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**Competing Choices:
Men's and Women's Paths
After Earning a Bachelor's Degree**

Michael S. Clune
Anne-Marie Nuñez
Susan P. Choy
MPR Associates, Inc.

C. Dennis Carroll
Project Officer
National Center for Education Statistics

**U.S. Department of Education
Office of Educational Research and Improvement**

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Rod Paige
Secretary

National Center for Education Statistics

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Executive Summary

During the last 30 years, women have made great strides in educational attainment, particularly in participating in postsecondary education, where they not only enroll and attain at higher rates than men but also do better academically and have higher educational expectations, on average (U.S. Department of Education 2000; Berkner, McCormick, and Cuccaro-Alamin 1996; NPSAS:93 Data Analysis System; McCormick et al. 1999). However, the superior performance of women at the undergraduate level has not translated into greater enrollment than males at the graduate level or enrollment rates equal to males in all types of graduate programs (McCormick et al. 1999).

At the same time that young adults are making decisions about graduate study and employment after earning their bachelor's degree, many are also facing choices about marriage and parenthood. These latter life transitions may play a greater role in women's decisions about schooling and employment at this juncture because women generally marry and have children at younger ages than do men. Thus, choices about getting married and having children may compete with choices about employment and graduate study more for women than for men. This report aims to provide a context for understanding the paths that women and men take toward graduate degrees, employment, marriage, and parenthood during the first 4 years after earning their bachelor's degree. In particular, the analysis seeks to identify how these behaviors are interrelated.

This analysis draws upon data from the 1993 Baccalaureate and Beyond Longitudinal Study (B&B:1993/1997), which identified students who received their bachelor's degree during academic year 1992–93. The analysis also used follow-up surveys conducted in 1994 and 1997 to trace changes in employment and graduate enrollment, along with changes in marital status and entry into parenthood. In order to obtain complete information about graduates' paths 4 years after degree receipt, this analysis was limited to graduates who responded to the second follow-up survey in 1997. The findings of the report are summarized below.

Gender Differences

Women's and men's characteristics and experiences differed both at the time they received their bachelor's degree and during the next 4 years.

Characteristics at Bachelor's Degree Receipt

Among 1992–93 bachelor's degree recipients, women differed from men on a number of characteristics, including age, marital and parenthood status, undergraduate major, grade-point average (GPA), and educational aspirations. Compared with men, women were more likely to be under age 23 (51 percent vs. 42 percent) or over age 29 (19 percent vs. 13 percent). They were also more likely than men to have married (29 percent vs. 24 percent) and to have children (16 percent vs. 12 percent) by the time they graduated.

With respect to their undergraduate experiences, women were more likely than men to major in certain fields, most notably education (18 percent vs. 6 percent) and health professions (10 percent vs. 4 percent). Men, in contrast, were more likely than women to major in business and management (26 percent vs. 19 percent) and engineering (12 percent vs. 2 percent). Women graduated with higher GPAs than men: 61 percent of women had GPAs of 3.0 or higher, compared with 49 percent of men.

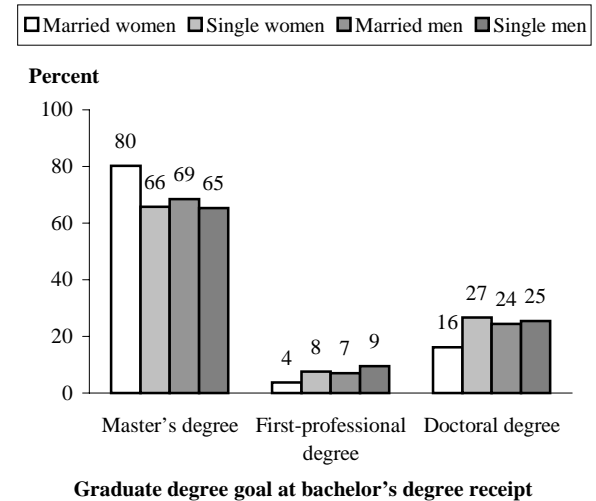
Finally, at the time they earned their bachelor's degree, women were more likely than men to expect to earn a graduate degree (87 percent vs. 83 percent). Marital status as well as gender was related to educational plans, with single¹ women being more likely to expect to earn a graduate degree (89 percent) than married women (83 percent) and both married and single men (82 percent and 84 percent, respectively). Among those expecting to earn a graduate degree, married women were less likely than single women and both married and single men to expect to earn a first-professional or doctoral degree (figure A).

Experiences After Graduation

During the first 4 years after graduation, women and men had different experiences with respect to marriage, parenthood, graduate enrollment, graduate attainment, and employment. Among those who had not married by the time they graduated, women were more likely than men to have married within 4 years (32 percent vs. 28 percent) (figure B).

Entry into parenthood occurred at lower rates than marriage. Within 4 years, 13 percent of bachelor's degree recipients who were not parents

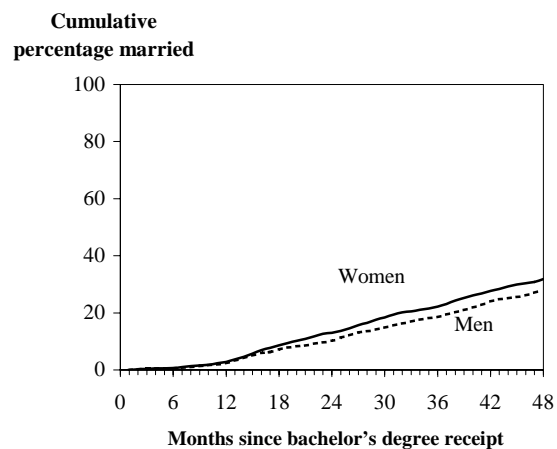
Figure A.—Among 1992–93 bachelor's degree recipients who expected to earn a graduate degree, percentage distribution according to degree expected at the time of bachelor's degree receipt, by marital status and gender



NOTE: Percentages may not sum to 100 due to rounding. "Single" means never been married; "married" means married at time of bachelor's degree receipt.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Figure B.—Among 1992–93 bachelor's degree recipients who at the time of graduation had never been married, cumulative percentage married each month for the next 4 years, by gender



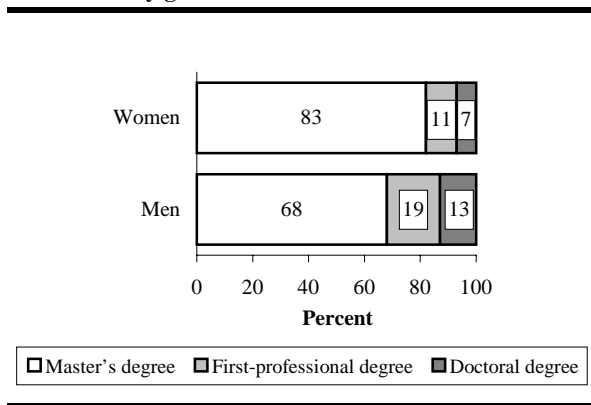
SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

¹Throughout the report, "single" refers to individuals who have never been married.

at graduation became parents. As with marriage, women were more likely than men to make this transition (15 percent vs. 11 percent).

After 4 years, 29 percent of bachelor's degree recipients had enrolled in a graduate degree program. While women and men were equally likely to enroll, women were more likely to enroll in master's degree programs and men were more likely to enroll in first-professional and doctoral programs (figure C).

Figure C.—Among 1992–93 bachelor's degree recipients who enrolled in a graduate degree program within 4 years of graduation, percentage distribution by highest level of enrollment, by gender



NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Fifteen percent of the 1992–93 bachelor's degree recipients earned a graduate degree within 4 years. While women and men were about equally likely to earn a graduate degree within this time frame (16 percent and 15 percent, respectively), among those who did, men were more likely to earn a first-professional or doctoral degree. Among those who earned a graduate degree, 13 percent of women and 23 percent of men earned a first-professional or doctoral degree.

Women and men were about equally likely to be employed during the first 4 years after earning their bachelor's degree, but among those working, men were more likely to be employed full time. For example, 2 years after graduation, 84 percent of women and 86 percent of men were employed; however, 92 percent of employed men were working full time, compared with 87 percent of employed women.

Age, Major, and Grade-Point Average

In addition to gender, several other characteristics of bachelor's degree recipients were related to their patterns of marriage, parenthood, graduate enrollment and attainment, and employment. These characteristics include age at graduation, undergraduate field of study, and undergraduate GPA.

First, older graduates were more likely to have married before earning their bachelor's degree. Among women who had not married by the time they graduated, women under 30 were more likely than women who were older to marry within the next 4 years. For both men and women, those ages 25–29 at graduation were more likely than those in other age groups to become parents within 4 years of graduation. Age was a factor for graduate enrollment as well, with both men and women who were age 22 or younger when they earned their bachelor's degree more likely than older graduates to enter graduate school within 4 years after graduation.

Second, graduates who majored in professional fields² as a group were more likely to be married and to have children before graduating, compared with graduates who majored in the arts and sciences. Those majoring in the arts and sciences

²Business and management, education, engineering, health professions, and public affairs/social services.

were more likely than those in professional fields to enroll in a graduate program. Probably due to their higher levels of graduate enrollment, bachelor's degree recipients who majored in the arts and sciences were less likely to be employed during the first 4 years following graduation.

Finally, graduates with higher GPAs were more likely to be married and have children before graduating. Those with higher GPAs were also more likely to enroll in a graduate program, enroll in a first-professional or doctoral program, and attain a graduate degree within 4 years of bachelor's degree receipt.

Interrelationships Among Transitions

In general, marriage, parenthood, graduate enrollment and attainment, and employment appeared to have different interrelationships for women and men.

Marriage

Graduate enrollment and marriage were negatively related for women, but not for men. Thirty-three percent of women who did not enroll in a graduate program within 4 years of bachelor's degree receipt married during that period, compared with 29 percent of those who did enroll. In contrast, the marriage rate for men was about the same whether they enrolled (27 percent) or not (29 percent).

Parenthood

Graduate enrollment and parenthood were negatively related for both men and women: 12 percent of men and 16 percent of women who did not enroll in a graduate program within 4 years of bachelor's degree receipt became parents during

that time. In contrast, 9 percent of men and 10 percent of women who enrolled did so. Women who enrolled in first-professional or doctoral programs were less likely to marry and become parents than were those who enrolled in master's programs.

Graduate School Enrollment and Attainment

Marriage and parenthood are more related to graduate outcomes for women than for men. Compared with women who did not marry before earning their bachelor's degree, women who did marry before earning their bachelor's degree were less likely to enroll in a graduate program or to enroll in a first-professional or doctoral degree program. Similarly, women who married before graduation were less likely to attain a graduate degree, and, among those who attained, less likely to attain a first-professional or doctoral degree. Similar consistent negative links to graduate enrollment and attainment were observed among women who became parents after graduation.

Among men, marriage before earning a bachelor's degree was related to a lower rate of enrollment in graduate school, but marriage within the next 4 years was not related to the rate of enrollment. In addition, marriage after graduation was not related to the type of degree program chosen. Among men who enrolled, neither marriage nor parenthood were related to men's graduate degree attainment.

Employment

While men and women were about equally likely to be employed after earning their bachelor's degree, differences existed according to marital and parenthood status. Among those who married before graduating, women were generally

less likely than men to work after graduating. In contrast, among graduates who did not marry within 4 years of graduating, women were generally more likely than men to be employed. Parenthood negatively affected women's employment: women who became parents either before or within 4 years after graduating were less likely than men to work.

Effects of Marriage and Parenthood on Graduate Enrollment After Controlling for Other Variables

For this report, multivariate analyses were conducted to examine the net effects of parenthood and marriage on enrolling in a graduate degree program after taking into account variables other than gender that might be related to graduate enrollment—such as age, race/ethnicity, parents' education, and undergraduate education (control and level of institution, major, and GPA). Analyses were conducted for women and men separately.

For women, marriage before bachelor's degree receipt was negatively related to graduate enrollment. After controlling for other characteristics, 23 percent of women who married before receiving their bachelor's degree enrolled in graduate

school, compared with 33 percent of women who had not yet married 4 years after earning their bachelor's degree. Marriage was not significantly related to graduate enrollment for men, however, after controlling for other characteristics.

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Foreword

This report aims to provide a context for understanding women's and men's paths toward graduate degrees, employment, marriage, and parenthood during the first 4 years after earning their bachelor's degree. The first section provides a profile of male and female bachelor's degree recipients in 1992–93, examining their demographic and educational characteristics, including their postbaccalaureate degree expectations. The second and third sections describe transitions into marriage, parenthood, graduate enrollment and attainment, and postbaccalaureate employment. Several aspects of each outcome of interest are studied, including the overall rates, annual rates, rates at specific points in time, and additional characteristics of the transition (such as the degree program for graduate enrollment). The fourth section revisits the postgraduate transitions studied in sections two and three, but focuses on their interrelationships. The fifth, and final, section describes attempts to identify the net effects of individual variables on the likelihood of graduate enrollment after controlling for other related variables.

The report uses data collected through the 1992–93 Baccalaureate and Beyond Longitudinal Study (B&B:1993) and the two follow-ups conducted in 1994 and 1997 (B&B:1993/1994 and B&B:1993/1997). The B&B Study tracks the experiences of a cohort of college graduates who received their bachelor's degrees during the 1992–93 academic year and were first interviewed as part of the 1992–93 National Postsecondary Student Aid Study (NPSAS:1993). The B&B panel used for this report consists of the 83 percent of NPSAS:1993 respondents who participated in all three rounds of interviews. This panel was weighted to represent all 1992–93 bachelor's degree recipients. Detailed information on this survey is available on the NCES website: <http://nces.ed.gov>.

The estimates presented in this report were produced using the B&B:1993/1997 Data Analysis System (DAS). The DAS is a microcomputer application that allows users to specify and generate their own tables from the B&B:1993/1997 data and is available for public use through the NCES website. The DAS produces the design-adjusted standard errors necessary for testing the statistical significance of differences shown in these tables. Additional information about the DAS is included in appendix B of this report and on the NCES website at <http://nces.ed.gov/das>.

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Introduction

During the last 30 years, women have made great strides in educational attainment, particularly in participating in postsecondary education, where they not only enroll and attain at higher rates than men but also do better academically and have higher educational expectations, on average. Among 1998 high school graduates, 69 percent of women, compared with 62 percent of men, were enrolled in postsecondary education the October following their high school graduation (U.S. Department of Education 2000). Among students who began postsecondary education during 1989–90, women were more likely than men to have attained a bachelor's degree by 1994 (61 percent vs. 53 percent) (Berkner, McCormick, and Cuccaro-Alamin 1996). Among 1992–93 bachelor's degree recipients, women reported a higher average grade-point average (GPA) than men (3.11 vs. 2.98) (NPSAS:93 Data Analysis System). In 1993, 87 percent of female bachelor's degree recipients reported that they expected to earn a graduate degree, compared with 83 percent of their male counterparts (McCormick et al. 1999).

However, the superior performance of women at the undergraduate level has not translated into greater enrollment than men at the graduate level or enrollment rates equal to men in all types of graduate programs. Four years after earning a bachelor's degree, women were no more likely than men to have enrolled in a graduate degree program. In each case, about 30 percent enrolled (McCormick et al. 1999). Furthermore, among those who enrolled in a graduate program, men were nearly twice as likely as women to enroll in an MBA, first-professional, or doctoral degree program (46 percent vs. 24 percent, respectively). Three-quarters of women and 54 percent of men enrolled in a master's program other than an MBA.

Why are women not entering graduate school at higher rates than men, given their higher undergraduate GPAs and degree expectations? Why are women so much less likely to pursue MBA, first-professional, and doctoral degrees? One explanation might be that men and women choose different undergraduate fields of study. Another contributing factor might be differences in the age distribution of bachelor's degree recipients. However, there is another set of factors that may also influence levels of graduate enrollment and attainment by gender—the competing choices women and men face after receiving the bachelor's degree. During these years, graduate study and employment are just two areas in which young adults make choices. In addition, many are also making decisions about marriage and becoming parents. While both men and women make such decisions during the early years after receiving the bachelor's degree, these issues may

influence women's decisions about schooling and employment more than men's because women generally marry and enter parenthood at younger ages. In 1998, the estimated median age at marriage for women was 25.0, compared with 26.7 for men (Lugaila 1998). In addition, traditional roles assign women greater responsibility for household work and child care and, therefore, less freedom to pursue career ambitions (Hochschild 1989). Thus, choices regarding marriage and parenthood may affect choices about employment and graduate study more for women than for men.

Research Questions

This analysis aims to provide a context for understanding women's and men's paths toward postgraduate degrees, employment, marriage, and parenthood during the 4 years after earning their bachelor's degree. In doing so, the analysis seeks to identify how these transitions are inter-related and how specific characteristics of employment and enrollment are related to marital status and parenthood. Specifically, the report examines the following questions:

- What are the patterns of transition into marriage, parenthood, graduate study, and employment during the first 4 years after college? How do these patterns differ for women and men? What other characteristics, such as age and undergraduate field of study, help explain differences in the postgraduate behaviors of women and men?
- What are the interrelationships among types of transitions? For example, how do enrollment transitions vary by gender and marital status? How do marital transitions vary by enrollment status?
- Are the interrelationships among the various types of postgraduate transitions stronger for women or men? For example, does becoming a parent have a stronger influence on women's likelihood of graduate enrollment than it does for men?

Data and Measurement Issues

This analysis draws upon data from the 1993 Baccalaureate and Beyond Longitudinal Study (B&B:1993/1997), which identified students who received their bachelor's degree during academic year 1992–93. The analysis also used follow-up surveys conducted in 1994 and 1997 to trace changes in employment and graduate enrollment, along with changes in marital status and entry into parenthood. In order to obtain complete information about graduates' paths 4 years after degree receipt, this analysis was limited to graduates who responded to the second follow-up survey in 1997.

Transitions

This report examines five possible transitions in the lives of bachelor's degree recipients during the years immediately following graduation: marriage, parenthood, graduate enrollment, graduate attainment, and employment. In the initial survey conducted in 1992–93, respondents indicated both their marital and parenthood status. In the 1994 and 1997 follow-up surveys, respondents reported any changes in status, the dates of these changes, monthly patterns of enrollment and employment, and the timing and nature of graduate degree receipt. Using the data collected in these surveys, this report looks at the following outcomes:

- *Transitions before bachelor's degree receipt*—Some bachelor's degree recipients have already married, become parents, or both by the time they graduate. This analysis examines the proportions of bachelor's degree recipients who had made these transitions before earning their bachelor's degree.
- *Transitions within 4 years of bachelor's degree receipt*—While marriage and enrollment are not necessarily permanent states, having ever married or ever enrolled in graduate school are important transitions. This analysis examines the proportion of bachelor's degree recipients who made transitions into marriage, parenthood, graduate enrollment, or graduate attainment during the first 4 years after graduation.
- *Annual transitions during the first 4 years after bachelor's degree receipt*—Understanding patterns of postgraduate transitions requires further scrutiny beyond the total proportion of graduates ever making a transition. The timing of transitions and whether they are rising or declining is also of interest. This analysis examines the proportions of graduates who made transitions during each year after graduation among those who had not previously made such a transition.
- *Proportions enrolled and employed*—Enrollment and employment are not permanent states, and virtually all graduates become employed at some time during the early years after bachelor's degree receipt. To better understand their patterns of enrollment and employment, the proportions of graduates who were enrolled and employed are examined at specific points in time, namely the 12th, 24th, 36th, and 48th months following receipt of the bachelor's degree.
- *Characteristics of enrollment, attainment, and employment*—Students may enroll or attain at three different graduate program levels (master's, first-professional, and doctoral). In addition, enrollment and employment may be full time or part time. These characteristics of enrollment and employment are considered in the analysis.

Comparison Groups

In examining each outcome described above, this report examines a range of demographic and educational characteristics of graduates that might influence outcomes during the years following graduation. The report also examines how the outcomes are interrelated. One hypothesis

is that marriage and parenthood affect the likelihood of enrollment and employment, especially for women; another is that enrollment affects the likelihood of marriage and childbearing. Because the relationships between the demographic transitions and enrollment behavior are likely to be further complicated by other background characteristics, a multivariate analysis was conducted to determine the effect of marriage and parenthood on graduate enrollment, net of background characteristics such as age and major.

