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Transfer Behavior Among Beginning Postsecondary Students: 1989–94

Alexander C. McCormick
MPR Associates, Inc.

C. Dennis Carroll
Project Officer
National Center for Education Statistics

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Foreword

This report is part of the Postsecondary Education Descriptive Analysis Reports (PEDAR) series. The PEDAR series consists of reports that focus on postsecondary education policy issues, taking advantage of a variety of education data sources, especially recently completed data collections. Other reports in the series include: *Undergraduates Who Work While Enrolled in Postsecondary Education: 1989–90* (NCES 94-311); *Characteristics of Students Who Borrow to Finance Their Postsecondary Education* (NCES 95-310); *Minority Undergraduate Participation in Postsecondary Education* (NCES 95-166); *Profile of Older Undergraduates: 1989–90* (NCES 95-167); *Profile of Part-Time Undergraduates in Postsecondary Education: 1989–90* (NCES 95-173); *Packaging of Undergraduate Student Financial Aid: 1989–90* (NCES 95-313); *How Low Income Undergraduates Financed Postsecondary Education: 1992–93* (NCES 96-161); and *Nontraditional Undergraduates: Trends in Enrollment from 1986 to 1992 and Persistence and Attainment Among 1989–90 Beginning Postsecondary Students* (NCES 97-578).

This report describes patterns of multiple institution attendance and transfer by students who first entered postsecondary education during the academic year 1989–90. The data were drawn from the second follow-up of the 1990 Beginning Postsecondary Students (BPS) Longitudinal Study, conducted in the spring of 1994. The BPS sample was drawn from students who participated in the 1990 National Postsecondary Student Aid Study (NPSAS), a nationally representative cross-sectional survey of graduate and undergraduate students.

The estimates presented in this report were produced using the public access BPS:90/94 Data Analysis System (DAS). The DAS is a microcomputer application that allows users to specify and generate their own tables from the BPS data. The DAS produces design-adjusted standard errors necessary for testing the statistical significance of differences shown in the tables. Additional information about the DAS, and how it may be obtained, is included in appendix C of this report.

We hope that the information provided in this report will be useful to a wide range of interested readers, and that the results reported here will encourage others to use the BPS data.

Pascal D. Forgione
Associate Commissioner
Data Development and Longitudinal Studies Group

Highlights

This report examines transfer behavior among students who began their postsecondary education in academic year 1989–90, using the most current, nationally representative longitudinal data on student progress through postsecondary education. Attendance patterns were examined through 1993–94. The following summarizes some of the report's key findings:

- Of students who began their postsecondary education in 1989–90, almost half (45 percent) had enrolled as undergraduates at more than one institution by 1994. One-third had attended two institutions, and 12 percent had attended three or more institutions. Not all students who attended more than one institution transferred, however.

- Thirty-five percent of all 1989–90 beginning postsecondary students had transferred by 1994.

- About one out of four students (28 percent) who began at a 4-year institution transferred: 16 percent to another 4-year institution, and 13 percent to a less-than-4-year institution.[1]

- Among students who began at a 2-year institution, 43 percent transferred: 22 percent to a 4-year institution, 15 percent to another 2-year institution, and 5 percent to a less-than-2-year institution.[1]

- One-quarter of students who began at a less-than-two-year institution transferred: 6 percent to a 4-year institution, 12 percent to a 2-year institution, and 6 percent to another less-than-2-year institution.[1]

- Students who transferred from a 4-year institution were much more likely than other transfers to enroll at the destination institution within 6 months of their departure from the first institution (68 percent did so, compared with 10–18 percent of students who transferred from a less-than-4-year institution). At the other extreme, nearly one-quarter of transfers from a 2-year institution were out of school for more than 3 years, compared with 2 percent of students who transferred from a 4-year institution.

- Almost all transfers from 4-year institutions (97 percent) transferred without earning any credential. Among transfers from 2-year institutions, 78 percent transferred without a credential, and almost all of the others (20 percent) completed an associate's degree. About two-thirds of transfers from less-than-2-year institutions transferred without completing any credential, and the remainder completed a certificate.

[1]Details may not sum to totals dues to rounding and the exclusion of students who transferred to an institution of unknown level (see table 4).

Transfer from 4-year institutions

- Among students at 4-year institutions, those with grade point averages (GPAs) below 2.50 at the first institution were more likely than other students to transfer (36 percent transferred, compared with 20–27 percent of students with higher grades).

- Dissatisfaction with any of the following factors (as reported in 1992) was positively related to transfer from 4-year institutions: intellectual growth, teacher ability, institutional prestige, and social life. Of these factors, students' dissatisfaction with their intellectual growth had a very strong correspondence to transfer: 63 percent of those who were dissatisfied with their intellectual growth at the first institution transferred, compared with 25 percent of students who found their intellectual growth to be satisfactory. At private institutions, students who were dissatisfied with the prestige of the institution were twice as likely to transfer as those who were content with the institution's prestige (54 versus 25 percent).

- The availability of various student services and students' satisfaction with those services were also related to transfer from 4-year institutions. Those reporting a lack of access to job placement, job counseling, and personal counseling services were much more likely to transfer than were students on campuses where such services were available. Among students who used services such as job placement and academic, personal, and job counseling, satisfaction with the experience was related to their likelihood of transfer.

- On average, students who transferred from a 4-year institution left 14 months after they began, and took about 7 months off before enrolling at the destination institution. Students who entered another 4-year institution (*horizontal transfers*) stayed at the first institution longer than did those who entered a less-than-4-year institution (*reverse transfers*), and they also took less time off before entering the destination institution.

- Among students who began at a 4-year institution, those who did not transfer were more likely than horizontal transfers to have completed a bachelor's degree by 1994 (63 percent of nontransfers had completed the degree, compared with 45 percent of horizontal transfers). However, if one combines bachelor's degree attainment and current enrollment at a 4-year institution as a broad measure of persistence, the two groups have similar persistence rates.

- Reverse transfer from a 4-year institution does not always signal a permanent abandonment of bachelor's degree plans: 22 percent of reverse transfers had either completed a bachelor's degree by 1994 or were enrolled at a 4-year institution.

Transfer from public 2-year colleges to 4-year institutions

- One out of four community college students indicated in 1989–90 that they were working toward a bachelor's degree (*prospective transfers*). Of this group, 39 percent transferred directly to a 4-year institution by 1994.

- Among community college students identified as prospective transfers, those who enrolled full time in their first year were about twice as likely as those who enrolled part time to transfer to a 4-year institution within 5 years (50 percent of full-timers transferred, compared with 26 percent of part-timers).

- Among community college beginners who transferred to a 4-year institution, 65 percent transferred without a degree. About one out of three completed an associate's degree before transferring.

- On average, community college beginners who transferred to a 4-year institution spent about 20 months at the first institution. They often took a considerable amount of time off between institutions, averaging 21 months.

- While one out of four community college transfers had received a bachelor's degree by 1994, another 44 percent were still enrolled at a 4-year institution, for an overall persistence rate of 70 percent. This is comparable to the persistence rate among students who began at 4-year institutions and among 4-year horizontal transfers.

- The bachelor's degree attainment rate was much higher among the minority of community college transfers who completed an associate's degree before transferring: 43 percent of associate's degree completers had received a bachelor's degree by 1994, compared with 17 percent among those who transferred without any credential.

Acknowledgments

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Introduction

A recent report from the National Center for Education Statistics showed that patterns of student persistence and attainment in postsecondary education look quite different when examined relative to an individual institution versus the postsecondary education system as a whole: many students change institutions before attaining a degree.[2] This report extends and elaborates upon those findings, analyzing undergraduate transfer behavior among first-time students in postsecondary education by tracing their attendance patterns from academic year 1989–90, when they first enrolled in postsecondary education, through academic year 1993–94. It uses the most current nationally representative longitudinal data on student progress through postsecondary education, the Beginning Postsecondary Students Longitudinal Study (BPS:90/94). (Refer to appendix C for a detailed description of the BPS data.)

This report first provides a general description of attendance at multiple institutions. Next, it provides an overview of transfer activity across the population of beginning students. Two types of transfer are then analyzed in detail: transfer out of 4-year institutions, and transfer from public 2-year institutions to 4-year institutions. Finally, three appendices are included for readers who desire additional information. Appendix A presents percentage distributions of key populations according to level and control of the base year sample institution, and also the distribution of selected student characteristics within each type of institution. Appendix B contains a glossary that provides detailed information about the characteristics presented in the tables. Appendix C describes the data and statistical methods used in the report.

Definition of Transfer

Transfer can be defined as a transition between postsecondary institutions in which the second institution (the destination, or receiving institution) typically grants the student credit for coursework taken at the first institution (the origin, or sending institution). It is normally a one-way transition: students who transfer do not return to the first institution. Thus, temporary enrollment at a second institution, followed by a return to the first, is not normally considered to be a transfer.[3]

Transfer can be characterized with respect to the level of the origin and destination institutions. *Horizontal transfer* occurs between institutions at the same level (for example, between 4-year institutions), while *vertical transfer* involves a change of level (for example, from a 2-year to a 4-year institution). Vertical transfer is sometimes described with respect to the direction of transfer: *forward transfer* involves movement to a higher level institution, while *reverse transfer* is movement in the opposite direction. (These may also be referred to as *upward* and *downward* transfer.) Since the BPS data do not include information on whether particular

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[2]L. Berkner, S. Cuccaro-Alamin, and A. McCormick, *Descriptive Summary of 1989–90 Beginning Postsecondary Students: 5 Years Later* (Washington, DC: U.S. Department of Education, National Center for Education Statistics, 1996).

[3]See B. Gose, "Double Dippers," *Chronicle of Higher Education* (August 4, 1995): A27.

institutions awarded transfer credit, this aspect of transfer is not reflected in the operational definition of transfer used in this report.[4]

For this report, the definition of transfer was based solely on the pattern of students' enrollment: any transition from one institution to another that was not followed by a return to the first institution was defined as a transfer.[5] In addition, any transition from a less-than-4-year institution to a 4-year institution was considered to be a transfer, even if a student subsequently reenrolled at the first institution. This permits a broad definition of this important kind of vertical transfer in order to capture all possible transfers to 4-year institutions and to avoid inappropriately excluding bona fide transfers who may temporarily reenroll at the first institution.[6]

Students do not necessarily have to complete an associate's degree to transfer from a 2-year to a 4-year institution. Depending upon a particular institution's or system's transfer admission practices, students may transfer with an associate's degree, a certificate, or without any credential. Consequently, completion of subbaccalaureate credentials was not considered in the operational definition of transfer. However, students who completed a bachelor's degree at their first institution were not eligible for transfer, even if they subsequently enrolled elsewhere.

Three types of transitions were thus defined as transfers:

1) A student began at a less-than-4-year institution, left that institution with or without a degree, enrolled at another less-than-4-year institution, and did not return to the first institution;

2) A student began at a less-than-4-year institution, left that institution with or without a degree, and enrolled at a 4-year institution (regardless of subsequent enrollment at the first institution); or

3) A student began at a 4-year institution, left that institution without completing a bachelor's degree, enrolled at another postsecondary institution, and did not return to the first institution.

Using this broad definition, certain students who might not normally be considered transfers are included. For example, a student who enrolled at one institution for a semester, left school for an extended period, and then enrolled as a first-year student at a different institution (without transferring any credit for previous work), is classified as a transfer under this definition. Another example is a student who completed a vocational certificate at a less-than-2-year institution and subsequently enrolled at a 2-year or 4-year institution. Although such a transition may not involve any transfer of credit, this definition considers students at 2-year and less-than-2-year institutions as equally eligible for transfer.

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[4]The BPS data do include a more general indication of whether a student transferred credits between *any* institutions, and this is examined in the descriptive analysis of transfer patterns.

[5]Thus it is possible that some students who looked like transfers as of 1994 will later return to the first institution.

[6]For example, this would include a student who transfers from a 2-year to a 4-year institution but subsequently reenrolls at the first institution to complete additional credits.

Since the definition of transfer requires that a student cease enrollment at the first institution, concurrent enrollment at two institutions does not constitute a transfer. Should a student who had been concurrently enrolled cease enrollment at the first institution while remaining enrolled at the second, then the transition may qualify as a transfer.

Attendance at Multiple Institutions

Transfer is, in effect, a special case of attendance at more than one institution. To set the context for examining transfer, it is worthwhile to begin by examining the general phenomenon of attendance at multiple institutions and its relationship to transfer.

Overview

Of students who began their postsecondary education in 1989–90, almost half (45 percent) had enrolled as undergraduates at more than one institution by 1994. One-third attended two institutions, and 12 percent attended three or more institutions (table 1). Concurrent enrollment at

Table 1—Percentage distribution of 1989–90 beginning students according to number of institutions attended, by first institution type and degree expectations: 1989–94

		Two or more		
	One	Total	Two	Three or more
Total	54.6	45.4	33.6	11.8
Level and control of first institution*				
4-year	52.9	47.1	33.0	14.0
Public, 4-year	53.7	46.3	33.3	13.0
Private, not-for-profit, 4-year	51.4	48.6	32.5	16.1
2-year	51.4	48.6	37.4	11.2
Public, 2-year	52.1	47.9	37.2	10.7
Private, not-for-profit, 2-year	33.2	66.8	42.9	23.9
Less-than-2-year	67.3	32.7	19.6	13.1
Public, less-than-2-year	73.1	27.0	17.8	9.2
Private, not-for-profit, less-than-2-year	36.7	63.3	29.2	34.0
Private, for-profit	72.6	27.4	22.3	5.1
Highest degree expected 1989–90				
Less than a bachelor's degree	73.9	26.1	23.3	2.8
Bachelor's degree	49.9	50.1	36.6	13.6
Advanced degree	46.4	53.6	37.9	15.7

*Totals by level are limited to public and private, not-for-profit institutions.

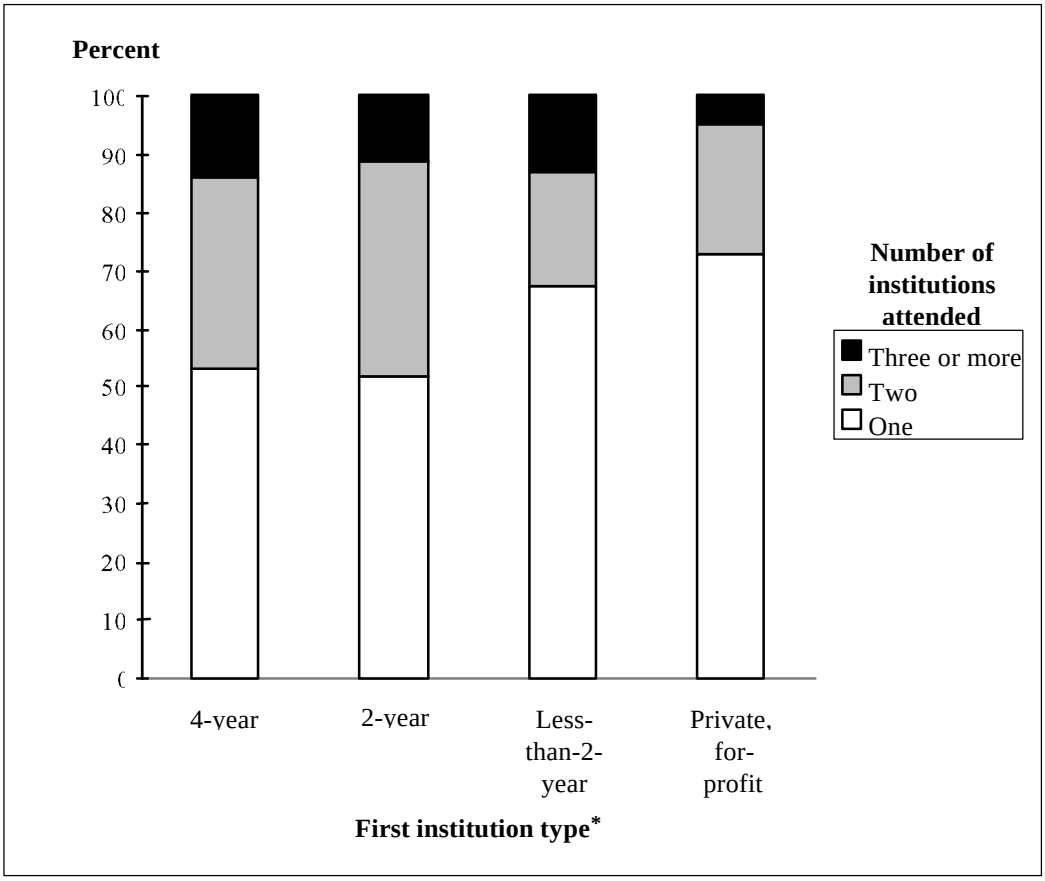
NOTE: Details may not sum to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

more than one institution was relatively rare: over the 5 years under study, 7 percent of beginning students exhibited such a pattern.[7]

The proportion of students attending more than one institution varied with the type of institution first attended (figure 1). Students who began at public 2-year and public or private, not-for-profit 4-year institutions were equally likely to attend more than one institution, with about half (46–49 percent) doing so (table 1). Two out of three students who began postsecondary education at private, not-for-profit 2-year institutions attended at least one other institution, as did about one out of four students who began at public less-than-2-year institutions and private, for-profit institutions.

Figure 1—Percentage distribution of 1989–90 beginning students according to number of institutions attended, by first institution type: 1989–94



*Distributions by level are limited to public and private, not-for-profit institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

[7]U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Attending multiple institutions was also related to students' educational expectations. Students who said in 1989–90 that they expected to attain a bachelor's degree or higher were twice as likely as those with lower expectations to have attended more than one institution by 1994 (50–54 percent versus 26 percent).

