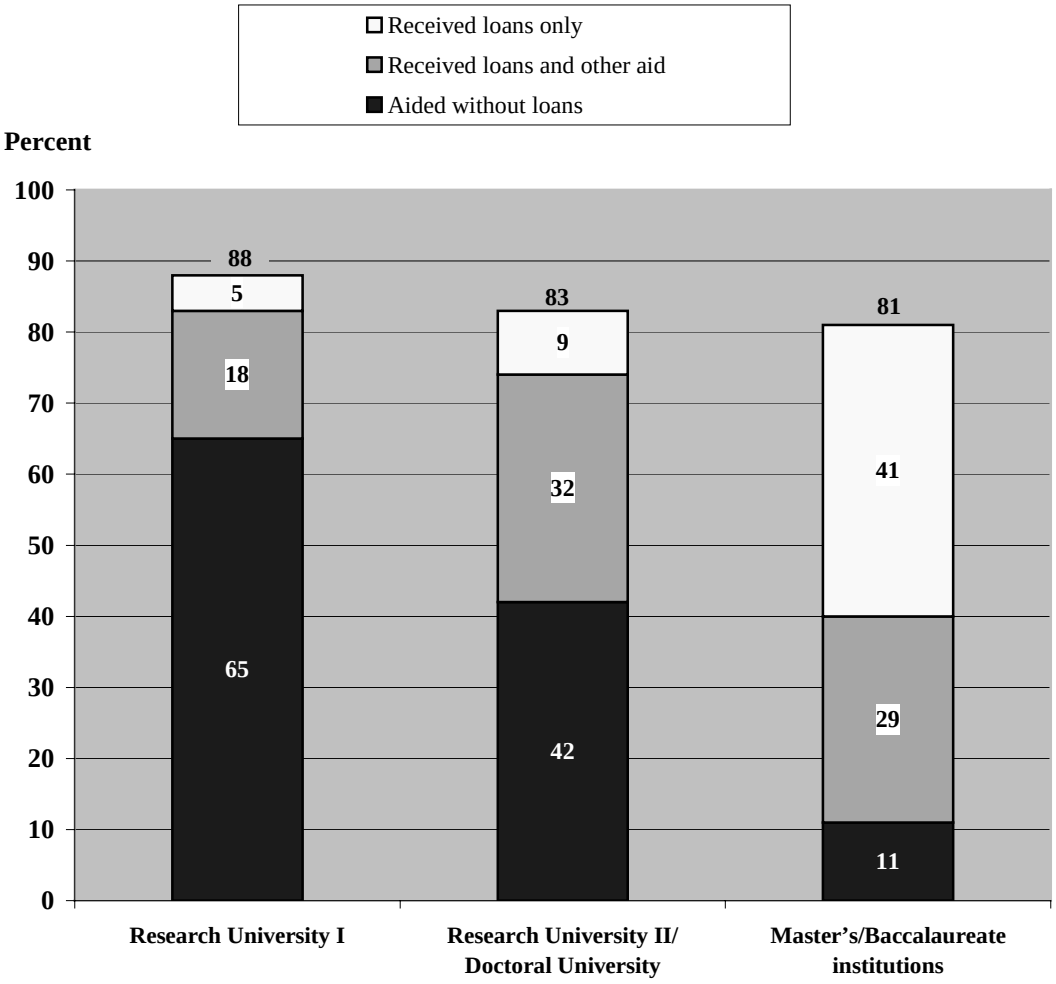


*Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

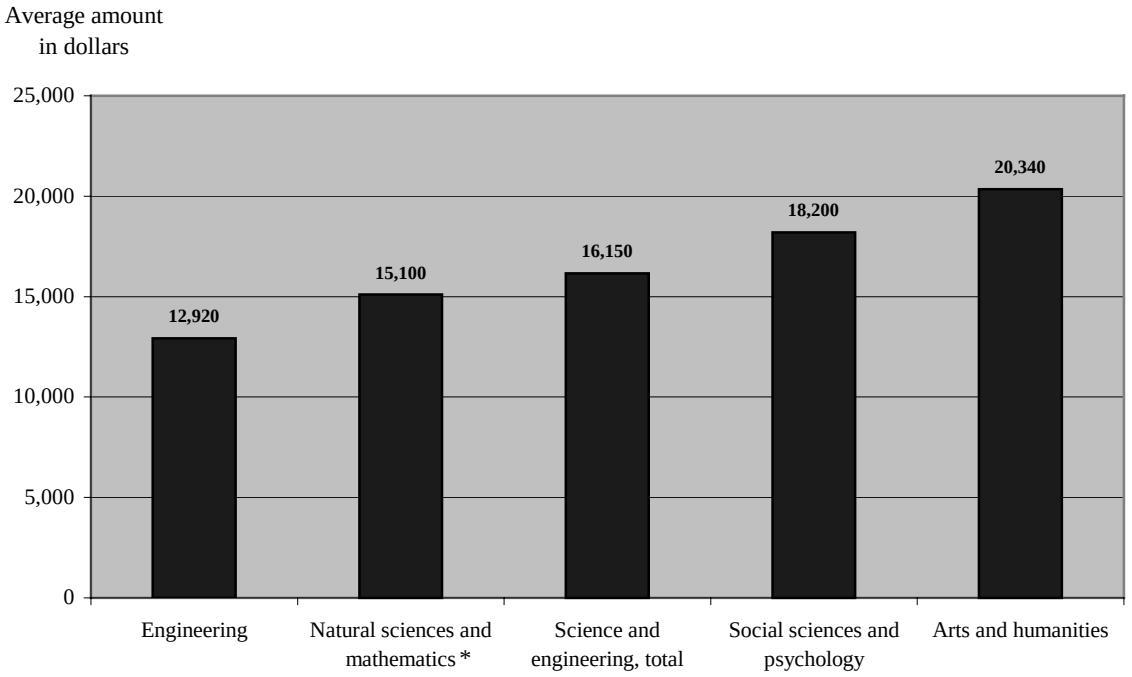
Figure 4—Among U.S. graduate students in science and engineering enrolled full time for the full year, the percentage receiving loans and other aid, by classification of institution attended: 1995–96



NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Figure 5—Average cumulative amount of federal loans taken out for undergraduate or graduate education by U.S. graduate students in selected fields: 1995–96

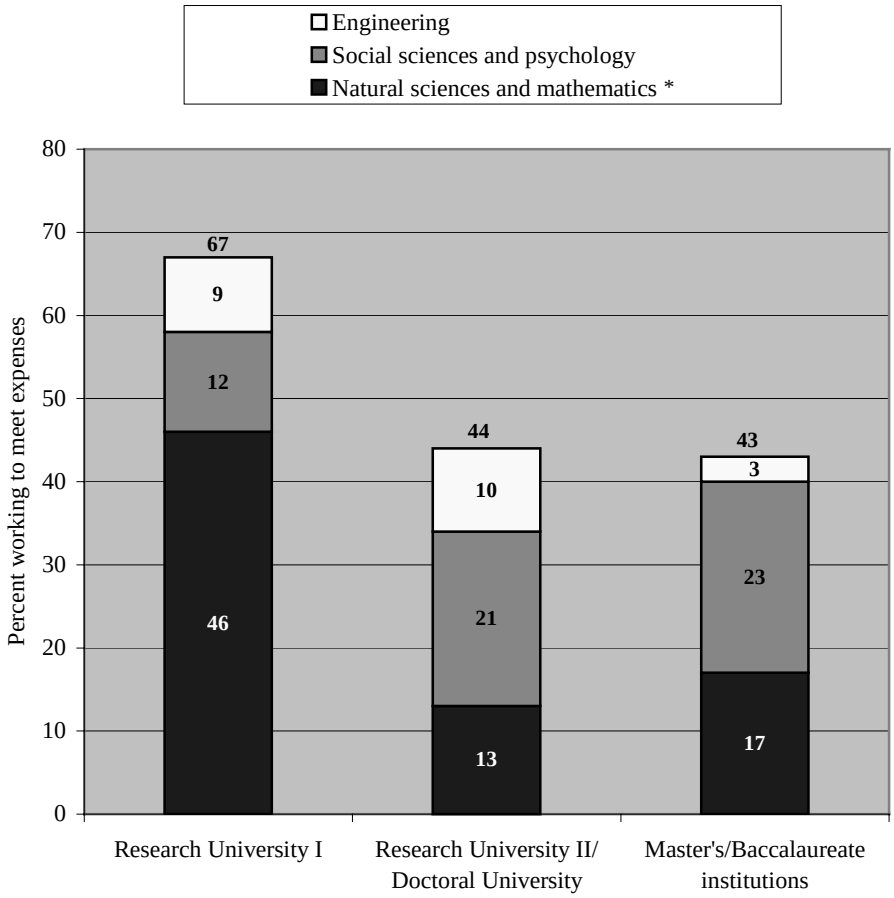


*Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Figure 6—Among U.S. science and engineering graduate students enrolled part time or part year, the percentage who considered themselves primarily students working to meet expenses, by institutional classification and major field of study: 1995–96

