

V. Transitions After High School

OVERVIEW

This chapter provides information on the postsecondary education and labor market experiences of public high school graduates. Postsecondary outcomes are presented before labor market outcomes, because, as discussed in Chapter II, postsecondary attainment contributes to labor market success. Two data sets were used in the analysis:

- *High School and Beyond (HS&B)* Sophomore Cohort Second and Fourth Follow-up Surveys
- National Education Longitudinal Study of 1988 (NELS:88) Third Follow-up Survey

The first data set provides information on 1982 public high school graduates 2 and 10 years after their high school graduation, while the second provides information on 1992 public high school graduates 2 years after their graduation. Due to the comparable nature of the data sets, it was possible in this analysis to compare postsecondary and labor market trends 2 years after high school for 1982 and 1992 graduates, although some data elements available in NELS:88 were not present in HS&B. Comparable long-term (10-year) outcomes for the 1992 cohort are obviously not yet available.

When making comparisons of postsecondary and labor market experiences for different groups of high school graduates, the same curriculum-based definitions used in the previous chapter were applied here:

Vocational concentrators completed 3.0 or more credits in a single occupational program area.⁹⁰ These program areas include the following:

- agriculture and renewable resources
- business

⁹⁰A second definition was also sometimes used: *vocational specialists* completed 4.0 or more credits in a single occupational program area, with 2.0 or more of these units taken beyond the introductory level. However, the report generally focuses on the first, less restrictive, definition of vocational concentrators.

- marketing and distribution
- health care
- public and protective services
- trade and industry
- technology and communications
- food service and hospitality
- child care and education
- personal and other services

College preparatory graduates completed a college preparatory course of study that was consistent with the prevailing entrance requirements at public 4-year institutions. These included 4.0 credits in English; 3.0 credits in mathematics at the Algebra 1 level or higher; 2.0 credits in biology, chemistry, and/or physics; 2.0 credits in social studies with at least 1.0 credit in U.S. or World History; and 2.0 credits in a single foreign language.

Other/general students met neither of the above criteria.

Students who met both the vocational concentrator and college preparatory criteria were included in the vocational concentrators total in the tables and figures. Students who met only the vocational concentrator criteria, as well as the “both” group, were also reported separately. When examining post-high school outcomes, it is important to relate these outcomes to the particular paths that students took in high school. Consequently, in this chapter, outcomes for vocational concentrators who also completed a college preparatory curriculum (the “both” group) are sometimes compared with outcomes for vocational concentrators who did not meet the college preparatory criteria (referred to as “strictly vocational concentrators”). When the vocational concentrator group is divided into these two subgroups, the distinctions are made clear in the text, tables, and figures.

Readers are cautioned against interpreting the findings in this chapter as evidence of the causal impact of vocational education on student outcomes. These data are descriptive only—they describe the post-high school experiences of students completing different courses of study in high school. They are not causal in the sense that participation in vocational education or the college preparatory curricula necessarily caused these outcomes. Factors that influenced students

to complete a particular course of study in high school may have a more direct impact on subsequent outcomes than participation in that course of study. For example, students whose parents have a bachelor's degree or higher may be more likely both to complete a college preparatory course of study in high school and to pursue and attain a bachelor's degree after high school. Attributing the finding that college preparatory students were more likely than other students to obtain a bachelor's degree within 10 years of graduating from high school to their having completed a college preparatory course of study is misleading. It is impossible in a descriptive analysis to determine the specific contribution of completing different courses to post-high school outcomes. In order to control for "selection bias" and isolate the impact of particular courses of study on subsequent outcomes, an experimental or quasi-experimental study would have to be performed.

POSTSECONDARY OUTCOMES

The postsecondary education outcomes described in this section include both enrollment in a postsecondary institution after high school, postsecondary remedial coursework taken, and completion of a degree or certificate. The points 2 and 10 years after high school graduation are examined. Generally, the expressions "degree attainment" and "degree completion" used in the text refer to attainment of any postsecondary degree or certificate, not just degrees. The vast majority of the certificates referred to in this section are subbaccalaureate certificates, as opposed to 4-year or post-baccalaureate certificates (such as some teaching credentials).⁹¹

The Transition to Postsecondary Education: Two Years After High School

Within 2 years after graduating from public high school in 1992, about three out of every four students enrolled in a postsecondary institution. This indicates a marked increase in postsecondary enrollment rates from a decade earlier, when about half of 1982 public high school graduates enrolled in a postsecondary institution within 2 years of graduating. Between 1982 and 1992, postsecondary enrollment rates increased for vocational concentrators and students completing general coursework in high school, but not for college preparatory graduates. While the gap in enrollment rates among the three main curriculum-based groups appeared to be narrowing, 1992 vocational concentrators were still less likely than their college preparatory and other/general peers to enroll in a postsecondary institution within 2 years. However, vocational concentrators who also completed a college preparatory curriculum had enrollment outcomes that were more like those of their college preparatory peers than did strictly vocational concentrators.

⁹¹HS&B and NELS:88 did not specify types of certificates in the survey questions asked of respondents about degree attainment. The vast majority of these certificates, however, appear to have been awarded by 2-year institutions.

Vocational concentrators were more likely than their other/general peers to obtain a degree or certificate within 2 years, despite the fact that the two groups enrolled at similar rates in community colleges and that vocational concentrators were more likely to be employed while in school.

