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College Persistence on the Rise?

Changes in 5-Year Degree Completion and Postsecondary Persistence Rates Between 1994 and 2000

U.S. Department of Education
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Postsecondary Education Descriptive Analysis Reports

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November 2004

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Executive Summary

Using two longitudinal surveys of beginning postsecondary students (i.e., first-time freshmen),[1] this study examines whether students who enrolled in the beginning of the 1990s were more or less likely than those who enrolled in the mid-1990s to complete postsecondary education. Specifically, the analysis compares the degree completion and persistence rates among two cohorts—students who first enrolled in postsecondary education in academic year 1989–90 and their counterparts who first enrolled in 1995–96. The study focuses on the rates at which students in each cohort completed a degree within 5 years or were still enrolled at the end of 5 years; it also examines changes in the students' demographic profile and other population characteristics. The findings are based on data from the 1990/94 and 1996/01 Beginning Postsecondary Students Longitudinal Studies (BPS:90/94 and BPS:96/01). Each of these studies surveys a sample of students who enrolled in postsecondary education for the first time in a specific academic year. The earlier cohort of beginning postsecondary students consisted of students who first began their postsecondary education in 1989–90 (BPS:90/94) and were interviewed again in 1992 and 1994. The more recent cohort followed students who began in 1995–96 (BPS:96/01) and were interviewed subsequently in 1998 and 2001.[2] The later survey actually covers a 6-year period, but in order to make comparisons with BPS:90/94, which ended after 5 years, measures of 5-year degree completion and persistence are analyzed. It is important to note that the findings from this analysis are entirely descriptive in nature and, while associations are noted, they should not be interpreted as causal inferences.[3]

Historical research based on data collected by the U.S. Department of Education and the U.S. Census Bureau has shown that college completion rates have changed little since the early 1970s (Barton 2002; Adelman 2004), with completion rates of 66–67 percent for 1972, 1982, and 1992 high school graduates who ever enrolled at a 4-year college (figure 1). In the current study, no overall change in the 5-year *bachelor's degree completion rate* was detected. However, despite the relatively short period of 6 years between the two surveys, measurable changes in 5-year *persistence rates* were evident. Students in the more recent (1995–96) cohort were more likely to be enrolled 5 years after they began their postsecondary studies. As a result, the combined rate of degree completion and 5-year persistence for students who began their undergraduate education in a 4-year institution rose from 76 to 80 percent (table 5-A).

Changes in Student Populations

Between 1989 and 1995, total undergraduate fall enrollment in institutions of higher education increased from 11.7 million to 12.2 million (U.S.

[1] The surveys included students in the 50 states, the District of Columbia, and Puerto Rico.

[2] Overall weighted response rates for these two studies are 91 and 86 percent, respectively (see appendix B for more information).

[3] All differences noted in the report are statistically significant at the 0.05 level.

Department of Education 2000, table 190). In addition to the increase in the total undergraduate population, the racial/ethnic composition and income level of students just beginning their postsecondary education changed over the 6-year period. In particular, as shown in table A, Black and Hispanic students made up larger proportions of beginning postsecondary students over the study period, while the proportion of White students declined over time. Although no overall change in the gender distribution was detected, when the data were broken out by the type of institution students first attended, among students enrolled in private not-for-profit 4-year institutions, it appears that the percentage who were women increased from 51 percent in 1989–90 to 57 percent in 1995–96; however, the difference is not statistically significant (table 1).

Coinciding with the rise in Black and Hispanic student enrollment in the 6-year period between cohorts was an increase in the proportion of low-income students. The percentage of low-income students increased from 13 to 16 percent overall for dependent students.[4] This increase held for dependent students who began in public 4-year institutions (from 10 to 15 percent) and private for-profit institutions (from 21 to 35 percent) (table 1).

The age distribution of beginning students changed to some degree. As of December 31 in the year they enrolled, the percentage of 19-year-olds and students in their 20s increased, while the proportion of 18-year-olds declined.

Table A. For beginning postsecondary students who first enrolled in 4-year institutions, percentage distribution by parents' highest level of education: 1989–90 and 1995–96

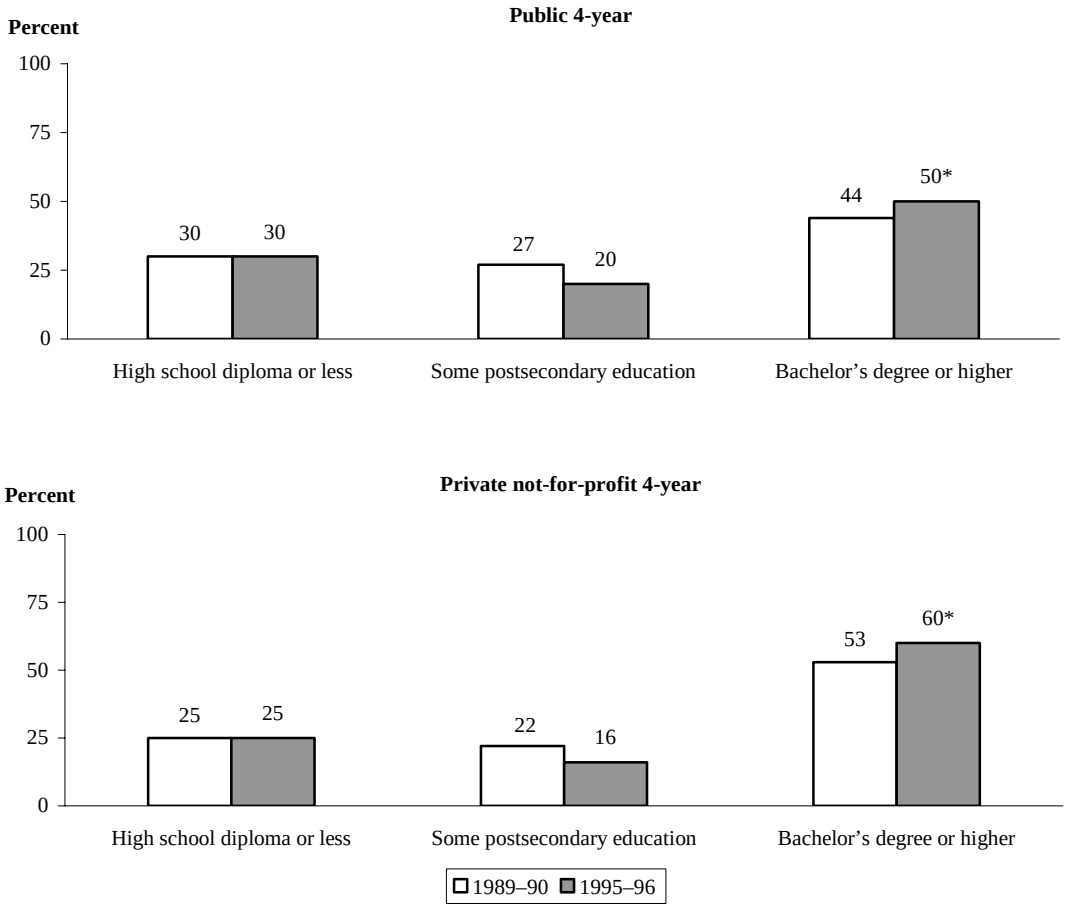
	1989–90	1995–96
Total	100.0	100.0
Gender		
Male	46.0	45.2
Female	54.0	54.8
Race/ethnicity[1]		
American Indian	0.7	0.8
Asian/Pacific Islander	4.0	4.6
Black	8.8	11.9*
White	78.8	70.6*
Hispanic[2]	7.6	12.2*
Income relative to poverty level[3]		
Dependent students		
Below 125 percent	12.6	16.2*
125–449 percent	58.9	56.0
450 percent or higher	28.5	27.8
Independent students		
Below 125 percent	38.4	47.1*
125–449 percent	56.0	46.4*
450 percent or higher	5.7	6.5
Age as of 12/31 in year of enrollment		
18 years or younger	55.2	45.3*
19 years	17.0	21.9*
20–29 years	18.1	21.1*
30 years or older	9.7	11.8

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).
[1]American Indian includes Alaska Native, Black includes African American, Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Race categories exclude Hispanic origin unless specified.
[2]It should be noted that 14 percent of Hispanic students in the later BPS survey (BPS:96/01) were from Puerto Rican institutions, while in the earlier survey, students from Puerto Rico accounted for 3 percent of Hispanic students. When students from Puerto Rico are removed, the total percentages of Hispanic students are 7.4 and 10.8, respectively, for the two cohorts (BPS:90/94 and BPS:96/01).
[3]Describes income as a percentage of the established poverty threshold for a given family size (see appendix A for detailed definition). For dependent students, calculation is based on parents' income. For independent students, calculation is based on their own income.
NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students first enrolled.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

[4] In the analysis comparing income levels between the BPS cohorts, "low income" is defined as family incomes that did not exceed 125 percent of established poverty levels. Poverty levels are calculated for families of different sizes. Dependent students are typically those under the age of 24 and are reported as dependents by their parents on financial aid applications. Dependent income levels are based on parents' income the year before students enrolled. See appendix A for more details.

As the demographic profile of beginning students changed, so did the level of education achieved by their parents. Students in the later cohort were more likely to have at least one parent who held a bachelor's degree or higher. Such students are typically more successful in completing college degrees than their counterparts whose parents never attended postsecondary education (Nuñez and Cuccaro-Alamin 1998). The change in parents' education levels was particularly evident among students who began in 4-year institutions, among whom the percentage with parents who held bachelor's degrees or higher increased from 44 to 50 percent for those who started in public institutions and from 53 to 60 percent for those who started in private not-for-profit institutions (figure A and table 2).

Figure A. Percentage distribution of the highest level of education completed by students' parents among beginning postsecondary students who first enrolled in 4-year institutions: 1989–90 and 1995–96



*Difference between 1989–90 and 1995–96 is statistically significant ($p<0.05$).

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

There was some indication that students' academic preparation may have changed over time, primarily for students who began in public 2-year colleges. Among these students, the percentage who reported taking remedial mathematics courses in their first year of enrollment increased from 11 to 17 percent (table 2). About 1 in 10 students who began in public 2-year colleges reported taking remedial reading courses in both cohorts.

Changes in Student Borrowing

Over the 6-year period between cohorts, rising tuition and changes in federal loan regulations were associated with changes in the way in which beginning students financed their postsecondary education. Between 1989–90 and 1995–96, tuition at postsecondary institutions increased 20 to 40 percent, depending on the institution type (The College Board 1998). Financial aid also increased over this period, but loans made up a greater portion of aid in 1995–96 (The College Board 2000). Changes in federal loan regulations expanded students' eligibility for both unsubsidized and subsidized loans (Berkner 2000). Consistent with these changes, the percentage of students who borrowed to help pay for their postsecondary education increased. During the course of their enrollment, nearly one-half of students who began their postsecondary education in 1995–96 took out student loans to help pay for their education, compared with about one-third of their counterparts who first enrolled 6 years earlier (table 4). Thus, beginning postsecondary students who enrolled in 1995–96 were more likely to accrue loan debt over the course of their studies than their counterparts who enrolled in 1989–90.

Changes in Degree Completion and 5-Year Persistence

Table B summarizes the educational outcomes of students in the two cohorts in terms of their 5-year degree completion and persistence rates. The first column displays the percentage of students who completed any degree in 5 years (the sum of columns 2, 3, and 4). Columns 2, 3, and 4 show the rate at which students completed each type of degree (bachelor's degree, associate's degree, and vocational certificate), while columns 5 and 6 display the percentage of students who had not earned a degree, but were still enrolled in either a 4-year institution or a subbaccalaureate institution. Column 7 shows the percentage of students who were not enrolled after 5 years and had not earned a degree. It is possible that these students resumed their postsecondary education at a later date (i.e., stopped out), but within the 5-year time frame of each survey, they had not earned a degree and were not enrolled. The last column of the table displays the combined 5-year degree completion and persistence rate (the sum of columns 1, 5, and 6), which, in other words, is the percentage of students who had completed a degree or were still enrolled 5 years after they began their postsecondary education. Where differences between the two student populations are statistically significant ($p<.05$), an asterisk appears next to the number for the more recent (1995–96) cohort.

The results indicate an increase in the percentage of students who had not yet completed a degree, but were still enrolled in a 4-year institution 5 years after first enrolling. These are students who are taking longer than 5 years in their efforts to complete a bachelor's degree. This finding held across all institution types except those in the for-profit sector. Among all students

Table B. Percentage of beginning postsecondary students who had completed a degree or were still enrolled 5 years after they began postsecondary education, by type of first institution and year enrolled: 1989–90 and 1995–96

		Highest degree completed			No degree, 5-year persistence			Total
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	completed or persisted
Total[1]								
1989–90	49.9	25.8	11.2	13.0	8.1	5.2	36.8	63.2
1995–96[2]	46.6*	25.1	9.9	11.7	11.6*	6.6	35.2	64.9
Type of first institution								
All 4-year								
1989–90	60.3	53.3	4.2	2.9	13.3	1.9	24.4	75.6
1995–96	59.3	53.4	3.7	2.3	17.2*	3.2*	20.4*	79.6*
Public 4-year								
1989–90	54.8	46.9	4.7	3.2	16.1	2.3	26.8	73.2
1995–96	53.3	46.6	4.1	2.6	20.9*	3.7*	22.1*	77.9*
Private not-for-profit 4-year								
1989–90	71.9	66.6	3.0	2.3	7.4	1.2	19.6	80.4
1995–96	69.8	65.3	2.9	1.6	10.7*	2.2*	17.3	82.7
Public 2-year								
1989–90	36.7	6.3	17.5	12.9	5.1	9.6	48.6	51.4
1995–96	32.0	6.9	15.9	9.3*	9.7*	10.5	47.8	52.2
Private for-profit								
1989–90	59.7	1.6	11.1	46.9	0.7	1.1	38.6	61.4
1995–96	58.6	1.4	8.2	49.1	1.6	3.2*	36.6	63.4

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).

[1]Total also includes private not-for-profit 2-year and less-than-2-year institutions and public less-than-2-year institutions.

[2]The 6-year completion and persistence rates for the 1995–96 cohort are presented in table B-1.

NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

who started in 1989–90, 8 percent were still enrolled in a 4-year institution, while among those who began 6 years later, 12 percent were still enrolled. The increase in enrollment after 5 years was accompanied by an overall decline in degree completion from 50 to 47 percent. However, for both cohorts, bachelor's degree completion remained at about one-quarter among all beginning students and at about 53 percent among students who began in 4-year institutions.

Changes in persistence and completion rates varied across the institution types that students first attended. For example, among students who began in public 4-year colleges or universities, the likelihood of still being enrolled in a 4-year institution increased (from 16 to 21 percent). Commensurate with this, the combined degree completion and 5-year persistence rate went up as well (from 73 to 78 percent).[5] This finding implies that given more time, the rate of bachelor's degree

[5] The combined rate of degree completion and persistence includes the small percentage of students enrolled in a less-than-4-year institution. For students who started in a 4-year college, being enrolled in a less-than-4-year institution would not be an indication of persisting toward a bachelor's degree.

completion in public 4-year institutions may increase. In private not-for-profit 4-year institutions, on the other hand, a change in the combined completion and persistence rate could not be detected even though the likelihood of still being enrolled in a 4-year institution increased measurably (from 7 to 11 percent).

Like students who first enrolled in the 4-year sector, those who started in public 2-year colleges increased their likelihood of being enrolled in a 4-year institution at the end of 5 years (from 5 to 10 percent). At the same time, comparisons between the two cohorts revealed no measurable change in either transfer rates from public 2-year colleges (figure 4) or bachelor's degree completion of transfer students (table 12). Therefore, the fact that a greater percentage of transfer students are enrolled in a 4-year institution after 5 years suggests that public 2-year college students in the later cohort may have been more persistent in pursuing a bachelor's degree. At the same time, however, the rate at which students in public 2-year colleges completed vocational certificates declined over the 6 years between cohorts, from 13 percent to 9 percent.

Changes by Gender, Race/Ethnicity, and Income

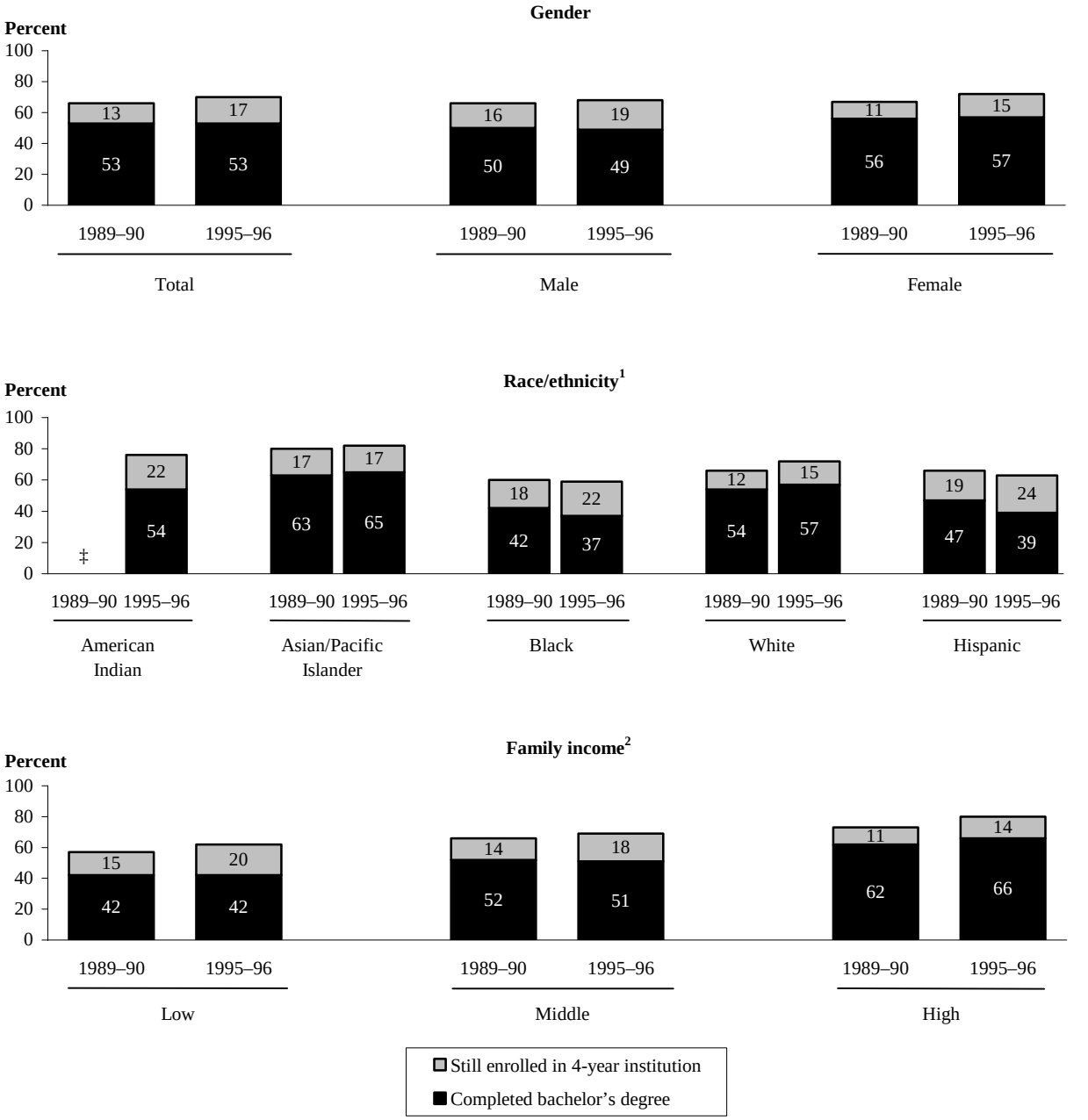
The analysis detected some variations in postsecondary completion and persistence measures by demographic characteristics; however, most of these changes were observed among students in specific institution types rather than among all students. In fact, the main finding overall—the increase in the percentage of students still enrolled in a 4-year institution—held for both men and women, for White students, and across all income levels (table 6).