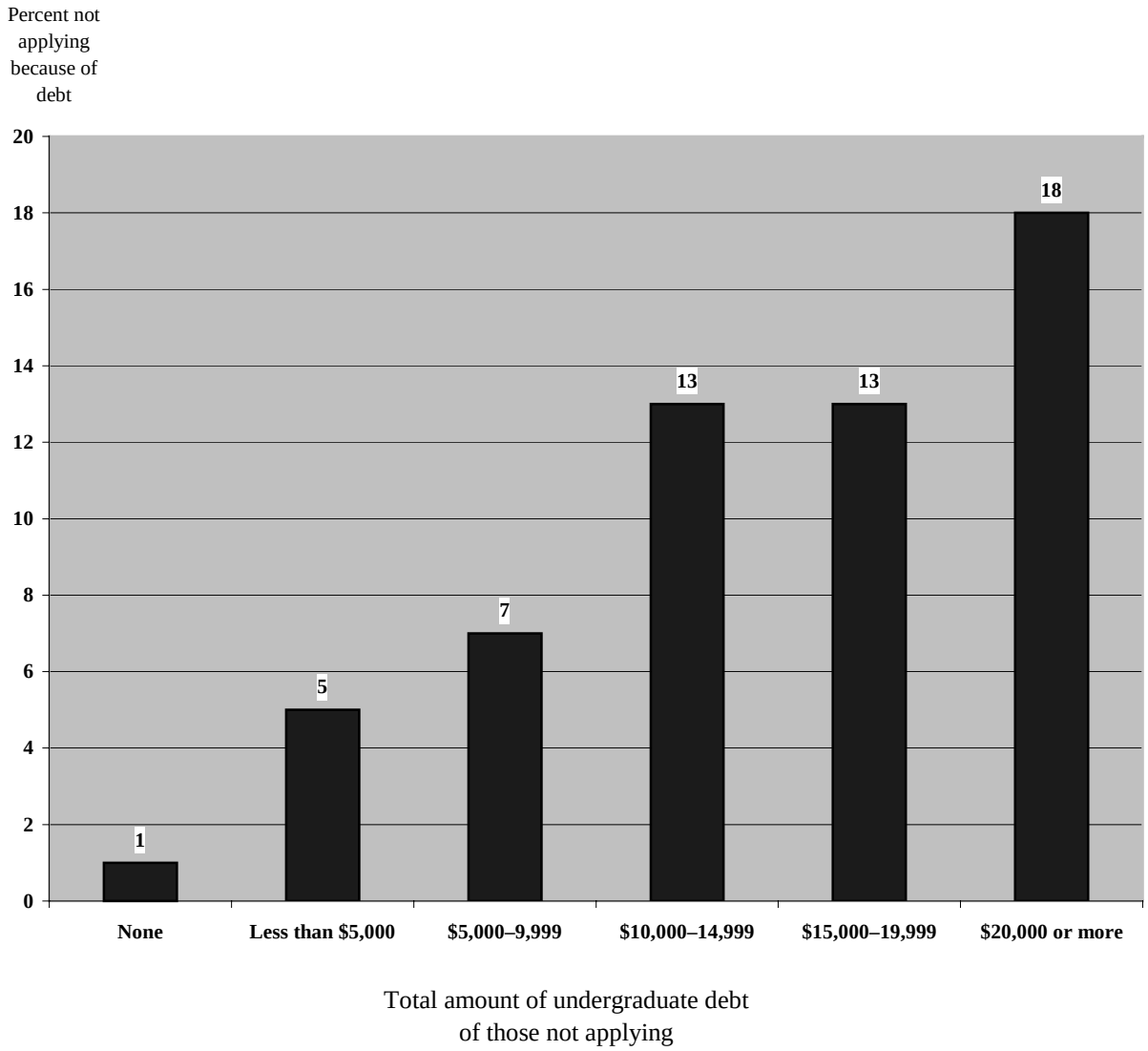


*Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

NOTE: "U.S. science and engineering graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

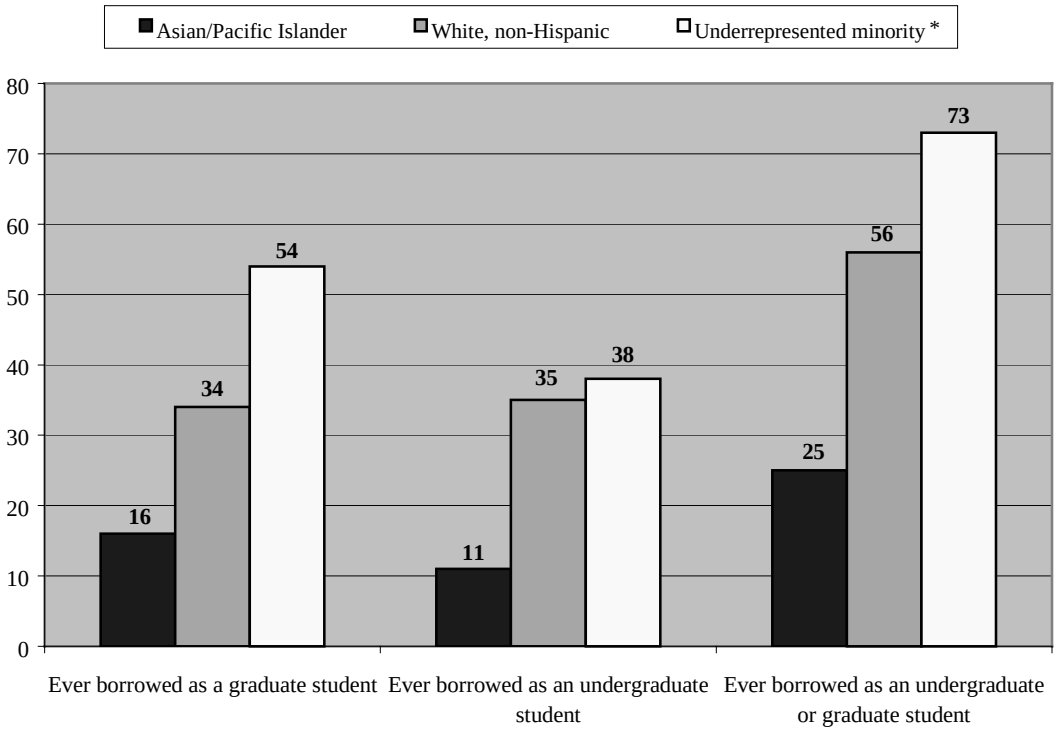
Figure 7—Among 1992–93 U.S. bachelor's degree recipients in science and engineering, the percentage who gave undergraduate debt as the primary reason for not applying to graduate school, by total undergraduate debt



NOTE: "U.S. bachelor's degree recipients" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study First Follow-up (B&B:93/94), Data Analysis System.

Figure 8—Percentage of U.S. graduate students in science and engineering who ever took out loans for undergraduate or graduate education, by race-ethnicity: 1995–96



*Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

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Appendix A—Glossary

This glossary describes the variables used in this report. The variables were taken directly from the NCES NPSAS:96 and the B&B:93/94 Data Analysis Systems (DAS), which are NCES software applications that generate tables from the NPSAS:96 and the B&B:93/94 data. A description of the DAS software can be found in appendix B. The variable labels below are in bold capital letters and correspond to the names of variables in the DAS.

The glossary is organized into two sections: variable definitions for the NPSAS:96 and the B&B:93/94 data sets, respectively. In the index below, the variables in each section are listed in the order they appear in the report; the glossary is in alphabetical order in each section by variable name (displayed in the right-hand column).

Glossary Index

NPSAS:96 VARIABLES

Age as of 12/31/95 **AGE**

25 years or younger
26–30 years
31–35 years
36 years or older

Any assistantship **ASTAMT**

Sum of amounts from all research assistantships, teaching assistantships, and "other" graduate assistantships (including unspecified types) in 1995–96. The percentage of students having assistantships is the percentage with positive amounts recorded for this variable. The average amount received is the average for all students who had assistantships. Assistantships are a form of institutional aid. Since most of the information on assistantships was obtained in student interviews, the CATI weight (CATIWT2) was used.

Attendance pattern **ATTNST1**

Indicates the student's attendance intensity and persistence during 1995–96. Intensity refers to the student's full- or part-time attendance while enrolled. Persistence refers to the number of months a student was enrolled during the year at the NPSAS institution. Students were considered to have enrolled for a full year at the NPSAS institution if they were enrolled 8 or more months during the NPSAS year. Months did not have to be contiguous, and students did not have to be enrolled for a full month in order to be considered enrolled for that month. In prior NPSAS surveys, full year has been defined as 9 or more months.

For tuition/fees and total student budget (table 1.1):

Full time, full year	Full time/full year
Part time or part year	Full time/part year, part time/full year, or part time/part year

For attendance pattern (table 4.1):

Full time	Full time/full year or full time/part year
Part-time	Part time/full year or part time/part year

Ever borrowed as an undergraduate or graduate **BORFED**

Indicates the cumulative federal amount the student borrowed for postsecondary education through 1996.

Ever borrowed as an undergraduate **BORFED1**

Cumulative amount of federal loans borrowed by graduate students while they were undergraduates through 1996. Equal to the cumulative amount of Stafford, SLS, and Perkins loans borrowed during undergraduate years or the amount of undergraduate federal loans reported in the student interview, whichever was greater.

Ever borrowed as a graduate **BORFED2**

Cumulative amount of federal loans borrowed for graduate or first-professional education through 1996. Equal to the cumulative amount of Stafford, SLS, and Perkins loans borrowed during graduate level years or the amount of graduate federal loans reported in the student interview, whichever was greater.

Total student budget **BUDGETAJ**

Total student budget amount for full-time, full-year students at the NPSAS institution. This variable estimates actual cost based on tuition paid, number of months enrolled, and attendance status while enrolled.