- Fifty-seven percent of 1982 public high school graduates had enrolled in postsecondary education within 2 years of graduation, in contrast to 73 percent of 1992 graduates (tables 61 and 62). Both 1992 vocational concentrators and other/general students were more likely to enroll in postsecondary education within 2 years than their 1982 counterparts. Forty-two percent of 1982 vocational concentrators enrolled in postsecondary education, while 55 percent of 1992 vocational concentrators did so. Similarly, 61 percent of 1982 high school graduates who completed general coursework in high school pursued further education by 1984, while 69 percent of their 1992 counterparts enrolled in postsecondary education within 2 years of leaving high school. There was no significant difference in the postsecondary enrollment rates for college preparatory graduates over the decade studied.

Table 61—Percentage distribution of 1982 public high school graduates according to their enrollment status in postsecondary institutions by 1984, by curriculum specialization and hours worked per week in high school

Curriculum specialization and hours worked	Never enrolled	Enrolled
Total	42.7	57.3
Curriculum specialization in high school		
College preparatory only	4.4	95.6
Vocational concentrators total*	58.5	41.5
Vocational concentration only	59.3	40.8
Both vocational concentration and college preparatory	14.1	85.9
Other/general	38.8	61.2
Hours worked per week in high school		
None	38.1	61.9
1–14	38.1	61.9
15–34	46.1	53.9
35 or more	58.2	41.8

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Second Follow-up Survey.

Table 62—Percentage distribution of 1992 public high school graduates according to their enrollment status in post-secondary institutions by 1994, and of those enrolled, percentage distribution according to type of first institution, by curriculum specialization in high school

Curriculum specialization	Enrollment status		Of those enrolled, type of first institution					
	Never enrolled	Enrolled	Public	Private,	Public	Private,	Public	Private, for-profit
			4-year	not-for-profit 4-year	2-year	not-for-profit 2-year	vocational– technical	
Total	27.0	73.0	39.3	17.3	36.7	0.3	1.6	4.8
College preparatory only	6.8	93.2	52.3	26.4	18.7	0.0	1.5	1.0
Vocational concentrators total*	45.3	54.7	30.5	8.5	49.9	1.0	1.9	8.3
Vocational concentration only	51.2	48.8	21.8	6.3	58.4	1.2	1.8	10.5
Both vocational concentration and college preparatory	9.4	90.6	58.8	15.7	21.9	0.3	2.2	1.2
Other/general	30.9	69.1	31.2	12.8	47.4	0.3	1.6	6.8

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

- Among 1992 public high school graduates, vocational concentrators were less likely than their peers to enroll in a postsecondary institution within 2 years after completing high school (table 62). Specifically, about 55 percent of vocational concentrators had enrolled, compared with 93 percent of college preparatory students and 69 percent of other/general students. Vocational concentrators who also completed a college preparatory curriculum were about as likely to enroll in a postsecondary institution as their college preparatory peers (91 percent versus 93 percent). Patterns among the different curriculum-based groups were similar for 1982 public high school graduates (table 61).
- Among 1992 public high school graduates who enrolled in postsecondary education within 2 years of graduation, vocational concentrators were more likely to enroll in community colleges than were college preparatory graduates (50 versus 19 percent), but they enrolled in these institutions at rates that resembled those of other/general graduates (47 percent) (table 62). College preparatory graduates and vocational concentrators who also completed a college preparatory curriculum were more likely to enroll in 4-year postsecondary institutions than their strictly vocational and other/general peers. Patterns among the different curriculum-based groups were similar for 1982 public high school graduates (table 63).⁹²
- Among those who enrolled in postsecondary education within 2 years of high school graduation in 1992, vocational concentrators were more likely to be employed than were their college preparatory peers, but were about as likely to be employed as other/general graduates (44 percent versus 17 percent and 38 percent, respectively) (tables 64 and 65; figure 26).
- Among 1992 public high school graduates who were employed as well as enrolled in postsecondary education 2 years later, those who were vocational concentrators in high school had a stronger work orientation than other students (table 64). About one quarter (26 percent) of postsecondary students who were vocational concentrators in high school identified themselves primarily as workers rather than as students. In comparison, 8 percent of postsecondary students who were college preparatory graduates and 22 percent of postsecondary students who were other/general graduates in high school considered themselves primarily as workers.

⁹²Among 1982 graduates, however, vocational concentrators were statistically more likely than other/general graduates to enroll at community colleges. In addition, vocational concentrators who also completed a college preparatory curriculum were not more likely than strictly vocational concentrators or other/general graduates to enroll at public 4-year institutions.

Table 63—Percentage distribution of 1982 public high school graduates enrolled in postsecondary institutions by 1984 according to type of institution, by curriculum specialization and hours worked per week in high school

Curriculum specialization and hours worked	Public 4-year	Private, not-for-profit 4-year	Public 2-year	Private, not-for-profit 2-year	Public vocational-technical	Private, for-profit
Total	38.8	15.3	37.1	1.9	1.8	5.1
Curriculum specialization in high school						
College preparatory only	53.0	25.1	18.2	1.4	0.3	2.0
Vocational concentrators total*	27.4	9.9	48.3	3.0	3.3	8.1
Vocational concentration only	27.6	8.9	48.8	3.1	3.4	8.2
Both vocational concentration and college preparatory	22.6	38.1	33.0	0.0	0.0	6.3
Other/general	40.3	15.3	36.8	1.6	1.5	4.6
Hours worked per week in high school						
None	39.3	17.3	35.6	1.8	1.2	4.7
1-14	42.2	17.5	32.3	1.9	1.6	4.4
15-34	36.9	12.3	40.2	2.3	2.1	6.2
35 or more	34.3	8.7	46.9	1.1	4.3	4.9

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table 64—Percentage distribution of 1992 public high school graduates enrolled in postsecondary education in 1994 according to their employment status and work orientation, by curriculum specialization in high school