Figure B illustrates changes by demographic characteristics for students who began in 4-year institutions. Differences in the combined 5-year degree completion and persistence rates were found primarily for those in public 4-year institutions where males, Whites, and low-income students experienced increases over time, while changes were not detected for women, other racial/ethnic groups, or higher income levels (table 7). Despite their financial disadvantage, the trends within income levels indicate that low-income students who first enrolled in public 4-year colleges improved their combined persistence and degree completion rate (figure C). Apparent increases for middle- and high-income students in the same sector were not statistically significant. In contrast to public 4-year institutions, among students who started in private not-for-profit 4-year institutions, high-income students improved their combined degree completion and persistence rate, while no change was detected for lower income students or for any other group of students (table 8).

Conclusions

On the whole, when comparing students who began their postsecondary education in 1989–90 with those who began 6 years later, no change was detected in the rate at which students earned a bachelor's degree within 5 years. However, for those who had not completed a degree, a higher percentage of students in the later cohort were still enrolled after 5 years. These findings indicate that students in the later cohort who had not earned a degree were more persistent in staying enrolled, but required more than 5 years in their efforts to complete a degree. Among students who began in public 2-year colleges, those in the later cohort

Figure B. Among beginning postsecondary students who first enrolled in 4-year institutions, the percentage who had completed a bachelor's degree or were still enrolled in a 4-year institution 5 years after they enrolled, by gender, race/ethnicity, and family income: 1989–90 and 1995–96



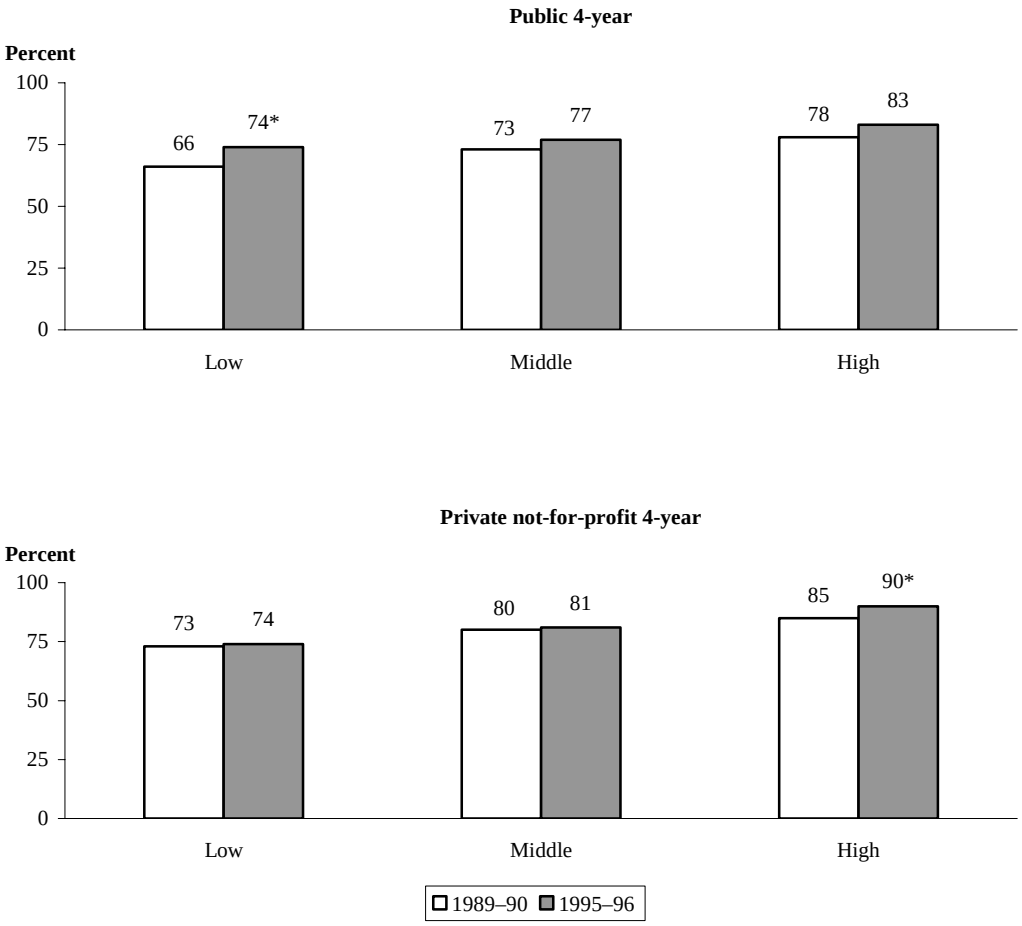
‡Reporting standards not met. (Too few cases.)

[1]American Indian includes Alaska Native, Black includes African American, Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Race categories exclude Hispanic origin unless specified.

[2]Calculated separately for dependent and independent students. "Low" refers to the bottom 25 percent of the income distribution; "Middle" refers to the middle 50 percent; and "High" refers to the upper 25 percent. See appendix A for detailed definition.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

Figure C. Among beginning postsecondary students who first enrolled in 4-year institutions, the percentage who completed a degree or were still enrolled 5 years after they began postsecondary education, by family income: 1989–90 and 1995–96



*Difference between 1989–90 and 1995–96 is statistically significant ($p<0.05$).

NOTE: Family income is calculated separately for dependent and independent students. "Low" refers to the bottom 25 percent of the income distribution; "Middle" refers to the middle 50 percent; and "High" refers to the upper 25 percent. See appendix A for detailed definition.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

were also more likely than their counterparts who enrolled 6 years earlier to be enrolled in a 4-year institution. This result suggests that community college students in the later cohort were more persistent in maintaining their enrollment toward a bachelor's degree than their counterparts who enrolled 6 years earlier.

It is difficult to pinpoint what accounts for the increase in persistence between the two cohorts and to determine whether or not it is a temporary occurrence. Changes in the demographic composition of the two cohorts may be related to the changes in persistence. Black, Hispanic, and low-income students gained greater representation

between 1989–90 and 1995–96. Such students have historically been underrepresented in postsecondary education and often face additional barriers to completing a degree. However, the data indicate that low-income students in public 4-year institutions actually increased their likelihood of succeeding as evidenced by an increase in their 5-year persistence rate. Also, the percentage of students whose parents graduated from college rose over time, which would typically be associated with higher completion and persistence rates.

Changes in students' reliance on loans may also have influenced their decision to stay enrolled. Students who entered college in 1995–96 were more likely than their counterparts who enrolled 6 years earlier to have taken out student loans to help finance their education. Over the course of their postsecondary studies, nearly one-half of these students borrowed, compared with about one-third of their counterparts who had enrolled earlier. The prospect of leaving college in debt may have motivated these students to stay enrolled and complete a degree.

It is also possible that the economy played a role in changing the rates at which students persisted. Students who began their postsecondary education in 1989–90 and who were still enrolled in college 5 years later (in 1994) encountered a growing economy with plentiful job opportunities (Schwenk and Pfuntner 2003). Those students who had not yet finished their degree may have been attracted to the high-tech industry job market and thought they could join the labor force and return later to finish their degree. On the other hand, students who began college in 1995–96 and who were still enrolled 5 years later (in 2000) faced an economy in the beginning stages of a recession (Martel and Langdon 2001). With fewer job options and greater debt, these students may have been less willing to take a break from their studies and leave without a degree.

Foreword

This study compares two longitudinal surveys of undergraduates who enrolled in postsecondary education for the first time in either 1989–90 or 1995–96 in institutions located in the 50 states, the District of Columbia, and Puerto Rico. The analysis focuses on changes over time in how well students persisted in their postsecondary programs and how many completed credentials within 5 years. The study also examined the demographic profiles of the two student populations to determine how certain student characteristics—gender, race/ethnicity, and income—changed over the 6-year period.

The analysis is based on the 1990/94 and 1996/01 Beginning Postsecondary Students Longitudinal Studies (BPS:90/94 and BPS:96/01). The BPS studies are a longitudinal component of the National Postsecondary Student Aid Studies (NPSAS) for 1989–90 and 1995–96. These are nationally representative samples of students enrolled in all types of postsecondary institutions, ranging from 4-year colleges and universities to less-than-2-year vocational institutions. The earlier BPS cohort consists of that subset of students from NPSAS who began their postsecondary education in 1989–90; they were interviewed again in 1992 and 1994. The more recent cohort includes first-time postsecondary entrants from the 1995–96 NPSAS year, interviewed again in 1998 and 2001. This and other reports using these datasets can be accessed and downloaded from the NCES website (http://nces.ed.gov).

The estimates presented in this report were produced using the NCES Data Analysis System (DAS), a web-based software application that allows users to specify and generate tables for the BPS cohorts. The DAS produces the design-adjusted standard errors necessary for testing the statistical significance of differences among estimates. The DAS is now available as a web-based application as well. For more information, consult the DAS website (http://nces.ed.gov/das/). Researchers are encouraged to use the BPS data for their own analyses; more information on the datasets used in this report can be found in appendix B.

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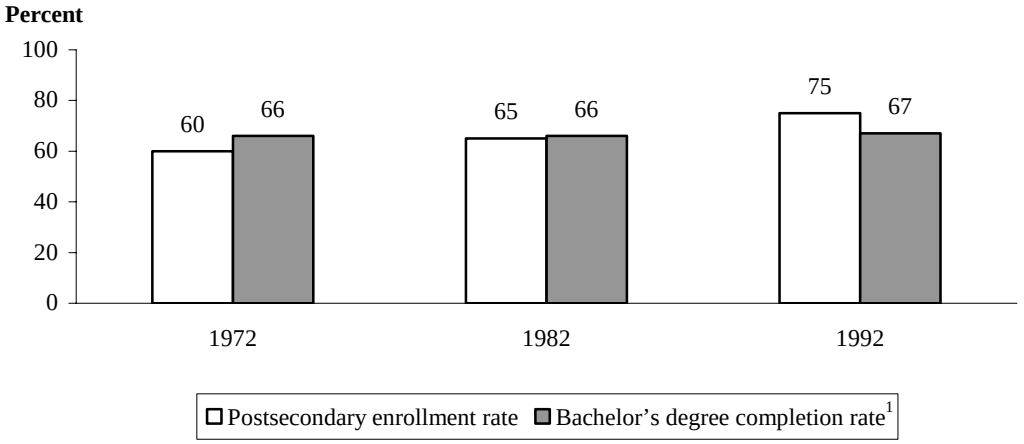
Introduction

Recent reports synthesizing historical data on the trends in college completion indicate that the overall educational attainment rates of Americans have changed little since the early 1970s (Barton 2002; Adelman 2004). Using data from a variety of sources including the U.S. Department of Education and the Census Bureau, the authors of these reports question whether institutions have focused too much on increasing enrollment, which has grown considerably, and not enough on completion. For example, the postsecondary enrollment rates for the high school classes of 1972, 1982, and 1992 were 60, 65, and 75 percent, respectively (figure 1). In contrast, the bachelor's degree completion rates for the same three cohorts among those who enrolled in college were 66, 66, and 67 percent. Thus, while college access increased substantially over time, the rate at which college students completed bachelor's degrees changed little.

Figure 1. Postsecondary enrollment rates and bachelor's degree completion rates for the high school classes of 1972, 1982, and 1992



[1]Bachelor's degree attainment as of age 30 for 1972 and 1982 high school graduates and age 26 for 1992 high school graduates. Rates based on those who had attended a 4-year institution and completed at least 10 credits.
SOURCE: Adelman, C. (1999). *Answers in the Toolbox: Academic Intensity, Attendance Patterns, and Bachelor's Degree Attainment* (PLLI1999–8021). U.S. Department of Education. Washington, DC: Office of Educational Research and Improvement; Adelman, C., Daniel, B., and Berkovits, I. (2003). *Postsecondary Attainment, Attendance, Curriculum, and Performance: Selected Results from the NELS:88/2000 Postsecondary Education Transcript Study (PETS), 2000* (NCES 2003–394). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office; and Adelman, C. (2004). *Principal Indicators of Student Academic Histories in Postsecondary Education, 1972–2000.* Washington, DC: U.S. Department of Education.

In attempting to examine more recent changes in degree completion, Barton (2002) compared the persistence rates of college freshmen who entered college 6 years apart: in 1989–90 and 1995–96. The study analyzed data from the 1990/94 and 1996/01 Beginning Postsecondary Students Longitudinal Studies (BPS:90/94 and BPS:96/01). Unlike the studies cited above, which are based on samples of particular cohorts of high school graduates, these datasets sampled *all* new postsecondary entrants, and therefore include students who may not have gone directly from high school to college. The earlier BPS cohort consists of students who began their postsecondary education in 1989–90; they were interviewed again in 1992 and 1994. The more recent cohort includes first-time postsecondary entrants from the 1995–96 academic year, interviewed again in 1998 and 2001. However, at the time of Barton's study, only the 1998 follow-up (providing 3 years of persistence data) for the later survey was available, and his findings were inconclusive. Now that the data from the 6-year follow-up of the 1995–96 cohort are available, it is possible to conduct a detailed study that compares the degree completion and persistence rates of the students in the two BPS cohorts. That is the purpose of this report.

Using data from the two BPS surveys, the study analyzes changes in 5-year postsecondary degree completion and persistence rates over the 6-year period. Special attention is paid to changes by the type of first institution attended and changes by key student characteristics—gender, race/ethnicity, and income. The study also attempts to determine whether known gaps in postsecondary attainment among these groups have increased or closed over this 6-year time period.

Key Questions in This Study

Comparing students who entered postsecondary education in 1989–90 with those who entered in 1995–96, the report addresses the following questions:

- How has the composition of students changed with respect to gender, race/ethnicity, income, age, parents' education, and postsecondary attrition risk factors (such as students' full- or part-time attendance status, hours worked while enrolled, and family responsibilities)?
- Were there indications of changes in high school academic preparation, such as the need for remedial coursetaking while in college or the likelihood of earning a GED instead of a high school diploma?
- How have rates of overall postsecondary degree completion (attainment of bachelor's and associate's degrees and certificates) and total persistence changed?
- Taking into account the type of institutions in which students first enrolled (i.e., public and private not-for-profit 4-year, public 2-year, and private for-profit institutions), were there differential changes in rates of attainment and persistence by gender, race/ethnicity, and income levels?

Data and Methods

The analysis conducted for this report is based upon the two administrations of the Beginning Postsecondary Students Longitudinal Study (BPS:90/94 and BPS:96/01), which identifies students who have enrolled in postsecondary education in institutions located in the 50 states, the District of Columbia, and Puerto Rico for the first time in a specific academic year. The two cohorts of first-time entrants are those entering college in 1989–90 and 1995–96, respectively. Eligible students for the BPS samples were identified from participants in the two corresponding National Postsecondary Student Aid Studies (NPSAS:90 and NPSAS:96), nationally representative cross-sectional surveys of postsecondary students at all levels in all types of institutions. Telephone interviews were conducted in the base year as part of NPSAS and twice more: in 1992 and 1994 for the earlier cohort, and in 1998 and 2001 for the later cohort. The two BPS cohorts contain enrollment histories for roughly 6,000 and 9,000 students, respectively. Overall weighted response rates for the two studies were 91 and 86 percent, respectively. More information about the surveys can be found in appendix B of this report.

The last follow-up for BPS:90/94 took place 5 years after the cohort first enrolled (as of 1994), while the last follow-up for BPS:96/01 was conducted 6 years after initial enrollment. Therefore, even though 6-year rates of persistence (continued enrollment in college) and attainment were available for the later survey, 5-year rates were calculated to match the former rates for comparison purposes. Appendix table B1 displays the 5-year (as of June 2000) and 6-year (as of June 2001) degree completion and persistence rates.[1]

Completion of a bachelor's degree within 4 years is more strongly associated with a number of student and environmental characteristics than more inclusive measures of persistence that count continued enrollment (Astin 1993). Since results may vary depending on the definition of persistence and completion, outcomes presented in this report include a number of different indicators. *Completion* refers to attainment of a degree or certificate; this report shows individual completion rates for bachelor's degrees, associate's degrees, and certificates, as well as a combined completion rate for any type of credential. Indicators of *persistence* report the percentage of students who, though not having completed a credential, are still enrolled in postsecondary education 5 years after entering; this report shows persistence in 4-year and in less-than-4-year institutions. Finally, a *combined completion and persistence rate* includes all

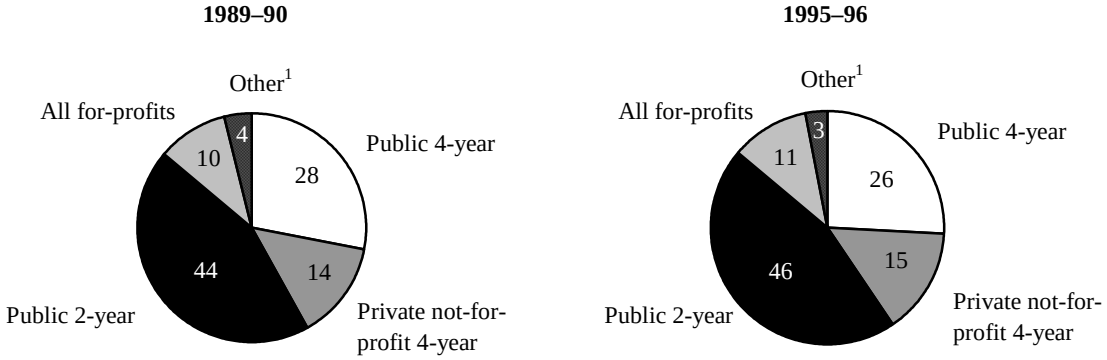
[1] Berkner, He, and Cataldi (2002) conducted an extensive analysis of the 6-year educational outcomes of the BPS:96/01 cohort.

categories of attainment or continued enrollment. Further information on the variables analyzed in this report may be found in appendix A.

Most analyses in this report are conducted for all beginning postsecondary students as well as separately by the type of institution that the students first attended. Institution type combines information about the level of degree awarded as well as the sector (public, private not-for-profit, or for-profit) of a given institution. Specifically, results are analyzed for those who began in the following types of institutions: public 4-year, private not-for-profit 4-year, public 2-year, and all for-profit institutions combined. Distributions of the two cohorts across institution types are shown in figure 2. Other institution types are not analyzed separately in the remainder of this report.

The analysis examines changes over time between the two cohorts using standard *t*-tests to determine statistical significance. When a large number of comparisons were made, statistical adjustments were applied using Fisher's Protected *t*-test to protect against Type I errors (for details see appendix B). A two-way Analysis of Variance (ANOVA) was used to detect differential changes over time by testing for interaction effects. (Statistical significance for both tests is reported at $p<.05$.) Two-way ANOVA indicates whether the amount of change in postsecondary completion and persistence rates differed between students who first enrolled in

Figure 2. Percentage distribution of beginning postsecondary students by first institution type: 1989–90 and 1995–96



[1]Includes private not-for-profit 2-year and less-than-2-year institutions and public less-than-2-year institutions.
NOTE: Detail may not sum to totals due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

college in 1989–90 and those who enrolled in 1995–96 across various student characteristics. That is, the analysis attempts to determine whether the attainment gaps between groups of students, such as between low- and high-income students, grew or diminished between the 1989–90 and 1995–96 cohorts. The findings from this analysis are entirely descriptive in nature and, while associations are noted, they should not be interpreted as causal inferences.