The analysis considers several contrasts. First, it considers differences between women and men; these differences are considered for all women and men and also between women and men with similar characteristics, such as women and men under age 23 at bachelor's degree receipt. Second, the analysis considers differences within gender. For example, female graduates under age 23 at the time of bachelor's degree receipt are compared with older female graduates, and similar comparisons are made for men. Third, the analysis considers changes in the likelihood of an event occurring over time. For women and men overall and within groups organized by characteristics, the likelihood of an event occurring during the first year after graduating is compared with the likelihood of such an event happening at a later time.

The Timing of Postbaccalaureate Events

When studying events that occur over time, it is often not helpful to take measurements at a calendar point in time. For example, it would have been possible to measure enrollment in graduate school by June 1997 for 1992–93 bachelor's degree recipients. For most 1992–93 graduates, June 1997 represents a date approximately 4 years after their graduation in spring 1993. However, for others who graduated in summer 1992, June 1997 is approximately 5 years after graduation. Thus, the estimate of enrollment 4 years later would be biased upward because those who graduated in summer 1992 would have been exposed to the possibility of enrolling in graduate school for a longer period than those who graduated in spring 1993. The same problem arises when looking at the likelihood of an event occurring during a particular month. For example, those who graduated in July 1992 should have been more likely than those who graduated in May 1993 to marry during June 1993.

Instead of measuring outcomes by a particular calendar date, this analysis uses the month of graduation as the baseline for measuring later events—that is, event timing is measured according to the number of months that have elapsed since graduation. As a result, it is possible to measure graduate enrollment for all 1992–93 graduates with the same amount of exposure to the possibility of enrolling in graduate school. Sample members include graduates who received their bachelor's degree any time from July 1992 through June 1993. The second follow-up interviews were conducted from April through December 1997. Respondents were asked about their be-

haviors from the date of bachelor's degree receipt to the second follow-up interview. Thus, the longest observation period is for a July 1992 graduate who completed the second interview during December 1997, a period of 66 months, while the shortest is for a June 1993 graduate who completed the second interview in April 1997, a period of 47 months. Because the number of respondents with 47-month observation periods is relatively small, the analysis uses the 4-year cut-off of 48 months as a point of measurement. Consequently, postgraduate behaviors and events are measured through June 1996 for those who graduated in July 1992 and through May 1997 for those who graduated in June 1993.

Report Organization

This report is organized into five sections. The first section provides a profile of female and male bachelor's degree recipients in 1992–93, examining their demographic and educational characteristics and the first set of transitions described above—those they made before receiving their bachelor's degree. The second and third sections look at the transitions made during the first 4 years after earning their bachelor's degree, emphasizing marriage, parenthood, graduate school enrollment, graduate degree attainment, and postbaccalaureate employment. In these sections, several aspects of each outcome of interest are studied, including the overall rates, annual rates, rates at specific points in time, and additional characteristics of the transition (such as the degree program for graduate enrollment). The fourth section revisits the postgraduate transitions studied in sections two and three, but focuses on their interrelationships. The fifth, and final, section describes attempts to identify the net effects of individual variables on the likelihood of graduate enrollment after controlling for other related variables.

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Profile of 1992–93 Bachelor’s Degree Recipients

Women’s and men’s behaviors during the early years after earning their bachelor’s degree are likely to be related to their characteristics and situations before graduation. Therefore, this section reviews how women and men differed with respect to their demographic characteristics, educational experiences, and degree aspirations when they received their bachelor’s degree.

At graduation, women and men differed on a number of demographic characteristics, notably age, marital status, and parenthood status (table 1). Among 1992–93 bachelor’s degree recipients, women (51 percent) were more likely than men (42 percent) to be 22 years or younger (figure 1). Women were also more likely than men to be in the oldest age category: a higher percentage of women (19 percent) than men (13 percent) were age 30 or older when they graduated. Conversely, men tended to be more concentrated than women in the 23–24 and 25–29 age categories when they graduated (30 percent vs. 20 percent, and 15 percent vs. 10 percent, respectively). In addition, women were more likely than men to be married and to have children at the time they graduated. Twenty-nine percent of women were married when they graduated, compared with 24 percent of men, and 16 percent of women had children, compared with 12 percent of men (figure 2).

Women and men who received their bachelor’s degree during 1992–93 also differed on certain characteristics related to their undergraduate education, including time to graduation, type of institution attended, field of study, and GPA (table 2). Women were more likely than men to complete their bachelor’s degree in 4 or fewer years (40 percent vs. 31 percent). Also, although similar proportions of men and women graduated from public or private institutions, men were more likely than women to graduate from doctorate-granting institutions.

In terms of their undergraduate fields of study, women and men had made quite different choices. Figure 3 shows the percentages of men and women who majored in each field, arrayed to show first the fields in which men were more likely to major than women, then the fields in which women were more likely to major than men.¹ About equal percentages of women majored in education (18 percent) and business and management (19 percent), although women were more likely than men to major in education (18 percent vs. 6 percent) and less likely than men to major in business and management (19 percent vs. 26 percent). In addition, women’s under-

¹Men and women were about equally likely to major in one field shown in table 2: public affairs/social services.

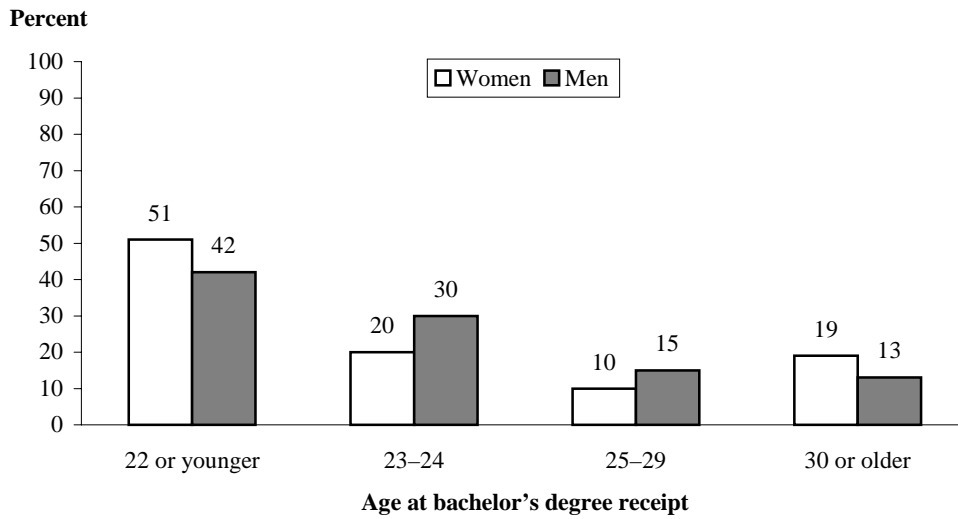
Table 1.—Percentage distribution of 1992–93 bachelor’s degree recipients according to selected demographic characteristics, by gender

	Total	Women	Men
Total	100.0	100.0	100.0
Age received bachelor’s degree			
22 or younger	46.7	50.7	42.0
23–24	24.6	20.3	29.8
25–29	12.3	10.2	14.9
30 or older	16.4	18.9	13.3
Race/ethnicity			
American Indian/Alaskan Native	0.6	0.8	0.4
Asian/Pacific Islander	4.6	3.8	5.5
Black, non-Hispanic	5.9	7.2	4.4
Hispanic	5.1	5.6	4.5
White, non-Hispanic	83.4	82.2	84.9
Other	0.4	0.4	0.3
Parents’ educational attainment			
Less than high school	4.6	5.3	3.8
High school or equivalency	26.8	27.9	25.4
Some postsecondary education	19.3	19.7	18.9
Bachelor’s degree	23.8	22.9	24.9
Advanced degree	25.5	24.2	27.0
Marital status at bachelor’s degree receipt			
Married	26.4	28.6	23.6
Separated	0.5	0.7	0.2
Divorced	3.2	4.3	1.8
Widowed	0.2	0.4	0.0
Cohabiting, not married	1.4	1.4	1.4
Single, never been married	68.4	64.6	73.0
Parenthood status at bachelor’s degree receipt			
No children	86.1	84.2	88.3
One or more children	14.0	15.8	11.7

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

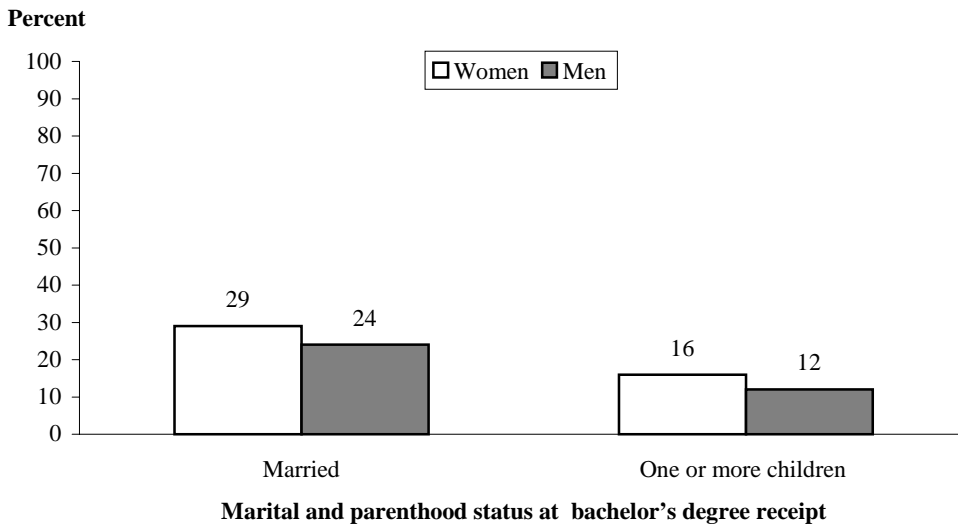
Figure 1.—Percentage distribution of 1992–93 bachelor’s degree recipients according to age at the time of bachelor’s degree receipt, by gender



NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Figure 2.—Percentages of 1992–93 bachelor’s degree recipients who were married and who had children when they graduated, by gender



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

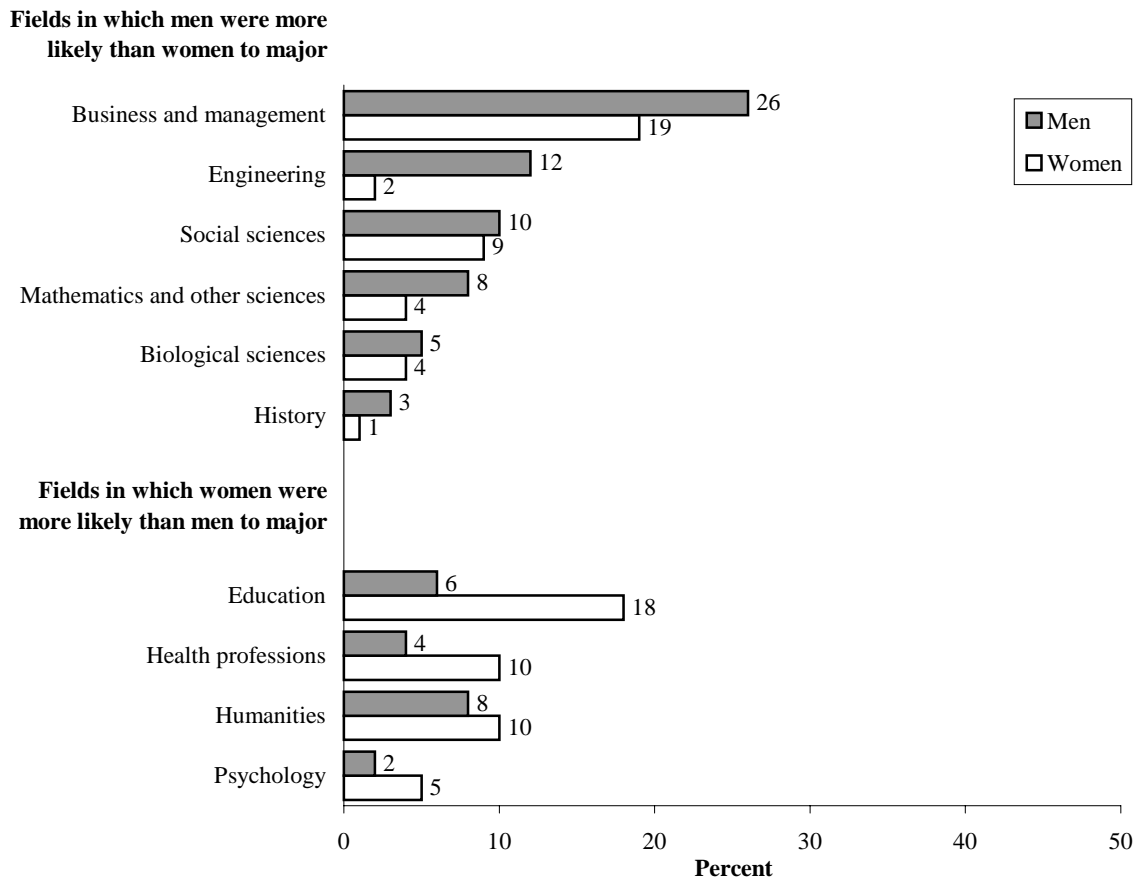
Table 2.—Percentage distribution of 1992–93 bachelor’s degree recipients according to selected enrollment characteristics, by gender

	Total	Women	Men
Total	100.0	100.0	100.0
Timing of postsecondary enrollment			
Immediately following high school	82.1	82.6	81.6
Delayed 1 year	6.9	6.2	7.8
Delayed 2 or more years	10.9	11.2	10.6
Time to bachelor’s degree			
Four or fewer years	35.7	39.5	31.1
More than 4, up to 5 years	27.8	25.7	30.3
More than 5 years	36.5	34.7	38.6
Degree-granting institution control			
Public 4-year	66.8	65.8	68.0
Private, not-for-profit 4-year	31.7	32.9	30.4
Private, for-profit	1.5	1.3	1.7
Degree-granting institution level			
Nondoctorate	43.2	45.8	40.1
Doctorate	55.3	52.5	58.6
Other	1.5	1.7	1.3
Attendance at 2-year institution			
Never attended	69.6	68.7	70.7
Attended	30.4	31.3	29.4
Baccalaureate degree major			
Professional fields	51.6	52.4	50.6
Business and management	22.1	19.0	25.8
Education	12.6	18.0	6.1
Engineering	6.1	1.6	11.5
Health professions	7.5	10.2	4.2
Public affairs/social services	3.3	3.7	2.9
Arts and sciences	34.4	33.1	35.8
Biological sciences	4.4	3.9	5.0
Mathematics/other sciences	5.7	4.2	7.5
Social science	9.4	8.6	10.4
History	1.9	1.3	2.6
Humanities	9.2	10.1	8.2
Psychology	3.7	5.1	2.1
Other	14.1	14.5	13.6
GPA at bachelor’s degree institution			
Under 2.5	15.1	12.0	18.9
2.5 to 2.99	29.0	26.6	32.0
3.0 to 3.49	33.0	34.2	31.5
3.5 or above	22.9	27.2	17.7

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Figure 3.—Percentage of 1992–93 bachelor’s degree recipients with undergraduate majors in various fields, by gender

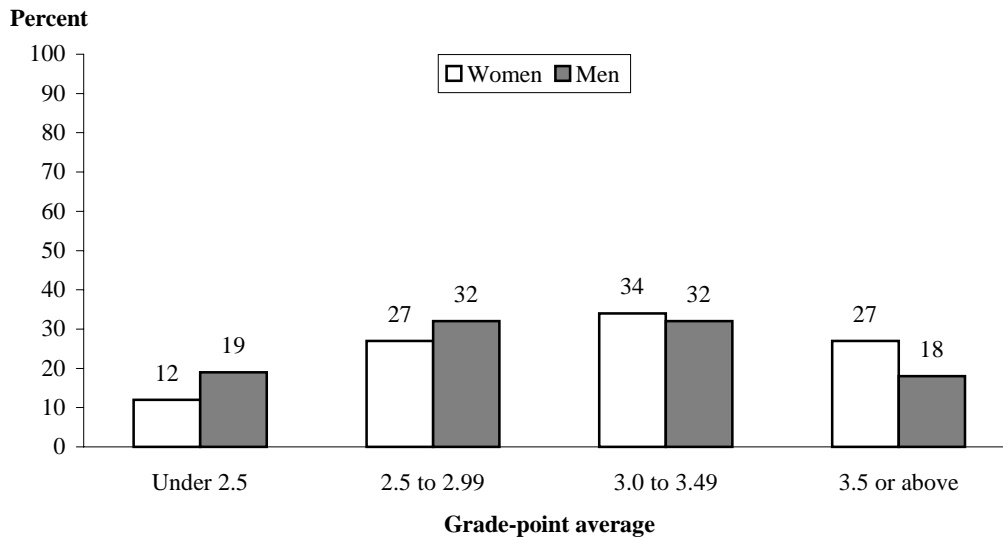


SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

graduate GPAs were notably higher than those of men (figure 4): 27 percent of women had GPAs of 3.5 or higher, compared with 18 percent of men. More men than women had GPAs below 3.0.

At the time they earned their bachelor’s degree, women and men had different expectations for graduate degree attainment (table 3). During the year they graduated, more women than men indicated that they expected to earn a graduate degree (87 percent vs. 83 percent). Among bachelor’s degree recipients who were 22 or younger, who majored in a professional field (including engineering), or who had a GPA below 3.0, women were more likely than men to expect to earn a graduate degree. Among those with expectations beyond a bachelor’s degree, women were more likely than men to expect to earn a master’s degree (70 percent vs. 66 percent), while men were more likely than women to expect to earn a first-professional degree (9 percent

Figure 4.—Percentage distribution of 1992–93 bachelor’s degree recipients according to undergraduate grade-point average (GPA), by gender



NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

vs. 6 percent). However, similar percentages expected to earn a doctoral degree (24 percent of women and 26 percent of men).

Marriage and parenthood status at the time of graduation appeared to influence women’s degree expectations, but not those of men (table 4). Single women were the most likely to expect to earn a graduate degree: 89 percent, compared with 83 percent of married women, 84 percent of single men, and 82 percent of married men. But among those with graduate degree expectations, married women stood out as being considerably more likely than others to expect to earn a master’s degree: 80 percent, compared with 66 percent of single women, 65 percent of single men, and 69 percent of married men (figure 5).

Among those without children when they graduated, more women than men (88 percent vs. 83 percent) indicated that they expected to attain an advanced degree (table 4). Among those with children, the proportions of women and men who expected to earn a graduate degree did not differ significantly (86 and 84 percent, respectively). However, when comparing women with and without children among those expecting to earn a graduate degree, those with children were less likely to expect to earn a first-professional degree and more likely to expect to earn a master’s degree.