Curriculum specialization	Not employed	Total	Employed	
			Work orientation	
			Primarily student, also employed	Primarily employed, also student
Total	69.4	30.6	13.6	17.1
College preparatory only	83.1	16.9	9.4	7.6
Vocational concentrators total*	56.0	44.0	17.9	26.1
Vocational concentration only	48.9	51.1	20.0	31.1
Both vocational concentration and college preparatory	78.2	21.8	11.3	10.4
Other/general	62.5	37.5	15.6	22.0

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

Table 65—Percentage distribution of 1992 public high school graduates according to their education and employment status in 1994, by curriculum specialization in high school

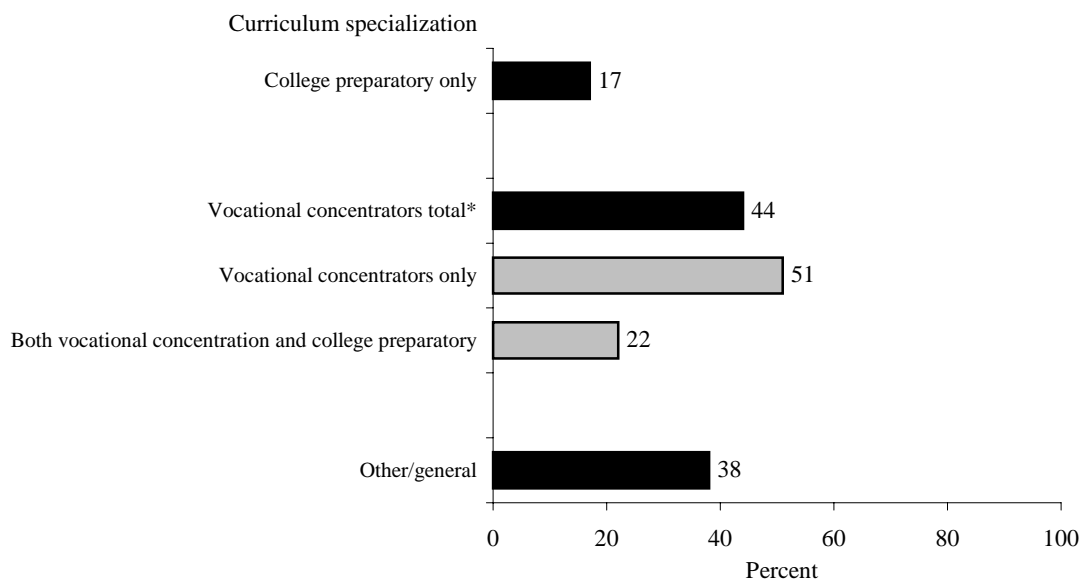
Curriculum specialization	Education status		Education/employment status					Nonstudent, not in labor force
	Student	Nonstudent	Traditional student, not employed	Primarily student, also employed	Primarily employed, also student	Nonstudent, employed	Nonstudent, not employed	
Total	69.1	30.9	47.9	9.4	11.8	27.8	0.9	2.1
College preparatory only	90.0	10.0	74.8	8.5	6.8	8.9	0.3	0.7
Vocational concentrators total*	51.8	48.2	29.0	9.3	13.5	44.8	0.8	2.6
Vocational concentration only	45.7	54.3	22.3	9.2	14.2	50.4	0.9	3.0
Both vocational concentration and college preparatory	89.5	10.5	70.0	10.1	9.3	10.2	0.0	0.3
Other/general	64.6	35.4	40.4	10.1	14.2	31.2	1.5	2.8

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data. Estimates appearing as 0.0 or 0.00 may be nonzero but less than 0.05 or 0.005.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

Figure 26—Percentage of 1992 public high school graduates enrolled in postsecondary education in 1994 who were also employed, by curriculum specialization in high school



*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

- Among 1992 public high school graduates who enrolled in postsecondary education within 2 years of completing high school, about 12 percent of vocational concentrators and 9 percent of other/general graduates had completed an associate's degree or certificate by 1994 (table 66). In contrast, 6 percent of college preparatory graduates had done so. Vocational concentrators were more likely than their other/general peers to obtain a degree or certificate within 2 years, despite the findings noted above that the two groups enrolled at similar rates in community colleges and that vocational concentrators were more likely to be employed while in school. Similar differences in rates of award completion were found among 1982 public high school graduates (table 67).

Table 66—Percentage distribution of 1992 public high school graduates according to their postsecondary enrollment and attainment status by 1994, by curriculum specialization in high school

Curriculum specialization	Enrollment status		Attainment of all high school graduates					Attainment of those enrolled by 1994			
	Never enrolled	Enrolled	No degree		Degree or certificate			Certificate or degree			
			Never enrolled	Enrolled	Total	Certificate	Associate's degree	No degree	Total	Certificate	Associate's degree
Total	26.1	73.9	26.1	67.9	6.1	5.9	0.2	91.8	8.2	7.9	0.3
College preparatory only	6.6	93.4	6.6	87.8	5.6	5.4	0.2	94.0	6.0	5.8	0.2
Vocational concentrators total*	43.4	56.6	43.4	50.1	6.5	6.4	0.2	88.5	11.6	11.2	0.3
Vocational concentration only	49.0	51.0	49.0	44.3	6.7	6.5	0.2	86.9	13.1	12.8	0.3
Both vocational concentration and college preparatory	9.1	90.9	9.1	85.2	5.7	5.4	0.3	93.8	6.3	5.9	0.4
Other/general	29.5	70.5	29.5	64.4	6.1	5.9	0.2	91.4	8.6	8.3	0.3

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

Table 67—Percentage distribution of 1982 public high school graduates according to their postsecondary attainment by 1984, by curriculum specialization and hours worked per week in high school

Curriculum specialization and hours worked	No degree	Certificate or degree		
		Total	Certificate	Associate's degree
Total	89.9	10.1	5.0	5.1
Curriculum specialization in high school				
College preparatory only	96.2	3.8	0.6	3.1
Vocational concentrators total*	85.8	14.2	7.8	6.5
Vocational concentration only	85.5	14.5	7.8	6.7
Both vocational concentration and college preparatory	94.1	5.9	5.9	0.0
Other/general	90.4	9.6	4.7	4.9
Hours worked per week in high school				
None	91.1	8.9	3.5	5.4
1–14	89.5	10.5	5.3	5.2
15–34	88.7	11.3	5.9	5.4
35 or more	91.7	8.3	5.3	3.0

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Second Follow-up Survey.