Unless otherwise specified, all findings in this analysis are comparisons *between* the two BPS cohorts (e.g., the change in the percentage of low-income students between students who first enrolled in 1989–90 and in 1995–96). An asterisk next to the estimate for the 1995–96 cohort indicates a statistically significant difference between the two cohorts ($p<.05$). Changes denoted as "increases" or "decreases" refer to the difference between the two cohorts for a particular group of students. In some cases, small sample sizes limited comparisons that could be made, in particular, when data were broken out by race/ethnicity and first institution type attended. When relevant to the discussion, the report points out instances where differences appear large, but are not statistically significant. There were too few cases of American Indians/Alaska Natives in the 1989–90 cohort to provide estimates separately by institution type, but data for this subgroup are included when all institution types are combined. Furthermore, when estimates are reported for American Indian/Alaska Native students, statistically significant differences between the two cohorts could not be determined. Therefore, discussion of this group is not included.

The report is organized into two main sections. The first section describes the changes in the characteristics of the two student populations with respect to key demographics such as gender, race/ethnicity, and income levels. The report also presents changes in other characteristics such as parents' highest level of education and risk factors that are related to lower completion and persistence rates. The second section of the report examines in detail changes in 5-year degree completion and persistence rates, according to the type of institution students first attended as well as by student characteristics.

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Changes in Student Populations

Between 1989 and 1995, the total fall enrollment of undergraduates in postsecondary education increased from 11.7 to 12.2 million (U.S. Department of Education 2000, table 190). This increase was accompanied by changes in the demographic characteristics of the freshmen who enrolled during this period. For example, the racial/ethnic and family income distributions of students who first enrolled in postsecondary education in the academic year 1989–90 differed from those of students who first enrolled in 1995–96.

Race/Ethnicity and Gender

A comparison of the two cohorts of BPS students revealed a shift in the racial/ethnic composition. Between 1989–90 and 1995–96, the percentage of students who were Black increased from 9 to 12 percent, and the percentage who were Hispanic increased from 8 to 12 percent (table 1).[2] Such increases were observed for Black male students as well as for Hispanic male and female students. Correspondingly, the percentage of students who were White declined over this period (from 79 to 71 percent), particularly the percentage of students who were White males. Although no overall change was detected in the distribution of students by gender, when examining findings by the first institution attended, the percentage of students enrolled in private not-for-profit 4-year institutions who were women appeared to increase from 51 percent in 1989–90 to 57 percent in 1995–96, but the difference is not statistically significant.

[2] Estimates in this report include students in institutions in Puerto Rico. It should be noted that 14 percent of the Hispanic students in the later BPS survey (BPS:96/01) were enrolled in Puerto Rican institutions, while in the earlier survey, students enrolled in Puerto Rico accounted for 3 percent of Hispanic students. When students enrolled in Puerto Rico are removed, the percent of Hispanic students is 7.4 and 10.8 percent, respectively, for the two cohorts.

Table 1. Percentage distribution of beginning postsecondary student characteristics, by type of first institution attended and year enrolled: 1989–90 and 1995–96

	Total[1]		4-year institutions			
			Public		Private not-for-profit	
	1989–90	1995–96	1989–90	1995–96	1989–90	1995–96
Total	100.0	100.0	100.0	100.0	100.0	100.0
Gender						
Male	46.0	45.2	46.5	45.8	48.6	43.3
Female	54.0	54.8	53.5	54.2	51.4	56.7
Race/ethnicity[2]						
American Indian	0.7	0.8	0.4	0.7	0.6	0.2
Asian/Pacific Islander	4.0	4.6	4.8	5.8	4.0	6.3*
Black	8.8	11.9*	8.6	10.9	6.2	10.3*
Male	3.3	4.8*	3.0	4.6	2.4	3.1
Female	5.5	7.1	5.6	6.4	3.9	7.2*
White	78.8	70.6*	81.9	71.9*	84.4	73.4*
Male	37.1	31.9*	39.4	33.3*	41.7	32.9*
Female	41.7	38.6	42.4	38.6	42.7	40.4
Hispanic[3]	7.6	12.2*	4.4	10.7*	4.8	9.8*
Male	3.5	5.4*	1.7	4.6*	2.2	3.9*
Female	4.1	6.8*	2.8	6.1*	2.7	5.9*
Age as of 12/31 in year of enrollment						
18 years or younger	55.2	45.3*	74.5	62.1*	76.6	66.6*
19 years	17.0	21.9*	17.0	24.7*	16.0	23.6*
20–29 years	18.1	21.1*	6.0	10.4*	4.5	7.3*
30 years or older	9.7	11.8	2.6	2.8	2.8	2.5
Income relative to poverty level[4]						
Dependent students						
Below 125 percent	12.6	16.2*	10.5	15.1*	10.1	12.2
125–449 percent	58.9	56.0	56.2	53.7	51.6	49.9
450 percent or higher	28.5	27.8	33.4	31.2	38.3	37.9
Independent students						
Below 125 percent	38.4	47.1*	47.1	50.3	32.6	47.0*
125–449 percent	56.0	46.4*	48.0	40.9	50.4	43.2
450 percent or higher	5.7	6.5	4.9	8.8	17.0	9.8

See notes at end of table.

Table 1. Percentage distribution of beginning postsecondary student characteristics, by type of first institution attended and year enrolled: 1989–90 and 1995–96—Continued

	Public 2-year		Private for-profit	
	1989–90	1995–96	1989–90	1995–96
Total	100.0	100.0	100.0	100.0
Gender				
Male	49.0	48.2	33.1	33.6
Female	51.0	51.8	66.9	66.5
Race/ethnicity[2]				
American Indian	0.7	0.7	1.4	1.4
Asian/Pacific Islander	3.7	3.8	1.9	2.4
Black	8.5	11.5	18.2	18.6
Male	3.8	5.6	5.2	4.8
Female	4.7	5.9	13.1	13.9
White	75.9	72.1*	68.4	56.7*
Male	37.3	33.8	21.9	19.5
Female	38.7	38.4	46.5	37.2
Hispanic[3]	11.1	11.8	10.2	21.1*
Male	5.8	5.9	3.8	6.9*
Female	5.4	5.9	6.4	14.1*
Age as of 12/31 in year of enrollment				
18 years or younger	43.9	36.5*	27.5	19.4*
19 years	18.0	21.8	16.0	15.2
20–29 years	24.1	26.1	39.7	41.3
30 years or older	14.0	15.7	16.9	24.1*
Income relative to poverty level[4]				
Dependent students				
Below 125 percent	13.5	16.0	20.7	34.9*
125–449 percent	63.4	60.9	64.9	56.4
450 percent or higher	23.2	23.2	14.4	8.7*
Independent students				
Below 125 percent	35.2	40.3	48.4	61.7*
125–449 percent	58.5	52.5	48.6	34.8*
450 percent or higher	6.3	7.3	3.0	3.5

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).

[1]Total also includes private not-for-profit 2-year and less-than-4-year institutions and public less-than-2-year institutions.

[2]American Indian includes Alaska Native, Black includes African American, Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Race categories exclude Hispanic origin unless specified.

[3]It should be noted that 14 percent of Hispanic students in the later BPS survey (BPS:96/01) were from Puerto Rican institutions, while in the earlier survey, students from Puerto Rico accounted for 3 percent of Hispanic students. When students from Puerto Rico are removed, the total percentages of Hispanic students are 7.4 and 10.8, respectively, for the two cohorts (BPS:90/94 and BPS:96/01).

[4]Describes income as a percentage of the established poverty threshold for a given family size (see appendix A for detailed definition). For dependent students, calculation is based on parents' income. For independent students, calculation is based on their own income.

NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

Age

During the period studied, the percentage of 18-year-olds declined from 55 to 45 percent, while the percentage of 19-year-olds increased from 17 to 22 percent (table 1).[3] The percentage of students in their 20s also increased from 18 to 21 percent. Examining age changes by the type of institution first attended revealed that the decrease in the percentage of 18-year-olds occurred across all institution types. For example, among students who began in public 4-year institutions, the percentage of 18-year-olds decreased from 75 to 62 percent, while the percentage of 19-year-olds increased from 17 to 25 percent. Likewise, among those who began at private not-for-profit 4-year institutions, the percentage of 18-year-olds declined from 77 to 67 percent, while the percentage of 19-year-olds increased from 16 to 24 percent. In both public 2-year and private for-profit institutions, the percentage of 18-year-olds decreased.

Income

Table 1 shows the distribution of the two cohorts of college entrants by their income relative to established federal poverty levels. In the 6 years between cohorts, the percentage of low-income dependent students increased from 13 to 16 percent overall (table 1).[4] The increase in the percentage of low-income students held for dependent students enrolled in both public 4-year institutions (from 10 to 15 percent) and private for-profit institutions (from 21 to 35 percent).

The percentage of independent students who were low income (based on students' income) rose from 38 percent in 1989–90 to 47 percent in 1995–96.[5] This increase was observed at both private not-for-profit 4-year institutions (from 33 to 47 percent) and private for-profit institutions (from 48 to 62 percent). In other words, among independent students who first enrolled in private not-for-profit 4-year institutions the percentage who were low income increased from about one-third to almost one-half, and the comparable percentages in private for-profit institutions increased from about one-half to about three-fifths.

[3] Age was determined as of December of the survey base year (1989 or 1995).

[4] In the analysis comparing income levels between the BPS cohorts, "low income" is defined as family incomes that did not exceed 125 percent of established poverty levels. Poverty levels are calculated for families of different sizes. Dependent students are typically those under the age of 24 and are reported as dependents by their parents on financial aid applications. Dependent income levels are based on parents' income the year before students enrolled. See appendix A for more details.

[5] The definition of independent students changed somewhat between cohorts. In 1989–90, students under age 24 could be considered independent if they could demonstrate sufficient income and they were not claimed as an income tax exemption by their parents in 1988 or 1989. The Higher Education Reauthorization Act of 1992 eliminated the procedure for this determination and authorized institutions' financial aid officers to make their own determination of the dependency status of students under age 24. This change may have had an impact on the income distribution of independent students.

Parents' Education Levels and Students' Degree Expectations

Students whose parents graduated from college are typically more successful in completing college degrees than their counterparts whose parents never attended postsecondary education (Nuñez and Cuccaro-Alamin 1998). The level of education completed by one or both parents increased over time for beginning postsecondary students (table 2). The likelihood that students had at least one parent who held a bachelor's degree increased from 34 to 37 percent overall between those who enrolled in 1989–90 and their counterparts who enrolled in 1995–96. This increase was particularly apparent for students who began at public 4-year institutions (from 44 to 50 percent) and at private not-for-profit 4-year institutions (from 53 to 60 percent).

Students' own educational expectations also increased between the two cohorts. However, it should be noted that the students in BPS:96/01 cohort were given the opportunity to report "don't know," while those in the earlier cohort were not. Therefore, for comparability, those who responded "don't know" (12 percent) were removed from the analysis.[6] Based on these

Table 2. Percentage distribution of beginning postsecondary students, by type of first institution attended and year enrolled according to the highest level of education completed by either parent, student expectations, and remedial coursetaking: 1989–90 and 1995–96

	Total[1]		4-year institutions			
			Public		Private not-for-profit	
	1989–90	1995–96	1989–90	1995–96	1989–90	1995–96
Total	100.0	100.0	100.0	100.0	100.0	100.0
Parents' highest education level						
High school diploma or less	43.4	41.7	29.5	30.4	25.0	24.7
Some postsecondary education	22.9	21.6	26.8	19.6	21.6	15.5
Bachelor's degree or higher	33.7	36.8*	43.7	50.0*	53.4	59.8*
Student expectations[2]						
Less than bachelor's degree	21.9	16.7*	3.6	2.3	2.8	1.1*
Bachelor's degree	35.9	31.7*	36.0	22.4*	28.7	19.6*
Advanced degree	42.1	51.6*	60.3	75.3*	68.5	79.3*
Remedial courses taken in first year						
Any	15.3	18.6*	16.1	17.9	10.4	11.3
Mathematics	8.6	12.1*	8.7	11.2	3.5	5.5*
Reading	7.4	6.8	6.1	5.1	3.8	4.2
Writing	6.2	7.1	5.8	6.7	3.7	4.8

See notes at end of table.

[6] The distribution including the "don't know" respondents is as follows: don't know=12 percent; less than bachelor's=15 percent; bachelor's degree=28 percent; and advanced=46 percent.

Table 2. Percentage distribution of beginning postsecondary students, by type of first institution attended and year enrolled according to the highest level of education completed by either parent, student expectations, and remedial coursetaking: 1989–90 and 1995–96—Continued

	Public 2-year		Private for-profit	
	1989–90	1995–96	1989–90	1995–96
Total	100.0	100.0	100.0	100.0
Parents' highest education level				
High school diploma or less	50.5	46.5	66.8	68.3
Some postsecondary education	21.8	25.4	20.9	17.7
Bachelor's degree or higher	27.8	28.1	12.3	14.1
Student expectations				
Less than bachelor's degree	29.0	20.8*	60.3	51.3*
Bachelor's degree	41.1	41.2	23.9	29.6
Advanced degree	29.9	38.1*	15.8	19.1
Remedial courses taken in first year				
Any	18.5	25.0*	8.7	5.4*
Mathematics	11.5	17.0*	5.3	3.4
Reading	10.3	10.0	4.1	1.7*
Writing	8.2	9.5	3.3	2.0

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).
[1]Total also includes private not-for-profit 2-year and less-than-4-year institutions and public less-than-2-year institutions.
[2]In 1995–96 students were given the option of reporting "Don't know." For comparability to those in 1989–90, who were not given this option, students who responded "Don't know" in 1995–96 (12 percent) were removed.
NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students enrolled.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

comparisons, the percentage of beginning postsecondary students who reported that they expected to complete an advanced (graduate or first-professional) degree rose from 42 to 52 percent, while those who expected to earn a bachelor's degree or a credential less than a bachelor's degree declined (36 to 32 percent and 22 to 17 percent, respectively). Increases in the percentage of students reporting advanced degree expectations held at public and private not-for-profit 4-year institutions and public 2-year colleges, while the percentage of students expecting less than a bachelor's degree declined in private not-for-profit 4-year and public 2-year institutions.

Remedial Education

The rate at which students participate in remedial education is an indication of how prepared they are to undertake coursework at the postsecondary level. In both BPS surveys, participants reported on whether they had taken any remedial-level courses, and they also specified the types of classes taken (table 2). Students who reported participation in *any* remedial

courses increased from 15 to 19 percent between the two cohorts. The increase was due primarily to an increase in remedial coursetaking among students in public 2-year colleges (19 to 25 percent). In contrast, a decline in remedial coursetaking was evident among those attending for-profit institutions (9 to 5 percent).

Remedial mathematics coursetaking rose from 9 to 12 percent, overall due to an increase among students in public 2-year colleges (from 11 to 17 percent) and private not-for-profit 4-year institutions (from 3 to 6 percent).

Changes in Persistence Risk Profile

Research has shown that many factors may contribute to postsecondary attrition (Bean and Metzner 1985; Tinto 1993). Using BPS data, earlier research identified specific risk characteristics associated with students' likelihood of leaving postsecondary education without attaining a credential (Horn and Premo 1995; Berkner, Cuccaro-Alamin, and McCormick 1996). These characteristics include delaying postsecondary enrollment more than a year after high school graduation, being financially independent, attending part time, working full time while enrolled, having children or dependents other than a spouse, being a single parent, and dropping out of high school (including dropouts who later complete a GED or high school equivalency certificate). Students with none of these risk characteristics are typically considered to be "traditional" college students—that is, they are dependent students who enroll in college full time immediately after graduating from high school. Measures of academic achievement such as high school grade-point average and admissions test scores are also strongly associated with persistence among predominantly traditional student populations enrolled in 4-year institutions (Astin 1993). However, high school grade-point average is not available in the BPS data, and admissions test scores for members of the 1989–90 cohort who first enrolled in 4-year institutions is incomplete;[7] so these variables were not included as persistence risk factors in this report. Once again, the reader is reminded that the findings from this analysis are entirely descriptive in nature and, while associations between risk factors and enrollment status are noted, they should not be interpreted as causal inferences.

While some changes in students' risk characteristics were evident between those in the two BPS cohorts, the findings shown in table 3 indicate that roughly one-half of each cohort had at

[7] Thirty-six percent of students who began at private not-for-profit 4-year institutions and 40 percent of those who began at public 4-year institutions are missing both SAT and ACT scores in the 1989–90 cohort (U.S. Department of Education, National Center for Education Statistics, BPS:90/94 Data Analysis System). However, in the later BPS:96/01 cohort, the weighted percentage of valid scores for 4-year college students is 90 percent (U.S. Department of Education, National Center for Education Statistics, BPS:96/01 Data Analysis System). It is anticipated that the newest BPS cohort (BPS:2003/2004), currently in data collection, will have a 90 percent response rate or higher for 4-year college students' entrance exam scores, thereby making comparisons over time possible between BPS:95/96 and BPS:2003/2004). The base-year data for the newest cohort should be available by the spring of 2005.

least one risk factor when they first enrolled in postsecondary education. Looking at specific risk factors, the percentage of students who had delayed their postsecondary enrollment increased from 12 to 18 percent for students who began in public 4-year institutions. This change is

Table 3. Percentage distribution of beginning postsecondary students, by type of first institution attended and year enrolled according to characteristics associated with higher risk of not completing postsecondary education: 1989–90 and 1995–96

	Total[1]		4-year institutions			
			Public		Private not-for-profit	
	1989–90	1995–96	1989–90	1995–96	1989–90	1995–96
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of risk factors						
Any risk factors	52.7	50.6	27.3	24.7	20.0	17.6
1 or 2	29.1	25.4*	21.1	18*	14.6	12.7
3 or more	23.6	25.2	6.2	6.7	5.4	4.9
Dependency status						
Dependent	74.0	72.5	91.1	91.9	92.3	93.3
Independent	26.0	27.5	8.9	8.1	7.7	6.7
Attendance status when first enrolled						
Full-time	70.4	72.5	88.9	88.6	94.2	94.1
Part-time	29.6	27.5	11.1	11.4	5.8	6.0
Worked while enrolled in first year						
Any work	61.1	69.8*	49.7	60.3*	48.2	64.5*
1–24 hours	21.5	31.1*	24.5	37.0*	29.0	48.1*
25–34 hours	13.2	15.5*	11.1	12.8	6.4	8.1
35 or more	26.5	23.3*	14.2	10.5*	12.8	8.4*
Delayed enrollment						
Did not delay	67.0	63.4	87.7	82.0*	89.7	86.7
Delayed	33.0	36.6	12.3	18.0*	10.3	13.3
Dependents other than spouse						
None	86.2	83.8	96.7	95.8	96.6	97.1
One or more	13.8	16.2	3.3	4.2	3.4	2.9
Single parent status						
Not a single parent	94.3	91.0*	98.7	97.6*	98.7	98.5
Single parent	5.7	9.0*	1.4	2.4*	1.3	1.5
High school graduation status						
High school diploma	93.6	90.3*	98.6	98.3	98.2	97.6
GED or alternative certificate	6.3	6.6	1.4	1.6	1.8	2.2
No high school diploma	0.1	3.0*	#	0.2	#	0.3

See notes at end of table.