Citizenship **CITIZEN2**

Indicates a student's citizenship status and federal financial aid eligibility. Constructed from citizenship status reported on the Free Application for Federal Student Aid (FAFSA). Where not available, student-reported data, institution-reported data, or data from the 1996–97 FAFSA were used. Used in this report to select for inclusion in analyses U.S. citizens and permanent residents (U.S. citizen; Non-citizen, eligible), and to exclude from analyses nonresident aliens (Non-citizen, not eligible).

Control of institution **CONTROL**

Source of revenue and control of operation.

Public	A postsecondary institution operated by publicly elected or appointed officials where the program and activities are under the control of these officials and that is supported primarily by public funds.
Private	A postsecondary institution that is controlled by an independent governing board.

Dependents and marital status **DEPEND4**

Indicates whether or not a student had dependents and also indicates the marital status of students without dependents.

No dependents, unmarried	Student was single, widowed, divorced, or separated and had no dependents.
No dependents, married	Student was married and had no dependents (a spouse is not considered a dependent).
Student has dependents	Student had dependents, regardless of marital status.

Employer aid **EMPLYAMT**

Total amount of employer aid received between July 1995 and June 1996. Employer aid is aid students receive from the business, corporation, institution, or individual by whom the student is employed. Includes tuition waivers for employees of postsecondary institutions and their dependents. The percentage of students with employer aid is the

percentage with positive amounts recorded for this variable. The average amount received is the average for all students who received employer aid. Since most of the information on employer aid was obtained in student interviews. applies to CATI respondents only.

Gender **GENDER**

Male
Female

Average hours worked per week while enrolled **HRSWORK**

Average number of hours students worked per week while enrolled during 1995–96. It is based on the student CATI question: "About how many hours did you work per week while you were enrolled?" Does not include hours students worked while not enrolled (in the summer, for example, if the student was not enrolled then). The percentage of students who worked while enrolled is the percentage with positive values for this variable. The average number of hours worked per week is the average for all students who reported working while enrolled. Applies to CATI respondents only.

0 hours
1–34 hours
35 hours or more

Loans and other aid packages **LOANAID**

Indicates whether a student received only loan aid, a combination of loan and non-loan aid, only non-loan aid such as grants or work-study, or did not receive any aid.

Aided without loans
Received loans and other aid
Received loans only
Unaided

Major field of study (graduate) **NSFMAJOR**

Major field of study categories parallel to National Science Foundation discipline codes used in the Survey of Graduate Students and Postdoctorates in Science and Engineering, Fall 1995. In addition to science and engineering fields, a comparison group is defined, comprising arts and humanities disciplines. Postbaccalaureate students enrolled in first-professional degree programs and graduate students in business, education, health, and other fields outside science/engineering and arts/humanities are not categorized.

Arts and humanities	American studies, area studies, art history/fine arts, commercial art, communications, foreign languages and literature, history, letters/English, music, philosophy.
Science and engineering, total	Natural sciences and mathematics, social sciences and psychology, and engineering.
Natural sciences and mathematics	Agricultural sciences; biological sciences; computer science; earth, atmospheric, and ocean sciences;

	mathematical sciences, and physical sciences (astronomy, chemistry, physics, etc.).
Social sciences and psychology	Anthropology, city planning, economics, geography, linguistics, political science (including international relations and public administration), psychology (clinical, social, etc.), and sociology.
Engineering	Chemical engineering, civil engineering, electrical engineering, mechanical engineering, other engineering.

Were bachelor's degree and graduate NPSAS institution the same **NSFSAME**

For graduate students, indicates whether the institution reported by a CATI respondent as granting his or her bachelor's degree was the same as the graduate NPSAS institution (No/Yes).

Degree program/degree expected at sample institution **NSFSTUD**

For graduate (not first-professional) students enrolled in science/engineering and arts/humanities major fields of study consistent with National Science Foundation discipline codes, categorizes by both type of graduate degree or highest level of education expected at sample school and U.S. citizenship/residency status.

Master's degree	U.S. citizens/permanent residents seeking other than doctoral degrees.
Doctoral degree	U.S. citizens/permanent residents seeking doctoral degrees.

Classification of institution **NSFTYPE**

Aggregates Carnegie classifications of institutions of higher education into three categories. Reflects reclassification of two Specialized Institutions: one from Medical Schools/Medical Centers to Research Universities II/Doctoral Universities, and the other from Schools of Engineering/Technology to Master's/Baccalaureate institutions.

Research University I	These institutions offer a full range of baccalaureate programs, are committed to graduate education through the doctorate, and give high priority to research. They award 50 or more doctoral degrees each year. In addition, they receive $40 million or more in federal support annually. Of the 88 institutions in this category, 78 participated in NPSAS:96.
Research University II/Doctoral University	These institutions offer a full range of baccalaureate programs and are committed to graduate education through the doctorate. Research Universities II give high priority to research. They award 50 or more doctoral degrees each year. In addition, they receive between $15.5 million and $40 million in federal support annually. Doctoral Universities I award at least 40 doctoral degrees annually in five or more

	disciplines. Doctoral Universities II annually award at least ten doctoral degrees—in three or more disciplines—or 20 or more doctoral degrees in one or more disciplines. Of the 148 institutions in these categories, 90 participated in NPSAS:96.
Master's/Baccalaureate	Master's (comprehensive) Colleges and Universities offer a full range of baccalaureate programs and are committed to graduate education through the master's degree. Master's Universities I award 40 or more master's degrees annually in three or more disciplines; whereas Master's Universities II award 20 or more master's degrees annually in one or more disciplines. Baccalaureate Colleges are primarily undergraduate colleges with major emphasis on baccalaureate degree programs. Baccalaureate Colleges I award 40 percent or more of their baccalaureate degrees in liberal arts fields and are restrictive in admissions. Baccalaureate Colleges II award less than 40 percent of their baccalaureate degrees in liberal arts fields or are less restrictive in admissions. Of the 1,166 institutions in these categories, 263 participated in NPSAS:96.

Holds a master's degree **OTHRMA**

Indicates whether student holds a master's degree (No/Yes). One of a series of variables which examines the type of postsecondary credential the student holds. Applies to CATI respondents only.

Parents' highest educational level **PAREDUC**

Indicates parents' highest level of education completed. Aggregated educational level of parent with highest level of education. Applies to CATI respondents only.

High school diploma or less
Postsecondary, including bachelor's degree
Graduate or first-professional degree

Race–ethnicity **RACE2**

White, non-Hispanic	A person having origins in any of the original peoples of Europe, North Africa, or the Middle East (except those of Hispanic origin).
Asian/Pacific Islander	A person having origins in any of the peoples of the Far East, Southeast Asia, the Indian subcontinent, or Pacific islands. This includes people from China, Japan, Korea, the Philippine Islands, Samoa, India, and Vietnam.

Underrepresented minority	A person identified as black, non-Hispanic; Hispanic; or American Indian/Alaskan Native.

Research assistantship **RESAMT**

Indicates the amount from research assistantships received at the NPSAS institution during 1995–96. The percentage of students having a research assistantship is the percentage with positive amounts recorded for this variable. Since most of the information on assistantships was obtained in student interviews, the CATI weight (CATIWT2) was used.

Primary role if working while enrolled **SEROLE**

Student response to the question, "While you were enrolled and working, would you say you were primarily a student working to meet expenses or an employee who's decided to enroll in school?" Applies to CATI respondents only.

Student working to meet expenses
Employee enrolled in school

Teaching assistantship **TEACHAMT**

Indicates the total amount from teaching assistantships received during 1995–96. The percentage of students having a teaching assistantship is the percentage with positive amounts recorded for this variableSince most of the information on assistantships was obtained in student interviews, the CATI weight (CATIWT2) was used.

Any aid **TOTAID2**

Indicates the total amount of federal Title IV, state, and institutional aid received during 1995–96 (excluding other sources). The percentage of students who received aid is the percentage with positive amounts recorded for this variable. The average amount received is the average for all students who received aid.

Grants **TOTGRT**

Total grants received in 1995–96. Grants are a type of student financial aid that does not require repayment or employment. Grants include scholarships and fellowships. Tuition waivers and employer aid are considered grant aid. The percentage of students who received grants is the percentage with positive amounts recorded for this variable. The average amount received is the average for all students who received grants.

Loans **TOTLOAN**

Total loans received in 1995–96. This includes all loans through federal, state, or institutional programs. Loans are a type of student financial aid that advances funds and that are evidenced by a promissory note requiring the recipient to repay the specified amounts under prescribed conditions. The percentage of students with loans is the percentage with positive amounts recorded for this variable. The average amount received is the average for all students who received loans.

Tuition and fees **TUITION2**

Tuition and fees charged at the sampled NPSAS institution for students who attended only one institution during 1995–96. Excludes students who attended more than one institution, since the tuition at the second institution is not known. If tuition amounts were not reported they were estimated based on the average per-credit or per-term charges for other students at the institution according to their class level, degree program, and attendance status. The average amount is the average for all students, including those who did not have any tuition or fees.

Tuition waivers **WAIVAMT**

Indicates the total amount of tuition and housing fee waivers received during 1995–96. Students with waivers are excused from paying tuition or housing fees, or pay discounted amounts. This variable included waivers for institutional employees or dependents and other waivers or discounts. Waivers are considered grant aid. The percentage of students with tuition waivers is the percentage with positive amounts recorded for this variable. The average amount received is the average for all students who received tuition waivers. Since most of the information on tuition waivers was obtained in student interviews, it applies to CATI respondents only.