Table 3.—Percentage of 1992–93 bachelor’s degree recipients who expected to earn a graduate degree, and among those who did, percentage distribution according to graduate degree expected at the time of bachelor’s degree receipt, by gender and selected demographic and enrollment characteristics

	Expected to earn a graduate degree	Degree expected		
		Master’s degree	First-professional	Doctoral degree
Total	86.9	70.1	6.3	23.6
Women				
Age received bachelor’s degree				
22 or younger	89.9	65.9	8.5	25.6
23–24	84.3	71.9	4.3	23.8
25–29	84.0	73.7	4.4	21.8
30 or older	83.6	77.5	3.3	19.1
Race/ethnicity				
American Indian/Alaskan Native	91.9	58.1	7.2	34.7
Asian/Pacific Islander	89.8	46.0	17.7	36.3
Black, non-Hispanic	88.9	55.5	9.8	34.7
Hispanic	91.1	65.9	7.9	26.2
White, non-Hispanic	86.2	73.1	5.3	21.6
Other	—	—	—	—
Parents’ educational attainment				
Less than high school	85.7	70.7	3.8	25.6
High school or equivalency	85.1	73.7	4.9	21.5
Some postsecondary education	89.5	69.8	7.1	23.1
Bachelor’s degree	84.0	71.4	5.3	23.3
Advanced degree	90.8	65.3	8.1	26.5
Degree-granting institution				
Public 4-year	86.7	70.8	6.0	23.1
Private, not-for-profit 4-year	87.8	67.9	7.0	25.2
Degree-granting institution level				
Nondoctorate	87.2	74.7	4.2	21.1
Doctorate	88.1	66.4	8.2	25.4
Baccalaureate degree major				
Professional fields	86.2	77.7	4.5	17.8
Business and management	81.1	83.8	5.3	10.9
Education	92.8	72.8	3.3	24.0
Engineering	91.9	68.8	5.3	26.0
Health professions	81.9	79.1	4.2	16.7
Public affairs/social services	90.1	73.7	8.3	18.0
Arts and sciences	89.5	56.9	9.2	34.0
Biological sciences	89.6	42.3	18.5	39.2
Mathematics/other sciences	89.8	63.8	5.5	30.7
Social science	92.1	57.8	12.9	29.3
History	83.5	47.0	12.5	40.5
Humanities	86.4	65.5	3.5	31.1
Psychology	92.3	47.9	7.6	44.5
Other	83.7	72.4	6.3	21.3
GPA at bachelor’s degree institution				
Under 2.5	82.2	75.5	5.5	19.0
2.5 to 2.99	86.6	72.8	5.9	21.3
3.0 to 3.49	88.2	70.0	6.8	23.3
3.5 or above	88.0	66.9	6.4	26.7

Table 3.—Percentage of 1992–93 bachelor’s degree recipients who expected to earn a graduate degree, and among those who did, percentage distribution according to graduate degree expected at the time of bachelor’s degree receipt, by gender and selected demographic and enrollment characteristics —Continued

	Expected to earn a graduate degree	Degree expected		
		Master’s degree	First-professional	Doctoral degree
Total	83.4	65.7	8.6	25.8
Men				
Age received bachelor’s degree				
22 or younger	85.5	59.9	11.6	28.5
23–24	80.9	67.6	6.6	25.8
25–29	82.2	71.8	6.0	22.2
30 or older	83.5	73.5	6.4	20.1
Race/ethnicity				
American Indian/Alaskan Native	—	—	—	—
Asian/Pacific Islander	87.1	54.4	10.8	34.8
Black, non-Hispanic	91.0	59.7	9.5	30.8
Hispanic	88.9	59.3	9.9	30.8
White, non-Hispanic	82.4	67.3	8.3	24.4
Other	—	—	—	—
Parents’ educational attainment				
Less than high school	81.3	69.1	6.5	24.4
High school or equivalency	80.1	70.9	6.3	22.8
Some postsecondary education	84.9	67.5	7.0	25.5
Bachelor’s degree	80.8	68.1	8.2	23.8
Advanced degree	87.3	56.1	12.8	31.1
Degree-granting institution				
Public 4-year	82.1	68.3	7.8	23.9
Private, not-for-profit 4-year	86.3	61.6	10.4	28.0
Degree-granting institution level				
Nondoctorate	82.1	68.4	6.4	25.3
Doctorate	85.2	63.5	10.1	26.4
Baccalaureate degree major				
Professional fields	82.2	75.5	5.8	18.8
Business and management	80.2	81.5	5.4	13.1
Education	88.7	69.8	2.0	28.2
Engineering	81.7	73.0	4.5	22.5
Health professions	83.7	57.5	14.5	28.0
Public affairs/social services	86.1	70.6	9.6	19.8
Arts and sciences	88.4	53.5	12.6	33.9
Biological sciences	93.3	25.1	30.0	44.9
Mathematics/other sciences	86.0	63.3	5.8	30.9
Social science	87.2	60.4	16.9	22.8
History	92.7	63.8	8.3	27.9
Humanities	86.5	54.9	4.7	40.3
Psychology	92.9	37.4	6.3	56.3
Other	74.8	62.2	8.0	29.8
GPA at bachelor’s degree institution				
Under 2.5	75.3	78.5	6.9	14.6
2.5 to 2.99	82.5	69.9	5.4	24.7
3.0 to 3.49	85.5	58.8	10.7	30.5
3.5 or above	88.5	60.2	11.6	28.2

—Sample size too small for a reliable estimate.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

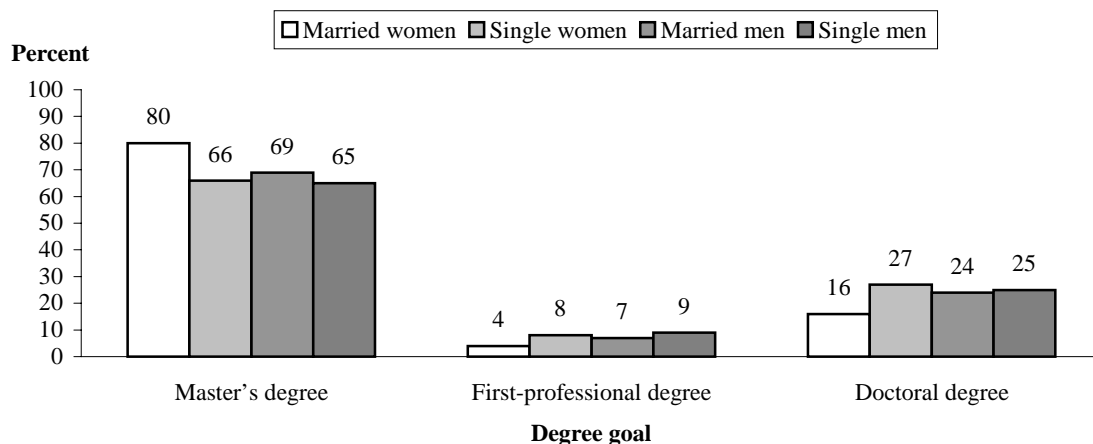
Table 4.—Percentage of 1992–93 bachelor’s degree recipients who expected to earn a graduate degree, and among those who did, percentage distribution according to graduate degree expected at the time of bachelor’s degree receipt, by gender and marital and parenthood status at graduation

	Expected to earn a graduate degree	Degree expected		
		Master’s degree	First-professional	Doctoral degree
Women				
Total	86.9	70.1	6.3	23.6
Marital status at graduation				
Married	82.5	80.2	3.7	16.1
Single, never been married	88.8	65.7	7.6	26.6
Parenthood status at graduation				
No children	87.5	68.7	6.9	24.4
One or more children	86.4	74.7	3.7	21.6
Men				
Total	83.4	65.7	8.6	25.8
Marital status at graduation				
Married	81.6	68.6	7.0	24.4
Single, never been married	83.6	65.2	9.5	25.3
Parenthood status at graduation				
No children	83.0	65.5	9.0	25.5
One or more children	84.0	69.8	7.8	22.4

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Figure 5.—Among 1992–93 bachelor’s degree recipients who expected to earn a graduate degree, percentage distribution according to degree expected at the time of bachelor’s degree receipt, by marital status and gender



NOTE: Percentages may not sum to 100 due to rounding. “Single” means never been married; “married” means married at time of bachelor’s degree receipt.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

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Patterns of Marriage and Parenthood

This section reviews patterns of marriage and parenthood among the 1992–93 bachelor’s degree recipients, both before and after receiving their degree. It describes differences by gender, age, race/ethnicity, parents’ educational attainment, undergraduate institution type, field of study, and GPA.

Marriage Before Graduation

Thirty-four percent of female graduates and 26 percent of male graduates married before earning their bachelor’s degree (table 5). For men and for women, having married before graduation was related to various demographic characteristics, most notably age. As might be expected, the proportion who had ever been married at the time of graduation increased with age for both men and women. Among women age 22 or younger when they graduated, 14 percent had married before graduating, compared with 87 percent of those age 30 or older. Among men, 9 percent of those 22 or younger had married before graduating, compared with 82 percent of those 30 or older. Across all age groups, men were less likely than women to have married.

While women were generally more likely than men to have married before graduating, the proportions of men and women who did so differed by institution type, field of study, and GPA in similar ways for women and men. For example, for both women and men, those who graduated from doctorate-granting institutions were less likely than those who graduated from non-doctorate-granting institutions to have married before graduating. Similarly, for both genders, those majoring in professional fields were more likely than those majoring in arts and sciences to have married. In addition, for both men and women, as their undergraduate GPA increased, so did their likelihood of having been married.

Marriage After Graduation

During the 4 years after graduation, marriage is a fairly common experience for bachelor’s degree recipients. Among graduates who had not married before graduating, 30 percent married during the first 4 years after college (table 6). Overall, women were more likely than men to marry during this time frame (32 percent vs. 28 percent) (figure 6). Within age groups, a higher rate of marriage for women was observed among graduates age 24 or younger: 31 percent

Table 5.—Percentage of 1992–93 bachelor’s degree recipients who had married before graduation, by gender and selected demographic and enrollment characteristics

	Total	Women	Men
Total	30.2	34.0	25.6
Age received bachelor’s degree			
22 or younger	11.9	14.1	8.5
23–24	21.0	25.4	17.3
25–29	45.3	51.7	39.9
30 or older	85.2	87.1	81.9
Race/ethnicity			
American Indian/Alaskan Native	57.2	61.5	—
Asian/Pacific Islander	15.2	15.4	14.9
Black, non-Hispanic	24.8	23.4	27.6
Hispanic	33.5	37.4	27.5
White, non-Hispanic	30.9	35.2	25.8
Other	—	—	—
Parents’ educational attainment			
Less than high school	57.6	58.6	56.0
High school or equivalency	38.9	43.3	32.8
Some postsecondary education	30.3	35.2	23.9
Bachelor’s degree	24.5	28.2	20.2
Advanced degree	20.5	21.6	19.4
Degree-granting institution			
Public 4-year	30.3	35.4	24.4
Private, not-for-profit 4-year	29.9	31.6	27.5
Degree-granting institution level			
Nondoctorate	34.9	38.6	29.6
Doctorate	26.6	30.0	22.8
Baccalaureate degree major			
Professional fields	36.2	41.5	29.5
Business and management	32.9	37.2	29.0
Education	41.8	43.6	35.1
Engineering	28.7	29.7	28.6
Health professions	44.4	48.9	31.1
Public affairs/social services	32.1	37.4	23.8
Arts and sciences	22.9	24.8	20.7
Biological sciences	19.2	22.0	16.4
Mathematics/other sciences	26.8	26.0	27.4
Social science	17.1	19.4	14.8
History	24.9	31.0	21.5
Humanities	25.4	26.9	23.0
Psychology	28.8	29.5	26.7
Other	26.3	27.9	24.1
GPA at bachelor’s degree institution			
Under 2.5	20.7	23.0	18.9
2.5 to 2.99	24.2	26.5	21.9
3.0 to 3.49	29.6	32.3	26.0
3.5 or above	45.8	49.3	39.3

—Sample size too small for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Table 6.—Among 1992–93 bachelor’s degree recipients who had not married before graduation, the percentage who married within 4 years of graduation, by gender and selected demographic and enrollment characteristics

	Total	Women	Men
Total	30.0	31.8	28.0
Age received bachelor’s degree			
22 or younger	28.9	31.0	26.0
23–24	33.4	37.8	30.1
25–29	31.8	30.8	32.4
30 or older	15.1	11.5	19.6
Race/ethnicity			
American Indian/Alaskan Native	—	—	—
Asian/Pacific Islander	17.3	22.5	12.4
Black, non-Hispanic	20.1	16.9	26.8
Hispanic	27.4	26.9	28.1
White, non-Hispanic	31.8	34.4	29.1
Other	—	—	—
Parents’ educational attainment			
Less than high school	34.8	37.4	30.6
High school or equivalency	30.3	30.7	29.8
Some postsecondary education	31.4	32.7	29.9
Bachelor’s degree	31.8	35.6	27.9
Advanced degree	27.2	29.2	25.1
Degree-granting institution			
Public 4-year	32.5	35.1	29.9
Private, not-for-profit 4-year	25.1	26.3	23.7
Degree-granting institution level			
Nondoctorate	32.0	33.8	29.8
Doctorate	29.2	31.0	27.4
Baccalaureate degree major			
Professional fields	33.2	37.2	29.0
Business and management	29.6	31.3	28.3
Education	39.4	43.4	27.1
Engineering	30.9	37.7	29.7
Health professions	39.0	43.0	30.2
Public affairs/social services	30.2	26.7	34.7
Arts and sciences	27.3	27.4	27.2
Biological sciences	22.3	22.8	21.8
Mathematics/other sciences	28.7	31.3	26.9
Social science	27.7	26.5	28.7
History	24.4	21.8	25.6
Humanities	25.9	25.6	26.4
Psychology	36.1	34.7	40.2
Other	26.6	26.7	26.5
GPA at bachelor’s degree institution			
Under 2.5	30.5	30.4	30.6
2.5 to 2.99	28.7	30.7	26.7
3.0 to 3.49	30.9	33.1	28.3
3.5 or above	32.5	35.6	27.6

—Sample size too small for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Figure 6.—Among 1992–93 bachelor’s degree recipients who at the time of graduation had never been married, cumulative percentage married each month for the next 4 years, by gender



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

of females age 22 or younger married within 4 years, compared with 26 percent of their male peers. Similarly, 38 percent of women ages 23–24 married within 4 years, while 30 percent of men in that age group did so. Among graduates ages 25–29 and 30 or older, the marriage rates of men and women did not differ significantly. Women ages 22 or younger and 25–29 married at the same rate (31 percent).

Women who majored in professional fields were more likely than women who majored in arts and sciences to marry within 4 years of graduating (37 percent vs. 27 percent). Within the professional fields, women who majored in education were more likely to marry than women who majored in business and management. In addition, while women who majored in professional fields were more likely than their male counterparts to marry (37 percent vs. 29 percent), women and men who majored in arts and sciences were equally likely to marry within 4 years of graduating (27 percent).

Among women and men who had not married before graduating, the proportions who did marry during the first year after graduation were low (3 percent and 2 percent, respectively) (table 7). The proportion of those who married for the first time during the second year after graduation rose sharply for both men (to 8 percent) and women (to 11 percent).

Table 7.—Among 1992–93 bachelor’s degree recipients who had not previously married, the percentage who married during each of the 4 years following graduation, by gender and age

	First year	Second year	Third year	Fourth year
	Total			
Total	2.6	9.4	9.9	12.0
Age received bachelor’s degree				
22 or younger	2.1	8.8	9.2	12.3
23–24	3.1	11.2	11.2	12.9
25–29	3.5	9.6	12.0	11.2
30 or older	2.5	2.1	7.9	3.4
	Women			
Total	2.8	10.6	10.5	12.4
Age received bachelor’s degree				
22 or younger	2.5	10.0	9.8	12.9
23–24	3.6	14.1	13.3	13.5
25–29	2.9	9.8	12.2	10.0
30 or older	3.0	1.6	6.5	0.8
	Men			
Total	2.3	8.1	9.3	11.7
Age received bachelor’s degree				
22 or younger	1.7	7.3	8.4	11.4
23–24	2.8	9.0	9.7	12.5
25–29	3.8	9.5	11.9	11.9
30 or older	1.9	2.8	9.7	6.7

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Parenthood Before Graduation

Fourteen percent of 1992–93 graduates had children by the time they graduated (table 8), with women being more likely than men to be parents (16 percent vs. 12 percent). Age was a factor as well: older graduates were more likely to have had children by the time they graduated. For example, 71 percent of females age 30 and older at graduation had children, compared with 24 percent of females ages 25–29. Among males, 61 percent who were 30 or older when they graduated had children, while 16 percent of those 25–29 were parents at the time. In addition, women who majored in professional fields were more likely to have children than women who majored in arts and sciences (20 percent vs. 12 percent). Among both men and women, graduates with GPAs of 3.5 or higher were more likely than others to have children before graduating.

Parenthood After Graduation

Among those without children when they received their bachelor’s degree, 13 percent became parents within 4 years of graduating (table 9). As with marriage after graduation, women

Table 8.—Percentage of 1992–93 bachelor’s degree recipients who had children before graduation, by gender and selected demographic and enrollment characteristics

	Total	Women	Men
Total	14.0	15.8	11.7
Age received bachelor’s degree			
22 or younger	1.1	1.4	0.8
23–24	4.8	5.2	4.4
25–29	19.8	23.9	16.4
30 or older	67.3	71.1	61.4
Race/ethnicity			
American Indian/Alaskan Native	38.0	42.9	—
Asian/Pacific Islander	8.8	10.7	6.9
Black, non-Hispanic	21.9	21.0	23.7
Hispanic	19.2	20.2	17.7
White, non-Hispanic	13.2	15.1	11.0
Other	—	—	—
Parents’ educational attainment			
Less than high school	39.9	40.0	39.6
High school or equivalency	20.1	22.0	17.7
Some postsecondary education	12.5	15.5	8.6
Bachelor’s degree	10.0	11.9	7.9
Advanced degree	8.2	8.0	8.3
Degree-granting institution			
Public 4-year	13.1	15.9	9.7
Private, not-for-profit 4-year	15.4	15.6	15.3
Degree-granting institution level			
Nondoctorate	18.6	20.6	15.9
Doctorate	10.4	11.9	8.9
Baccalaureate degree major			
Professional fields	16.8	19.6	13.4
Business and management	15.7	16.8	14.8
Education	19.5	20.4	16.1
Engineering	8.1	6.2	8.4
Health professions	21.7	24.5	13.9
Public affairs/social services	19.2	22.0	15.2
Arts and sciences	10.5	11.6	9.4
Biological sciences	10.8	13.2	8.5
Mathematics/other sciences	11.3	11.7	11.1
Social science	8.4	9.2	7.6
History	8.6	7.4	9.2
Humanities	10.8	11.1	10.3
Psychology	14.8	16.1	11.2
Other	11.9	12.1	11.5
GPA at bachelor’s degree institution			
Under 2.5	11.3	13.7	9.4
2.5 to 2.99	9.8	10.1	9.4
3.0 to 3.49	12.1	13.9	9.7
3.5 or above	24.4	25.5	22.5

—Sample size too small for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Table 9.—Among 1992–93 bachelor’s degree recipients who did not have children before graduation, the percentage who had a first child within 4 years of graduation, by gender and selected demographic and enrollment characteristics

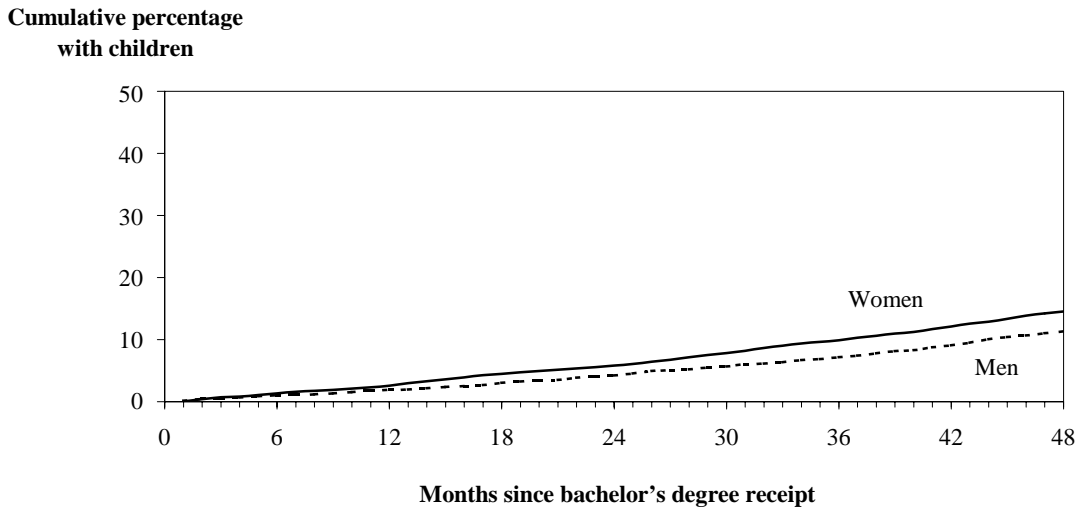
	Total	Women	Men
Total	13.1	14.5	11.3
Age received bachelor’s degree			
22 or younger	8.7	10.3	6.4
23–24	14.9	17.7	12.5
25–29	27.2	32.6	23.0
30 or older	18.2	18.6	17.7
Race/ethnicity			
American Indian/Alaskan Native	17.2	—	—
Asian/Pacific Islander	4.1	6.5	1.9
Black, non-Hispanic	21.6	21.0	22.7
Hispanic	18.4	21.4	13.8
White, non-Hispanic	12.6	13.8	11.3
Other	—	—	—
Parents’ educational attainment			
Less than high school	17.4	19.1	14.8
High school or equivalency	16.3	18.9	13.2
Some postsecondary education	14.4	16.2	12.3
Bachelor’s degree	12.0	12.8	11.1
Advanced degree	9.0	9.2	8.7
Degree-granting institution			
Public 4-year	13.2	14.5	11.9
Private, not-for-profit 4-year	12.4	14.4	9.9
Degree-granting institution level			
Nondoctorate	15.3	17.7	12.4
Doctorate	11.6	12.5	10.7
Baccalaureate degree major			
Professional fields	15.4	17.7	12.7
Business and management	13.6	14.9	12.6
Education	18.4	19.7	14.1
Engineering	10.5	7.7	11.0
Health professions	19.9	21.5	15.8
Public affairs/social services	16.7	19.3	13.3
Arts and sciences	10.0	11.1	8.8
Biological sciences	7.0	7.1	7.0
Mathematics/other sciences	13.7	14.5	13.2
Social science	7.9	8.8	6.9
History	5.7	5.6	5.7
Humanities	11.1	12.0	9.7
Psychology	13.2	15.0	8.4
Other	12.7	12.1	13.4
GPA at bachelor’s degree institution			
Under 2.5	12.7	13.0	12.6
2.5 to 2.99	13.6	16.8	10.5
3.0 to 3.49	12.2	12.4	12.1
3.5 or above	14.1	16.0	10.8

—Sample size too small for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

were more likely than men to become parents within 4 years (15 percent vs. 11 percent) (figure 7). This gender difference in parenthood was observed across all age categories except among graduates age 30 or older, for whom there was no difference. Among graduates under age 30 when they graduated, parenthood after graduation rose with age: 9 percent of graduates age 22 or younger became parents within 4 years, compared with 15 percent of graduates ages 23–24 and 27 percent ages 25–29. Among both men and women, graduates who majored in professional fields were more likely than those who majored in arts and sciences to become parents within 4 years of graduating. Although the proportions of graduates who became parents appeared to rise each year during the 4-year period, the increases were not statistically significant (table 10). For both men and women, the proportions who became parents 3 and 4 years after graduation were higher than among those who became parents 1 year after.