Table 3. Percentage distribution of beginning postsecondary students, by type of first institution attended and year enrolled according to characteristics associated with higher risk of not completing postsecondary education: 1989–90 and 1995–96—Continued

	Public 2-year		Private for-profit	
	1989–90	1995–96	1989–90	1995–96
Total	100.0	100.0	100.0	100.0
Number of risk factors				
Any risk factors	72.2	67.0*	76.7	80.7
1 or 2	38.2	33.6	30.6	26.0
3 or more	34.0	33.4	46.1	54.7
Dependency status				
Dependent	65.5	65.5	44.6	34.7
Independent	34.5	34.5	55.4	65.3
Attendance status				
Full-time	48.5	52.6	86.2	86.6
Part-time	51.5	47.4	13.8	13.4
Worked while enrolled in first year				
Any work	72.5	80.7*	57.3	55.8
1–24 hours	19.1	25.8*	13.0	18.6*
25–34 hours	16.4	19.8	12.6	14.1
35 or more	37.1	35.1	31.6	23.1*
Delayed enrollment				
Did not delay	56.0	54.4	33.1	30.0
Delayed	44.0	45.6	66.9	70.0
Dependents other than spouse				
None	81.0	79.4	68.2	60.1
One or more	19.0	20.6	31.8	40.0
Single parent status				
Not a single parent	93.3	90.0*	80.8	71.2*
Single parent	6.7	10.0*	19.2	28.8*
High school graduation status				
High school diploma	92.2	88.0*	81.8	74.2*
GED or alternative certificate	7.6	8.1	17.7	15.8
No high school diploma	0.2	4.0*	0.5	10.0*

#Rounds to zero.

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).

[1]Total also includes private not-for-profit 2-year and less-than-2-year institutions and public less-than-2-year institutions.

NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

consistent with the fact that among these students, the percentage of 19-year-olds increased and the percentage of 18-year-olds decreased.

Changes in other risk characteristics were also evident. Overall, the percentage of students who worked while enrolled as freshmen increased from 61 to 70 percent. This increase, however, occurred primarily among those working less than 25 hours per week (from 22 to 31 percent), while the percentage of students working full time declined from 26 to 23 percent.[8] Only full-time employment (i.e., working 35 or more hours per week while enrolled) is considered a risk characteristic. Thus students' risk associated with working full time while enrolled declined even though more students reported working.

Between 1989–90 and 1995–96, the percentage of beginning postsecondary students who were single parents increased from 6 to 9 percent. Among the relatively small percentage of single parents in 4-year institutions, an increase was detected among students who began in public 4-year colleges (from 1 to 2 percent). Among those who started in public 2-year institutions the percentage of single parents rose from 7 to 10 percent, and among students who began in for-profit institutions, the percentage of single parents increased from 19 to 29 percent.

An examination of students' high school credentials among those who enrolled in postsecondary education revealed that the percentage of beginning students who graduated from high school with a regular high school diploma declined from 94 percent in 1989–90 to 90 percent in 1995–96 (table 3). This change, however, was observed only for students who began in public 2-year or in private for-profit institutions. The percentage of high school dropouts who first enrolled in private for-profit institutions increased from less than 1 percent to 10 percent between 1989–90 and 1995–96, while comparable percentages for those entering community colleges increased from 0.2 percent to 4 percent. During this period, no change was detected in the percentage of students who entered postsecondary institutions with a GED or equivalency certificate.

Changes in Student Borrowing and Grant Receipt

Between 1989 and 1995, tuition at postsecondary institutions increased nationwide from 20 to 40 percent depending on the type of institution (The College Board 1998). In addition, federal loan regulations expanded students' eligibility for both unsubsidized and subsidized loans (Berkner 2000). Corresponding to these changes, the percentage of students who borrowed to help pay for their postsecondary education increased from about one-fifth to nearly one-third in their first year of enrollment, and throughout their enrollment, increased from about one-third to almost one-half (table 4). Likewise, the percentage of students who received grants of any type

[8] The increase from 13 to 16 percent for those working 25-34 hours is also significant.

Table 4. Percentage of beginning postsecondary students who received loans or grants, by type of first institution attended and year enrolled: 1989–90 and 1995–96

	Total[1]	
	1989–90	1995–96
	Total	
Received loans		
In first year	19.6	30.9*
Any throughout enrollment	31.2	46.7*
Received grants		
In first year	38.1	49.8*
Any throughout enrollment	47.1	61.9*
	Public 4-year	
Received loans		
In first year	20.5	41.7*
Any throughout enrollment	37.2	57.5*
Received grants		
In first year	38.2	54.1*
Any throughout enrollment	49.6	66.7*
	Private not-for-profit 4-year	
Received loans		
In first year	40.2	58.8*
Any throughout enrollment	53.8	66.6*
Received grants		
In first year	66.3	74.4*
Any throughout enrollment	72.4	81.6*
	Public 2-year	
Received loans		
In first year	4.6	8.5*
Any throughout enrollment	14.3	29.7*
Received grants		
In first year	24.4	35.0*
Any throughout enrollment	34.7	50.1*
	Private for-profit	
Received loans		
In first year	57.2	63.1
Any throughout enrollment	66.0	66.3
Received grants		
In first year	57.1	65.5
Any throughout enrollment	61.8	71.9*

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).

[1]Totals also include private not-for-profit 2-year and less-than-2-year institutions and public less-than-2-year institutions.

NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

increased from 38 to 50 percent in the first year of their enrollment, and from 47 to 62 percent over the course of their enrollment. These changes in education financing held for students in all 4-year and public 2-year institutions. Thus, while increases in financial aid accompanied increases in tuition, nearly one-half of all beginning postsecondary students in the 1995–96 survey would end their postsecondary education with loan debt, compared with roughly one-third of their counterparts who enrolled earlier.

Summary

During the 6-year period under study, the profile of students entering postsecondary education changed in several ways. Black and Hispanic students increased their representation in college, as did low-income students. Such students have historically been underrepresented in postsecondary education. Student population changes are influenced by many factors, such as changes in the applicant pools and admissions policies (Bowen and Bok 1998). Given these changes, one might expect a decline in the likelihood of students persisting in their postsecondary programs and completing postsecondary credentials. However, these shifts in student demographics were accompanied by an increase in parents' education levels, which are associated with higher rates of college completion.

To finance their postsecondary education, students who participated in the 1995–96 survey were more likely to rely on student loans than their counterparts who had enrolled 6 years earlier. More students, therefore, were leaving postsecondary education, whether they graduated or not, with education-related debt.

Changes in Degree Completion and 5-Year Persistence

Table 5-A summarizes the educational outcomes of the two cohorts in terms of their 5-year degree completion and persistence rates. Unlike those in previous tables, the findings here are presented as row percentages with the estimates for the 1989–90 students displayed above those for the 1995–96 students. An asterisk next to the estimate for the 1995–96 cohort again indicates a statistically significant difference between the two cohorts ($p<.05$). Apparent differences between estimates that are not indicated are not statistically significant.

As illustrated in the last column of the table, roughly two-thirds of students in both cohorts (63 and 65 percent, respectively) had either completed a postsecondary credential or were still enrolled 5 years after they began their postsecondary studies. There was an increase from 8 to 12 percent between the two cohorts in the percentage of students who had not yet completed a degree, but who were still enrolled in a 4-year institution 5 years after they began (column 5). Conversely, overall degree completion (column 1) declined from 50 to 47 percent. However, when examining each type of postsecondary degree individually (i.e., bachelor's, associate's, or certificate), no differences were detected.

Changes by First Institution Type

Institution characteristics are also associated with persistence (Bowen and Bok 1998; Astin 1993).[9] Changes in students' degree completion and 5-year persistence rates were evident when examining the findings by the type of first institution attended. Results are displayed for students enrolled in any 4-year institution (combining public and private not-for-profit institutions), public 4-year institutions, private not-for-profit 4-year institutions, public 2-year institutions, and private for-profit institutions.

Four-Year Institutions

In both BPS surveys, among students who began in 4-year institutions, about 53 percent had completed a bachelor's degree in 5 years (table 5-A). Again, the percentage of students in the

[9] In addition to institution type, Bowen and Bok (1998) also include a measure of institutional selectivity, based on mean student admissions test scores. No information for the institutions in this report was available to measure institutional selectivity; however, NCES's Integrated Postsecondary Education Data System (IPEDS) has begun to collect admissions information that may be used to further examine variation across institutions in future studies.

Table 5-A. Percentage of beginning postsecondary students who had completed a degree or were still enrolled 5 years after they began postsecondary education, by type of first institution attended and year enrolled: 1989–90 and 1995–96

		Highest degree completed			No degree, 5-year persistence			Total
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	completed or persisted
Total								
1989–90	49.9	25.8	11.2	13.0	8.1	5.2	36.8	63.2
1995–96	46.6*	25.1	9.9	11.7	11.6*	6.6	35.2	64.9
Type of first institution								
All 4-year								
1989–90	60.3	53.3	4.2	2.9	13.3	1.9	24.4	75.6
1995–96	59.3	53.4	3.7	2.3	17.2*	3.2*	20.4*	79.6*
Public 4-year								
1989–90	54.8	46.9	4.7	3.2	16.1	2.3	26.8	73.2
1995–96	53.3	46.6	4.1	2.6	20.9*	3.7*	22.1*	77.9*
Private not-for-profit 4-year								
1989–90	71.9	66.6	3.0	2.3	7.4	1.2	19.6	80.4
1995–96	69.8	65.3	2.9	1.6	10.7*	2.2*	17.3	82.7
Public 2-year								
1989–90	36.7	6.3	17.5	12.9	5.1	9.6	48.6	51.4
1995–96	32.0	6.9	15.9	9.3*	9.7*	10.5	47.8	52.2
For-profit								
1989–90	59.7	1.6	11.1	46.9	0.7	1.1	38.6	61.4
1995–96	58.6	1.4	8.2	49.1	1.6	3.2*	36.6	63.4
Other[1]								
1989–90	54.6	3.6	16.2	34.9	4.4	2.8	38.2	61.9
1995–96	53.0	3.2	10.7	39.1	3.8	5.3	37.9	62.1

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).

[1]Includes private not-for-profit 2-year and less-than-2-year institutions and public less-than-2-year institutions.

NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

4-year sector who were still enrolled in the same sector 5 years after they began increased from 13 to 17 percent, while the percentage who left with no degree declined from 24 to 20 percent.[10] Correspondingly, the combined 5-year completion and persistence rate increased, from 76 to 80 percent. The small percentage of students who began in the 4-year sector and who, 5 years later, were enrolled in institutions with programs lasting no more than 2 years (such as programs in community colleges) also increased from 2 to 3 percent. These students presumably changed their degree expectations when they transferred from a 4-year to less-than-4-year institution.

The results for students who began in public 4-year institutions paralleled those for students who began in all 4-year institutions. The likelihood of still being enrolled in a 4-year institution after 5 years increased, from 16 to 21 percent. There was also a small but significant increase in the likelihood of still being enrolled after 5 years in an institution with programs lasting no more than 2 years (from 2 to 4 percent). As a result of these changes, the combined 5-year completion and persistence rate increased from 73 to 78 percent, along with a concomitant decline in the percentage who left with no degree, from 27 to 22 percent. In private not-for-profit 4-year institutions, there were increases in the likelihood of still being enrolled either in a 4-year institution or in an institution with programs lasting 2 years or less (from 7 to 11 percent and from 1 to 2 percent, respectively). Despite these changes, however, no measurable change in either the percentage who left with no degree or in the combined completion and persistence rate between the two cohorts could be detected.

Public 2-Year Institutions

In public 2-year institutions, the percentage of students who earned a vocational certificate declined from 13 to 9 percent (table 5-A). On the other hand, as in the 4-year sector, the likelihood of still being enrolled in a 4-year institution increased from 5 to 10 percent between cohorts. Thus, the data suggest that students in the later survey may have been more persistent in maintaining their enrollment toward completing a bachelor's degree.

Private for-Profit Institutions

Private for-profit institutions, also known as private career academies, are institutions that typically provide short-term occupational and career training, but their programs may last from just a few months to the 4 or more years it usually takes to complete a bachelor's degree (Phipps, Harrison, and Merisotis 1999). In both BPS surveys, roughly 1-in-10 beginning students enrolled

[10] It is possible that students who left resumed their postsecondary education at a later date (i.e., stopped out), but within the 5-year time frame of each survey, they had not earned a degree and were not enrolled.

in these institutions (Fitzgerald et al. 1994; Berkner, Horn, and Clune 2000); thus, they represent a relatively small percentage of all beginning postsecondary students.

As shown in the last column of table 5-A, in both surveys, approximately 60 percent of students who first enrolled in private for-profit institutions had either obtained a credential or were still enrolled. Likewise, the total completion rate for both cohorts was nearly 60 percent, and about three-quarters of the credentials acquired were vocational certificates. The only change observed over time for students who first enrolled in these institutions was an increase in the small percentage who were still enrolled in an institution with programs lasting 2 years or less (from 1 to 3 percent).

Changes by Gender, Race/Ethnicity, and Income

Both overall and within institution types, completion and persistence rates were also calculated by gender, race/ethnicity, and family income.[11] While variations in postsecondary completion and persistence measures by demographic characteristics were evident, most of these changes were observed among students in specific institution types rather than among all students. In fact, the increase in the likelihood of still being enrolled in a 4-year institution held for both men and women and across all income levels (table 5-B). The finding also held for White students.[12]

Four-Year Institutions

As discussed in the previous section describing outcomes by institution type, the combined degree completion and 5-year persistence rate increased over time in the 4-year sector, as did the rate at which students were still enrolled in 4-year institutions 5 years after they began postsecondary education, while the percentage with no degree who were not enrolled decreased. Within the 4-year sector, some variations by gender, race/ethnicity and income levels were

[11] For the analysis of completion and persistence, family income is based on the distribution of income within each cohort by dependency status (the calculation for dependent students is based on parents' income, while the calculation for independent students is based on their own income). "Low" refers to the bottom 25 percent of each distribution; "Middle" refers to the middle 50 percent of each distribution; and "High" refers to the upper 25 percent of each distribution. See appendix A for more details.

[12] The sample sizes of American Indian/Alaska Native students were particularly small and despite what look like substantial changes over time (e.g., increase in bachelor's degree completion from 16 to 28 percent and decline in combined completion and persistence rate from 72 to 59 percent), these changes are not statistically significant. Moreover, the sample sizes of American Indian/Alaska Native students were not large enough for reliable estimates when broken out by first institution attended.

Table 5-B. Percentage of beginning postsecondary students who had completed a degree or were still enrolled 5 years after they began postsecondary education, by student characteristics and year enrolled: 1989–90 and 1995–96

		Highest degree completed			No degree, 5-year persistence			Total
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	completed or persisted
Gender								
Male								
1989–90	46.0	24.5	10.2	11.3	10.0	5.6	38.4	61.6
1995–96	43.8	23.5	10.7	9.6	14.1*	6.6	35.6	64.4
Female								
1989–90	53.4	26.9	12.1	14.4	6.3	4.8	35.4	64.6
1995–96	49.0*	26.3	9.3	13.4	9.6*	6.6	34.8	65.2
Race/ethnicity[1]								
American Indian								
1989–90	50.5	15.8	11.9	22.8	#	21.5	28.0	72.0
1995–96	39.3	27.8	2.8	8.7	15.0	4.4	41.3	58.7
Asian/Pacific Islander								
1989–90	54.4	34.4	8.5	11.5	13.5	6.4	25.7	74.3
1995–96	53.3	35.7	10.6	6.9	16.0	7.6	23.2	76.8
Black								
Total								
1989–90	41.8	16.9	8.8	16.1	8.2	5.3	44.7	55.3
1995–96	36.6	14.5	5.2	16.9	11.2	7.2	45.1	54.9
Male								
1989–90	40.3	13.1	11.7	15.5	8.9	4.7	46.2	53.8
1995–96	35.1	12.4	6.2	16.5	10.9	7.8	46.3	53.7
Female								
1989–90	42.7	19.3	7.0	16.4	7.8	5.7	43.9	56.1
1995–96	37.5	15.9	4.6	17.1	11.4	6.7	44.3	55.7
White								
Total								
1989–90	51.2	27.3	11.6	12.3	7.9	4.3	36.6	63.5
1995–96	48.7	27.8	10.3	10.6	11.4*	6.3	33.6	66.4
Male								
1989–90	46.9	26.1	10.4	10.4	10.1	4.6	38.4	61.6
1995–96	45.2	26.2	11.0	8.1	14.8*	5.9	34.1	65.9
Female								
1989–90	55.1	28.3	12.8	14.0	5.9	4.1	34.9	65.1
1995–96	51.6	29.1	9.8	12.8	8.5*	6.7	33.2	66.8
Hispanic								
Total								
1989–90	45.1	17.8	11.5	15.7	6.8	11.8	36.4	63.6
1995–96	41.4	15.2	11.8	14.4	11.4	7.4	39.8	60.2
Male								
1989–90	34.9	14.4	8.8	11.8	7.3	16.0	41.7	58.3
1995–96	38.9	14.1	12.9	11.9	10.2	8.1	42.7	57.3
Female								
1989–90	54.0	20.9	13.9	19.2	6.3	8.0	31.7	68.3
1995–96	43.3	16.0	10.9	16.4	12.3*	6.8	37.6	62.5

See notes at end of table.

Table 5-B. Percentage of beginning postsecondary students who had completed a degree or were still enrolled 5 years after they began postsecondary education, by student characteristics and year enrolled: 1989–90 and 1995–96—Continued

		Highest degree completed			No degree, 5-year persistence			Total
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	completed or persisted
Family income[2]								
Low								
1989–90	45.5	16.7	11.5	17.2	7.3	4.9	42.3	57.7
1995–96	43.9	15.0	14.0	14.9	10.7*	6.1	39.4	60.6
Middle								
1989–90	49.5	24.6	11.6	13.2	7.8	5.2	37.5	62.5
1995–96	45.7	23.7	9.5	12.5	11.4*	7.4	35.5	64.5
High								
1989–90	55.9	38.4	9.8	7.7	9.5	5.5	29.1	70.9
1995–96	52.6	41.0	5.9*	5.7	12.8*	5.4	29.2	70.8

#Rounds to zero.

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).

[1]American Indian includes Alaska Native, Black includes African American, Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Race categories exclude Hispanic origin unless specified.

[2]Calculated separately for dependent and independent students. "Low" refers to the bottom 25 percent of the income distribution; "Middle" refers to the middle 50 percent; and "High" refers to the upper 25 percent. See appendix A for detailed definition.

NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

detected for the completion and persistence measures (table 6). Both men and women experienced an increase in the percentage still enrolled at 4-year institutions as well as in the combined completion and persistence rate (resulting in a decrease in the percentage with no degree who were not enrolled). Similarly, the percentage of White students who had earned no degree but were still enrolled in a 4-year institution increased (from 12 to 15 percent). Although it appears that the percentage of Black and Hispanic students enrolled in 4-year institutions increased, readers should be cautioned that the increase is not statistically significant, perhaps as a result of small sample sizes and large standard errors.