B&B:93/94 VARIABLES

Accepted, if applied to graduate school **ACCEPT**

Indicates respondents who reported the number of schools that accepted them if they applied to graduate school.

Citizenship **CTZNSHP2**

Student response to the question: "Are you a United States citizen? If not, do you have a permanent or temporary resident card? If you are not a resident, do you have a student or exchange visitor visa?" If the student was not interviewed, or was not asked this question during the telephone interview, pertinent CADE data were retrieved. Used in this report to select for inclusion in analyses of U.S. citizens and permanent residents (U.S. citizen or U.S. national; U.S. permanent resident or has temporary visa), and to exclude from analyses nonresident aliens (Other, including F1/F2 student visa or J1/J2 visa).

Enrolled in graduate school **ENRST94**

Intensity of graduate study in the 1993-94 academic year. The percentage of students enrolling in graduate or professional school is the percentage with positive values recorded for this variable.

Applied to graduate school **EVERAPP**

Indicates whether or not a respondent applied to a graduate or professional school (No/Yes).

Grade point average (4.0 scale) **NORMGPA**

Student's grade point average reported by the institution, normalized to a 4.0 scale. If the data were not available, student-reported categorical GPAs were used. Refers to NPSAS institution for those enrolled in more than one institution.

Less than 3.0	Student's GPA was less than 3.0
3.0 or above	Student's GPA was 3.0 or above

Bachelor's degree major field of study **NSFMAJ**

Aggregates undergraduate major field of study categories to be parallel to National Science Foundation discipline codes used in the Survey of Graduate Students and Postdoctorates in Science and Engineering, Fall 1995. Codes major fields science/engineering if either first major or second major pertains to an NSF science or engineering field. In addition to science and engineering fields, a comparison group is defined, comprising arts and humanities discipline. Students are categorized in arts/humanities if neither their first nor second major is science/engineering and either the first or second major is an arts/humanities discipline. Students having bachelor's degrees in business, education, health, and other fields outside science/engineering and arts/humanities are not categorized. Original major field categories entered during CADE from student undergraduate transcripts.

Arts and humanities	American studies, area studies, art history/fine arts, commercial art, communications, foreign languages and literature, history, letters/English, music, philosophy.
Science and engineering, total	Natural sciences and mathematics, social sciences and psychology, and engineering.

Classification of institution type **NSFTYPE**

Aggregates Carnegie classifications of institutions of higher education into four categories. Reflects reclassification of two Specialized Institutions: one from Medical Schools/Medical Centers to Research Universities II/Doctoral Universities, and the other from Schools of Engineering/Technology to Master's/Baccalaureate institutions.

Research University I	These institutions offer a full range of baccalaureate programs, are committed to graduate education through the doctorate, and give high priority to research. They award 50 or more doctoral degrees each year. In addition, they receive $40 million or more in federal support annually.
Research University II/Doctoral University	These institutions offer a full range of baccalaureate programs and are committed to graduate education through the doctorate. Research Universities II give high priority to research. They award 50 or more doctoral degrees each year. In addition, they receive between $15.5 million and $40 million in federal support annually. Doctoral Universities I award at least 40 doctoral degrees annually in five or more disciplines. Doctoral Universities II annually award at least ten doctoral degrees—in three or more disciplines—or 20 or more doctoral degrees in one or more disciplines.
Baccalaureate I (Liberal Arts)	These institutions are primarily undergraduate colleges with major emphasis on baccalaureate degree programs. They award 40 percent or more of their baccalaureate degrees in liberal arts fields and are restrictive in admissions.
Master's/Baccalaureate II	Master's Universities offer a full range of baccalaureate programs and are committed to graduate education through the master's degree. Master's Universities I award 40 or more master's degrees annually in three or more disciplines; whereas Master's Universities II award 20 or more master's degrees annually in one or more disciplines. Baccalaureate II are primarily undergraduate colleges with major emphasis on baccalaureate degree programs. They award less than 40 percent of their baccalaureate degrees in liberal arts fields or are less restrictive in admissions.

Primary reason did not apply to graduate school **REASNAP**

If the respondent had not applied to graduate school but had considered applying, respondents indicated the primary reason for not applying from among the following choices:

Too much undergraduate debt	
Too much other debt	
Not enough financial aid or assistance	
Cost related	"Costs too much; not worth it; can't afford it"
Personal related	"Wanted to take time off; family responsibilities too demanding; don't like school; location, no school nearby"
Work related	"Not necessary for career; working and happy with current job; want work experience before attending graduate school; need to work and save money for graduate school; job responsibilities too demanding"
Undecided about what to study	
Other academic	"Need better grades/scores to apply; missed application/test deadline; graduate school too difficult"

Total undergraduate debt **TOTDEBT**

Indicates whether and how much the student borrowed for undergraduate education. Includes the amounts of federal, state, or institutional loans a student received from all sources. Also include loans from family, friends, relatives, banks, savings and loans, and credit unions, and loans that have been repaid. NPSAS preload data were verified if present; question was asked if no NPSAS data were present.

Borrowing history	
Never borrowed	Total undergraduate debt = 0.
Ever borrowed	Total undergraduate debt > 0.

Total undergraduate debt
- None
- Less than $5,000
- $5,000 to 9,999
- $10,000 to 14,999
- $15,000 to 19,999
- $20,000 or more

Considered graduate school, among those who did not apply **WANTAPP**

Student response to the question, "Did you consider attending graduate or professional school?" This was asked only of respondents who had not applied to graduate school (No/Yes).

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Appendix B—Technical Notes and Methodology

The 1995–96 National Postsecondary Student Aid Study (NPSAS:96)

The 1995–96 National Postsecondary Student Aid Study (NPSAS:96) is a comprehensive nationwide study conducted by the Department of Education's National Center for Education Statistics (NCES) to determine how students and their families pay for postsecondary education. It also describes demographic and other characteristics of students enrolled. The study is based on a nationally representative sample of all students in postsecondary education institutions, including undergraduate, graduate, and first-professional students. Students attending all types and levels of institutions are represented in the sample, including public and private institutions and less-than-2-year institutions, 2-year institutions, and 4-year colleges and universities. The study is designed to address the policy questions resulting from the rapid growth of financial aid programs, and the succession of changes in financial aid program policies since 1986. The first NPSAS study was conducted in 1986–87, and then again in 1989–90 and 1992–93.[1]

Information in NPSAS:96 was obtained on approximately 8,700 graduate students from institution records. These were subsampled for computer-assisted telephone interview, yielding about 5,000 students from about 375 institutions on the analysis file, from which complete interviews were obtained for approximately 3,000. For institutional record data collection, the weighted response rate among graduate students was 91.9 percent. For the telephone interviews of graduate students, the weighted effective response rate was 81.5 for federal aid applicants and 76.5 for federal aid non-applicants.

Baccalaureate and Beyond Longitudinal Study

The Baccalaureate and Beyond Longitudinal Study (B&B:93) tracks the experiences of a cohort of college graduates who received a bachelor's degree during the 1992–93 academic year. This group's experience in the areas of further education and degree completion, employment, public service, family formation, and other adult decisions will be followed for about 12 years. B&B will provide data to assess the outcomes of postsecondary education, including graduate

[1]For more information on the NPSAS survey, consult U.S. Department of Education, National Center for Education Statistics, *Methodology Report for the 1995–96 National Postsecondary Student Aid Study* (NCES 98-073) (Washington, DC: 1997), available electronically at *http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=98073*.

and professional program access, labor market experience, and rate of return on investment in education.

Participants in the 1993 National Postsecondary Student Aid Study (NPSAS:93) who received their bachelor's degrees between July 1992 and June 1993 form the base sample for the B&B study. Approximately 12,500 NPSAS:93 respondents were identified as eligible for the first follow-up survey, which was conducted between July 1993 and December 1994 (roughly one year after participants' graduation). Approximately 1,500 members of this initial sample were determined to be ineligible at the time of the follow-up interview, and about 900 others were not interviewed (usually because they could not be located or refused to participate), generating a final sample of 11,192 college graduates. An overall response rate of 92 percent was achieved for the first follow-up survey.[2]

The B&B survey sample, while representative and statistically accurate, was not a simple random sample. Instead, the survey sample was selected using a more complex three-step procedure with stratified samples and differential probabilities of selection at each level. The same three-stage procedure described for BPS applies to B&B.

Accuracy of Estimates

The statistics in this report are estimates derived from a sample. Two broad categories of error occur in such estimates: sampling and nonsampling errors. Sampling errors occur because observations are made only on samples of students, not entire populations. Nonsampling errors occur not only in sample surveys but also in complete censuses of entire populations. Nonsampling errors can be attributed to a number of sources: inability to obtain complete information about all students in all institutions in the sample (some students or institutions refused to participate, or students participated but answered only certain items); ambiguous definitions; differences in interpreting questions; inability or unwillingness to give correct information; mistakes in recording or coding data; and other errors of collecting, processing, sampling, and imputing missing data.

[2]For more information on procedures for the Baccalaureate and Beyond First Followup Study (B&B:93/94), consult U.S. Department of Education, National Center for Education Statistics, *Baccalaureate and Beyond Longitudinal Study: 1993/94 First Follow-up Methodology Report* (NCES 96-149) (Washington, DC: 1996), available electronically at *http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=96149*..