Attainment at First Institution and Transfer by Students Who Attended Multiple Institutions

Attending more than one institution does not necessarily mean a student left without a degree. An appreciable number of students who attended more than one institution completed a degree at the first institution, before or after enrolling elsewhere (table 2). Of students who began at a 4-year institution and attended more than one institution, about one-quarter (29 percent) received a bachelor's degree from the first institution. For most of these students, the additional enrollment extended, augmented, or was incidental to their bachelor's program at the first institution.[8]

Table 2—Of 1989–90 beginning students who attended more than one institution, percentage distribution according to degree attainment at first institution, by level of first institution: 1989–94

	None	Certificate	Associate's	Bachelor's
Total	71.2	3.9	12.2	12.8
Level of first institution				
4-year	69.0	0.4	1.7	28.8
2-year	75.3	2.4	22.3	0
Less-than-2-year	52.3	47.7	0	0

NOTE: Details may not sum to 100 percent due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

As noted earlier, transfer is a special case of multiple-institution attendance. That is, a subset of students who attended more than one institution qualify as transfers. This relationship is depicted in table 3, which shows that 60 percent of 4-year beginners who attended more than one institution transferred, as did about 90 percent of students who began at a less-than-4-year institution and attended more than one institution.

[8]Out of the 29 percent who received a degree from the first institution, 25 percent had attended more than one institution before receiving the degree—that is, they enrolled elsewhere and then returned to the first institution to complete the degree. A small number had further undergraduate enrollment after receiving the bachelor's degree (U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up [BPS:90/94], Data Analysis System).

Table 3—Among 1989–90 beginning students who attended more than one institution, percentage who transferred by level of first institution, by number of institutions attended and degree attainment at the first institution: 1989–94

	Total	4-year	2-year	Less-than-2-year
Total	77.1	60.1	90.2	92.7
Number of institutions attended				
Two	73.6	52.2	88.6	90.9
Three or more	87.3	78.7	95.6	97.5
Attainment at first institution				
Did not attain	88.5	84.8	90.8	98.0
Attained, total	48.5	5.2	88.3	86.9
Certificate	85.9	—	83.2	86.9
Associate's degree	87.6	—	88.8	—
Bachelor's degree	(*)	(*)	(*)	(*)

—Too few cases for a reliable estimate.
*Not applicable. Students who attained a bachelor's degree at first institution are not eligible for transfer (see text), and less-than-4-year institutions do not award bachelor's degrees.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Overview of Transfer Activity

Whereas the previous section examined students' overall pattern of attendance at more than one institution, this section looks at the subset of multiple-institution attenders whose transition between institutions qualifies as a transfer, as defined at the beginning of this report. Although students may transfer more than once, the following analyses of transfer are restricted to the *first* transfer.

Thirty-five percent of all 1989–90 beginning postsecondary students transferred within 5 years of entering postsecondary education: 18 percent transferred to a 4-year institution, 13 percent to a 2-year institution, and 4 percent to a less-than-2-year institution (table 4).

Origin and Destination of Transfer

Students' propensity to transfer and the destination of transfer varied somewhat with the type of institution first attended (figure 2). About one out of four students (28 percent) who began at a 4-year institution transferred: 16 percent entered another 4-year institution, and 13 percent entered a less-than-4-year institution, with most of them entering a 2-year institution (table 4). Among students who began at a 2-year institution, 43 percent transferred: 22 percent to a 4-year institution, 15 percent to another 2-year institution, and 5 percent to a less-than-2-year institution. One-quarter of students who began at a less-than-2-year institution transferred:

Table 4—Percentage distribution of 1989–90 beginning students according to transfer status and level of transfer destination, by level of first institution: 1989–94

		Transferred, by level of destination				
	Did not transfer	Total	Transferred to 4-year	Transferred to 2-year	Transferred to less-than-2-year	Transferred, destination unknown*
Total	65.0	35.0	17.8	13.1	3.6	0.5
Level of first institution						
4-year	71.7	28.3	15.6	11.6	1.0	0.1
2-year	57.5	42.6	21.8	14.6	5.4	0.8
Less-than-2-year	75.5	24.5	5.8	11.8	6.3	0.6

*A small number of students are known to have transferred but characteristics of the transfer destination could not be determined.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

6 percent to a 4-year institution, 12 percent to a 2-year institution, and 6 percent to another less-than-2-year institution. [9,10]

Transfer was particularly common among students who began postsecondary education at a private, not-for-profit 2-year institution (62 percent).[11] Among students who began at a public 2-year institution, about two students in five transferred (43 percent) (table 5).

Within each type of institution, transfer was related to certain student characteristics. Among students who began postsecondary education at 2-year institutions, the likelihood of transferring was directly related to their stated educational expectations in the first year: students who expected to complete a bachelor's degree or higher were two to three times more likely to transfer than those who did not expect to complete at least a bachelor's degree (half of those expecting to complete a bachelor's degree transferred, as did 59 percent of those expecting to complete an advanced degree, compared with 23 percent of those who did not expect to complete at least a bachelor's degree) (table 5).

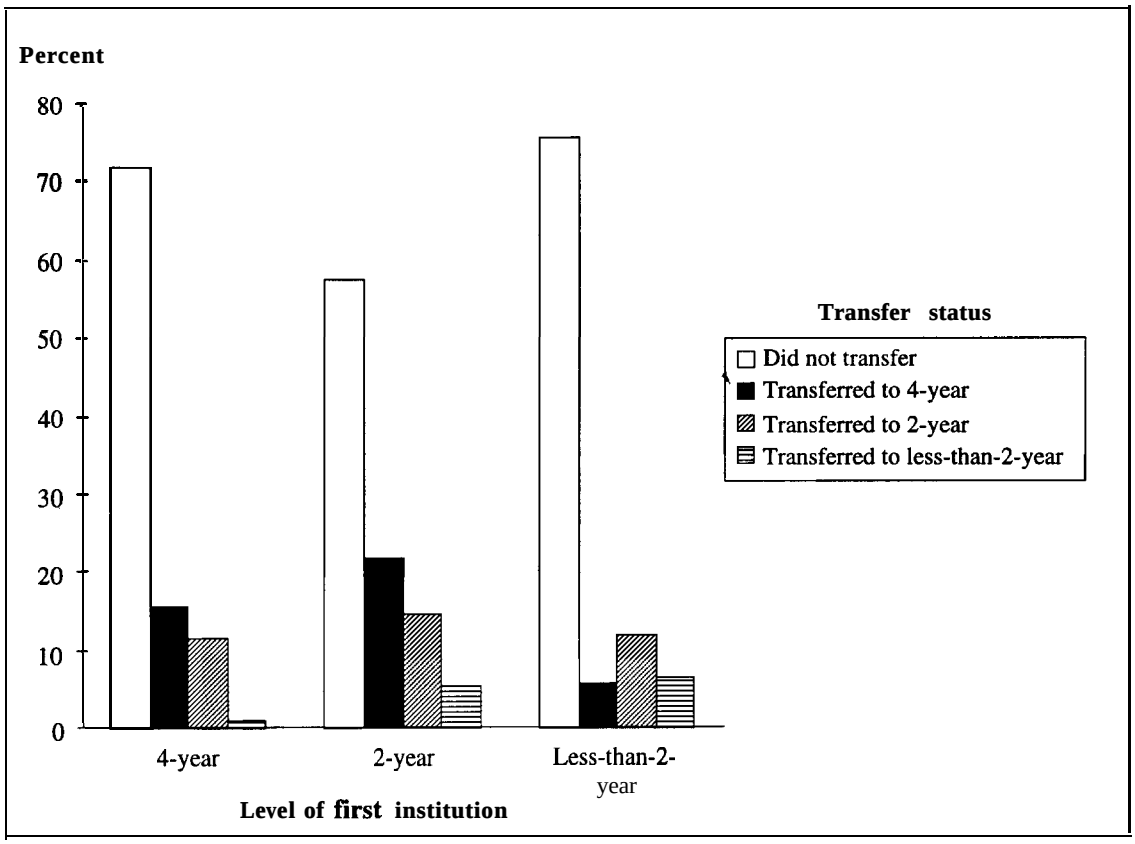
The relationship between students' educational expectations and their socioeconomic background has been well established. Thus, it is not surprising to find a relationship between socioeconomic status (SES) and transfer behavior among 2-year college students that corresponds to the findings for educational expectations: 60 percent of high-SES students at 2-year colleges transferred, as did 40 percent of middle-SES and 25 percent of low-SES students.

[9]Details may not sum to totals due to rounding and the exclusion of students who transferred to an institution of unknown level (see table 4).

[10]Students completing a subbaccalaureate credential at the first institution are included among transfers.

[11]This group is a very small segment—about 2 percent—of the beginning population, however (appendix A, table A1).

Figure 2—Percentage distribution of 1989–90 beginning students according to transfer status, by level of first institution: 1989–94



NOTE: The small number of students who transferred to an institution of unknown level is not represented.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Timing of Transfer

In addition to the mere fact of transfer, the timing of transfer is also of interest. First, did students have substantial exposure to the first institution, or leave after just a few months? Examining the duration of enrollment at the first institution provides an indication of the extent of course taking at the first institution and the likely number of credits available for transfer. Second, did the transfer follow an interruption in postsecondary attendance, or did students change institutions without interrupting their educational progress? Examining how much time elapsed between institutions reveals what proportion of students made an uninterrupted transition, and what proportion took time off before resuming their education at a different institution.

Table 5—Percentage of 1989–90 beginning students who transferred by level of first institution, by selected student and enrollment characteristics: 1989–94

	Total	4-year	2-year	Less-than-2-year
Total	35.0	28.3	42.6	24.5
Control of first institution				
Public	36.6	28.1	42.7	25.9
Private, not-for-profit	33.0	28.7	62.4	56.8
Private, for-profit	26.0	—	32.1	22.4
Attainment at first institution[1]				
Did not attain	45.3	51.9	42.7	31.3
Attained, total	17.1	1.6	42.0	19.3
Certificate	18.1	—	15.2	19.3
Associate's degree	49.1	27.0	51.4	—
Bachelor's degree	([2])	([2])	([2])	([2])
Grade point average 1989–90				
Not reported	31.9	31.0	34.7	26.1
Below 2.50	40.8	35.5	45.9	19.5
2.50–2.99	38.9	26.7	59.7	17.1
3.00–3.49	31.2	20.7	42.1	22.9
3.50 or higher	28.0	20.1	36.0	24.5
Highest degree expected 1989–90				
Less than a bachelor's degree[3]	22.3	30.3	22.5	19.7
Bachelor's degree	41.9	33.7	49.1	31.2
Advanced degree	37.2	25.5	59.2	44.2
Socioeconomic status				
Bottom 25%	23.0	19.9	25.4	17.9
Middle 50%	35.1	29.8	40.2	24.7
Top 25%	39.2	28.2	57.8	40.3

—Too few cases for a reliable estimate.
[1]For those who attained more than one degree at the first institution, first degree attained.
[2]Not applicable. Students who attained a bachelor's degree at first institution are not eligible for transfer (see text), and less-than-4-year institutions do not award bachelor's degrees.
[3]Several factors may account for students at 4-year institutions who expect less than a bachelor's degree: some may be working on a subbaccalaureate credential (which some 4-year institutions offer) and not plan to continue their education; some may have decided to leave school before completing a bachelor's degree; and some may lack confidence that they will complete one.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Duration of enrollment at the first institution

About half of all students who transferred were enrolled at the first institution for up to 10 months; one-quarter were enrolled for 11–20 months; and the remainder (22 percent) spent more than 20 months at the first institution before transferring (table 6).

Table 6—Of 1989–90 beginning students who transferred, percentage distribution according to number of months enrolled at first institution prior to transfer, by selected student and enrollment characteristics: 1989–94

		0–10			21 or
	Total	0–5	6–10	11–20	more
Total	51.6	21.2	30.4	26.6	21.8
Level and control of first institution*					
4-year	55.5	17.3	38.2	26.4	18.1
Public, 4-year	52.8	17.2	35.6	26.5	20.7
Private, not-for-profit, 4-year	60.8	17.5	43.3	26.2	13.0
2-year	46.3	20.6	25.6	27.1	26.7
Public, 2-year	46.0	20.6	25.4	26.4	27.6
Private, not-for-profit, 2-year	51.7	22.0	29.7	38.6	9.7
Less-than-2-year	68.9	49.3	19.6	25.9	5.3
Public, less-than-2-year	79.5	63.3	16.3	13.0	7.5
Private, not-for-profit, less-than-2-year	—	—	—	—	—
Private, for-profit	69.6	36.2	33.3	23.9	6.6
Level of transfer destination					
4-year	35.2	11.0	24.2	31.4	33.4
2-year	64.3	29.3	35.0	24.5	11.2
Less-than-2-year	80.0	39.3	40.8	14.1	5.9
Level of transfer origin and destination					
4-year to 4-year	50.3	12.9	37.3	28.2	21.6
2-year to 4-year	24.9	8.8	16.1	32.9	42.2
Less-than-2-year to 4-year	56.2	30.9	25.3	42.7	1.2
4-year to 2-year	61.4	23.1	38.3	25.0	13.6
2-year to 2-year	65.7	32.2	33.5	23.7	10.7
Less-than-2-year to 2-year	68.5	38.4	30.1	27.6	3.9
4-year to less-than-2-year	63.7	18.7	45.0	18.0	18.2
2-year to less-than-2-year	82.1	38.1	44.0	12.8	5.1
Less-than-2-year to less-than-2-year	82.9	61.5	21.4	17.1	0.0
Attainment status at first transfer					
None	59.3	24.5	34.8	24.9	15.9
Certificate	53.2	20.0	33.2	38.8	8.0
Associate's degree	0	0	0	34.3	65.7
Highest degree expected 1989–90					
Less than a bachelor's degree	65.9	34.0	32.0	20.8	13.3
Bachelor's degree	51.9	21.1	30.8	26.2	21.9
Advanced degree	46.0	17.7	28.3	28.7	25.3

—Too few cases for a reliable estimate.
*Totals by level are limited to public and private, not-for-profit institutions.

NOTE: Details may not sum to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Students who transferred from 2- and 4-year institutions were equally likely to transfer after 10 months or less, with about half doing so. However, transfers from 2-year institutions were more likely than those from other institutions to spend more than 20 months at the first institution before transferring. This may reflect high rates of part-time attendance at 2-year institutions, which slows the rate of credit accumulation.[12] Also, there is a high rate of transfer within 10 months from private, for-profit institutions (70 percent), many of which offer programs lasting 1 academic year or less.[13]

The amount of time students spent at the first institution was also related to the destination of transfer. Students who transferred to a 4-year institution were more likely than other transfers to have spent more than 10 months at the first institution. Of students who transferred to a 2-year institution, two out of three left the first institution after 10 months or less, as did 80 percent of transfers to a less-than-2-year institution. Among transfers to a 4-year institution, about one-third (35 percent) left the first institution within 10 months.

Time elapsed between institutions

Of students who transferred, about one-third (32 percent) entered the destination institution within 6 months after leaving the first institution. About half of all transfers (54 percent) were out of school for more than a year before continuing their education (table 7). Some of these students attained a certificate or degree at the first institution, while others interrupted their studies before receiving any credential (attainment prior to transfer is examined below).

Students who transferred from a 4-year institution were much more likely than other transfers to enroll at the destination institution within 6 months of leaving the first institution (68 percent did so, compared with 10–18 percent of students who transferred from a less-than-4-year institution). At the other extreme, fully half of students who transferred from a less-than-2-year institution and one-quarter of transfers from a 2-year institution were out of school for more than 3 years, compared with 2 percent of students who transferred from a 4-year institution.[14]

The amount of time elapsed between institutions was also related to students' educational expectations. Students who said in 1990 that they expected to complete a bachelor's degree or higher were more likely than others to make the transition between institutions within 1 year or less. For example, the transition took place within 6 months for 30–42 percent of students who expected to complete a bachelor's degree or higher, compared with 12 percent of students who had lower degree expectations.

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[12]Beginning students at public 2-year institutions were twice as likely as students at other institutions to be enrolled part time in their first year (appendix A, table A2), and public 2-year institutions enrolled 89 percent of all beginning students at 2-year institutions (U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up [BPS:90/94], Data Analysis System).

[13]U.S. Department of Education, National Center for Education Statistics, *1995 Directory of Postsecondary Institutions* (Washington, DC: 1996). The rate of transfer within 10 months from public and private, not-for-profit less-than-2-year institutions was equally high, but the less-than-2-year sector consists mainly of private, for-profit institutions.

[14]Some of these students completed a subbaccalaureate credential at the first institution (table 8).

Table 7—Of 1989–90 beginning students who transferred, percentage distribution according to number of months between institutions, by selected student and enrollment characteristics: 1989–94

	0–12			13 or more			
	Total	0–6	7–12	Total	13–24	25–36	37 or more
Total	46.5	32.3	14.2	53.5	20.7	14.6	18.2
Level and control of first institution*							
4-year	80.9	67.8	13.1	19.1	12.5	4.3	2.2
Public, 4-year	78.0	64.5	13.6	22.0	14.2	5.2	2.6
Private, not-for-profit, 4-year	86.8	74.6	12.2	13.2	9.1	2.6	1.5
2-year	29.8	14.2	15.6	70.2	26.0	20.6	23.7
Public, 2-year	30.3	14.6	15.7	69.7	26.4	19.8	23.5
Private, not-for-profit, 2-year	21.4	7.7	13.7	78.7	19.0	33.3	26.4
Less-than-2-year	29.1	18.4	10.7	70.9	12.2	7.2	51.5
Public, less-than-2-year	25.4	12.7	12.7	74.6	11.8	4.7	58.1
Private, not-for-profit, less-than-2-year	—	—	—	—	—	—	—
Private, for-profit	19.0	10.3	8.7	81.0	20.5	19.2	41.3
Level of transfer destination							
4-year	55.6	42.4	13.2	44.4	17.7	15.6	11.1
2-year	38.1	24.0	14.1	61.9	23.3	13.9	24.6
Less-than-2-year	37.4	17.0	20.4	62.6	22.5	12.7	27.4
Level of transfer origin and destination							
4-year to 4-year	87.4	75.1	12.3	12.6	9.4	2.1	1.1
2-year to 4-year	37.1	23.0	14.1	62.9	23.3	24.4	15.3
Less-than-2-year to 4-year	33.7	25.5	8.2	66.3	8.2	5.4	52.7
4-year to 2-year	74.9	60.1	14.8	25.1	15.7	6.2	3.3
2-year to 2-year	16.1	2.1	14.0	83.9	28.7	18.7	36.5
Less-than-2-year to 2-year	16.6	4.8	11.8	83.4	22.3	17.5	43.7
4-year to less-than-2-year	52.2	48.4	3.7	47.8	22.6	17.4	7.8
2-year to less-than-2-year	37.1	10.5	26.5	62.9	25.3	12.9	24.8
Less-than-2-year to less-than-2-year	27.4	23.5	3.9	72.6	8.8	8.0	55.8
Attainment status at first transfer							
None	50.0	35.6	14.4	50.0	19.2	11.3	19.5
Certificate	23.5	12.3	11.2	76.5	15.8	22.3	38.5
Associate's degree	31.0	17.5	13.4	69.0	32.2	34.3	2.6
Highest degree expected 1989–90							
Less than a bachelor's degree	28.6	11.7	16.9	71.5	28.6	13.0	29.9
Bachelor's degree	45.2	29.9	15.3	54.8	17.9	17.5	19.5
Advanced degree	54.5	42.0	12.5	45.5	20.7	12.3	12.5

—Too few cases for a reliable estimate.