Changes by income levels among students in the 4-year sector, on the other hand, were observed for students at the lowest income level. There were increases in both the combined degree completion and persistence rate (from 68 to 74 percent) and the rate of remaining enrolled in a 4-year institution (from 15 to 20 percent), with a concomitant decrease in the percentage who were not enrolled and had not obtained a degree (from 32 to 26 percent). In both cohorts, about 42 percent of low-income students had completed a bachelor's degree in 5 years. In the case of high-income students, degree completion rates did not increase measurably; however, a 5

Table 6. Among beginning postsecondary students who began at 4-year institutions, the percentage who had completed a degree or were still enrolled 5 years after they began postsecondary education, by student characteristics and year enrolled: 1989–90 and 1995–96

		Highest degree completed			No degree, 5-year persistence			Total completed or persisted
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	
				4-year institutions				
Total								
1989–90	60.3	53.3	4.2	2.9	13.3	1.9	24.4	75.6
1995–96	59.3	53.4	3.7	2.3	17.2*	3.2*	20.4*	79.6*
Gender								
Male								
1989–90	56.4	50.1	3.9	2.4	15.7	1.6	26.3	73.7
1995–96	54.7	49.4	3.4	1.8	19.4*	4.0*	21.9*	78.1*
Female								
1989–90	63.9	56.2	4.4	3.4	11.1	2.3	22.8	77.2
1995–96	63.1	56.7	3.8	2.6	15.4*	2.5	19.1*	80.9*
Race/ethnicity[1]								
American Indian								
1989–90	‡	‡	‡	‡	‡	‡	‡	‡
1995–96	58.1	54.2	3.9	#	21.9	5.0	15.1	84.9
Asian/Pacific Islander								
1989–90	67.2	62.7	1.8	2.7	17.1	1.6	14.1	85.9
1995–96	66.9	65.0	1.7	0.2	16.8	3.2	13.2	86.9
Black								
Total								
1989–90	50.8	41.9	4.3	4.6	18.1	3.2	27.9	72.1
1995–96	43.7	37.4	2.8	3.5	22.2	4.6	29.5	70.5
Male								
1989–90	45.2	38.0	4.3	2.9	25.9	2.1	26.9	73.1
1995–96	36.2	30.7	3.2	2.3	22.0	6.3	35.5	64.5
Female								
1989–90	54.0	44.1	4.3	5.5	13.7	3.8	28.5	71.5
1995–96	48.3	41.5	2.5	4.3	22.4*	3.5	25.8	74.2
White								
Total								
1989–90	61.4	54.3	4.4	2.7	12.3	1.8	24.5	75.6
1995–96	62.7	57.0	3.7	2.1	15.3*	2.7	19.3	80.7
Male								
1989–90	57.0	50.6	4.1	2.3	14.8	1.5	26.7	73.3
1995–96	57.6	52.7	3.3	1.6	18.0	3.6	20.9	79.1
Female								
1989–90	65.6	57.7	4.7	3.2	10.0	2.1	22.4	77.7
1995–96	67.1	60.6	3.9	2.5	13.1*	1.9	17.9	82.1
Hispanic								
Total								
1989–90	50.6	47.2	2.1	1.3	18.7	2.7	28.1	71.9
1995–96	46.8	38.9	5.3	2.6	23.9	5.2	24.2	75.8
Male								
1989–90	47.7	47.7	#	#	18.1	4.0	30.2	69.8
1995–96	43.1	35.4	5.0	2.8	24.9	5.5	26.5	73.5
Female								
1989–90	52.6	46.9	3.4	2.2	19.0	1.8	26.7	73.3
1995–96	49.4	41.5	5.5	2.4	23.2	4.9	22.5	77.5

See notes at end of table.

Table 6. Among beginning postsecondary students who began at 4-year institutions, the percentage who had completed a degree or were still enrolled 5 years after they began postsecondary education, by student characteristics and year enrolled: 1989–90 and 1995–96—Continued

		Highest degree completed			No degree, 5-year persistence			Total completed or persisted
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	
				4-year institutions				
Family income[2]								
Low								
1989–90	50.3	41.6	5.2	3.5	15.4	2.2	32.2	67.8
1995–96	49.4	41.5	4.7	3.2	20.0*	4.2	26.4*	73.7*
Middle								
1989–90	59.4	52.4	4.0	2.9	13.7	2.3	24.6	75.4
1995–96	57.4	51.1	4.2	2.0	17.7	3.4*	21.6	78.4
High								
1989–90	68.5	62.3	3.7	2.4	11.2	1.2	19.2	80.8
1995–96	70.1	66.2	2.0*	1.9	14.1	2.0	13.8*	86.2*

#Rounds to zero.

‡Reporting standards not met. (Too few cases.)

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).

[1]American Indian includes Alaska Native, Black includes African American, Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Race categories exclude Hispanic origin unless specified.

[2]Calculated separately for dependent and independent students. "Low" refers to the bottom 25 percent of the income distribution; "Middle" refers to the middle 50 percent; and "High" refers to the upper 25 percent. See appendix A for detailed definition.

NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

percentage point decrease in the percentage who left with no degree and an associated 5 percentage point increase in the combined completion and persistence rate (from 81 to 86 percent) was detected.

Public 4-Year Institutions

Variations by gender, race/ethnicity, and income in rates of persistence were found among students enrolled in public 4-year institutions. For example, as shown in table 7, men's rate of leaving without a degree decreased from 30 to 24 percent, and their combined degree completion and persistence rate increased from 70 to 76 percent. While women increased their likelihood of remaining enrolled in a 4-year institution from 14 to 19 percent, the net effect of small variations in their completion and other persistence rates resulted in no measurable difference in their combined completion and persistence rate.

When examining changes in educational outcomes by race/ethnicity, the combined degree completion and persistence rate of White students increased from 73 to 79 percent over time.

Table 7. Among beginning postsecondary students who began at public 4-year institutions, the percentage who had completed a degree or were still enrolled 5 years after they began postsecondary education, by student characteristics and year enrolled: 1989–90 and 1995–96

		Highest degree completed			No degree, 5-year persistence			Total
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	completed or persisted
				Public 4-year institutions				
Total								
1989–90	54.8	46.9	4.7	3.2	16.1	2.3	26.8	73.2
1995–96	53.3	46.6	4.1	2.6	20.9*	3.7*	22.1*	77.9*
Gender								
Male								
1989–90	49.4	42.2	4.8	2.4	19.0	2.1	29.6	70.4
1995–96	48.6	42.9	3.7	1.9	22.7	4.9*	23.8*	76.2*
Female								
1989–90	59.5	51.0	4.7	3.8	13.6	2.5	24.4	75.6
1995–96	57.4	49.7	4.5	3.2	19.3*	2.7	20.7	79.3
Race/ethnicity[1]								
American Indian								
1989–90	‡	‡	‡	‡	‡	‡	‡	‡
1995–96	‡	‡	‡	‡	‡	‡	‡	‡
Asian/Pacific Islander								
1989–90	61.2	55.9	1.6	3.8	20.8	0.9	17.1	82.9
1995–96	61.9	59.0	2.6	0.3	20.5	4.0	13.7	86.4
Black								
Total								
1989–90	44.5	34.8	4.5	5.2	20.8	3.2	31.4	68.6
1995–96	38.7	32.9	3.0	2.8	26.0	5.0	30.3	69.7
Male								
1989–90	39.4	31.5	4.4	3.5	29.2	1.8	29.6	70.4
1995–96	32.7	29.1	2.8	0.8	25.0	6.3	36.0	64.0
Female								
1989–90	47.3	36.7	4.5	6.1	16.2	4.1	32.4	67.6
1995–96	43.0	35.6	3.1	4.3	26.7*	4.1	26.2	73.8
White								
Total								
1989–90	56.1	48.0	5.1	3.0	14.9	2.2	26.7	73.3
1995–96	56.6	49.9	4.2	2.6	18.8*	3.3	21.2*	78.8*
Male								
1989–90	50.5	43.1	5.1	2.3	17.8	2.1	29.6	70.4
1995–96	51.3	45.7	3.7	1.9	21.1	4.7	22.9*	77.1*
Female								
1989–90	61.4	52.6	5.2	3.6	12.2	2.4	24.0	76.0
1995–96	61.2	53.5	4.5	3.2	16.9*	2.1	19.8	80.2
Hispanic								
Total								
1989–90	45.3	42.3	1.4	1.7	24.1	3.1	27.5	72.5
1995–96	40.4	32.3	5.4	2.8	29.0	5.1	25.6	74.4
Male								
1989–90	‡	‡	‡	‡	‡	‡	‡	‡
1995–96	35.0	27.9	5.1	2.0	30.7	5.8	28.5	71.6
Female								
1989–90	52.8	47.9	2.3	2.6	25.0	1.6	20.6	79.4
1995–96	44.5	35.6	5.5	3.3	27.6	4.5	23.4	76.6

See notes at end of table.

Table 7. Among beginning postsecondary students who began at public 4-year institutions, the percentage who had completed a degree or were still enrolled 5 years after they began postsecondary education, by student characteristics and year enrolled: 1989–90 and 1995–96—Continued

		Highest degree completed			No degree, 5-year persistence			
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	Total completed or persisted
				Public 4-year institutions				
Family income[2]								
Low								
1989–90	45.4	35.6	5.9	3.9	17.9	2.1	34.6	65.5
1995–96	46.1	37.7	5.0	3.4	23.5*	4.1	26.3*	73.7*
Middle								
1989–90	53.8	46.6	4.3	3.0	16.7	2.8	26.6	73.4
1995–96	51.4	44.6	4.5	2.4	21.6*	4.0	23.0	77.0
High								
1989–90	63.3	55.5	4.8	3.0	13.7	1.4	21.6	78.4
1995–96	63.4	58.3	2.8	2.4	17.2	2.8	16.7	83.3

‡Reporting standards not met. (Too few cases.)

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).

[1]American Indian includes Alaska Native, Black includes African American, Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Race categories exclude Hispanic origin unless specified.

[2]Calculated separately for dependent and independent students. "Low" refers to the bottom 25 percent of the income distribution; "Middle" refers to the middle 50 percent; and "High" refers to the upper 25 percent. See appendix A for detailed definition.

NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

Trends among income groups in the public 4-year sector revealed gains for low-income students, whose combined degree completion and persistence rate increased from 65 to 74 percent; no such difference could be detected for middle- and high-income students. As was the case for female students, among middle-income students, the likelihood of still being enrolled in a 4-year institution increased over time, but did not translate into an increase in the combined completion and persistence rate. The increase for low-income students brought their rate of degree completion and persistence close to that of middle-income students (74 vs. 77 percent), but it remained lower than their high-income counterparts in 1995–96 (78 vs. 83 percent).

Private Not-for-Profit 4-Year Institutions

In private not-for-profit 4-year institutions, variations in degree completion and persistence rates by income levels differed from those observed for students in the public 4-year sector. For example, only among high-income students was a significant increase in the combined degree completion and persistence rate detected (from 85 to 90 percent) (table 8). Similar changes were

Table 8. Among beginning postsecondary students who began at private not-for-profit 4-year institutions, the percentage who had completed a degree or were still enrolled 5 years after they began postsecondary education, by student characteristics and year enrolled: 1989–90 and 1995–96

		Highest degree completed			No degree, 5-year persistence			Total completed or persisted
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	
Private not-for-profit 4-year institutions								
Total								
1989–90	71.9	66.6	3.0	2.3	7.4	1.2	19.6	80.4
1995–96	69.8	65.3	2.9	1.6	10.7*	2.2*	17.3	82.7
Gender								
Male								
1989–90	70.3	65.8	2.3	2.2	9.3	0.6	19.8	80.2
1995–96	66.0	61.5	2.9	1.6	13.2*	2.3	18.5	81.5
Female								
1989–90	73.3	67.3	3.7	2.4	5.6	1.8	19.3	80.7
1995–96	72.7	68.3	2.8	1.6	8.8*	2.1	16.5	83.5
Race/ethnicity[1]								
American Indian								
1989–90	‡	‡	‡	‡	‡	‡	‡	‡
1995–96	‡	‡	‡	‡	‡	‡	‡	‡
Asian/Pacific Islander								
1989–90	81.8	79.5	2.3	#	8.1	3.3	6.9	93.2
1995–96	74.9	74.6	0.3	#	10.9	1.9	12.3	87.7
Black								
Total								
1989–90	68.8	62.2	3.8	2.8	10.3	3.0	17.9	82.1
1995–96	53.1	45.9	2.4	4.8	15.3	3.7	27.9	72.1
Male								
1989–90	60.6	55.4	3.9	1.3	17.1	2.8	19.5	80.5
1995–96	45.2	34.7	4.4	6.1	14.2	6.3	34.3	65.7
Female								
1989–90	73.9	66.4	3.8	3.7	6.1	3.2	16.9	83.1
1995–96	56.5	50.7	1.5	4.2	15.7	2.6	25.2	74.8
White								
Total								
1989–90	72.0	66.8	2.9	2.3	7.1	1.0	19.9	80.1
1995–96	73.2	69.2	2.8	1.2	9.3	1.6	15.9	84.1
Male								
1989–90	69.7	65.4	2.2	2.1	9.0	0.4	20.9	79.1
1995–96	68.7	65.0	2.6	1.1	12.4	1.6	17.3	82.7
Female								
1989–90	74.3	68.3	3.6	2.4	5.4	1.5	18.9	81.1
1995–96	76.8	72.6	2.9	1.4	6.8	1.6	14.7	85.3
Hispanic								
Total								
1989–90	60.6	56.7	3.3	0.7	8.3	1.9	29.2	70.8
1995–96	59.0	51.7	5.2	2.1	14.1	5.3	21.6	78.4
Male								
1989–90	71.2	71.2	#	#	11.1	1.4	16.4	83.6
1995–96	60.1	51.1	4.7	4.3	12.7	4.8	22.5	77.6
Female								
1989–90	52.0	44.8	5.9	1.3	6.1	2.2	39.7	60.3
1995–96	58.2	52.0	5.4	0.8	15.1	5.7	21.0	79.0

See notes at end of table.

Table 8. Among beginning postsecondary students who began at private not-for-profit 4-year institutions, the percentage who had completed a degree or were still enrolled 5 years after they began postsecondary education, by student characteristics and year enrolled: 1989–90 and 1995–96 —Continued

		Highest degree completed			No degree, 5-year persistence			Total
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	completed or persisted
				Private not-for-profit 4-year institutions				
Family income[2]								
Low								
1989–90	61.6	55.6	3.6	2.5	9.5	2.3	26.6	73.4
1995–96	56.6	49.8	4.0	2.8	12.5	4.5	26.4	73.6
Middle								
1989–90	71.8	65.4	3.5	2.9	7.0	1.2	20.1	79.9
1995–96	68.3	63.1	3.8	1.4	10.5*	2.1	19.1	80.9
High								
1989–90	77.1	73.8	2.0	1.4	6.9	0.8	15.2	84.8
1995–96	79.2	77.0	0.9	1.3	10.0	1.0	9.9*	90.1*

#Rounds to zero.

‡Reporting standards not met. (Too few cases.)

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).

[1]American Indian includes Alaska Native, Black includes African American, Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Race categories exclude Hispanic origin unless specified.

[2]Calculated separately for dependent and independent students. "Low" refers to the bottom 25 percent of the income distribution; "Middle" refers to the middle 50 percent; and "High" refers to the upper 25 percent. See appendix A for detailed definition.

NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

not detected for either middle- or low-income students. Middle-income students, however, did increase their likelihood of being enrolled in a 4-year institution (from 7 to 11 percent).

Although there was an apparent decline among Black students in their rate of bachelor's degree completion (from 62 to 46 percent), readers should be cautioned that this large apparent change is not statistically significant. Because this failure to find a measurable difference may be related to a small sample size and associated large standard errors, the completion pattern of Black students in private not-for-profit 4-year institutions is a potential topic for future studies.[13]

Public 2-Year Institutions

Postsecondary education outcomes for students who began in public 2-year colleges are shown in table 9. Since the BPS samples for this type of institution were relatively small, many

[13] Studies designed with sufficiently large over-samples of this subgroup would be needed to examine whether there are changing patterns of degree completion.

Table 9. Among beginning postsecondary students who began at public 2-year institutions, the percentage who had completed a degree or were still enrolled 5 years after they began postsecondary education, by student characteristics and year enrolled: 1989–90 and 1995–96

		Highest degree completed			No degree, 5-year persistence			Total completed or persisted
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	
Public 2-year institutions								
Total								
1989–90	36.7	6.3	17.5	12.9	5.1	9.6	48.6	51.4
1995–96	32.0	6.9	15.9	9.3*	9.7*	10.5	47.8	52.2
Gender								
Male								
1989–90	33.8	5.6	15.5	12.7	6.7	10.5	49.1	50.9
1995–96	32.1	6.7	16.6	8.9	12.4*	9.7	45.9	54.1
Female								
1989–90	39.6	7.0	19.4	13.2	3.7	8.7	48.1	51.9
1995–96	32.0	7.2	15.2	9.6	7.1*	11.3	49.6	50.4
Race/ethnicity[1]								
American Indian								
1989–90	‡	‡	‡	‡	‡	‡	‡	‡
1995–96	‡	‡	‡	‡	‡	‡	‡	‡
Asian/Pacific Islander								
1989–90	‡	‡	‡	‡	‡	‡	‡	‡
1995–96	33.5	3.0	24.4	6.1	18.6	15.5	32.5	67.5
Black								
Total								
1989–90	31.8	3.1	12.5	16.1	3.6	9.5	55.1	44.9
1995–96	24.7	1.6	7.3	15.8	5.3	10.3	59.7	40.3
Male								
1989–90	‡	‡	‡	‡	‡	‡	‡	‡
1995–96	34.1	3.3	7.8	23.1	5.1	9.6	51.2	48.8
Female								
1989–90	28.1	5.6	8.2	14.2	6.5	10.5	54.9	45.1
1995–96	15.9	#	6.8	9.0	5.5	11.0	67.7	32.3
White								
Total								
1989–90	37.3	6.6	18.4	12.3	5.3	7.8	49.7	50.3
1995–96	33.6	8.1	16.5	9.0	10.3	10.4	45.8	54.2
Male								
1989–90	34.2	6.1	16.0	12.1	7.1	8.5	50.2	49.8
1995–96	32.0	7.3	17.6	7.2	14.7	8.6	44.6	55.4
Female								
1989–90	40.3	7.0	20.9	12.5	3.4	7.1	49.2	50.8
1995–96	34.9	8.8	15.5	10.6	6.3	11.9	46.9	53.2
Hispanic								
Total								
1989–90	38.0	7.2	15.5	15.2	3.8	18.5	39.8	60.2
1995–96	27.9	3.3	17.8	6.8	6.7	10.7	54.7	45.3
Male								
1989–90	26.0	4.1	12.2	9.7	5.2	22.9	45.9	54.1
1995–96	27.5	4.2	17.3	6.1	3.5	12.0	57.1	42.9
Female								
1989–90	50.9	10.6	19.1	21.1	2.1	13.7	33.3	66.7
1995–96	28.3	2.4	18.4	7.5	10.0	9.4	52.3	47.7

See notes at end of table.

Table 9. Among beginning postsecondary students who began at public 2-year institutions, the percentage who had completed a degree or were still enrolled 5 years after they began postsecondary education, by student characteristics and year enrolled: 1989–90 and 1995–96—Continued

		Highest degree completed			No degree, 5-year persistence			Total completed or persisted
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	
				Public 2-year institutions				
Family income[2]								
Low								
1989–90	36.4	4.5	16.7	15.3	4.3	8.7	50.6	49.4
1995–96	35.5	2.6	23.2	9.8	7.9	9.0	47.6	52.4
Middle								
1989–90	37.3	6.9	17.2	13.3	4.5	8.7	49.5	50.6
1995–96	32.2	7.5	14.0	10.8	9.0*	11.3	47.4	52.6
High								
1989–90	35.1	6.9	19.8	8.5	8.4	13.5	42.9	57.1
1995–96	26.8	11.9	10.7	4.2	12.9	10.6	49.8	50.2

#Rounds to zero.

‡Reporting standards not met. (Too few cases.)

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).

[1]American Indian includes Alaska Native, Black includes African American, Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Race categories exclude Hispanic origin unless specified.

[2]Calculated separately for dependent and independent students. "Low" refers to the bottom 25 percent of the income distribution; "Middle" refers to the middle 50 percent; and "High" refers to the upper 25 percent. See appendix A for detailed definition.

NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

apparent differences are not statistically significant. However, some changes by gender and income levels were detected. As discussed earlier, students who began their postsecondary education in public 2-year colleges in 1995–96 were more likely than their counterparts who enrolled 6 years earlier to be enrolled in a 4-year institution 5 years after their initial enrollment. These students had transferred to a 4-year institution and presumably were still working toward their bachelor's degree. The increase over time in the likelihood of being enrolled in a 4-year institution held for men and women, and middle-income students.