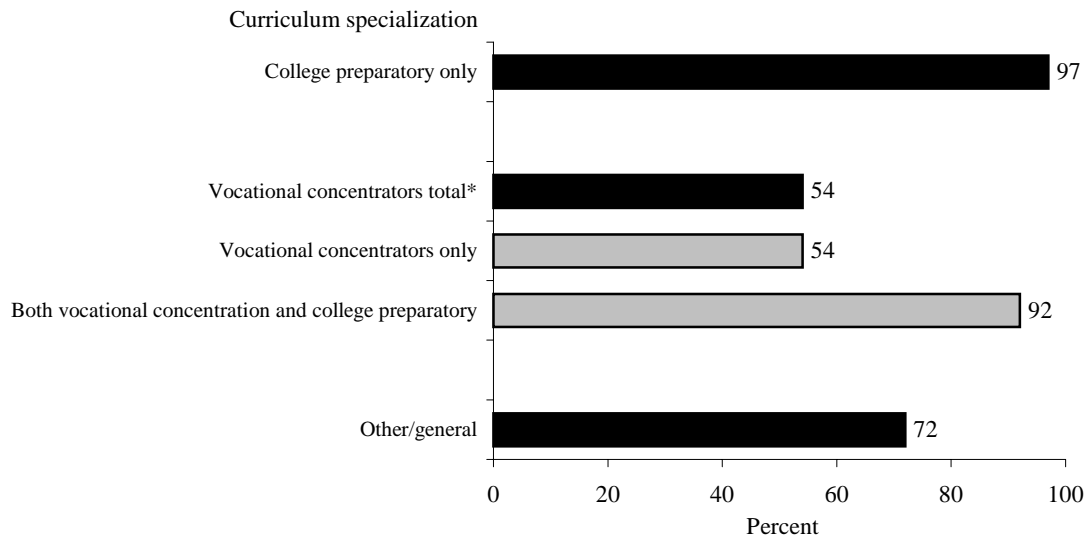
The Transition to Postsecondary Education: Ten Years After High School

Initial indications are that long-term postsecondary enrollment rates have increased for public high school graduates over the decade from 1982 to 1992. About three-fourths of 1992 graduates enrolled in a postsecondary institution within 2 years of graduation, while two-thirds of 1982 graduates enrolled within a full 10 years after graduation. By the year 2002, the 10-year enrollment rate is likely to be even higher than 74 percent for 1992 graduates.

Among 1982 graduates, vocational concentrators were less likely than either their other/general or college preparatory peers to enroll in postsecondary education by 1992. However, vocational concentrators who also completed a college preparatory curriculum were about as likely as college preparatory graduates to enroll during this timeframe. Students who worked fewer than 15 hours per week during their senior year of high school were more likely to both enroll in postsecondary education and complete a postsecondary degree or certificate within 10 years than their peers who worked more hours.

- About two-thirds (68 percent) of 1982 public high school graduates enrolled in postsecondary education by 1992 (table 68; figure 27). Vocational concentrators were less likely than either their other/general or college preparatory peers to enroll within 10 years (54 percent versus 72 percent and 97 percent, respectively). However, vocational concentrators who also completed a college preparatory curriculum were about as likely as college preparatory graduates to enroll during this time frame (92 percent and 97 percent, respectively).

Figure 27—Percentage of 1982 public high school graduates who were enrolled in postsecondary education by 1992, by curriculum specialization in high school



*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

- Most 1982 public high school graduates (92 percent) who subsequently enrolled in postsecondary education did so within 3 years of high school graduation (table 69). Vocational concentrators were more likely than college preparatory graduates to delay their enrollment. Among graduates who enrolled within 10 years, 6 percent of vocational concentrators enrolled more than 5 years after high school graduation, compared with 0.2 percent of college preparatory graduates. However, most vocational concentrators (87 percent) enrolled within 3 years.

Table 68—Percentage distribution of 1982 public high school graduates according to their postsecondary enrollment and attainment status by 1992, by curriculum specialization in high school

Curriculum specialization	Enrollment status		Attainment of all high school graduates							Attainment of those enrolled				
			No degree		Certificate or degree			Certificate or degree			Bachelor's or higher			
	Never enrolled	Enrolled	Never enrolled	Enrolled	Total	Less than a bachelor's		Less than a bachelor's						
						Total	Certificate	Associate's	Certificate	Associate's				
Total	32.1	67.9	32.1	29.7	38.2	12.4	5.7	6.7	25.9	56.3	18.2	8.3	9.9	38.1
College preparatory only	3.5	96.6	3.5	22.2	74.3	7.8	2.2	5.6	66.6	77.0	8.1	2.3	5.8	68.9
Vocational concentrators total*	45.7	54.3	45.7	28.5	25.8	13.9	7.1	6.8	11.9	47.6	25.6	13.0	12.6	21.9
Vocational concentration only	46.4	53.6	46.4	28.7	25.0	13.9	7.1	6.8	11.1	46.6	25.9	13.3	12.7	20.7
Both vocational concentration and college preparatory	7.8	92.2	7.8	17.7	74.5	13.9	4.9	8.9	60.6	80.8	15.0	5.4	9.7	65.7
Other/general	28.3	71.7	28.3	31.5	40.2	12.1	5.3	6.8	28.1	56.1	16.9	7.4	9.5	39.2