Figure 7.—Among 1992–93 bachelor’s degree recipients who at the time of graduation had no children, cumulative percentage with children each month for the next 4 years, by gender



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Table 10.—Among 1992–93 bachelor’s degree recipients who did not previously have children, the percentage who had a first child during each of the 4 years following graduation, by gender and age

	First year	Second year	Third year	Fourth year
			Total	
Total	2.3	2.9	3.7	4.9
Age received bachelor’s degree				
22 or younger	1.4	1.8	2.5	3.3
23–24	2.1	2.9	4.4	6.3
25–29	5.3	6.6	8.3	10.4
30 or older	5.6	6.2	4.1	3.5
			Women	
Total	2.6	3.3	4.3	5.2
Age received bachelor’s degree				
22 or younger	1.7	2.2	3.1	3.8
23–24	3.0	3.1	5.7	7.2
25–29	5.1	9.8	9.8	12.7
30 or older	6.3	7.4	4.2	2.0
			Men	
Total	1.9	2.4	3.1	4.5
Age received bachelor’s degree				
22 or younger	0.9	1.4	1.6	2.7
23–24	1.4	2.8	3.4	5.5
25–29	5.4	4.1	7.2	8.7
30 or older	4.8	4.9	4.0	5.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

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Patterns of Graduate School Enrollment, Graduate Degree Attainment, and Employment

As bachelor's degree recipients think about life after college, among the options they consider are graduate school, employment, or a combination of the two. What they choose to do depends on a variety of factors, such as their career interests, academic performance in college, and family situation. A later section of this report explores the factors related to graduate enrollment controlling for some of these factors. In this section, the relationships between these choices and marriage and parenthood are explored.

Graduate School Enrollment

Four years after graduating, 29 percent of 1992–93 degree recipients had enrolled in a graduate degree program (table 11). At graduation, these women and men differed in age, marital status, and parenthood status; in their educational characteristics, such as GPAs, majors, and degree expectations; and also in their rates of transition into marriage and parenthood after graduation. However, women and men were about equally likely to enroll in graduate school at some point during the first 4 years after earning their bachelor's degree.

Age was a factor in graduate enrollment for all bachelor's degree recipients. Regardless of gender, those age 22 or younger when they had earned their bachelor's degree were more likely than older graduates to enroll in a graduate degree program during the 4 years after graduation. Among women, 34 percent of degree recipients age 22 or younger enrolled in graduate school within 4 years, compared with 21 to 27 percent of older women. Similarly, 37 percent of male degree recipients age 22 or younger enrolled, compared with 22 to 26 percent of older graduates.

Overall, those who majored in arts and sciences as undergraduates were more likely than those who majored in professional fields to enroll in a graduate program (37 percent vs. 25 percent). Among graduates who majored in professional fields, business and management majors were less likely to enter a graduate degree program (16 percent) than were education, engineering, and health professions majors (37, 33, and 26 percent, respectively). Among arts and sciences graduates, biological science majors were more likely to enroll in graduate school (52 percent) than were graduates who majored in mathematics and other sciences, social sciences, and humanities (38 percent, 35 percent, and 30 percent, respectively).

Table 11.—Percentage of 1992–93 bachelor’s degree recipients who enrolled in a graduate degree program within 4 years of graduation, by gender and selected demographic and enrollment characteristics

	Total	Women	Men
Total	28.9	28.8	29.0
Age received bachelor’s degree			
22 or younger	35.5	34.2	37.3
23–24	21.5	20.5	22.3
25–29	21.9	21.9	21.8
30 or older	26.5	26.6	26.2
Race/ethnicity			
American Indian/Alaskan Native	21.6	15.7	—
Asian/Pacific Islander	31.4	29.9	32.6
Black, non-Hispanic	31.5	32.8	28.9
Hispanic	31.1	28.3	35.6
White, non-Hispanic	28.5	28.5	28.5
Other	26.9	—	—
Parents’ educational attainment			
Less than high school	23.7	25.5	20.7
High school or equivalency	24.5	24.6	24.2
Some postsecondary education	26.7	26.2	27.3
Bachelor’s degree	28.2	28.7	27.8
Advanced degree	37.3	36.6	38.1
Degree-granting institution			
Public 4-year	27.7	28.1	27.3
Private, not-for-profit 4-year	32.3	31.2	33.9
Degree-granting institution level			
Nondoctorate	26.1	26.2	25.9
Doctorate	31.0	30.9	31.2
Baccalaureate degree major			
Professional fields	25.1	26.0	24.0
Business and management	15.9	15.3	16.4
Education	36.8	37.1	35.4
Engineering	32.8	33.3	32.7
Health professions	26.4	24.3	32.9
Public affairs/social services	24.8	27.7	20.4
Arts and sciences	37.1	35.6	38.9
Biological sciences	51.7	47.3	55.9
Mathematics/other sciences	38.0	36.3	39.2
Social science	34.9	34.1	35.6
History	39.7	36.5	41.6
Humanities	29.8	28.9	31.1
Psychology	41.4	41.5	41.1
Other	22.8	23.8	21.6
GPA at bachelor’s degree institution			
Under 2.5	12.7	12.7	12.8
2.5 to 2.99	25.1	25.1	25.1
3.0 to 3.49	32.3	31.2	33.6
3.5 or above	40.2	37.5	45.4

—Sample size too small for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

In addition, GPA was strongly related to graduate school entry within the 4 years after graduation: among both men and women, degree recipients with GPAs of 3.5 or higher were much more likely to have entered graduate school than those with GPAs below 2.5. Men with GPAs of 3.5 or higher were more likely to enroll in graduate school than were women with similar GPAs (45 percent vs. 38 percent).

In each of the 4 years after earning their bachelor's degree, men and women enrolled in a graduate degree program at similar rates (table 12). The rate of entry into graduate school (for men and women together) was highest during the first year following bachelor's degree receipt and decreased measurably during the second and third years. Among those who had not previously enrolled, 14 percent of bachelor's degree recipients entered a graduate degree program

Table 12.—Among 1992–93 bachelor's degree recipients who had not previously enrolled, the percentage who enrolled in a graduate degree program during each of the 4 years following graduation, by gender and age

	First year	Second year	Third year	Fourth year
	Total			
Total	13.8	8.4	5.3	5.0
Age received bachelor's degree				
22 or younger	17.6	10.6	6.8	6.0
23–24	10.2	4.9	3.9	4.4
25–29	7.7	6.9	4.6	4.8
30 or older	12.5	9.0	4.1	3.7
	Women			
Total	13.0	8.5	5.7	5.2
Age received bachelor's degree				
22 or younger	16.3	9.8	7.1	6.2
23–24	8.9	4.9	4.3	4.2
25–29	6.3	8.1	4.2	5.4
30 or older	12.0	9.8	4.2	3.6
	Men			
Total	14.7	8.1	4.8	4.9
Age received bachelor's degree				
22 or younger	19.6	11.8	6.2	5.7
23–24	11.4	4.9	3.5	4.5
25–29	8.9	5.8	4.8	4.2
30 or older	13.3	7.7	4.1	3.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

during the first year. New enrollments fell to 8 percent during the second year, and to 5 percent during the third year (remaining at 5 percent in the fourth year).

Among degree recipients who enrolled in graduate education during the 4-year period, men were less likely than women to enroll in master's degree programs (68 percent vs. 83 percent), but were more likely to enroll in first-professional programs (19 percent vs. 11 percent) or doctoral programs (13 percent vs. 7 percent) (table 13). Age at bachelor's degree receipt and level of enrollment in graduate school were negatively related. Among those who enrolled, students who were younger at the time of receiving their bachelor's degree were less likely than older graduates to enroll in a master's program and more likely to enter a first-professional or doctoral degree program. For example, 77 percent of women age 22 or younger had enrolled in a master's program within 4 years of graduation, compared with 94 percent age 30 or older. A similar pattern held for men.

The higher proportions of women pursuing master's degrees (compared with men) persisted by field of study. For professional fields and for arts and sciences, women were more likely to pursue a master's degree (92 percent and 71 percent, respectively) than were men (84 percent and 56 percent, respectively). Men and women with higher GPAs were less likely than those with lower GPAs to enroll in a master's program but were more likely to enroll in first-professional or doctoral programs. Among women who enrolled in a graduate degree program, 75 percent of those with undergraduate GPAs of 3.5 or higher enrolled in a master's program, compared with 93 percent of graduates with GPAs below 2.5. Similarly, 60 percent of men who earned GPAs of 3.5 or more had enrolled in master's degree programs, while 85 percent of men who had GPAs below 2.5 did so.

At the end of each year following graduation, similar proportions of men and women were enrolled in some type of further postsecondary education (not just graduate degree programs): 17 percent at the end of the first year, 18 percent at the end of the second year, 19 percent at the end of the third year, and 18 percent at the end of the fourth year (table 14). Among those enrolled, men were more likely to attend full time (table 15). One year after graduation, among those who were enrolled, 75 percent of men and 64 percent of women attended postsecondary education full time. Over time, this difference between men and women persisted.

Table 13.—Among 1992–93 bachelor’s degree recipients who enrolled in a graduate degree program within 4 years of graduation, percentage distribution according to the highest level of enrollment, by gender and selected demographic and enrollment characteristics

	Women			Men		
	Master’s degree	First-professional degree	Doctoral degree	Master’s degree	First-professional degree	Doctoral degree
Total	82.6	10.7	6.8	68.3	18.8	13.0
Age received bachelor’s degree						
22 or younger	77.0	14.3	8.7	60.6	24.5	14.9
23–24	86.1	6.8	7.1	69.3	16.9	13.8
25–29	94.0	3.7	2.4	84.8	6.9	8.3
30 or older	93.7	4.2	2.1	86.2	7.8	6.0
Race/ethnicity						
American Indian/Alaskan Native	—	—	—	—	—	—
Asian/Pacific Islander	63.7	27.4	9.0	49.1	41.2	9.7
Black, non-Hispanic	84.7	11.0	4.3	72.8	12.3	15.0
Hispanic	80.8	15.0	4.2	68.8	18.2	13.0
White, non-Hispanic	83.3	9.5	7.2	69.7	17.3	13.0
Other	—	—	—	—	—	—
Parents’ educational attainment						
Less than high school	88.0	5.8	6.3	75.4	20.9	3.7
High school or equivalency	88.9	6.8	4.3	77.9	12.3	9.8
Some postsecondary education	87.5	7.0	5.5	70.3	20.0	9.8
Bachelor’s degree	79.4	11.7	8.8	68.9	18.7	12.3
Advanced degree	77.0	13.8	9.2	59.0	22.9	18.1
Degree-granting institution						
Public 4-year	83.1	10.3	6.7	70.6	16.3	13.1
Private, not-for-profit 4-year	81.5	11.4	7.1	64.0	23.2	12.8
Degree-granting institution level						
Nondoctorate	87.0	9.0	4.0	77.6	12.5	9.9
Doctorate	79.0	12.0	9.1	62.8	22.5	14.7
Baccalaureate degree major						
Professional fields	92.2	5.3	2.5	83.8	9.2	6.9
Business and management	92.1	7.5	0.4	87.8	10.5	1.8
Education	93.2	3.6	3.3	85.3	7.7	7.0
Engineering	86.6	5.0	8.5	83.9	4.2	11.9
Health professions	90.4	6.8	2.8	68.6	19.5	12.0
Public affairs/social services	93.3	6.7	0.0	85.4	14.6	0.0
Arts and sciences	71.1	16.3	12.6	55.9	25.2	18.9
Biological sciences	43.5	31.1	25.4	20.8	48.4	30.7
Mathematics/other sciences	68.7	14.0	17.3	57.2	11.4	31.4
Social science	70.5	20.5	9.0	62.3	26.0	11.7
History	66.4	22.2	11.5	75.2	20.0	4.8
Humanities	85.3	7.8	6.9	69.4	19.7	10.9
Psychology	78.4	10.0	11.6	75.6	15.6	8.9
Other	83.8	12.3	4.0	62.5	27.5	10.0
GPA at bachelor’s degree institution						
Under 2.5	92.8	4.2	3.1	84.6	9.8	5.7
2.5 to 2.99	89.2	7.4	3.4	77.7	13.3	9.0
3.0 to 3.49	84.2	10.8	5.0	64.5	21.3	14.2
3.5 or above	75.2	13.2	11.6	60.2	22.5	17.4

—Sample size too small for a reliable estimate.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Table 14.—Percentage of 1992–93 bachelor’s degree recipients who were enrolled in any postsecondary education at the end of each year following graduation, by gender and selected demographic and enrollment characteristics

	Women				Men			
	Year 1	Year 2	Year 3	Year 4	Year 1	Year 2	Year 3	Year 4
Total	16.7	17.9	18.8	17.7	17.2	17.8	19.1	17.5
Age received bachelor’s degree								
22 or younger	20.0	21.1	22.2	20.8	21.9	22.8	25.2	20.9
23–24	12.6	13.7	14.9	13.2	14.2	13.8	15.6	15.9
25–29	8.5	13.5	14.4	14.9	11.3	12.7	13.2	14.7
30 or older	16.9	16.5	15.9	15.6	15.8	16.4	14.7	12.9
Race/ethnicity								
American Indian/Alaskan Native	12.2	14.0	10.6	8.5	—	—	—	—
Asian/Pacific Islander	18.6	19.8	22.1	19.0	22.2	19.3	22.6	23.7
Black, non-Hispanic	15.7	16.3	16.0	15.3	15.5	19.8	18.3	17.5
Hispanic	17.6	19.7	17.9	21.6	23.6	20.2	18.6	21.0
White, non-Hispanic	16.8	17.7	18.9	17.7	16.6	17.5	19.0	17.0
Other	—	—	—	—	—	—	—	—
Parents’ educational attainment								
Less than high school	14.9	15.0	16.6	18.0	11.3	14.5	16.8	13.8
High school or equivalency	13.0	14.7	15.0	14.3	13.7	15.1	14.5	11.4
Some postsecondary education	16.7	15.5	15.9	14.4	15.9	15.5	20.4	18.4
Bachelor’s degree	16.3	16.4	18.0	19.2	16.5	18.1	18.3	18.4
Advanced degree	21.9	24.9	26.2	23.0	24.2	23.0	24.5	22.3
Degree-granting institution								
Public 4-year	16.9	18.2	18.7	17.4	16.6	16.4	18.4	16.9
Private, not-for-profit 4-year	17.1	17.9	19.4	19.0	19.3	21.5	20.9	19.1
Degree-granting institution level								
Nondoctorate	14.7	16.5	17.6	17.4	16.2	16.1	16.2	16.0
Doctorate	18.7	18.8	19.7	18.0	17.7	19.0	21.3	18.7
Baccalaureate degree major								
Professional fields	14.5	14.3	15.2	15.1	13.4	13.0	14.1	14.2
Business and management	8.9	8.5	9.0	10.9	8.4	8.8	9.3	9.3
Education	18.7	20.7	22.4	21.7	16.4	18.3	27.4	22.9
Engineering	23.6	22.0	17.9	11.9	19.4	17.3	17.1	18.7
Health professions	15.0	14.0	14.2	13.2	23.9	18.8	16.8	20.0
Public affairs/social services	16.7	11.0	14.2	11.8	12.1	14.3	13.3	13.5
Arts and sciences	21.0	23.7	24.7	22.7	24.5	26.5	27.7	24.5
Biological sciences	35.7	38.2	38.2	34.1	35.3	41.7	47.9	51.0
Mathematics/other sciences	21.7	20.8	24.8	21.8	25.0	25.2	20.5	18.2
Social science	18.3	22.7	23.5	21.1	18.3	22.8	28.8	21.5
History	22.0	26.5	23.5	25.3	25.1	25.7	20.7	20.5
Humanities	16.2	20.1	18.3	17.7	23.9	23.0	23.0	18.6
Psychology	23.1	23.5	29.5	26.8	29.7	31.3	30.3	30.3
Other	15.1	17.9	18.0	16.1	12.1	13.1	15.4	11.6
GPA at bachelor’s degree institution								
Under 2.5	10.2	10.0	10.1	12.2	8.1	7.6	9.3	9.4
2.5 to 2.99	11.8	14.5	17.2	16.5	14.8	15.0	17.7	16.3
3.0 to 3.49	18.4	19.6	19.8	19.5	19.7	21.4	22.8	20.3
3.5 or above	22.4	23.2	22.5	19.9	26.2	26.6	25.7	23.8

—Sample size too small for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Table 15.—Among 1992–93 bachelor’s degree recipients who were enrolled in any postsecondary education at the end of each year following graduation, percentage who were enrolled full time, by gender and selected demographic and enrollment characteristics

