DOCUMENT RESUME

ED 375 768 HE 027 867

AUTHOR	Sutterlin, Rebecca; Kominski, Robert A.
TITLE	Dollars for Scholars: Postsecondary Costs and Financing, 1990-1991. Current Population Reports, Household Economic Studies.
INSTITUTION	Bureau of the Census (DOC), Washington, DC. Economics and Statistics Administration.
PUB DATE	Sep 94
NOTE	71p.
AVAILABLE FROM	Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.
PUB TYPE	Statistical Data (110) -- Reports - Research/Technical (143)
JOURNAL CIT	Current Population Reports; series P-70 n39 Sep 1994
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Business Education; Colleges; Enrollment; Ethnicity; Family Income; *Paying for College; *Postsecondary Education; Race; Sex; *Student Characteristics; *Student Costs; *Student Financial Aid; Tables (Data); Technical Institutes; Vocational Schools
IDENTIFIERS	*Survey of Income and Program Participation

ABSTRACT

This report looks at the individuals who were enrolled in postsecondary school during the 1990-1991 school year and the costs and financing of their education. Using data from the Wave 5 component of the 1990 Survey of Income and Program Participation (SIPP), the report examines patterns of school enrollment, education costs, financial aid, and the associated characteristics of postsecondary students in the U.S. The report includes those enrolled in two-year and four-year colleges as well as vocational, technical, and business schools. The tabulations show the numbers of high school graduates enrolled in postsecondary institutions by a variety of demographic, social, and economic characteristics. Other tabulations show the average costs, financial aid received, net costs, and numbers of aid recipients by level of enrollment. These tabulations are crossed by gender, family income, race/ethnicity, and student dependency status. Appendices provide tabulations referring to the school year 1987-1988, an overview of the SIPP program, definitions and explanations, an analysis of the source and accuracy of the estimates and the data quality, and a copy of the questionnaire. The report's highlights indicate that the average total cost of schooling was $2,653 per student, and that among those students who received some kind of financial aid, about 75 percent of their costs were covered. (JDD)

CURRENT POPULATION REPORTS
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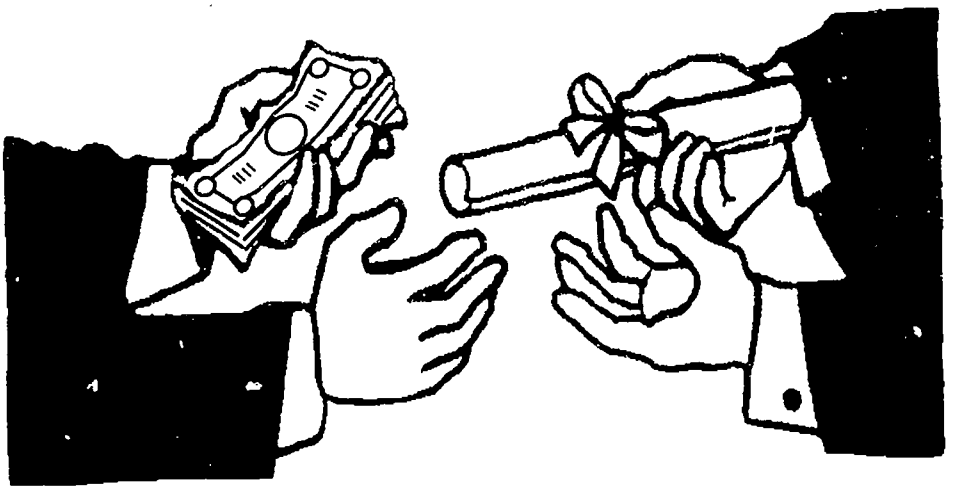
Dollars for Scholars: Postsecondary Costs and Financing, 1990-1991



by Rebecca Sutterlin
Robert A. Kominski

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Acknowledgments

This report was prepared in Population Division, under the general direction of **Suzanne Bianchi,** Assistant Division Chief for Social and Demographic Statistics. Content review was provided by **Jay Noell,** of the Congressional Budget Office, and **Andrew Malizio,** of the National Center for Education Statistics. **Andrea Adams,** Population Division, assisted with table and manuscript preparation.

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Sampling review was conducted by **Derrick Butler,** under the supervision of **Vicki Huggins,** Chief, Survey of Income and Program Participation Branch, Demographic Statistical Methods Division.

The staff of the Administrative and Publications Services Division, **Walter C. Odom,** Chief, provided publication planning, editorial review, design, composition, and printing, planning, and procurement. **Frances B. Scott** provided publication coordination and editing.

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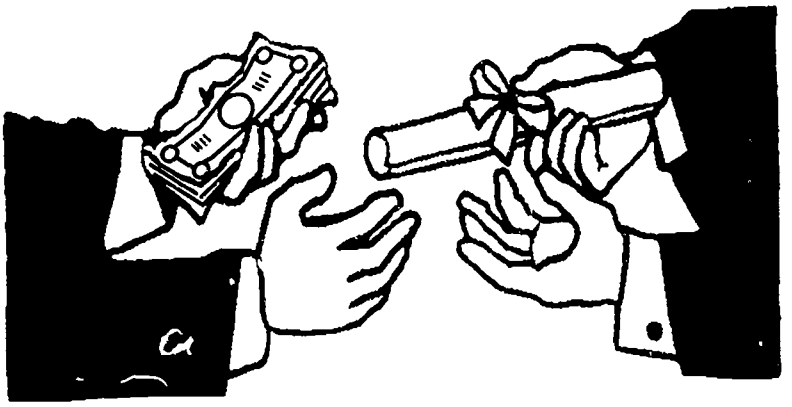

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Sutterlin, Rebecca and Robert A. Kominski, *Dollars for Scholars: Postsecondary Costs and Financing, 1990-1991.*
U.S. Bureau of the Census, Current Population Reports, P70-39.
U.S. Government Printing Office, Washington, DC, 1994.

For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

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HIGHLIGHTS

- During school year 1990-1991 an estimated 20.6 (±.5) million high school graduates ages 17 or above were enrolled in postsecondary school for at least some time, approximately 14 (±.4) percent of that population.
- In 1990-1991 the average total costs of schooling for all postsecondary students, irrespective of type of school, level of enrollment, or amount of time spent in school, was $2,653 (±98) per student.
- Of the estimated 20.6 (±.5) million students who were enrolled in the past year, 51 (±1.4) percent received some kind of financial assistance from at least one source.
- The average overall aid package among persons who received any financial aid at all was $2,919 (±152).
- While the most common source of aid was employer assistance with 3,617,000 (±232,000) recipients, this was also the lowest average aid source at $979 (±106).
- The single largest aid amount was that based on loans, at $3,155 (±168), while the smallest number of people served by any source was the 416,000 (±79,000) reporting aid from one of the many veterans' programs.
- Half of both men and women receive some type of aid and both receive comparable amounts, but there is variation in the sources of this aid. Women were more likely than men to have received aid from a Pell Grant or from a loan, while men were more likely to have gotten aid from a veterans' program or their employer.
- For Black students, Pell Grants were the single largest source of aid (in terms of proportions served); for White students the largest source of aid was in the form of emoloyer assistance.
- Generally. the proportion of students receiving aid decreased as their family income increased, going from 59.5 (±2.4) percent of students in the low income category to 43.7 (±2.2) percent in the highest income category.
- Over three and a half million students were receiving financial aid from more than one source; this is about one-third of all students who received aid.
- The single most common multiple aid package was a loan and a Pell Grant, held by 6 (±.9) percent of aid recipients, with another 3 (±.6) percent receiving a loan, a Pell Grant, and something else.
- Among those students who received some kind of financial aid, on average 75 (±1.6) percent of their costs were covered.
- About 60 (±2.4) percent of students from the lowest income category received aid, and on average, about 80 (±1.6) percent of their costs were covered. By contrast, 44 (±2.2) percent of the students from the highest family income category received some kind of aid, and 69 (±3.2) percent of their costs were covered.

INTRODUCTION

Each year, millions of persons throughout the nation attend colleges and other postsecondary institutions in pursuit of knowledge, skills, and training that will make them better equipped citizens and workers. While a wide array of educational opportunities beyond high school are available to most adults, they are not without financial cost. Indeed, there is much current debate about how best to provide access to higher education to as many people as desire it. In this report we look at the individuals who were enrolled in postsecondary school at any time during the 1990-1991 school year and the costs and financing of their education.

Using data from the Survey of Income and Program Participation (SIPP), this report examines patterns of school enrollment, education costs, financial aid, and the associated social, demographic, and economic characteristics of postsecondary students in the United States. Often, the collection of postsecondary enrollment data includes only those enrolled in 2- or 4-year colleges; that is, undergraduate and graduate/professional degree programs. This report also includes persons in vocational, technical, and business schools. The tabulations show the numbers of high school graduates (17 years and older) enrolled in postsecondary institutions by a variety of demographic, social, and economic characteristics. Other tabulations show the average

costs, financial aid received, net costs, and numbers of aid recipients by level of enrollment. These tabulations are crossed by gender, family income, race/ethnicity, and student dependency status.

The analysis is based on data collected as part of the Wave 5 (interview) of the 1990 SIPP panel. These data were gathered in the 4-month period from June through September of 1991. The fifth wave includes a section of questions regarding school enrollment and financing for the past year (see appendix F for a copy of the questionnaire). Thus, the period of enrollment under examination basically reflects the 1990-1991 school year. Analysis of enrollment is restricted to persons 17 years and older with at least a high school diploma or the equivalent. Tabulations of the financing data focus on those high school graduates age 17 and over who were enrolled in a postsecondary institution.

Other tabulations included in this report refer to the school year 1987-1988 and are found in appendix A, tables A-1 through A-6. These data were collected in Wave 5 of the 1987 SIPP panel during the 4-month period from June through September of 1988. Tables A-1 to A-6 are laid out in the same format as tables 1 to 6 for comparison purposes. The analysis in this report, however, is restricted to data from the 1990 SIPP panel.

A note of caution should be issued to users of this report who are also familiar with other sources of postsecondary school financing data. The SIPP estimates differ from those found in the 1989-1990 National Postsecondary Student Aid Study (NPSAS) administered by the Department of Education. While these two surveys reflect two different academic years (NPSAS collected data for the 1989-1990 school year while SIPP data reflects 1990-1991), there should be some correspondence. However, SIPP and NPSAS may differ due to differences in the populations studied. This is most likely due to the ability of SIPP to collect data for those students of the shortest enrollment durations — usually in non-traditional postsecondary institutions. Why would there be more short-term students captured in SIPP? Institutions are ineligible in NPSAS if they offer only correspondence courses; offer only courses or seminars of less than 3 months duration; or provide only avocational, recreational, or remedial courses.[1] However, students in courses of less than 3 months duration and the other types of courses mentioned are very likely to have reported themselves as enrolled in the SIPP survey since the SIPP enrollment question is so broad. Table E-4 in appendix E shows weighted estimates of enrollment level for both surveys. SIPP shows a substantially higher number of persons enrolled in vocational, technical, and business schools or other types of noncollegiate postsecondary institutions. For a more detailed discussion on data quality, see appendix E.

[1]See the "Methodology Report for the 1990 National Postsecondary Student Aid Study" for more detail.

CHARACTERISTICS OF POSTSECONDARY STUDENTS

Table 1 shows some of the basic characteristics of persons who were enrolled in postsecondary school at any time during the 1990-1991 school year. Enrollment as measured in this report is not necessarily continuous throughout the entire school year. Respondents were asked whether or not they were enrolled at any time in the past 12 months. This includes not only year-round enrollees, but also those who were enrolled for one term/semester and those who may have dropped out before completing the term. Enrollment is not confined to full-time students, but also includes those who were enrolled part-time, as well as persons who were taking only one course or were not working towards a degree. Consequently, the enrollment estimates presented in this report are higher than those from surveys using a "snapshot" or one point in time approach in collecting the data (e.g., college enrollment numbers estimated from the October Current Population Survey). At levels beyond high school, enrollment is not necessarily a year-long activity; people move in and out of the system much more rapidly than at lower levels. In this regard, SIPP provides a more realistic picture of the total number of persons enrolled in a given year than does a simple one-time cross-sectional survey.

Table 1 shows that in 1990-1991 an estimated 20.6 million high school graduates ages 17 and above had been enrolled in postsecondary school, approximately 14 percent of the eligible population.[2] A sizable segment of these students (35 percent) were enrolled in the first 2 years of college (this includes both 2-year and 4-year institutions). About 25 percent were enrolled in the third and fourth years of college, 19 percent in the fifth year or higher, and 20 percent in some type of noncollegiate postsecondary school.[3]

Some variation in the patterns of enrollment by level can be observed in various demographic subgroups. For example, a higher proportion of women than men are enrolled in the first 2 years of college (37 percent versus 32 percent), and a larger proportion of men than women are in a vocational, technical, business, or other school (23 percent versus 18 percent). This does not necessarily mean men are less likely to attend 4-year institutions; the higher college enrollment of women in years one and two may reflect a higher enrollment by women in 2-year associate degree programs. Although the type of degree sought cannot be determined from the data (associate versus bachelor's), it is clear that similar proportions of each sex are enrolled in the third

[2]The Current Population Survey shows an estimated 13.6 million persons 17 years and over enrolled in college in October 1990.

[3]The proportion of students enrolled in the fifth year of college or higher and in a noncollegiate postsecondary institution are not significantly different.

and fourth years of college. Men may be more likely to attend vocational, technical, or business schools whereas women may enroll in associate degree programs in junior or 2-year colleges.

Level of enrollment also differs across race/ethnicity groups. While Whites have greater proportions enrolled at the graduate level (21 percent in the fifth year of college or more) than either Hispanics or Blacks (both at 9 percent),[4] a greater proportion of both Black and Hispanic students are enrolled in noncollegiate schooling (26 percent and 28 percent, respectively) than are Whites (20 percent).[5]

Variation across other dimensions such as age and marital status show what may be considered typical life course patterns. Many students enroll in college shortly following high school graduation. A traditional life course pattern would include school completion followed by employment and family formation. As might be expected, the proportion of persons enrolled decreases with increases in age. Half of all persons ages 17 to 24 are enrolled in some type of schooling, compared to only 16 percent of those ages 25 to 34. Similarly, persons who have never married are more likely to have been enrolled in the past year than were any other marital status group.

Not only do persons in different stages of the life course differ in the overall proportion enrolled, but there are also differences in the level of enrollment. For example, the vast majority of the youngest age group is enrolled in the first 4 years of college. Relatively high proportions of persons 25 and over enroll in the graduate level (5th year of college or more)[6] and in other schooling such as vocational or technical schools in comparison to the younger students. A similar pattern is seen when comparing never married persons to married persons, where the enrollment patterns of never married persons follow those of the youngest age group. Veterans, who tend to be older because of their time in the military, also have higher proportions enrolled in noncollegiate postsecondary schools than do non-veterans.

One might expect economic circumstances to be related to enrollment, but the data in table 1 show some surprising findings. The highest overall enrollment level is reported by those persons from the lowest family income category. This may be due to the fact that many of these persons are "independent" students who are reporting only their own income, as opposed to "dependent" students who may still be living with or be supported by their parents. Across income categories, the proportion enrolled in noncollegiate schools — that is vocational, technical, or business, schools — drops substantially for persons with higher family incomes (only 11.9 percent of students in the highest income category are enrolled in noncollegiate institutions compared to 23.4 percent of students with average monthly family income below $1,250). Conversely, the proportion enrolled at the graduate level is quite high for those in the highest income group.

It is important to remember when examining the relationship between income and enrollment that not all students are "traditional" students who attend college immediately after high school and who are supported by their parents; table 1 includes all students, the traditional and the non-traditional. Another way to look at the relationship between income and enrollment is to examine only the traditional-aged college students. Typically, the "traditional" postsecondary student is a young adult between the ages of 18 and 24 often still economically dependent on a parent or parents. Thus, one pool of potential students consists of unenrolled young adults who have yet to complete 4 years of college.[7] Table A and figure 1 show enrollment status by income for young adults who have not completed 4 years of college. The data indicate that those young adults with higher family incomes are more likely to be enrolled and those in the lowest family income category are the least likely to be enrolled. It cannot be determined here whether or not these unenrolled young adults have the financial means to attend a postsecondary institution. Some of the young adults are likely to be in the lowest income group because they are already in the labor force and economically independent of their family of origin; these persons would likely have lower incomes since they are often in entry-level jobs. A substantial proportion, however, are reported as living with at least one parent.[8]

Table 1 also shows enrollment by dependency status. Dependency status is defined in terms similar to those used by federal aid programs such as the Pell Grant, although the definitions are not exactly comparable due to restrictions of the SIPP data (see appendix B for the definition). Not unexpectedly, a clear majority of students are classified as independent (70 percent), since we are looking at all adults, not just traditional-age students. Half of the dependent students reported living at home. The majority of dependent students were

[4]The race/ethnicity categories used in this report are: Hispanic; White, not Hispanic; Black, not Hispanic; and, other races, not Hispanic. Thus, references to "White," "Black" and "other races" throughout this report refer only to the non-Hispanic members of these groups.

[5]The proportions of Hispanic and Black students enrolled in noncollegiate schools are not significantly different.

[6]The year of college may not correspond directly to the level of enrollment. Although persons enrolled in the 5th year of college are likely to be enrolled in graduate or professional school, they may also be 5th year undergraduates.

[7]It should be noted that this pool may have attained an associates degree or a vocational or technical school license, diploma, or certificate. Of course, they are still eligible for undergraduate enrollment in a 4-year college.

[8]Further analysis shows that 41.5 percent of not enrolled young adults are reported as child of the reference person; an additional 5.1 percent are some other relative (not spouse) of the reference person. Of the remainder, 42.2 percent are a reference person or spouse of the reference person and the rest are nonrelatives of the reference person, but some may be related to other household members.

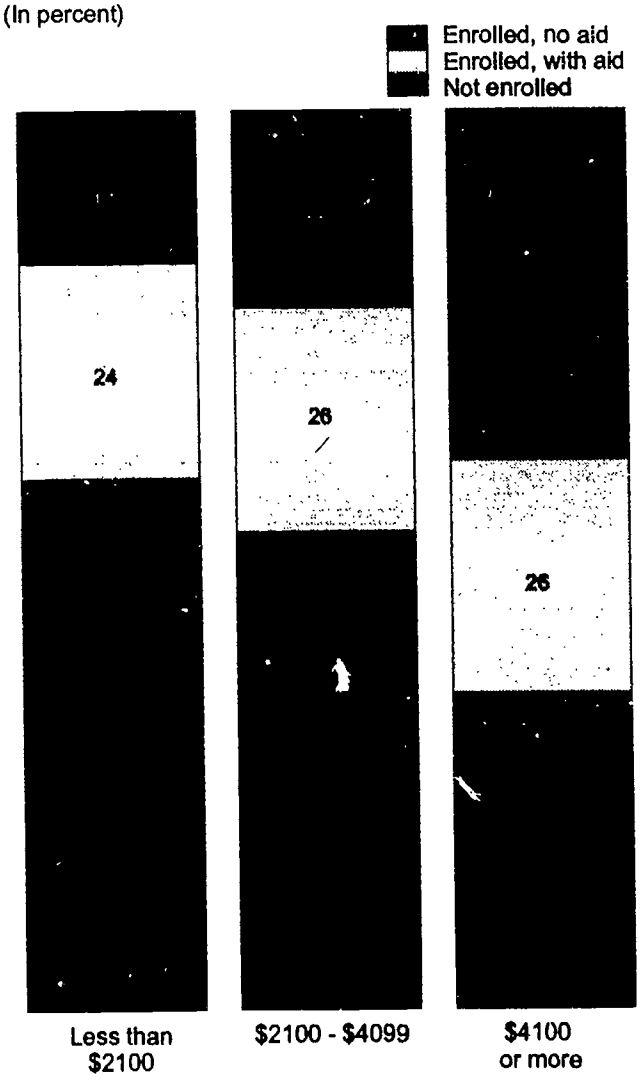
Table A. **Persons Enrolled by Average Monthly Family Income and Aid Recipiency for Persons 18-24 Years of Age With Less Than 4 Years of College Completed: 1990-1991**

(In thousands)

Persons	Total	Average monthly family income					
		Less than $2,100		$2,100 to $4,099		$4,100 or more	
		Number	Percent	Number	Percent	Number	Percent
Total	17,968	6,743	100	5,327	100	5,898	100
Not enrolled	8,888	4,012	59	2,801	53	2,075	35
Enrolled	9,080	2,730	40	2,527	47	3,823	65
Receives aid	4,515	1,616	24	1,369	26	1,531	26
No aid	4,565	1,115	17	1,158	22	2,292	39

Figure 1.
Family Income by Enrollment and Aid Received for 18-24 Year Olds: 1990-1991

(In percent)



enrolled in the first or second year of college (55 percent). Independent students, however, are distributed fairly evenly across the four levels of enrollment.[9] Most of the students in year five or higher are classified as independent (96 percent). Many of these students are likely to be in a graduate or professional degree program. They are generally a group of students who are older and consequently more likely to be independent of their parents. The majority of noncollegiate school enrollees are also independent students (87 percent). Persons may be more likely to attend this type of school after being employed and discovering vocational opportunities. These students also tend to be at a different stage in the life course. For example, half of vocational/technical/business students are married — this factor alone qualifies them as independent.