*Totals by level are limited to public and private, not-for-profit institutions.

NOTE: Details may not sum to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Attainment Prior to Transfer

Since the definition of transfer used in this report allows for completion of subbaccalaureate credentials at the first institution, it is worthwhile to examine students' attainment before transferring. Overall, four out of five transfers (83 percent) changed institutions before completing any credential (table 8). However, among students who transferred, attainment prior to transfer varied considerably with institutional origin and destination.

Almost all transfers from 4-year institutions (97 percent) left without earning any credential. Among transfers from 2-year institutions, 78 percent left without a credential, and almost all of the others (20 percent) completed an associate's degree. About two-thirds of transfers from less-than-2-year institutions left without completing any credential, and the remainder completed a certificate.

Differences in attainment before transfer were also related to the level of the destination institution. While transfer before completing any credential was common among all transfers, it was most common among those who transferred to less-than-4-year institutions (89–94 percent of transfers to less-than-4-year institutions did not complete a credential at the first institution, compared with 76 percent of transfers to 4-year institutions).

About one out of five transfers to a 4-year institution completed an associate's degree before transferring (21 percent, compared with 1–4 percent of transfers to other institutions). One-third of students who transferred from a less-than-4-year institution to a 4-year institution did so.

Certificate completion at the first institution was rare among transfers (4 percent). It occurred more often among those who transferred to a 2-year institution than among transfers to a 4-year institution (7 versus 3 percent).

Half of all students who transferred without receiving a credential from the first institution made the transition within 1 year of their departure from the first institution (table 7). Students who received a credential from the first institution were less likely to do so: about one-third of transfers who completed an associate's degree and one-quarter who completed a certificate enrolled at the destination institution within 1 year (table 7).

Transfer From 4-Year Institutions

Most studies of student transfer behavior focus on transfer from community colleges to 4-year institutions, a subject that this report addresses in the following section. There has been relatively little systematic analysis of transfer from 4-year institutions on a national scale, at least in part due to a lack of adequate data that track a nationally representative sample of entering

Table 8—Of 1989–90 beginning students who transferred, percentage distribution according to degree attainment prior to transfer, by selected student and enrollment characteristics: 1989–94

	None	Certificate	Associate's degree
Total	83.2	4.2	12.5
Level and control of first institution*			
4-year	97.3	0.7	2.0
Public, 4-year	97.1	0.5	2.5
Private, not-for-profit, 4-year	97.8	1.1	1.2
2-year	78.4	1.6	19.9
Public, 2-year	79.0	1.4	19.6
Private, not-for-profit, 2-year	68.2	5.9	25.9
Less-than-2-year	66.5	33.5	0
Public, less-than-2-year	76.7	23.3	0
Private, not-for-profit, less-than-2-year	—	—	—
Private, for-profit	60.1	32.4	7.5
Level of transfer destination			
4-year	76.1	2.5	21.4
2-year	89.4	6.5	4.1
Less-than-2-year	94.2	4.7	1.2
Level of transfer origin and destination			
4-year to 4-year	96.9	0.6	2.4
4-year to less than 4-year	97.8	0.7	1.5
Less-than-4-year to 4-year	63.8	3.6	32.6
Less-than-4-year to less-than-4-year	87.0	8.7	4.3
Months enrolled at first institution			
0–10	95.6	4.4	0
11–20	77.7	6.2	16.2
21 or more	60.7	1.6	37.8
Months between institutions			
0–12	89.5	2.1	8.4
13 or more	77.8	6.1	16.2
Highest degree expected 1989–90			
Less than a bachelor's degree	80.8	13.6	5.6
Bachelor's degree	81.7	2.8	15.6
Advanced degree	85.2	2.7	12.2
Socioeconomic status			
Bottom 25%	81.7	9.5	8.9
Middle 50%	82.4	4.9	12.7
Top 25%	84.4	2.5	13.2

—Too few cases for a reliable estimate.
*Totals by level are limited to public and private, not-for-profit institutions.

NOTE: Details may not sum to 100 percent due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

students across institutions—a deficiency that the BPS data collection effort was designed to address. This section provides a detailed descriptive analysis of transfer from 4-year institutions, asking the following questions:

- Who transfers from 4-year institutions?
- How is transfer related to undergraduate experiences?
- What kinds of institutions do students transfer to?
- How is the direction of transfer (horizontal or downward) related to undergraduate experiences?
- What proportion of transfers received credit at the destination institution for their coursework at the first institution?
- What enrollment and attainment outcomes were observed for students who transferred from 4-year institutions, and how do they compare with those observed for students who did not transfer?

The analysis presented in this section is restricted to students who first attended a public or private, not-for-profit 4-year institution.[15] Thus, throughout this section, private, not-for-profit 4-year institutions are identified simply as private institutions.

Who Transfers From 4-Year Institutions?

As noted in the overview of transfer, about one-quarter of beginning students at 4-year institutions transferred, and students attending public and private institutions were equally likely to do so.

Students' propensity to transfer did not appear to have much to do with their background characteristics. Among the exceptions to this generalization, Asian/Pacific Islanders were half as likely as students from other racial–ethnic groups to transfer out of the 4-year institution where they began (14 percent, compared with 29–31 percent of others for whom a transfer rate could be estimated) (table 9). Low-SES students were also less likely than others to transfer (20 percent, compared with 29 percent among other students).

Although students who received financial aid at the first institution were less likely to transfer than their counterparts who did not receive any aid, the difference in the two groups' transfer rates is small and only exists at public institutions; aided and unaided students at private institutions were equally likely to transfer. This difference probably reflects the lower transfer rate among low-SES students noted above. Middle- and high-SES students—many of whom may have received some form of financial aid—transferred at similar rates.

[15]Very few private 4-year institutions are operated as for-profit enterprises (U.S. Department of Education, National Center for Education Statistics, *1995 Directory of Postsecondary Institutions* (Washington, DC: 1996)).

Table 9—Percentage of 1989–90 beginning students at 4-year institutions who transferred by control of first institution, by selected student characteristics: 1989–90

	Total	Public	Private, not-for-profit
Total	28.3	28.1	28.7
Gender			
Male	30.5	30.6	30.3
Female	26.3	25.9	27.2
Race–ethnicity			
Asian/Pacific Islander	13.6	11.2	19.4
Black, non-Hispanic	30.7	30.7	30.8
Hispanic	31.0	34.5	24.4
American Indian/Alaskan Native	—	—	—
White, non-Hispanic	28.7	28.4	29.2
Socioeconomic status			
Bottom 25%	19.9	18.6	23.1
All others	28.8	28.7	29.0
Middle 50%	29.8	29.1	31.8
Top 25%	28.2	28.4	27.7
Received financial aid 1989–90			
Did not receive aid	30.8	31.0	30.1
Received aid	26.3	25.0	28.2
Enrollment status 1989–90			
Full-time	27.2	26.8	28.0
Part-time	38.7	38.8	38.5
Grade point average 1989–90			
Not reported	31.0	30.0	32.7
Below 2.50	35.5	34.4	39.1
2.50–2.99	26.7	25.9	28.4
3.00–3.49	20.7	20.1	21.6
3.50 or higher	20.1	21.8	17.1

—Too few cases for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Transfer was less common among full-time students than among those who attended part time in their first year (27 percent of full-time students transferred, compared with 39 percent of part-time students).

Accounting for Transfer From 4-Year Institutions

Why do students transfer from 4-year institutions? For some, transfer may indicate that they are having academic difficulty at the first institution, while for others it may indicate that they are dissatisfied with the institution. These factors may be related, of course: students who are dissatisfied may not be motivated to do well, and students who do poorly may find cause to be dissatisfied.

Indeed, students with grade point averages (GPAs) below 2.50 at the first institution were more likely than other students to transfer (36 percent transferred, compared with 20–27 percent of students with higher grades) (table 9). For students with low grades, this may reflect involuntary departure from the first institution.

There is also evidence that transfer is related to students' satisfaction with various aspects of the institution where they began postsecondary education, as reported in 1992 (table 10).[16] Dissatisfaction with any of the following factors was positively related to transfer:

- intellectual growth;
- teacher ability;
- institutional prestige; and
- social life (figure 3).

Students' reported dissatisfaction with intellectual growth had a very strong correspondence to transfer: 63 percent of those who were dissatisfied with their intellectual growth at the first institution transferred, compared with 25 percent of students who found their intellectual growth to be satisfactory. While dissatisfaction with institutional prestige was related to transfer at both public and private institutions, the relationship was stronger at private ones, where students who were dissatisfied with the prestige of the institution were twice as likely to transfer as those who were content with the institution's prestige (54 versus 25 percent). In addition, cost was a factor at private institutions, where the transfer rate was somewhat higher among students who were dissatisfied with the cost of attendance (30 versus 23 percent). When satisfaction with the five attributes represented in figure 3 is combined into an overall index of satisfaction, transfer is found to be more common among students who identified three or fewer attributes as satisfactory (of whom 40 percent transferred) than among students who were satisfied with more than three attributes (24 percent transferred).

[16]Because questions about satisfaction with the first institution were asked in the first BPS follow-up survey (1992), many students reported on their satisfaction with the first institution after having transferred.

Table 10—Percentage of 1989–90 beginning students at 4-year institutions who transferred by control of first institution, by satisfaction with aspects of the institution: 1989–94

	Total	Public	Private, not-for-profit
Total	28.3	28.1	28.7
Overall satisfaction with first institution			
Low	39.7	37.2	43.5
All others	23.8	24.4	22.4
Moderate	25.3	26.1	24.0
High	22.6	23.3	20.2
Satisfaction with cost of attending			
Not satisfied	27.7	25.0	30.4
Satisfied	26.6	27.5	23.4
Satisfaction with intellectual growth			
Not satisfied	62.7	60.5	68.7
Satisfied	24.7	24.3	25.4
Satisfaction with institutional prestige			
Not satisfied	39.4	34.8	53.5
Satisfied	25.2	25.5	24.6
Satisfaction with social life			
Not satisfied	39.6	37.9	41.8
Satisfied	24.9	25.3	24.2
Satisfaction with teacher ability			
Not satisfied	35.1	32.7	44.5
Satisfied	26.1	26.0	26.3
Satisfaction with academic counseling			
Not available	—	—	—
Did not use	35.4	40.5	24.5
Used, dissatisfied	31.6	31.2	32.8
Used, satisfied	23.4	21.2	27.6
Satisfaction with financial aid counseling			
Not available	—	—	—
Did not use	28.9	30.1	25.2
Used, dissatisfied	27.1	25.7	29.6
Used, satisfied	24.6	22.7	27.9
Satisfaction with job counseling			
Not available	65.0	—	—
Available	26.7	26.6	26.9
Did not use	31.9	31.1	34.0
Used, dissatisfied	31.6	33.0	28.9
Used, satisfied	20.5	20.1	21.3

Table 10—Percentage of 1989–90 beginning students at 4-year institutions who transferred by control of first institution, by satisfaction with aspects of the institution: 1989–94—Continued

	Total	Public	Private, not-for-profit
Satisfaction with job placement services			
Not available	44.3	35.1	56.6
Available	26.6	26.6	26.6
Did not use	31.2	30.8	32.2
Used, dissatisfied	26.5	26.6	26.4
Used, satisfied	16.0	15.6	16.5
Satisfaction with personal counseling			
Not available	53.3	—	—
Available	26.7	26.5	27.0
Did not use	26.9	27.4	25.8
Used, dissatisfied	39.9	36.3	45.8
Used, satisfied	24.3	23.5	25.6

—Too few cases for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

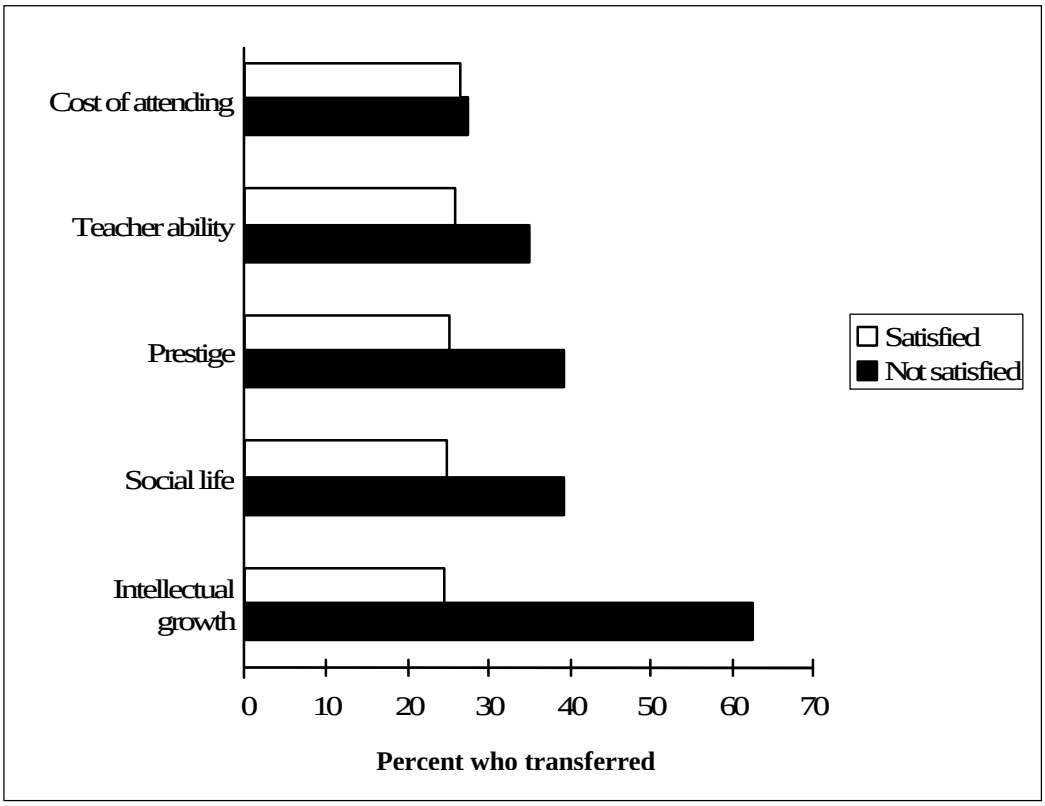
The availability of various student services and students' satisfaction with those services were also related to the likelihood of transfer (figure 4). Those reporting a lack of access to job placement, job counseling, and personal counseling services were much more likely to transfer than were students on campuses where such services were available. Students who reported that job and personal counseling were unavailable transferred at about twice the rate of students who had access to those services. Among students who used job placement services and academic, personal, and job counseling services, satisfaction with the experience was associated with their likelihood of transferring (table 10).

Where Did the Transfers Go?

Among students who transferred from 4-year institutions, about half (55 percent) entered another 4-year institution. The remainder were reverse transfers, entering a less-than-4-year institution. Almost all reverse transfers went to a 2-year institution (table 11). Transfers from private institutions were somewhat more likely than those from public institutions to enter another 4-year institution (61 versus 53 percent).

Among transfers, those who started college before age 20 were more likely than older students to enter another 4-year institution (57 versus 39 percent). Horizontal transfer was also more common among full-time students and students who received financial aid at the first institution.

Figure 3—Percentage of 1989–90 beginning students at 4-year institutions who transferred, by their satisfaction with various aspects of the first institution: 1989–94

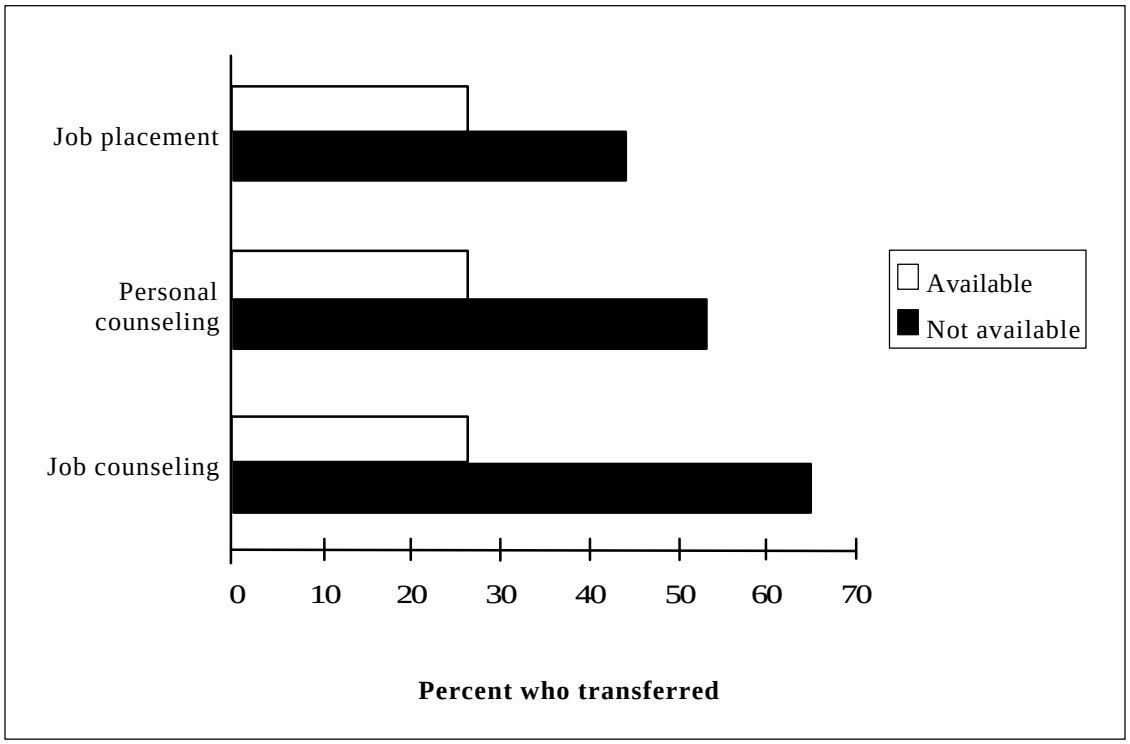


SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Students who transferred to another 4-year institution tended to gravitate toward public institutions. Two out of three horizontal transfers from private 4-year institutions entered a public institution, as did 82 percent of horizontal transfers from public 4-year institutions (table 12). The pattern of movement from private to public institutions is consistent with the earlier finding of a relationship between transfer and satisfaction with the cost of attendance at private institutions.