	Women				Men			
	Year 1	Year 2	Year 3	Year 4	Year 1	Year 2	Year 3	Year 4
Total	63.6	56.7	50.7	45.4	74.6	69.2	60.8	52.5
Age received bachelor’s degree								
22 or younger	70.0	63.5	57.4	52.3	83.0	78.0	69.0	66.0
23–24	60.3	58.9	49.1	44.0	68.5	70.1	55.5	39.6
25–29	51.7	50.6	43.5	42.0	71.7	53.8	43.0	48.5
30 or older	49.2	34.4	31.2	23.6	51.5	42.7	46.6	24.1
Race/ethnicity								
American Indian/Alaskan Native	—	—	—	—	—	—	—	—
Asian/Pacific Islander	75.4	86.0	70.7	51.3	70.4	67.4	59.2	57.2
Black, non-Hispanic	67.1	61.1	57.0	54.7	68.0	69.8	53.0	41.1
Hispanic	65.8	59.2	51.0	28.9	69.3	67.7	67.8	64.0
White, non-Hispanic	62.6	55.4	49.3	45.9	75.6	69.5	60.5	52.3
Other	—	—	—	—	—	—	—	—
Parents’ educational attainment								
Less than high school	45.4	64.9	43.7	33.9	—	—	60.6	—
High school or equivalency	66.3	51.0	41.8	35.6	62.1	62.9	50.6	39.7
Some postsecondary education	58.3	52.2	43.1	42.1	73.0	60.8	53.3	51.6
Bachelor’s degree	67.4	57.6	50.7	43.2	75.4	72.7	62.5	54.5
Advanced degree	66.4	63.0	63.5	61.0	82.5	76.1	69.9	59.8
Degree-granting institution								
Public 4-year	62.1	55.9	49.3	42.8	73.1	66.2	55.7	50.0
Private, not-for-profit 4-year	66.5	58.8	53.4	50.2	77.0	74.0	69.6	57.6
Degree-granting institution level								
Nondoctorate	62.3	50.4	40.1	38.3	67.5	61.7	56.4	44.0
Doctorate	64.3	60.9	58.3	50.6	79.1	73.7	63.1	57.7
Baccalaureate degree major								
Professional fields	52.6	44.0	38.7	32.0	66.1	61.7	49.8	38.2
Business and management	51.9	51.6	44.7	35.1	52.4	67.5	53.6	39.4
Education	51.2	33.5	27.6	24.7	68.5	51.4	37.9	30.8
Engineering	—	—	—	—	76.5	54.8	47.5	36.4
Health professions	53.8	63.0	61.1	42.6	73.5	75.6	75.7	61.5
Public affairs/social services	61.9	—	—	—	—	—	—	—
Arts and sciences	74.0	68.1	61.6	60.7	80.4	75.3	67.2	64.9
Biological sciences	72.1	80.1	79.6	78.0	82.3	84.5	85.3	83.8
Mathematics/other sciences	78.2	68.0	46.5	53.1	86.7	79.7	70.8	68.8
Social science	73.8	67.2	62.9	53.3	79.1	67.7	53.7	45.8
History	—	—	—	—	—	—	—	—
Humanities	75.6	54.7	52.5	52.9	75.4	72.8	63.7	65.0
Psychology	72.6	77.1	62.2	66.5	—	80.6	71.4	—
Other	68.7	58.6	53.3	42.2	78.3	65.3	68.5	50.1
GPA at bachelor’s degree institution								
Under 2.5	47.1	51.2	43.0	39.5	56.7	47.7	45.9	33.0
2.5 to 2.99	55.2	49.4	46.9	42.8	67.3	66.0	51.4	43.2
3.0 to 3.49	69.2	57.6	49.5	42.1	78.3	70.0	63.3	57.8
3.5 or above	67.8	61.7	55.9	51.7	81.7	76.0	71.1	60.5

—Sample size too small for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Graduate Degree Attainment

Four years after earning a bachelor's degree, 16 percent of women and 15 percent of men had attained graduate degrees (table 16). Male graduates who were age 22 or younger at the time of bachelor's degree receipt were more likely than those who were older to earn graduate degrees within the first 4 years after graduation. Students who majored in arts and sciences as undergraduates were more likely than those with majors in professional fields to attain graduate degrees within 4 years (18 percent vs. 14 percent). Among both men and women, as undergraduate GPA increased so did the likelihood of earning a graduate degree. For example, 20 percent of men with an undergraduate GPA of 3.5 or above attained a degree within this time frame, while 8 percent of men with a GPA below 2.5 did so. Similarly, 19 percent of women with a GPA of 3.5 or above attained a graduate degree within 4 years of bachelor's degree receipt, compared with 10 percent of those with a GPA below 2.5. As might be expected, rates of graduate degree attainment rose over the 4-year period, particularly between the second and third and third and fourth years after graduation (table 17).

Paralleling enrollment patterns, among those graduates who attained a graduate degree within 4 years of bachelor's degree receipt, women were more likely than men to have attained a master's degree (87 percent vs. 77 percent) and were less likely than men to have attained a first-professional degree (12 percent vs. 21 percent) (table 18). Among both men and women, as age increased, so did the likelihood of earning a master's degree rather than a first-professional or doctoral degree. For those who attained a degree, the proportion who earned a master's degree rose from 83 percent among women age 22 or younger to 96 percent among women age 30 or older. Similarly, among men, the proportion rose from 71 percent for those age 22 or younger to 90 percent for those age 30 or older.

Employment After Graduation

Similar proportions of men and women were employed during each year following graduation (table 19). One, 2, 3, and 4 years after graduation, 87 percent, 84 percent, 89 percent, and 88 percent, respectively, of women were employed; at these same times, 86 percent, 86 percent, 89 percent, and 90 percent, respectively, of men were employed. Among both men and women, those who majored in professional fields were more likely to be employed during each year following graduation than those who majored in arts and sciences. The results were different when full-time employment was taken into consideration (table 20). In this case, women were less likely than men to be employed full time at each point in time.

Table 16.—Percentage of 1992–93 bachelor’s degree recipients who attained a graduate degree within 4 years of bachelor’s degree receipt, by gender and selected demographic and enrollment characteristics

	Total	Women	Men
Total	15.3	15.8	14.6
Age received bachelor’s degree			
22 or younger	17.5	17.6	17.5
23–24	13.4	14.1	12.8
25–29	10.2	10.0	10.3
30 or older	15.2	16.1	13.6
Race/ethnicity			
American Indian/Alaskan Native	12.8	8.3	—
Asian/Pacific Islander	18.1	21.0	15.7
Black, non-Hispanic	13.0	13.3	12.4
Hispanic	14.6	15.2	13.6
White, non-Hispanic	15.2	15.9	14.5
Other	35.3	—	—
Parents’ educational attainment			
Less than high school	13.6	14.6	11.9
High school or equivalency	13.5	14.0	12.8
Some postsecondary education	15.0	16.8	12.6
Bachelor’s degree	14.3	15.2	13.3
Advanced degree	19.1	18.4	19.8
Degree-granting institution			
Public 4-year	15.5	16.5	14.2
Private, not-for-profit 4-year	15.4	15.1	15.9
Degree-granting institution level			
Nondoctorate	13.8	14.1	13.2
Doctorate	16.3	17.3	15.3
Baccalaureate degree major			
Professional fields	13.8	14.1	13.5
Business and management	9.5	9.2	9.8
Education	18.8	18.4	20.3
Engineering	16.0	17.9	15.7
Health professions	15.4	14.4	18.2
Public affairs/social services	16.1	15.5	17.1
Arts and sciences	17.9	18.3	17.3
Biological sciences	19.0	25.2	13.1
Mathematics/other sciences	15.4	14.6	16.0
Social science	19.5	21.4	17.6
History	18.7	15.3	20.7
Humanities	15.5	14.4	17.2
Psychology	21.2	19.3	26.9
Other	14.2	16.6	11.2
GPA at bachelor’s degree institution			
Under 2.5	8.8	9.7	8.0
2.5 to 2.99	13.2	12.2	14.3
3.0 to 3.49	17.6	18.5	16.4
3.5 or above	19.2	18.9	19.7

—Sample size too small for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Table 17.—Among 1992–93 bachelor’s degree recipients who had not previously attained a graduate degree, the percentage who did so during each of the 4 years following bachelor’s degree receipt, by gender and age

	First year	Second year	Third year	Fourth year
			Total	
Total	2.8	3.2	4.4	5.8
Age received bachelor’s degree				
22 or younger	2.2	3.2	5.3	8.0
23–24	3.4	2.9	4.2	3.6
25–29	3.3	1.7	2.2	3.3
30 or older	3.3	4.8	3.7	4.4
			Women	
Total	3.0	3.6	4.7	5.6
Age received bachelor’s degree				
22 or younger	2.4	3.5	5.6	7.3
23–24	3.8	2.9	4.6	3.7
25–29	3.0	1.7	1.9	3.8
30 or older	4.0	5.6	3.7	4.0
			Men	
Total	2.5	2.8	4.1	6.0
Age received bachelor’s degree				
22 or younger	1.9	2.8	4.8	9.1
23–24	3.1	2.8	3.9	3.6
25–29	3.6	1.8	2.5	2.9
30 or older	2.1	3.4	3.8	5.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Table 18.—Among 1992–93 bachelor’s degree recipients who attained a graduate degree within 4 years of graduation, percentage distribution according to highest degree earned, by gender and selected demographic and enrollment characteristics

	Women			Men		
	Master’s degree	First-professional degree	Doctoral degree	Master’s degree	First-professional degree	Doctoral degree
Total	87.2	11.5	1.3	76.6	20.8	2.6
Age received bachelor’s degree						
22 or younger	83.3	15.2	1.5	71.4	25.1	3.6
23–24	91.0	6.8	2.1	81.2	17.5	1.4
25–29	98.1	1.9	0.0	85.7	11.9	2.4
30 or older	96.4	3.0	0.6	89.5	10.5	0.0
Race/ethnicity						
American Indian/Alaskan Native	—	—	—	—	—	—
Asian/Pacific Islander	66.0	34.0	0.0	69.9	30.1	0.0
Black, non-Hispanic	90.8	7.7	1.5	—	—	—
Hispanic	73.3	23.7	3.1	68.3	31.7	0.0
White, non-Hispanic	89.0	9.8	1.2	77.2	19.9	2.9
Other	—	—	—	—	—	—
Parents’ educational attainment						
Less than high school	92.1	3.3	4.6	—	—	—
High school or equivalency	89.3	8.8	1.9	81.5	16.6	1.9
Some postsecondary education	93.8	5.6	0.7	84.8	14.3	0.9
Bachelor’s degree	86.6	12.0	1.5	73.8	22.5	3.7
Advanced degree	82.1	16.9	1.0	71.1	26.0	2.9
Degree-granting institution						
Public 4-year	87.8	11.1	1.1	79.5	18.4	2.1
Private, not-for-profit 4-year	86.0	12.4	1.6	71.4	25.3	3.4
Degree-granting institution level						
Nondoctorate	90.4	8.1	1.4	82.0	15.1	2.9
Doctorate	84.5	14.2	1.3	73.1	24.4	2.5
Baccalaureate degree major						
Professional fields	93.7	5.6	0.7	86.0	12.4	1.6
Business and management	90.3	9.7	0.0	81.8	17.3	0.9
Education	96.3	3.1	0.6	87.4	12.7	0.0
Engineering	—	—	—	95.7	2.4	2.0
Health professions	91.7	6.0	2.3	73.3	22.2	4.6
Public affairs/social services	97.9	2.1	0.0	—	—	—
Arts and sciences	79.9	18.1	2.0	71.2	25.6	3.2
Biological sciences	64.9	29.6	5.5	37.7	50.6	11.7
Mathematics/other sciences	90.6	9.4	0.0	93.4	5.3	1.3
Social science	72.0	24.2	3.9	60.3	37.2	2.5
History	—	—	—	—	—	—
Humanities	89.5	10.5	0.0	82.0	18.1	0.0
Psychology	90.8	9.2	0.0	—	—	—
Other	86.8	12.0	1.2	62.5	33.8	3.7
GPA at bachelor’s degree institution						
Under 2.5	—	—	—	87.0	10.4	2.6
2.5 to 2.99	90.8	8.1	1.1	79.5	17.6	2.9
3.0 to 3.49	88.7	10.2	1.1	71.7	25.4	2.9
3.5 or above	84.2	14.2	1.7	77.5	21.0	1.5

—Sample size too small for a reliable estimate.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Table 19.—Percentage of 1992–93 bachelor’s degree recipients who were employed at the end of each year following graduation, by gender and selected demographic and enrollment characteristics

	Women				Men			
	Year 1	Year 2	Year 3	Year 4	Year 1	Year 2	Year 3	Year 4
Total	86.6	84.1	88.8	88.3	85.7	85.6	88.7	89.8
Age received bachelor’s degree								
22 or younger	86.2	82.6	88.5	88.2	83.0	80.9	84.8	86.0
23–24	90.4	86.2	89.8	88.5	87.4	87.6	90.8	91.5
25–29	88.2	88.1	88.4	88.3	89.6	92.1	93.0	93.0
30 or older	82.7	84.1	88.9	88.7	86.8	88.3	92.3	94.6
Race/ethnicity								
American Indian/Alaskan Native	87.3	81.2	84.8	85.0	—	—	—	—
Asian/Pacific Islander	80.2	75.8	83.3	86.1	77.4	82.5	81.7	82.9
Black, non-Hispanic	85.8	87.6	87.1	90.4	80.7	83.9	90.4	91.4
Hispanic	81.3	81.7	83.2	83.2	84.0	81.9	84.6	84.7
White, non-Hispanic	87.4	84.5	89.6	88.6	86.6	86.0	89.3	90.5
Other	—	—	—	—	—	—	—	—
Parents’ educational attainment								
Less than high school	85.5	87.9	87.1	87.7	85.6	86.9	88.6	91.5
High school or equivalency	88.4	85.8	91.0	89.5	87.5	88.0	91.3	95.3
Some postsecondary education	87.4	86.2	89.7	89.6	87.7	86.5	90.7	91.2
Bachelor’s degree	87.4	83.8	89.3	90.0	87.1	87.2	88.2	88.8
Advanced degree	84.3	80.7	86.0	85.3	80.8	80.0	84.9	84.5
Degree-granting institution								
Public 4-year	87.0	83.7	89.0	89.1	86.2	86.4	89.4	90.3
Private, not-for-profit 4-year	86.2	85.4	89.0	87.4	84.1	83.0	87.0	88.6
Degree-granting institution level								
Nondoctorate	87.2	85.1	88.9	88.9	86.9	87.0	90.3	91.2
Doctorate	86.1	83.5	88.7	87.6	85.3	84.5	87.6	88.7
Baccalaureate degree major								
Professional fields	89.3	87.5	91.6	91.0	88.6	89.9	93.0	93.3
Business and management	91.5	89.3	93.9	93.7	90.1	90.5	94.3	93.4
Education	88.1	83.5	90.4	88.7	88.4	87.7	91.6	94.7
Engineering	81.1	88.8	89.1	88.3	86.1	91.3	93.1	95.1
Health professions	89.9	90.4	89.6	90.4	86.1	85.4	84.5	84.7
Public affairs/social services	85.6	89.8	91.8	90.5	88.7	90.8	95.5	95.0
Arts and sciences	82.0	79.6	84.7	83.7	80.6	78.7	82.3	83.6
Biological sciences	69.6	71.1	74.7	75.0	65.7	56.7	59.6	58.7
Mathematics/other sciences	85.7	80.1	86.6	87.1	75.7	79.8	85.7	88.5
Social science	85.0	83.2	89.0	88.7	86.3	83.7	85.0	87.8
History	86.5	83.7	81.4	80.0	83.0	80.1	85.1	86.9
Humanities	83.1	80.1	86.9	83.3	85.8	82.6	87.4	86.2
Psychology	80.5	77.8	79.8	80.2	81.8	81.5	84.6	85.7
Other	87.2	82.1	88.3	89.3	88.6	86.9	89.7	93.1
GPA at bachelor’s degree institution								
Under 2.5	89.6	89.1	91.0	89.4	90.4	91.4	92.6	91.3
2.5 to 2.99	90.7	87.1	90.3	89.5	88.7	87.7	91.5	93.0
3.0 to 3.49	85.6	84.2	90.1	90.1	84.4	83.7	86.8	88.9
3.5 or above	82.5	79.9	85.5	85.6	78.0	79.4	84.1	85.7

—Sample size too small for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Table 20.—Among 1992–93 bachelor’s degree recipients who were employed, percentage who were employed full time at the end of each year following graduation, by gender and selected demographic and enrollment characteristics

	Women				Men			
	Year 1	Year 2	Year 3	Year 4	Year 1	Year 2	Year 3	Year 4
Total	81.9	86.8	87.4	88.6	86.6	91.7	92.0	93.3
Age received bachelor’s degree								
22 or younger	81.6	88.0	88.5	90.1	84.6	89.8	90.8	92.9
23–24	81.7	87.3	89.1	89.5	87.0	91.4	91.8	93.3
25–29	85.0	85.9	84.4	85.7	87.4	94.1	94.0	95.5
30 or older	81.2	83.9	84.2	85.0	91.0	95.0	93.3	92.4
Race/ethnicity								
American Indian/Alaskan Native	83.6	84.7	86.8	85.6	—	—	—	—
Asian/Pacific Islander	79.6	90.0	87.4	88.7	85.7	92.4	89.6	92.1
Black, non-Hispanic	83.7	91.5	94.9	94.0	84.9	94.7	93.1	97.0
Hispanic	78.2	88.8	88.4	89.6	83.5	88.3	88.9	86.5
White, non-Hispanic	82.0	86.3	86.8	88.1	86.9	91.6	92.2	93.6
Other	—	—	—	—	—	—	—	—
Parents’ educational attainment								
Less than high school	82.6	89.8	90.5	90.7	89.5	96.6	94.0	93.1
High school or equivalency	80.7	88.1	88.2	88.5	88.5	93.3	93.6	94.1
Some postsecondary education	81.1	87.5	88.9	89.7	85.7	94.5	94.5	96.1
Bachelor’s degree	83.9	88.2	88.5	90.1	87.1	91.0	92.7	93.1
Advanced degree	82.0	83.6	84.1	86.0	84.4	87.6	87.0	90.5
Degree-granting institution								
Public 4-year	81.5	86.6	87.5	88.6	87.1	91.8	92.4	93.7
Private, not-for-profit 4-year	83.0	87.2	87.0	88.2	85.2	91.1	91.0	92.4
Degree-granting institution level								
Nondoctorate	80.1	86.2	87.0	88.2	86.6	92.5	92.4	93.6
Doctorate	83.7	87.4	87.6	88.7	86.8	91.1	91.6	93.0
Baccalaureate degree major								
Professional fields	83.8	89.0	89.3	89.9	89.9	95.3	95.8	96.6
Business and management	90.7	94.9	93.6	93.6	93.8	96.6	96.3	98.4
Education	75.9	86.2	87.9	88.7	78.5	91.4	91.7	91.4
Engineering	87.9	96.0	97.9	96.6	89.3	95.5	97.5	96.9
Health professions	84.3	82.3	82.6	82.9	83.9	89.8	94.7	94.3
Public affairs/social services	83.1	86.7	88.2	92.2	88.8	98.3	94.7	94.1
Arts and sciences	78.3	83.1	84.0	86.4	82.2	86.2	86.7	88.5
Biological sciences	68.2	74.9	77.6	82.0	81.0	84.6	83.9	87.8
Mathematics/other sciences	78.7	89.5	91.2	92.2	86.4	90.5	89.9	89.9
Social science	82.9	84.7	84.7	89.6	85.7	89.0	88.7	92.0
History	81.7	79.7	84.8	86.9	84.5	90.3	89.9	92.0
Humanities	76.1	81.3	82.7	83.0	73.6	79.4	81.6	81.9
Psychology	79.8	84.9	83.4	84.9	83.5	81.7	86.2	88.3
Other	82.7	86.8	87.4	88.2	85.2	90.5	90.0	92.3
GPA at bachelor’s degree institution								
Under 2.5	87.1	91.6	93.1	93.6	90.5	94.1	94.8	95.7
2.5 to 2.99	83.6	86.5	87.9	89.5	85.6	91.8	91.7	92.9
3.0 to 3.49	81.0	87.3	87.4	88.1	86.5	90.4	91.1	92.6
3.5 or above	78.3	83.8	84.0	85.5	86.4	91.4	91.8	92.9

—Sample size too small for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

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Interrelationships Among Transitions

The previous section described the relationships between marriage and parenthood and graduate school enrollment, degree attainment, and employment during the first 4 years after bachelor's degree receipt, but did not take into account the interrelationships among these variables. This section examines their interrelationships.