The last panel of table 1 shows the proportion of students who reported receiving aid of any type. Although the largest number of students receiving aid were in their early college years, the proportion of students receiving financial aid in some form does not differ significantly across levels of enrollment. One half of all postsecondary students reported receiving financial assistance of some kind in the 1990-1991 school year.

POSTSECONDARY COSTS

Enrollment in higher education is not without real financial costs for most students. Generally, these costs have three basic components: actual tuition and fees that are assessed; books and educational supplies; and for students living away from home, the cost of room and board. In this section we examine these three cost components as well as their sum. In the analysis that follows costs are reported for all types of students in the past year, including full-time and part-time, as well as those attending one or more terms/semesters. Table 2

[9]The proportion of independent students enrolled in college years 1 to 2, college years 5 or higher, and noncollegiate postsecondary schools are not significantly different; the proportion enrolled in college years 3 to 4 is slightly lower than each of the other levels.

shows average total costs, as well as tuition and fees, books and supplies, and room and board, for different levels of enrollment. Average total cost is the total value of the three components of tuition and fees, books, and room and board, and is computed before financial aid is taken into account.[10] In 1990-1991 the average total costs of schooling for all postsecondary students, irrespective of type of school, level of enrollment or amount of time spent in school, was $2,653.

While we might expect average costs to be higher for private institutions than for public, this information was not collected in the SIPP data. We might also expect variation in costs by the level of enrollment, and this is generally borne out. Table 2 and figure 2 show that on average, noncollegiate (that is, vocational, technical, or business) schools are the least costly to attend ($1,066),[11] while students in the third and fourth year of college have the highest average total costs ($3,825). This pattern holds for tuition and for books, with significantly lower costs in noncollegiate institutions. Room and board costs across the different college levels are relatively similar;[12] however, those for students in other postsecondary schools were significantly lower at $1,874.

Examination of the differences in costs between men and women indicate that there is no significant difference in the total average costs or in any of the individual cost components. One sizable difference in cost is seen across race and ethnic groups, where Hispanics have lower total costs ($1,882) than any other group, as well as the lowest average tuition and fees ($1,275). Overall costs, as well as those of the three individual components, do not differ between White and Black students.[13]

Differences in costs by family income are somewhat counter-intuitive. Although students from the lowest income group have lower total costs than those from the highest group ($2,627 versus $2,982 respectively), the middle income group has the lowest average total costs at $2,302. This is somewhat unexpected since one might assume that higher income families might be more disposed to choose more select colleges, and thus, incur higher costs, while students from less well-to-do families would choose more economical options. The inconsistency may be explained in part by who is in the lowest income group and who is eligible for financial aid. For example, graduate students tend to have little or no income while in school, while younger undergraduates are often supported by their families, having larger family incomes than the independent graduate students. This notion is supported by the higher total costs reported by low income students in the graduate school category in comparison to the total costs of the other two income groups.

A different way of looking at this phenomenon is by examining the data for students classified by their dependency status. Simply put, "dependent" students are assumed to still be a part of their family of origin — that is, the family in which they grew up. For the most part, dependent students tend to be young undergraduates. Independent students, by comparison, are not as economically bound to their original family. They have struck out on their own, perhaps as a single individual, or have created a family of their own. Many independent students are graduate students. Obviously, the dependency concept relates strongly to "who pays the bills" as far as college financing is concerned. We use a series of variables, described in appendix B, to define dependent and independent status of students.

On average, the total cost for dependent students is much higher at $4,387 than those of independent students ($1,923). This holds true for average tuition and fees, books and supplies, and room and board. Dependent students, being somewhat more "traditional," may very well include some of the persons attending higher cost colleges and universities. Dependent students may also be more likely to go to school full-time, driving up average costs. Independent students on the other hand are supporting themselves and may also be supporting a family, and are probably more likely to look for low-cost educational sources. Independent students are probably also more likely to be part-time as they may not have the luxury to attend full-time if they are in the labor force supporting themselves or their family, which would also indicate lower costs.

FINANCIAL AID

For many students, finding a way to finance postsecondary education may be as much of a challenge as the academic training they will have to master. In general, the costs of higher education are not as prohibitive if financial aid is available. A wide variety of sources of financial aid are available to students and their families. Some of these are competitive; some are based on financial need; others are direct grants; still others are loans requiring repayment. In the SIPP, students were asked about 12 possible sources of educational financing they might have received; these are shown in appendix F. Our analysis of these 12 sources indicates

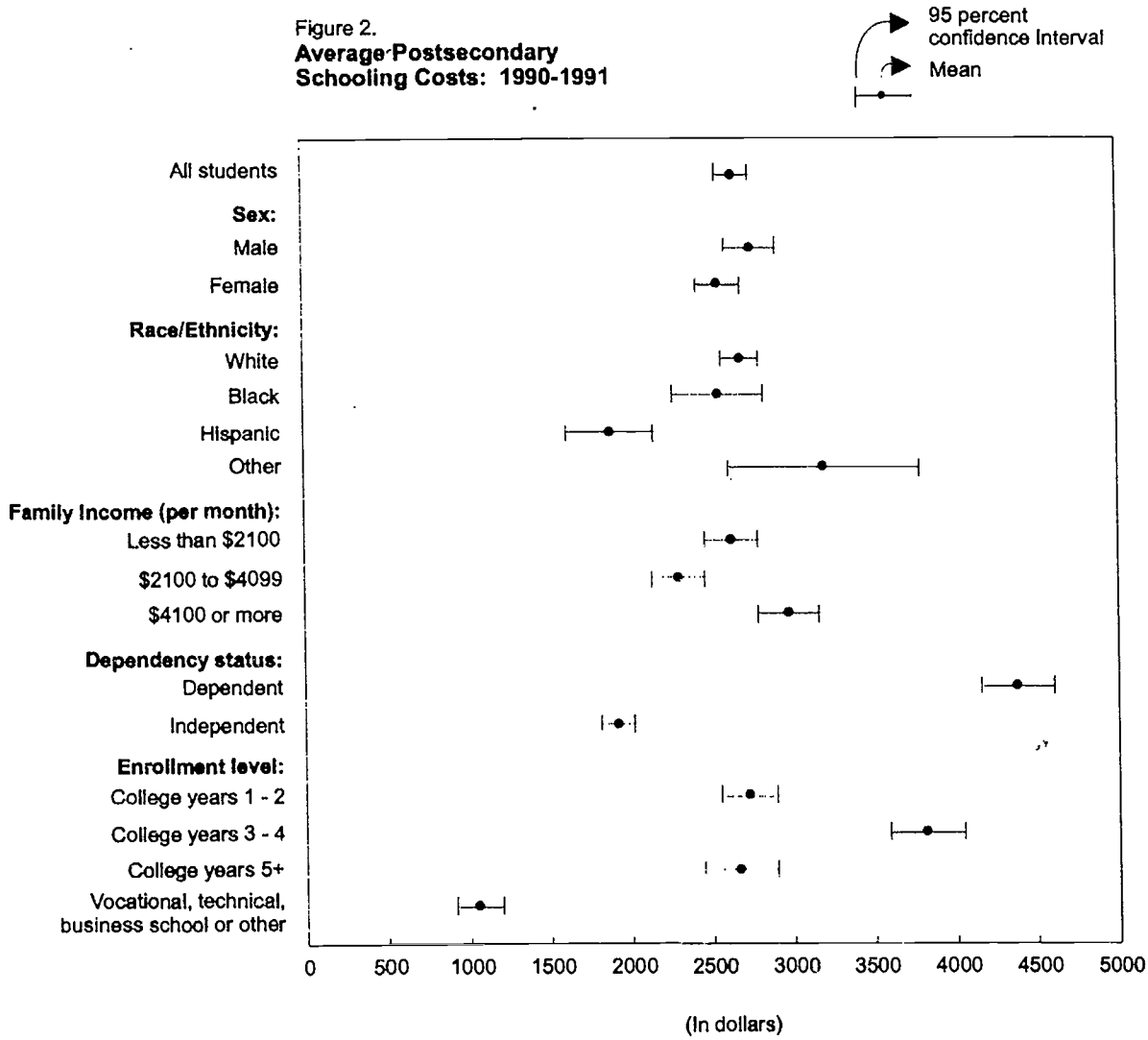
[10]The average value is for all students, including those who have no costs in any one or all of the components.

[11]The average cost for noncollegiate schools in SIPP is considerably lower than that reported in the NPSAS. See appendix E for a detailed discussion on the differences between SIPP and NPSAS data.

[12]For persons enrolled at the graduate level, room and board costs are significantly lower than those of students in the third and fourth year of college ($2,931 versus $3,465); however, room and board costs for graduate students are not statistically different from those of students in the first and second year of college ($2,931 versus $3,203). The cost of room and board does not differ significantly between students in the first 2 years of college and those in the third and fourth year.

[13]Total cost does not differ significantly between White students and students of "other" races; however, Black students have significantly lower total costs than do students of "other" races.

Figure 2.
Average Postsecondary Schooling Costs: 1990-1991



that some have very few recipients and cannot be reliably disaggregated given the small number of sample cases in the SIPP for these sources. For this reason, we have collapsed the sources into seven categories to provide more detail about the recipients.

Table 3 shows data for the seven collapsed sources of financial assistance. This table provides information on the number and percentage of students receiving each source, the average amount received, and the percentage of total aid received that is due to this source, by enrollment levels. Note that the sum of recipients across all sources does not equal the total number of recipients of aid, since students may receive more than one source of financial assistance.

Of the estimated 20.6 million students who were enrolled in the previous year, 51 percent received some kind of financial assistance from at least one source. This level of aid receipt was remarkably consistent across the different enrollment levels, with no category exceeding 54 percent or below 49 percent.

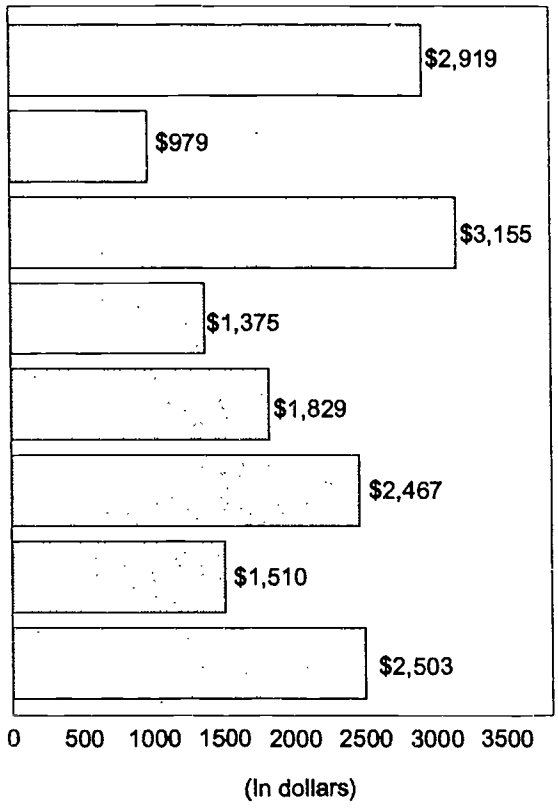
Overall, the average aid package (which may include multiple sources of assistance) among persons who received any aid, was $2,919. Unlike the proportion receiving aid, however, the average amount of aid varies significantly by level of enrollment. For example, persons enrolled in the fifth year or higher of college reported average aid packages of $4,223, while those enrolled in noncollegiate institutions reported significantly smaller packages of $1,673. Aid packages were also higher for students in the third and fourth year of college ($3,312) than for those in the first or second year ($2,573).

As one might expect, the actual amount of aid received from different sources varies greatly, as shown in figure 3. At least part of this is due to limits placed on some aid programs, loans, and grants.[14] While the most common source of aid was employer assistance or Job Training Partnership Act (JTPA) programs (most of

[14]For example, the maximum Pell Grant award in 1991 was $2,300 according to the Department of Education.

Figure 3.
Recipients of Financial Aid and Mean Amount Received: 1990-1991

	Number of recipients (In thousands)	Percent of all students
All sources	10,461	51
Employer assistance	3,617	18
Loan	3,022	15
Pell Grant	2,881	14
Other	2,788	14
Fellowship/scholarship	2,436	12
SEOG/College work study	890	4
GI Bill/VEAP	416	2



which was employer assistance) with 3,617,000 recipients, this was also the lowest average amount of aid at $979. One can imagine many situations where an employer will have paid for a course or two, thus requiring a relatively small financial expenditure. The single largest aid amount was that based on loans, at $3,155, while the smallest number of people served by any source was the 416,000 reporting aid from one of the many veterans' programs.

Table 4 shows the kinds and amounts of aid received by students of different demographic and economic backgrounds. Half of both men and women receive some form of assistance and both receive comparable amounts, but there is variation in the sources of aid received. For example, women were more likely than men to have received aid from a Pell Grant or a loan, while men were more likely to have gotten aid from veterans' programs or from their employer. The largest aid components for men were given in the form of loans, veterans' benefits, and fellowships and scholarships (at $2979, $2761, and $2971, respectively). For women, the largest single source was in the form of loans ($3,280). Men were awarded a substantially higher amount in terms of scholarships, fellowships, and tuition reductions than were women ($2,971 versus $2,068) which is money that does not have to be repaid.

Differences in sources and amounts of aid are also apparent across race and ethnic groups. While 58.3 percent of Black students reported some kind of aid, only about half of all Hispanic students had received some kind of assistance. Overall, average amounts ranged from $2,527 for Black students to $4,032 for students of "other" races. There was also variation in the kinds of aid received: for example, White students were less likely than either Black or Hispanic students to have been given a Pell Grant.[15] Of course, many of the White students may have come from families with sufficient economic resources which would rule out this need-based source of aid. Nearly one-fifth (19.5 percent) of all Black students had a loan of some kind, giving them a level of use of this source that was higher than that of Whites. For Blacks, Pell Grants were the single largest source of aid (in terms of proportions served), while for Whites the largest source was employer assistance. One of the most common sources of aid for Hispanic students was the Pell Grant.[16]

[15]The proportion of White students receiving a Pell Grant did not differ significantly from that of students of "other" races.

[16]The proportion of Hispanic students receiving a loan is not statistically different from the proportion receiving a Pell Grant.

Across levels of family income, it can be seen that the proportion of students receiving aid decreases as family income increases, going from 59.7 percent of students in the low income-category to 43.7 percent in the highest category. The average amount varies substantially as well, going from $2,427 for the high-income group to $3,622 for the low-income group. Specific types of aid vary as well. Since Pell Grants are need-based, it is not surprising that most of the recipients have family incomes of less than $2,100 per month. Pell Grants were the most common form of aid for students from the lowest family income group, received by 26.0 percent of them, as contrasted with just 4.3 percent of the students from the highest income group. While Pell Grants and loans are primary sources of funding for many low-income students,[17] employer assistance was the main source for students from middle and high-income families.

Similar patterns are observed across the dependent/independent student classification. Slightly more independent students receive financial aid (53 vs. 46 percent), but the average aid amount is substantially higher for the dependent students ($3,729 vs. $2,619). Dependent students are more likely than independents to have received a Pell Grant, loan or fellowship, but independent students are much more likely to receive employer assistance (24 vs 2 percent).

For many students, financial aid does not come from a single source, but takes the form of an "assistance package" that consists of several different sources. Table B shows the extent of these multiple aid packages by demographic sub-groups for the seven aid source categories we have established.[18] Over three and a half million students were receiving financial aid from more than one source, about one third of all students who received aid. Dependent students were much more likely to have received multiple sources than were independent students, with 53 percent reporting more than one source (8 percent of dependent students had four or more sources). Multiple sources also became less common with increasing family income (with 45, 34, and 23 percent for the low, middle, and high income groups, respectively).

Since Pell Grants have a fairly low limit on the grant amount, it would probably not be uncommon for many students to have both a Pell Grant and something else. The data support this notion, with the single most common multiple aid package being a Pell Grant and a loan, held by 6 percent of aid recipients. Another 3 percent received a Pell Grant, a loan, and something else. The Pell Grant/loan combinations was more common for Black students (13 percent) than for any other race/ethnic group. The 11 percent of aid recipients from low-income families receiving the same combination was greater than the proportions receiving it in the other income groups.

COSTS COVERED BY AID

By considering both the costs and financial assistance sources available to students we are able to determine how much of the overall costs of schooling are covered by some kind of financial aid. Table 5 presents costs for both those students with aid and those without. This is necessary because, as the data show, the gross costs students incur vary depending on whether or not aid is available to them. There was a difference of about $600 less in the gross costs of schooling for persons who were not receiving any kind of aid, compared to those with aid of some sort. In virtually all comparisons, persons who have no aid also have lower gross costs.[19] This is not too surprising, in that persons attending higher cost schools are often given some kind of financial inducement in the form of fellowships or loans to help them attend.

Only about half of all students received some form of financial aid. However, as can be seen in table 5, these students on average had significant proportions of their costs covered by their aid. For example, among all students who received any kind of aid, the average gross costs were $2,955, but the average amount of aid received was $2,919, implying, by subtraction, net costs of about $36 per student. Since these are average amounts, this is somewhat misleading because many students in fact received more aid than their total costs. For example, aid can take many forms, including loans, fellowships, grants, and direct payments from employers. In many cases, aid amounts are designed to cover not only tuition and fee costs, but other living expenses as well. Graduate students in particular are likely not to report room and board costs, but often receive stipends to cover these costs as well as tuition and fees. If

[17]The proportion of low-income students receiving loans does not differ significantly from those receiving "other" types of aid.

[18]Estimates in this analysis are an underestimate of all multiple recipients, since students might receive more than one loan or fellowship, and because we had previously collapsed some categories.

[19]The groups in which the gross costs did not differ between those with aid and those not receiving aid include: persons enrolled in college years 3 to 4; students of "other" races; dependent students; and students from the highest family income groups.

Table B. **Percentage of Persons With Multiple Types of Financial Assistance by Sex, Race/Ethnicity, Dependency Status, Level of Enrollment, and Family Income: 1990-1991**

Aid received	All students	Sex		Race/ethnicity				Dependency status		Level of enrollment				Average monthly family income		
		Male	Female	White	Black	Hispanic	Other	Dependent students	Independent students	College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational, technical, business school or other	Less than $2,100	$2,100 to $4,099	$4,100 or more
Total aid recepients[1]	10,461	4,773	5,687	8,381	1,128	551	401	2,825	7,635	3,601	2,652	2,136	2,072	3,717	3,410	3,333
Percent with:																
One type of aid	66	69	64	67	58	67	61	47	73	62	52	75	81	55	66	77
Veterans Assistance	2	3	1	2	2	-	2	-	3	3	2	1	1	1	3	2
SEOG/College Work Study	1	1	-	1	2	1	-	1	1	1	1	1	-	1	1	1
Pell Grant	7	4	10	6	13	17	6	9	6	12	5	1	8	11	7	2
Loan	8	8	7	7	9	13	9	8	7	5	9	11	6	7	7	8
Employer assistance/JTPA	32	36	28	35	19	21	15	3	42	23	19	41	52	19	35	42
Fellowship/Scholarship	8	8	8	9	5	7	8	17	5	11	8	9	2	6	5	14
Other Type	9	8	9	9	8	7	19	9	9	7	8	10	12	10	9	8
Multiple Types	34	31	36	33	42	33	39	53	27	38	48	25	19	45	34	23
Two types of aid	21	19	22	19	30	23	25	30	17	22	26	17	14	27	19	16
Fellowship or Scholarship/ Other	2	3	2	2	3	2	-	4	2	3	3	3	-	2	1	4
Loan/Other	2	2	2	2	2	2	2	2	2	1	2	4	1	3	3	1
Loan/Fellowship or Scholarship	3	2	3	3	1	2	8	5	2	2	3	4	2	2	3	3
Pell/Other	2	1	3	2	3	1	6	2	2	3	3	-	1	3	2	1
Pell/Fellowship or Scholarship	1	1	1	1	2	2	2	3	1	2	2	-	-	2	1	1
Pell/Loan	6	5	7	5	13	2	1	8	5	7	8	2	6	11	4	3
Three types of aid	9	9	9	9	9	7	9	15	7	11	14	6	4	12	10	5
Loan/Fellowship or Scholarship/ Other	1	1	2	1	1	1	1	2	1	1	1	3	-	2	1	1
Pell/Loan/Other	2	2	2	2	2	-	3	2	2	2	3	1	1	3	3	1
Pell/Loan/Fellowship or Scholarship	1	1	1	1	-	1	-	2	1	1	2	-	-	1	2	1
Four or more types of aid	5	4	5	5	3	3	6	8	3	6	8	2	1	6	5	2

- Represents zero.
[1] Numbers in thousands.