Private for-Profit Institutions

Table 10 displays the educational outcomes of students who first enrolled in private for-profit institutions. Between 1989–90 and 1995–96, few differences in the rate at which students completed or persisted could be statistically determined. However, the results indicate that women in the later cohort were more likely than their counterparts in the earlier cohort to be enrolled in an institution with programs lasting no longer than 2 years (4 vs. 1 percent) even though 5 years had passed since they first enrolled.

Table 10. Among beginning postsecondary students who began at private for-profit institutions, the percentage who had completed a degree or were still enrolled 5 years after they began postsecondary education, by student characteristics and year enrolled: 1989–90 and 1995–96

		Highest degree completed			No degree, 5-year persistence			Total completed or persisted
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	
				Private for-profit institutions				
Total								
1989–90	59.7	1.6	11.1	46.9	0.7	1.1	38.6	61.4
1995–96	58.6	1.4	8.2	49.1	1.6	3.2*	36.6	63.4
Gender								
Male								
1989–90	57.5	0.9	11.1	45.6	#	1.7	40.8	59.2
1995–96	56.8	2.9	10.7	43.2	2.2	2.4	38.6	61.4
Female								
1989–90	60.7	2.0	11.1	47.6	1.0	0.8	37.5	62.5
1995–96	59.6	0.6	7.0	52.0	1.2	3.6*	35.6	64.4
Race/ethnicity[1]								
American Indian								
1989–90	‡	‡	‡	‡	‡	‡	‡	‡
1995–96	‡	‡	‡	‡	‡	‡	‡	‡
Asian/Pacific Islander								
1989–90	‡	‡	‡	‡	‡	‡	‡	‡
1995–96	‡	‡	‡	‡	‡	‡	‡	‡
Black								
Total								
1989–90	44.6	2.6	9.0	33.1	0.8	1.3	53.3	46.8
1995–96	48.3	0.2	3.9	44.2	2.5	5.1	44.1	55.9
Male								
1989–90	37.9	#	10.1	27.8	#	#	62.1	37.9
1995–96	33.0	0.9	4.8	27.3	6.3	5.4	55.4	44.6
Female								
1989–90	47.3	3.6	8.5	35.2	1.1	1.8	49.8	50.2
1995–96	53.6	#	3.6	50.0	1.2	4.9	40.3	59.8
White								
Total								
1989–90	62.8	1.4	11.5	49.9	0.8	1.2	35.2	64.8
1995–96	60.7	1.9	9.6	49.3	1.3	2.2	35.7	64.3
Male								
1989–90	59.9	1.3	12.3	46.3	#	2.5	37.5	62.5
1995–96	58.9	4.2	11.9	42.8	0.9	2.1	38.1	61.9
Female								
1989–90	64.1	1.4	11.2	51.6	1.2	0.6	34.2	65.9
1995–96	61.7	0.7	8.4	52.7	1.6	2.3	34.5	65.5
Hispanic								
Total								
1989–90	58.2	2.2	12.4	43.6	#	#	41.8	58.3
1995–96	61.3	0.9	9.5	50.9	0.6	4.2	33.8	66.2
Male								
1989–90	53.2	#	5.2	48.0	#	#	46.8	53.2
1995–96	65.2	2.0	16.0	47.2	1.9	2.1	30.8	69.3
Female								
1989–90	61.3	3.6	16.7	41.0	#	#	38.7	61.3
1995–96	59.5	0.4	6.3	52.7	#	5.3	35.3	64.7

See notes at end of table.

Table 10. Among beginning postsecondary students who began at private for-profit institutions, the percentage who had completed a degree or were still enrolled 5 years after they began postsecondary education, by student characteristics and year enrolled: 1989–90 and 1995–96 —Continued

		Highest degree completed			No degree, 5-year persistence			Total
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	completed or persisted
				Private for-profit institutions				
Family income[2]								
Low								
1989–90	57.4	1.3	10.2	45.9	0.2	1.0	41.4	58.6
1995–96	54.9	0.4	8.6	45.9	1.1	2.4	41.6	58.4
Middle								
1989–90	62.7	1.3	12.5	48.9	1.2	1.0	35.2	64.8
1995–96	61.8	2.0	7.8	52.0	1.8	3.7	32.8	67.2
High								
1989–90	53.4	4.6	7.4	41.4	#	1.7	44.9	55.1
1995–96	59.7	2.9	8.9	48.0	2.6	4.6	33.0	67.0

#Rounds to zero.

‡Reporting standards not met. (Too few cases.)

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).

[1]American Indian includes Alaska Native, Black includes African American, Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Race categories exclude Hispanic origin unless specified.

[2]Calculated separately for dependent and independent students. "Low" refers to the bottom 25 percent of the income distribution; "Middle" refers to the middle 50 percent; and "High" refers to the upper 25 percent. See appendix A for detailed definition.

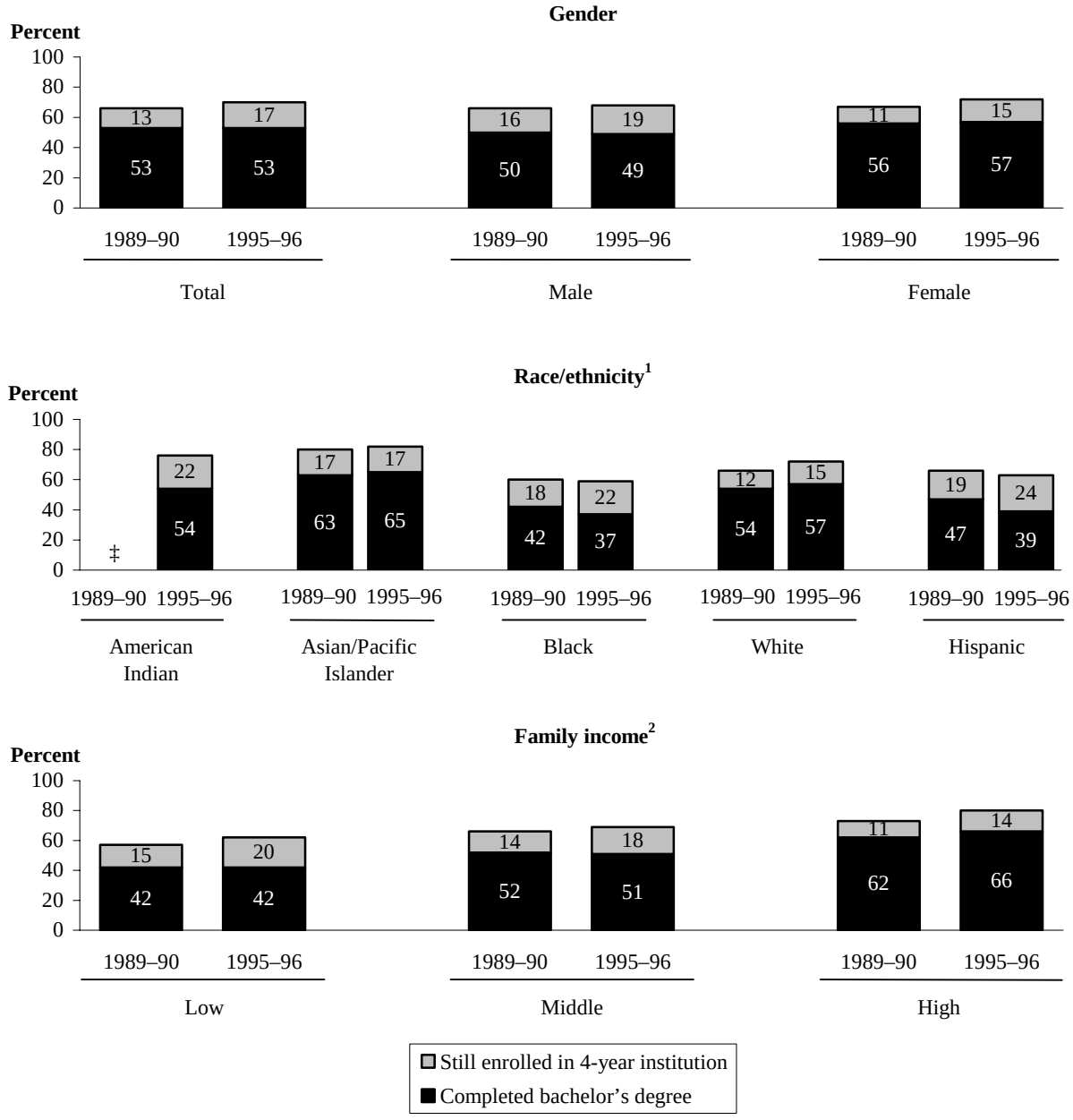
NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

Completion Gaps

When looking *within* each cohort, differences by gender, race/ethnicity, and income levels were evident in both surveys. For example, as shown in figure 3, among students who first attended 4-year institutions, women were more likely than men to attain a bachelor's degree, White and Asian students were more likely to do so than Black students (54 and 63 vs. 42 percent for the 1989–90 cohort, and 57 and 65 vs. 37 percent for the 1995–96 cohort), and high-income students were more successful than low-income students in completing a degree (62 vs. 42 percent in 1989–90 and 66 vs. 42 percent in 1995–96). The question for this study, however, is not whether such gaps in achievement exist, but whether the gaps between these groups changed over time. When an analysis of variance (ANOVA) was applied to detect differential changes in degree completion and persistence over time, no significant differences were detected in the overall changes in degree completion or combined degree completion and 5-year persistence. In other words, there was no statistical evidence to indicate that the overall postsecondary attainment gaps between men and women, among racial/ethnic groups, or among

Figure 3. Among beginning postsecondary students who began at 4-year institutions, the percentage who had completed a bachelor's degree or were still enrolled in a 4-year institution 5 years after they enrolled, by gender, race/ethnicity, and family income: 1989–90 and 1995–96



‡Reporting standards not met. (Too few cases.)

[1]American Indian includes Alaska Native, Black includes African American, Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Race categories exclude Hispanic origin unless specified.

[2]Calculated separately for dependent and independent students. "Low" refers to the bottom 25 percent of the income distribution; "Middle" refers to the middle 50 percent; and "High" refers to the upper 25 percent. See appendix A for detailed definition.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

income groups, had either widened or narrowed between students who first enrolled in 1989–90 and those who began 6 years later.

Changes by Risk Profile

The degree completion and persistence rates for students with and without factors that place them at risk of leaving postsecondary education is the focus of this section. Results for students who are not at risk are displayed in table 11-A. These students are considered by most to be "traditional" college students—those who are dependent[14] and enroll in college full time immediately after high school graduation. Since traditional students are a relatively homogeneous group, the completion and persistence rates in both surveys should be highly comparable. Results for students at risk of leaving postsecondary education are found in table 11-B. As was the case when enrollment status and risk factors were considered, the reader is reminded that the findings from this analysis are entirely descriptive in nature and, while associations between risk factors and completion and persistence rates are noted, they should not be interpreted as causal inferences.

Traditional Students

The total degree completion rate among traditional beginning postsecondary students dropped over time from 63 to 58 percent (table 11-A). This decline was mainly due to the drop in associate's degree completion among students who started in public 2-year colleges (from 32 to 23 percent). However, the drop in associate's degree completion was accompanied by an increase in the percentage of community college students who were still enrolled in 4-year institutions (from 8 to 14 percent). These students had not yet earned a degree, but had transferred to a 4-year institution and were presumably still working toward a bachelor's degree. No difference could be detected between the two cohorts, however, in the rate at which traditional students who started in community colleges completed a bachelor's degree in 5 years (14 and 15 percent, respectively).

In some respects, among traditional students in 4-year institutions, the variations in degree completion and persistence rates paralleled those observed for all students. For example, while no increase in bachelor's degree completion was detected, the likelihood that traditional students were still enrolled in 4-year institutions increased from 13 to 16 percent.

Students at Risk

Students are considered at risk if they enter postsecondary education with one or more characteristics that place them at risk of not completing their postsecondary studies. Students at

[14] See appendix A glossary under DEPEND2 entry for definition of dependent and independent students.

Table 11-A. Percentage of beginning postsecondary students identified as traditional college students who had completed a degree or were still enrolled 5 years after they began postsecondary education, by type of first institution attended and year enrolled: 1989–90 and 1995–96

		Highest degree completed			No degree, 5-year persistence			Total
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	completed or persisted
				Traditional students[1]				
Total								
1989–90	62.8	44.0	12.4	6.4	11.0	1.9	24.3	75.8
1995–96	57.7*	43.6	10.0	4.2*	15.0*	4.6*	22.7	77.3
Type of first institution								
All 4-year								
1989–90	65.8	59.9	3.7	2.3	13.3	1.7	19.1	80.9
1995–96	64.9	60.2	3.3	1.4*	16.4*	2.8*	15.9*	84.1*
Public 4-year								
1989–90	60.1	53.3	4.2	2.6	16.8	2.1	21.0	79.0
1995–96	58.6	53.1	3.8	1.8	20.3*	3.5	17.6*	82.4*
Private not-for-profit 4-year								
1989–90	76.5	72.2	2.6	1.6	6.8	1.1	15.6	84.4
1995–96	75.0	71.7	2.6	0.7	10.3*	1.6	13.1	86.9
Public 2-year								
1989–90	53.1	14.1	32.1	6.9	8.4	2.9	35.6	64.4
1995–96	42.8*	15.2	22.6*	5.1	14.0*	8.0	35.1	64.9
For-profit								
1989–90	71.8	1.9	18.9	51.0	0.1	0.1	28.0	72.1
1995–96	56.5*	5.0	15.6	35.9*	2.8*	6.7*	33.9	66.1
Other[2]								
1989–90	55.8	7.9	27.0	20.8	3.1	1.4	39.8	60.2
1995–96	55.1	9.9	23.3	21.8	3.5	11.7	29.8	70.2

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).

[1]Dependent students who enrolled in postsecondary education full time immediately after high school graduation.

[2]Includes private not-for-profit 2-year and less-than-2-year institutions and public less-than-2-year institutions.

NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

Table 11-B. Percentage of beginning postsecondary students with any risk characteristics who had completed a degree or were still enrolled 5 years after they began postsecondary education, by type of first institution attended and year enrolled: 1989–90 and 1995–96

		Highest degree completed			No degree, 5-year persistence			Total
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	completed or persisted
				Any risk factors[1]				
Total								
1989–90	38.2	9.2	10.1	18.9	5.3	8.2	48.3	51.7
1995–96	35.9	7.1*	9.9	18.9	8.2*	8.5	47.4	52.6
Institution first enrolled								
All 4-year								
1989–90	44.0	33.5	5.7	4.8	13.1	2.5	40.4	59.6
1995–96	39.6	29.4	4.9	5.3	19.7*	4.5	36.1	63.9
Public, 4-year								
1989–90	40.6	29.9	6.1	4.7	14.4	2.8	42.2	57.8
1995–96	37.2	26.8	5.2	5.2	22.6*	4.4	35.8	64.2
Private not-for-profit 4-year								
1989–90	53.4	43.9	4.5	5.0	9.5	1.8	35.3	64.7
1995–96	45.6	35.8	4.1	5.7	12.6	4.9	37.0	63.0
Public 2-year								
1989–90	30.4	3.3	11.9	15.2	3.9	12.1	53.6	46.4
1995–96	26.8	2.9	12.6	11.4	7.2*	11.8	54.2	45.8
All for profits								
1989–90	55.9	1.6	8.7	45.7	0.9	1.3	41.9	58.1
1995–96	59.1	0.5	6.5	52.2	1.3	2.4	37.2	62.8
All others[2]								
1989–90	53.3	1.0	8.3	44.0	5.3	3.7	37.7	62.3
1995–96	52.5	1.5	7.4	43.5	3.9	3.7	40.0	60.0

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).

[1]Risk factors are characteristics associated with not completing postsecondary programs. Students' risk status was determined when they first enrolled; students at risk include those who had 1 or more of the following experiences: delayed postsecondary enrollment, attended part time, worked full time while enrolled, were financially independent, had children or dependents other than a spouse, were single parents, or did not receive a high school diploma (including dropouts and those who earned GEDs).

[2]Includes private not-for-profit 2-year and less-than-2-year institutions and public less-than-2-year institutions.

NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

risk include those who delay their postsecondary enrollment by a year or more, are financially independent from their parents, first enroll part time, work full time while enrolled, have children or dependents other than a spouse, are single parents, or do not graduate from high school (drop out or earn a GED).

Unlike the pattern for their traditional counterparts, the bachelor's degree completion rates of students with one or more of these risk characteristics declined (from 9 to 7 percent) (table 11-B). However, like their traditional counterparts, their likelihood of remaining enrolled in a 4-year institution after 5 years increased over time (from 5 to 8 percent). As a result, no difference could be detected in the combined completion and persistence rate, with about 52 percent of at-risk students completing or persisting in both surveys. In other words, the findings for at-risk students indicate that students in the later cohort did not demonstrate an increase in overall persistence and completion and they required more time in their efforts to complete a bachelor's degree. Examining at-risk students by first institution type showed that the increase in the likelihood of students being enrolled in 4-year institutions 5 years after they first started held among students who began in public 4-year institutions and public 2-year institutions.

Institutional Completion Rates and Transfer

All of the completion and persistence data presented thus far in the report are based on system-wide rates regardless of whether students transferred at any time during the course of their enrollment. This means that even if students begin in one institution and complete in another, they are identified as having persisted and earned a degree. Other rates, such as those reported by the college admissions testing organization, ACT, are based on what happened to the student in the *first* institution attended. No distinction is made between students who leave postsecondary education altogether and students who transfer to another institution.

Findings reported by ACT indicate that institutional graduation rates declined between 1992 and 2002.[15] According to their annual survey of about 1,450 institutions, the average 5-year bachelor's degree completion rate was 54 percent in 1994 and 51 percent in 2000.[16] However, ACT graduation rates are institution based rather than student based and, therefore, not weighted by student enrollment. This means equal weight is given to institutions with small and large enrollments. The data from the BPS surveys, on the other hand, are student based, and weighted to reflect such students nationally. Comparable institutional graduation rates from the BPS surveys indicate no significant change for the same years. Yet another source for institutional graduation

[15] Data from ACT website: http://www.act.org/news/releases/2002/11-15-02.html.

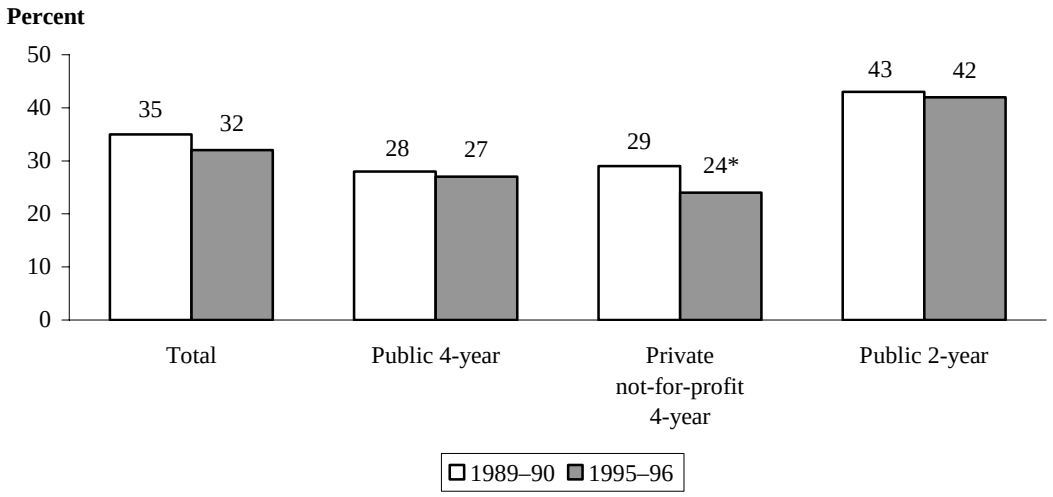
[16] The remaining students had either left postsecondary education from the first institution or had transferred elsewhere.

rates is the NCAA historical data for Division I institutions. These data indicate no change in 6-year graduation rates for the comparable years to BPS and ACT: among full-time students who enrolled in Division I institutions in 1989, 57 percent graduated in 6 years, while 58 percent of those who entered in 1995 did so.[17] Taking all these sources of data into account, there is no clear evidence that the institutional graduation rates changed over the time period under study.