Data Analysis System

The estimates presented in this report were produced using the NPSAS:96 and B&B:93/94 Data Analysis Systems (DASs). The DAS software makes it possible for users to specify and generate their own tables from the NPSAS:96 or B&B:93/94 data. With the DAS, users can replicate or expand upon the tables presented in this report. In addition to the table estimates, the DAS calculates proper standard errors[3] and weighted sample sizes for these estimates. For example, table B1 contains standard errors that correspond to table 1 in the essay of this report, and was generated by the DAS. If the number of valid cases is too small to produce a reliable estimate (less than 30 cases), the DAS prints the message "low-N" instead of the estimate.

For more information about the NPSAS:96 and B&B:93/94 Data Analysis Systems, consult the NCES DAS Website (WWW.NCES.ed.gov/DAS) or contact:

Aurora D'Amico
NCES Postsecondary Studies Division
1990 K Street, NW
Washington, DC 20006
(202) 502-7334
Internet address: Aurora_D'Amico@ed.gov

Weights

Two sets of weights are available for analyses of NPSAS:96 data: the full-sample weight, which was based on the entire sample, and the CATI (Computer Assisted Telephone Interview) weight, which was based on all students who were interviewed. In cases where information was obtained only from student interviews, estimates were calculated using the CATI weight. These variables are identified as such in the glossary (appendix A). Within a single table that includes either row or column variables that require different weights, those weights are reflected in the pertinent row or column data.

The single set of B&B:93/94 weights was calculated by adjusting the original baseline NPSAS:93 weights for the actual number of degrees awarded in 1992-93 (yielding the B&B base weight), which was further adjusted for non-response to the follow-up survey (CATI) data collection.

[3]The NPSAS:96 and B&B:93/94 samples are not simple random samples and, therefore, simple random sample techniques for estimating sampling error cannot be applied to these data. The DAS takes into account the complexity of the sampling procedures and calculates standard errors appropriate for such samples. The method for computing sampling errors used by the DAS involves approximating the estimator by the linear terms of a Taylor series expansion. The procedure is typically referred to as the Taylor series method.

Table B1—Standard errors for table 5: Percentage of all U.S. graduate students in selected fields receiving various types of financial aid and average amount received, by selected institutional and demographic characteristics: 1995–96

	Any aid		Loans		Grants[1]	
	Percent	Average amount	Percent	Average amount	Percent	Average amount
Major field of study						
Science and engineering, total	2.68	$448	1.62	$384	2.33	$507
Natural sciences and mathematics[2]	4.64	652	2.06	523	3.80	592
Social sciences and psychology	3.29	700	2.85	552	2.78	864
Engineering	5.30	785	2.23	1,030	4.76	1,022
Arts and humanities	3.51	709	2.72	411	3.22	684
			Science and engineering students			
Control of institution						
Public	2.92	450	1.89	319	2.65	461
Private	3.60	967	2.81	631	3.57	1,099
Classification of institution						
Research University I	3.65	589	2.08	539	3.83	819
Research University II/Doctoral	3.66	828	2.66	638	3.33	389
University	4.34	593	4.07	599	3.33	444
Master's/Baccalaureate						
Gender	2.83	521	1.55	457	2.59	637
Male	3.65	582	2.79	496	3.29	678
Female						
Race–ethnicity	2.42	458	1.74	382	2.45	564
White, non-Hispanic	5.49	1,382	4.10	—	5.19	—
Asian/Pacific Islander	8.71	805	5.81	860	7.53	995
Underrepresented minority[3]						
Parents' highest educational level						
High school diploma or less	4.17	752	3.69	593	4.76	362
Postsecondary, including bachelor's degree	6.29	737	3.67	638	4.97	1,043
Graduate or first-professional degree	4.53	808	4.31	791	4.72	1,099
			Arts and humanities students			
Control of institution						
Public	4.27	664	3.02	466	3.86	763
Private	6.41	1,776	4.46	817	5.42	1,255
Classification of institution						
Research University I	4.97	953	3.89	540	4.77	965
Research University II/ Doctoral University	5.88	1,144	5.69	888	5.48	589
Master's/Baccalaureate	5.98	860	3.71	575	4.10	—

Table B1—Standard errors for table 5: Percentage of all U.S. graduate students in selected fields receiving various types of financial aid and average amount received, by selected institutional and demographic characteristics: 1995–96—Continued

	Any aid		Loans		Grants[1]	
	Percent	Average amount	Percent	Average amount	Percent	Average amount
Gender						
Male	4.96	$1,089	3.59	$568	4.41	$1,087
Female	4.67	899	3.68	544	4.26	948
Race–ethnicity						
White, non-Hispanic	3.76	818	2.99	442	3.58	802
Asian/Pacific Islander	—	—	—	—	—	—
Underrepresented minority[3]	10.56	—	8.72	—	9.09	—
Parents' highest educational level						
High school diploma or less	7.54	1,234	6.29	—	6.90	—
Postsecondary, including bachelor's degree	8.90	1,322	6.91	—	6.65	—
Graduate or first-professional degree	5.69	1,412	5.98	854	6.81	1,562

—Not available.

[1]Grants include scholarships, fellowships, tuition wivers, and employer aid.

[2]Natural sciences and mathematics includes physical sciences, earth sciences, mathematical sciences, computer sciences, agricultural sciences, and biological sciences.

[3]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

NOTE: "U.S. graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System.

Statistical Procedures

The descriptive comparisons were tested in this report using Student's *t* statistic. Differences between estimates are tested against the probability of a Type I error, or significance level. The significance levels were determined by calculating the Student's *t* values for the differences between each pair of means or proportions and comparing these with published tables of significance levels for two-tailed hypothesis testing.

Student's *t* values may be computed to test the difference between estimates with the following formula:

$$t = \frac{E_1 - E_2}{\sqrt{se_1^2 + se_2^2}} \tag{1}$$

where E_1 and E_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors. This formula is valid only for independent estimates. When estimates are not independent a covariance term must be added to the formula. If the comparison is between the mean of a subgroup and the mean of the total group, the following formula is used:

$$\frac{E_{sub} - E_{tot}}{\sqrt{se_{sub}^2 + se_{tot}^2 - 2p\, se_{sub}^2}} \tag{2}$$

where p is the proportion of the total group contained in the subgroup.[4]

The general formula for comparing two percentages is:

$$\frac{E_1 - E_2}{\sqrt{se_1^2 + se_2^2 - 2(r)se_1\, se_2}} \tag{3}$$

where r is the correlation between the two estimates. In particular, this formula is used when the percentages are from a distribution that adds to 100 percent.[5] The estimates, standard errors, and correlations can all be obtained from the DAS.

There are hazards in reporting statistical tests for each comparison. First, comparisons based on large *t* statistics may appear to merit special attention. This can be misleading, since the magnitude of the *t* statistic is related not only to the observed differences in means or percentages

[4]U.S. Department of Education, National Center for Education Statistics, *A Note from the Chief Statistician*, No. 2, 1993.
[5]Ibid.

but also to the number of students in the specific categories used for comparison. Hence, a small difference compared across a large number of students would produce a large *t* statistic.

A second hazard in reporting statistical tests for each comparison occurs when making multiple comparisons among categories of an independent variable. For example, when making paired comparisons among different levels of income, the probability of a Type I error for these comparisons taken as a group is larger than the probability for a single comparison. When more than one difference between groups of related characteristics or "families" are tested for statistical significance, one must apply a standard that assures a level of significance for all of those comparisons taken together.

Most comparisons were made in this report when $p \leq .05/k$ for a particular pairwise comparison,[6] where that comparison was one of *k* tests within a family. This guarantees both that the individual comparison would have $p \leq .05$ and that for *k* comparisons within a family of possible comparisons, the significance level for all the comparisons will sum to $p \leq .05$.[7]

For example, in a comparison of the percentages of males and females who enrolled in postsecondary education only one comparison is possible (males versus females). In this family, $k=1$, and the comparison can be evaluated without adjusting the significance level. When students are divided by the four classifications of institutions granting their bachelor's degrees and all possible comparisons are made, then $k=6$ and the significance level of each test must be $p \leq .05/8$, or $p \leq .006$. The formula for calculating family size (k) is as follows:

$$k = \frac{j(j-1)}{2} \tag{4}$$

where *j* is the number of categories for the variable being tested. In the case of the classification of bachelor's degree-granting institutions, there are four categories (Research University I, Research University II/Doctoral University, Baccalaureate I [Liberal Arts], and Master's/Baccalaureate II), so substituting 4 for *j* in equation 2,

$$k = \frac{4(4-1)}{2} = 6$$

[6]Some differences mentioned in the text were significant at only the .10 level; each of these is indicated by a footnote.

[7]The standard that $p \leq .05/k$ for each comparison is more stringent than the criterion that the significance level of the comparisons should sum to $p \leq .05$. For tables showing the *t* statistic required to ensure that $p \leq .05/k$ for a particular family size and degrees of freedom, see Olive Jean Dunn, "Multiple Comparisons Among Means," *Journal of the American Statistical Association* 56 (1961): 52–64.

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Appendix C—Comparison of NPSAS and NSF Graduate Student Survey: Fall 1995

Because both the fall 1995 NSF graduate student survey and NPSAS:96 collected data concerning enrollment status, demographic characteristics, and institution classification and control, these data can be compared. Specifically, percentages based on the numbers compiled from the NSF graduate student survey can be compared to weighted sample percentages for fall 1995 science and engineering students in NPSAS:96. The latter data differ from those presented in this report, which pertain to students enrolled for specified periods throughout the 1995–96 academic year. These two sets of fall 1995 percentages are displayed in the tables that follow.