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table 69—Percentage distribution of 1982 public high school graduates who subsequently enrolled according to the timing of their first postsecondary enrollment, by curriculum specialization in high school

Curriculum specialization	Annual enrollments										Within 1–3 years	Within 1–5 years	After 5 years
	Within 1 year	Within 1–2 years	Within 2–3 years	Within 3–4 years	Within 4–5 years	Within 5–6 years	Within 6–7 years	Within 7–8 years	Within 8–9 years	After 9 years			
Total	83.1	6.0	3.1	1.7	1.3	0.9	1.0	1.2	0.7	1.0	92.2	96.1	3.9
College preparatory only	94.3	4.3	1.0	0.2	0.0	0.0	0.1	0.0	0.1	0.0	99.6	99.9	0.2
Vocational concentrators total*	74.4	7.6	5.2	2.9	2.3	1.6	1.0	1.9	1.8	1.4	87.2	93.9	6.1
Vocational concentration only	74.0	7.7	5.4	3.0	2.4	1.6	0.9	2.0	1.8	1.4	87.0	93.9	6.1
Both vocational concentration and college preparatory	88.8	5.3	0.0	0.4	0.0	1.3	4.3	0.0	0.0	0.0	94.1	95.7	4.3
Other/general	84.5	5.7	2.6	1.6	1.1	0.9	1.1	1.1	0.4	1.1	92.8	96.4	3.7

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Within 1 year indicates the percentage of 1992 high school graduates who enrolled in their first postsecondary institution from June 1983 to May 1984. Similarly, within 1–2 years suggests that the graduates enrolled in their first institution from June 1984 to May 1985. Percentages may not add to 100 due to rounding. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

- Enrollment rates for vocational concentrators varied by program area. For example, among those with a vocational concentration, concentrators in technology and communications and in business were more likely to enroll in postsecondary education within 10 years than concentrators in personal services and in trade and industry (81 percent and 64 percent, respectively, versus 37 percent and 47 percent, respectively) (table 70).
- Those 1982 public high school graduates who worked 15 or more hours per week during their senior year of high school were less likely than their counterparts working fewer than 15 hours per week to enroll in postsecondary education by 1992 (table 71). About 71–72 percent of graduates who worked fewer than 15 hours per week during their senior year enrolled in postsecondary education by 1992, compared with 65 percent of graduates who worked 15 to 34 hours per week and 55 percent of graduates who worked full time (35 or more hours per week). Readers are cautioned against interpreting this finding as evidence of the causal impact of working fewer hours on greater postsecondary enrollment. It may be that graduates working fewer than 15 hours per week were more likely for other reasons to enroll in college. For example, as discussed in Chapter IV, 1992 college preparatory graduates were significantly less likely than vocational concentrators to work part time during their senior year (table 42). They were also significantly less likely than other/general graduates to work part time.⁹³
- Among 1982 public high school graduates who enrolled in postsecondary education by 1992, those who worked 15 or more hours per week during their senior year of high school were less likely than those working 1–14 hours per week to have earned a postsecondary degree (table 71). Specifically, 53 percent of graduates who worked 15 to 34 hours per week in high school and 43 percent of those who worked 35 or more hours per week obtained a degree within 10 years, compared with 61 percent of graduates who worked 1 to 14 hours per week.

⁹³Some research has shown that work experience while in school may have other benefits. For some students, work experience appears to reduce their risk of dropping out of high school. See, for example, D.R. Entwisle, K.L. Alexander, and L.S. Olson, *Urban Teenagers: Work, Stopout and Dropout* (Baltimore, MD: Johns Hopkins University, July 2, 1999).

Table 70—Percentage distribution of 1982 public high school vocational concentrator graduates according to their postsecondary enrollment and attainment status by 1992, by program area of high school vocational concentration

Vocational concentration program area ¹	Enrollment status		Attainment of all high school graduates							Attainment of those enrolled				
			No degree		Certificate or degree			Certificate or degree		Certificate or degree				
	Never enrolled	Enrolled	Never enrolled	Enrolled	Total	Less than a bachelor's		Bachelor's or higher	Less than a bachelor's		Bachelor's or higher			
						Certificate	Asso- ciate's		Total	Total		Certificate	Asso- ciate's	
Total	32.1	67.9	32.1	29.7	38.2	12.4	5.7	6.7	25.9	56.3	18.2	8.3	9.9	38.1
No concentration	25.2	74.8	25.2	30.3	44.5	11.6	4.9	6.6	33.0	59.5	15.5	6.6	8.9	44.0
Agriculture and renewable resources	49.4	50.6	49.4	24.7	25.9	12.2	7.3	4.9	13.7	51.2	24.1	14.4	9.7	27.1
Business	36.3	63.8	36.3	32.0	31.7	18.3	8.1	10.1	13.5	49.8	28.6	12.7	15.9	21.1
Marketing and distribution	36.2	63.8	36.2	40.0	23.8	6.8	1.4	5.4	17.0	37.3	10.6	2.2	8.5	26.7
Health care	50.6	49.4	50.6	31.1	18.4	13.5	7.2	6.3	4.9	—	—	—	—	—
Public and protective services	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Trade and industry	52.9	47.1	52.9	25.0	22.1	11.6	6.9	4.8	10.5	46.9	24.7	14.6	10.1	22.3
Technology and communications	18.8	81.2	18.8	37.1	44.1	15.5	2.2	13.3	28.7	54.3	19.0	2.7	16.3	35.3
Occupational home economics ²	59.1	41.0	59.1	25.5	15.5	12.8	8.0	4.8	2.7	37.7	31.2	19.6	11.6	6.6
Personal and other services	62.9	37.2	62.9	23.2	13.9	10.4	5.3	5.1	3.5	—	—	—	—	—
Food service and hospitality	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Child care and education	—	—	—	—	—	—	—	—	—	—	—	—	—	—

—Too few sample observations for a reliable estimate.