Marriage

As shown earlier, women were more likely than men to marry during the first 4 years after they earned their bachelor's degree. Among those who had not married by the time they graduated, 32 percent of women and 28 percent of men married during the next 4 years. This difference in women's and men's likelihood of marriage existed among those who did not enroll in graduate school and among those who were employed 1 year after earning their bachelor's degree (table 21). In contrast, among those who enrolled in graduate school, the percentages of women and men who married did not differ.

Women who enrolled in graduate education during the 4 years after graduation were less likely to marry (29 percent) than women who did not enroll at this time (33 percent), but this pattern did not apply for men. The likelihood of marriage for women varied with graduate degree program. Among women who enrolled, those who enrolled in master's degree programs were more likely than those who enrolled in first-professional degree programs to marry (31 percent vs. 19 percent). Both women and men who were employed 1 year after bachelor's degree receipt were more likely to marry within 4 years than those who were not employed at that time.

Parenthood

As indicated earlier, women without children at graduation were more likely than their male counterparts to become parents during the 4 years following graduation (15 percent vs. 11 percent) (table 9). This difference between men and women was also observed for those who did not enroll in graduate education and for those who were not employed 1 year after graduation (table 22). However, among men and women who enrolled in graduate school or who were employed 1 year after bachelor's degree receipt, there were no differences in their likelihood of becoming parents.

Table 21.—Among 1992–93 bachelor’s degree recipients who had not married before graduation, the percentage who married within 4 years of graduation, by gender and selected enrollment and employment characteristics

	Total	Women	Men
Total	30.0	31.8	28.0
Graduate enrollment			
Never enrolled	31.0	33.3	28.5
Enrolled	27.8	28.7	26.7
First enrolled year 1	29.8	30.2	29.5
First enrolled year 2	22.8	25.0	20.3
First enrolled year 3	28.7	30.7	26.1
First enrolled year 4	27.8	27.5	28.2
Highest level of enrollment			
Master’s degree	30.0	31.2	28.3
First-professional degree	20.2	18.5	21.4
Doctoral degree	25.0	20.6	28.0
Graduate attainment			
Never attained	30.2	32.8	27.3
Attained	29.5	27.4	32.1
First attained year 1	35.3	26.0	45.1
First attained year 2	35.3	31.9	40.6
First attained year 3	29.6	25.6	35.0
First attained year 4	23.9	26.9	20.4
Highest level of attainment			
Master’s degree	27.5	27.7	27.2
First-professional degree	22.2	21.2	23.0
Doctoral degree	—	—	—
Employment—month 12			
Not employed	25.0	27.1	23.1
Employed	30.9	32.6	29.0
Employed full time	32.0	34.1	29.8
Employed part time	25.1	25.8	24.2

—Sample size too small for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

For both men and women, enrollment in graduate school was negatively associated with becoming a parent. Among those enrolled, 9 percent of men and 10 percent of women became parents, compared with 12 percent of men and 16 percent of women who did not enroll in graduate school. Among women, enrolling in a first-professional or doctoral degree program and attaining a degree were associated with a lower likelihood of becoming a parent. Eleven percent of

Table 22.—Among 1992–93 bachelor’s degree recipients who did not have children before graduation, the percentage who became parents within 4 years of graduation, by gender and selected enrollment and employment characteristics

	Total	Women	Men
Total	13.1	14.5	11.3
Graduate enrollment			
Never enrolled	14.5	16.4	12.4
Enrolled	9.5	10.1	9.0
First enrolled year 1	8.8	7.5	10.1
First enrolled year 2	9.5	11.5	7.1
First enrolled year 3	9.3	11.2	6.6
First enrolled year 4	12.9	14.8	10.4
Highest level of enrollment			
Master’s degree	10.8	11.4	9.9
First-professional degree	5.1	3.6	6.1
Doctoral degree	7.0	4.4	8.7
Graduate attainment			
Never attained	13.8	15.8	11.5
Attained	9.3	8.2	10.6
First attained year 1	15.4	9.1	23.3
First attained year 2	6.1	6.9	4.9
First attained year 3	8.3	7.8	9.0
First attained year 4	8.9	8.8	8.9
Highest level of attainment			
Master’s degree	8.6	8.7	8.5
First-professional degree	6.0	2.9	8.2
Doctoral degree	—	—	—
Employment—month 12			
Not employed	12.3	15.9	8.8
Employed	13.2	14.4	11.7
Employed full time	13.5	14.3	12.6
Employed part time	11.5	15.0	6.3

—Sample size too small for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

women who enrolled in master’s programs became parents, compared with 4 percent of those who enrolled in first-professional programs and 4 percent of those who enrolled in doctoral programs. Similarly, while 16 percent of women who did not attain a graduate degree within 4 years became parents, 8 percent of those who attained a degree did so. Neither level of enrollment nor degree attainment was related to the likelihood of parenthood for men, however. Men who were

employed full time 1 year after graduation were more likely than those working part time to become parents during the 4 years after bachelor's degree receipt (13 percent vs. 6 percent).

Graduate School Enrollment

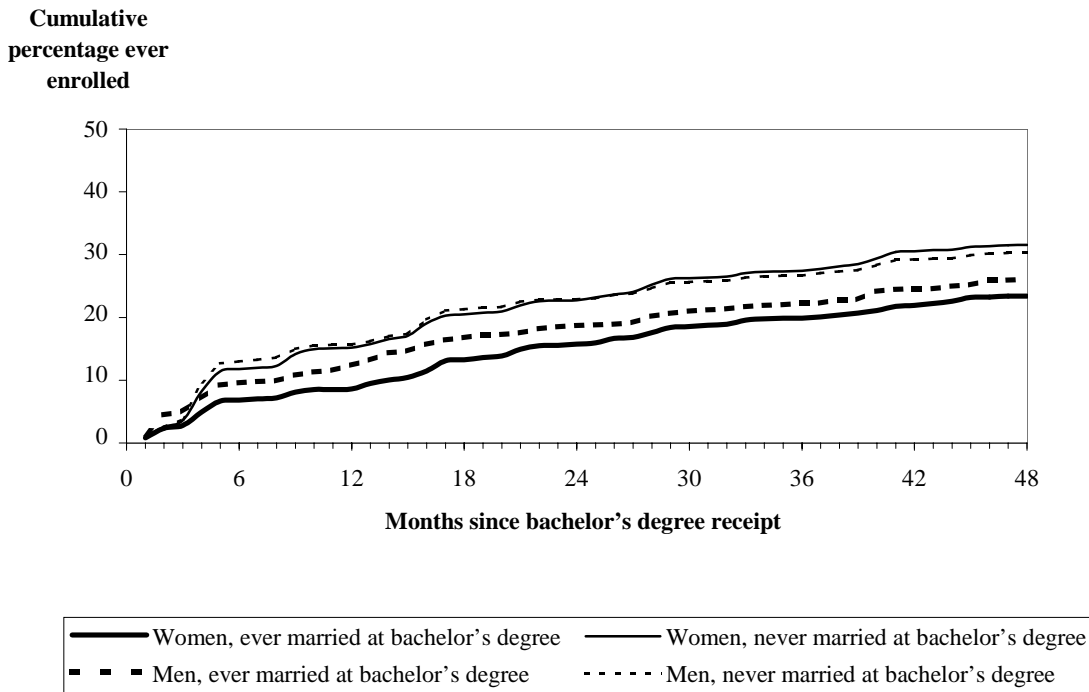
Earlier it was shown that men and women were equally likely to enroll in graduate school, despite differences in their various characteristics (table 11). Overall, 29 percent of male and female bachelor's degree recipients enrolled in graduate education during the 4 years after graduation (table 23). Further, men's and women's enrollment rates did not differ significantly according to their marital and parenthood status. However, among women, those who married before earning their bachelor's degree were less likely than those who did not marry to enroll in graduate school within 4 years of graduating (figure 8).

Table 23.—Percentage of 1992–93 bachelor's degree recipients who enrolled in a graduate degree program within 4 years of graduation, by gender and marital and parenthood status

	Total	Women	Men
Total	28.9	28.8	29.0
Marital status			
Married before bachelor's degree	24.4	23.4	26.0
Not married before bachelor's degree	30.9	31.5	30.3
Did not marry within 4 years	31.9	33.0	30.8
Married after bachelor's degree	28.6	28.4	28.9
Married year 1	16.8	18.9	14.1
Married year 2	23.7	25.5	21.3
Married year 3	32.1	30.7	33.7
Married year 4	33.2	32.0	34.5
Parenthood status			
Had child before bachelor's degree	26.0	26.2	25.6
No children before bachelor's degree	29.6	29.6	29.6
Did not become a parent within 4 years	30.8	31.1	30.4
Became a parent after bachelor's degree	21.6	20.4	23.3
Became a parent year 1	15.2	11.7	20.6
Became a parent year 2	19.8	19.3	20.7
Became a parent year 3	22.7	21.3	24.9
Became a parent year 4	25.2	25.4	25.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Figure 8.—Cumulative percentage of 1992–93 bachelor’s degree recipients who had ever enrolled in a graduate degree program each month for the next 4 years, by marital status and gender



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

For both men and women, having a child within 4 years of bachelor’s degree receipt was negatively associated with enrollment in graduate school during that period. Among women, 20 percent of those who had a child within that period entered graduate school, compared with 31 percent of those without children. Among men, 23 percent of those who became parents after earning their bachelor’s degree entered graduate school, compared with 30 percent of men without children.

As discussed earlier, women who enrolled in graduate school were more likely than their male counterparts to pursue master’s degrees. For both men and women, marriage and parenthood were related to choice of graduate program (table 24). Those degree recipients who did not marry either before or within 4 years of graduation were less likely than those who had married before earning their bachelor’s degree to have enrolled in master’s programs within 4 years, but they were more likely to have enrolled in first-professional or doctoral programs. Among women who enrolled, 93 percent of those who had married before graduation enrolled in master’s degree programs, compared with 76 percent of those who were still single 4 years after earning their

Table 24.—Among 1992–93 bachelor’s degree recipients who enrolled in a graduate degree program within 4 years of graduation, percentage distribution according to the highest level of enrollment, by gender and marital and parenthood status

	Women			Men		
	Master’s degree	First-professional degree	Doctoral degree	Master’s degree	First-professional degree	Doctoral degree
Total	82.6	10.7	6.8	68.3	18.8	13.0
Marital status						
Married before bachelor’s degree	92.5	4.1	3.4	81.0	9.5	9.5
Not married before bachelor’s degree	78.9	13.0	8.1	64.6	21.5	13.9
Did not marry within 4 years	76.3	14.8	9.0	63.4	23.1	13.6
Married after bachelor’s degree	85.9	8.3	5.8	68.4	17.2	14.5
Married year 1	—	—	—	—	—	—
Married year 2	92.5	3.8	3.6	52.0	26.7	21.3
Married year 3	85.3	6.8	7.9	78.5	9.7	11.8
Married year 4	78.9	14.9	6.2	67.6	18.4	14.0
Parenthood status						
Had child before bachelor’s degree	93.3	5.9	0.8	85.6	8.2	6.2
No children before bachelor’s degree	80.5	11.6	8.0	65.9	20.0	14.1
Did not become a parent within 4 years	79.3	12.3	8.4	65.3	20.6	14.1
Became a parent after bachelor’s degree	92.3	4.2	3.5	72.8	13.6	13.6
Became a parent year 1	—	—	—	—	—	—
Became a parent year 2	—	—	—	—	—	—
Became a parent year 3	89.1	8.8	2.1	67.2	14.0	18.8
Became a parent year 4	92.1	1.5	6.4	69.4	13.5	17.1

—Sample size too small for a reliable estimate.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

bachelor’s degree. Similarly, women who married after graduation were more likely than those who remained single to enroll in master’s degree programs (86 percent vs. 76 percent). Marriage after graduation was not related to level of enrollment for men, however. With respect to parenthood, enrolled men and women who were parents at graduation were more likely than those who did not have children then to enter master’s programs. Enrolled women who became parents within 4 years of graduation were more likely than women who were not parents to enroll in a master’s program, but about as likely to do so as women who had children at the time of bachelor’s degree receipt.

Graduate Degree Attainment

While men and women were equally likely to attain a graduate degree during the 4 years after receiving their bachelor's degree (table 16), differences in attainment were associated with their marriage and parenthood status (table 25). Among those who had married before or within 4 years after receiving their bachelor's degree, there were no differences in attainment rates according to gender; however, among those who had never married, women were more likely than men to attain a graduate degree (18 percent vs. 14 percent). Although parenthood did not seem to significantly affect men's degree attainment, the situation differed among women. Women who became parents during these 4 years were less likely to attain a graduate degree than were women who did not become parents (9 percent vs. 17 percent).

Table 25.—Percentage of 1992–93 bachelor's degree recipients who attained a graduate degree within 4 years of bachelor's degree receipt, by gender and marital and parenthood status

	Total	Women	Men
Total	15.3	15.8	14.6
Marital status			
Married before bachelor's degree	13.1	13.2	13.0
Not married before bachelor's degree	16.2	17.2	15.0
Did not marry within 4 years	16.3	18.4	14.2
Married after bachelor's degree	15.9	14.8	17.2
Married year 1	10.1	8.4	12.4
Married year 2	11.9	12.2	11.5
Married year 3	19.0	18.0	20.3
Married year 4	18.3	16.5	20.4
Parenthood status			
Had child before bachelor's degree	15.3	16.5	13.2
No children before bachelor's degree	15.3	15.9	14.6
Did not become a parent within 4 years	16.0	17.1	14.7
Became a parent after bachelor's degree	10.8	8.9	13.6
Became a parent year 1	6.4	7.1	5.2
Became a parent year 2	7.4	7.8	6.9
Became a parent year 3	12.1	8.7	17.6
Became a parent year 4	14.2	10.9	18.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

As with graduate attainment overall, marriage and parenthood were related to women's level of attainment, but not men's. Among those who attained degrees within 4 years after earning their bachelor's degree, 97 percent of women who had married before earning their bachelor's degree earned master's degrees, compared with 84 percent of women who had not married

during that period (table 26). Women who had children before earning their bachelor's degree were also more likely to earn a master's degree (97 percent) than were women without children at that time (86 percent). Similarly, women who had children during the 4 years after graduation were more likely to earn a master's degree than women without children (95 percent vs. 85 percent).

Table 26.—Among 1992–93 bachelor's degree recipients who attained a graduate degree within 4 years of graduation, percentage distribution according to highest degree earned, by gender and marital and parenthood status

	Women			Men		
	Master's degree	First-professional degree	Doctoral degree	Master's degree	First-professional degree	Doctoral degree
Total	87.2	11.5	1.3	76.6	20.8	2.6
Marital status						
Married before bachelor's degree	97.3	2.1	0.6	82.2	17.0	0.9
Not married before bachelor's degree	84.4	14.1	1.5	74.9	22.2	2.9
Did not marry within 4 years	83.4	14.9	1.7	74.3	23.4	2.2
Married after bachelor's degree	87.9	11.0	1.1	76.1	19.2	4.8
Married year 1	—	—	—	—	—	—
Married year 2	95.1	2.7	2.1	—	—	—
Married year 3	85.7	14.3	0.0	83.6	12.7	3.8
Married year 4	83.5	15.0	1.5	75.0	23.1	1.9
Parenthood status						
Had child before bachelor's degree	96.7	3.3	0.0	78.0	20.9	1.2
No children before bachelor's degree	85.7	12.8	1.5	75.8	21.4	2.8
Did not become a parent within 4 years	85.1	13.3	1.7	76.0	21.4	2.6
Became a parent after bachelor's degree*	95.4	4.6	0.0	74.8	20.2	5.0

—Sample size too small for a reliable estimate.

*There were too few cases to look at the percentages year by year.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Employment

While men and women exhibited similar employment patterns during the 4 years after receiving the bachelor's degree (table 19), some differences appeared when controlling for marital and parenthood status (table 27). Generally, among those who married before receiving the bachelor's degree, men were more likely than women to be employed during the years following graduation. Two years after graduation, 90 percent of men in this group were employed,

Table 27.—Percentage of 1992–93 bachelor’s degree recipients who were employed during various months following graduation, by gender and marital and parenthood status

	Women				Men			
	Month 12	Month 24	Month 36	Month 48	Month 12	Month 24	Month 36	Month 48
Total	86.6	84.1	88.8	88.3	85.7	85.6	88.7	89.8
Marital status								
Married before bachelor’s degree	85.4	84.2	87.8	86.5	88.2	90.2	92.9	93.9
Not married before bachelor’s degree	87.3	84.1	89.3	89.4	84.8	83.8	87.3	88.4
Did not marry within 4 years	86.4	82.8	89.0	89.2	83.7	82.8	86.1	87.5
Married after bachelor’s degree	89.2	86.7	90.0	89.7	87.5	86.4	90.4	90.8
Married year 1	86.0	71.1	76.9	84.3	96.9	94.1	93.7	94.2
Married year 2	89.9	90.7	91.6	88.7	87.1	88.0	90.5	90.4
Married year 3	89.8	86.1	90.3	90.4	90.6	85.0	91.5	91.5
Married year 4	88.8	87.6	91.7	91.6	82.8	84.3	88.7	89.7
Parenthood status								
Had child before bachelor’s degree	81.2	82.0	88.2	87.7	88.5	90.1	93.5	94.9
No children before bachelor’s degree	87.9	84.4	88.9	88.5	85.4	84.8	88.3	89.3
Did not become a parent within 4 years	88.1	84.7	90.6	90.4	85.0	83.9	87.4	88.6
Became a parent after bachelor’s degree	86.8	83.0	79.1	76.9	88.7	91.7	94.8	94.8
Became a parent year 1	63.1	71.2	71.7	76.7	84.2	90.9	94.6	94.2
Became a parent year 2	91.3	76.4	73.9	78.6	90.1	93.0	94.6	97.3
Became a parent year 3	92.3	89.2	73.8	73.6	91.0	91.9	92.8	94.5
Became a parent year 4	92.1	88.7	91.2	78.7	88.3	91.2	96.4	94.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

compared with 84 percent of women. This difference persisted for the next 2 years as well. In addition, among those who had children either before or after earning their bachelor’s degree, men were more likely than women to be employed. Two years after graduation, 90 percent of men who had children before they graduated were employed, compared with 82 percent of women. Similarly, 92 percent of men who had children after earning their bachelor’s degree were employed 2 years later, while 83 percent of their female counterparts were working at this time.

As men’s rates of marriage and parenthood increased, so did their likelihood of being employed. Men who had married or become parents before graduating were consistently more likely than men who were not married or parents at that time to be employed 2, 3, and 4 years after graduation. Similarly, men who had married after graduation were consistently more likely than those who had not married to be employed. The same was true for men who had become parents compared with those who had not. For women, on the other hand, no consistent effects of marriage and parenthood on employment emerge. However, during the third and fourth years after graduation, women who became parents after earning their bachelor’s degree were less likely to be employed than were women without children.

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Controlling for Related Variables

Earlier sections of this report have illustrated several connections between student characteristics and the competing choices that bachelor's degree recipients face, as well as the interrelationships among marriage, parenthood, graduate enrollment, and employment. Marital and parenthood transitions are strongly related to age, with older graduates being more likely to marry or become parents than younger graduates. Also, undergraduate field of study and GPA are both linked to the likelihood of graduate enrollment: graduates who majored in arts and sciences and those with higher GPAs were more likely than other students to enroll in graduate degree programs. In turn, it appears that marriage and parenthood are associated with a lower likelihood of graduate enrollment.

A multivariate analysis was conducted to examine the effects of marriage and parenthood on the likelihood of graduate enrollment during the first 4 years after bachelor's degree receipt, taking into consideration other demographic and enrollment variables that might be expected to affect graduate enrollment as well. To explore differences in the effects of characteristics and in women's and men's behaviors, the analysis was conducted for all bachelor's degree recipients and then separately for women and men.