To compare percentages from NPSAS:96 and the NSF graduate student survey, the differences between estimates were tested using Student's *t* statistic, based on actual NPSAS:96 standard errors and a standard error of 0 for NSF graduate student survey percentages. No measurable differences were found, except in table C4, where the percentages of underrepresented minority and Asian/Pacific Islander students differ significantly. The differences shown in table C4 may in part be related to differences between the two surveys in the manner in which U.S. permanent residents versus nonresident aliens were identified. With the exception of table C4, the absence of difference between estimated percentages from the two surveys suggests that in spite of different methodologies, both surveys were describing the same national population of science and engineering graduate students, after nonresident aliens had been excluded.

The national estimate numbers for NPSAS:96 data were obtained by applying various weights to the sample of students.[1] Assuming complete data for a given variable, the unweighted sample pertaining to the tables in appendix C consists of 698 cases, and the weighted estimate is 385,320. Thus, the average weight would be 552. Given the sampling error involved in such estimates, comparisons of the NPSAS:96 weighted estimated numbers with NSF graduate student survey total numbers should be made with caution.

[1]For more information on the methodology of NPSAS survey, consult U.S. Department of Education, National Center for Education Statistics, *Methodology Report for the 1995–96 National Postsecondary Student Aid Study* (NCES 98-073) (Washington, DC: 1997), available electronically at *http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=98073*.

Table C1—Percentage distribution of U.S. science and engineering graduate students according to field of study: Fall 1995

	All institutions			Doctorate-granting institutions		
	NPSAS:96, fall 1995	(SE*)	NSF graduate student survey, fall 1995	NPSAS:96, fall 1995	(SE*)	NSF graduate student survey, fall 1995
Aggregated field of study						
Physical and earth sciences	9.3	(1.4)	10.8	10.2	(1.6)	11.5
Mathematics and computer science	14.0	(2.1)	10.9	13.0	(2.3)	10.6
Agricultural and biological sciences	17.8	(3.0)	17.2	18.8	(3.4)	18.2
Social sciences and psychology	39.0	(2.5)	39.0	36.0	(2.7)	36.2
Engineering, total	20.1	(2.1)	22.1	22.1	(2.3)	23.6
Science and engineering, total	100.0		100.0	100.0		100.0
National estimate	385,320		323,997	344,361		277,733

*Standard error of the NPSAS:96 estimate. No differences were found between NPSAS:96 and NSF-GSS percentages at the 0.05 level.

NOTE: "U.S. science and engineering graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System and National Science Foundation/SRS, Survey of Graduate Students and Postdoctorates in Science and Engineering, fall 1995.

Table C2—Percentage of female U.S. science and engineering graduate students in all institutions, by aggregated field of study: Fall 1995

	NPSAS:96, fall 1995	(SE*)	NSF graduate student survey, fall 1995
Aggregated field of study			
Natural sciences and mathematics	40.1	(5.2)	37.9
Social sciences and psychology	54.5	(3.2)	58.0
Engineering, total	18.3	(4.0)	18.1
Science and engineering, total	41.3	(2.6)	41.4
National estimate	159,262		134,030

*Standard error of the NPSAS:96 estimate. No differences were found between NPSAS:96 and NSF-GSS percentages at the 0.05 level.

NOTE: "U.S. science and engineering graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System and National Science Foundation/SRS, Survey of Graduate Students and Postdoctorates in Science and Engineering, fall 1995.

Table C3—Percentage distribution of U.S. science and engineering graduate students enrolled full time according to aggregated field of study: Fall 1995

	All institutions			Doctorate-granting institutions		
	NPSAS:96, fall 1995	(SE*)	NSF graduate student survey, fall 1995	NPSAS:96, fall 1995	(SE*)	NSF graduate student survey, fall 1995
Aggregated field of study						
Natural sciences and mathematics	41.0	(4.0)	43.2	41.6	(4.3)	44.3
Social sciences and psychology	41.5	(3.3)	38.0	39.8	(3.4)	35.9
Engineering, total	17.4	(2.5)	18.9	18.6	(2.7)	19.8
Science and engineering, total	100.0		100.0	100.0		100.0
National estimate	204,870		204,143	188,343		188,166

*Standard error of the NPSAS:96 estimate. No differences were found between NPSAS:96 and NSF-GSS percentages at the 0.05 level.

NOTE: "U.S. science and engineering graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens. Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System and National Science Foundation/SRS, Survey of Graduate Students and Postdoctorates in Science and Engineering, fall 1995.

Table C4—Percentage of U.S. science and engineering graduate students in selected racial–ethnic groups, by aggregated field of study: Fall 1995

	Underrepresented minority[1]			Asian/Pacific Islander		
	NPSAS:96, fall 1995	(SE[2])	NSF graduate student survey, fall 1995	NPSAS:96, fall 1995	(SE[2])	NSF graduate student survey, fall 1995
			In all institutions			
Aggregated field of study						
Natural sciences and mathematics	15.6	(6.2)	13.0	16.8	(3.2*)	9.5
Social sciences and psychology	14.6	(2.3*)	19.9	8.2	(2.5)	3.9
Engineering, total	5.5	(2.1*)	15.0	24.3	(4.2*)	12.6
Science and engineering, total	13.2	(2.8)	16.1	15.0	(2.0*)	8.0
National estimate	50,660		52,227	57,672		25,899
			In doctorate-granting institutions			
Aggregated field of study						
Natural sciences and mathematics	16.1	(6.7)	12.0	17.1	(3.5*)	9.3
Social sciences and psychology	14.5	(2.6)	18.1	9.1	(3.0)	4.1
Engineering, total	5.4	(2.1*)	14.5	23.8	(4.2*)	11.9
Science and engineering, total	13.2	(3.1)	14.8	15.7	(2.2*)	8.0
National estimate	45,322		41,123	54,070		22,352

*Difference between NPSAS:96 and NSF-GSS percentages significant at .05 level.

[1]Underrepresented minority includes American Indian/Alaskan Native; black, non-Hispanic; and Hispanic.

[2]Standard error of the NPSAS:96 estimate.

NOTE: "U.S. science and engineering graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System and National Science Foundation/SRS, Survey of Graduate Students and Postdoctorates in Science and Engineering, fall 1995.

Table C5—Percentage of U.S. science and engineering graduate students enrolled in private institutions, by aggregated field of study: Fall 1995

	All institutions			Doctorate-granting institutions		
	NPSAS:96, fall 1995	(SE*)	NSF graduate student survey, fall 1995	NPSAS:96, fall 1995	(SE*)	NSF graduate student survey, fall 1995
Aggregated field of study						
Natural sciences and mathematics	25.2	(3.7)	26.3	24.8	(4.0)	27.0
Social sciences and psychology	31.5	(3.8)	35.1	33.2	(4.2)	37.4
Engineering, total	27.6	(5.1)	29.8	27.5	(5.2)	28.4
Science and engineering, total	28.2	(2.6)	30.5	28.4	(2.8)	31.1
National estimate	108,506		98,799	97,869		86,300

*Standard error of the NPSAS:96 estimate. No differences were found between NPSAS:96 and NSF-GSS percentages at the 0.05 level.

NOTE: "U.S. science and engineering graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System and National Science Foundation/SRS, Survey of Graduate Students and Postdoctorates in Science and Engineering, fall 1995.

Table C6—Percentage of U.S. science and engineering graduate students according to classification of institution, by aggregated field of study: Fall 1995

	Research University I			Research University II/ Doctoral University[1]			Master's/Baccalaureate[2]		
	NPSAS:96, fall 1995	(SE[3])	NSF graduate student survey, fall 1995[4]	NPSAS:96, fall 1995	(SE[3])	NSF graduate student survey, fall 1995[4]	NPSAS:96, fall 1995	(SE[3])	NSF graduate student survey, fall 1995[4]
Aggregated field of study									
Natural sciences and mathematics	55.7	(5.7)	51.9	31.6	(5.4)	32.0	12.7	(2.3)	15.3
Social sciences and psychology	42.6	(4.4)	37.6	31.0	(4.4)	32.7	26.4	(3.5)	25.4
Engineering, total	56.2	(6.5)	55.3	32.5	(6.0)	29.6	11.3	(3.5)	14.0
Science and engineering, total	50.7	(4.0)	47.1	31.6	(3.8)	31.8	17.8	(2.0)	19.0
National estimate	195,238		152,481	121,612		102,925	68,470		61,398

[1]Also includes institutions classified as Medical Schools and Medical Centers.

[2]Also includes institutions classified as Schools of Engineering and Technology.

[3]Standard error of the NPSAS:96 estimate. No differences were found between NPSAS:96 and NSF-GSS percentages at the 0.05 level.

[4]Also included in NSF graduate student survey percentages for Master's/Baccalaureate institutions are additional institutional classifications, which represent 2.2 percent of total science and engineering graduate students. These residual classifications include the following: Associate of Arts Colleges; Schools of Art, Music, and Design; Schools of Business and Management; Other Separate Health Profession Schools; Schools of Law; Theological Seminaries, Bible Colleges, and Other Institutions Offering Degrees in Religion; Teachers' Colleges; Tribal Colleges and Institutions; Other Specialized Institutions; Not Classified.