¹Vocational concentrators earned 3 or more credits in a single vocational program area.

²Occupational home economics combines personal and other services, food service and hospitality, and child care and education.

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table 71—Percentage distribution of 1982 public high school graduates according to their postsecondary enrollment and attainment status by 1992, by selected student characteristics

Selected student characteristics	Enrollment status		Attainment of all high school graduates							Attainment of those enrolled				
			No degree		Certificate or degree			Certificate or degree			Less than a bachelor's		Bachelor's or higher	
	Never enrolled	Enrolled	Never enrolled	Enrolled	Total	Less than a bachelor's		Bachelor's or higher	Total	Total	Less than a bachelor's			
						Certificate	Associate's				Certificate	Associate's		
Total	32.1	67.9	32.1	29.7	38.2	12.4	5.7	6.7	25.9	56.3	18.2	8.3	9.9	38.1
Hours worked per week in high school														
None	28.1	71.9	28.1	30.2	41.7	12.4	5.5	6.9	29.3	58.0	17.2	7.6	9.6	40.8
1–14	29.0	71.0	29.0	27.4	43.6	12.4	5.9	6.5	31.2	61.5	17.5	8.3	9.2	44.0
15–34	34.7	65.3	34.7	31.0	34.4	12.9	5.9	7.0	21.4	52.6	19.8	9.1	10.7	32.8
35 or more	45.5	54.5	45.5	31.0	23.5	9.9	4.8	5.1	13.6	43.2	18.1	8.7	9.4	25.0
College preparatory only	3.5	96.6	3.5	22.2	74.3	7.8	2.2	5.6	66.6	77.0	8.1	2.3	5.8	68.9
Vocational concentrators total*	45.7	54.3	45.7	28.5	25.8	13.9	7.1	6.8	11.9	47.6	25.6	13.0	12.6	21.9
Vocational concentration only	46.4	53.6	46.4	28.7	25.0	13.9	7.1	6.8	11.1	46.6	25.9	13.3	12.7	20.7
Both vocational concentration and college preparatory	7.8	92.2	7.8	17.7	74.5	13.9	4.9	8.9	60.6	80.8	15.0	5.4	9.7	65.7
Other/general	28.3	71.7	28.3	31.5	40.2	12.1	5.3	6.8	28.1	56.1	16.9	7.4	9.5	39.2

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Remedial Coursework in Postsecondary Education

Among 1982 public high school graduates who enrolled in postsecondary education by 1992, students earned, on average, approximately one and a half remedial credits in postsecondary coursework. In general, vocational concentrators completed more remedial coursework than their peers. Postsecondary degree completers earned fewer remedial credits than their counterparts who enrolled in postsecondary education but did not earn a degree or certificate. Among postsecondary award holders, certificate and bachelor's degree completers earned fewer remedial credits than graduates completing an associate's degree. Comparing remedial coursework by type of degree or certificate is relevant, because vocational education policy has emphasized greater educational attainment in recent years.

- On average, 1982 public high school graduates who enrolled in postsecondary education by 1992 completed 1.4 remedial credits in postsecondary coursework (table 72; figure 28). Graduates completed most of this coursework in mathematics: 53 percent of all remedial coursework was in mathematics, compared with 9 percent in English and 38 percent in other areas.
- Vocational concentrators earned more remedial credits than other 1982 public high school graduates, although they were more like other/general graduates in terms of the amount of credits earned than like their college preparatory peers (earning 1.8 credits versus 1.4 and 0.6 credits, respectively) (table 72; figure 28). Vocational concentrators who also completed a college preparatory curriculum earned fewer remedial credits, on average, than their strictly vocational peers (1.0 credit versus 1.8 credits).⁹⁴
- Among 1982 public high school graduates who enrolled in postsecondary education by 1992, vocational concentrators and other/general graduates took a greater proportion of their remedial coursework in mathematics than did college preparatory graduates (55 percent and 54 percent, respectively, versus 44 percent) (table 72).

⁹⁴The difference in average number of remedial credits earned between vocational concentrators who also completed a college preparatory curriculum and graduates who completed only a college preparatory curriculum was not statistically significant (1.0 versus 0.6 credits).

Table 72—Average number of postsecondary remedial credits earned by 1982 public high school graduates by 1992, and of those earning remedial credits, percentage distribution according to subject of remedial credits, by curriculum specialization in high school

Curriculum specialization	Total	Average number of remedial credits ¹			Percentage of total remedial credits earned ¹		
		English	Mathematics	Other	English	Mathematics	Other
Total	1.39	0.15	0.72	0.52	9.2	53.1	37.7
College preparatory only	0.62	0.07	0.25	0.30	10.5	43.7	45.8
Vocational concentrators total ²	1.75	0.19	0.91	0.65	8.5	54.6	36.9
Vocational concentration only	1.77	0.19	0.93	0.65	8.5	54.7	36.8
Both vocational concentration and college preparatory	0.97	0.07	0.40	0.50	—	—	—
Other/general	1.39	0.16	0.72	0.51	9.4	53.6	37.0

—Too few sample observations for a reliable estimate.