Horizontal transfer was much more common among students with at least a 2.50 GPA than among students with lower grades (62–77 percent of transfers who had GPAs of at least 2.5 entered another 4-year institution, compared with 45 percent of students who had lower GPAs) (figure 5). Students who entered another 4-year institution had GPAs averaging about 2.6, while reverse transfers had GPAs averaging about 2.0 (table 13). While transfers from public institutions had lower aggregate GPAs than those from private institutions, horizontal transfers

Figure 4—Percentage of 1989–90 beginning students at 4-year institutions who transferred, by the availability of various student services at the first institution: 1989–94



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

from each type of institution had comparable grades. Students who took more than a year off between institutions had lower GPAs than students who entered the destination institution within a year, and this was true for both horizontal and reverse transfers.

On average, students who transferred from a 4-year institution left 14 months after they began, and took about 7 months off before enrolling at the destination institution (table 14).[17] Horizontal transfers stayed at the first institution longer than did reverse transfers, and they also took less time off before entering the destination institution.

[17]Averages can be influenced by extreme values, concealing distributional characteristics. To put these figures into proper perspective, refer to the percentage distributions in tables 6 and 7.

Table 11—Of 1989–90 beginning students who transferred from 4-year institutions, percentage distribution according to level of transfer destination, by selected student and enrollment characteristics: 1989–94

	Transferred to 4-year	Transferred to 2-year	Transferred to less-than-2-year
Total	55.4	41.0	3.6
Gender			
Male	56.1	41.1	2.9
Female	54.6	41.0	4.4
Race–ethnicity			
Asian/Pacific Islander	—	—	—
Black, non-Hispanic	54.0	35.7	10.3
Hispanic	53.1	40.7	6.1
American Indian/Alaskan Native	—	—	—
White, non-Hispanic	55.4	41.9	2.7
Age as of 12/31/89			
Under age 20	56.6	40.2	3.2
20 or older	38.8	52.0	9.2
Socioeconomic status			
Bottom 25%	57.8	35.4	6.7
Middle 50%	47.2	47.4	5.4
Top 25%	60.7	37.1	2.2
Control of first institution			
Public	52.8	43.3	3.9
Private, not-for-profit	60.6	36.4	3.0
Received financial aid 1989–90			
Did not receive aid	49.5	47.8	2.7
Received aid	60.6	34.9	4.5
Enrollment status 1989–90			
Full-time	58.0	38.5	3.5
Part-time	39.9	57.9	2.3
Grade point average 1989–90			
Not reported	48.4	47.6	4.0
Below 2.50	44.9	50.4	4.6
2.50–2.99	61.5	35.7	2.9
3.00–3.49	76.6	21.3	2.0
3.50 or higher	71.7	26.0	2.3

—Too few cases for a reliable estimate.

NOTE: Details may not sum to 100 percent due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Table 12—Of 1989–90 beginning students who transferred between 4-year institutions, percentage distribution according to control of transfer destination, by control of first institution: 1989–94

	Transferred to Public 4-year	Transferred to Private 4-year
Total	76.4	23.6
Level and control of first institution		
Public 4-year	81.8	18.2
Private 4-year	67.0	33.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

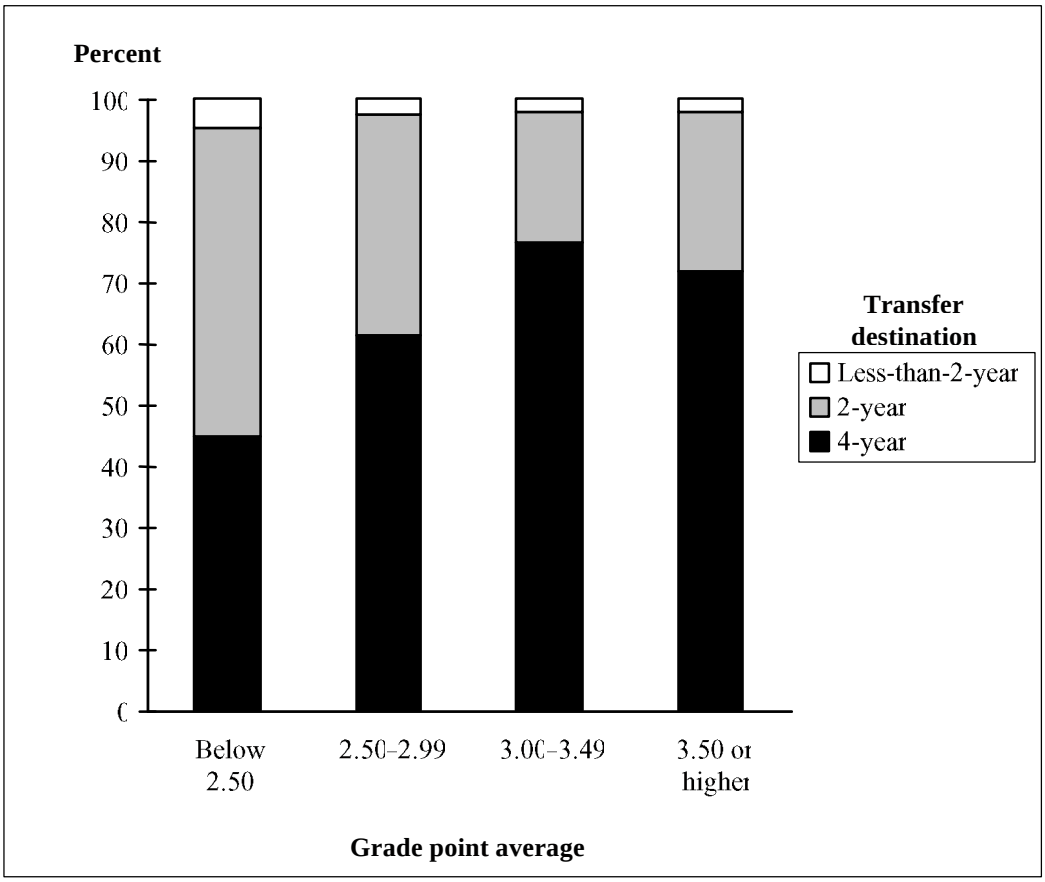
Table 13—Among 1989–90 beginning students who transferred from 4-year institutions, average GPA by level of transfer destination, by control of first institution and timing of transfer: 1989–94

	Total	Transferred to 4-year	Transferred to 2-year
Total	2.35	2.59	2.03
Control of first institution			
Public	2.28	2.59	1.92
Private, not-for-profit	2.51	2.61	2.33
Months enrolled at first institution			
0–10	2.22	2.56	1.87
11–20	2.41	2.62	2.06
21 or more	2.64	2.64	2.69
Months between institutions			
0–12	2.44	2.64	2.11
13 or more	1.93	2.26	1.72

NOTE: There were not enough students who transferred from 4-year to less-than-2-year institutions to produce reliable estimates for any of the statistics reported in this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Figure 5—Percentage distribution of 1989–90 beginning students at 4-year institutions who transferred according to level of transfer destination, by grade point average in 1989–90: 1989–94



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

What Proportion of Transfers Received Credit for Their Coursework at the First Institution?

Although the BPS data do not include information about the transfer of credit between specific institutions, students who had attended more than one institution were asked a general question about transfer of credit in each follow-up survey. For transfers who attended only two institutions,[18] this item can be used to assess transfer of credit between institutions. Among horizontal transfers who attended two institutions, 89 percent transferred credits, as did about half of reverse transfers (table 15).

[18]This group represents 63 percent of horizontal transfers, and 58 percent of reverse transfers (U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up [BPS:90/94], Data Analysis System).

Table 14—Among 1989–90 beginning students who transferred from 4-year institutions, average number of months enrolled at first institution and average number of months between institutions, by GPA and level of transfer destination: 1989–94

	Average number of months enrolled at first institution	Average number of months between institutions
Total	13.7	7.2
Grade point average 1989–90		
Not reported	13.2	8.7
Below 2.50	12.8	8.2
2.50–2.99	14.6	6.4
3.00–3.49	14.2	5.3
3.50 or higher	16.1	4.1
Level of transfer destination		
4-year	14.7	5.7
Less-than-4-year	12.5	9.1
2-year	12.3	8.5
Less-than-2-year	13.9	15.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

What Happened to the Transfers, and How Did They Fare Relative to Students Who Did Not Transfer?

Among students who began at a 4-year institution, those who did not transfer were more likely than those who transferred to another 4-year institution to have completed a bachelor's degree by 1994 (63 percent of nontransfers had completed the degree, compared with 45 percent of horizontal transfers) (table 16). However, if one combines bachelor's degree completers with those currently enrolled at a 4-year institution as a broad indicator of persistence toward the degree (first column in table 16), the two groups have similar persistence rates (figure 6).

Reverse transfer does not always signal permanent abandonment of bachelor's degree plans: 22 percent of reverse transfers had either completed a bachelor's degree by 1994 or were enrolled at a 4-year institution (12 percent had attained the degree, and 11 percent were enrolled).[19] Although reverse transfers did not return to the first institution they attended, at least one out of five made a subsequent transition to another 4-year institution.

[19]Details do not sum to total due to rounding (see table 16).

Table 15—Among 1989–90 beginning students who transferred from 4-year institutions and attended two institutions, percentage who transferred credits by level of transfer destination, by control of first institution, GPA, and timing of transfer: 1989–94

	Total	Transferred to 4-year	Transferred to 2-year
Total	72.8	88.5	55.5
Control of first institution			
Public	68.3	86.3	50.7
Private, not-for-profit	83.6	92.6	70.5
Grade point average 1989–90			
Not reported	62.9	82.5	48.8
Below 2.50	63.5	82.3	50.9
2.50–2.99	85.4	92.8	76.1
3.00–3.49	88.7	98.2	—
3.50 or higher	82.7	90.3	—
Months enrolled at first institution			
0–10	65.5	82.7	52.0
11–20	83.6	97.2	58.4
21 or more	76.8	87.6	64.4
Months between institutions			
0–12	80.3	91.0	61.7
13 or more	51.5	74.1	45.6

—Too few cases for a reliable estimate.

NOTE: There were not enough students who transferred from 4-year to less-than-2-year institutions to produce reliable estimates for any of the statistics reported in this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

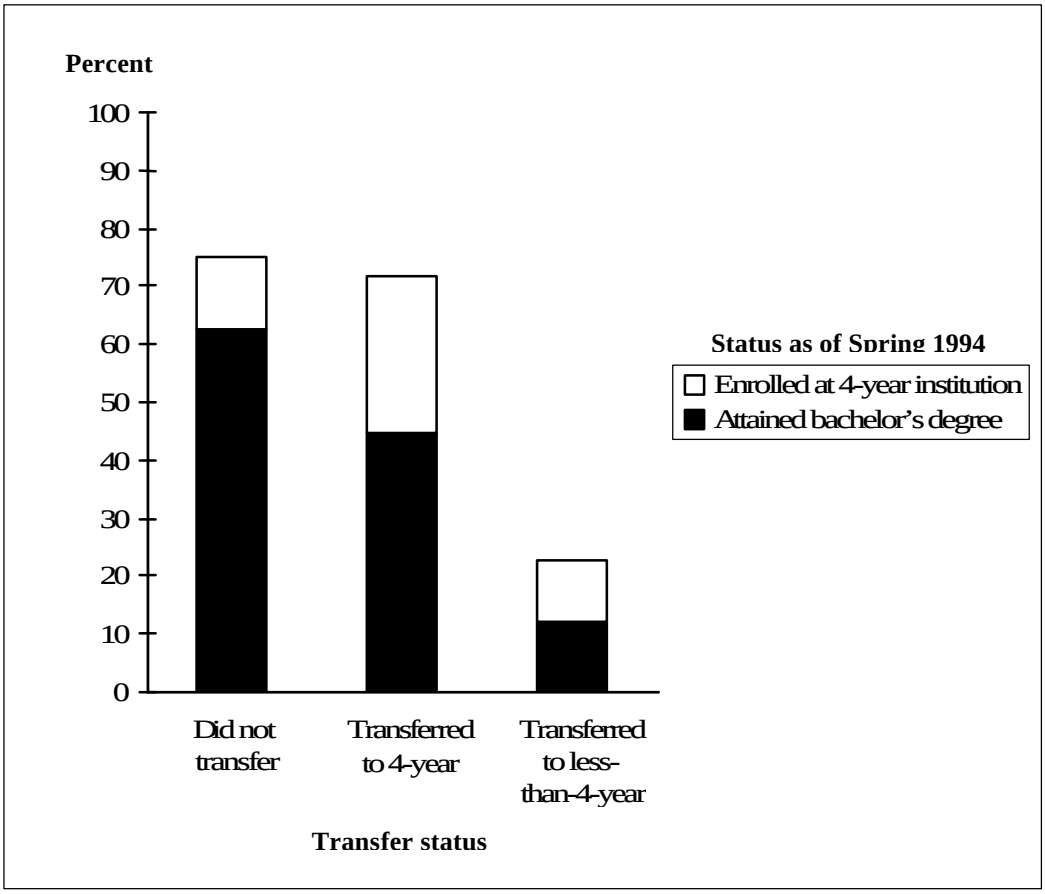
Table 16—Percentage distribution of 1989–90 beginning students at 4-year institutions according to 1994 enrollment and attainment status, by transfer status: 1989–94

	Attained bachelor's degree or enrolled at a 4-year institution			Enrolled at a less-than-4-year institution	Not enrolled
	Total	Attained bachelor's degree	Enrolled at a 4-year institution		
Total	67.8	53.3	14.5	2.7	29.5
Transfer status					
Did not transfer	75.1	62.5	12.5	0	24.9
Transferred	49.3	29.9	19.4	9.5	41.2
To 4-year	71.4	44.7	26.7	1.8	26.8
To less-than-4-year	22.4	11.8	10.6	19.2	58.4

NOTE: Details may not sum to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Figure 6—Percentage of 1989–90 beginning students at 4-year institutions who had attained a bachelor's degree or were enrolled at a 4-year institution as of Spring 1994, by transfer status: 1989–94



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Transfer From Public 2-Year Colleges to 4-Year Institutions

Public community colleges serve a wide range of educational purposes. One important purpose is to provide a low-cost, flexible means for students working toward a bachelor's degree to complete their lower division requirements before transferring to a 4-year institution to complete the degree. How effectively community colleges fulfill this purpose has been the subject of considerable debate among scholars and policymakers.[20] This section uses BPS data to examine the extent of transfer to 4-year institutions by beginning students at public 2-year colleges.[21]

Students' Degree Goals

[20]For a brief review of literature on the transfer function of community colleges, see T. Baker and W. Vélez, "Access to and Opportunity in Postsecondary Education in the United States: A Review," *Sociology of Education* Extra Issue (1996): 82–101. For an extensive policy-oriented discussion, see K. Dougherty, "The Community College at the Crossroads: The Need for Structural Reform," *Harvard Educational Review* 61 (1991): 311–336.
[21]Throughout this section, the terms *community college* and *public 2-year college* are used interchangeably.

One difficulty in examining transfer from community colleges is how to identify students who have transfer intentions at the outset. Community college advocates argue that it is inappropriate to include all community college students when calculating transfer rates because many never intend to transfer. In the analysis presented in this section, the population of prospective transfers is defined narrowly, based on students' responses to a base-year question that asked them to specify the degree toward which they were working. This question allowed students to specify any undergraduate degree, including one that they intended to receive at a different institution. One out of four community college students indicated that they were working toward a bachelor's degree (table 17). In examining transfer rates, this report will focus on this group as the population with clear transfer intentions (i.e., *prospective transfers*).[22] When presenting characteristics of students who did, in fact, transfer to a 4-year institution, however, all such students will be included unless noted otherwise.

The virtue of this approach to identifying prospective transfers is that it permits a sharp focus on students whose degree goal necessitates transferring to a 4-year institution. However, it also excludes other students who may have had equally strong transfer intentions. For example, there can be little doubt that the group of students who said that they were working on an associate's degree (54 percent of community college beginners) includes two subgroups: those who did not have immediate plans to continue their education beyond an associate's degree, and those who intended to transfer to a 4-year institution after completing an associate's degree. Since these two groups of associate's degree seekers cannot be separated, the only students who can be identified as having clear transfer intentions are those who stated that their courses were leading toward a bachelor's degree—a subset of all who intend to transfer.[23] This group nevertheless includes students who were formally enrolled in an associate's degree program at the first institution: one-quarter of those classified by the institution as enrolled in an associate's degree program indicated that they were working toward a bachelor's degree (table 17).

The relationship between students' immediate degree goals and long-term educational expectations is shown in table 17. Among students who expected that they would ultimately attain a bachelor's degree or higher, about one-third (34 percent) said they were working on a bachelor's degree, and 56 percent said they were working on an associate's degree.[24] By contrast, 5 percent of those who expected to attain less than a bachelor's degree said they were

[22]Another method for identifying the pool of potential transfers that has been promoted, but is not feasible with the BPS data, is based on credit accumulation (see E. Jones, ed., *A Model for Deriving the Transfer Rate* (Washington, DC: American Association of Community and Junior Colleges, 1992)). While this approach excludes students who enroll only briefly, it still includes students who may never intend to transfer.