NOTE: "U.S. science and engineering graduate students" includes U.S. citizens and permanent residents, excludes nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System and National Science Foundation/SRS, Survey of Graduate Students and Postdoctorates in Science and Engineering, fall 1995.

Table C7—Among all full-time science and engineering graduate students at doctorate-granting institutions, the percentage having research or teaching assistantships, by aggregated field of study: Fall 1995

	Research assistantship			Teaching assistantship		
	NPSAS:96, fall 1995	(SE*)	NSF graduate student survey, fall 1995	NPSAS:96, fall 1995	(SE*)	NSF graduate student survey, fall 1995
Aggregated field of study						
Natural sciences and mathematics	33.5	(7.8)	40.8	39.4	(7.9)	30.3
Social sciences and psychology	14.5	(6.1)	10.9	31.6	(8.4)	17.3
Engineering, total	31.2	(9.1)	40.9	7.1	(4.7)	15.2
Science and engineering, total	26.9	(5.1)	30.0	32.1	(5.6)	22.0
National estimate	65,266		83,369	77,924		61,134

*Standard error of the NPSAS:96 estimate. No differences were found between NPSAS:96 and NSF-GSS percentages at the 0.05 level.

NOTE:Because the NSF graduate student survey does not collect mechanism of support data by citizenship status, this table pertains to all full-time science and engineering graduate students, including nonresident aliens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Graduate Data Analysis System and National Science Foundation/SRS, Survey of Graduate Students and Postdoctorates in Science and Engineering, fall 1995.

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97-07	The Determinants of Per-Pupil Expenditures in Private Elementary and Secondary Schools: An Exploratory Analysis	Stephen Broughman
97-09	Status of Data on Crime and Violence in Schools: Final Report	Lee Hoffman
97-10	Report of Cognitive Research on the Public and Private School Teacher Questionnaires for the Schools and Staffing Survey 1993–94 School Year	Dan Kasprzyk
97-11	International Comparisons of Inservice Professional Development	Dan Kasprzyk
97-12	Measuring School Reform: Recommendations for Future SASS Data Collection	Mary Rollefson
97-14	Optimal Choice of Periodicities for the Schools and Staffing Survey: Modeling and Analysis	Steven Kaufman
97-18	Improving the Mail Return Rates of SASS Surveys: A Review of the Literature	Steven Kaufman
97-22	Collection of Private School Finance Data: Development of a Questionnaire	Stephen Broughman
97-23	Further Cognitive Research on the Schools and Staffing Survey (SASS) Teacher Listing Form	Dan Kasprzyk
97-41	Selected Papers on the Schools and Staffing Survey: Papers Presented at the 1997 Meeting of the American Statistical Association	Steve Kaufman
97-42	Improving the Measurement of Staffing Resources at the School Level: The Development of Recommendations for NCES for the Schools and Staffing Survey (SASS)	Mary Rollefson
97-44	Development of a SASS 1993–94 School-Level Student Achievement Subfile: Using State Assessments and State NAEP, Feasibility Study	Michael Ross
98-01	Collection of Public School Expenditure Data: Development of a Questionnaire	Stephen Broughman
98-02	Response Variance in the 1993–94 Schools and Staffing Survey: A Reinterview Report	Steven Kaufman
98-04	Geographic Variations in Public Schools' Costs	William J. Fowler, Jr.
98-05	SASS Documentation: 1993–94 SASS Student Sampling Problems; Solutions for Determining the Numerators for the SASS Private School (3B) Second-Stage Factors	Steven Kaufman
98-08	The Redesign of the Schools and Staffing Survey for 1999–2000: A Position Paper	Dan Kasprzyk
98-12	A Bootstrap Variance Estimator for Systematic PPS Sampling	Steven Kaufman
98-13	Response Variance in the 1994–95 Teacher Follow-up Survey	Steven Kaufman
98-14	Variance Estimation of Imputed Survey Data	Steven Kaufman
98-15	Development of a Prototype System for Accessing Linked NCES Data	Steven Kaufman
98-16	A Feasibility Study of Longitudinal Design for Schools and Staffing Survey	Stephen Broughman
1999-02	Tracking Secondary Use of the Schools and Staffing Survey Data: Preliminary Results	Dan Kasprzyk
1999-04	Measuring Teacher Qualifications	Dan Kasprzyk
1999-07	Collection of Resource and Expenditure Data on the Schools and Staffing Survey	Stephen Broughman
1999-08	Measuring Classroom Instructional Processes: Using Survey and Case Study Fieldtest Results to Improve Item Construction	Dan Kasprzyk
1999-10	What Users Say About Schools and Staffing Survey Publications	Dan Kasprzyk
1999-12	1993–94 Schools and Staffing Survey: Data File User's Manual, Volume III: Public-Use Codebook	Kerry Gruber
1999-13	1993–94 Schools and Staffing Survey: Data File User's Manual, Volume IV: Bureau of Indian Affairs (BIA) Restricted-Use Codebook	Kerry Gruber

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1999-14	1994–95 Teacher Followup Survey: Data File User's Manual, Restricted-Use Codebook	Kerry Gruber
1999-17	Secondary Use of the Schools and Staffing Survey Data	Susan Wiley
2000-04	Selected Papers on Education Surveys: Papers Presented at the 1998 and 1999 ASA and 1999 AAPOR Meetings	Dan Kasprzyk
2000-10	A Research Agenda for the 1999–2000 Schools and Staffing Survey	Dan Kasprzyk

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Adult education		
96-14	The 1995 National Household Education Survey: Reinterview Results for the Adult Education Component	Steven Kaufman
96-20	1991 National Household Education Survey (NHES:91) Questionnaires: Screener, Early Childhood Education, and Adult Education	Kathryn Chandler
96-22	1995 National Household Education Survey (NHES:95) Questionnaires: Screener, Early Childhood Program Participation, and Adult Education	Kathryn Chandler
98-03	Adult Education in the 1990s: A Report on the 1991 National Household Education Survey	Peter Stowe
98-10	Adult Education Participation Decisions and Barriers: Review of Conceptual Frameworks and Empirical Studies	Peter Stowe
1999-11	Data Sources on Lifelong Learning Available from the National Center for Education Statistics	Lisa Hudson
Adult literacy—see Literacy of adults		
American Indian – education		
1999-13	1993–94 Schools and Staffing Survey: Data File User's Manual, Volume IV: Bureau of Indian Affairs (BIA) Restricted-Use Codebook	Kerry Gruber
Assessment/achievement		
95-12	Rural Education Data User's Guide	Samuel Peng
95-13	Assessing Students with Disabilities and Limited English Proficiency	James Houser
97-29	Can State Assessment Data be Used to Reduce State NAEP Sample Sizes?	Larry Ogle
97-30	ACT's NAEP Redesign Project: Assessment Design is the Key to Useful and Stable Assessment Results	Larry Ogle
97-31	NAEP Reconfigured: An Integrated Redesign of the National Assessment of Educational Progress	Larry Ogle
97-32	Innovative Solutions to Intractable Large Scale Assessment (Problem 2: Background Questions)	Larry Ogle
97-37	Optimal Rating Procedures and Methodology for NAEP Open-ended Items	Larry Ogle
97-44	Development of a SASS 1993–94 School-Level Student Achievement Subfile: Using State Assessments and State NAEP, Feasibility Study	Michael Ross
98-09	High School Curriculum Structure: Effects on Coursetaking and Achievement in Mathematics for High School Graduates—An Examination of Data from the National Education Longitudinal Study of 1988	Jeffrey Owings
Beginning students in postsecondary education		
98-11	Beginning Postsecondary Students Longitudinal Study First Follow-up (BPS:96–98) Field Test Report	Aurora D'Amico
Civic participation		
97-25	1996 National Household Education Survey (NHES:96) Questionnaires: Screener/Household and Library, Parent and Family Involvement in Education and Civic Involvement, Youth Civic Involvement, and Adult Civic Involvement	Kathryn Chandler
Climate of schools		
95-14	Empirical Evaluation of Social, Psychological, & Educational Construct Variables Used in NCES Surveys	Samuel Peng
Cost of education indices		
94-05	Cost-of-Education Differentials Across the States	William J. Fowler, Jr.
Course-taking		
95-12	Rural Education Data User's Guide	Samuel Peng