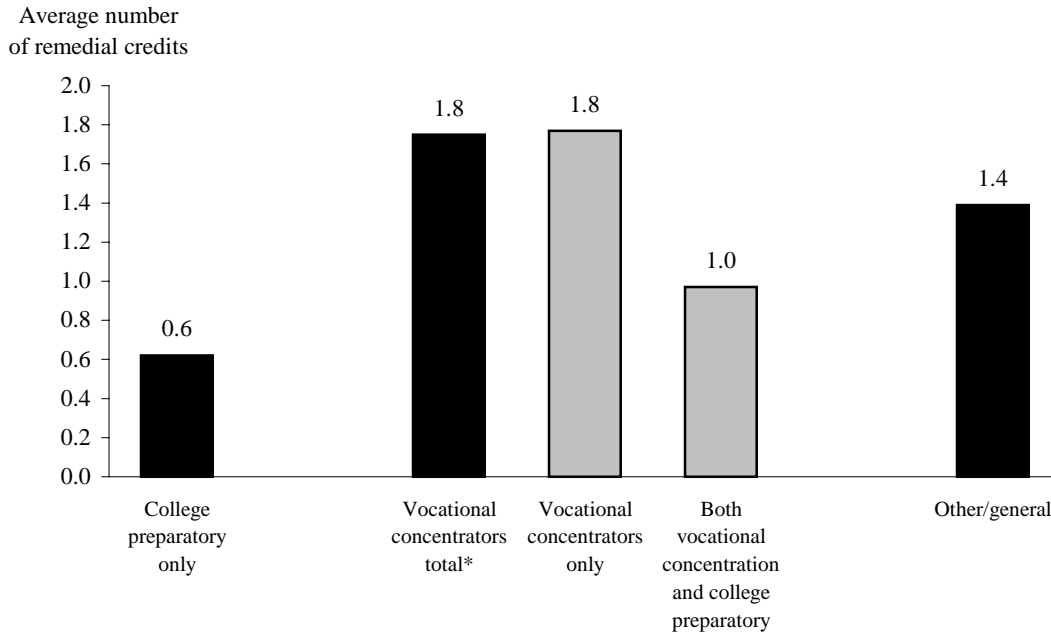
¹Averages are for all 1982 public high school graduates, while percentages are for those graduates earning postsecondary remedial credits.

²Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Averages may not add to totals and percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Figure 28—Average number of remedial credits earned by 1982 public high school graduates who entered a postsecondary institution by 1992, by curriculum specialization in high school



*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

- Among 1982 public high school graduates who enrolled in postsecondary education by 1992, those attaining a postsecondary degree or certificate earned fewer remedial credits than those who did not attain a degree or certificate (1.2 credits versus 1.6 credits) (table 73). Although taking remedial coursework may slow students' progress toward a degree, students who take more remedial coursework may be less likely to obtain a degree in the first place. Perhaps this pattern exists because these students have lower educational aspirations or because they are more academically at risk.
- Among 1982 public high school graduates who enrolled in postsecondary education by 1992, those obtaining an associate's degree completed more remedial coursework than either certificate or bachelor's degree earners (2.2 credits versus 1.3 credits and 1.0 credits, respectively) (table 73). There may be several reasons why associate's degree holders complete more remedial coursework. Associate's degree programs may have stricter academic prerequisites than certificate programs; alternatively, associate's degree earners may complete more coursework overall than certificate earners. In addition,

Table 73—Average number of postsecondary remedial credits earned by 1982 public high school graduates by 1992, and of those earning remedial credits, percentage distribution according to subject of remedial credits, by degree attainment by 1992

Degree attainment	Total	Average number of remedial credits*			Percentage of total remedial credits earned*		
		English	Mathematics	Other	English	Mathematics	Other
Total	1.39	0.15	0.72	0.52	9.2	53.1	37.7
None	1.60	0.21	0.85	0.54	10.4	56.6	33.0
Any certificate or degree	1.23	0.11	0.62	0.51	8.2	50.2	41.6
Certificate	1.31	0.07	0.57	0.67	4.6	43.5	51.9
Associate's degree	2.16	0.20	1.18	0.78	8.3	55.0	36.7
Bachelor's degree or higher	0.99	0.09	0.49	0.41	9.0	49.8	41.3

*Averages are for all 1982 public high school graduates, while percentages are for those graduates earning postsecondary remedial credits.

NOTE: Averages may not add to totals and percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