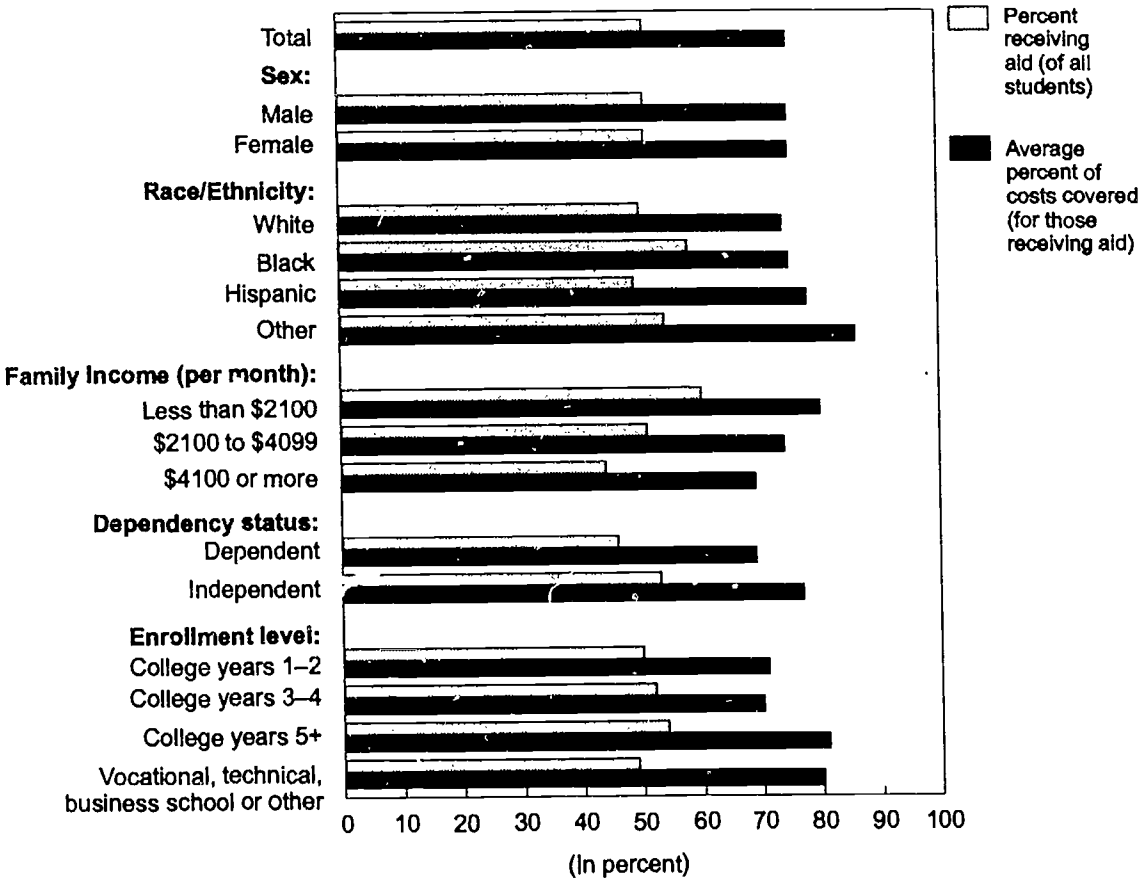
instead of computing net costs we consider the proportion of all costs that were covered for each student, then on average, about 75 percent of costs were taken care of by aid.[20]

In general, there was relatively little variation in the proportion of costs that were covered, as figure 4 shows, with most groups close to the overall level of 75 percent. Some differences are evident across different levels of school, with slightly higher cost proportions covered at the graduate and noncollegiate postsecondary levels (around 80 percent). Independent students had a higher proportion of their costs covered on average than did dependent students. However, the major variation in cost coverage is seen along lines of family income. About 60 percent of the students from the lowest income category received aid, and among these, about 80 percent of their costs were covered. By contrast, 44 percent of the students from the highest family income category received any kind of aid, and 69 percent of their costs were covered. Higher income families are usually better able to afford the costs of schooling, and much of the "financial aid" that lower income students receive comes in the form of loans which must be paid back at a later date.

Table 6 extends this discussion by showing the distribution in quartiles of the proportion of costs that are covered. As can be seen, a sizable group — 19 percent — of all students had more than 100 percent of their costs covered. This group ranged from a high of 29 percent of students from families with income of less than $2,100 a month, to 13 percent of those from families with incomes of $4,100 a month or more. Nevertheless, while many students who did receive aid had large proportions of their costs covered, it is important to remember that a substantial proportion of

[20] Note that this method assigns a coverage rate of 100 percent to all persons covered at a level of 100 percent or more. Thus, proportions exceeding 100 percent are not allowed to artificially raise the overall rate of coverage.

Figure 4.
Proportion of Students Receiving Aid and Proportion of Costs Covered: 1990-1991



students had *none* of their costs covered (49 percent). An additional 13 percent of all students had up to half of their costs covered.

MULTIVARIATE ANALYSES

Thus far, our examination of financial aid recipients and the amounts of aid received has concentrated on simple patterns of association with a variety of demographic and economic variables, considered one at a time. However, it is possible to examine the joint effects of these variables by using multivariate modeling techniques such as regression. The multivariate regression techniques allow us to simultaneously assess the influence that multiple conditions have on the variables of interest — the likelihood of receiving financial aid and the amount of aid received.

Table C shows the results of a multiple logistic regression which estimates the likelihood of receiving financial aid of any kind. Most of the variables that have been discussed in the univariate context are included in the model predicting the receipt of financial aid. These include: gender, race, family income, schooling costs, level of enrollment, dependency status, and household size. The results indicate statistically significant effects for several of the variables in the multivariate context.[21] For example, persons from low-income households had

[21] Parameter effects are interpreted in the following way: a positive value indicates that the predicted phenomenon (receiving aid) is more likely when the condition is present, while a negative number means it is less likely. The "average" condition is determined based on the excluded categories from the model. For example, White is the excluded race category in these models. The effect of any other race is then the deviation from the White category.

Table C. **Logistic Regression for Odds of a Student to Receive Financial Aid by Dependency Status: 1990-1991**

Characteristic	All students		Dependency status			
			Dependent students		Independent students	
	Parameter	Standard error	Parameter	Standard error	Parameter	Standard error
Demographic Chacteristics:						
Sex						
(Female)	...	...	...	...	...	...
Male	0.014	0.030	-0.138	0.150	0.073	0.096
Race						
(White)	...	...	...	...	...	...
Black	*0.256	0.141	**0.641	0.239	0.005	0.176
Hispanic	-0.068	0.178	**0.745	0.322	**-0.466	0.220
Other	-0.021	0.214	0.251	0.422	-0.138	0.249
Average monthly family income						
($2,100 to $4,099)	...	...	...	...	...	...
Less than $2,100	**0.364	0.103	0.284	0.217	**0.408	0.118
$4,100 or more	**-0.306	0.097	**-0.621	0.179	-0.138	0.117
Number of persons in households						
(Persons)	**0.065	0.030	*0.101	0.057	0.045	0.035
Educational Characteristics:						
Dependency status						
(Independent student)	...	...	(X)	(X)	(X)	(X)
Dependent student	**-0.391	0.101	(X)	(X)	(X)	(X)
Enrollment level						
(College year 1 to 2)	...	...	...	...	...	...
College years 3 to 4	0.003	0.105	-0.126	0.167	0.085	0.138
College years 5 or higher	0.078	0.121	-0.010	0.454	0.054	0.133
Vocational technical, business school, or other	0.035	0.120	0.403	0.286	-0.001	0.137
Log of total cost of schooling (dollars)	**0.120	0.023	**0.209	0.060	**0.110	0.026
Constant	**-0.923	0.205	**-2.004	0.549	**-0.854	0 231
Likelihood χ^2	**152.42		**94.70		**89.61	
Degrees of freedom	12		11		11	
Number of cases (unweighted)	4,502		1,342		3,160	

Note: Individual categories listed in parentheses following factor headings indicate reference categories in the models.

X Not applicable.
... Reference categories
* Statistically significant at the 90-percent confidence level.
** Statistically significant at the 95-percent confidence level.

a much higher likelihood of receiving aid (compared to middle-income households, the excluded comparison category), while persons from high income households had lower than average chances of receiving aid. The receipt of aid was also positively related to schooling costs. Dependent students were somewhat less likely to receive aid, while Black students were slightly more likely to have received it. Finally, household size was positively related to the receipt of aid. The likelihood of receiving aid does not vary across level of school or gender, once other factors are controlled.

Models for the receipt of aid were run separately for dependent and independent students, since they are viewed as two very different groups. The model for independent students indicates that higher costs and lower income were both significantly related to an increased likelihood of receiving aid, but that Hispanics had a significantly lower likelihood of getting financial aid. The model for dependent students shows that Hispanics and Blacks both had higher likelihoods of receiving aid, and that costs and household size were also positively related to aid receipt. While the chances of getting aid did not increase for persons from low income families compared to those from middle income families, those from high income backgrounds were much less likely than the middle income group to receive assistance.

Table D shows the results of a multiple regression model designed to predict the amount of total aid received by aid recipients. The results of this estimation indicate that the amount of aid received rises with increasing costs, for dependent students, and for higher levels of college. The amount decreases with rising family income, as well as for persons in vocational, technical or business schools (which generally have lower tuition than colleges).

By stratifying the estimation procedure by dependency status, a pattern of effects similar to the total is revealed for independent students, with the exception that persons of other races also have significantly higher expected amounts of financial aid, controlling for other factors. The model for dependent students is less involved, showing significant effects only for costs, and for the two higher categories of college (junior/senior,

Table D. **Multiple Regression Coefficients for the Log of Total Aid (in Dollars) Received by Dependency Status: 1990-1991**

Characteristic	All students		Dependency status			
			Dependent students		Independent students	
	Parameter	Standard error	Parameter	Standard error	Parameter	Standard error
Demographic Chacteristics:						
Sex						
(Female)	...	...	...	...	...	...
Male	0.053	0.065	0.048	0.107	0.065	0.080
Race						
(White)	...	..	...	...	...	...
Black	0.043	0.108	-0.182	0.149	0.229	0.143
Hispanic	0.077	0.147	-0.047	0.196	0.134	0.200
Other	0.251	0.171	0.262	0.292	*0.364	0.206
Log of income (dollars)	**-0.212	0.026	-0.022	0.044	**-0.288	0.032
Number of persons in households						
(Persons)	0.014	0.024	-0.041	0.037	0.030	0.030
Educational Characteristics:						
Dependency status						
(Independent student)	...	...	(X)	(X)	(X)	(X)
Dependent student	**0.562	0.083	(X)	(X)	(X)	(X)
Enrollment level						
(College years 1 to 2)	...	...	...	...	...	...
College years 3 to 4	**0.285	0.085	*0.217	0.118	**0.322	0.113
College years 5 or higher	**0.674	0.097	*0.567	0.322	**0.724	0.110
Vocational, technical, business school, or other	*-0.187	0.098	-0.022	0.190	* 0.215	0.116
Log of total cost of schooling (dollars)	**0.250	0.017	**0.220	0.039	**0.247	0.020
Constant	**6.668	0.243	**6.275	0.455	**7.180	0.295
R^2	0.312		0.139		0.316	

Note: Individual categories listed in parentheses following factor headings indicate reference categories in the models.

(X) Not applicable.
... Reference categories
* Statistically significant at the 90-percent confidence level.
** Statistically significant at the 95-percent confidence level.

and graduate level). One of the encouraging aspects of these models is that for the most part they show relatively few significant effects for race or gender. While we might reasonably expect the receipt and amount of aid to vary with things like costs, level of schooling and family income, factors such as race and gender should have little or no independent effect on whether or not a student gets aid or how much they receive.

SUMMARY

Over the past several decades, opportunities in higher education have been opened to millions of new students, but not without financial cost. The analysis of the SIPP data shown in this report indicates that students continue to utilize a wide array of resources to finance their postsecondary education. Despite the availability and use of these sources, many students receive no assistance at all in paying for their schooling. On the other hand, a sizable minority of students manage to cover most or all of their costs, often by using a combination of aid sources. While there is some variability in who receives aid and how much they get, the distribution of financial aid appears reasonably distributed across demographic groups, as well as in regard to the degree of financial need of the student (or their family). In short, postsecondary financial aid, while not as pervasive as many students might wish, continues to make higher education possible for many persons.

Table 1. **Level of Enrollment by Sex, Race/Ethnicity, Age, Marital Status, Veteran Status, Family Income, and Other Selected Characteristics for High School Graduates 17 Years and Older: 1990-1991**

(In thousands)

Characteristic	Total	Enrolled	Percent enrolled	College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational, technical, business school or other
Total	142,710	20,560	14	7,232	5,148	3,977	4,203
SEX							
Male	68,453	9,439	14	3,065	2,398	1,829	2,147
Female	74,257	11,121	15	4,167	2,749	2,148	2,056
RACE/ETHNICITY[1]							
White	118,214	16,761	14	5,794	4,196	3,500	3,270
Black	12,667	1,935	15	744	518	172	501
Hispanic	7,432	1,115	15	442	262	100	312
Other	4,396	748	17	252	172	205	119
AGE							
17 to 24 years	18,007	9,099	51	4,550	2,896	669	984
25 to 34 years	37,050	5,903	16	1,459	1,410	1,646	1,388
35 to 44 years	34,324	3,461	10	834	618	1,075	933
45 to 54 years	21,018	1,420	7	279	161	451	529
55 to 64 years	14,971	492	3	72	62	98	260
65 years and over	17,340	185	1	38	-	38	109
MARITAL STATUS							
Married	87,161	7,698	9	1,969	1,423	2,131	2,175
Widowed, separated, or divorced	23,389	2,033	9	612	389	388	643
Never married	32,160	10,829	34	4,651	3,335	1,458	1,385
VETERAN STATUS							
Veteran	23,899	1,851	8	550	314	348	638
Non-veteran	118,811	18,709	16	6,682	4,834	3,629	3,564
AVERAGE MONTHLY FAMILY INCOME							
Less than $800	10,631	2,183	21	752	627	328	476
$800 to $1,249	10,860	1,438	13	475	370	220	372
$1,250 to $1,699	11,912	1,422	12	547	283	224	368
$1,700 to $2,499	22,794	2,654	12	825	658	447	724
$2,500 to $3,399	24,023	3,031	13	1,129	568	651	684
$3,400 to $4,199	17,434	2,537	15	888	627	469	554
$4,200 to $5,399	17,663	2,748	16	1,001	704	556	487
$5,400 or more	27,392	4,547	17	1,615	1,310	1,082	539
BENEFITS							
Family does not receive benefits	129,282	18,445	14	6,374	4,783	3,824	3,464
Someone in family receives AFDC, Foodstamps, or unemployment	13,428	2,115	16	859	365	153	738
RELATIONSHIP TO REFERENCE PERSON							
Reference person living with relative(s)	52,415	4,777	9	1,195	893	1,183	1,506
Reference person living alone or with non-relative(s)	20,584	2,606	13	599	671	779	557
Spouse	42,948	3,992	9	1,147	754	1,128	963
Child	16,596	7,238	44	3,578	2,369	543	747
Other relative	3,532	662	19	287	116	64	195
Non-relative of reference person but other relatives in household	480	70	15	17	13	12	27
Other	6,156	1,217	20	408	332	269	207

Table 1. **Level of Enrollment by Sex, Race/Ethnicity, Age, Marital Status, Veteran Status, Family Income, and Other Selected Characteristics for High School Graduates 17 Years and Older: 1990-1991**—Continued

(In thousands)

Characteristic	Total	Enrolled	Percent enrolled	College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational, technical, business school or other
DEPENDENCY STATUS[2]							
Dependent student	6,094	6,094	100	3,382	2,002	168	540
Lives away from home	2,965	2,965	100	1,469	1,310	110	75
Lives at home	3,129	3,129	100	1,913	692	58	465
Independent student	14,466	14,466	100	3,850	3,146	3,808	3,663
RECEIVES FINANCIAL AID[2]							
None received	10,099	10,099	100	3,632	2,495	1,842	2,131
Aid received	10,461	10,461	100	3,601	2,652	2,136	2,072

- Represents zero

[1]Race/ethnicity categories are mutually exclusive and exhaustive of the total population. For details of category construction see appendix C, Defintions and Explanations.

[2]Total is that of enrolled persons only.