An important caveat in interpreting these net effects relates to the fact that the phenomena under study are transitions. The ordinary least squares (OLS) regression model does not account for the timing of events.² In these models, outcomes over a 4-year period are related to behaviors during that same period. Also, the OLS model does not account for the amount of "exposure" to a behavior, but only whether or not the degree recipient engaged in the behavior. In addition, for some respondents, the outcome precedes or coincides with the behavior being used as a predictor, making it difficult to interpret the regression coefficients. For example, an individual who married during the first month after receiving the bachelor's degree is treated the same way as a second individual who married in the 48th month after graduation. Clearly, these two behaviors should have different effects on the likelihood of graduate enrollment during the period. Further, interpreting the results is difficult because the second graduate may have already enrolled in graduate school before marrying. Therefore, the coefficients associated with marriage, parent-

²Ideally, one would conduct an event history analysis. Such a model would be used to predict an event (such as graduate enrollment) in month t , based on fixed characteristics (such as undergraduate major) and time-varying characteristics (such as ever being married) as of month $t-1$.

hood, enrollment, and attainment after bachelor's degree receipt are more correctly viewed as correlations than as predictors.

The analysis examining graduate enrollment for all bachelor's degree recipients (table 28) shows that, for the combined pool of men and women, marriage and parenthood were not related to the likelihood of graduate enrollment once other factors affecting enrollment were taken into account. These other factors included age, race/ethnicity, parents' educational attainment, undergraduate field of study, and GPA. Graduates age 22 or younger at bachelor's degree receipt were more likely to enroll in a graduate program within 4 years than graduates ages 23–29. Although there were no significant differences in the unadjusted rates of graduate enrollment by race/ethnicity, black, non-Hispanic graduates were more likely to enroll than their white, non-Hispanic counterparts when other factors were controlled for. Graduates whose parents had advanced degrees were more likely to enroll than graduates whose parents had high school diplomas. Degree recipients who majored in arts and sciences were more likely to enter graduate school than professional field majors. In addition, graduates with higher GPAs were more likely to enroll than their counterparts with lower GPAs. Finally, graduates of private, for-profit institutions were less likely than graduates of public institutions to enroll in a graduate degree program, but only 2 percent of graduates earned their degrees from a private, for-profit institution.

The analyses examining graduate enrollment for women and men separately (tables 29 and 30) show different relationships between enrollment and marriage. For women, marriage before degree receipt had a negative effect on the likelihood of graduate enrollment. After controlling for other characteristics, 23 percent of women who married before receiving their bachelor's degree enrolled in graduate school (column 2), compared with 33 percent of women who had not yet married 4 years after graduating. Marriage was not significantly related to graduate enrollment for men, however. For both men and women, the effects of other variables—age, parents' education, field of study, and GPA—were generally consistent with the analysis of men and women together.

Table 28.—Percentage of 1992–93 bachelor’s degree recipients who enrolled in a graduate degree program within 4 years of earning their bachelor’s degree and the adjusted percentage after taking into account the covariation of the variables listed in the table

	Unadjusted percentages ¹	Adjusted percentages ²	WLS coefficient ³	Standard error ⁴
Total	28.9	28.9	30.83	3.51
Baccalaureate degree major				
Arts and sciences	37.1*	35.4*	9.46	2.12
Other	22.8 ₅	24.0	-1.97	2.87
<i>Professional fields</i>	25.1	25.9	†	†
Race/ethnicity				
American Indian/Alaskan Native	21.6	29.0	1.23	12.42
Asian/Pacific Islander	31.4	31.1	3.28	4.59
Black, non-Hispanic	31.5	37.8*	10.00	4.15
Hispanic	31.1	35.4	7.61	4.46
Other	26.9	28.4	0.61	16.17
<i>White, non-Hispanic</i>	28.5	27.8	†	†
Gender				
Women	28.8	27.6	-2.87	1.95
<i>Men</i>	29.0	30.5	†	†
Age received bachelor’s degree				
23–24	21.5*	24.7*	-8.20	2.47
25–29	21.9*	25.4*	-7.49	3.28
30 or older	26.5*	26.4	-6.49	3.88
<i>22 or younger</i>	35.5	32.9	†	†
Degree-granting institution				
Private, not-for-profit 4-year	32.3*	29.5	0.39	2.14
Private, for-profit 4-year	8.5*	9.8*	-19.24	8.07
<i>Public 4-year</i>	27.7	29.1	†	†
Degree-granting institution level				
Doctorate	31.0*	30.2	3.15	2.01
Other	31.4	32.7	5.64	7.92
<i>Nondoctorate</i>	26.1	27.1	†	†
GPA at bachelor’s degree institution				
Under 2.50	12.7*	12.5*	-19.30	3.03
2.50 to 2.99	25.1*	24.4*	-7.42	2.43
3.50 or above	40.2*	41.3*	9.49	2.63
<i>3.0 to 3.49</i>	32.3	31.8	†	†

Table 28.—Percentage of 1992–93 bachelor’s degree recipients who enrolled in a graduate degree program within 4 years of earning their bachelor’s degree and the adjusted percentage after taking into account the covariation of the variables listed in the table—Continued

	Unadjusted percentages ¹	Adjusted percentages ²	WLS coefficient ³	Standard error ⁴
Parents’ educational attainment				
Less than high school	23.7	24.9	-1.23	4.94
Some postsecondary education	26.7	27.4	1.22	2.83
Bachelor’s degree	28.2	28.0	1.80	2.71
Advanced degree	37.3*	34.6*	8.39	2.69
<i>High school or equivalency</i>	24.5	26.2	†	†
Parenthood status 4 years after graduation				
Had first child before bachelor’s degree	26.0*	31.1	2.20	3.99
Had first child within 4 years of graduation	21.6*	26.0	-2.89	3.49
<i>No children</i>	30.8	28.9	†	†
Marital status 4 years after graduation				
Married before bachelor’s degree	24.4*	25.6	-5.30	3.15
Married within 4 years of graduation	28.6	29.2	-1.67	2.54
<i>Had not married</i>	31.9	30.9	†	†

*p ≤ .05.

†Not applicable for the reference group.

¹The estimates are from the B&B:1993/1997 Undergraduate Data Analysis System.

²The percentages are adjusted for differences associated with other variables in the table (see appendix B).

³Weighted least squares (WLS) coefficient, multiplied by 100 to reflect percentage (see appendix B).

⁴Standard error of WLS coefficient, adjusted for design effect, multiplied by 100 to reflect percentage (see appendix B).

⁵The italicized group in each category is the reference group being compared.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Table 29.—Percentage of 1992–93 bachelor’s degree recipients who enrolled in a graduate degree program within 4 years of earning their bachelor’s degree and the adjusted percentage after taking into account the covariation of the variables listed in the table: Women

	Unadjusted percentages ¹	Adjusted percentages ²	WLS coefficient ³	Standard error ⁴
			Women	
Total	28.8	28.8	31.16	4.79
Baccalaureate degree major				
Arts and sciences	35.6*	34.0*	7.05	3.16
Other	23.8	23.9	-3.03	4.17
<i>Professional fields</i>	26.0 ⁵	26.9	†	†
Race/ethnicity				
American Indian/Alaskan Native	15.7	23.4	-4.45	16.11
Asian/Pacific Islander	29.9	26.7	-1.15	7.42
Black, non-Hispanic	32.8	38.5	10.63	5.65
Hispanic	28.3	32.2	4.39	6.24
Other	†	38.0	10.12	23.33
<i>White, non-Hispanic</i>	28.5	27.8	†	†
Age received bachelor’s degree				
23–24	20.5*	23.2*	-8.52	3.78
25–29	21.9*	26.3	-5.46	5.19
30 or older	26.6*	28.3	-3.40	5.64
<i>22 or younger</i>	34.2	31.7	†	†
Degree-granting institution				
Private, not-for-profit 4-year	31.2	28.6	-0.89	3.11
Private, for-profit 4-year	6.4*	3.6*	-25.90	12.49
<i>Public 4-year</i>	28.1	29.5	†	†
Degree-granting institution level				
Doctorate	30.9*	30.1	2.98	2.95
Other	34.3	37.1	9.98	11.05
<i>Nondoctorate</i>	26.2	27.1	†	†
GPA at bachelor’s degree institution				
Under 2.50	12.7*	11.8*	-18.95	4.84
2.50 to 2.99	25.1*	23.9	-6.87	3.65
3.50 or above	37.5*	38.8*	8.03	3.64
<i>3.0 to 3.49</i>	31.2	30.7	†	†
Parents’ educational attainment				
Less than high school	25.5	27.1	0.62	6.84
Some postsecondary education	26.2	26.4	-0.06	4.11
Bachelor’s degree (4–5 year degree)	28.7	28.0	1.51	4.01
Advanced degree	36.6*	34.6*	8.08	4.00
<i>Less than a bachelor’s degree</i>	24.6	26.5	†	†

Table 29.—Percentage of 1992–93 bachelor’s degree recipients who enrolled in a graduate degree program within 4 years of earning their bachelor’s degree and the adjusted percentage after taking into account the covariation of the variables listed in the table: Women—Continued

	Unadjusted percentages ¹	Adjusted percentages ²	WLS coefficient ³	Standard error ⁴
Women				
Parenthood status 4 years after graduation				
Had first child before bachelor’s degree	26.2	31.4	2.65	5.71
Had first child within 4 years of graduation	20.4*	25.7	-3.12	4.92
<i>No children</i>	<i>31.1</i>	<i>28.8</i>	†	†
Marital status 4 years after graduation				
Married before bachelor’s degree	23.4*	23.4*	-9.25	4.48
Married within 4 years of graduation	28.4	29.4	-3.29	3.81
<i>Had not married</i>	<i>33.0</i>	<i>32.7</i>	†	†

*p ≤ .05.

†Not applicable for the reference group.

¹The estimates are from the B&B:1993/1997 Undergraduate Data Analysis System.

²The percentages are adjusted for differences associated with other variables in the table (see appendix B).

³Weighted least squares (WLS) coefficient, multiplied by 100 to reflect percentage (see appendix B).

⁴Standard error of WLS coefficient, adjusted for design effect, multiplied by 100 to reflect percentage (see appendix B).

⁵The italicized group in each category is the reference group being compared.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Table 30.—Percentage of 1992–93 bachelor’s degree recipients who enrolled in a graduate degree program within 4 years of earning their bachelor’s degree and the adjusted percentage after taking into account the covariation of the variables listed in the table: Men

	Unadjusted percentages ¹	Adjusted percentages ²	WLS coefficient ³	Standard error ⁴
			Men	
Total	29.0	29.0	26.91	5.31
Baccalaureate degree major				
Arts and sciences	38.9*	37.0*	12.32	3.31
Other	21.6	23.9	-0.79	4.62
<i>Professional fields</i>	24.0 ⁵	24.7	†	†
Race/ethnicity				
American Indian/Alaskan Native	†	41.2	13.38	24.55
Asian/Pacific Islander	32.6	34.2	6.38	6.77
Black, non-Hispanic	28.9	34.9	7.15	7.48
Hispanic	35.6	40.6	12.82	7.57
Other	†	14.4	-13.43	26.28
<i>White, non-Hispanic</i>	28.5	27.8	†	†
Age received bachelor’s degree				
23–24	22.3*	26.2*	-7.98	3.78
25–29	21.8*	24.8	-9.40	4.88
30 or older	26.2*	23.7	-10.48	6.34
<i>22 or younger</i>	37.3	34.2	†	†
Degree-granting institution				
Private, not-for-profit 4-year	33.9*	30.5	1.84	3.47
Private, for-profit 4-year	10.5*	14.3	-14.41	12.40
<i>Public 4-year</i>	27.3	28.7	†	†
Degree-granting institution level				
Doctorate	31.2*	30.4	3.36	3.21
Other	26.6	27.2	0.12	13.69
<i>Nondoctorate</i>	25.9	27.0	†	†
GPA at bachelor’s degree institution				
Under 2.50	12.8*	13.9*	-18.97	4.46
2.50 to 2.99	25.1*	25.2*	-7.66	3.78
3.50 or above	45.4*	45.4*	12.58	4.56
<i>3.0 to 3.49</i>	33.6	32.8	†	†
Parents’ educational attainment				
Less than high school	20.7	20.5	-5.05	8.54
Some postsecondary education	27.3	28.6	3.01	4.59
Bachelor’s degree (4–5 year degree)	27.8	28.1	2.57	4.28
Advanced degree	38.1*	34.6*	9.04	4.24
<i>Less than a bachelor’s degree</i>	24.2	25.5	†	†

Table 30.—Percentage of 1992–93 bachelor’s degree recipients who enrolled in a graduate degree program within 4 years of earning their bachelor’s degree and the adjusted percentage after taking into account the covariation of the variables listed in the table: Men—Continued

	Unadjusted percentages ¹	Adjusted percentages ²	WLS coefficient ³	Standard error ⁴
Men				
Parenthood status 4 years after graduation				
Had first child before bachelor’s degree	25.6	29.5	0.25	6.67
Had first child within 4 years of graduation	23.3*	26.6	-2.60	5.87
<i>No children</i>	<i>30.4</i>	<i>29.2</i>	†	†
Marital status 4 years after graduation				
Married before bachelor’s degree	26.0*	29.0	0.06	5.27
Married within 4 years of graduation	28.9	29.1	0.15	3.97
<i>Had not married</i>	<i>30.8</i>	<i>29.0</i>	†	†

*p ≤ .05.

†Not applicable for the reference group.

¹The estimates are from the B&B:1993/1997 Undergraduate Data Analysis System.

²The percentages are adjusted for differences associated with other variables in the table (see appendix B).

³Weighted least squares (WLS) coefficient, multiplied by 100 to reflect percentage (see appendix B).

⁴Standard error of WLS coefficient, adjusted for design effect, multiplied by 100 to reflect percentage (see appendix B).

⁵The italicized group in each category is the reference group being compared.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

Summary and Conclusions

Among 1992–93 bachelor’s degree recipients, women and men had different demographic and educational characteristics. Women were more likely than men to be under age 22 or age 30 or older. Women were also more likely to be married and have children. Women were more likely than men to major in education, health professions, and humanities and psychology fields, and to graduate with higher GPAs. In addition, women who did not marry before graduating were more likely than married women and both married and single men to aspire to a graduate degree. Among those with graduate degree aspirations, married women were less likely than single women and married or single men to aspire to a first-professional or doctoral degree.

During the first 4 years after graduation, women and men behaved differently with respect to marriage, parenthood, graduate enrollment, graduate attainment, and employment. Among those who at graduation had not already made such transitions, women were more likely to marry and/or become parents during the first 4 years after degree receipt. While women and men were equally likely to enroll in some type of graduate degree program, women were more likely to enroll in master’s degree programs, and men were more likely to enroll in first-professional and doctoral programs.

Graduate enrollment was negatively related to marriage for women, and to parenthood for both men and women. In addition, women who enrolled in first-professional or doctoral programs were less likely to marry and become parents than those enrolling in master’s programs. For women, marriage and parenthood appeared to play more significant roles in determining their graduate outcomes than they did for men. In particular, women who were married before earning their bachelor’s degree were less likely than those who were not married to enroll in a graduate program, to enroll in a first-professional or doctoral degree program, and among those who enrolled, to enroll full time. These women were also less likely to attain a graduate degree, and among those who attained, they were less likely to attain a first-professional or doctoral degree. Among women who became parents after graduation, one also observed similar consistent negative effects on graduate enrollment and attainment. However, these effects were less consistent for women who married after graduation, for women who were parents at graduation, and for men.

Results of multivariate analyses show that, for women, marriage before receipt of a bachelor’s degree decreased their likelihood of graduate enrollment. On the other hand, for men, mar-

riage had no effect on their enrolling in a graduate program. For the combined pool of men and women, age, race/ethnicity, parents' education, field of study, and GPA were significant predictors of graduate enrollment.

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Appendix A—Glossary

This glossary describes the variables used in this report. The variables were taken directly from the B&B:97 Data Analysis System (DAS), an NCES software application that generates tables from the B&B:97 data. A description of the DAS software can be found in appendix B. The labels are in bold capital letters and correspond to the names of the variables in the DAS.

The glossary index is organized into three sections: Student Characteristics; Undergraduate Enrollment Characteristics; and Postbaccalaureate Enrollment, Attainment, and Employment Characteristics as of 1997. In the index below, the variables in each section are listed in the order they appear in the tables; the glossary is in alphabetical order by variable name (displayed in the right-hand column).

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Parenthood status at bachelor's degree receipt	KIDSATBA
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POST-BACCALAUREATE ENROLLMENT, ATTAINMENT, AND EMPLOYMENT CHARACTERISTICS

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Employment/enrollment 3 years after bachelor's degree receipt	EMEN36
Employment/enrollment 4 years after bachelor's degree receipt	EMEN48
Year first married after bachelor's degree	YRMARRY
Year of first graduate degree after bachelor's degree	YRGRDEG
Year of parenthood after bachelor's degree	YRBIRTH
Year first enrolled in graduate school after bachelor's degree.....	YRENROL

Graduate degree goal

ANYHILVL

Indicates highest degree respondent expected ever to complete when asked in 1993. Degree expectations were classified as follows:

Master's
First-professional
Doctoral

Attendance at 2-year institution

B2ATT2YR

Indicates if a respondent attended a 2-year institution prior to attending the NPSAS institution.

Never attended
Attended

Baccalaureate degree major

B2BAMAJR

Identifies a respondent's undergraduate major field of study. Majors were classified as follows:

Professional fields
Business and management
Education
Engineering
Health professions
Public affairs/social services
Arts and sciences
Biological sciences
Mathematics and other sciences
Social science
History
Humanities
Psychology
Other

Race/ethnicity

B2ETHNIC

Indicates the race and ethnicity of the respondent. Created by combining two items respondents reported, their race (American Indian/Alaskan Native, Asian/Pacific Islander, black, white, other) and whether or not they were of Hispanic origin.

American Indian/Alaskan Native
Asian/Pacific Islander
Black, non-Hispanic
Hispanic
White, non-Hispanic
Other

Highest degree earned after bachelor's degree

B2HDGPRG

Identifies degree type for the highest degree a student earned after completing the bachelor's degree. Less than master's degrees were not included. Degree types were classified as follows:

Master's degree	Master's degree; MBA; post-master's certificate
First-professional degree	Medicine, law, theology, or other health science degree
Doctoral degree	Doctor of Philosophy, Doctor of Education, or other doctoral degree

Highest level of enrollment after earning a bachelor's degree

B2HENPRG

Identifies degree type for the highest degree program in which respondent enrolled after earning a bachelor's degree. Less than master's degrees were not included. Degrees were defined as follows:

Master's degree	Master's degree; MBA; post-master's certificate
First-professional degree	Medicine, law, theology, or other health science degree
Doctoral degree	Doctor of Philosophy, Doctor of Education, or other doctoral degree

Gender

B2RSEX

Indicates respondent's gender.

- Male
- Female

Time to bachelor's degree

BATIME2

Indicates the number of months between the date the respondent first entered college and the date of bachelor's degree receipt. Responses were grouped as follows:

- Four or fewer years
- More than four, up to five
- More than five

Age received bachelor's degree

CCAGEBA

Indicates the respondent's age when he or she received a bachelor's degree.

- 22 or younger
- 23–24
- 25–29
- 30 or older

Degree-granting institution control

CONTROL

Identifies the source of revenue and type of operations for the bachelor’s degree-granting institution.

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

Timing of postsecondary enrollment

DELAYENR

Indicates whether respondent delayed entering postsecondary education after high school and length of delay.