[23]The distinction is further complicated by the fact that some articulation arrangements emphasize completion of an associate's degree for transfer admission, while others do not. In systems that emphasize the associate's degree, students who intend to transfer may be more likely to report that they are working toward an associate's degree.

[24]It cannot be assumed that all students who expected to attain a bachelor's degree had immediate transfer intentions.

Table 17—Of 1989–90 beginning students at public 2-year institutions, percentage distribution according to stated degree goal, by selected student and enrollment characteristics: 1989–90

	Not working towards a a degree	Certificate	Associate's degree	Bachelor's degree
Total	7.3	13.0	54.3	25.5
Gender				
Male	7.5	11.2	50.6	30.8
Female	7.1	14.7	57.8	20.5
Race–ethnicity				
Asian/Pacific Islander	—	—	—	—
Black, non-Hispanic	2.7	16.1	62.0	19.3
Hispanic	9.3	10.8	47.3	32.7
American Indian/Alaskan native	—	—	—	—
White, non-Hispanic	7.7	12.7	56.1	23.5
Age as of 12/31/89				
Under age 20	5.0	8.7	54.6	31.7
20 or older	11.2	20.2	53.6	15.0
Socioeconomic status				
Bottom 25%	7.3	25.8	50.7	16.2
Middle 50%	9.5	13.6	56.9	20.1
Top 25%	3.8	4.5	52.1	39.7
Highest degree expected 1989–90				
Less than a bachelor's degree	13.1	27.8	53.7	5.4
Bachelor's degree or higher	4.1	5.7	56.0	34.2
Bachelor's degree	4.0	6.4	59.4	30.2
Advanced degree	4.3	4.6	51.2	39.9
Enrollment status 1989–90				
Full-time	2.4	8.8	60.1	28.7
Part-time	12.8	17.8	48.5	21.0
Degree program 1989–90 (institution-reported)				
Associate's degree	6.5	7.6	59.9	26.0
Undergraduate certificate	9.5	23.7	43.9	22.9
Other undergraduate program	8.2	25.6	43.0	23.3

—Too few cases for a reliable estimate.

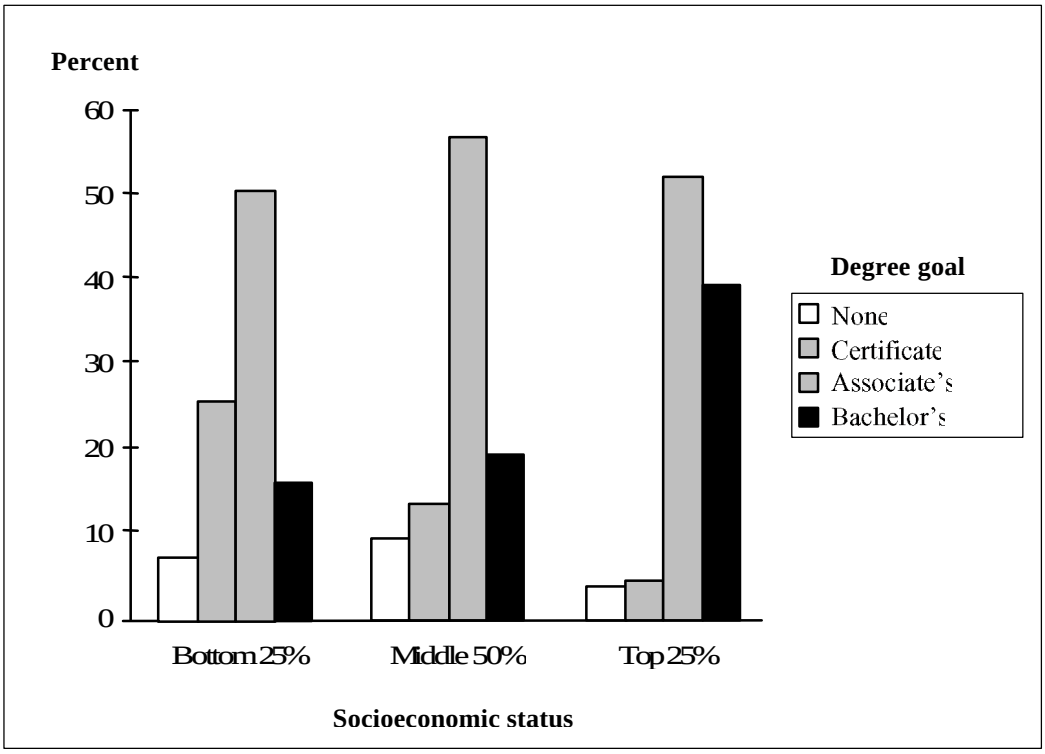
NOTE: Details may not sum to 100 percent due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

working toward one, but they were just as likely as those with higher expectations to be working toward an associate's degree (54 percent).[25]

Certain community college beginners were more likely than others to be identified as prospective transfers (i.e., to say they were working toward a bachelor's degree). Students who were under 20 when they started college were twice as likely as older students to say they were working toward a bachelor's degree (32 percent, compared with 15 percent of older students). Moreover, high-SES students were twice as likely as others to have a bachelor's degree goal (40 percent, compared with 16–20 percent of low- and middle-SES students) (figure 7). Men were also more likely than women to state a bachelor's degree goal (31 percent of men compared with 21 percent of women) (table 17).

Figure 7—Percentage distribution of 1989–90 beginning students at public 2-year institutions according to stated degree goal, by socioeconomic status: 1989–90



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

[25]The apparent contradiction between working toward a bachelor's degree and expecting less may be interpreted as reflecting some students' lack of confidence that they will achieve their goal.

Finally, although there were no significant racial–ethnic differences in the percentage of community college beginners working toward a bachelor's degree, the large share of Hispanic beginners who were working toward a bachelor's degree (one-third) illustrates Hispanic students' heavy reliance on community colleges as a point of entry into postsecondary education and toward a bachelor's degree. For example, 61 percent of Hispanic beginning students were enrolled at community colleges, compared with 41–42 percent of non-Hispanic black and white students, and among beginning students who expected to complete at least a bachelor's degree, 59 percent of Hispanics were at a community college, compared with 37–40 percent of non-Hispanic whites, blacks, and Asian/Pacific Islanders.[26] A recent analysis of data from the National Education Longitudinal Study (NELS:88) found that among 1988 eighth graders who had enrolled in postsecondary education by 1994, half of Hispanic students first enrolled at a community college, compared with about one-third of non-Hispanic whites, blacks, and Asian/Pacific Islanders.[27]

Overview of Transfer Activity Among Community College Beginners

Overall, about one out of five community college beginners (22 percent) transferred to a 4-year institution (table 18).[28] However, among prospective transfers (students who were working toward a bachelor's degree), 39 percent transferred to a 4-year institution. This finding is consistent with the logic of sample selection described above—that examining this group permits a sharp focus on those with transfer intentions. It also shows that even when one defines prospective transfers narrowly, less than half of such students had made a direct transition to a 4-year institution within 5 years of college entry.[29]

While students who were working toward an associate's degree were less likely to transfer to a 4-year institution than those who were working toward a bachelor's degree, they were much more likely to do so than students who were working toward a certificate or who were not working toward any credential (23 percent of those working toward an associate's degree transferred to a 4-year institution, compared with 2–9 percent of the other groups). This is consistent with the interpretation that the group working toward an associate's degree includes both students who planned to transfer as well as students who did not intend to continue their education past the associate's degree (figure 8).

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[26]U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

[27]A. Sanderson et al., *National Education Longitudinal Study 1988–1994 Descriptive Summary Report: With an Essay on Access and Choice in Postsecondary Education* (Washington, DC: U.S. Department of Education, National Center for Education Statistics, 1996).

[28]This figure is very close to the 21 percent "de facto transfer rate" found by Adelman in an analysis of postsecondary transcript data for the National Longitudinal Study of the High School Class of 1972 (NLS:72) ("Transfer Rates and the Going Mythologies," *Change* (January/February 1988): 38–41).

[29]The possibility of "indirect transfer"—entering a 4-year institution after an intermediate transition to another less-than-4-year institution—is considered at the end of this section.

Table 18—Of 1989–90 beginning students at public 2-year institutions, percentage distribution according to transfer status, by stated degree goal: 1989–94

	Did not transfer	Transferred to 4-year	Transferred to 2-year	Transferred to less-than-2-year
Total	57.8	22.4	14.2	5.6
Degree goal 1989–90				
None	65.6	8.7	17.3	8.4
Certificate	87.3	2.4	4.5	5.9
Associate's degree	56.1	22.9	15.5	5.6
Bachelor's degree	40.3	38.7	16.2	4.8

NOTE: Details may not sum to 100 percent due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

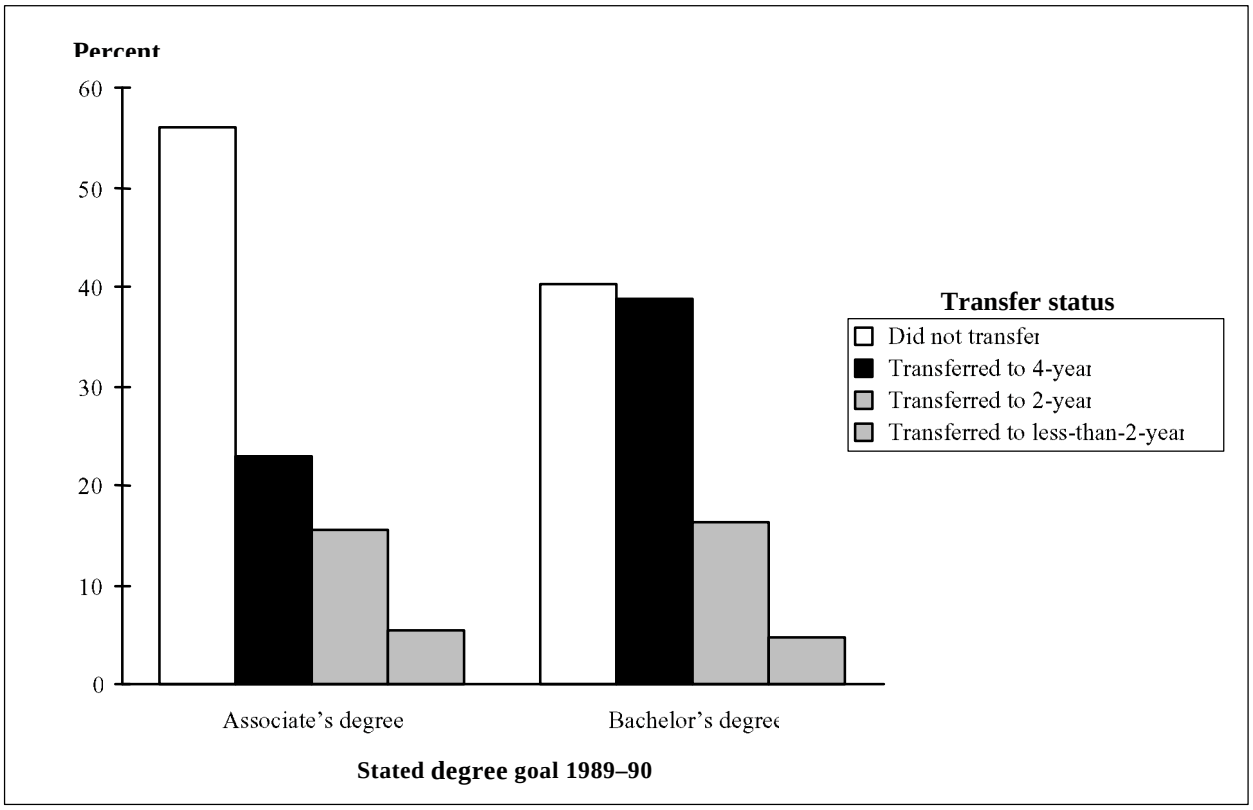
Table 19 presents transfer outcomes for the subset of community college beginners who said they were working toward a bachelor's degree. Many of the differences among these small groups are not statistically significant. That is, while some of the estimates of the proportion who transferred in table 19 appear notably different, there is insufficient evidence to conclude that this reflects a difference in transfer behavior in the population of beginning students rather than simply among those in the BPS sample. (See appendix C for a detailed discussion of statistical significance testing.)

Among prospective transfers, those who enrolled full time in their first year were twice as likely as those who enrolled part time to transfer to a 4-year institution by 1994. It is unlikely that this simply reflects the time needed to complete transfer requirements—since the study covers a period of 5 years, it allows sufficient time for continuously enrolled half-time students to complete the equivalent of 2 years of full-time attendance. However, to the extent that students who transfer take a year or more off between institutions (see table 7), 5 years may not be enough time to capture all transfer behavior among part-time students. It is nevertheless very likely that some of the difference in transfer rates reflects higher stopout and dropout rates among part-time students.[30] It may also reflect a greater propensity of part-time students seeking a bachelor's degree to change their degree objective.

Prospective transfers who expected to complete an advanced degree also transferred at a higher rate than did those who expected their highest attainment to be a bachelor's degree.

[30]See L. Berkner, S. Cuccaro-Alamin, and A. McCormick, *Descriptive Summary of 1989–90 Beginning Postsecondary Students: 5 Years Later* (Washington, DC: U.S. Department of Education, National Center for Education Statistics, 1996), and A. McCormick, S. Geis, and R. Vergun, *Profile of Part-Time Undergraduates in Postsecondary Education: 1989–90* (Washington, DC: U.S. Department of Education, National Center for Education Statistics, 1995).

Figure 8—Percentage distribution of 1989–90 beginning students at public 2-year institutions who transferred according to transfer status, by stated degree goal in 1989–90: 1989–94



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Attainment Before Transferring to a 4-Year Institution

Among community college beginners who transferred to a 4-year institution, most (65 percent) did not complete a degree before transferring. About one out of three completed an associate's degree (table 20).

About half of transfers (46 percent) who had said that they were working toward an associate's degree completed this degree before transferring, twice as many as those who had said they were working toward a bachelor's degree. Transfers who were enrolled full time in their first year were much more likely than part-timers to complete an associate's degree before transferring to a 4-year institution (41 versus 17 percent), and female transfers were more likely than their male counterparts to have done so (44 versus 24 percent).[31]

[31]Among all community college beginners, full-time students were also more likely than part-timers to be working toward an associate's degree (60 versus 49 percent, table 17).

Table 19—Of 1989–90 beginning students at public 2-year institutions with stated goal of a bachelor's degree, percentage distribution according to transfer status, by selected student and enrollment characteristics: 1989–94

	Did not transfer	Transferred to 4-year	Transferred to 2-year	Transferred to less-than-2-year
Total	40.3	38.7	16.2	4.8
Gender				
Male	45.8	33.5	15.4	5.3
Female	32.4	46.0	17.4	4.1
Age as of 12/31/89				
Under age 20	36.1	40.3	18.8	4.9
20 or older	55.7	32.9	6.8	4.6
Socioeconomic status				
Bottom 25%	—	—	—	—
Middle 50%	46.5	35.9	16.3	1.4
Top 25%	32.5	44.7	16.1	6.8
Highest degree expected 1989–90				
Less than a bachelor's degree	—	—	—	—
Bachelor's degree or higher	35.8	42.3	17.7	4.2
Bachelor's degree	44.5	35.7	17.2	2.7
Advanced degree	27.0	49.0	18.3	5.7
Enrollment status 1989–90				
Full-time	34.6	49.5	12.7	3.2
Part-time	46.5	26.4	23.9	3.2

—Too few cases for a reliable estimate.

NOTES: Details may not sum to 100 percent due to rounding. The number of nonwhite students eligible for inclusion in this table was too small to produce reliable estimates by race–ethnicity.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Table 20—Of 1989–90 beginning students at public 2-year institutions who transferred to 4-year institutions, percentage distribution according to degree attainment prior to transfer, by selected student and enrollment characteristics: 1989–94

	None	Certificate	Associate's degree
Total	65.1	0.7	34.1
Gender			
Male	74.7	1.2	24.1
Female	55.3	0.2	44.4
Socioeconomic status			
Bottom 25%	—	—	—
Middle 50%	62.4	0.2	37.4
Top 25%	68.1	1.3	30.6
Highest degree expected 1989–90			
Less than a bachelor's degree	—	—	—
Bachelor's degree or higher	64.9	0.8	34.4
Bachelor's degree	59.6	1.6	38.8
Advanced degree	69.9	0	30.1
Degree goal 1989–90			
None	—	—	—
Certificate	—	—	—
Associate's degree	52.8	1.2	46.0
Bachelor's degree	77.6	0	22.4
Enrollment status 1989–90			
Full-time	57.7	1.1	41.2
Part-time	83.1	0	16.9

—Too few cases for a reliable estimate.

NOTE: Details may not sum to 100 percent due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Timing of Transfer to 4-Year Institutions

On average, community college beginners who transferred to a 4-year institution spent about 20 months at the first institution, roughly equal to the amount of time normally required for a full-time student to complete lower division coursework (table 21).[32] Students who completed an associate's degree before transferring tended to spend more time at the first institution than students who transferred without any credential.

[32]As noted earlier, extreme values can cause the average to conceal distributional characteristics. Table 6 shows that among transfers from community colleges to any institution, about one-quarter spent up to 10 months at the first institution and one-quarter spent more than 20 months there.

The average number of months transfers spent at the first institution did not differ according to enrollment status in the first year. One possible explanation for this finding is that part-timers simply transferred fewer credits than did full-timers (for example, transferring in as sophomores rather than as juniors). Another possibility is that part-timers who transferred increased their course load soon after the first term.

Community college beginners who transferred to a 4-year institution often took a considerable amount of time off between institutions, averaging 21 months (table 21).[33] The amount of time they took off between institutions did not appear to vary with other student or enrollment characteristics, however.