Table 2. **Average Postsecondary Schooling Costs by Level of Enrollment, Sex, Race/Ethnicity, Family Income and Dependency Status: 1990-1991**

Characteristic	Total	College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational technical, business school or other
ALL POSTSECONDARY STUDENTS:					
Total costs[1]					
Mean	$2,653	$2,730	$3,825	$2,672	$1,066
Standard error	61	103	134	137	85
Tuition and fees					
Mean	$1,651	$1,667	$2,179	$1,830	$807
Standard error	40	68	88	95	64
Books and supplies					
Mean	$289	$308	$399	$291	$118
Standard error	8	11	17	20	14
Room and board[2]					
Mean	$3,172	$3,203	$3,465	$2,931	$1,874
Standard error	78	109	117	259	310
SEX					
Male					
Total cost					
Mean	$2,762	$2,871	$4,130	$2,812	$1,036
Standard error	96	165	207	212	134
Tuition and fees					
Mean	$1,686	$1,775	$2,290	$1,879	$720
Standard error	62	107	133	143	94
Books and supplies					
Mean	$296	$318	$416	$323	$107
Standard error	12	19	26	36	16
Room and board					
Mean	$3,125	$3,075	$3,481	$2,935	$2,043
Standard error	110	151	169	353	378
Female					
Total cost					
Mean	$2,560	$2,627	$3,559	$2,552	$1,098
Standard error	79	132	174	177	106
Tuition and fees					
Mean	$1,621	$1,587	$2,083	$1,788	$898
Standard error	53	87	117	127	88
Books and supplies					
Mean	$283	$301	$385	$264	$128
Standard error	10	12	23	22	22
Room and board					
Mean	$3,221	$3,309	$3,446	$2,927	(B)
Standard error	112	155	162	381	(B)
RACE/ETHNICITY					
White					
Total cost					
Mean	$2,691	$2,804	$3,988	$2,524	$1,006
Standard error	68	118	152	135	91
Tuition and fees					
Mean	$1,662	$1,691	$2,252	$1,749	$761
Standard error	45	77	99	95	69
Books and supplies					
Mean	$286	$316	$400	$265	$108
Standard error	8	12	17	19	14
Room and board					
Mean	$3,207	$3,276	$3,536	$2,771	$1,823
Standard error	84	118	126	255	351

Table 2. **Average Postsecondary Schooling Costs by Level of Enrollment, Sex, Race/Ethnicity, Family Income and Dependency Status: 1990-1991**—Continued

Characteristic	Total	College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational technical, business school or other
Black					
Total cost					
Mean	$2,552	$2,941	$3,222	(B)	$1,177
Standard error	170	296	310	(B)	258
Tuition and fees					
Mean	$1,649	$1,922	$1,971	(B)	$814
Standard error	115	201	202	(B)	182
Books and supplies					
Mean	$305	$251	$430	(B)	$188
Standard error	31	20	78	(B)	59
Room and board					
Mean	$2,834	$2,790	(B)	(B)	(B)
Standard error	231	296	(B)	(B)	(B)
Hispanic					
Total cost					
Mean	$1,882	$1,668	$2,802	(B)	$1,028
Standard error	162	224	409	(B)	214
Tuition and fees					
Mean	$1,275	$1,086	$1,648	(B)	$922
Standard error	125	165	293	(B)	210
Books and supplies					
Mean	$252	$267	$390	(B)	$75
Standard error	21	22	66	(B)	17
Room and board					
Mean	(B)	(B)	(B)	(B)	(B)
Standard error	(B)	(B)	(B)	(B)	(B)
Other					
Total cost					
Mean	$3,203	$2,284	(B)	$4,828	(B)
Standard error	353	439	(B)	966	(B)
Tuition and fees					
Mean	$1,972	$1,384	(B)	$2,935	(B)
Standard error	222	262	(B)	607	(B)
Books and supplies					
Mean	$367	$367	(B)	$518	(B)
Standard error	49	75	(B)	167	(B)
Room and board					
Mean	(B)	(B)	(B)	(B)	(B)
Standard error	(B)	(B)	(B)	(B)	(B)
AVERAGE MONTHLY FAMILY INCOME					
Less than $2,100					
Total cost					
Mean	$2,627	$2,385	$3,739	$3,442	$1,326
Standard error	102	152	233	279	160
Tuition and fees					
Mean	$1,599	$1,511	$2,051	$2,027	$996
Standard error	67	106	147	178	116
Books and supplies					
Mean	$309	$303	$434	$367	$154
Standard error	14	21	35	35	24
Room and board					
Mean	$3,268	$2,957	$3,546	$3,449	(B)
Standard error	151	240	222	434	(B)

Table 2. **Average Postsecondary Schooling Costs by Level of Enrollment, Sex, Race/Ethnicity, Family Income and Dependency Status: 1990-1991**—Continued

Characteristic	Total	College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational technical, business school or other
$2,100 to $4,099					
Total cost					
Mean	$2,302	$2,480	$3,405	$2,440	$830
Standard error	102	178	231	237	111
Tuition and fees					
Mean	$1,548	$1,586	$2,180	$1,810	$643
Standard error	71	119	164	173	93
Books and supplies					
Mean	$257	$276	$365	$282	$99
Standard error	13	15	26	43	25
Room and board					
Mean	$2,702	$3,054	$3,188	$2,146	(B)
Standard error	152	207	231	465	(B)
$4,100 or more					
Total cost					
Mean	$2,982	$3,224	$4,193	$2,419	$1,033
Standard error	111	193	226	204	166
Tuition and fees					
Mean	$1,784	$1,863	$2,276	$1,734	$772
Standard error	71	122	145	14[illegible]	124
Books and supplies					
Mean	$300	$340	$398	$256	$94
Standard error	12	18	27	28	20
Room and board					
Mean	$3,394	$3,418	$3,539	$3,010	(B)
Standard error	111	148	170	413	(B)
DEPENDENT STUDENTS					
Total cost					
Mean	$4,387	$3,980	$5,579	(B)	$1,891
Standard error	132	172	230	(B)	313
Tuition and fees					
Mean	$2,330	$2,188	$2,755	(B)	$1,401
Standard error	84	110	157	(B)	213
Books and supplies					
Mean	$395	$368	$499	(B)	$177
Standard error	13	13	28	(B)	46
Room and board					
Mean	$3,416	$3,278	$3,554	(B)	(B)
Standard error	91	120	139	(B)	(B)
INDEPENDENT STUDENTS					
Total cost					
Mean	$1,923	$1,632	$2,708	$2,507	$945
Standard error	59	99	138	134	84
Tuition and fees					
Mean	$1,365	$1,209	$1,813	$1,774	$719
Standard error	44	77	99	96	66
Books and supplies					
Mean	$244	$255	$336	$386	$109
Standard error	9	16	21	21	14
Room and board					
Mean	$2,737	$2,737	$3,247	$2,677	$1,757
Standard error	142	244	214	277	348

B Base is less than 200,000.
[1]Based on all students, including those with zero costs in any component.
[2]Based only on students who report living away from home.

Table 3. **Number of Recipients and Average Amount Received by Level of Enrollment and Aid Type: 1990-1991**

(Numbers in thousands)

Types of aid	Total	College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational technical, business school or other
All students	20,560	7,232	5,148	3,977	4,203
All aid recipients					
Number	10,461	3,601	2,652	2,136	2,072
Percent	51	50	52	54	49
Mean	$2,919	$2,573	$3,312	$4,223	$1,673
Standard error	95	131	177	302	153
Pell Grant					
Number	2,881	1,395	951	123	412
Percent	14	19	18	3	10
Mean	$1,375	$1,254	$1,378	(B)	$1,613
Standard error	44	55	82	(B)	131
Percent of total aid					
Mean	51	56	39	(B)	62
Standard error	2	2	3	(B)	4
GI Bill or VEAP					
Number	416	162	197	34	23
Percent	2	2	4	1	1
Mean	$2,503	(B)	(B)	(B)	(B)
Standard error	281	(B)	(B)	(B)	(B)
Percent of total aid					
Mean	78	(B)	(B)	(B)	(B)
Standard error	4	(B)	(B)	(B)	(B)
SEOG or college work study					
Number	890	417	334	83	56
Percent	4	6	6	2	1
Mean	$1,510	$1,387	$1,368	(B)	(B)
Standard error	134	189	187	(B)	(B)
Percent of total aid					
Mean	34	32	30	(B)	(B)
Standard error	3	4	4	(B)	(B)
Loan					
Number	3,022	968	1,058	616	381
Percent	15	13	21	15	9
Mean	$3,155	$2,483	$2,961	$4,833	$2,689
Standard error	105	127	135	329	296
Percent of total aid					
Mean	66	60	66	74	72
Standard error	1	2	2	3	4
Employer assistance or JTPA					
Number	3,617	903	575	986	1,154
Percent	18	12	11	25	27
Mean	$979	$669	$908	$1,577	$748
Standard error	66	102	120	150	121
Percent of total aid					
Mean	95	94	92	95	97
Standard error	1	2	3	2	1
Fellowship, scholarship or tuition reduction					
Number	2,436	1,018	792	507	119
Percent	12	14	15	13	3
Mean	$2,467	$2,017	$2,094	$4,118	(B)
Standard error	189	233	237	636	(B)
Percent of total aid					
Mean	59	65	51	61	(B)
Standard error	2	3	3	5	(B)

Table 3. **Number of Recipients and Average Amount Received by Level of Enrollment and Aid Type: 1990-1991**—Continued

(Numbers in thousands)

Types of aid	Total	College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational technical, business school or other
Other aid					
Number	2,788	964	849	536	439
Percent	.14	13	16	13	10
Mean	$1,829	$1,475	$1,517	$3,465	$1,213
Standard error	121	152	167	454	208
Percent of total aid					
Mean	54	48	48	61	72
Standard error	2	3	4	5	5

B Base is less than 200,000 persons.

Table 4. **Average Aid Received and Number of Recipients by Social and Demographic Characteristics: 1990-1991**

(Numbers in thousands)

Types of aid	Male	Female	White	Black	Hispanic	Other	Average monthly family income: Less than $2,100	Average monthly family income: $2,100 to $4,099	Average monthly family income: $4,100 or more	De-pendent students	Inde-pendent students
All students	9,439	11,120	16,761	1,935	1,114	749	6,247	6,694	7,619	6,094	14,466
All aid recipients											
Number	4,773	5,687	8,381	1,128	551	401	3,717	3,410	3,333	2,825	7,635
Percent	51	51	50	58	49	54	60	51	44	46	53
Mean	$2,953	$2,891	$2,927	$2,527	$2,800	$4,032	$3,622	$2,634	$2,427	$3,729	$2,619
Standard error	148	125	108	211	313	500	183	146	148	177	112
Pell Grant											
Number	1,008	1,873	2,039	510	214	118	1,625	924	332	1,161	1,719
Percent	11	17	12	26	19	16	26	14	4	19	12
Mean	$1,439	$1,341	$1,421	$1,191	$1,264	(B)	$1,432	$1,361	$1,136	$1,342	$1,398
Standard error	86	50	51	105	140	(B)	57	84	120	67	58
Percent of total aid											
Mean	45	53	48	54	66	(B)	51	51	46	48	52
Standard error	3	2	2	4	5	(B)	2	3	5	2	2
GI Bill or VEAP											
Number	314	102	348	41	17	10	150	144	121	58	358
Percent	3	1	2	2	2	1	2	2	2	1	2
Mean	$2,761	(B)	$2,617	(B)	(B)	(B)	(B)	(B)	(B)	(B)	$2,595
Standard error	325	(B)	321	(B)	(B)	(B)	(B)	(B)	(B)	(B)	310
Percent of total aid											
Mean	81	(B)	79	(B)	(B)	(B)	(B)	(B)	(B)	(B)	81
Standard error	4	(B)	4	(B)	(B)	(B)	(B)	(B)	(B)	(B)	4
SEOG or college work study											
Number	392	498	654	128	48	59	388	299	203	534	356
Percent	4	4	4	7	4	8	6	4	3	9	2
Mean	$1,422	$1,580	$1,584	(B)	(B)	(B)	$1,361	$1,634	$1,612	$1,554	$1,444
Standard error	223	162	171	(B)	(B)	(B)	153	304	291	175	207
Percent of total aid											
Mean	36	32	31	(B)	(B)	(B)	29	36	40	32	36
Standard error	4	3	3	(B)	(B)	(B)	3	5	7	4	4
Loan											
Number	1,256	1,766	2,356	377	172	117	1,361	955	706	1,194	1,828
Percent	13	16	14	19	15	16	22	14	9	20	13
Mean	$2,979	$3,280	$3,298	$2,313	(B)	(B)	$3,366	$2,883	$3,116	$2,614	$3,508
Standard error	156	140	123	181	(B)	(B)	162	180	206	116	154
Percent of total aid											
Mean	67	66	65	69	(B)	(B)	65	64	72	61	70
Standard error	2	2	2	3	(B)	(B)	2	2	3	2	2
Employer assistance or JTPA											
Number	1,875	1,742	3,161	251	135	70	832	1,302	1,484	112	3,505
Percent	20	16	19	13	12	9	13	19	19	2	24
Mean	$1,077	$875	$953	$1,014	(B)	(B)	$1,004	$965	$979	(B)	$963
Standard error	99	89	65	281	(B)	(B)	141	102	109	(B)	65
Percent of total aid											
Mean	96	93	95	90	(B)	(B)	91	96	96	(B)	96
Standard error	1	1	1	4	(B)	(B)	2	1	1	(B)	1
Fellowship, scholarship or tuition reduction											
Number	1,079	1,357	2,016	203	114	103	786	712	938	1,272	1,163
Percent	11	12	12	10	10	14	13	11	12	21	8

Table 4. **Average Aid Received and Number of Recipients by Social and Demographic Characteristics: 1990-1991**—Continued

(Numbers in thousands)

Types of aid	Male	Female	White	Black	Hispanic	Other	Average monthly family income			De-pendent students	Inde-pendent students
							Less than $2,100	$2,100 to $4,099	$4,100 or more		
Mean	$2,971	$2,068	$2,441	$2,112	(B)	(B)	$3,031	$1,865	$2,453	$2,396	$2,545
Standard error	369	190	206	518	(B)	(B)	410	239	288	228	308
Percent of total aid											
Mean	60	58	59	61	(B)	(B)	53	48	73	64	54
Standard error	3	3	2	7	(B)	(B)	3	4	3	3	3
Other aid											
Number	1,195	1,593	2,252	273	103	160	1,202	935	651	972	1,816
Percent	13	14	13	14	9	21	19	14	9	16	13
Mean	$1,886	$1,787	$1,767	$1,731	(B)	(B)	$1,985	$1,713	$1,711	$1,748	$1,873
Standard error	180	162	128	304	(B)	(B)	205	192	214	193	155
Percent of total aid											
Mean	53	55	52	60	(B)	(B)	53	53	59	46	59
Standard error	3	2	2	5	(B)	(B)	3	4	4	3	2

- Represents zero.
B Base is less than 200,000 persons.

Table 5. **Average Cost, Aid, and Net Cost by Level of Enrollment and Other Social and Demographic Variables: 1990-1991**

Cost	Total	Level of enrollment				Sex		Race/Ethnicity				Average monthly family income			Dependency status	
		College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational, technical, business school, or other	Male	Female	White	Black	Hispanic	Other	Less than $2,100	$2,100 to $4,099	$4,100 or more	Dependent students	Independent students
All students																
Total cost																
Mean	$2,653	$2,730	$3,825	$2,672	$1,066	$2,762	$2,560	$2,691	$2,552	$1,682	$3,203	$2,627	$2,302	$2,982	$4,387	$1,923
Standard error	61	103	134	137	85	97	79	68	170	162	353	103	102	111	132	59
Total aid																
Mean	$1,485	$1,281	$1,706	$2,268	$825	$1,493	$1,479	$1,463	$1,473	$1,385	$2,157	$2,155	$1,342	$1,062	$1,729	$1,383
Standard error	56	78	111	188	84	86	75	63	145	177	317	124	89	75	106	66
Net cost																
Mean	$1,168	$1,449	$2,119	$404	$241	$1,269	$1,082	$1,228	$1,080	$497	$1,046	$472	$961	$1,920	$2,658	$540
Standard error	70	107	156	190	95	109	90	78	185	195	391	139	102	114	151	71
Percent of total cost covered by aid																
Mean	38	36	36	43	39	38	38	37	44	39	46	48	38	30	32	40
Standard error	1	1	2	2	2	1	1	1	3	3	4	2	2	1	1	1
Students not receiving aid																
Total cost																
Mean	$2,340	$2,360	$3,798	$2,199	$720	$2,463	$2,235	$2,407	$1,986	$1,449	$2,983	$2,216	$1,754	$2,863	$4,186	$1,457
Standard error	87	145	196	190	94	135	112	96	254	204	530	161	127	149	186	76
Total aid																
Mean	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Standard error	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net cost																
Mean	$2,340	$2,360	$3,798	$2,199	$720	$2,463	$2,235	$2,407	$1,986	$1,449	$2,983	$2,216	$1,754	$2,863	$4,186	$1,457
Standard error	87	145	196	190	94	135	112	96	254	204	530	161	127	149	186	76
Percent of total cost covered by aid																
Mean	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Standard error	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Students receiving aid																
Total cost																
Mean	$2,955	$3,104	$3,850	$3,079	$1,422	$3,055	$2,871	$2,975	$2,957	$2,324	$3,395	$2,907	$2,830	$3,135	$4,618	$2,339
Standard error	86	145	184	191	139	137	110	97	224	247	469	132	152	167	188	87
Total aid																
Mean	$2,919	$2,573	$3,312	$4,223	$1,673	$2,953	$2,891	$2,927	$2,527	$2,800	$4,032	$3,622	$2,634	$2,427	$3,729	$2,619
Standard error	95	131	177	302	153	148	125	108	211	313	500	183	146	148	177	112
Net cost																
Mean	$36	$531	$538	$-1,144	$-251	$102	$-20	$48	$431	$-475	$-637	$-715	$197	$708	$889	$-280
Standard error	99	146	207	282	161	156	127	112	247	314	461	189	148	157	211	108
Percent of total cost covered by aid																
Mean	75	71	70	81	80	75	75	74	75	78	86	80	74	69	69	77
Standard error	1	1	2	2	2	1	1	1	2	3	3	1	2	2	2	1

- Represents zero.

Table 6. **Persons Receiving Aid and the Percent of Total Costs Covered by Level of Enrollment and Other Social and Demograhic Variables: 1990-1991**

Item	Total	Level of enrollment				Sex		Race/Ethnicity				Average monthly family income			Dependency	
		College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational, technical, business school, or other	Male	Female	White	Black	Hispanic	Other	Less than $2,100	$2,100 to $4,099	$4,100 or more	Dependent students	Independent students
All students[1]	20,560	7,232	5,148	3,977	4,203	9,439	11,120	16,761	1,935	1,115	749	6,247	6,694	7,619	6,094	14,466
Students receiving aid[1]	10,461	3,601	2,652	2,136	2,072	4,773	5,687	8,381	1,128	551	401	3,717	3,410	3,333	2,825	7,635
Percent of all students with:																
No costs covered	49	50	48	46	51	49	49	50	42	50	46	40	49	56	54	47
Up to 25 percent of total costs covered	7	8	7	4	6	7	7	7	9	4	3	5	7	8	7	7
26 to 50 percent of total costs covered	6	6	10	5	4	6	7	7	6	7	1	6	6	7	8	6
51 to 75 percent of total costs covered	6	7	8	7	4	7	6	7	6	6	7	7	7	6	7	6
76 to 100 percent of total costs covered	12	11	8	13	19	12	12	12	12	9	16	13	13	11	8	14
More than 100 percent of total costs covered	19	18	20	25	16	19	20	18	25	23	26	29	18	13	16	21

[1]Numbers in thousands.

Appendix A. **Supplementary Tables**

Table A-1. **Level of Enrollment by Sex, Race/Ethnicity, Age, Marital Status, Veteran Status, Family Income, and Other Selected Characteristics for High School Graduates 17 Years and Older: 1987-1988**

(In thousands)

Characteristic	Total	Enrolled	Percent enrolled	College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational, technical, business school or other
Total	134,270	20,140	15	7,011	4,966	3,925	4,238
SEX							
Male	63,538	9,223	15	2,987	2,264	1,906	2,067
Female	70,732	10,917	15	4,024	2,702	2,020	2,171
RACE/ETHNICITY[1]							
White	112,003	16,320	15	5,632	4,021	3,279	3,389
Black	11,692	1,827	16	657	498	266	408
Hispanic	7,019	1,198	17	416	274	242	266
Other	3,556	794	22	306	173	139	175
AGE							
17 to 24 years	18,711	8,940	48	4,438	2,810	647	1,044
25 to 34 years	37,313	6,036	16	1,510	1,348	1,944	1,234
35 to 44 years	30,242	3,184	11	717	529	912	1,025
45 to 54 years	18,304	1,298	7	232	205	280	581
55 to 64 years	14,732	521	4	86	73	81	282
65 years and over	14,968	161	1	27	-	61	73
MARITAL STATUS							
Married	83,022	7,229	9	1,732	1,270	2,100	2,127
Widowed, separated, or divorced	21,529	2,057	10	621	433	332	670
Never married	29,719	10,855	37	4,658	3,262	1,493	1,441
VETERAN STATUS							
Veteran	23,928	1,899	8	480	379	397	642
Non-veteran	110,342	18,241	17	6,530	4,587	3,528	3,596
AVERAGE MONTHLY FAMILY INCOME							
Less than $800	11,016	2,075	19	709	565	457	344
$800 to $1,249	10,744	1,457	14	584	266	265	342
$1,250 to $1,699	13,196	1,600	12	602	345	180	473
$1,700 to $2,499	24,350	3,420	14	927	1,026	686	780
$2,500 to $3,399	24,809	3,386	14	1,206	641	681	857
$3,400 to $4,199	16,072	2,358	15	697	640	455	566
$4,200 to $5,399	15,023	2,421	16	875	594	511	441
$5,400 or more	19,060	3,423	18	1,410	889	690	434
BENEFITS							
Family does not receive benefits	125,711	18,514	15	6,310	4,599	3,839	3,766
Someone in family receives AFDC, Foodstamps, or unemployment	8,559	1,626	19	701	366	86	472

Table A-1. **Level of Enrollment by Sex, Race/Ethnicity, Age, Marital Status, Veteran Status, Family Income, and Other Selected Characteristics for High School Graduates 17 Years and Older: 1987-1988**—Continued

(In thousands)

Characteristic	Total	Enrolled	Percent enrolled	College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational, technical, business school or other
RELATIONSHIP TO REFERENCE PERSON							
Reference person living with relative(s)	48,894	4,624	9	1,028	806	1,233	1,557
Reference person living alone or with non-relative(s)	19,519	2,822	14	689	607	874	652
Spouse	41,375	3,550	9	1,002	703	955	890
Child	16,402	7,338	45	3,599	2,405	551	783
Other relative	3,090	604	20	303	119	40	142
Non-relative of reference person but other relatives in household	246	97	39	36	52	-	9
Other	4,744	1,105	23	354	273	272	205
DEPENDENCY STATUS[2]							
Dependent student	5,953	5,953	100	3,374	1,921	213	444
Lives away from home	3,215	3,215	100	1,678	1,291	148	98
Lives at home	2,738	2,738	100	1,696	630	65	346
Independent student	14,187	14,187	100	3,636	3,045	3,712	3,794
RECEIVES FINANCIAL AID[2]							
None received	10,098	10,098	100	3,488	2,508	1,878	2,224
Aid received	10,041	10,041	100	3,522	2,458	2,047	2,014

- Represents zero.