Changes in Transfer Rates

The difference between institutional graduation rates and system-wide completion and persistence rates reflects the frequency of transfer (Berkner, Cuccaro-Alamin, and McCormick 1996). If institutional graduation rates are roughly 50 to 60 percent as described in the previous paragraph, then logically, the other 40 to 50 percent of students leave their first institution entirely (i.e., leave postsecondary education) or transfer elsewhere. Unlike institution-based data, which cannot distinguish between dropouts and transfers, the BPS surveys track all students including transfers. Roughly one-third of students in both BPS cohorts had transferred during the course of their enrollment (figure 4).

Figure 4. Percentage of beginning postsecondary students who had ever transferred, by first institution type: 1989–90 and 1995–96



*Difference between 1989–90 and 1995–96 is statistically significant ($p<0.05$).
SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

[17] Data from NCAA website: http://www.ncaa.org/grad_rates.

Students who transfer take longer to complete a bachelor's degree than those who do not (Bradburn et al. 2003). If the time spent to complete a bachelor's degree is increasing, it could reflect an increase in transfer rates over time. However, as shown in figure 4, in the aggregate, no change in transfer rates overall could be detected over time. Examining transfer rates by first institution type did reveal a decline in transfers for one institution type—private not-for-profit 4-year institutions (from 29 to 24 percent). Thus, not only was no increase in aggregate transfer rates detected, the only change appeared to be a decline for those who started in the private not-for-profit 4-year sector.

Transfer Students' Completion and Persistence

Table 12 displays the 5-year completion and persistence rates for students who had transferred at any time from their first institution regardless of where they transferred. Among all transfers, the total degree completion rate declined over the 6-year time period from 53 to 44 percent, and the likelihood of still being enrolled in a 4-year institution increased from 13 to 22 percent. Patterns among transfers from both public and private not-for-profit 4-year institutions paralleled these results: transfers from both sectors were less likely to have completed a degree in 5 years and more likely to be enrolled in 4-year institutions.

Among transfers who began in public 2-year institutions, those in the later cohort were less likely to have earned a vocational certificate (7 vs. 19 percent) and more likely to be enrolled in a 4-year institution (22 vs. 12 percent). Thus, the trend for transfers from public 2-year colleges appeared to be away from acquiring vocational certificates and toward pursuing bachelor's degrees. Among transfers who began in for-profit institutions, the only measurable change was a an increase in the percentage still enrolled in less than-4-year institutions from 4 to 17 percent.

Overall, the analysis did not detect an increase in the rate at which students transferred from their first institution. Moreover, for those who began in private not-for-profit 4-year institutions, the transfer rate declined. Analyzing the outcomes for transfer students revealed a decline between the cohorts in 5-year degree completion rates and an increase in the percentage still enrolled in a 4-year institution, reflecting the need for more time in their efforts to complete a bachelor's degree.

Table 12. Among beginning postsecondary students who had ever transferred, the percentage who completed a degree or were still enrolled 5 years after they began postsecondary enrollment, by type of first institution attended and year enrolled: 1989–90 and 1995–96

		Highest degree completed			No degree, 5-year persistence			Total
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	completed or persisted
				Transfer students				
Total								
1989–90	53.2	18.3	17.8	17.0	12.8	7.7	26.4	73.6
1995–96	43.7*	17.5	17.0	9.2*	22.3*	9.8*	24.2	75.8
Type of first institution								
All 4-year								
1989–90	48.1	29.9	9.9	8.4	16.6	6.9	28.4	71.6
1995–96	37.1*	23.0	9.1	5.0*	26.3*	11.3*	25.4	74.6
Public 4-year								
1989–90	47.7	27.3	11.0	9.4	16.1	8.2	28.1	71.9
1995–96	36.0*	20.9	9.6	5.5*	27.9*	12.3*	23.8	76.3
Private not-for-profit 4-year								
1989–90	49.1	35.2	7.6	6.4	17.5	4.3	29.1	70.9
1995–96	39.3*	27.1	8.1	4.0	22.9*	9.2*	28.6	71.4
Public 2-year								
1989–90	54.4	13.6	22.3	18.5	12.1	8.9	24.7	75.3
1995–96	45.7	16.1	22.4	7.2*	22.0*	8.3	24.0	76.0
For profit								
1989–90	65.4	6.3	17.7	41.4	2.7	3.6	28.3	71.9
1995–96	56.2	2.7	6.8*	46.7	6.6	16.7*	20.5	76.2
All others[1]								
1989–90	55.4	8.1	23.3	24.0	9.9	6.1	28.6	76.8
1995–96	53.2	12.1	18.2	22.9	14.3	9.4	23.2	71.9

*Estimate for the 1995–96 cohort is statistically significantly different from the estimate for the 1989–90 cohort ($p<0.05$).

[1]Includes private not-for-profit 2-year and less-than-2-year institutions and public less-than-2-year institutions.

NOTE: Detail may not sum to totals because of rounding. Unless otherwise specified, all variables refer to the first time students enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

Summary

Table 13 summarizes the changes over time in the 5-year degree completion and persistence rates between students who began their postsecondary education in 1989–90 and those who started in 1995–96. The up-arrow (↑ symbol) in a cell of the table indicates an increase, the down-arrow (↓ symbol) indicates a decrease, while a blank cell indicates no

Table 13. Summary findings for changes in degree attainment, 5-year persistence, and combined 5-year attainment and persistence between beginning postsecondary students who first enrolled in 1989–90 and in 1995–96

	Total			Public 4-year			Private not-for-profit 4-year			Public 2-year			Private for-profit		
	Total completed	Still enrolled at 4-year	Completed or still enrolled	Total completed	Still enrolled at 4-year	Completed or still enrolled	Total completed	Still enrolled at 4-year	Completed or still enrolled	Total completed	Still enrolled at 4-year	Completed or still enrolled	Total completed	Still enrolled at 2-year or less	Completed or still enrolled
Total	↓	↑			↑	↑		↑			↑			↑	
Gender															
Male		↑				↑		↑			↑		[3]		
Female	↓	↑			↑			↑			↑		[4]	↑	
Race/ethnicity[1]															
American Indian															
Asian/Pacific Islander															
Black															
White		↑			↑	↑					↑				
Hispanic															
Family income[2]															
Low		↑			↑	↑									
Middle		↑			↑						↑				
High	[1]	↑							↑						
Risk profile															
No risk (traditional)	↓	↑						↑					↓	↑	
At risk	[4]	↑			↑										
Transfer students	↓	↑		↓	↑		↓	↑		[2]	↑				

↑ Increased over time ($p<0.05$).

↓ Decreased over time ($p<0.05$).

[1] Significant decline in associate's degree, but not total.

[2] Significant decline in certificates, but not total.

[3] Significant increase in bachelor's degree, but not total.

[4] Signficant decline in bachelor's degree, but not total.

[1]American Indian includes Alaska Native, Black includes African American, Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Race categories exclude Hispanic origin unless specified.

[2]Calculated separately for dependent and independent students. "Low" refers to the bottom 25 percent of the income distribution; "Middle" refers to the middle 50 percent; and "High" refers to the upper 25 percent. See appendix A for detailed definition.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

statistical change. For each group, changes over time are displayed for three measures: total degree completion, enrollment in a 4-year institution if no degree (for those who began in for-profit institutions, enrollment in a 2-year or less institution is displayed), and the combined 5-year degree completion and persistence rates.

The most obvious change evident in the table is the increase in the likelihood of students still being enrolled in a 4-year institution. These are students who had not completed a degree but were still enrolled 5 years after they began their postsecondary studies. This finding was evident for students who began in public 4-year institutions, private not-for-profit 4-year institutions, and public 2-year colleges. Does the result simply mean that students are taking longer to complete bachelor's degrees? One could draw such a conclusion if a corresponding decline in completion rates was observed. However, no aggregate differences in bachelor's degree completion rates were detected at any of the three types of institutions (tables 7–9), implying that given more time, the bachelor's degree completion rate might well go up.

When the data were broken out by gender, race/ethnicity, income, risk status, and transfer status, there were specific groups of students who experienced losses in either degree completion or combined degree completion and persistence. Specifically, the bachelor's degree completion rate among at-risk students declined, as did the total degree completion for transfer students.

Nearly all the students who experienced gains over time in the combined measure of degree completion and persistence were among those who first enrolled in public 4-year institutions. These students included males, White students, and students from the lowest income group. The only other group for whom a significant gain in the combined degree completion and persistence rate was detected was for students in the highest income group who first enrolled in private not-for-profit 4-year institutions.

Conclusions

It is not entirely clear why the 5-year persistence rate of beginning postsecondary students, especially those who entered public 4-year institutions, increased over the period studied in this report. This increase could be related to many factors. For example, both the composition of the student population and the economy changed during this time. Between 1989–90 and 1995–96, more students enrolled in college for the first time and the demographic profile of these students changed, with Black, Hispanic, and low-income students making up a greater proportion of the student population. Such students have historically been underrepresented in postsecondary education and often face financial barriers or other hardships in completing a degree. On the other hand, students' educational expectations as well as their parents' education levels were somewhat higher, characteristics typically associated with higher rates of persistence and attainment. These patterns may be opposing forces on educational outcomes and may account, on one hand, for the greater percentage of students persisting, and on the other, for the increased time necessary to complete a bachelor's degree. Further complicating the picture are institutional factors that may be associated both with changes in the student population over time—such as policies to admit and retain nontraditional students—and with enrolled students' completion rates (Astin 1993; Bowen and Bok 1998).

The increase in persistence rates may also be related to students' increased reliance on student loans to help pay for postsecondary education. One-half of the students who started in 1995–96 had borrowed during their enrollment to help finance their education, compared with one-third of their counterparts who started 6 years earlier. Therefore, students in the later cohort were more likely to have accrued loan debt, thereby increasing the potential financial burden of leaving with no degree.

There were also changes in the economy between the years when each cohort of students would have entered the labor market. Students who began their postsecondary education in 1989–90 and who were still enrolled in college 5 years later (1994) encountered a prosperous economy with plentiful job opportunities (Schwenk and Pfuntner 2003). It is possible that those who had not yet finished their degree may have been attracted to the growing job market especially in the high-tech industry and thought they could leave school and return later to finish their degree. On the other hand, students who began college in 1995–96 and who were still enrolled 5 years later (2000) faced an economy in the beginning stages of a recession and a

tightening job market (Martel and Langdon 2001). With fewer job options and more debt, these students may have been less inclined to take a break from their studies and leave without a degree.

Finally, it should be noted that while the overall results found no evidence of a decline in bachelor's degree completion between the two cohorts, certain subgroups of students did not fare as well over the period under study. In particular, at-risk students, who represent a large segment of the beginning student population, experienced losses in the rate at which they completed bachelor's degrees in 5 years.

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Appendix A—Glossary

The glossary describes the variables used in this report. The variables were taken directly from the BPS:90/94 and BPS:96/01 Data Analysis Systems (DAS), NCES software applications that generate tables from the BPS data. Appendix B contains a description of the DAS software. In the index below, the variables are listed in the order they appear in the report. The glossary items are in alphabetical order by 1989–90 variable name.

GLOSSARY INDEX

Received any grants throughout enrollment
1989–90.....GOTGRANT
1995–96.....AHGRAN

DEGREE COMPLETION AND PERSISTENCE

Highest degree completed or enrollment status after 5 years
1989–90..... ATTENRST
1995–96.....PRENRL2A

Bachelor's degree completion at first institution
1989–90 ..... PERABA
1995–96 ..... PROUTYX5

Ever transferred
1989–90 .....TRANTO
1995–96 ..... ITTRSE2B

DAS Variable

Age when first enrolled **AGE (1989–90) AGE (1995–96)**

Student's age as of December 31 of 1989 for 1989–90 cohort and 1995 for 1995–96 cohort.

18 years or younger
19 years
20–23 years
24–29 years
30 years or older

Attendance intensity **ATTEND (1989–90) ATTEND2 (1995–96)**

Indicates the student's attendance status during the first term.

Full-time
Part-time

Degree attainment or enrollment status **ATTENRST (1989–90) PRENRL2A (1995–96)**

Indicates the highest degree the student attained after 5 years or the level of the institution in which the student is still enrolled if no degree had been attained. The last follow-up for BPS:90/94 was conducted 5 years after first enrollment, whereas, the last follow-up for BPS:96/01 took place 6 years after first enrollment. However, for both cohorts, cumulative attainment and persistence was measured at the end of each academic year. An academic year is defined as months from July through June of the academic year, inclusive. For BPS:96/01, the outcome for 2000, or 5 years after first enrollment, was used to compare with the final 5-year outcome BPS:90/94. In both cohorts, those who had never attained, but were enrolled in either a 4-year or less-than-4-year institution, had records of enrollment for the academic year under consideration. For those who attained more than one credential, the highest degree is recorded.

Total completed	(1) + (2) + (3)
Bachelor's degree	(1) Attained bachelor's degree
Associate's degree	(2) Attained associate's degree
Certificate	(3) Attained certificate
Still enrolled at 4-year	(4) Never attained, enrolled at 4-year
Still enrolled at 2-year or less	(5) Never attained, enrolled at less-than-4-year
No degree, not enrolled	(6) Never attained, not enrolled
Total completed or persisted	(1) + (2) + (3) + (4) + (5)

DAS Variable

Race/ethnicity **BPSRACE (1989–90) SBRACECI (1995–96)**

Categories that classify students based on reported race and Hispanic ethnicity. In 1995–96 the option of choosing the category "Other" was added to the survey, which was selected by 0.3 percent of respondents. These students were excluded when comparing race/ethnicity distributions between the two cohorts, but they were included in all other estimates.

White, non-Hispanic	A person having origins in any of the original people of Europe, North Africa, or the Middle East (except those of Hispanic origin).
Black, non-Hispanic	A person having origins in any of the Black racial groups of Africa, not of Hispanic origin.
Hispanic	A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.
Asian/Pacific Islander	A person having origins in any of the peoples of the Far East, Southeast Asia, the Indian subcontinent, or Pacific Islands. This includes people from China, Japan, Korea, the Philippine Islands, Samoa, India, and Vietnam.
American Indian/Alaska Native	A person having origins in any of the original peoples of North America and who maintains cultural identification through tribal affiliation or community recognition.

Delayed enrollment (length of delay after high school) **DELAYENR (1989–90) ENDELAY (1995–96)**

Indicates whether or not student enrolled in postsecondary education in the same calendar year as he or she graduated from high school.

Did not delay
Delayed enrollment

Dependency status when first enrolled **DEPEND2 (1989–90) SBDEP1Y1 (1995–96)**

Student dependency status for federal financial aid. Students were considered independent if any of the following applied:

a) Student was 24 years or older as of 12/31 in the year enrolled.[1]
b) Student was a veteran of the U.S. Armed Forces
c) Student was married
d) Student was an orphan or ward of the court
e) Student had legal dependents, other than spouse
f) Student was enrolled in a graduate or professional program beyond a bachelor's degree

Dependent
Independent

[1] In 1989–90 students under age 24 could have been considered independent if they could demonstrate sufficient income and were not claimed as an income tax exemption by their parents in 1988 and 1989. This provision was removed a year later.

DAS Variable

Highest degree ever expected **EXEDCOL (1989–90) EPHDEGY1 (1995–96)**

The highest level of education students expected to complete in postsecondary education.

Less than a bachelor's degree
Bachelor's degree
Advanced degree
Don't know (asked only in 1995–96)

Family income **FAMINCPR (1989–90) PCTALL2 (1995–96)**

Indicates income levels for all students as a percentage distribution. Calculated separately for dependent and independent students; each ranking thus compares the student only to other students of the same dependency status.

Low	Income in the lowest 25 percent of the distribution.
Middle	Income in the middle 50 percent of the distribution.
High	Income in the highest 25 percent of the distribution.

Received student grant **GOTGRAN (1989–90) AHGRAN (1995–96)**

Indicates whether or not student received any grants throughout their undergraduate enrollment.

Yes
No

Received student loan **GOTLOAN (1989–90) AHANYL6 (1995–96)**

Indicates whether or not student received any loans throughout their undergraduate enrollment.

Yes
No

Gender **H_GENDR (1989–90) SBGENDER (1995–96)**

Male
Female

DAS Variable

High school diploma or equivalency status **H_HSDIP (1989–90) HSDIPLOM (1995–96)**

Indicates type of high school degree reported by sample institution or, if not available, by student. Response to CATI question in 1989–90: What type of high school diploma did you receive? and to CATI question in 1995–96: Did you receive a high school diploma, pass a General Educational Development (GED) test, or receive a high school completion certificate? In the analysis GED and certificate of completion were combined.

High school diploma	Student graduated from high school.
GED or equivalent	Student did not graduate from high school but passed the General Educational Development (GED) exam or high school equivalent, administered by the American Council on Education.
Certificate of completion	Student received a certificate of completion.
No high school degree/certificate	Student neither graduated from high school nor earned a GED or certificate of completion.

Number of dependents when first enrolled **NUMDEPND (1989–90) SBDPNY1 (1995–96)**

Number of dependents (excluding spouse).

None
One or more

Type of first institution **OFCO8990 (1989–90) ITNPSAS (1995–96)**

4-year	Can award bachelor's degrees or higher, including institutions that award doctorate degrees and first-professional degrees. First-professional includes chiropractic, pharmacy, dentistry, podiatry, medicine, veterinary medicine, optometry, law, osteopathic medicine, and theology.
Public	A postsecondary education institution supported primarily by public funds and operated by publicly elected or appointed officials who control the programs and activities.
Private not-for-profit	A postsecondary institution that is controlled by an independent governing board and incorporated under Section 501(c)(3) of the Internal Revenue Code.
Public 2-year	Public institution that does not confer bachelor's degrees, but does provide 2-year programs that result in a certificate or an associate's degree, or 2-year programs that fulfill part of the requirements for a bachelor's degree or higher at 4-year institutions.
Private, for-profit	A postsecondary institution that is privately owned and operated as a profit-making enterprise. Includes career colleges and proprietary institutions. Includes all levels (less-than-2-year, 2-year, 4-year).
Other	Includes private not-for-profit 2-year and less-than-2-year institutions and public less-than-2-year institutions.

DAS Variable

Bachelor's degree completion at first institution **PERABA (1989–90) PROUTYX5 (1995–96)**

Bachelor's degree completion at the first institution at the end of 5 years. Used to compare to ACT and NCAA graduation rates.

Income relative to poverty level **PCTPVRTY (1989–90) SFPOV94 (1995–96)**

Categorizes total family income as reported on financial aid applications, by family size in relation to federal poverty level income thresholds. The calculation for dependent students is based on parents' income. The calculation for independent students is based on their own income. Income thresholds are based on the Census Bureau's poverty levels in the year preceding enrollment (1988 or 1994). A value of 100 or less means the family is at or below the poverty income level. For this analysis, income levels were categorized as indicated below.

Below 125 percent
125 to 449 percent
450 percent or more

Took remedial courses **REMEDIAL (1989–90) RMANYY1 (1995–96)**

Respondent reported taking one or more remedial instruction or developmental courses in reading, writing, math, study skills, or English language skills during the first year enrolled.