Table 21—Among 1989–90 beginning students at public 2-year institutions who transferred to 4-year institutions, average number of months enrolled at the first institution and average number of months between institutions, by selected student and enrollment characteristics: 1989–94

	Average number of months enrolled at first institution	Average number of months between institutions
Total	20.2	21.4
Attainment status at first transfer		
None	17.1	21.5
Certificate	—	—
Associate's degree	26.0	21.4
Degree goal 1989–90		
None	—	—
Certificate	—	—
Associate's degree	22.1	22.2
Bachelor's degree	18.2	20.6
Enrollment status 1989–90		
Full-time	19.8	21.8
Part-time	20.7	20.0

—Too few cases for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Transfer of Credit by Students Who Transferred to 4-Year Institutions

As in the analysis of transfer from 4-year institutions, a partial examination of transfer of credit between institutions is possible by restricting the sample to transfers who attended only two

[33]About one-third of community college transfers to any institution made the transition within 1 year, and about one-quarter took more than 3 years off (table 7).

institutions.[34] Among community college students transferring to a 4-year institution who attended two institutions, nine out of ten (89 percent) reported transferring credits between institutions (table 22). Among high-SES students and students who completed an associate's degree before transferring, almost all (98 percent) transferred credits. This may reflect better academic preparation, stronger academic performance, or greater compliance with transfer requirements among such students, as well as other factors that might improve the chances that their credits will transfer (for example, attendance at institutions that are more oriented toward baccalaureate transfer, where appropriate academic advising may be more accessible and more effective).[35]

Table 22—Among 1989–90 beginning students at public 2-year institutions who transferred to 4-year institutions and attended two institutions, percentage who transferred credits, by selected student characteristics: 1989–94

	Percentage who transferred credits
Total	88.9
Socioeconomic status	
Bottom 25%	—
Middle 50%	84.4
Top 25%	97.6
Degree goal 1989–90	
None	—
Certificate	—
Associate's degree	85.6
Bachelor's degree	93.3
Attainment status at first transfer	
None	82.3
Certificate	—
Associate's degree	98.4

—Too few cases for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

What Became of Students Who Transferred to a 4-Year Institution?

[34]This group represents 73 percent of all community college students who transferred to a 4-year institution (U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up [BPS:90/94], Data Analysis System).

[35]Previous research on transfer is illustrative in this respect. For example, Banks found that institutions with more students who transfer with at least 12 credits tended to be located in high income areas in states with formalized articulation systems that facilitate transfer (D. Banks, "Effects of Environmental Conditions on Student-Transfer Activity," *Community College Journal of Research and Practice* 18 (1994): 245–259). In an analysis of *High School and Beyond* data, Lee and Frank found that the positive effect of socioeconomic background on transfer was mediated by a variety of academic behaviors that are associated with transfer (V. Lee and K. Frank, "Students' Characteristics that Facilitate the Transfer from Two-Year to Four-Year Colleges," *Sociology of Education* 63 (1990): 178–193).

What had happened to transfers by the 1994 follow-up survey? Table 23 shows the percentage who had attained a bachelor's degree by 1994, and for those who had not attained the degree, the percentage who were enrolled, by level of institution. While one out of four transfers had received a bachelor's degree by the time of the follow-up survey, another 44 percent were still enrolled at a 4-year institution, representing an overall persistence rate of 70 percent (table 23, first column). This is comparable to the persistence rate among students who began at 4-year institutions, and among 4-year horizontal transfers (table 16). Thus, while less than half of prospective transfers made the transition to a 4-year institution (39 percent, table 19), those who transferred did as well with respect to overall persistence as their counterparts who began at a 4-year institution.[36]

The bachelor's degree attainment rate was much higher among the minority of transfers who had completed an associate's degree before transferring: 43 percent of associate's degree completers had received a bachelor's degree by 1994, compared with 17 percent among those who transferred without any credential (figure 9). This difference cannot be attributed to different rates of part-time enrollment or different amounts of time off between institutions: those factors would merely alter the balance between the proportion who had attained and the proportion still enrolled. However, the two groups had equivalent rates of current enrollment at a 4-year institution (44–45 percent), and the percentage who had left postsecondary education was nearly three times higher among students who did not complete any credential before. The higher bachelor's degree attainment rate among transfers who first completed an associate's degree is also consistent with the finding that associate's degree completers were more likely to transfer credits, which would accelerate degree completion (table 22). Students who transferred with an associate's degree may have been better prepared for the transition, or they may have encountered fewer obstacles to continued progress.

[36]Beginners and horizontal transfers at 4-year institutions had higher rates of bachelor's degree attainment, however. This is consistent with higher rates of full-time attendance by 4-year beginners (appendix A, table A2), and less time off between institutions by 4-year horizontal transfers (tables 14 and 21).

Table 23—Of 1989–90 beginning students at public 2-year institutions who transferred to 4-year institutions, percentage distribution according to attainment and enrollment outcomes as of 1994, by selected student and enrollment characteristics: 1989–94

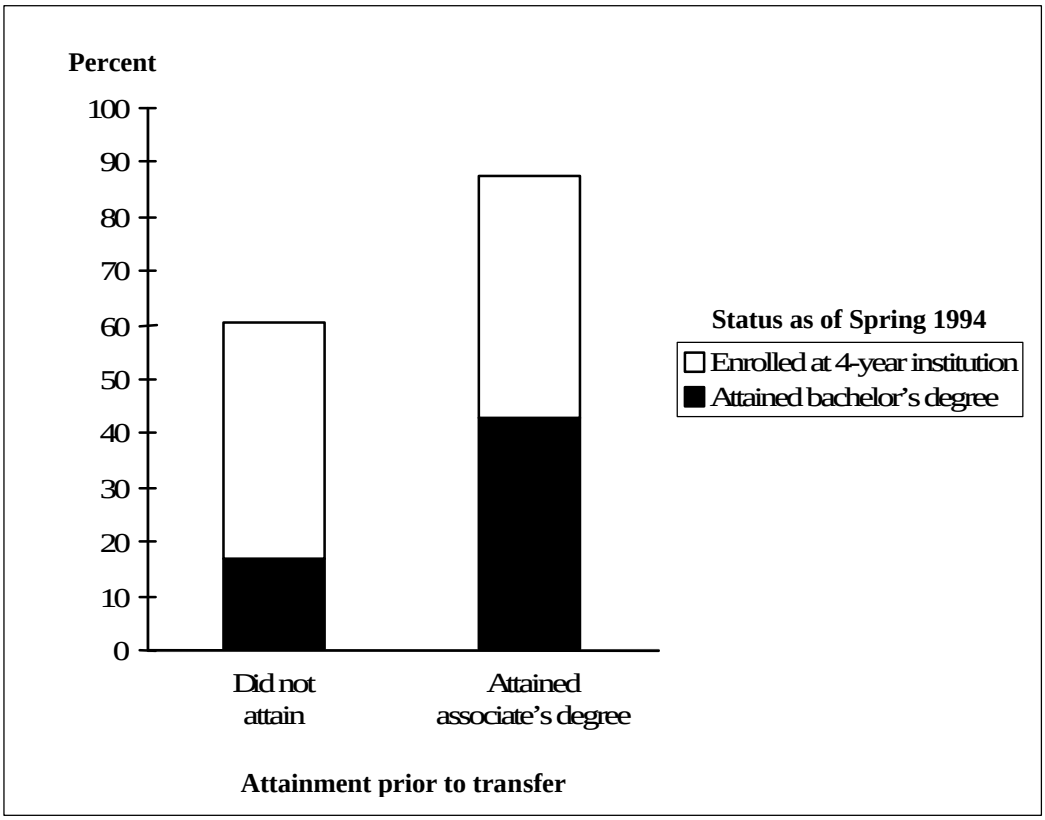
	Attained bachelor's degree or enrolled at a 4-year institution					
	Total	Attained bachelor's degree	Enrolled at a 4-year institution	Enrolled at a 2-year institution	Enrolled at a less-than-2-year institution	Not enrolled
Total	69.8	25.6	44.2	4.7	0	25.6
Gender						
Male	68.4	21.0	47.4	8.5	0	23.1
Female	71.2	30.3	40.9	0.7	0	28.1
Age as of 12/31/89						
Under age 20	72.2	26.0	46.2	3.9	0	23.9
20 or older	—	—	—	—	—	—
Socioeconomic status						
Bottom 25%	—	—	—	—	—	—
Middle 50%	77.4	26.5	51.0	4.4	0	18.2
Top 25%	66.0	25.4	40.6	4.8	0	29.2
Highest degree expected 1989–90						
Less than a bachelor's degree	—	—	—	—	—	—
Bachelor's degree	68.1	31.5	36.6	7.8	0	24.1
Advanced degree	69.7	21.4	48.3	2.2	0	28.1
Degree goal 1989–90						
None	—	—	—	—	—	—
Certificate	—	—	—	—	—	—
Associate's degree	73.4	30.3	43.1	3.8	0	22.7
Bachelor's degree	64.4	19.6	44.7	6.2	0	29.5
Attainment status at first transfer						
None	60.5	16.9	43.5	7.2	0	32.4
Certificate	—	—	—	—	—	—
Associate's degree	87.2	42.6	44.7	0	0	12.8

—Too few cases for a reliable estimate.

NOTES: Details may not sum to totals due to rounding. The number of nonwhite students eligible for inclusion in this table was too small to produce reliable estimates by race–ethnicity.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Figure 9—Among 1989–90 beginning students at public 2-year institutions who transferred to a 4-year institution, percentage who had attained a bachelor's degree or were enrolled at a 4-year institution as of Spring 1994, by attainment prior to transfer: 1989–94



NOTE: The number of students who had attained a certificate prior to transferring was too small to produce reliable estimates.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Did Students Who Did Not Transfer Directly to a 4-Year Institution Eventually Attend One?

Since the analysis thus far has been restricted to the first transfer, the possibility remains that some students found their way into a 4-year institution after an intermediate transition to a less-than-4-year institution. This possibility can be addressed by examining the full record of institutions attended over the 5 years covered by BPS:90/94. In addition, one can examine the full record of stated degree objectives and bachelor's degree attainment among community college beginners.

As noted earlier, 26 percent of community college beginners stated in their first year that they were working toward a bachelor's degree (table 17). Over the full 5-year period, however, 38 percent said at some time that they were working toward a bachelor's degree (table 24). Many students who were not initially working toward a bachelor's degree later took steps toward one.

For example, among students who initially said they were working toward an associate's degree, 26 percent had attended a 4-year institution by 1994, and 24 percent had reported working toward a bachelor's degree by 1994 (table 24).

Table 24 shows that some students who were not identified as transfers or whose first transfer was to a less-than-4-year institution (2 and 9 percent, respectively) had attended a 4-year institution at some time by 1994, and a fraction of a percent had attained a bachelor's degree by 1994.[37]

Among all community college beginners, the bachelor's degree attainment rate after 5 years was equal for those initially working toward an associate's degree and those initially working toward a bachelor's degree (8 percent). The rate of 4-year institution attendance was higher among those initially working toward a bachelor's degree, however (45 versus 26 percent).

Some "indirect transfer"—that is, transfer to a 4-year institution after an intermediate transfer to a less-than-4-year institution—occurred among students identified as prospective transfers based on their stated degree goal in 1989–90. While 39 percent of prospective transfers made a direct transition to a 4-year institution (table 19), 45 percent had attended a 4-year institution at some time by 1994 (table 25). Among students who transferred to a less-than-4-year institution, 17 percent subsequently enrolled at a 4-year institution. While 20 percent of direct transfers had attained a bachelor's degree by 1994, none of the other transfers had done so (table 25).

Table 24—Among 1989–90 beginning students at public 2-year institutions, percentage who ever stated working toward a bachelor's degree, who ever attended a 4-year institution, and who had attained a bachelor's degree, by stated degree goal and transfer status: 1989–94

	Ever stated a bachelor's degree goal	Ever attended a 4-year institution	Attained a bachelor's degree
Total	37.8	25.4	6.3
Degree goal 1989–90			
None	6.5	8.7	3.2
Certificate	3.0	2.5	0
Associate's degree	23.6	25.6	7.8
Bachelor's degree	100.0	44.8	8.1
Transfer status			
Did not transfer*	18.2	2.0	0.2
Transferred to 4-year	91.7	100.0	25.6
Transferred to less-than-4-year	33.1	8.8	0.6

*The small number of students in this category who attended a 4-year institution or who attained a bachelor's degree did so while still enrolled at the first institution, and thus did not qualify as transfers.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

[37]Nontransfers who attended a 4-year institution or who attained a bachelor's degree were simultaneously enrolled at the first institution. Because they did not leave the first institution, they did not meet the criteria for transfer as defined in this report.

Table 25—Among 1989–90 beginning students at public 2-year institutions with stated goal of a bachelor's degree, percentage who ever attended a 4-year institution and who had attained a bachelor's degree, by transfer status: 1989–94

	Ever attended a 4-year institution	Attained bachelor's degree
Total	44.8	8.1
Transfer status		
Did not transfer*	6.8	0
Transferred to 4-year	100.0	19.6
Transferred to less-than-4-year	16.9	0

*Students in this category who attended a 4-year institution did so while still enrolled at the first institution, and thus did not qualify as transfers.

NOTE: The number of nonwhite students eligible for inclusion in this table was too small to produce reliable estimates by race–ethnicity.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Analysis of Transfer After Controlling for Background Variation

Thus far, the analysis of transfer behavior has examined the relationship between transfer and individual student or enrollment characteristics, considering each characteristic one at a time. Because these characteristics are related to one another—for example, older students are more likely to attend part-time—this approach cannot reveal the *unique* relationship between each characteristic and transfer behavior (that is, the relationship that exists apart from the confounding influence of other variables). In this section, linear regression analysis is used to provide information about how certain characteristics are related to transfer after controlling for a set of other characteristics. Three different types of transfer are analyzed in this fashion: horizontal transfer from 4-year institutions, reverse transfer from 4-year institutions, and transfer from public community colleges to 4-year institutions. For more information about this methodology, refer to appendix C.

Horizontal Transfer From 4-Year Institutions

Table 26 shows the results for an analysis of horizontal transfer from 4-year institutions. The first column displays the unadjusted percentages—the percentages in each group who transferred to another 4-year institution before controlling for the other variables in the table—and the second column displays adjusted percentages for a hypothetical student with average values on the other variables. The last row in each set of characteristics is the comparison group for significance testing, and the asterisks indicate cases where the percentage in a column is significantly different from that of the comparison group. For example, the percentage of older students who transferred to another 4-year institution is significantly lower than among younger students, both before and after adjusting for the other variables in the table.

Table 26—Among 1989–90 beginning students at 4-year institutions, percentage who transferred to another 4-year institution by selected characteristics, and this percentage after taking into account the covariation of the variables in the table: 1989–94

	Unadjusted percentage[1]	Adjusted percentage[2]	WLS coefficient[3]	Standard error[4]
Total	15.6	15.6	15.3	1.7
Gender				
Male	17.1	16.8*	2.2	1.0
Female	14.3	14.6	†	†
Age as of 12/31/89				
20 or older	9.7*	10.6*	-5.5	2.4
Under age 20	16.1	16.1	†	†
Socioeconomic status				
Bottom 25%	11.5	12.9	-1.1	2.9
Top 25%	17.0	16.9*	2.9	1.3
Middle 50%	14.1	14.0	†	†
Highest degree expected 1989–90				
Less than a bachelor's degree	8.4*	10.7*	-8.3	3.2
Advanced degree	14.6*	14.1*	-4.8	1.2
Bachelor's degree	18.5	19.0	†	†
Control of first institution				
Private, not-for-profit	17.4	16.6	1.5	2.3
Public	14.8	15.1	†	†
Received financial aid 1989–90				
Received aid	16.0	16.2	1.3	1.4
No aid	15.2	14.9	†	†
Enrollment status 1989–90				
Part-time	15.3	18.2	2.9	2.9
Full-time	15.7	15.4	†	†
Grade point average 1989–90				
Below 2.50	15.9	15.3	-0.9	1.2
3.50 or higher	14.2	15.1	-1.0	1.4
2.50–3.49	16.1	16.1	†	†
Overall satisfaction with first institution				
Low (0–3)	20.9*	21.9*	6.7	1.4
High (5)	11.9	13.0	-2.3	1.2
Moderate (4)	14.3	15.2	†	†

*$p \leq .05$.
†Not applicable for the reference category.
[1]Unadjusted percentages are from the BPS:90/94 Data Analysis System.
[2]See appendix C for an explanation of the adjustment procedure.
[3]Weighted least squares (WLS) coefficients were multiplied by 100 to match the percentage scale (see appendix C).
[4]Standard error of WLS coefficient, adjusted for design effects and multiplied by 100 to match the percentage scale (see appendix C).

NOTE: The last row in each group is the reference category for comparison (see appendix C).

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

This analysis shows that adjusting for variation among these variables does little to change the conclusions one would reach based on comparisons of the unadjusted percentages: horizontal transfer was less likely among older students than younger students, and less likely among students with educational expectations other than a bachelor's degree (lower or higher) than among those who expected their highest degree would be a bachelor's degree; and horizontal transfer was more likely among students who were relatively dissatisfied with their first institution than among those who were moderately satisfied (table 26).

The analysis does show two additional characteristics are associated with transfer when variation of the other variables has been taken into account: men were somewhat more likely than women to transfer to another 4-year institution, and high-SES students were more likely than middle-SES students to do so.

Reverse Transfer From 4-Year Institutions

Table 27 shows the results for an analysis of reverse transfer from 4-year institutions. In this case, controlling for the other variables does not change the interpretation one would draw from the unadjusted percentages. Reverse transfer was less common among both low- and high-SES students than among middle-SES students; less common among students who expected to attain an advanced degree than among those who thought their highest degree would be a bachelor's; and less common among students who received financial aid than among unaided students. Reverse transfer was about twice as likely among students who were enrolled part-time in their first year than among full-time students, and also among students who earned low grades in their first year. Satisfaction with the institution was associated with reverse transfer as well as horizontal transfer: those with low satisfaction were more likely to transfer. However, it is likely that the nature of dissatisfaction was different for horizontal and reverse transfers.

Transfer From Community Colleges to 4-Year Institutions

Table 28 presents the results for transfer from community colleges to 4-year institutions. This model differs from that used to analyze transfer from 4-year institutions in several important respects. First, some of the variables included in tables 26 and 27 were not included because they have little or no relevance to this model (for example, control of first institution). Second, although one would normally want to control for achievement at the first institution when analyzing transfer, it was not included in the model because GPAs were unavailable for about one out of four community college beginners. Finally, the model includes students' stated degree goal because of its importance in the foregoing analysis of community college transfer.