[1]Race/ethnicity categories are mutually exclusive and exhaustive of the total population. For details of category construction see appendix C, Defintions and Explanations.

[2]Total is that of enrolled persons only.

Table A-2. **Average Postsecondary Schooling Costs by Level of Enrollment, Sex, Race/Ethnicity, Family Income, and Dependency Status: 1987-1988**

Characteristic	Total	College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational, technical, business school or other
All postsecondary students:					
Total costs[1]					
Mean	$2,414	$2,607	$3,408	$2,327	$1,009
Standard error	77	130	170	173	106
Tuition and fees					
Mean	$1,482	$1,539	$1,963	$1,552	$759
Standard error	51	86	115	118	80
Books and supplies					
Mean	$260	$284	$368	$264	$90
Standard error	9	14	21	24	10
Room and board[2]					
Mean	$2,738	$2,728	$2,964	$2,923	$1,553
Standard error	86	115	143	270	284
SEX					
Male					
Total cost					
Mean	$2,608	$2,826	$3,740	$2,490	$1,162
Standard error	120	214	264	239	178
Tuition and fees					
Mean	$1,585	$1,644	$2,087	$1,697	$847
Standard error	82	147	181	180	125
Books and supplies					
Mean	$280	$306	$411	$279	$101
Standard error	14	24	33	28	18
Room and board					
Mean	$2,677	$2,695	$2,895	$2,891	$1,588
Standard error	122	175	200	349	417
Female					
Total cost					
Mean	$2,250	$2,445	$3,130	$2,173	$864
Standard error	99	162	220	246	121
Tuition and fees					
Mean	$1,394	$1,460	$1,858	$1,415	$675
Standard error	64	102	149	154	101
Books and supplies					
Mean	$243	$268	$331	$249	$79
Standard error	12	16	26	38	11
Room and board					
Mean	$2,803	$2,758	$3,045	$2,953	(B)
Standard error	121	152	205	416	(B)
RACE/ETHNICITY					
White					
Total cost					
Mean	$2,448	$2,674	$3,574	$2,268	$912
Standard error	84	145	189	178	107
Tuition and fees					
Mean	$1,481	$1,543	$2,008	$1,549	$687
Standard error	55	93	125	124	84
Books and supplies					
Mean	$259	$288	$365	$254	$91
Standard error	10	15	22	25	11
Room and board					
Mean	$2,731	$2,786	$2,987	$2,816	$1,231
Standard error	90	122	152	275	224

Table A-2. **Average Postsecondary Schooling Costs by Level of Enrollment, Sex, Race/Ethnicity, Family Income, and Dependency Status: 1987-1988**—Continued

Characteristic	Total	College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational, technical, business school or other
Black					
Total cost					
Mean	$2,719	$2,698	$3,780	$2,432	$1,646
Standard error	310	464	666	1,045	448
Tuition and fees					
Mean	$1,833	$1,744	$2,549	$1,481	$1,330
Standard error	225	354	568	557	296
Books and supplies					
Mean	$268	$244	$447	$282	$77
Standard error	36	47	103	74	25
Room and board					
Mean	$2,765	(B)	(B)	(B)	(B)
Standard error	409	(B)	(B)	(B)	(B)
Hispanic					
Total cost					
Mean	$2,097	$2,426	$1,505	$3,085	$1,293
Standard error	332	548	355	975	795
Tuition and fees					
Mean	$1,348	$1,661	$868	$2,058	$707
Standard error	246	425	211	821	479
Books and supplies					
Mean	$243	$269	$260	$320	$114
Standard error	36	49	57	137	68
Room and board					
Mean	$2,752	(B)	(B)	(B)	(B)
Standard error	420	(B)	(B)	(B)	(B)
Other					
Total cost					
Mean	$1,476	$1,425	(B)	(B)	(B)
Standard error	246	407	(B)	(B)	(B)
Tuition and fees					
Mean	$890	$840	(B)	(B)	(B)
Standard error	152	254	(B)	(B)	(B)
Books and supplies					
Mean	$280	$317	(B)	(B)	(B)
Standard error	60	92	(B)	(B)	(B)
Room and board					
Mean	(B)	(B)	(B)	(B)	(B)
Standard error	(B)	(B)	(B)	(B)	(B)
AVERAGE MONTHLY FAMILY INCOME					
Less than $2,100					
Total cost					
Mean	$2,389	$2,187	$2,991	$3,328	$1,317
Standard error	130	197	276	371	216
Tuition and fees					
Mean	$1,502	$1,347	$1,804	$2,064	$974
Standard error	89	137	189	252	160
Books and supplies					
Mean	$269	$276	$361	$351	$96
Standard error	17	27	34	59	18
Room and board					
Mean	$2,760	$2,402	$2,937	$3,240	(B)
Standard error	167	212	326	407	(B)
$2,100 to $4,099					
Total cost					
Mean	$2,032	$2,268	$3,133	$1,740	$895
Standard error	118	214	282	227	157

Table A-2. **Average Postsecondary Schooling Costs by Level of Enrollment, Sex, Race/Ethnicity, Family Income, and Dependency Status: 1987-1988**—Continued

Characteristic	Total	College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational, technical, business school or other
Tuition and fees					
Mean	$1,315	$1,372	$1,876	$1,310	$697
Standard error	81	140	192	173	124
Books and supplies					
Mean	$215	$244	$316	$210	$85
Standard error	12	20	27	28	16
Room and board					
Mean	$2,422	$2,568	$2,804	(B)	(B)
Standard error	153	212	239	(B)	(B)
$4,100 or more					
Total cost					
Mean	$2,894	$3,356	$4,161	$2,030	$695
Standard error	149	251	317	284	112
Tuition and fees					
Mean	$1,657	$1,892	$2,229	$1,332	$505
Standard error	96	162	219	185	77
Books and supplies					
Mean	$302	$330	$432	$241	$89
Standard error	17	22	44	36	21
Room and board					
Mean	$2,965	$3,039	$3,102	$2,830	(B)
Standard error	127	173	203	448	(B)
DEPENDENT STUDENTS					
Total cost					
Mean	$4,158	$3,852	$4,953	$4,880	$2,695
Standard error	163	210	294	830	540
Tuition and fees					
Mean	$2,207	$2,121	$2,382	$2,561	$1,936
Standard error	111	144	198	684	385
Books and supplies					
Mean	$387	$348	$473	$598	$217
Standard error	17	20	32	153	51
Room and board					
Mean	$2,894	$2,780	$3,122	(B)	(B)
Standard error	98	122	173	(B)	(B)
INDEPENDENT STUDENTS					
Total cost					
Mean	$1,682	$1,451	$2,433	$2,180	$812
Standard error	74	123	179	172	94
Tuition and fees					
Mean	$1,177	$998	$1,698	$1,494	$621
Standard error	53	84	139	117	73
Books and supplies					
Mean	$206	$225	$302	$244	$75
Standard error	10	18	26	23	10
Room and board					
Mean	$2,447	$2,470	$2,567	$3,045	$1,292
Standard error	161	323	246	316	324

B Base is less than 200,000.
[1]Based on all students, including those with zero costs in any component.
[2]Based only on students who report living away from home.

Table A-3. **Number of Recipients and Average Amount Received by Level of Enrollment and Aid Type: 1987-1988**

(Numbers in thousands)

Types of aid	Total	College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational, technical, business school or other
All students	20,140	7,011	4,966	3,925	4,238
All aid recipients					
Number	10,041	3,522	2,458	2,047	2,014
Percent	50	50	49	52	48
Mean	$2,720	$2,714	$2,949	$3,762	$1,390
Standard error	146	283	206	417	158
Pell Grant					
Number	2,672	1,308	855	102	408
Percent	13	19	17	3	10
Mean	$1,242	$1,181	$1,279	(B)	$1,270
Standard error	56	73	100	(B)	172
Percent of total aid					
Mean	51	50	47	(B)	62
Standard error	2	4	4	(B)	7
GI Bill or VEAP					
Number	521	225	191	76	28
Percent	3	3	4	2	1
Mean	$2,613	$2,846	(B)	(B)	(B)
Standard error	279	445	(B)	(B)	(B)
Percent of total aid					
Mean	80	$79	(B)	(B)	(B)
Standard error	4	6	(B)	(B)	(B)
SEOG or college work study					
Number	1,054	459	446	104	45
Percent	5	7	9	3	1
Mean	$1,045	$1,007	$931	(B)	(B)
Standard error	95	134	106	(B)	(B)
Percent of total aid					
Mean	31	28	33	(B)	(B)
Standard error	3	4	6	(B)	(B)
Loan					
Number	3,307	1,291	1,020	562	436
Percent	16	18	21	14	10
Mean	$2,589	$2,121	$2,383	$4,167	$2,425
Standard error	128	149	166	514	246
Percent of total aid					
Mean	65	61	61	70	79
Standard error	2	3	3	5	5
Employer assistance or JTPA					
Number	3,353	809	477	900	1,167
Percent	17	12	10	23	28
Mean	$746	$539	$778	$1,394	$377
Standard error	69	94	96	213	50
Percent of total aid					
Mean	93	87	90	96	97
Standard error	1	4	4	2	2
Fellowship, scholarship or tuition reduction					
Number	2,232	900	748	564	19
Percent	11	13	15	14	0
Mean	$2,680	$2,689	$2,028	$3,575	(B)
Standard error	401	853	272	702	(B)

Table A-3. **Number of Recipients and Average Amount Received by Level of Enrollment and Aid Type: 1987-1988**—Continued

(Numbers in thousands)

Types of aid	Total	College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational, technical, business school or other
Percent of total aid					
Mean	62	61	55	71	(B)
Standard error	3	4	5	5	(B)
Other aid					
Number	2,416	1,043	669	441	262
Percent	12	15	13	11	6
Mean	$1,855	$1,266	$1,395	$3,605	$2,424
Standard error	218	198	298	908	561
Percent of total aid					
Mean	53	51	44	54	83
Standard error	3	4	5	7	6

B Base is less than 200.000 persons.

Table A-4. **Average Aid Received and Number of Recipients by Social and Demographic Characteristics: 1987-1988**

(Numbers in thousands)

Types of aid	Male	Female	White	Black	Hispanic	Other	Average monthly family income: Less than $2,100	Average monthly family income: $2,100 to $4,099	Average monthly family income: $4,100 or more	Dependent students	Independent students
All students	9,223	10,917	16,320	1,828	1,198	794	6,860	7,203	6,077	5,953	14,186
All aid recipients											
Number	4,709	5,332	7,917	1,194	600	331	3,860	3,768	2,414	3,084	6,957
Percent	51	49	49	65	50	42	56	52	40	52	49
Mean	$2,869	$2,588	$2,682	$2,772	$2,720	$3,425	$3,265	$2,418	$2,320	$3,493	$2,377
Standard error	260	154	164	346	450	1,252	219	277	246	328	151
Pell Grant											
Number	972	1,700	1,780	625	195	72	1,727	687	258	1,170	1,502
Percent	11	16	11	34	16	9	25	10	4	20	11
Mean	$1,127	$1,308	$1,160	$1,352	(B)	(B)	$1,324	$1,103	$1,065	$1,315	$1,185
Standard error	71	77	59	128	(B)	(B)	69	111	147	87	72
Percent of total aid											
Mean	47	54	46	62	(B)	(B)	52	48	58	52	51
Standard error	4	3	3	6	(B)	(B)	3	5	9	4	3
GI Bill or VEAP											
Number	423	98	406	56	38	21	220	196	105	70	451
Percent	5	1	2	3	3	3	3	3	2	1	3
Mean	$2,673	(B)	$2,775	(B)	(B)	(B)	$2,239	(B)	(B)	(B)	$2,540
Standard error	315	(B)	310	(B)	(B)	(B)	410	(B)	(B)	(B)	312
Percent of total aid											
Mean	81	(B)	76	(B)	(B)	(B)	75	(B)	(B)	(B)	81
Standard error	4	(B)	5	(B)	(B)	(B)	7	(B)	(B)	(B)	5
SEOG or college work study											
Number	433	621	743	165	113	33	550	340	164	556	498
Percent	5	6	5	9	9	4	8	5	3	9	4
Mean	$964	$1,101	$977	(B)	(B)	(B)	$1,179	$876	(B)	$995	$1,101
Standard error	119	137	104	(B)	(B)	(B)	167	114	(B)	108	166
Percent of total aid											
Mean	37	27	30	(B)	(B)	(B)	27	36	(B)	31	31
Standard error	7	3	4	(B)	(B)	(B)	4	8	(B)	5	5
Loan											
Number	1,507	1,800	2,599	466	175	67	1,580	1,123	605	1,576	1,731
Percent	16	16	16	25	15	8	23	16	10	26	12
Mean	$2,619	$2,565	$2,642	$2,516	(B)	(B)	$2,665	$2,473	$2,608	$2,333	$2,823
Standard error	198	169	140	418	(B)	(B)	204	161	328	145	204
Percent of total aid											
Mean	67	63	66	65	(B)	(B)	60	69	69	64	66
Standard error	3	3	2	6	(B)	(B)	3	3	4	3	3
Employer assistance or JTPA											
Number	1,637	1,716	2,953	223	85	92	789	1,583	981	90	3,263
Percent	18	16	18	12	7	12	12	22	16	2	23
Mean	$833	$664	$744	$846	(B)	(B)	$701	$728	$812	(B)	$730
Standard error	109	85	73	367	(B)	(B)	145	109	108	(B)	68
Percent of total aid											
Mean	92	95	94	92	(B)	(B)	86	96	95	(B)	94
Standard error	2	2	1	8	(B)	(B)	4	2	2	(B)	1
Fellowship, scholarship or tuition reduction											
Number	955	1,276	1,896	177	92	67	787	813	632	1,252	979
Percent	10	12	12	10	8	8	11	11	10	21	7

Table A-4. **Average Aid Received and Number of Recipients by Social and Demographic Characteristics: 1987-1988**—Continued

(Numbers in thousands)

Types of aid	Male	Female	White	Black	Hispanic	Other	Average monthly family income			De-pendent students	Inde-pendent students
							Less than $2,100	$2,100 to $4,099	$4,100 or more		
Mean	$3,176	$2,310	$2,696	(B)	(B)	(B)	$2,523	$2,921	$2,568	$2,580	$2,808
Standard error	846	329	458	(B)	(B)	(B)	463	978	466	619	459
Percent of total aid											
Mean	65	59	63	(B)	(B)	(B)	54	62	72	59	65
Standard error	4	4	3	(B)	(B)	(B)	5	5	5	4	4
Other aid											
Number	1,159	1,257	1,774	294	219	129	1,166	695	555	1,009	1,406
Percent	13	12	11	16	18	16	17	10	9	17	10
Mean	$2,174	$1,561	$1,772	$1,024	$2,385	(B)	$2,079	$1,696	$1,582	$1,422	$2,166
Standard error	406	203	211	242	850	(B)	363	317	410	240	330
Percent of total aid											
Mean	53	52	51	40	73	(B)	52	52	56	45	58
Standard error	4	4	3	9	11	(B)	4	5	6	4	4

- Represents zero.
B Base is less than 200,000 persons.

Table A-5. **Average Cost, Aid, and Net Cost by Level of Enrollment and Other Social and Demographic Variables: 1987-1988**

Cost	Total	Level of enrollment				Sex		Race/Ethnicity				Average monthly family income			Dependency status	
		College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational, technical, business school, or other	Male	Female	White	Black	Hispanic	Other	Less than $2,100	$2,100 to $4,099	$4,100 or over	Dependent students	Independent students
All students																
Total cost																
Mean	$2,414	$2,607	$3,408	$2,327	$1,009	$2,608	$2,250	$2,448	$2,719	$2,097	$1,476	$2,389	$2,032	$2,894	$4,158	$1,682
Standard error	77	130	170	172	106	120	99	84	310	332	246	130	118	149	163	74
Total aid																
Mean	$1,356	1,364	1,459	1,962	661	1,465	1,264	1,301	1,812	1,361	1,428	1,837	1,265	921	1,810	1,166
Standard error	80	152	128	240	84	145	86	87	266	278	568	143	151	110	187	82
Net cost																
Mean	$1,058	1,243	1,948	365	348	1,143	985	1,147	908	736	48	552	767	1,973	2,348	516
Standard error	90	168	178	227	110	160	99	99	319	305	496	149	150	162	220	83
Percent of total cost covered by aid																
Mean	37	35	34	40	41	38	36	36	50	38	33	45	39	26	34	38
Standard error	1	2	2	3	3	2	2	1	5	5	6	2	2	2	2	1
Students not receiving aid																
Total cost																
Mean	$1,949	$2,204	$2,915	$1,473	$861	$2,247	$1,708	$2,038	$2,052	$1,272	$1,055	$1,681	$1,466	$2,620	$3,763	$1,229
Standard error	95	171	216	175	138	159	115	104	498	367	239	166	130	181	223	80
Total aid																
Mean	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Standard error	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net cost																
Mean	$1,949	$2,204	$2,915	$1,473	$861	$2,247	$1,708	$2,038	$2,052	$1,272	$1,055	$1,681	$1,466	$2,620	$3,763	$1,229
Standard error	95	171	216	175	138	159	115	104	498	367	239	166	130	181	223	80
Percent of total cost covered by aid																
Mean	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Standard error	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Students receiving aid																
Total cost																
Mean	$2,881	$3,006	$3,911	$3,110	$1,173	$2,954	$2,817	$2,883	$3,073	$2,920	$2,065	$2,938	$2,548	$3,310	$4,524	$2,153
Standard error	118	194	259	278	162	175	160	132	388	522	461	186	189	255	235	123
Total aid																
Mean	$2,720	2,714	2,949	3,762	1,390	2,869	2,588	2,682	2,772	2,720	3,425	3,265	2,418	2,320	3,493	2,377
Standard error	146	283	206	417	158	260	154	164	346	450	1252	219	277	246	328	151
Net cost																
Mean	$161	291	962	-651	-217	85	229	201	301	200	-1360	-327	130	991	1032	-225
Standard error	147	277	266	393	163	260	156	165	389	474	1,081	217	261	288	352	142
Percent of total cost covered by aid																
Mean	74	70	69	76	85	74	74	73	76	76	79	80	74	66	65	78
Standard error	1	2	3	3	2	2	2	1	4	5	6	2	2	3	2	1

- Represents zero.

Table A-6. **Persons Receiving Aid and the Percent of Total Costs Covered by Level of Enrollment and Other Social and Demographic Variables: 1987-1988**

Item	Total	Level of enrollment				Sex		Race/Ethnicity				Average monthly family income				
		College years 1 to 2	College years 3 to 4	College years 5 or higher	Vocational, technical, business school, or other	Male	Female	White	Black	Hispanic	Other	Less than $2,100	$2,100 to $4,099	$4,100 or more	Dependent students	Independent students
All students[1]	20,140	7,011	4,966	3,925	4,238	9,223	10,917	16,320	1,828	1,198	794	6,860	7,203	6,077	5,953	14,186
Students receiving aid[1]	10,041	3,522	2,458	2,047	2,014	4,709	5,332	7,917	1,194	600	331	3,860	3,768	2,414	3,084	6,957
Percent of all students with:																
No costs covered	50	50	51	48	52	49	51	51	35	50	58	44	48	60	48	51
Up to 25 percent of total costs covered	6	7	9	5	2	6	6	6	8	5	3	5	6	8	10	5
26 to 50 percent of total costs covered	8	9	7	8	6	7	8	7	8	8	8	7	8	7	9	7
51 to 75 percent of total costs covered	6	7	9	5	4	7	6	6	7	7	4	6	7	5	9	5
76 to 100 percent of total costs covered	12	8	8	14	20	13	11	12	12	10	6	11	14	9	5	15
More than 100 percent of total costs	18	18	17	20	16	18	18	17	29	20	21	27	16	11	19	18

[1]Numbers in thousands.