- Immediately following high school
- Delayed 1 year
- Delayed 2 or more years

Employment/enrollment after bachelor’s degree receipt—end of year 1, 2, 3, and 4

**EMEN12, EMEN24
EMEN36, EMEN48**

Indicates respondent’s status with respect to employment and enrollment in any postsecondary education 12, 24, 36, and 48 months after bachelor’s degree receipt. For all respondents, these characteristics are grouped as follows:

- Employed
- Not employed

- Enrolled
- Not enrolled

In part of the analysis, they are also grouped according to more specific enrollment and employment characteristics that take part-time/full-time status into account. Categories are defined as follows:

Employed full time	Employed full time, enrolled full time; employed full time, enrolled part time; employed full time, not enrolled
Employed part time	Employed part time, enrolled full time; employed part time, enrolled part time; employed part time, not enrolled
Not employed	Not employed, enrolled full time; not employed, enrolled part time; not employed, not enrolled
Enrolled full time	Enrolled full time, employed full time; enrolled full time, employed part time; enrolled full time, not employed

Enrolled part time	Enrolled part time, employed full time; enrolled part time, employed part time; enrolled part time, not employed
Not enrolled	Not enrolled, employed full time; not enrolled, employed part time; not enrolled, not employed

Parenthood status at bachelor’s degree receipt

KIDSATBA

Indicates whether the respondent had any children at the time of receiving his or her bachelor’s degree.

- No children
- One or more children

Degree-granting institution level

LEVEL6A

Indicates the highest type of degree offered at respondent’s institution. Responses were grouped as follows:

Nondoctorate	Bachelor’s degree; master’s degree
Doctorate	Doctoral degree; first-professional degree
Other	Less-than-2-year; 2-year

Marital status at bachelor’s degree receipt

MSATBA

Indicates respondent’s marital status at time of receiving his or her bachelor’s degree. Responses were classified as follows:

- Ever married
- Married
- Separated
- Divorced
- Widowed
- Never married
- Cohabiting
- Single, never married

GPA at bachelor’s degree institution

NORMGPA

Indicates respondent’s normalized calculated GPA. GPA scores were categorized as follows:

- Under 2.50
- 2.50–2.99
- 3.00–3.49
- 3.50–4.00

Parents' educational attainment

PAREUC

Indicates the highest level of education completed by either of the respondent's parents. Responses were defined in the following categories:

- Less than high school
- High school or equivalency
- Some postsecondary education (including associate's degree)
- Bachelor's degree
- Advanced degree

Year of parenthood after bachelor's degree

YRBIRTH

Indicates whether the respondent became a parent after receiving his or her bachelor's degree, relative to the date of degree receipt.

- Did not become a parent within 4 years
- Became a parent after bachelor's degree
- Became a parent during year 1
- Became a parent during year 2
- Became a parent during year 3
- Became a parent during year 4

Year first enrolled in graduate school after bachelor's degree

YRENROL

Indicates the year of first enrollment in a graduate program after receipt of the bachelor's degree, relative to the date of degree receipt. Responses were classified as follows:

- Did not enroll in graduate school within 4 years
- Enrolled in grad school after bachelor's degree
- Enrolled in grad school during year 1
- Enrolled in grad school during year 2
- Enrolled in grad school during year 3
- Enrolled in grad school during year 4

Year of first graduate degree after bachelor's degree

YRGRDEG

Indicates the year of first graduate attainment after receipt of the bachelor's degree, relative to the date of degree receipt. Responses were categorized as follows:

- Did not attain graduate degree within 4 years
- Attained graduate degree after bachelor's degree
- Attained graduate degree during year 1
- Attained graduate degree during year 2
- Attained graduate degree during year 3
- Attained graduate degree during year 4

Year first married after bachelor's degree

YRMARRY

Indicates the year of first marriage after receipt of the bachelor's degree, relative to the date of degree receipt. Categories are as follows:

- Did not marry within 4 years
- Married after bachelor's degree
- Married during year 1
- Married during year 2
- Married during year 3
- Married during year 4

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Appendix B—Technical Notes and Methodology

The Baccalaureate and Beyond Longitudinal Study³

The data analyzed in this report came from the First and Second Follow-ups of the Baccalaureate and Beyond Longitudinal Study (B&B:93/94 and B&B:93/97), a study that tracks the experiences of a cohort of college graduates who received baccalaureate degrees during the 1992–93 academic year and were first interviewed as part of the National Postsecondary Student Aid Study (NPSAS:93). This group’s experiences in the areas of academic enrollments, degree completions, employment, public service, and other decisions have been followed through 1997. The data derived from this survey provide critical information about college graduates’ post-secondary education outcomes, including graduate and professional program access, labor market experience, and rates of return on investment in education.

The B&B:93/94 survey was the first follow-up interview of NPSAS:93 participants who received their bachelor’s degree between July 1992 and June 1993. Of 12,500 NPSAS:93 respondents who were identified as potentially eligible for the first follow-up survey, about 1,500 were determined to be ineligible. About 10,000 eligible individuals completed the 1994 interview.

The B&B:93/97 survey is the second follow-up interview of the B&B cohort. The first follow-up interview (B&B:93/94) collected information from respondents 1 year after they received the bachelor’s degree; the second follow-up (B&B:93/97) collected data 4 years after they received the bachelor’s degree. Data collection for B&B:93/97 took place between April and December 1997. Approximately 11,000 individuals in the B&B cohort were determined eligible for follow-up in 1997. For the second followup, the number of interviews completed was about 10,000, yielding a response rate of 90 percent. About 9,000 individuals (83 percent of the sample) responded to all three rounds of the B&B study. Referred to as “the B&B panel sample,” these respondents became the base sample of the analyses presented in this report.

The NPSAS:93 sample, while representative and statistically accurate, was not a simple random sample. Instead, the survey sample was selected using a more complex three-step proce-

³The text in this section is based on excerpts from the *Baccalaureate and Beyond Longitudinal Study: 1993/97 Methodology Report* (NCES 1999–159) (Washington, DC: U.S. Department of Education, National Center for Education Statistics, 1999).

cedure with stratified samples and differential probabilities of selection at each level. Postsecondary institutions were initially selected within geographic strata. Once institutions were organized by zip code and state, they were further stratified by control (i.e., public; private, not-for-profit; or private, for-profit) and degree offering (less-than-2-year, 2- to 3-year, 4-year nondoctorate-granting, and 4-year doctorate-granting).⁴

For more information about the NPSAS:93 survey, refer to the *Methodology Report for the National Postsecondary Student Aid Study, 1992–93* (NCES 95–211, Washington, DC: U.S. Department of Education, National Center for Education Statistics, 1995). For more information on procedures for the Baccalaureate and Beyond First Follow-up Study (B&B:93/94), consult the *Baccalaureate and Beyond Longitudinal Study: 1993/94 Methodology Report* (NCES 96–149, Washington, DC: U.S. Department of Education, National Center for Education Statistics, 1996). For more information on procedures for the Baccalaureate and Beyond Second Follow-up Study (B&B:93/97), consult the *Baccalaureate and Beyond Longitudinal Study: 1993/97 Methodology Report* (NCES 1999–159, Washington, DC: U.S. Department of Education, National Center for Education Statistics, 1999).

Sample weights. B&B:93/97 final weights were calculated by making a nonresponse adjustment to the baseline B&B weight calculated for the sample eligible for B&B:93/94 and later follow-up studies. This baseline B&B weight is an adjustment of the baseline NPSAS:93 weight to correct for misidentification in NPSAS:93 and several post-stratification adjustments. All analyses in this report are weighted to compensate for unequal probability of selection into the B&B sample and to adjust for nonresponse. The B&B panel weight, based on respondents who participated in all three surveys, is used. A complete description of the weighting methodology is available in the methodology reports cited above.

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. Surveys of population universes are not subject to sampling errors. Estimates based on a sample will differ somewhat from those that would have been obtained by a complete census of the relevant population using the same survey instruments, instructions, and procedures. The standard error of a statistic is a measure of the variation due to sampling; it indicates the precision of the statistic

⁴The NPSAS universe excludes institutions offering only correspondence courses, institutions enrolling only their own employees, and U.S. service academies. For this B&B cohort, institutions were further stratified by the number of degrees in education they had awarded in the past.

obtained in a particular sample. In addition, the standard errors for two sample statistics can be used to estimate the precision of the difference between the two statistics and to help determine whether the difference based on the sample is large enough so that it represents the population difference.

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. Although nonsampling errors due to questionnaire and item nonresponse can be reduced somewhat by the adjustment of sample weights and imputation procedures, correcting nonsampling errors or gauging the effects of these errors is usually difficult.

Data Analysis System

The estimates presented in this report were produced using the B&B:93/97 Data Analysis System (DAS). The DAS software makes it possible for users to specify and generate their own tables from the B&B:93/97 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 errors⁵ and weighted sample sizes for these estimates. For example, table B1 contains estimated standard errors that correspond to the estimates presented in table 9 and was generated by the B&B:93/97 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 standard errors based on an assumption of simple random sampling, those standard errors must be adjusted with the design effects to take into account B&B’s complex sample design. (See discussion under “Statistical Procedures” below for the adjustment procedure.)

⁵The B&B sample is not a simple random sample, and therefore simple random sample techniques for estimating sampling error cannot be applied to these data. The DAS takes into account the complexity of the sampling procedures and calculates standard errors appropriate for such samples. The method for computing sampling errors used by the DAS involves approximating the estimator by the linear terms of a Taylor series expansion. The procedure is typically referred to as the Taylor series method.

Table B1.—Standard errors for table 3: Percentage of 1992–93 bachelor’s degree recipients who expected to earn a graduate degree, and among those who did, percentage distribution according to graduate degree expected at the time of bachelor’s degree receipt, by gender and selected demographic and enrollment characteristics

	Expected to earn a graduate degree	Degree expected		
		Master’s degree	First-professional	Doctoral degree
Total	0.59	0.94	0.45	0.85
Women				
Age received bachelor’s degree				
22 or younger	0.73	1.30	0.73	1.15
23–24	1.28	2.05	0.80	1.97
25–29	2.23	2.61	0.91	2.57
30 or older	1.54	1.90	0.64	1.83
Race/ethnicity				
American Indian/Alaskan Native	4.92	10.17	3.70	10.03
Asian/Pacific Islander	3.12	5.67	3.65	6.59
Black, non-Hispanic	2.25	3.73	1.75	3.28
Hispanic	1.86	3.82	1.95	3.58
White, non-Hispanic	0.66	0.94	0.44	0.85
Other	—	—	—	—
Parents’ educational attainment				
Less than high school	2.83	3.42	1.15	3.32
High school or equivalency	1.14	1.72	0.75	1.62
Some postsecondary education	1.16	2.12	0.99	2.05
Bachelor’s degree	1.38	1.72	0.68	1.57
Advanced degree	1.17	1.95	0.97	1.73
Degree-granting institution				
Public 4-year	0.69	1.14	0.56	1.04
Private, not-for-profit 4-year	1.10	1.65	0.75	1.47
Degree-granting institution level				
Nondoctorate	0.86	1.23	0.47	1.18
Doctorate	0.78	1.33	0.73	1.13
Baccalaureate degree major				
Professional fields	0.85	1.09	0.50	1.01
Business and management	1.80	1.91	1.09	1.62
Education	0.82	1.64	0.54	1.64
Engineering	2.88	6.62	2.28	6.34
Health professions	2.04	2.30	0.94	2.23
Public affairs/social services	2.36	4.17	2.07	4.01
Arts and sciences	0.84	1.69	0.90	1.60
Biological sciences	2.49	4.31	2.90	4.04
Mathematics/other sciences	2.58	4.66	1.52	4.79
Social science	1.31	3.04	2.02	2.75
History	6.35	5.96	4.95	5.80
Humanities	1.74	3.01	0.83	2.97
Psychology	1.87	4.22	2.03	4.31
Other	1.69	2.10	1.03	1.97
GPA at bachelor’s degree institution				
Under 2.5	2.14	2.85	1.33	2.70
2.5 to 2.99	1.17	1.63	0.82	1.56
3.0 to 3.49	0.95	1.47	0.70	1.34
3.5 or above	1.15	1.70	0.79	1.62

Table B1.—Standard errors for table 3: Percentage of 1992–93 bachelor’s degree recipients who expected to earn a graduate degree, and among those who did, percentage distribution according to graduate degree expected at the time of bachelor’s degree receipt, by gender and selected demographic and enrollment characteristics—Continued

	Expected to earn a graduate degree	Degree expected		
		Master’s degree	First-professional	Doctoral degree
Total	0.82	1.11	0.60	1.08
Men				
Age received bachelor’s degree				
22 or younger	1.18	1.61	1.02	1.48
23–24	1.54	2.55	0.89	2.62
25–29	2.10	2.66	1.26	2.45
30 or older	2.03	2.69	1.57	2.32
Race/ethnicity				
American Indian/Alaskan Native	—	—	—	—
Asian/Pacific Islander	3.32	8.36	2.73	9.75
Black, non-Hispanic	2.44	4.97	3.19	4.50
Hispanic	2.72	4.89	2.40	4.80
White, non-Hispanic	0.90	1.08	0.64	0.99
Other	—	—	—	—
Parents’ educational attainment				
Less than high school	4.13	4.71	2.68	4.53
High school or equivalency	1.70	1.95	0.90	1.78
Some postsecondary education	1.74	3.66	1.36	3.73
Bachelor’s degree	1.64	1.96	1.20	1.83
Advanced degree	1.42	2.05	1.41	1.95
Degree-granting institution				
Public 4-year	1.03	1.19	0.72	1.11
Private, not-for-profit 4-year	1.28	1.83	1.10	1.68
Degree-granting institution level				
Nondoctorate	1.39	2.02	0.84	2.02
Doctorate	1.01	1.30	0.83	1.21
Baccalaureate degree major				
Professional fields	1.22	1.33	0.72	1.20
Business and management	1.87	1.95	1.15	1.66
Education	3.03	3.37	0.74	3.30
Engineering	2.09	2.58	1.28	2.40
Health professions	3.56	4.70	2.88	4.14
Public affairs/social services	3.67	4.61	2.78	3.99
Arts and sciences	0.98	1.63	1.10	1.53
Biological sciences	1.79	3.43	3.96	3.78
Mathematics/other sciences	2.20	3.34	1.33	3.27
Social science	1.89	2.87	2.35	2.51
History	3.44	6.32	2.92	5.86
Humanities	2.38	3.57	1.13	3.42
Psychology	2.70	6.67	2.56	6.89
Other	2.60	4.80	1.48	5.19
GPA at bachelor’s degree institution				
Under 2.5	2.00	2.11	1.42	1.61
2.5 to 2.99	1.41	1.60	0.75	1.54
3.0 to 3.49	1.35	2.41	1.21	2.46
3.5 or above	1.59	2.58	1.53	2.28

—Sample size too small for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (B&B:1993/1997), Data Analysis System.

For more information about the B&B:93/97 and other Data Analysis Systems, consult the NCES DAS website (<http://nces.ed.gov/das>) or contact:

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

Statistical Procedures

Differences Between Means

The descriptive comparisons were tested in this report using Student's *t* statistic. Differences between estimates are tested against the probability of a Type I error,⁶ or significance level. The significance levels were determined by calculating the Student's *t* values for the differences between each pair of means or proportions and comparing these with published tables of significance levels for two-tailed hypothesis testing.

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

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

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

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

where r is the correlation between the two estimates.⁷ This formula is used when comparing two percentages from a distribution that adds to 100. If the comparison is between the mean of a subgroup and the mean of the total group, the following formula is used:

⁶A Type I error occurs when one concludes that a difference observed in a sample reflects a true difference in the population from which the sample was drawn, when no such difference is present.

⁷U.S. Department of Education, National Center for Education Statistics, A Note from the Chief Statistician, no. 2, 1993.

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

where p is the proportion of the total group contained in the subgroup.⁸ The estimates, standard errors, and correlations can all be obtained from the DAS.

There are hazards in reporting statistical tests for each comparison. First, comparisons based on large t statistics may appear to merit special attention. This can be misleading since the magnitude of the t statistic is related not only to the observed differences in means or percentages but also to the number of 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 $p \leq .05/k$ 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 $p \leq .05$ and that for k comparisons within a family of possible comparisons, the significance level for all the comparisons will sum to $p \leq .05$.⁹

For example, in a comparison of males and females, only one comparison is possible (males vs. 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 $p \leq .05/10$, or $p \leq .005$. The formula for calculating family size (k) is as follows:

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

⁸Ibid.

⁹The standard that $p \leq .05/k$ for each comparison is more stringent than the criterion that the significance level of the comparisons should sum to $p \leq .05$. For tables showing the t statistic required to ensure that $p \leq .05/k$ for a particular family size and degrees of freedom, see Olive Jean Dunn, “Multiple Comparisons Among Means,” *Journal of the American Statistical Association* 56 (1961): 52–64.

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/Alaskan Native; Asian/Pacific Islander; black, non-Hispanic; Hispanic; and white, non-Hispanic), so substituting 5 for j in equation 2,

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

Linear Trends

While most descriptive comparisons in this report were tested using Student's t statistic, some comparisons across categories of an ordered variable with three or more levels involved a test for a linear trend across all categories, rather than a series of tests between pairs of categories. In this report, when averages of a continuous variable were examined relative to a variable with ordered categories, Analysis of Variance (ANOVA) was used to test for a linear relationship between the two variables. To do this, ANOVA models included orthogonal linear contrasts corresponding to successive levels of the independent variable. The squares of the Taylorized standard errors (that is, standard errors that were calculated by the Taylor series method), the variance between the means, and the unweighted sample sizes were used to partition total sum of squares into within- and between-group sums of squares. These were used to create mean squares for the within- and between-group variance components and their corresponding F statistics, which were then compared with published values of F for a significance level of .05.¹⁰ Significant values of both the overall F and the F associated with the linear contrast term were required as evidence of a linear relationship between the two variables. Means and Taylorized standard errors were calculated by the DAS. Unweighted sample sizes are not available from the DAS and were provided by NCES.

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 or were still enrolled in postsecondary education 3 years after their initial enrollment, 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.

¹⁰More information about ANOVA and significance testing using the F statistic can be found in any standard textbook on statistical methods in the social and behavioral sciences.

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.¹¹ Adjusted means for subgroups were obtained by regressing the dependent variable on a set of descriptive variables such as gender, race/ethnicity, SES, and so on. 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
Less than 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:

$$\hat{Y} = a + b_1A + b_2G \tag{5}$$

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:

$$\hat{Y} = 0.15 + 0.17A + 0.01G \tag{6}$$

¹¹For more information about weighted least squares regression, see Michael S. Lewis-Beck, *Applied Regression: An Introduction*, Vol. 22 (Beverly Hills, CA: Sage Publications, Inc., 1980); William D. Berry and Stanley Feldman, *Multiple Regression in Practice*, Vol. 50 (Beverly Hills, CA: Sage Publications, Inc., 1987).

To estimate the adjusted value for older students, one substitutes the appropriate parameter estimates and variable values into equation 6.

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 resemble 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 pairwise missing values. In regression analysis, there are several common approaches to the problem of missing data. The two simplest are pairwise deletion of missing data and listwise deletion of missing data. In pairwise deletion, each correlation is calculated using all of the cases for the two relevant variables. For example, suppose you have a regression analysis that uses variables X1, X2, and X3. The regression is based on the correlation matrix between X1, X2 and X3. In pairwise deletion the correlation between X1 and X2 is based on the nonmissing cases for X1 and X2. Cases missing on either X1 or X2 would be excluded from the calculation of the correlation. In listwise deletion the correlation between X1 and X2 would be based on the nonmissing values for X1, X2, and X3. That is, all of the cases with missing data on any of the three variables would be excluded from the analysis.¹²

The correlation 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.

¹²Although the DAS simplifies the process of making regression models, it also limits the range of models. Analysts who wish to use an approach other than pairwise treatment of missing values or to estimate probit/logit models (which are the most appropriate for models with categorical dependent variables) can apply for a restricted data license from NCES. See John H. Aldrich and Forrest D. Nelson, *Linear Probability, Logit and Probit Models (Quantitative Applications in Social Sciences, Vol. 45)* (Beverly Hills, CA: Sage, 1984).

Most statistical software packages assume simple random sampling when computing standard errors of parameter estimates. Because of the complex sampling design used for the NPSAS and B&B 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 dependent variable (DEFT),¹³ 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.

¹³The 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).