Unlike the results for reverse transfer from a 4-year institution, these results show that controlling for variation among these variables substantially alters the interpretation of how these variables are related to transfer from a community college to a 4-year institution. Whereas the unadjusted percentages show different rates of transfer to a 4-year institution for every variable except gender, all but one of these differences disappears when one controls for variation among

Table 27—Among 1989–90 beginning students at 4-year institutions, percentage who transferred to a less-than-4-year institution by selected characteristics, and this percentage after taking into account the covariation of the variables in the table: 1989–94

	Unadjusted percentage[1]	Adjusted percentage[2]	WLS coefficient[3]	Standard error[4]
Total	12.6	12.6	13.0	1.6
Gender				
Male	13.4	12.7	0.1	0.9
Female	11.9	12.5	†	†
Age as of 12/31/89				
20 or older	15.3	11.6	-1.1	2.2
Under age 20	12.4	12.7	†	†
Socioeconomic status				
Bottom 25%	8.4*	7.7*	-7.8	2.6
Top 25%	11.0*	11.2*	-4.2	1.2
Middle 50%	15.7	15.5	†	†
Highest degree expected 1989–90				
Less than a bachelor's degree	21.0	18.1	4.1	2.9
Advanced degree	10.8*	11.6*	-2.4	1.1
Bachelor's degree	15.2	14.0	†	†
Control of first institution				
Private, not-for-profit	11.3	13.1	0.8	2.1
Public	13.2	12.3	†	†
Received financial aid 1989–90				
Received aid	10.4*	10.9*	-4.0	1.2
No aid	15.5	14.8	†	†
Enrollment status 1989–90				
Part-time	23.1*	20.9*	9.1	2.6
Full-time	11.4	11.7	†	†
Grade point average 1989–90				
Below 2.50	19.5*	19.4*	10.7	1.1
3.50 or higher	5.6	6.9	-1.8	1.2
2.50–3.49	7.7	8.8	†	†
Overall satisfaction with first institution				
Low (0–3)	18.7*	18.2*	6.7	1.2
High (5)	10.6	10.9	-0.6	1.1
Moderate (4)	10.9	11.5	†	†

*$p \leq .05$.
†Not applicable for the reference category.
[1]Unadjusted percentages are from the BPS:90/94 Data Analysis System.
[2]See appendix C for an explanation of the adjustment procedure.
[3]Weighted least squares (WLS) coefficients were multiplied by 100 to match the percentage scale (see appendix C).
[4]Standard error of WLS coefficient, adjusted for design effects and multiplied by 100 to match the percentage scale (see appendix C).

NOTE: The last row in each group is the reference category for comparison (see appendix C).

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

the variables: only enrollment status retains an independent effect.[38] The likelihood of transfer to a 4-year institution was nearly twice as high for full-time students than for students of comparable gender, age, SES, educational expectations, and degree goals who were attending part-time.

Table 28—Among 1989–90 beginning students at public 2-year institutions, percentage who transferred to a 4-year institution by selected characteristics, and this percentage after taking into account the covariation of the variables in the table: 1989–94

	Unadjusted percentage[1]	Adjusted percentage[2]	WLS coefficient[3]	Standard error[4]
Total	22.4	22.4	32.6	6.6
Gender				
Male	23.1	21.8	-1.2	4.7
Female	21.7	23.0	†	†
Age as of 12/31/89				
20 or older	8.0*	17.0	-8.8	7.1
Under age 20	31.3	25.7	†	†
Socioeconomic status				
Bottom 25%	7.2*	16.1	-6.2	7.0
Top 25%	34.8*	26.3	3.9	6.1
Middle 50%	20.7	22.4	†	†
Highest degree expected 1989–90				
Less than a bachelor's degree	3.4*	10.1	-13.3	6.8
Advanced degree	38.7*	32.9	9.5	5.8
Bachelor's degree	26.8	23.4	†	†
Enrollment status 1989–90				
Part-time	12.6*	16.4*	-12.3	6.2
Full-time	33.1	28.7	†	†
Degree goal 1989–90				
None or certificate	4.7*	15.8	-5.5	7.0
Bachelor's degree	38.7*	29.9	8.5	6.7
Associate's degree	22.9	21.4	†	†

*$p \leq .05$.
†Not applicable for the reference category.
[1]Unadjusted percentages are from the BPS:90/94 Data Analysis System.
[2]See appendix C for an explanation of the adjustment procedure.
[3]Weighted least squares (WLS) coefficients were multiplied by 100 to match the percentage scale (see appendix C).
[4]Standard error of WLS coefficient, adjusted for design effects and multiplied by 100 to match the percentage scale (see appendix C).

NOTE: The last row in each group is the reference category for comparison (see appendix C).

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

[38]This illustrates why controlling for covariation among variables is useful: differences between the unadjusted percentages can conceal interrelationships among several variables.

This finding suggests that administrators and policymakers concerned with the transfer function must devote special attention to the needs of part-time students, who make up a majority of the community college population.[39] Areas in which part-time students may be at a

[39]For example, in academic year 1992–93 60 percent of community college students attended part time (L. Horn and M. Premo, *Profile of Undergraduates in U.S. Postsecondary Institutions: 1992–93,* Washington, DC: U.S. Department of Education, National Center for Education Statistics,

disadvantage include access to transfer-oriented classes that accommodate their work schedule, access to faculty outside of class, and access to and quality of advising. Other areas that may be equally important but less amenable to institutional intervention include access to child care and support by family, friends, and employers.

Summary

This report presents a comprehensive analysis of undergraduate transfer behavior using the most current, nationally representative longitudinal data on student progress through postsecondary education. This information is potentially useful to state and federal policymakers as well as administrators at postsecondary institutions.

Attendance at multiple institutions is a widespread phenomenon: nearly half of all first-time beginning students in 1989–90 had enrolled elsewhere within 5 years. Not all instances of multiple-institution enrollment represent transfers, however. At 4-year institutions, for example, about half of beginning students enrolled elsewhere at some time, but only one-quarter transferred.

Transfer From 4-Year Institutions

At 4-year institutions, transfer was related to academic performance, satisfaction with selected aspects of the institution (particularly its contribution to their intellectual growth), and the availability of and students' satisfaction with certain services (particularly job and personal counseling). Cost also appeared to be a factor in transfer from private institutions, and two out of three students who transferred from private institutions entered public ones.

While the bachelor's degree attainment rate was lower among horizontal transfers from 4-year institutions than among students who did not transfer, the overall persistence rate was similar for the two groups. The implication of this finding is that horizontal transfer may increase time to degree without undermining persistence. Half of all horizontal transfers left the first institution after 10 months or less. Three-quarters of horizontal transfers entered the destination institution within 6 months of leaving the first institution; one out of eight entered later, but within a year; and one-eighth took more than a year off between institutions.

About half of students who transferred from 4-year institutions were reverse transfers. Of these, about one out of five had returned to another 4-year institution by 1994. Reverse transfer was more common among older beginning students, part-time students, and students who did not receive financial aid from the first institution. Reverse transfer was also more common among students who had low grades in the first year.

Transfer From Public 2-Year Colleges to 4-Year Institutions

About one-quarter of beginning students at community colleges were identified as prospective transfers: in their first year of college, they explicitly stated that they were working toward a bachelor's degree. Of this group, 39 percent had made a direct transition to a 4-year

institution by 1994, and another 6 percent entered a 4-year institution after an intermediate transfer to another subbaccalaureate institution. Community college students who transferred to 4-year institutions had lower rates of bachelor's degree completion relative to those who began in a 4-year institution, but comparable rates of overall persistence toward the bachelor's degree.

About one-third of community college transfers to 4-year institutions completed an associate's degree before they transferred. This group was much more likely than those who transferred without any credential to have completed a bachelor's degree by 1994.

In contrast with horizontal transfers from 4-year institutions, students who transferred from a community college to a 4-year institution often stopped out for an extended period between institutions. On average, they took almost 2 years off (21 months).

Prospective transfers who enrolled full-time in the first year were twice as likely as part-timers to transfer to a 4-year institution within 5 years. Even after controlling for a number of other characteristics in a multivariate model, enrollment status in the first year remains strongly related to the likelihood of transfer within 5 years.

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Appendix A: Reference Tables

Table A1—Percentage distribution of beginning postsecondary students according to level and control of first institution, by selected student characteristics: 1989–90

	4-year		2-year		Less-than-2-year		
	Public	Private not-for-profit	Public	Private not-for-profit	Public	Private not-for-profit	Private for-profit
Total	28.5	13.7	43.7	1.7	1.8	0.4	10.2
Gender							
Male	28.5	14.4	46.1	1.5	2.0	0.4	7.2
Female	28.4	13.2	41.7	1.9	1.7	0.3	12.7
Age as of 12/31/89							
Under age 20	35.9	17.5	37.3	2.0	1.2	0.1	6.1
20 or older	8.8	3.7	60.8	1.0	3.7	1.1	21.0
Socioeconomic status							
Bottom 25%	11.4	4.8	56.0	1.1	4.1	0.8	21.8
Middle 50%	24.7	9.5	49.0	2.0	2.0	0.5	12.4
Top 25%	39.0	21.8	33.3	1.7	0.9	0.0	3.4
Race–ethnicity							
Asian/Pacific Islander	36.2	14.6	43.3	0.5	0.1	0.4	5.1
Black, non-Hispanic	26.7	9.3	40.7	1.8	1.1	0.3	20.2
Hispanic	15.7	8.3	61.2	0.7	0.4	0.8	13.0
American Indian/ Alaskan Native	16.2	13.1	48.6	0.8	0.3	0.0	21.1
White, non-Hispanic	29.6	14.8	42.4	1.9	2.2	0.3	8.9
Highest degree expected 1989–90							
Less than a bachelor's degree	4.8	1.8	56.7	2.0	6.2	0.7	27.8
Bachelor's degree	29.4	11.3	49.5	2.1	0.6	0.3	6.8
Advanced degree	41.4	22.8	30.2	1.5	0.2	0.2	3.8

NOTE: Details may not sum to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Table A2—Percentage distribution (in columns) of beginning postsecondary students according to selected characteristics, by level and control of first institution: 1989–90

		4-year		2-year		Less-than-2-year		
	Total	Public	Private not-for-profit	Public	Private not-for-profit	Public	Private not-for-profit	Private for-profit
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Gender								
Male	46.0	46.5	48.6	49.0	40.8	50.7	48.7	33.1
Female	54.0	53.5	51.4	51.0	59.2	49.3	51.3	66.9
Race–ethnicity								
Asian/Pacific Islander	4.0	4.8	4.0	3.7	1.0	0.2	4.3	1.9
Black, non-Hispanic	8.8	8.6	6.2	8.5	9.4	5.5	6.9	18.2
Hispanic	7.6	4.4	4.8	11.1	3.2	1.5	17.7	10.2
American Indian/ Alaskan Native	0.7	0.4	0.6	0.7	0.3	0.1	0.0	1.4
White, non-Hispanic	78.8	81.9	84.4	75.9	86.2	92.8	71.1	68.4
Age as of 12/31/89								
Under age 20	72.3	91.5	92.7	61.9	84.2	45.8	16.5	43.5
20 or older	27.8	8.5	7.4	38.1	15.8	54.2	83.5	56.5
Socioeconomic status								
Bottom 25%	14.7	5.8	5.1	18.6	9.3	32.7	33.9	31.2
Middle 50%	45.7	39.5	31.6	51.1	52.0	48.4	63.1	55.6
Top 25%	39.7	54.7	63.3	30.3	38.7	19.0	3.0	13.2
Highest degree expected 1989–90								
Less than a bachelor's degree	21.9	3.6	2.8	29.0	24.0	81.4	43.9	60.3
Bachelor's degree	35.9	36.0	28.7	41.1	41.0	13.5	30.8	23.9
Advanced degree	42.1	60.3	68.5	29.9	35.1	5.1	25.3	15.8
Received financial aid 1989–90								
Received aid	45.7	48.5	72.3	27.8	57.7	47.0	84.5	77.7
No aid	54.3	51.6	27.7	72.2	42.3	53.0	15.5	22.3
Enrollment status 1989–90								
Full-time	70.4	88.9	94.2	48.5	87.0	74.0	74.8	86.2
Part-time	29.6	11.1	5.8	51.5	13.0	26.0	25.2	13.8
Grade point average 1989–90								
Not reported	25.3	14.9	19.4	25.7	31.2	77.1	79.6	45.4
Below 2.50	30.5	36.0	24.6	34.6	29.0	6.8	7.8	11.6
2.50–2.99	14.5	20.1	20.5	11.3	17.8	5.3	5.5	7.5
3.00–3.49	15.6	16.5	19.9	15.9	11.0	4.7	6.1	10.7
3.50 or higher	14.2	12.5	15.6	12.5	11.1	6.2	1.0	24.8

NOTE: Details may not sum to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Appendix B

Glossary

This glossary describes the variables used in this report. These items were taken directly from the Beginning Postsecondary Students Longitudinal Study Second Follow-up Data Analysis System (DAS), an NCES software application that generates tables directly from the BPS:90/94 data files. A description of the DAS files can be found in appendix C. The variables are organized in alphabetic order by label used in the tables. BPS:90/94 variable names are indicated to the right of each label.

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Age as of 12/31/89 **AGE**

This is a continuous variable that was aggregated to the following categories:

Under age 20	Student was younger than age 20 as of 12/31/89.
20 or older	Student was older than age 20 as of 12/31/89.

Attainment at first institution **DEGREEFS**

Degree attained, if any, at the first institution attended. For students who attained more than one degree at the first institution, first degree attained.

None/Did not attain	Student did not attain any degrees at the first institution.
Certificate	Student attained a certificate or other formal award at the first institution.
Associate's degree	Student attained an associate's degree at the first institution.
Bachelor's degree	Student attained a bachelor's degree at the first institution.

Attainment status at first transfer **TRAN1ATT**

Student's attainment status at the time of first transfer.

None	Student did not attain before transferring.
Certificate	Student attained a certificate before transferring.
Associate's degree	Student attained an associate's degree before transferring.

Positive values on this variable were also used to indicate the percentage of students who ever transferred during postsecondary education.

Control of first institution **OFCO8990**

Control of the base year sample institution.

Public	A postsecondary educational institution operated by publicly elected or appointed school officials in which the program and activities are under the control of these officials and that is supported primarily by public funds.
Private, not-for-profit	A postsecondary educational institution that is controlled by an independent governing board and incorporated under Section 501(c)(3) of the Internal Revenue Code.
Private, for-profit	A postsecondary educational institution that is privately owned and operated as a profit-making enterprise. These institutions include career colleges and proprietary institutions.

Control of transfer origin and destination **TRANCTL**

For students who transferred, this variable indicates the control of the institutions of origin and destination (first transfer).

From public to public	Student transferred from one publicly controlled institution to another.
From private to public	Student transferred from a private, not-for-profit institution to a publicly controlled institution.
From public to private	Student transferred from a publicly controlled institution to a private, not-for-profit institution.
From private to private	Student transferred from one private, not-for-profit institution to another.

Note: This variable was used only with respect to transfer from 4-year institutions. Transfers involving private, for-profit institutions were not represented.

Degree goal 1989–90 **GOAL8990**

Type of degree student reported working toward, if any, at the base year sample institution in academic year 1989–90.

Not working towards a degree	Student did not report working toward any formal award.
Certificate	Student reported working toward a certificate or formal award other than an associate's or bachelor's degree.
Associate's degree	Student reported working toward an associate's degree.
Bachelor's degree	Student reported working toward a bachelor's degree.

Degree program 1989–90 (institution-reported) **PROGTYP**

Type of program undergraduate was enrolled in during the 1989–90 academic year reported by the base year sample institution.

Associate's degree	Student was pursuing an associate of arts or associate of sciences degree.
Undergraduate certificate	Student was pursuing a certificate or other formal award other than an associate's or bachelor's degree.
Other undergraduate program	Student is not in any of the above programs.

Note: This variable was only used in tables restricted to students who began at a public, 2-year institution.

Enrollment and attainment status as of 1994 **ATTENRST**

Attained bachelor's degree	Student had attained a bachelor's degree as of spring 1994.
Enrolled at a 4-year institution	Student had not attained a bachelor's degree but was enrolled at a 4-year institution as of spring 1994.
Enrolled at a 2-year institution	Student had not attained a bachelor's degree but was enrolled at a 2-year institution as of spring 1994.

Enrolled at a less-than-2-year institution	Student had not attained a bachelor's degree but was enrolled at a less-than-2-year institution as of spring 1994.
Not enrolled	Student had not attained a bachelor's degree and was not enrolled as of spring 1994.

Enrollment status 1989–90 **ATTEND**

Intensity of enrollment in the sampled term of the survey year (fall 1989 for most students), as reported by the base year sample institution.

Full-time	Student was enrolled full time according to the institution's definition of full-time enrollment during the fall.
Part-time	Student was enrolled less than full time according to the institution's definition of less than full-time enrollment during the fall.

Ever attended a public or private, not-for-profit 4-year institution **EVER4YR**

Positive values on this variable were used to identify the percentage of students who reported ever attending a public or private, not-for-profit 4-year institution.

Ever stated working toward a bachelor's degree **PERABA**

Positive values on this variable were used to identify students who had said they were working toward a bachelor's degree at any time through spring 1994.

Gender **H_GENDR**

Male

Female

Grade point average 1989–90 **GPA**

Cumulative grade point average (GPA) at the base year sample institution over the 1989–90 academic year, as reported by the institution. The most recent GPA was used if the cumulative GPA was not available.

Not reported	Student's GPA was not reported.
Below 2.50	
2.50–2.99	
3.00–3.49	
3.50 or higher	

Note: It is possible that students for whom GPAs were not reported may not be randomly distributed across the GPA scale, thus causing a slight bias among reported GPAs.

Highest degree expected 1989–90 **ASPIRE**

Highest level of education that the student expected to complete. Recoded from the student's reported educational expectations in the base year survey.