Appendix B. **Overview of the SIPP Program**

BACKGROUND

The Survey of Income and Program Participation (SIPP) provides a major expansion in the kind and amount of information available to analyze the economic situation of households and persons in the United States. The information supplied by this survey is expected to provide a better understanding of the level and changes in the level of well-being of the population and of how economic situations are related to the demographic and social characteristics of individuals. The data collected in SIPP will be especially useful in studying Federal transfer programs, estimating program cost and effectiveness, and assessing the effect of proposed changes in program regulations and benefit levels. Analysis of other important national issues such as tax reform, Social Security program costs, and national health insurance can be expanded and refined, based on the information from this survey.

The first interviews in the SIPP took place in October 1983, nearly 8 years after the research and developmental phase, the Income Survey Development Program (ISDP), was initiated by the Department of Health, Education, and Welfare in 1975. Between 1975 and 1980 extensive research was undertaken to design and test new procedures for collecting income and related socioeconomic data on a subannual basis and in a longitudinal framework. Much of the work centered around four experimental field tests that were conducted in collaboration with the Bureau of the Census to examine different concepts, procedures, questionnaires, and recall periods. Two of the tests were restricted to a small number of geographic sites; the other two were nationwide. In the first nationwide test, the 1978 Research Panel, approximately 2,000 households were interviewed. Because of the relatively small number of interviews, controlled experimental comparisons of alternatives were not possible; however, the panel did demonstrate that many new ideas and methods were feasible. It also laid a foundation for the largest and most complex test: the 1979 Research Panel. This panel consisted of a nationally representative sample of 8,200 households and provided a vehicle for feasibility tests and controlled experiments of alternative design features.

In the fall of 1981, virtually all funding for ISDP research and planning of the continuing SIPP program was deleted from the budget of the Social Security Administration. The loss of funding for fiscal year 1982 brought all work on the new survey to a halt. In fiscal year 1983, however, money for initiation of the new survey was allotted in the budget of the Bureau of the Census. Work began almost immediately in preparation for the survey start in October 1983. The design of the questionnaire for the first interview was similar in structure to that used in the 1979 ISDP panel study with two important exceptions. First, the reference period for the questions was extended from 3 months to 4 months in order to reduce the number of interviews and, therefore, lower costs. Second, the questions covering labor force activity were expanded in order to provide estimates that were closer, on a conceptual basis, to those derived from the Current Population Survey (CPS). The design also incorporated a number of other modifications resulting from experience with the 1979 pilot study.

SURVEY CONTENT

There are three basic elements contained in the overall design of the survey content. The first is a control card that serves several important functions. The control card is used to record basic social and demographic characteristics for each person in the household at the time of the initial interview. Because households are interviewed a total of 8 or 9 times, the card is also used to record changes in characteristics such as age, educational attainment, and marital status and to record the dates when persons enter or leave the household. Finally, during each interview, information on each source of income received and the name of each job or business is transcribed to the card so that this information can be used in the updating process in subsequent interviews.

The second major element of the survey content is the core portion of the questionnaire. The core questions are repeated at each interview and cover labor force activity, the types and amounts of income received during the 4-month reference period, and participation status in various programs. Some of the important elements of labor force activity are recorded separately for each week of the period. Income recipiency and amounts are recorded on a monthly basis with the exception of amounts of property income (interest, dividends, rent, etc.). Data for these types are recorded as totals for the 4-month period. The core also contains questions covering attendance in postsecondary schools,

private health insurance coverage, public or subsidized rental housing, low-income energy assistance, and school breakfast and lunch participation.

The third major element is the various supplements or topical modules that are included during selected household visits. The topical modules cover areas that need not be examined every 4 months. Certain of these topical modules are considered to be so important that they are viewed as an integral part of the overall survey. Other topical modules have more specific and more limited purposes. The reference periods of the topical modules may vary as well.

Questions on enrollment and related costs and financing were first asked in the ninth wave (interview) of the 1984 panel as part of the School Enrollment and Financing Module. Beginning with the 1985 panel, this module has been administered as part of the fifth wave of each SIPP panel (except for 1989 when only 3 waves of data were collected). In 1986, the School Enrollment and Financing module was asked in the eighth wave as well; the module was not administered in the eighth wave until the 1990 panel. Appendix F shows the School Enrollment and Financing Topical Module as it appeared in the 1990 panel, Wave 5 interview.

SAMPLE DESIGN

The SIPP sample design for the 1990 panel consists of about 29,000 housing units selected to represent the noninstitutional population of the United States. (See appendix D for more details on the procedures used to select the sample.) About 23,300 of these were occupied and eligible for interview. Each household in the sample was scheduled to be interviewed at 4-month intervals over a period of 2.5 years beginning in February 1990. The reference period for the questions is the 4-month period preceding the interview. For example, households interviewed in February 1990 were asked questions for the months October, November, December, and January. This household was interviewed again in June 1990 for the February through May period. The sample households within a given panel are divided into four subsamples of nearly equal size. These subsamples are called rotation groups and one rotation group is interviewed each month. In general, one cycle of four interviews covering the entire sample, using the same questionnaire, is called a wave. This design was chosen because it provides a smooth and steady work load for data collection and processing.

Interviews for the second wave of the 1990 panel were conducted during June, July, August, and September of 1991. In each case, the reference period was the 4 months prior to the interview. Table B-1 shows the reference and interview months for the fifth wave data used in this report. As is seen, most of the reference period covers the spring of 1991.

Table B-1. **Interview and Reference Periods for the Fifth Wave of the 1990 SIPP Panel**

Rotation	Interview months	Reference months
2	June1991	Feb. - May
3	July1991	March - June
4	August1991	April - July
1	September 1991	May - August

SURVEY OPERATIONS

Data collection operations are managed through the Census Bureau's 12 permanent regional offices. A staff of interviewers assigned to SIPP conduct interviews by personal visit each month with most interviewing completed during the first 2 weeks of that month. Completed questionnaires are transmitted to the regional offices where they undergo an extensive clerical edit before being entered into the Bureau's SIPP data processing system. Upon entering this processing system the data are subjected to a detailed computer edit. Errors identified in this phase are corrected and computer processing continues.

Two of the major steps of computer processing are the assignment of weights to each sample person and imputation for missing survey responses. The weighting procedures assure that SIPP estimates of the number of persons agree with independent estimates of the population within specified age, race, and sex categories. The procedures also assure close correspondence with monthly CPS estimates of households. In almost all cases, a survey nonresponse is assigned a value in the imputation phase of processing. The imputation for missing responses is based on procedures generally referred to as the "hot deck" approach. This approach assigns values for nonresponses from sample persons who did provide responses and who have characteristics similar to those of the nonrespondents.

The longitudinal design of SIPP dictates that all persons 15 years old and over present as household members at the time of the first interview be part of the survey throughout the entire 2.5 year period. To meet this goal, the survey collects information useful in locating persons who move. In addition, field procedures were established that allow for the transfer of sample cases between regional offices. Persons moving within a 100-mile radius of an original sampling area (a county or group of counties) are followed and continue with the normal personal interviews at 4-month intervals. Those moving to a new residence that falls outside the 100-mile radius of any SIPP sampling area are interviewed by telephone. The geographic areas defined by these rules contain more than 95 percent of the U.S. population.

Because most types of analysis using SIPP data will be dependent not on data for individuals but on groups of individuals (households, families, etc.), provisions

were made to interview all "new" persons living with original sample persons (those interviewed in the first wave). These new sample persons entering the survey through contact with original sample persons are considered as part of the sample only while residing with the original sample person.

Appendix C. **Definitions and Explanations**

Population coverage. The estimates in this report are restricted to the civilian, noninstitutional population of the United States and members of the Armed Forces living off post or with their families on post. The estimates exclude group quarters.

Householder. Survey procedures call for listing first the person (or one of the persons) in whose name the home is owned or rented as of the interview date. If the house is owned jointly by a married couple, either the husband or the wife may be listed first, thereby becoming the reference person, or householder, to whom the relationship of other household members is recorded. One person in each household is designated as the "householder." The number of householders, therefore, is equal to the number of households.

Household. A household consists of all the persons who occupy a housing unit. A house, an apartment or other group of rooms, or a single room is regarded as a housing unit when it is occupied or intended for occupancy as separate living quarters; that is, when the occupants do not live and eat with any other persons in the structure and there is direct access from the outside or through a common hall.

For this report, the household composition was determined as of the interview date. A household includes the related family members and all the unrelated persons, if any, such as lodgers, foster children, wards, or employees who share the housing unit. A person living alone in a housing unit, or a group of unrelated persons sharing a housing unit as partners, is also counted as a household. The count of households excludes group quarters. Examples of group quarters include rooming and boarding houses, college dormitories, and convents and monasteries.

Family. A family is a group of two or more persons (one of whom is the householder) related by blood, marriage, or adoption and residing together; all such persons (including related subfamily members) are considered members of one family.

Family household. A family household is a household maintained by a family; any unrelated persons (unrelated subfamily members and/or secondary individuals) who may be residing there are included. The number of family households is equal to the number of families. The count of family household members differs from the count of family members, however, in that the family household members include all persons living in the household, whereas family members include only the householder and his/her relatives.

Nonfamily household. A nonfamily household is a household maintained by a person living alone or with nonrelatives only.

Race/Ethnicity. The data are collected by race and by ethnicity. For this report, the population is divided into four groups on the basis of race and ethnicity: White, not Hispanic; Black, not Hispanic; "other races," not Hispanic; and Hispanic. The category of "other races" includes both Native Americans and Asian/Pacific Islanders who are not of Hispanic origin, as well as any other race except White and Black who are not of Hispanic origin. Hispanic origin was determined on the basis of a question that asked for self-identification of the person's origin or descent. Respondents were asked to select their origin (or the origin of some other household member) from a "flash card" listing ethnic origins. Persons of Hispanic origin, in particular, were those who indicated that their origin was Mexican, Puerto Rican, Cuban, Central or South American, or some other Spanish origin.

Enrollment. Enrollment includes any postsecondary enrollment in the past 12 months. Enrollment includes both full-time and part-time enrollment.

Level of enrollment. The level of enrollment refers to enrollment in the past 12 months. If a person was enrolled at more than one level in the past year, then the level of enrollment is the grade or level in which the greatest amount of time was spent. "College years" refers to the level of enrollment and not the actual number of years spent in college. For example, college year 1 refers to the freshman year of college. A student who attended college part-time for two years may still be classified as a freshman. Vocational, technical, business, or other postsecondary school are postsecondary institutions which are sometimes referred to as "less than 2 year" institutions.

Dependency status. Students are classified as either dependent or independent students. Students are assigned

dependency status based on several demographic characteristics as opposed to institutional or selfidentification. The definition of independent students is intended to be as close to that of financial aid programs (such as the Pell Grant) as the data allow. However, due to limitations of the data, the definitions are not exact. In this report, students are classified as independent if they are either: married; 24 years of age or older; a veteran; the reference person of the household; or if they have health insurance under their own name.

Financial aid recipiency. The estimate is based on the number of persons who reported receiving any of the 12 categories of educational assistance listed on the questionnaire during the past 12 months. The 12 categories include: 1) GI Bill; 2) other Veterans' Educational Assistance Programs; 3) College Work Study Program; 4) Pell Grant; 5) Supplemental Educational Opportunity Grant; 6) National Direct Student Loan; 7) Guaranteed Student Loan; 8) JTPA training program; 9) employer assistance; 10) fellowship or scholarship; 11) tuition reduction; and 12) anything else other than assistance from relatives and friends.

Some of the financial aid sources had very few recipients. As a result, the 12 sources were collapsed into the following 7 categories for the tabulations in this report:

Pell Grant. This category includes only the Pell Grant; no other categories were combined here.

GI Bill or VEAP. The GI Bill was combined with other Veterans' Educational Assistance Programs. This would include programs such as Survivors and Dependents, Vocational Rehabilitation, and Post-Vietnam Veterans' Assistance.

SEOG or College Work Study. This category includes the Supplemental Educational Opportunity Grant (SEOG) and the College (or Federal) Work Study Program.

Loan. The two loans specified in the questionnaire included here are the National Direct Student Loan (NDSL or Perkins Loan) and the Guaranteed Student Loan (or Stafford Loan).

Employer Assistance or JTPA. Most persons in this category are recipients of financial aid from their employer. Only 8 percent of persons in this category reported receiving educational assistance through the Job Partnership Training Act (JTPA) programs. Employer assistance includes any educational assistance ranging from tuition payments to stipends for living expenses.

Fellowship, scholarship, or tuition reduction. This category combines the single category of fellowships and scholarships with aid from a tuition reduction (or tuition remission). Fellowships and scholarships include those awarded from the institution attended, the government, or outside organizations such as private corporations, foundations, or community groups.

Other aid. This is a catchall category which includes any other type of educational assistance not previously mentioned EXCLUDING assistance from relatives and friends.

Total Aid. The estimate is the sum of the amounts received from each of the financial aid sources (see appendix F for a copy of the questionnaire). The average total aid is calculated only for those students who have received educational assistance.

Total Cost. The total cost is the sum of three cost components: tuition and fees; books and supplies; and room and board. The cost of room and board is determined only for those students who reported living away from home while attending school. The average total cost is calculated for all students and includes some students who report having no costs in any one or all of the components. The total cost is computed before financial aid is taken into account.

Net Cost. The net cost equals the total cost minus the total aid. The average net cost is calculated for all postsecondary students.

Percent of Costs Covered. The estimate is equal to the total aid received divided by the total cost. To calculate the mean, all students with more than 100 percent of their costs covered had the estimate top-coded to 100 percent so that the average would not be artificially inflated.

Average monthly family income. The estimate is based on the total amount of income received by all members of the individuals family during the 4 months prior to the interview month, divided by the number of months in which income was received. For persons without a family income (those persons who live alone or with nonrelatives), their personal income for the previous 4 months was used instead.

Symbols. A dash (-) represents zero or a number which rounds to zero; "B" means that the base is too small to show the derived measure (less than 200,000 persons).

Rounding of estimates. Individual numbers are rounded to the nearest thousand without being adjusted to group totals, which are independently rounded. Derived measures are based on unrounded numbers when possible; otherwise, they are based on the rounded numbers.

Appendix D. **Source and Accuracy of the Estimates**

SOURCE OF DATA

The SIPP universe is the noninstitutionalized resident population living in the United States. This population includes persons living in group quarters, such as dormitories, rooming houses, and religious group dwellings. Not eligible to be in the survey are crew members of merchant vessels, Armed Forces personnel living in military barracks, and institutionalized persons, such as correctional facility inmates and nursing home residents. Also not eligible are, United States citizens residing abroad. Foreign visitors who work or attend school in this country and their families are eligible; all others are not eligible. With the exceptions noted above, field representatives interview eligible persons who are at least 15 years of age at the time of the interview.

The 1990 panel SIPP sample is located in 230 Primary Sampling Units (PSUs) each consisting of a county or a group of contiguous counties. Within these PSUs, we systematically selected expected clusters of two living quarters (LQs) from lists of addresses prepared for the 1980 decennial census to form the bulk of the sample. To account for LQs built within each of the sample areas after the 1980 census, we selected a sample containing clusters of four LQs from permits issued for construction of residential LQs up until shortly before the beginning of the panel.

In jurisdictions that have incomplete addresses or don't issue building permits, we sampled small land areas, listed expected clusters of four LQs, and then subsampled. In addition, we selected a sample of LQs from a supplemental frame that included LQs identified as missed in the 1980 census.

The 1990 panel differs from other panels as a result of oversampling for low income households. The panel contains an oversample of Black headed households, Hispanic headed households and female headed family households with no spouse present and living with relatives.

The first interview occurred during February, March, April, or May of 1990. Interviews for approximately one-fourth of the sample took place in each of these months. For the remainder of the panel, interviews for each person occurred every four months. At each interview the reference period was the 4 months preceding the interview month.

Occupants of about 93 percent of all eligible living quarters participated in the first interview of the panel. For later interviews, field representatives interviewed only original sample persons (those in Wave 1 sample households and interviewed in Wave 1) and persons living with them. The Bureau automatically designated all first wave noninterviewed households as noninterviews for all subsequent interviews. Field representatives conducted personal interviews in the first, second, and sixth waves only. The remaining interviews were telephone interviews. For personal interviews we followed original sample persons if they moved to a new address, unless the new address was more than 100 miles from a SIPP sample area. If the original sample persons moved farther than 100 miles from a SIPP sample area, we attempted telephone interviews. When original sample persons moved to remote parts of the country and were unreachable by telephone, moved without leaving a forwarding address, or refused the interview, additional noninterviews resulted.

As a part of most waves, we cover subjects that are important to meet SIPP goals and don't require repeated measurement during the panel. The data on these subjects are of particular interest to data users and policy makers. We cover these subjects once during the panel or annually. By collecting data once for the panel or annually, we reduce respondent burden. We call a specific set of questions on a subject a topical module. For this report the topical modules analyzed include questions on Educational Attainment. We implemented them in Wave 5 of the 1990 panel.

Noninterviews. Tabulations in this report were drawn from interviews conducted from June through September 1991. Table D-1 summarizes information on nonresponse for the interview months in which we collected the data used to produce this report.

Table D-1. **Household Sample Size by Month and Interview Status**

Month	Eligible	Interviewed	Noninterviewed	Nonresponse rate (percent)[1]
June 1991	6,400	5,200	1,199	18.8
July 1991	6,400	5,200	1,175	18.3
August 1991	6,300	5,100	1,205	19.1
September 1991	6,300	5,100	1,193	19.0

[1]Due to rounding of all numbers to the nearest 100, there are some inconsistencies. We calculated the percentage using unrounded numbers.

Some respondents do not respond to some of the questions. Therefore, the overall nonresponse rate for some items such as income and money related items is higher than the nonresponse rates in table D-1. For more discussion of nonresponse see the *Quality Profile for the Survey of Income and Program Participation,* May 1990, by T. Jabine, K. King, and R. Petroni, available from Customer Services, Data Users Services Division, of the U.S. Census Bureau (301-763-6100).

WEIGHTING PROCEDURE

We derived SIPP person weights in each panel from several stages of weight adjustments. In the first wave, we gave each person a base weight equal to the inverse of his/her probability of selection. For each subsequent interview, the Bureau gave each person a base weight that accounted for following movers.

We applied a factor to each interviewed person's weight to account for the SIPP sample areas not having the same population distribution as the strata they are from.

We applied a noninterview adjustment factor to the weight of every occupant of interviewed households to account for persons in noninterviewed occupied households which were eligible for the sample. (The Bureau treated individual nonresponse within partially interviewed households with imputation. We made no special adjustment for noninterviews in group quarters.)

The Bureau used complex techniques to adjust the weights for nonresponse. For a further explanation of the techniques used, see the *Nonresponse Adjustment Methods for Demographic Surveys at the U.S. Bureau of the Census,* November 1988, Working paper 8823, by R. Singh and R. Petroni. The success of these techniques in avoiding bias is unknown. An example of successfully avoiding bias is in "Current Nonresponse Research for the Survey of Income and Participation" (paper by Petroni, presented at the Second International Workshop on Household Survey Nonresponse, October 1991).

We performed an additional stage of adjustment to persons' weights to reduce the mean square errors of the survey estimates. We accomplished this by ratio adjusting the sample estimates to agree with monthly Current Population Survey (CPS) type estimates of the civilian (and some military) noninstitutional population of the United States at the national level by demographic characteristics including age, sex, and race as of the specified date. The Bureau brought CPS estimates by age, sex, and race into agreement with adjusted estimates from the 1980 decennial census. Adjustments to the 1980 decennial census estimates reflect births, deaths, immigration, emigration, and changes in the Armed Forces since 1980. In addition, we controlled SIPP estimates to independent Hispanic controls and made an adjustment to assign equal weights to husbands and wives within the same household. We implemented all of the above adjustments for each reference month and the interview month.

ACCURACY OF ESTIMATES

We base SIPP estimates on a sample. The sample estimates may differ somewhat from the values obtained from administering a complete census using the same questionnaire, instructions, and enumerators. The difference occurs because with an estimate based on a sample survey two types of errors are possible: nonsampling and sampling. We can provide estimates of the magnitude of the SIPP sampling error, but this is not true of nonsampling error. The next few sections describe SIPP nonsampling error sources, followed by a discussion of sampling error, its estimation, and its use in data analysis.