Took remedial math **REMMATH (1989–90) SIMATH (1995–96)**

Took remedial reading **REMREAD (1989–90) SIREAD (1995–96)**

Took remedial writing **REMWRITE (1989–90) SIWRIT (1995–96)**

Postsecondary risk status **RISKNDX2 (1989–90, and 1995–96)**

Represents an index of risk based on the seven possible characteristics related to lower persistence and attainment.

1) Older than typical age for year in school (i.e., delayed enrollment)
2) Attend on a part-time basis
3) Financially independent based on financial aid eligibility (see entry for DEPEND2 for detailed definition)
4) Have dependents other than spouse
5) Single parent status
6) High school dropout, GED or high school equivalency certificate recipient
7) Work full-time while enrolled (35 hours or more)

For this analysis, the categories were aggregated as follows:

Any
One to two
Three or more

DAS Variable

Parental education **RPARED (1989–90) PBEDHI3 (1995–96)**

The highest level of education completed by the student's mother or father, whoever had the highest level. The variable was aggregated to the following categories in this report:

High school diploma or less	Students' parents earned a high school diploma or equivalent or did not complete high school.
Some postsecondary education	Students' parents attended some postsecondary education, but did not earn a bachelor's degree.
Bachelor's degree or higher	Students' parents attained a bachelor's or advanced degree.

Single parent status when first enrolled **SINGLPAR (1989–90) SBSINGY1 (1995–96)**

Indicates whether the student had dependents and was not married.

Not a single parent
Single parent

Total grants **TOTGRT (1989–90, and 1995–96)**

Total grants received in the first year of enrollment. Includes grants from all sources. "Yes" is defined as any amount greater than zero.

No, did not receive grants
Yes, received grants

Total loans (except PLUS) **TOTLOAN (1989–90, and 1995–96)**

Total amount of all loans, except PLUS: federal, state, institutional, and private sector received in the first year of enrollment. "Yes" is defined as any amount greater than zero.

No, did not receive loans
Yes, received loans

Transferred **TRANTO (1989–90) ITTRESE2B (1995–96)**

Variables identify destination of first transfer. For this analysis, transfers were aggregated into one group to identify those who had ever transferred.

Worked while enrolled **WHRS4 (1989–90) J1HOURY1 (1995–96)**

WHRS4 is the average number of hours worked in October 1989, and J1HOURY1 is the number of hours students reported working when directly asked how many hours they typically worked per week while enrolled.

Did not work
Worked part time (1 to 34 hours)
Worked full time (35 or more hours)

Appendix B—Technical Notes and Methodology

Beginning Postsecondary Students Longitudinal Study

The Beginning Postsecondary Students Longitudinal Study (BPS) is based on a sample of students who enrolled in postsecondary education in institutions located in the 50 states, the District of Columbia, and Puerto Rico for the first time in a specific academic year. Two BPS surveys have been conducted thus far; one followed students who first began their postsecondary education in 1989–90 (BPS:90/94) and a second followed students who began in 1995–96 (BPS:96/01). Unlike other NCES longitudinal surveys (such as the National Education Longitudinal Study of 1988), which follow age-specific cohorts of secondary school students, the BPS sample includes nontraditional students who have delayed their postsecondary education due to financial need or family responsibilities, or other reasons. Students who began their postsecondary studies before the base year of the study, or who stopped out, and then returned to their studies in the base year were not included, nor were students who were still enrolled in high school. Eligible students for the BPS samples were identified from participants in the two corresponding National Postsecondary Student Aid Studies (NPSAS:90 and NPSAS:96).

The BPS survey samples, while representative and statistically accurate, are not simple random samples. Instead, the samples are selected using a more complex three-step procedure with stratified samples and differential probabilities of selection at each level. First, postsecondary institutions are selected within geographic strata. Once institutions are organized by zip code and state, they are further stratified by institution control (i.e., public; private not-for-profit; or private for-profit) and highest degree offering (less-than-2-year; 2-year to 3-year; 4-year non-doctorate-granting; and 4-year doctorate-granting).

A computer-assisted telephone interview (CATI) was conducted with BPS students twice after the Base Year survey. The final follow-up survey for BPS:90/94 took place about 5 years after college entry (in 1994), while the final follow-up survey for BPS:96/01 took place 6 years after (in 2001). The CATI collected information concerning enrollment, program completion, education financing, employment, and family formation; graduate school access and enrollment; and civic participation.

The BPS survey data underwent several data quality evaluations, which included both online data editing procedures and post-data collection editing. The online data editing ensured that the data collected fell within legitimate ranges and where feasible, items were cross-checked against other related items. After data collection, the data were cleaned and edited using several steps including verification of one-way frequencies for each item, cross-tabulations of related items, standard variable recoding and formatting (such as dates), the determination of outlier values, and logical imputations. After the CATI data were cleaned and edited, composite variables for specific data analyses were created, which were subjected to similar cleaning and checking procedures.

1989–90 Beginning Postsecondary Students Longitudinal Study

BPS:90/94 survey followed approximately 9,000 students from the 1989–90 National Postsecondary Student Aid Study (NPSAS:90) sample who were identified as first-time beginning (FTB) students in academic year 1989–90.[1] The unweighted BPS:90/94 response rate is 91.4 percent. The weighted response rate, using the NPSAS:90 analysis weights, is 91.0 percent. Among respondents, about 10 percent of sample members did not have sufficiently detailed enrollment histories to allow for classification in the persistence variables used in this report.[2] The weight used for analysis of BPS:90/94 data was BPS94AWT, which includes students who participated in both the first and last followup surveys. The unweighted sample sizes (rounded, by institution type) of respondents used in this analysis are shown in table B-2.

1995–96 Beginning Postsecondary Students Longitudinal Study

The Beginning Postsecondary Students Longitudinal Study (BPS) is based on a sample of students who were enrolled in postsecondary education for the first time in 1995–96 and participated in the 1995–96 National Postsecondary Student Aid Study (NPSAS:96). This BPS study began with a sample of approximately 12,000 students who were identified in NPSAS:96 as having entered postsecondary education for the first time in 1995–96.

The first follow-up of the BPS cohort (BPS:96/98) was conducted in 1998, approximately 3 years after these students first enrolled. Approximately 10,300 of the students who first began in 1995–96 were located and interviewed in the 1998 follow-up for an overall weighted response rate of 79.8 percent. This response rate includes those who were nonrespondents in 1996; among

[1] Eligibility status could not be determined for about 6 percent of the BPS:90/94 sample.

[2] For more information on BPS:90/94, consult *Beginning Postsecondary Students Longitudinal Study Second Follow-up (BPS:90/94) Final Technical Report* (NCES 96–153) (Washington, DC: U.S. Department of Education, National Center for Education Statistics, 1996).

the NPSAS:96 respondents the response rate was 85.9 percent.[3] The second follow-up of the BPS cohort (BPS:1996/2001) was conducted in 2001, six years following college entry. All respondents to the first follow-up, as well as a subsample of nonrespondents in 1998, were eligible to be interviewed. Over 9,100 students were located and interviewed. The weighted response rate was 83.6 percent overall, but was somewhat higher among respondents to both the 1996 and the 1998 interviews (87.4 percent).[4]

Even though rates of degree completion and persistence after 6 years are available for BPS:96/01, variables measuring 5-year degree completion and persistence were created for comparability to the earlier BPS survey (BPS:90/94), which ended 5 years after students first enrolled. Table B-1 shows the rates of completion and persistence after 5 years and 6 years for BPS:96/01. The weight used for the analysis of data from the BPS:96/01 was B01LWT2, which includes students who responded to both the first and last followup surveys. The unweighted sample sample sizes (rounded, by institution type) of respondents used in this analysis are shown in table B-2.

Bias Analysis

Nonresponse among cohort members causes bias in survey estimates when the outcomes of respondents and nonrespondents are shown to be different. A bias analysis was conducted on the 2001 BPS:96/01 survey results to determine if any variables were significantly biased due to nonresponse. Considerable information was known from the 1996 and 1998 surveys for nonrespondents to the 2001 interviews, and nonresponse bias could be estimated using variables with this known information. Weight adjustments were applied to the BPS:96/01 sample to reduce any bias found due to unit nonresponse. After the weight adjustments, some variables were found to reflect zero bias, and for the remaining variables the bias did not differ significantly from zero. This analysis was performed on variables found on the frame where the true value is known for both respondents and nonrespondents. For other variables collected in the survey, where data is available only for respondents, it is not known whether the weight adjustments completely eliminate bias.

[3] For more information on the BPS:96/98 survey, consult *Beginning Postsecondary Students Longitudinal Study First Follow-up 1996–98, Methodology Report* (NCES 2000–157) (Washington, DC: U.S. Department of Education, National Center for Education Statistics, 2000).

[4] For more information on the BPS:96/01 survey, consult *Beginning Postsecondary Students Longitudinal Study:1996–2001 Methodology Report* (NCES 2002–171) (Washington, DC: U.S. Department of Education, National Center for Education Statistics, 2002).

Table B-1. Percentage of 1995–96 beginning postsecondary students who had completed a degree or were still enrolled 5 years (2000) or 6 years (2001) after they began postsecondary education, by first institution type attended: 1995–96

	Highest degree completed			No degree, 5-year persistence		
Estimates	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled
Total						
2000	25.1	9.9	11.7	11.6	6.6	35.2
2001	28.8	10.0	12.0	8.8	5.6	34.8
Type of first institution						
All 4-year						
2000	53.4	3.7	2.3	17.2	3.2	20.4
2001	58.8	3.8	2.5	11.8	2.6	20.5
Public 4-year						
2000	46.6	4.1	2.6	20.9	3.7	22.1
2001	53.0	4.4	2.8	14.5	2.8	22.5
Private not-for-profit 4-year						
2000	65.3	2.9	1.6	10.7	2.2	17.3
2001	68.8	2.8	1.8	7.1	2.3	17.2
Public 2-year						
2000	6.9	15.9	9.3	9.7	10.5	47.8
2001	10.3	15.7	9.7	8.4	9.1	46.9
For-profit						
2000	1.4	8.2	49.1	1.6	3.2	36.6
2001	1.6	8.7	49.6	1.1	2.3	36.7

NOTE: Unless otherwise specified, all variables refer to the first time students enrolled.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

Table B-2. Rounded unweighted sample sizes for the two BPS cohorts, by first institution type

	BPS:90/94	BPS:96/01
Total	6,000	9,000
Institution first enrolled		
Public, 4-year	1,600	4,000
Private not-for-profit 4-year	2,200	2,600
Public 2-year	700	1,100
All for-profits	1,000	900
Other	500	400

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

Item Response Bias

All the variables used in this report and defined in appendix A had item response rates above 85 percent. Therefore, a bias analysis for individual survey items was not necessary.

Accuracy of Estimates

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

Data Analysis System

The estimates presented in this report were produced using the NCES Data Analysis Systems (DAS) for the Beginning Postsecondary Students Longitudinal Study, Second Follow-up for the two BPS surveys (BPS:90/04 and BPS:96/01). The DAS software makes it possible for users to specify and generate their own tables. With the DAS, users can replicate or expand upon the tables presented in this report; the table parameter files (tpf) that produced these tables are available to users on the NCES Web site. In addition to the table estimates, the DAS calculates proper standard errors[6] and weighted sample sizes for these estimates**.** For example, table B-3 contains standard errors that corresponds to table 5-B. If the number of valid cases is too small to produce a reliable estimate (less than 30 cases), the DAS prints the message "low-N" instead of the estimate. All standard errors for estimates presented in this report can be viewed at http://nces.ed.gov/das/library/reports.asp.

In addition to tables, the DAS can also produce a correlation matrix of selected variables to be used for linear regression models. Included in the output with the correlation matrix are the design effects (DEFTs) for each variable in the matrix. Since statistical procedures generally

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

Table B-3. Standard errors for table 5-B: Percentage of beginning postsecondary students who had completed a degree or were still enrolled 5 years after they began postsecondary education, by student characteristics and year enrolled: 1989–90 and 1995–96

		Highest degree completed			No degree, 5-year persistence			Total
	Total completed	Bachelor's degree	Associate's degree	Certificate	Still enrolled at 4-year	Still enrolled at 2-year or less	No degree, not enrolled	completed or persisted
Gender								
Male								
1989–90	1.60	1.34	0.89	1.13	0.85	0.95	1.58	1.58
1995–96	1.42	1.14	1.00	0.92	0.93	0.76	1.42	1.42
Female								
1989–90	1.48	1.26	1.19	1.11	0.63	0.72	1.49	1.49
1995–96	1.24	1.15	0.88	0.99	0.69	0.76	1.27	1.27
Race/ethnicity								
American Indian								
1989–90	13.07	5.90	9.39	11.06	#	12.84	11.37	11.37
1995–96	12.32	11.73	1.69	6.26	6.41	2.80	9.89	9.89
Asian/Pacific Islander								
1989–90	5.11	4.44	2.96	3.36	3.20	3.09	5.27	5.27
1995–96	4.50	3.42	3.39	2.63	3.23	2.93	3.97	3.97
Black								
1989–90	3.27	2.06	2.07	2.45	1.48	1.74	3.53	3.53
1995–96	2.44	1.58	1.14	2.36	1.70	1.27	2.69	2.69
White								
1989–90	1.25	1.18	0.89	0.93	0.59	0.55	1.19	1.19
1995–96	1.15	1.08	0.81	0.79	0.68	0.65	1.14	1.14
Hispanic								
1989–90	3.84	2.90	2.70	3.11	1.90	3.14	4.39	4.39
1995–96	2.81	1.45	1.85	2.57	1.56	1.54	2.86	2.86
Family income								
Low								
1989–90	2.04	1.31	1.43	1.57	0.92	1.14	2.06	2.06
1995–96	1.79	0.97	1.57	1.38	0.97	0.81	1.76	1.76
Middle								
1989–90	1.41	1.19	1.06	1.12	0.73	0.76	1.44	1.44
1995–96	1.38	1.02	0.84	0.98	0.81	0.92	1.35	1.35
High								
1989–90	2.19	2.02	1.59	1.21	1.21	1.15	2.05	2.05
1995–96	2.11	1.95	1.07	0.87	1.19	1.12	2.01	2.01

#Rounds to zero.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990/94 Beginning Postsecondary Students Longitudinal Study (BPS:90/94) and 1996/01 Beginning Postsecondary Students Longitudinal Study (BPS:96/01).

compute regression coefficients based on simple random sample assumptions, the standard errors must be adjusted with the design effects to take into account the BPS:96/01 sample design.

The DAS can be accessed electronically at http://.nces.ed.gov/das. For more information about the BPS Data Analysis Systems, contact:

Aurora D'Amico
National Center for Education Statistics
1990 K Street, NW
Room 8115
Washington, DC 20006
(202) 502-7334
Internet address: Aurora.D'Amico@ed.gov

Statistical Procedures

Differences Between Means

The descriptive comparisons were tested in this report using Student's *t* statistic. Differences between estimates are tested against the probability of a Type I error,[7] or significance level. The significance levels were determined by calculating the Student's *t* values for the differences between each pair of means or proportions and comparing these with published tables of significance levels for two-tailed hypothesis testing.

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

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

where E_1 and E_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors. This formula is valid only for independent estimates. When estimates are not independent, a covariance term must be added to the formula:

$$t = \frac{E_1 - E_2}{\sqrt{se_1^2 + se_2^2 - 2(r)se_1\ se_2}} \quad (2)$$

[7] A Type I error occurs when one concludes that a difference observed in a sample reflects a true difference in the population from which the sample was drawn, when no such difference is present.

where *r* is the correlation between the two estimates.[8] This formula is used when comparing two percentages from a distribution that adds to 100. If the comparison is between the mean of a subgroup and the mean of the total group, the following formula is used:

$$t = \frac{E_{sub} - E_{tot}}{\sqrt{se_{sub}^2 + se_{tot}^2 - 2p\,se_{sub}^2}} \quad (3)$$

where *p* is the proportion of the total group contained in the subgroup.[9] The estimates, standard errors, and correlations can all be obtained from the DAS.

There are hazards in reporting statistical tests for each comparison. First, comparisons based on large *t* statistics may appear to merit special attention. This can be misleading since the magnitude of the *t* statistic is related not only to the observed differences in means or percentages but also to the number of respondents in the specific categories used for comparison. Hence, a small difference compared across a large number of respondents would produce a large *t* statistic.

A second hazard in reporting statistical tests is the possibility that one can report a "false positive" or Type I error. In the case of a *t* statistic, this false positive would result when a difference measured with a particular sample showed a statistically significant difference when there is no difference in the underlying population. Statistical tests are designed to control this type of error, denoted by alpha. The alpha level of 0.05 selected for findings in this report indicates that a difference of a certain magnitude or larger would be produced no more than one time out of twenty when there was no actual difference in the quantities in the underlying population. When hypothesis tests show *t* values at the 0.05 level or smaller, the null hypothesis, indicating that there is no difference between the two quantities, is rejected. However, when significant results are detected that are not indicated by any hypothesis, or when a large number of comparisons in a table are tested, Type I errors should not be ignored. For example, in this analysis, comparisons of degree completion between the two cohorts were made both overall and also for each of four institution types (public 4-year, private not-for-profit 4-year, public 2-year, and for-profit). The probability of a Type I error for these comparisons taken as a group is larger than the probability for a single comparison. When more than one comparison between groups of related characteristics are tested for statistical significance, one must apply a standard that assures a level of significance for all of those comparisons taken together. In this analysis, the Fisher's protected *t*-test method (also called the "least significant difference" method) was used to protect

[8] U.S. Department of Education, National Center for Education Statistics, A Note from the Chief Statistician, no. 2, 1993.
[9] Ibid.

against the inflation of the overall probability of a Type I error.[10] The method involves calculating the overall *F* ratio (computed as part of the two-way ANOVA described below under "Interaction Effects") and determining whether the *F* value is sufficiently large to reject the null hypothesis. When the value of the overall *F* exceeded the value at the 0.05 level, the comparison was considered significant. However, even when the overall *F* is significant, one can only conclude that a comparison for a particular group within a family (such as institution type) is different when a *t*-value is significant. One cannot conclude that non-significant comparisons for other groups within that family are *not* different. For example, when looking at the difference between the two cohorts in the combined completion and persistence rate by institution type, only the comparison for public 4-year institutions is significant (see table 5-A). One cannot conclude that the rate did not change for other institution types, only that a change could not be detected.

Interaction Effects (Change in Completion Gaps)

Determining differential changes in outcomes across years for particular groups of students involved a test of interaction effects. These interaction effects were tested with a two-way Analysis of Variance (ANOVA). For example, in comparing the change in total degree completion between BPS participants in 1989–90 and 1995–96 by income level, a test was conducted on the interaction between income level and a variable representing year. An interaction effect significant at the 0.05 level indicated that the amount of change in completion between the two cohorts was different for students from different income levels.

In creating the two-way Analysis of Variance, the squares of the standard errors, the variance between the means, and the unweighted sample sizes were used to partition total sums of squares into within- and between-group sums of squares. These were used to create mean squares for the within- and between-group variance components and their corresponding *F* statistics. The *F* statistics were then compared with *F* values associated with a significance level of 0.05. Significant values of both the overall *F* and the *F* associated with the interaction term were required as evidence of a relationship between year and the row variable of interest. Means and standard errors were calculated by the DAS. Unweighted sample sizes are not available from the DAS and were provided by NCES through a restricted-use data license agreement.

[10] See Snedecor, G. and Cochran, W. (1980). *Statistical Methods*, Iowa State University Press, Ames, Iowa (p. 234) or Harris, R. (1975), *A Primer of Mulitivariate Statistics*, Academic Press, NY (p. 11).