Less than a bachelor's degree	Student expected to earn less than a bachelor's degree.
Bachelor's degree	Student expected to earn a bachelor's degree, but not an advanced degree.
Advanced degree	Student expected to earn a master's, doctoral, or first professional degree.

Note: In some tables, the last two categories were aggregated as "bachelor's degree or higher."

Level and control of first institution **OFCO8990**

Level and control of the base year sample institution.

4-year	An institution that offers 4-year baccalaureate degrees. These institutions may or may not also offer master's, doctoral, or first professional degrees in one or more programs as the highest degree awarded.
Public	Public, 4-year institution.
Private, not-for-profit	Private, not-for-profit, 4-year institution.

2-year	An institution whose program of study results in an award or degree below the baccalaureate level, and is at least 2 years but less than 4 years in duration. These institutions include many community and junior colleges.
Public	Public, 2- to 3-year institution.
Private, not-for-profit	Private, not-for-profit, 2- to 3-year institution.
Less-than-2-year	An institution whose normal program of study is less than 2 years in duration.
Public	Public, less-than-2-year institution.
Private, not-for-profit	Private, not-for-profit, less-than-2-year institution.
Private, for-profit	Private, for-profit institution. Includes all levels.

Note: In tables that aggregate this variable by level with subcategories for control, totals by level are limited to public and private, not-for-profit institutions.

Level of first institution **OFCO8990**

Level of the base year sample institution. Aggregates public, private not-for-profit, and private for-profit institutions according to level. See *Level and control of first institution* for definitions of levels.

4-year

2-year

Less-than-2-year

Level of transfer destination **TRANTO**

For students who transferred, level of the destination institution (first transfer). Aggregates public, private not-for-profit, and private for-profit institutions.

4-year

2-year

Less-than-2-year

Level of transfer origin and destination **TRANLVL**

For students who transferred, indicates the level of origin and destination institutions (first transfer). Aggregates public, private not-for-profit, and private for-profit institutions.

4-year to 4-year

2-year to 4-year

Less-than-2-year to 4-year

4-year to 2-year

2-year to 2-year

Less-than-2-year to 2-year

4-year to less-than-2-year

2-year to less-than-2-year

Less-than-2-year to less-than 2-year

Months between institutions **TRAN1GAP**

For students who transferred, elapsed time between last enrollment at origin (base year sample institution) and first enrollment at destination institution (first transfer). Set to zero if enrollment overlapped.

Months enrolled at first institution **TRAN1MOS**

For students who transferred, months enrolled at the base year sample institution prior to transfer. Months were not necessarily consecutive.

Number of institutions attended **NINSTOT**

Count of number of institutions attended during the period of analysis. Includes simultaneous or temporary enrollment at more than one institution as well as transfers.

One	Student attended one postsecondary institution.
Two	Student attended two postsecondary institutions.
Three or more	Student attended more than two postsecondary institutions.

Overall satisfaction with first institution **SATISFYN**

Number of aspects of the base year sample institution that the student reported being somewhat or very satisfied with, from among the following items asked about in the first follow-up survey: cost of the institution, prestige of the institution, teacher ability, social life, and intellectual development. Ranges from 0–5; collapsed into 3 categories based on the empirical distribution to produce categories of roughly equal size.

Low	Student reported being somewhat or very satisfied with three or fewer aspects of the institution.
Moderate	Student reported being somewhat or very satisfied with four aspects of the institution.
High	Student reported being somewhat or very satisfied with five aspects of the institution.

Race–ethnicity **BPSRACE**

Asian/Pacific Islander	A person having origins in any of the original 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.
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.
American Indian/Alaskan 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.
White, non-Hispanic	A person having origins in any of the original peoples of Europe, North Africa, or the Middle East (except those of Hispanic origin).

Received financial aid 1989–90 **AID8990**

Indicates whether student received non-family financial aid at the base year sample institution.

Did not receive aid	Student did not receive non-family financial aid from any source.
Received aid	Student received non-family financial aid from any source; including federal, state, institution, and other sources, during the academic year.

Satisfaction with academic counseling **SATNACNS**

Indicates availability and, where available, student use of and satisfaction with academic counseling at the base year sample institution (asked in the first follow-up survey).

Not available	Student reported that this service was not available at the institution.
Available	Student reported that this service was available (includes students who did and who did not use the service).
Did not use	Student did not use this service.
Used, dissatisfied	Student used this service and reported being somewhat or very dissatisfied with it.
Used, satisfied	Student used this service and reported being somewhat or very satisfied with it.

Satisfaction with cost of attending **SATNCOST**

Indicates whether student was satisfied with the cost of the base year sample institution (asked in the first follow-up survey).

Not satisfied	Student reported being somewhat or very dissatisfied with this aspect of the institution.
Satisfied	Student reported being somewhat or very satisfied with this aspect of the institution.

Satisfaction with financial aid counseling **SATNFCNS**

Indicates availability and where available, student use of and satisfaction with financial aid counseling at the base year sample institution (asked in the first follow-up survey).

For categories, refer to *Satisfaction with academic counseling*.

Satisfaction with institutional prestige **SATNPRES**

Indicates whether student was satisfied with the prestige of the base year sample institution (asked in the first follow-up survey).

For categories, refer to *Satisfaction with cost of attending.*

Satisfaction with intellectual growth **SATNINTL**

Indicates whether student was satisfied with his or her intellectual growth at the base year sample institution (asked in the first follow-up survey).

For categories, refer to *Satisfaction with cost of attending.*

Satisfaction with job counseling **SATNJCNS**

Indicates availability and where available, student use of and satisfaction with job counseling at the base year sample institution **(asked in the first follow-up survey)**.

For categories, refer to *Satisfaction with academic counseling*.

Satisfaction with job placement services **SATNJOBP**

Indicates availability and where available, student use of and satisfaction with job placement services at the base year sample institution **(asked in the first follow-up survey)**.

For categories, refer to *Satisfaction with academic counseling*.

Satisfaction with personal counseling **SATNPCNS**

Indicates availability and where available, student use of and satisfaction with personal counseling at the base year sampling institution **(asked in the first follow-up survey).**

For categories, refer to *Satisfaction with academic counseling*.

Satisfaction with social life **SATNSOCL**

Indicates whether student was satisfied with the social life of the base year sample institution **(asked in the first follow-up survey)**.

For categories, refer to *Satisfaction with cost of attending.*

Satisfaction with teacher ability **SATNTEAC**

Indicates whether student was satisfied with teacher ability at the base year sample institution **(asked in the first follow-up survey)**.

For categories, refer to *Satisfaction with cost of attending.*

Socioeconomic status **SESPERC**

Composite variable combining parents' educational attainment and occupational status, dependent student's family income, and the existence of a series of material possessions in respondent's home.

Bottom 25%	Socioeconomic status fell at or below the 25th percentile.
Middle 50%	Socioeconomic status fell between the 25th percentile and the 75th percentile.
Top 25%	Socioeconomic status fell at or above the 75th percentile.

Transfer status **TRANTO**

Indicates whether or not a student transferred and, for those who transferred, the level of the destination institution (first transfer).

Did not transfer	Student did not transfer.
Transferred to 4-year	Student transferred to a 4-year institution.
Transferred to less than 4-year	Student transferred to a 2-year or less-than-2-year institution.
Transferred to 2-year	Student transferred to a 2-year institution.
Transferred to less than 2-year	Student transferred to a less-than-2-year institution.
Transferred to unknown	Students transferred but characteristics of the destination institution could not be determined.

Notes: The last category is excluded from most tables and distributions. It is included in table 4 to provide a consistent total percentage who transferred. It can be obtained in the Data Analysis System by first filtering for those with valid values for TRAN1ATT (0-3). The remaining cases with missing values on TRANTO are those for whom the destination characteristics are unknown.

Transferred credits **CREDTRAN**

For students who attended more than one institution, indicates whether a student transferred credits between any institutions.

Appendix C

Technical Notes and Methodology

Beginning Postsecondary Students Longitudinal Study

The need for a nationally representative database on postsecondary student financial aid prompted the U.S. Department of Education to initiate the National Postsecondary Student Aid Study (NPSAS), a cross-sectional survey conducted every 3 years starting in 1987. The NPSAS sample was designed to include students enrolled in all types of postsecondary education. However, service academies were not included in the institution sample because of their unique funding and tuition base, and certain other institutions were also excluded.[40] In addition to a computer-assisted telephone interview (CATI) of students and parents, the NPSAS surveys collect students' registrarial and financial aid information directly from the sampled institutions. To provide the full range of information on financing postsecondary education, NPSAS samples both aided and nonaided students.

The Beginning Postsecondary Students Longitudinal Study (BPS:90/94) followed students from the NPSAS:90 sample who were identified as first-time beginning (FTB) students in academic year 1989–90. A CATI was conducted 2 and 4 years after the base year that collected information concerning enrollment, program completion, education financing, employment, and family formation; graduate school access and enrollment; and civic participation. The data derived from this survey permit a variety of analyses concerning postsecondary persistence and completion, entry into the work force, and civic participation.

Unlike other NCES longitudinal surveys based on grade-specific cohorts (such as High School and Beyond), the BPS design allows for the increasing numbers of "nontraditional" postsecondary students, such as those who have delayed their education due to financial needs or family responsibilities. Students who began their postsecondary studies before 1989–90, stopped out, and then returned to their studies in 1989–90 were not included, nor were students who were still enrolled in high school.

The NPSAS and 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 initially selected within geographical strata. Once institutions are

[40]Other excluded institutions were those offering only avocational, recreational, or remedial courses; those offering only in-house business courses; those offering only programs of less than 3 months' duration; and those offering only correspondence courses.

organized by zip code and state, they are further stratified by control (i.e., public; private, not-for-profit; or private, for-profit) and offering (less-than-2-year, 2-year, 4-year nondoctorate-granting, and 4-year doctorate-granting). Sampling rates for students enrolled at different institutions and levels (undergraduate or other) vary, resulting in better data for policy purposes, but at a cost to statistical efficiency.

For more information on BPS:90/94, consult *Beginning Postsecondary Students Longitudinal Study Second Follow-up (BPS:90/94) Final Technical Report* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 1996).

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 on 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 BPS:90/94 Data Analysis System (DAS). The DAS software makes it possible for users to specify and generate their own tables from the BPS data. With the DAS, users can replicate or expand upon the tables presented in this report. In addition to the table estimates, the DAS calculates proper standard errors[41] and weighted sample sizes for these estimates. For example, table C1 contains standard errors that correspond to table 5 in the text, and was generated by the DAS. If the number of valid cases is too small to produce a reliable estimate (fewer than 30 cases), the DAS prints the message "low-N" instead of the estimate.

In addition to tables, the DAS will 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 compute regression coefficients based on simple random sample assumptions, the standard errors must be adjusted with the design effects to take into account the NPSAS stratified sampling method. (See discussion under "Statistical Procedures" below for the adjustment procedure.)

[41]The NPSAS and 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.

For more information about the BPS:90/94 Data Analysis System, contact:

Aurora D'Amico
NCES Longitudinal Studies Branch
555 New Jersey Avenue, NW
Washington, DC 20208-5652
(202) 219-1365
Internet address: Aurora_D'Amico@ed.gov

Statistical Procedures

Two types of statistical procedures were employed in this report: testing differences between means, and adjustment of means after controlling for covariation among a group of variables. Each procedure is described below.

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, 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. Note that this formula is valid only for independent estimates. When the estimates were not independent (for example, when comparing a total percentage with that for a subgroup that is included in the total), a covariance term was added to the denominator of the *t*-test formula.

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

A second hazard in reporting statistical tests for each comparison occurs when making multiple comparisons among categories of an independent variable. For example, when making paired comparisons among different levels of income, the probability of a Type I error for these comparisons taken as a group is larger than the probability for a single comparison. When more

than one difference between groups of related characteristics or "families" are tested for statistical significance, one must apply a standard that assures a level of significance for all of those comparisons taken together.

Comparisons were made in this report only when p £ .05/*k* for a particular pairwise comparison, where that comparison was one of *k* tests within a family. This guarantees both that the individual comparison would have p £ .05 and that for *k* comparisons within a family of possible comparisons, the significance level for all the comparisons will sum to p £ .05.[42]

For example, in a comparison of the percentages of males and females who enrolled in postsecondary education only one comparison is possible (males versus females). In this family, *k*=1, and the comparison can be evaluated without adjusting the significance level. When students are divided into five racial–ethnic groups and all possible comparisons are made, then *k*=10 and the significance level of each test must be p £ .05/10, or p £ .005. The formula for calculating family size (*k*) is as follows:

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

where *j* is the number of categories for the variable being tested. In the case of race–ethnicity, there are five racial–ethnic groups (American Indian, Asian/Pacific Islander, black non-Hispanic, Hispanic, and white non-Hispanic), so substituting 5 for *j* in equation 2,

$$k = \frac{5(5-1)}{2} = 10$$

Adjustment of Means to Control for Background Variation

Tabular results are limited by sample size when attempting to control for additional factors that may account for the variation observed between two variables. For example, when examining the percentages of those who completed a degree, it is impossible to know to what extent the observed variation is due to socioeconomic status (SES) differences and to what extent it is due to differences in other factors related to SES, such as type of institution attended, intensity of enrollment, and so on. However, if a nested table were produced showing SES within type of institution attended, within enrollment intensity, the cell sizes would be too small to identify the patterns. When the sample size becomes too small to support controls for another level of variation, one must use other methods to take such variation into account.

To overcome this difficulty, multiple linear regression was used to obtain means that were adjusted for covariation among a list of control variables. Adjusted means for subgroups were obtained by regressing the dependent variable on a set of descriptive variables such as gender,

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

race–ethnicity, SES, etc. Substituting ones or zeros for the subgroup characteristic(s) of interest and the mean proportions for the other variables results in an estimate of the adjusted proportion for the specified subgroup, holding all other variables constant. For example, consider a hypothetical case in which two variables, age and gender, are used to describe an outcome, *Y* (such as attaining a degree). The variables age and gender are recoded into a dummy variable representing age, *A*, and a dummy variable representing gender, *G*:

Age	*A*
24 years or older	1
Under 24 years old	0

and

Gender	*G*
Female	1
Male	0

The following regression equation is then estimated from the correlation matrix output from the DAS:

$$\hat{Y} = a + b_1 A + b_2 G \tag{3}$$

To estimate the adjusted mean for any subgroup evaluated at the mean of all other variables, one substitutes the appropriate values for that subgroup's dummy variables (1 or 0) and the mean for the dummy variable(s) representing all other subgroups. For example, suppose *Y* represents attainment, and is being described by age (*A*) and gender (*G*), coded as shown above, with means as follows:

Variable	Mean
A	0.355
G	0.521

Next, suppose the regression equation results in:

$$\hat{Y} = 0.15 + 0.17A + 0.01G$$

To estimate the adjusted value for older students, one substitutes the appropriate parameter estimates and variable values into equation 3.

Variable	Parameter	Value
a	0.15	—
A	0.17	1.000
G	0.01	0.521

This results in:

$$\hat{Y} = 0.15 + (0.17)(1) + (0.01)(0.521) = 0.325$$

In this case the adjusted mean for older students is 0.325 and represents the expected outcome for older students who look like the average student across the other variables (in this example, gender). In other words, the adjusted percentage who attained after controlling for age and gender is 32.5 percent (0.325 x 100 for conversion to a percentage).

It is relatively straightforward to produce a multivariate model using the DAS, since one of the DAS output options is a correlation matrix, computed using pair-wise missing values.[43] This matrix can be used by most statistical software packages as the input data for least-squares regression. That is the approach used for this report, with an additional adjustment to incorporate the complex sample design into the statistical significance tests of the parameter estimates (described below). For tabular presentation, parameter estimates and standard errors were multiplied by 100 to match the scale used for reporting unadjusted and adjusted percentages.

Most statistical software packages assume simple random sampling when computing standard errors of parameter estimates. Because of the complex sampling design used for the BPS surveys, this assumption is incorrect. A better approximation of their standard errors is to multiply each standard error by the design effect associated with the independent variable (DEFT),[44] where the DEFT is the ratio of the true standard error to the standard error computed under the assumption of simple random sampling. It is calculated by the DAS and produced with the correlation matrix.

[43]Although the DAS simplifies the process of making regression models, it also limits the range of models. Analysts who wish to use other than pairwise treatment of missing values or to estimate probit/logit models can apply for a restricted data license from NCES.

[44]The adjustment procedure and its limitations are described in C.J. Skinner, D. Holt, and T.M.F. Smith, eds., *Analysis of Complex Surveys* (New York: John Wiley & Sons, 1989).

Table C1—Standard errors corresponding to table 5

	Total	4-year	2-year	Less-than-2-year
Total	1.13	1.08	1.95	2.26
Control of first institution				
Public	1.45	1.42	2.15	5.58
Private, not-for-profit	1.72	1.57	4.83	8.43
Private, for-profit	2.06	—	3.57	2.38
Attainment at first institution[1]				
Did not attain	1.46	1.78	2.21	3.68
Attained, total	1.44	0.40	3.48	2.56
Certificate	2.33	—	4.52	2.56
Associate's degree	3.58	6.40	3.87	—
Bachelor's degree	([2])	([2])	([2])	([2])
Grade point average 1989–90				
Not reported	1.95	2.24	3.26	3.48
Below 2.50	1.94	1.73	3.20	6.45
2.50–2.99	2.70	1.96	5.33	5.46
3.00–3.49	2.68	1.84	4.88	5.54
3.50 or higher	2.57	2.26	4.98	3.36
Highest degree expected 1989–90				
Less than a bachelor's degree	2.11	4.87	2.93	2.56
Bachelor's degree	1.99	1.74	3.27	5.58
Advanced degree	1.64	1.22	3.41	8.83
Socioeconomic status				
Bottom 25%	2.33	3.21	3.45	2.92
Middle 50%	1.58	1.52	2.53	3.07
Top 25%	1.69	1.41	3.39	8.71

—Too few cases for a reliable estimate.
[1]For those who attained more than 1 degree at the first institution, first degree attained.
[2]Not applicable. Students who attained a bachelor's degree at first institution are not eligible for transfer (see text), and less-than-4-year institutions do not award bachelor's degrees.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.