Nonsampling Variability. We attribute nonsampling errors to many sources, they include:

- inability to obtain information about all cases in the sample,
- definitional difficulties,
- differences in the interpretation of questions,
- inability or unwillingness on the part of the respondents to provide correct information,
- inability to recall information,
- errors made in collection (e.g. recording or coding the data),
- errors made in processing the data,
- errors made in estimating values for missing data,
- biases resulting from the differing recall periods caused by the interviewing pattern used,
- undercoverage.

We used quality control and edit procedures to reduce errors made by respondents, coders and interviewers. More detailed discussions of the existence and control of nonsampling errors in the SIPP are in the *SIPP Quality Profile*.

Undercoverage in SIPP resulted from missed living quarters and missed persons within sample households. It is known that undercoverage varies with age, race, and sex. Generally, undercoverage is larger for males than for females and larger for Blacks than for Nonblacks. Ratio estimation to independent age-race-sex population controls partially corrects for the bias due to survey undercoverage. However, biases exist in the estimates when persons in missed households or

missed persons in interviewed households have characteristics different from those of interviewed persons in the same age-race-sex group. Further, we didn't adjust the independent population controls for undercoverage in the Census.

A common measure of survey coverage is the coverage ratio, the estimated population before ratio adjustment divided by the independent population control. Table D-2 shows CPS coverage ratios for age-sex-race groups for 1992. The CPS coverage ratios can exhibit some variability from month to month, but these are a typical set of coverage ratios. Other Census Bureau household surveys like the SIPP experience similar coverage.

Table D-2. **1992 CPS Coverage Ratios**

Age	Non-Black		Black		All persons		
	Males	Females	Males	Females	Males	Females	Total
0-14 years	0.963	0.965	0.927	0.926	0.957	0.959	0.958
15 years	0.962	0.949	0.899	0.919	0.952	0.944	0.948
16 years	0.969	0.936	0.923	0.907	0.962	0.932	0.947
17 years	0.981	0.975	0.945	0.862	0.975	0.957	0.966
18 years	0.939	0.926	0.883	0.846	0.930	0.913	0.922
19 years	0.860	0.872	0.754	0.801	0.844	0.861	0.853
20-24 years	0.913	0.927	0.734	0.832	0.889	0.913	0.901
25-26 years	0.927	0.940	0.688	0.877	0.897	0.931	0.914
27-29 years	0.910	0.954	0.707	0.864	0.885	0.941	0.914
30-34 years	0.893	0.948	0.691	0.883	0.870	0.939	0.905
35-39 years	0.910	0.949	0.763	0.899	0.895	0.942	0.919
40-44 years	0.929	0.951	0.824	0.906	0.919	0.946	0.933
45-49 years	0.956	0.966	0.903	0.956	0.951	0.965	0.958
50-54 years	0.940	0.961	0.807	0.877	0.927	0.951	0.940
55-59 years	0.944	0.941	0.826	0.825	0.932	0.928	0.930
60-62 years	0.965	0.956	0.792	0.850	0.948	0.944	0.946
63-64 years	0.905	0.907	0.669	0.872	0.884	0.903	0.894
65-67 years	0.935	0.979	0.783	0.875	0.921	0.969	0.947
68-69 years	0.925	0.942	0.789	0.831	0.913	0.931	0.923
70-74 years	0.926	0.993	0.856	1.014	0.920	0.995	0.962
75-99 years	0.977	0.989	0.764	0.912	0.961	0.983	0.975
15+	0.928	0.953	0.782	0.883	0.912	0.944	0.929
0+	0.936	0.955	0.827	0.895	0.923	0.947	0.935

Comparability with Other Estimates. Exercise caution when comparing data from this report with data from other SIPP publications or with data from other surveys. Comparability problems are from varying seasonal patterns for many characteristics, different nonsampling errors, and different concepts and procedures. Refer to the *SIPP Quality Profile* for known differences with data from other sources and further discussion.

Sampling Variability. Standard errors indicate the magnitude of the sampling error. They also partially measure the effect of some nonsampling errors in response and enumeration, but do not measure any systematic biases in the data. The standard errors mostly measure the variations that occurred by chance because we surveyed a sample rather than the entire population.

USES AND COMPUTATION OF STANDARD ERRORS

Confidence Intervals. The sample estimate and its standard error enable one to construct confidence intervals, ranges that would include the average result of all possible samples with a known probability. For example, if we selected all possible samples and surveyed each of these under essentially the same conditions and with the same sample design, and if we calculated an estimate and its standard error from each sample, then:

1. Approximately 68 percent of the intervals from one standard error below the estimate to one standard error above the estimate would include the average result of all possible samples.
2. Approximately 90 percent of the intervals from 1.645 standard errors below the estimate to 1.645 standard errors above the estimate would include the average result of all possible samples.
3. Approximately 95 percent of the intervals from 1.960 standard errors below the estimate to 1.960 standard errors above the estimate would include the average result of all possible samples.

The average estimate derived from all possible samples is or is not contained in any particular computed interval.

However, for a particular sample, one can say with a specified confidence that the confidence interval includes the average estimate derived from all possible samples.

Hypothesis Testing. One may also use standard errors for hypothesis testing. Hypothesis testing is a procedure for distinguishing between population characteristics using sample estimates. The most common type of hypothesis tested is 1) the population characteristics are identical versus 2) they are different. One can perform tests at various levels of significance, where a level of significance is the probability of concluding that the characteristics are different when, in fact, they are identical.

Unless noted otherwise, all statements of comparison in the report passed a hypothesis test at the 0.10 level of significance or better. This means that, for differences cited in the report, the estimated absolute difference between parameters is greater than 1.645 times the standard error of the difference.

To perform the most common test, compute the difference $X_A - X_B$, where X_A and X_B are sample estimates of the characteristics of interest. A later section explains how to derive an estimate of the standard error of the difference $X_A - X_B$. Let that standard error be sDIFF. If $X_A - X_B$ is between -1.645 times s_{DIFF} and +1.645 times s_{DIFF}, no conclusion about the characteristics is justified at the 10 percent significance level. If, on the other hand, $X_A - X_B$ is smaller than -1.645 times s_{DIFF} or larger than +1.645 times s_{DIFF}, the observed difference is significant at the 10 percent level. In this event, it is commonly accepted practice to say that the characteristics are different. Of course, sometimes this conclusion will be wrong. When the characteristics are, in fact, the same, there is a 10 percent chance of concluding that they are different.

Note that as we perform more tests, more erroneous significant differences will occur. For example, at the 10-percent significance level, if we perform 100 independent hypothesis tests in which there are no real differences, it is likely that about 10 erroneous differences will occur. Therefore, interpret the significance of any single test cautiously.

Note Concerning Small Estimates and Small Differences. We show summary measures in the report only when the base is 200,000 or greater. Because of the large standard errors involved, there is little chance that estimates will reveal useful information when computed on a base smaller than 200,000. Also, nonsampling error in one or more of the small number of cases providing the estimate can cause large relative error in that particular estimate. We show estimated numbers, however, even though the relative standard errors of these numbers are larger than those for the corresponding percentages. We provide smaller estimates primarily to permit such combinations of the categories as serve each user's needs. Therefore, be careful in the interpretation of small differences since even a small amount of nonsampling error can cause a borderline difference to appear significant or not, thus distorting a seemingly valid hypothesis test.

Standard Error Parameters and Tables and Their Use. Most SIPP estimates have greater standard errors than those obtained through a simple random sample because we sampled clusters of living quarters for the SIPP. To derive standard errors at a moderate cost and applicable to a wide variety of estimates, we made a number of approximations. We grouped estimates with similar standard error behavior and developed two parameters (denoted "a" and "b") to approximate the standard error behavior of each group of estimates. Because the actual standard error behavior was not identical for all estimates within a group, the standard errors we computed from these parameters provide an indication of the order of magnitude of the standard error for any specific estimate. These "a" and "b" parameters vary by characteristic and by demographic subgroup to which the estimate applies. Use base "a" and "b" parameters found in table D-3 for Wave 5 1990 panel estimates.

For users who wish further simplification, we also provide general standard errors in tables D-4 and D-5. Note that you need to adjust these standard errors by a factor from table D-3. The standard errors resulting from this simplified approach are less accurate. Methods for using these parameters and tables for computation of standard errors are given in the following sections.

Standard Errors of Estimated Numbers. There are two ways to compute the approximate standard error, sx, of an estimated number shown in this report. The first uses the formula

$$s_x = fs \qquad (1)$$

where f is a factor from table D-3, and s is the standard error of the estimate obtained by interpolation from table D-4. Alternatively, approximate sx using the formula,

$$s_x = \sqrt{ax^2 + bx} \qquad (2)$$

from which we calculated the standard errors in table D-4. Here x is the size of the estimate and a and b are the parameters in table D-3 associated with the particular type of characteristic. Use of formula 2 will provide more accurate results than the use of formula 1. When calculating standard errors for numbers from cross-tabulations involving different characteristics, use the factor or set of parameters for the characteristic which will give the largest standard error.

Illustration. Suppose the SIPP estimate of the number of students enrolled in postsecondary schools receiving some form of financial aid during the 1990-1991 school year is 10,000,000. The appropriate "a" and "b" parameters and the "f" factor to use for calculating the standard error for the estimate are found from table D-3 to be:

$$a = -0.0000312,\ b = 5913,\ f = 0.95.$$

From table D-4,

$$s = 264{,}000.$$

Using formula (1), the approximate standard error is

$$s_x = 0.95\ (264{,}000) = 251{,}000.$$

The 90-percent confidence interval is from 9,587,000 to 10,413,000. Therefore, a conclusion that the average estimate derived from all possible samples, lies within a range computed in this way would be correct for roughly 90 percent of all samples.

Using formula (2), the approximate standard error is

$$s_x = \sqrt{(-0.0000312)(10{,}000{,}000)^2 + (5913)(10{,}000{,}000)} = 237000.$$

The 90-percent confidence interval is from 9,610,000 to 10,390,000.

Standard Errors of Estimated Percentages. The reliability of an estimated percentage, computed using sample data for both numerator and denominator, depends on the size of the percentage and its base. When the numerator and denominator of the percentage have different parameters, use the parameter (or appropriate factor) from table D-3 indicated by the numerator.

Calculate the approximate standard error, $s_{(x,p)}$, of an estimated percentage p using the formula

$$s_{(x,p)} = fs \qquad (3)$$

where p is the percentage of persons/families/households with a particular characteristic such as the percent of persons owning their own homes.

In this formula, f is the appropriate "f" factor from table D-3, and s is the standard error of the estimate obtained by interpolation from table D-5.

Alternatively, approximate it by the formula:

$$s_{(x,p)} = \sqrt{\frac{b}{x}(p)(100-p)} \qquad (4)$$

from which we calculated the standard errors in table D-5. Here x is the total number of persons, families, households, or unrelated individuals in the base of the percentage, p is the percentage ($0 \leq p \leq 100$), and b is the "b" parameter in tables D-3 associated with the characteristic in the numerator of the percentage. Use of this formula will give more accurate results than use of formula (3) above.

Illustration. Suppose the SIPP estimate of the number of high school graduates ages 17 and above enrolled in postsecondary school in 1990-1991 is 20,000,000. Of these, 25 percent were enrolled in the 3rd and 4th years of college. Using formula (3) with the "f" factor of 0.95 from table D-3, and s from table D-5, the approximate standard error is

$$s_{(x,p)} = (0.95)(0.78)$$
$$= 0.74 \text{ percent.}$$

Using formula (4) and the "b" parameter of 5913 from table D−3, the approximate standard error is

$$s_{(s,p)} = \sqrt{\frac{5913}{20{,}000{,}000}(25)(100-25)}$$
$$= .74 \text{ percent}$$

Consequently, the 90-percent confidence interval is from 23.8 to 26.2 percent.

Standard Error of a Difference. The standard error of a difference between two sample estimates, x and y, is approximately equal to

$$s_{(x-y)} = \sqrt{s_x^2 + s_y^2 - 2rs_xs_y} \qquad (5)$$

where s_x and s_y are the standard errors of the estimates x and y and r is the correlation coefficient between the characteristics estimated by x and y. The estimates can be numbers, averages, percents, ratios, etc. Underestimates or overestimates of standard error of differences result if the estimated correlation coefficient is overestimated or underestimated, respectively. In this report, we assume r is zero.

Illustration. Suppose we need the difference in the percentage of females enrolled in the first 2 years of college and the percentage of males enrolled in the first 2 years of college. Of the 11,121,000 females enrolled in post secondary schools, 37 percent were enrolled in the first 2 years of college. Of the 9,439,000 males enrolled in post secondary schools, 32 percent were enrolled in the first 2 years of college.

Using the appropriate "b" parameter from table D-3 and formula (4), the standard errors of the percentages, for females and males enrolled in the first 2 years of college are 1.12 and 1.17 percent respectively.

Assuming that there is no correlation between these two estimates, the standard error of the difference using formula (5) is

$$s_{(x-y)} = \sqrt{(1.12)^2 + (1.17)^2} = 1.62.$$

To test whether the two percentages are significantly different at the 10 percent significance level, compare the difference of 5 percent to the product 1.62 x 1.645 = 2.66 percent. Since the difference is larger than 1.645 times the standard error of the difference, the data shows that the estimates of 37 and 32 percent differ significantly at the 10-percent level.

Table D-3. **SIPP Topical Module Generalized Variance Parameters**

Characteristics	a	b	f
1990 panel, wave 5			
All persons	-0.0000312	5,913	0.95
White	-0.0000405	6,553	1.00
Black	-0.0001972	4,273	0.81
Hispanic	-0.0003048	4,273	0.81
1987 panel, wave 5			
All persons	-0.0000806	10,393	1.26

Table D-4. **Standard Errors of Estimated Numbers of Persons**

(In thousands)

Size of estimate	Standard error	Size of estimate	Standard error
200	36	25,000	435
300	44	30,000	483
500	57	35,000	528
600	63	40,000	572
1,000	81	45,000	614
2,000	115	50,000	655
3,000	142	75,000	848
5,000	184	80,000	885
8,000	235	90,000	958
10,000	264	100,000	1030
12,000	291	120,000	1070
15,000	328	125,000	1205
18,000	362	140,000	1308
20,000	384	150,000	1376

Table D-5. **Standard Errors of Estimated Percentages of Persons**

Base of estimated percentage (thousands)	Estimated percentages					
	≤ 1 or ≤ 99	2 or 98	5 or 95	10 or 90	25 or 75	50
200	1.80	2.53	3.95	5.43	7.84	9.05
300	1.47	2.07	3.22	4.43	6.40	7.39
500	1.14	1.60	2.50	3.43	4.96	5.72
600	1.04	1.46	2.28	3.14	4.53	5.23
1,000	0.81	1.13	1.76	2.43	3.51	4.05
2,000	0.57	0.80	1.25	1.72	2.48	2.86
3,000	0.47	0.65	1.02	1.40	2.02	2.34
5,000	0.36	0.51	0.79	1.09	1.57	1.81
8,000	0.28	0.40	0.62	0.86	1.24	1.43
10,000	0.25	0.36	0.56	0.77	1.11	1.28
12,000	0.23	0.33	0.51	0.70	1.01	1.17
15,000	0.21	0.29	0.46	0.63	0.91	1.05
18,000	0.19	0.27	0.42	0.57	0.83	0.95
20,000	0.18	0.25	0.39	0.54	0.78	0.91
25,000	0.16	0.23	0.35	0.49	0.70	0.81
30,000	0.15	0.21	0.32	0.44	0.64	0.74
35,000	0.14	0.19	0.30	0.41	0.59	0.68
40,000	0.13	0.18	0.28	0.38	0.55	0.64
45,000	0.12	0.17	0.26	0.36	0.52	0.60
50,000	0.11	0.16	0.25	0.34	0.50	0.57
75,000	0.09	0.13	0.20	0.28	0.40	0.47
80,000	0.09	0.13	0.20	0.27	0.39	0.45
90,000	0.08	0.12	0.19	0.26	0.37	0.43
100,000	0.08	0.11	0.18	0.24	0.35	0.40
120,000	0.07	0.10	0.16	0.22	0.32	0.37
125,000	0.07	0.10	0.16	0.22	0.31	0.36
140,000	0.07	0.10	0.15	0.21	0.30	0.34
150,000	0.07	0.09	0.14	0.20	0.29	0.33

Appendix E. **Data Quality**

Two principal indicators of the quality of data collected in household surveys are the magnitude of imputed and modified responses, and the accuracy of the responses that are provided. Another source for data quality is through comparisons to administrative estimates. This appendix provides a review of the data quality of the Wave 5 School Enrollment and Financing topical module from the Survey of Income and Program Participation (SIPP). The data are discussed in the context of imputation rates, comparisons to other sources, and overall reasonableness of the data, as well as some of the problems encountered in collecting the data.

IMPUTATION RATES

Imputed responses refer either to missing responses for specific questions or "items" in the questionnaire, or to responses that were rejected in the editing procedure because they were improbable or inconsistent. Persons may not respond for a variety of reasons, and nonresponse may occur for the entire topical module or only for chosen items.

The estimates shown in this report are produced after all items have been edited and imputed wherever necessary. Missing or inconsistent responses to specific questions are assigned a value in the imputation phase of the data processing operation. The procedure used to assign or impute responses for missing or inconsistent data is referred to as the "hot deck" imputation method. This process assigns item values reported in the survey by respondents to those who do not respond. The respondent from whom the value is taken is called the "donor." Values from donors are assigned by controlling for demographic and labor force data available for both donors and nonrespondents.

Imputation rates for some of the major items in this report are shown in table E-1. The imputation rates are calculated by dividing the number of missing responses by the number of persons who should have responded to the item; since skip patterns modify the interview universe for any given question, rates calculated on the entire sample universe would be misleading.

Some items are imputed because a respondent did not respond to the entire module (or wave interview); about 7 percent of those persons eligible for the School Enrollment and Financing module did not respond to any question in the module. (More than half of these were nonrespondents for the entire interview.) Despite the presence of the total module nonrespondents, most module questions are answered by most persons; of the 7,810 persons responding "yes" to the first item (the enrollment question), 66 percent had no imputed items in this section, and 87 percent had 2 or fewer imputations.

Table E-1. **Imputation and Edit Rates for Selected School Enrollment and Financing Items**

Item	Rate percent
Enrollment status[1]	7
Level of enrollment	4
Aid Recipiency[1]	31
Costs of schooling[2]	29-35
Lived away from home	14
Amount of aid received[3]	14-65

[1]These items have undergone extensive editing and allocation and have not been imputed.
[2]Includes rates for amount of tuition and fees, books and supplies, and room and board.
[3]Includes rates for amounts of each individual aid category.

It should be noted that the basic item of enrollment and the actual yes/no items for recipiency (e.g., did ... receive a Pell Grant) are not part of the hot deck imputation scheme. Instead, these items undergo an extensive edit process which checks information in other places in the questionnaire and previous interviews. As table E-1 shows, about 4 percent of the enrollment level responses were imputed. In general, the rates for the educational financing section are somewhat high. This is because many aid recipients are not imputed, but edited based on information given in other parts of the questionnaire or in a prior interview. Consequently, for many respondents, we know from other data that aid had been received during the past year and what kind it was. This leaves only the actual amount to be imputed resulting in the high levels of imputation shown in table E-2. The imputation rates for costs range from 29 to 35 percent.[1] It is also important to note that only about 43 percent of all answers of "yes" to the enrollment question were given by a self-respondent. Since this answer determines the subuniverse for the remaining questions, over half of the amounts data is being provided by someone other than the actual subject.

[1]These levels are similar to those obtained in previous waves where this module was administered.

Table E-2. **Comparison of Postsecondary Schooling Costs for Undergraduates between SIPP and Administrative Estimates[1]**

Cost	Administrative estimate	SIPP 1990 wave 5 estimates		
		Total	Self	Proxy
Tuition	$3,016	$1,876	$1,462	$2,295
Room and board	3,545	3,340	3,288	3,331
Books	-	344	303	390

- Represents zero.

[1]SIPP estimates are only for students enrolled in college years 1 through 4 for comparability to administrative data sources.

REASONABLENESS OF DATA

Another means of determining data quality is by comparison of the weighted survey estimates to other data, either from elsewhere in the questionnaire, a different survey, or administrative estimates. If editing, imputation and weighting procedures are properly applied, the final weighted data should compare favorably with other known estimates of the same phenomenon.