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Engineering		
2000-11	Financial Aid Profile of Graduate Students in Science and Engineering	Aurora D'Amico
Faculty – higher education		
97-26	Strategies for Improving Accuracy of Postsecondary Faculty Lists	Linda Zimbler
2000-01	1999 National Study of Postsecondary Faculty (NSOPF:99) Field Test Report	Linda Zimbler
Finance – elementary and secondary schools		
94-05	Cost-of-Education Differentials Across the States	William J. Fowler, Jr.
96-19	Assessment and Analysis of School-Level Expenditures	William J. Fowler, Jr.
98-01	Collection of Public School Expenditure Data: Development of a Questionnaire	Stephen Broughman
1999-07	Collection of Resource and Expenditure Data on the Schools and Staffing Survey	Stephen Broughman
1999-16	Measuring Resources in Education: From Accounting to the Resource Cost Model Approach	William J. Fowler, Jr.
Finance – postsecondary		
97-27	Pilot Test of IPEDS Finance Survey	Peter Stowe
Finance – private schools		
95-17	Estimates of Expenditures for Private K–12 Schools	Stephen Broughman
96-16	Strategies for Collecting Finance Data from Private Schools	Stephen Broughman
97-07	The Determinants of Per-Pupil Expenditures in Private Elementary and Secondary Schools: An Exploratory Analysis	Stephen Broughman
97-22	Collection of Private School Finance Data: Development of a Questionnaire	Stephen Broughman
1999-07	Collection of Resource and Expenditure Data on the Schools and Staffing Survey	Stephen Broughman
Geography		
98-04	Geographic Variations in Public Schools' Costs	William J. Fowler, Jr.
Graduate students		
2000-11	Financial Aid Profile of Graduate Students in Science and Engineering	Aurora D'Amico
Imputation		
2000-04	Selected Papers on Education Surveys: Papers Presented at the 1998 and 1999 ASA and 1999 AAPOR Meetings	Dan Kasprzyk
Inflation		
97-43	Measuring Inflation in Public School Costs	William J. Fowler, Jr.
Institution data		
2000-01	1999 National Study of Postsecondary Faculty (NSOPF:99) Field Test Report	Linda Zimbler
Instructional resources and practices		
95-11	Measuring Instruction, Curriculum Content, and Instructional Resources: The Status of Recent Work	Sharon Bobbitt & John Ralph
1999-08	Measuring Classroom Instructional Processes: Using Survey and Case Study Field Test Results to Improve Item Construction	Dan Kasprzyk
International comparisons		
97-11	International Comparisons of Inservice Professional Development	Dan Kasprzyk
97-16	International Education Expenditure Comparability Study: Final Report, Volume I	Shelley Burns
97-17	International Education Expenditure Comparability Study: Final Report, Volume II, Quantitative Analysis of Expenditure Comparability	Shelley Burns
Libraries		
94-07	Data Comparability and Public Policy: New Interest in Public Library Data Papers Presented at Meetings of the American Statistical Association	Carrol Kindel

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97-25	1996 National Household Education Survey (NHES:96) Questionnaires: Screener/Household and Library, Parent and Family Involvement in Education and Civic Involvement, Youth Civic Involvement, and Adult Civic Involvement	Kathryn Chandler
Limited English Proficiency		
95-13	Assessing Students with Disabilities and Limited English Proficiency	James Houser
Literacy of adults		
98-17	Developing the National Assessment of Adult Literacy: Recommendations from Stakeholders	Sheida White
1999-09a	1992 National Adult Literacy Survey: An Overview	Alex Sedlacek
1999-09b	1992 National Adult Literacy Survey: Sample Design	Alex Sedlacek
1999-09c	1992 National Adult Literacy Survey: Weighting and Population Estimates	Alex Sedlacek
1999-09d	1992 National Adult Literacy Survey: Development of the Survey Instruments	Alex Sedlacek
1999-09e	1992 National Adult Literacy Survey: Scaling and Proficiency Estimates	Alex Sedlacek
1999-09f	1992 National Adult Literacy Survey: Interpreting the Adult Literacy Scales and Literacy Levels	Alex Sedlacek
1999-09g	1992 National Adult Literacy Survey: Literacy Levels and the Response Probability Convention	Alex Sedlacek
1999-11	Data Sources on Lifelong Learning Available from the National Center for Education Statistics	Lisa Hudson
2000-05	Secondary Statistical Modeling With the National Assessment of Adult Literacy: Implications for the Design of the Background Questionnaire	Sheida White
2000-06	Using Telephone and Mail Surveys as a Supplement or Alternative to Door-to-Door Surveys in the Assessment of Adult Literacy	Sheida White
2000-07	"How Much Literacy is Enough?" Issues in Defining and Reporting Performance Standards for the National Assessment of Adult Literacy	Sheida White
2000-08	Evaluation of the 1992 NALS Background Survey Questionnaire: An Analysis of Uses with Recommendations for Revisions	Sheida White
2000-09	Demographic Changes and Literacy Development in a Decade	Sheida White
Literacy of adults – international		
97-33	Adult Literacy: An International Perspective	Marilyn Binkley
Mathematics		
98-09	High School Curriculum Structure: Effects on Coursetaking and Achievement in Mathematics for High School Graduates—An Examination of Data from the National Education Longitudinal Study of 1988	Jeffrey Owings
1999-08	Measuring Classroom Instructional Processes: Using Survey and Case Study Field Test Results to Improve Item Construction	Dan Kasprzyk
Parental involvement in education		
96-03	National Education Longitudinal Study of 1988 (NELS:88) Research Framework and Issues	Jeffrey Owings
97-25	1996 National Household Education Survey (NHES:96) Questionnaires: Screener/Household and Library, Parent and Family Involvement in Education and Civic Involvement, Youth Civic Involvement, and Adult Civic Involvement	Kathryn Chandler
1999-01	A Birth Cohort Study: Conceptual and Design Considerations and Rationale	Jerry West
Participation rates		
98-10	Adult Education Participation Decisions and Barriers: Review of Conceptual Frameworks and Empirical Studies	Peter Stowe
Postsecondary education		
1999-11	Data Sources on Lifelong Learning Available from the National Center for Education Statistics	Lisa Hudson

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1999-03	Evaluation of the 1996–97 Nonfiscal Common Core of Data Surveys Data Collection, Processing, and Editing Cycle	Beth Young
2000-10	A Research Agenda for the 1999–2000 Schools and Staffing Survey	Dan Kasprzyk
Schools – safety and discipline		
97-09	Status of Data on Crime and Violence in Schools: Final Report	Lee Hoffman
Science		
2000-11	Financial Aid Profile of Graduate Students in Science and Engineering	Aurora D'Amico
Software evaluation		
2000-03	Strengths and Limitations of Using SUDAAN, Stata, and WesVarPC for Computing Variances from NCES Data Sets	Ralph Lee
Staff		
97-42	Improving the Measurement of Staffing Resources at the School Level: The Development of Recommendations for NCES for the Schools and Staffing Survey (SASS)	Mary Rollefson
98-08	The Redesign of the Schools and Staffing Survey for 1999–2000: A Position Paper	Dan Kasprzyk
Staff – higher education institutions		
97-26	Strategies for Improving Accuracy of Postsecondary Faculty Lists	Linda Zimbler
State		
1999-03	Evaluation of the 1996–97 Nonfiscal Common Core of Data Surveys Data Collection, Processing, and Editing Cycle	Beth Young
Statistical methodology		
97-21	Statistics for Policymakers or Everything You Wanted to Know About Statistics But Thought You Could Never Understand	Susan Ahmed
Students with disabilities		
95-13	Assessing Students with Disabilities and Limited English Proficiency	James Houser
Survey methodology		
96-17	National Postsecondary Student Aid Study: 1996 Field Test Methodology Report	Andrew G. Malizio
97-15	Customer Service Survey: Common Core of Data Coordinators	Lee Hoffman
97-35	Design, Data Collection, Interview Administration Time, and Data Editing in the 1996 National Household Education Survey	Kathryn Chandler
98-06	National Education Longitudinal Study of 1988 (NELS:88) Base Year through Second Follow-Up: Final Methodology Report	Ralph Lee
98-11	Beginning Postsecondary Students Longitudinal Study First Follow-up (BPS:96–98) Field Test Report	Aurora D'Amico
98-16	A Feasibility Study of Longitudinal Design for Schools and Staffing Survey	Stephen Broughman
1999-07	Collection of Resource and Expenditure Data on the Schools and Staffing Survey	Stephen Broughman
1999-17	Secondary Use of the Schools and Staffing Survey Data	Susan Wiley
2000-01	1999 National Study of Postsecondary Faculty (NSOPF:99) Field Test Report	Linda Zimbler
2000-02	Coordinating NCES Surveys: Options, Issues, Challenges, and Next Steps	Valena Plisko
2000-04	Selected Papers on Education Surveys: Papers Presented at the 1998 and 1999 ASA and 1999 AAPOR Meetings	Dan Kasprzyk
Teachers		
98-13	Response Variance in the 1994–95 Teacher Follow-up Survey	Steven Kaufman
1999-14	1994–95 Teacher Followup Survey: Data File User's Manual, Restricted-Use Codebook	Kerry Gruber
2000-10	A Research Agenda for the 1999–2000 Schools and Staffing Survey	Dan Kasprzyk
Teachers – instructional practices of		
98-08	The Redesign of the Schools and Staffing Survey for 1999–2000: A Position Paper	Dan Kasprzyk
Teachers – opinions regarding safety		
98-08	The Redesign of the Schools and Staffing Survey for 1999–2000: A Position Paper	Dan Kasprzyk

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Teachers – performance evaluations		
1999-04	Measuring Teacher Qualifications	Dan Kasprzyk
Teachers – qualifications of		
1999-04	Measuring Teacher Qualifications	Dan Kasprzyk
Teachers – salaries of		
94-05	Cost-of-Education Differentials Across the States	William J. Fowler, Jr.
Variance estimation		
2000-03	Strengths and Limitations of Using SUDAAN, Stata, and WesVarPC for Computing Variances from NCES Data Sets	Ralph Lee
2000-04	Selected Papers on Education Surveys: Papers Presented at the 1998 and 1999 ASA and 1999 AAPOR Meetings	Dan Kasprzyk
Violence		
97-09	Status of Data on Crime and Violence in Schools: Final Report	Lee Hoffman
Vocational education		
95-12	Rural Education Data User's Guide	Samuel Peng
1999-05	Procedures Guide for Transcript Studies	Dawn Nelson
1999-06	1998 Revision of the Secondary School Taxonomy	Dawn Nelson