Enrollment

The initial question asks persons if they were enrolled in school anytime during the past year. The parenthetical expression instructs the interviewer to tell the respondent to include any regular school such as elementary, high school or college, or any vocational, technical or business school. Clearly, this is a very general question, and should elicit a large number of responses. In fact it does, yielding a weighted estimate of about 34.7 million persons. There is no administrative number which can provide a good basis for comparison. School enrollment is generally determined in a "snapshot" context, that is, as of a certain date what numbers of people were and were not enrolled in school. The October Current Population Survey (CPS), for instance, is the other basic Census tool for measuring school enrollment. Here, the item concerning enrollment is referenced to the interview week. Other surveys conducted by the Department of Education and the National Center for Education Statistics also use a "snapshot" approach in collecting, data. At levels beyond high school, enrollment may not be a year-long activity; people move in and out of the system much more rapidly. Consequently, estimates obtained from the snapshot approach should be lower than those yielded by a question such as the one used in SIPP. The point of closest correspondence should occur at the elementary and high school level, where fall enrollment numbers probably accurately reflect how many persons will be in those levels at any time during the year.

At the combined elementary and secondary level, the 1990 Wave 5 SIPP estimate of 13.0 million persons is about the same as the October CPS estimate of 13.1 million persons. The SIPP estimate is based on the number of persons who were age 15 or above during the summer of 1991 who were enrolled at the elementary and secondary levels at some point during the previous year. The CPS estimate is based on the number of students age 14 and above enrolled at the elementary and secondary levels (in October 1990) and removing from that total the approximate number of students, i.e. about one fourth of 14 year olds, who would not have turned 15 (the age of SIPP eligibility) before the time of the SIPP interview in summer 1991. This adjustment makes the population more comparable between the two surveys.

At the college level, the SIPP estimate of 16.8 million persons is higher than the October 1990 CPS estimate of 13.6 million. Using the Integrated Postsecondary Education Data System (IPEDS), Fall Enrollment Survey, the Department of Education estimated fall 1990 postsecondary enrollment to be 13.9 million. The SIPP estimate is larger than both the CPS and IPEDS estimate which would be expected since SIPP asks about school enrollment for any time within the last year, while the CPS reference period is only the previous week, and IPEDS is referenced in the fall only. Since college enrollment and non-regular schooling is not as likely as elementary and secondary to be year-round, the IPEDS estimate is expected to be lower even though it includes enrollment figures for all post-secondary schooling. The estimate for post-secondary schools other than college is estimated at 4.8 million in Wave 5 of the 1990 panel.

Educational Costs

The first amount items in the section ask questions regarding the costs of education, including tuition and fees, books and supplies and room and board for persons living away at school. Strictly comparable administrative figures are not available, but estimates for undergraduate college students from IPEDS probably provide the best administrative data. The IPEDS data come from the "Fall Enrollment" and the "Institutional Characteristics" surveys. Estimates of the mean tuition, room and board and books and supplies costs are shown in table E-2.

For the 1990-91 school year (the period most comparable to the SIPP period of reference for this module), the average tuition and fees were estimated to be $3,016. The 1990 SIPP Wave 5 estimate for persons in college years 1 through 4 is $1,876. The cost of room and board derived from the Department of Education data, was $3,545 a year; in SIPP, the estimate is $3,340. The estimate of the cost of books is $344, and there is no corresponding independent estimate for comparison.

Three contributing factors to the "underestimation" may be: 1) the high proportion of cases requiring imputation; 2) the fact that for many of the cases for

which "direct" data is received, it is taken from a proxy; and 3) greater representation of very short-term students (with lower costs) in the SIPP data. In fact, as table E2 shows, examination of tuition amounts by self/proxy status reveals that the average amounts reported by proxies (probably parents) is much closer to the derived administrative estimate than is the estimate taken as a self-report (that is, from the student themselves). In addition, the estimates are expected to be lower since Department of Education figures are estimated from institutions as year-round costs. SIPP averages are the means for each student for the past year; for many students the costs of the past year may include only one semester of tuition, thus lowering the average. These administrative estimates of tuition and fees are also weighted by full-time students only. SIPP estimates do not distinguish between full-time and part-time students.

Financial Aid Recipiency

The major data in this section are those concerning the receipt of educational financial aid and the amounts received from various sources. Respondents are able to report the receipt of 11 different types of financial aid as well as a twelfth residual "anything else" category. Some of the types of aid for which data is collected correspond closely to known financial aid programs, while others are of a more general nature. Table E-3 shows the comparison of some weighted SIPP estimates, both in terms of recipients and average amounts, to administrative data (where it is available).

With respect to the total number of recipients in specific programs, the general pattern of the data indicate that the SIPP estimates are close to some administrative and college board estimates. (As always, one should remember that these estimates may not be directly comparable in all cases to the reference period for the SIPP data.) However, some point estimates fall below other estimates, indicating that there is room for improvement. Part of the problem in collecting detailed sources such as these is that respondents may not be able to recall the specific program from which their funds came, especially when the report is given by a proxy. In this regard, the estimate for any specific program may not be very precise, but the overall estimate of all educational financing sources is probably much more comprehensively measured than in any single administrative context. Of course, that is what SIPP is supposed to be able to do—measure the conjoint occurrence of different financial sources.

Examination of the dollar amounts reported by the recipients of these programs continues to show some discrepancies from the administrative and college board estimates (where available). While the mean amounts received for several programs correspond closely to the administrative numbers (note those for the Pell and GSL programs), some SIPP estimates are higher than the available administrative estimates. Unfortunately, for many sources of educational aid, comparative administrative data do not exist; thus it is not possible to determine if the estimates of sources such as "employer assistance" and "tuition reductions" are accurate.

The estimates of recipients and amounts for financial aid sources continue to show some variation from other available administrative estimates. The lack of exact knowledge and comparability of any and all external data sources we might find, however, should lead users to show caution in the detailed analysis of any specific kind of aid. Individuals using these data might instead draw their focus in terms of "total packages" of aid and costs; in this respect these data would seem to offer a high degree of reasonableness.

Table E-3. **Comparison of Aid Recipients and Amount of Aid Received Between SIPP and Administrative Estimates**

Source	Recipients[1]			Average amount received[2]		
	SIPP	College board [3]	Other administrative estimates[4]	SIPP	College board	Other administrative estimates
Pell Grant	3,047	3,300	3,405	$1,390	$1,489	$1,449
College Work Study	617	876	687	1,523	940	1,059
SEOG	420	678	761	1036	648	661
National Direct Student Loan	868	804	660	2,000	1,070	1,318
Guaranteed Student Loan	2,838	3,633	4,187[5]	2,870	2,709	2,804

[1]Numbers in thousands.
[2]Reported in current 1990 dollars.
[3]Data from the College Board are from "Trends in Students Aid: 1981 to 1991".
[4]Data are from the Department of Education: "Pell Grant: End of the Year Report," "Updated Tables and Graphs for the FY1991 Guaranteed Student Loan Data Book," and unpublished data sources.
[5]The number of Guaranteed Student Loan recipients is calculated as the number of guaranteed loans divided by 1.15 (the average number of loans per student, as reported by Department of Education).

DATA FROM THE NATIONAL POSTSECONDARY STUDENT AID STUDY (NPSAS)

Users who are familiar with the Department of Education's NPSAS data may notice discrepancies between the NPSAS and SIPP estimates. Although these two surveys are both nationally representative samples, the universes differ and as a result estimates may also differ. Although these two surveys reflect two different academic years, 1989-90 for NPSAS and 1990-91 for SIPP, there should be some correspondence. Table E-4 provides an indication of how the populations differ between the two surveys.[2]

Table E-4. **Number of Students Enrolled by Level of Enrollment**

(Numbers in thousands)

	Level of enrollment			
	Total	Undergraduate (2 and 4-year institutions)	Other undergraduate	Graduate
SIPP90	20,560	12,380	4,203	3,977
Dependent	6,149	5,412	560	176
Percent	30	44	13	4
Independent	14,410	6,967	3,642	3,801
Percent	70	56	87	96
NPSAS89-90	18,590	14,879	1,391	2,318
Dependent[1]	7,846	7,367	391	87
Percent	42	50	28	4
Independent	10,679	7,464	983	2,231
Percent	57	50	71	96

[1]Since 65,500 weighted cases were unclassified, NPSAS numbers do not add to total.

In NPSAS, students are characterized by academic level, undergraduate and graduate (identified through institutional records), and by institutional type. For this table, undergraduates were divided into two groups, undergraduates in 2-year and 4-year colleges and those in "less than 2-year" institutions. In SIPP, students are self-identified by actual enrollment level (college years 1 through 6+ and vocational, technical, business, or other type of postsecondary school). These students were classified as follows: 1) college years 1 through 4 as undergraduates in 2-year and 4-year colleges; 2) vocational, business, technical, and other institutions as undergraduates in a less than 2-year institution; and 3) college years 5 and higher as graduate students. Although these categories are not exactly comparable, they do provide interesting findings. The SIPP data clearly show a greater enrollment in the "other undergraduate" institutions than does NPSAS. This is most likely due to the ability of SIPP to collect data for those students of the shortest enrollment durations—usually in nontraditional postsecondary institutions. Why would there be more short-term students captured in SIPP? Institutions are ineligible in NPSAS if they offer only correspondence courses; offer only courses or seminars of less than three months duration; or provide only avocational, recreational, or remedial courses. Students in courses of less than 3 months duration and the other types of courses mentioned are very likely to have reported themselves as enrolled in the SIPP survey since the enrollment question is so broad. On a different level, the number of SIPP graduate students may be higher than in NPSAS since students are classified by enrollment level. Fifth-year undergraduates may be included in this rough categorization of graduate students in SIPP, while in NPSAS, students are identified by actual type of program.

Upon further examination, it is clear that the differences in the enrollment numbers may lead to different estimates in average costs for groups of students. For example, the SIPP estimate of tuition and fees for those in other undergraduate institutions is $759, far below the NPSAS average of $4,123.[3] Again, this underestimate points to the differences in counting students of the shortest enrollment periods. Enrollment in a course for 1 month is likely to be much less in cost than a student enrolled for 6 months. The inclusion of nearly 3 million more students may certainly drive down the cost average, if, as suspected, these students are those of very short enrollment durations. Furthermore, table E-4 indicates that these missing students are more likely to be independent students who tend to have lower costs than dependent students (see table 2 of report). These non-traditional students may also be more likely to be considered "less than half-time" students. Although SIPP, does not differentiate between full-time and part-time students, unpublished NPSAS data indicates that tuition and fees drop dramatically depending on attendance status (full-time students average $3,332; at least half-time, but less than full-time students average $1,110; and less than half-time students average $596 in tuition and fees).

A comparison of undergraduates in 2-year and 4-year colleges is more difficult to make. The NPSAS data clearly indicate that students enrolled in 2-year colleges have substantially lower tuition and fees (only $854) than do those undergraduate students in 4-year colleges ($3,199 for non-PhD-granting schools and $3,380 for PhD-granting schools). The SIPP estimate cannot reliably estimate the cost for students in 2-year versus

[2]The weighted NPSAS estimates can be found in a technical report from the National center for Education Statistics entitled "Methodology Report for the 1990 National Postsecondary Student Aid Study." The estimates are found in the executive summary of the report.

[3]The NPSAS data on average costs are from unpublished data provided form the National Center for Education Statistics.

4-year institutions as data for type of institution is not available. The SIPP estimates show that undergraduates enrolled in the first 2 years of college are have lower tuition and fees than those in the 3rd and 4th years ($1,667 vs. $2,179) indicating that the inclusion of 2-year college undergraduates has driven down the number. However, it is impossible to disaggregate the groups to make a true comparison of this level of students.

SUMMARY

While the educational financing data collected in the 5th Wave of the 1990 panel of SIPP appears to have a high degree of reasonableness and utility, there are important differences from the other sources of financial aid data of which users should be aware. For example, estimates of the number of recipients and the amounts they receive for specific aid sources show some variability from the available administrative estimates. Caution should, therefore, be exercised in detailed analysis of specific aid sources; however, in terms of "overall" pictures of students, their costs and their sources of aid, the data as a whole appear reasonable. Variation from other data, such as the NPSAS survey, may be a function of the inclusion of a large component of very short-term students in the SIPP data. Without additional variables for disaggregation in the SIPP, however, analytic comparability of universes between the two surveys is not possible.

Several additional points should be kept in mind when using these data: 1) Edits/Imputations The implementation (in the 1985 Panel) of a more rigorous edit procedure which checks data from both the core and three prior waves to look for the actual report of any of the aid sources identified in the topical module seems to have worked quite well. Nevertheless, this increase in the number of "inferred" recipiencies provides a large base for the number of cases which must then have an amount imputed. This explains imputation rates of around 50 percent for some specific amount sources; 2) Proxy Responses - Probably because of the nature of the subpopulation of concern (i.e., students away at school), proxy response is quite high for the enrollment and financial aid items. This in turn acts to drive up the nonresponse (and imputation) rate, particularly for items which do not have closed-ended response categories, and items which require an amount as a response. Additionally, for items such as tuition and room and board costs, proxy responses seem to be much closer to administrative estimates than those given as self-reports. One possibility is that the proxies (parents) have a better idea of the amounts they may be paying than do the students, many of whom are not responsible for paying the bills. Much of the financial aid, however, may go directly to the institution and thus is never really seen by the respondent, whether self- or proxy-interview; 3) Amounts - In general, the ability of an individual to return a reliable amount (or any amount), even for self-respondents, is less than the ability to return a yes-no or closed-ended response. The simple item non-response rates of amount items versus other types of items demonstrates this point.

Appendix F. **Facsimile of Questionnaire**

See following pages for sample of questionnaire.

1. Was . . . enrolled in school anytime during the past 12 months? (Include any regular school, such as elementary, high school, or	9810 1 ☐ Yes

Statement E The next few questions are about school enrollment and financing.

1. Was . . . enrolled in school anytime during the past 12 months? (Include any regular school, such as elementary, high school, or college, or any vocational, technical or business school.)	9810 1 ☐ Yes 2 ☐ No — *SKIP to Check Item C1, page 64*
2. At what level or grade was . . . enrolled? *(If enrolled at more than one level in the past 12 months, check level in which the greatest amount of time was spent.)*	9812 1 ☐ Elementary grades 1—8 2 ☐ High school grades 9—12 3 ☐ College year 1 4 ☐ College year 2 5 ☐ College year 3 6 ☐ College year 4 7 ☐ College year 5 8 ☐ College year 6+ 9 ☐ Vocational school 10 ☐ Technical school 11 ☐ Business school 12 ☐ Other or DK
CHECK ITEM I21 Was . . . enrolled in elementary or high school?	9814 1 ☐ Yes 2 ☐ No — *SKIP to 4*
3. Was . . . enrolled in a public school? *(Mark "Yes" if the school at which . . . spent the greatest amount of time was public.)*	9816 1 ☐ Yes — *SKIP to Check Item C1, page 64* 2 ☐ No
4. During the past 12 months —	
a. What was the total cost of . . .'s tuition and fees?	9818 $. 00 x3 ☐ None x1 ☐ DK
b. What was the total cost of . . .'s books and supplies?	9820 $. 00 x3 ☐ None x1 ☐ DK
c. Did . . . live away from home while attending school?	9822 1 ☐ Yes 2 ☐ No — *SKIP to 5*
d. What was the total cost for room and board while away at school?	9824 $. 00 x3 ☐ None x1 ☐ DK

NOTES

Section 5 — TOPICAL MODULES (Continued)

Part C — SCHOOL ENROLLMENT AND FINANCING (Continued)

(HAND RESPONDENT CARD DD)

5a. **Please look at this card and tell me if . . . received any of these types of educational assistance during the past 12 months.**

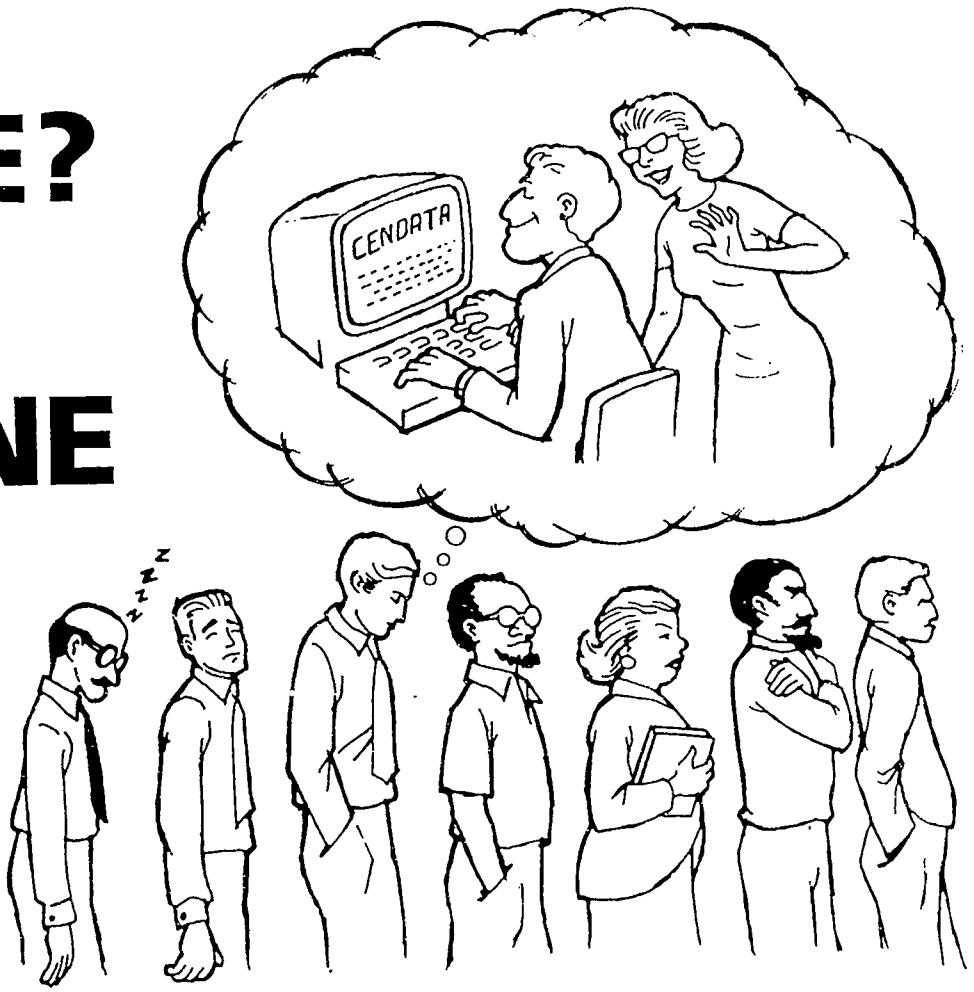
Anything else?

		5b. How much did . . . receive?
	$628 x3 ☐ None — *SKIP to Check Item C1*	
(1) The GI Bill?	$629 1 ☐ Received	$630 $. x1 ☐ DK
(2) Other Veterans' Educational Assistance Programs? (Include survivors and dependents, vocational rehabilitation and post-Vietnam veterans' assistance.)	$632 1 ☐ Received	$634 $. x1 ☐ DK
(3) College Work Study Program?	$636 1 ☐ Received	$638 $. x1 ☐ DK
(4) A Pell Grant?	$640 1 ☐ Received	$642 $. x1 ☐ DK
(5) A Supplemental Educational Opportunity Grant (SEOG)?	$644 1 ☐ Received	$646 $. x1 ☐ DK
(6) A National Direct Student Loan (NDSL) (or Perkins Loan)?	$648 1 ☐ Received	$650 $. x1 ☐ DK
(7) A guaranteed student loan (or Stafford Loan)?	$652 1 ☐ Received	$654 $. x1 ☐ DK
(8) A JTPA Training Program?	$656 1 ☐ Received	$658 $. x1 ☐ DK
(9) Employer assistance	$660 1 ☐ Received	$662 $. x1 ☐ DK
(10) A fellowship or scholarship?	$664 1 ☐ Received	$666 $. x1 ☐ DK
(11) A tuition reduction?	$668 1 ☐ Received	$670 $. x1 ☐ DK
(12) Anything else (other than assistance from relatives and friends)?	$672 1 ☐ Received	$674 $. x1 ☐ DK

NOTES

*U.S Government Printing Office: 1994 — 300-557/00061

ONLINE?
or
IN LINE
for Census Data?



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