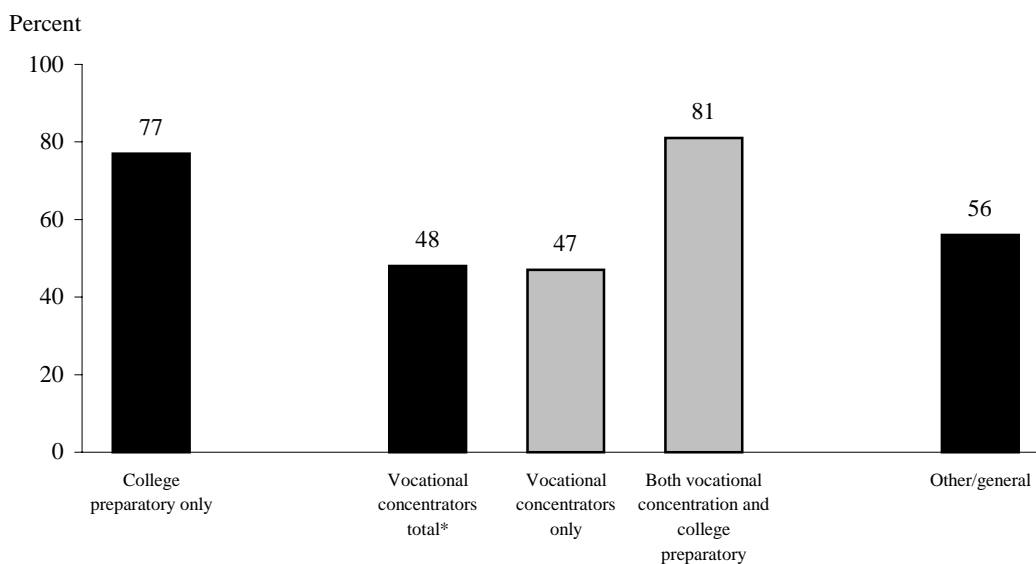
associate's degree earners may be less academically prepared than students who pursue a bachelor's degree; alternatively, 2-year institutions may be more likely to offer remedial coursework than 4-year institutions.

Postsecondary Completion 10 Years After High School

More than half of 1982 public high school graduates who enrolled in postsecondary education completed a degree or certificate by 1992. Vocational concentrators had lower postsecondary completion rates overall than their peers. However, vocational concentrators who also completed a college preparatory curriculum were as likely as college preparatory graduates to earn a postsecondary degree during this period. Among graduates who enrolled in postsecondary education by 1992, vocational concentrators were less likely than their peers to earn a bachelor's degree, but more likely to obtain a certificate or an associate's degree.

- Among 1982 public high school graduates who enrolled in postsecondary education after high school, 56 percent completed a degree or certificate within 10 years (table 68; figure 29). Vocational concentrators had lower postsecondary completion rates than their college preparatory and other/general peers (48 percent versus 77 percent and 56 percent, respectively). Vocational concentrators who also completed a college preparatory curriculum were as likely as college preparatory graduates to earn a postsecondary degree during this period (81 percent versus 77 percent).
- Among 1982 public high school graduates who enrolled in postsecondary education by 1992, vocational concentrators were more likely than both college preparatory and other/general graduates to complete a certificate (13 versus 2 and 7 percent, respectively) or an associate's degree (13 versus 6 and 10 percent, respectively), and less likely to complete a bachelor's degree (22 versus 69 and 39 percent, respectively) (table 68). Again, vocational concentrators who also completed a college preparatory curriculum in high school exhibited rates of certificate and degree completion that were similar to those of their college preparatory peers.

Figure 29—Percentage of 1982 public high school graduates who were enrolled in postsecondary education according to their attainment status by 1992, by curriculum specialization in high school



*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

- Among 1982 public high school graduates who enrolled in postsecondary education by 1992, most associate's degree and certificate earners obtained their awards in vocational rather than academic areas (table 74). Almost two-thirds (63 percent) of associate's degree earners and virtually all (99 percent) of certificate earners obtained their awards in vocational areas.

LABOR MARKET OUTCOMES

The labor market outcomes described in this section include participation in the labor force, employment and unemployment rates, and earnings. The points 2 and 10 years after high school graduation are examined.

Table 74—Percentage distribution of 1982 public high school graduates who earned an associate’s degree and/or a certificate by 1992 according to postsecondary program, by curriculum specialization in high school

Curriculum specialization	Associate’s degree				Certificate			Associate’s degree or certificate			
	Total	Vocational	Academic	Other	Total	Vocational	Academic	Total	Vocational	Academic	Other
Total	6.7	62.8	27.4	9.8	25.9	98.9	1.2	32.6	79.0	15.6	5.4
College preparatory only	5.6	—	—	—	66.6	—	—	72.1	74.9	16.4	8.7
Vocational concentrators total*	6.8	69.8	25.7	4.4	11.9	98.9	1.1	18.7	84.4	13.4	2.2
Vocational concentration only	6.8	69.1	26.4	4.5	11.1	98.9	1.1	17.9	84.1	13.6	2.3
Both vocational concentration and college preparatory	8.9	—	—	—	60.6	—	—	69.5	—	—	—
Other/general	6.8	58.3	29.1	12.6	28.1	98.8	1.2	34.9	75.9	17.0	7.1

—Too few sample observations for a reliable estimate.

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Labor Market Outcomes 2 Years After High School

Labor market experiences 2 years after leaving high school were similar for the graduating classes of 1982 and 1992. In both cases, about three out of four public high school graduates were in the labor force. Vocational concentrators in both graduating classes were more likely than their college preparatory peers to be in the labor force 2 years after graduation. While 1992 public high school graduates had similar labor market experiences regardless of their course of study in high school, 1982 college preparatory graduates tended to have lower unemployment rates than their vocational concentrator and other/general peers. This difference may be due to changes over the decade in economic conditions or in the academic preparation of high school graduates, or other factors.

- Among 1992 public high school graduates, vocational concentrators and graduates completing general coursework in high school were more likely to be in the labor force in December 1993 than were their college preparatory peers (83 percent and 80 percent versus 63 percent, respectively) (table 75). Among labor force participants, all curriculum-based groups had similar employment and unemployment rates. Although vocational concentrators who also completed a college preparatory curriculum appeared to have a lower unemployment rate than that of other groups, the differences were not statistically significant.

Table 75—Percentage distribution of 1992 public high school graduates according to their employment status in December 1993, by curriculum specialization and work experience in high school

Curriculum specialization and work experience	In labor force	Of those in labor force	
		Employed	Unemployed
Total	75.5	91.4	8.6
Curriculum specialization in high school			
College preparatory only	63.4	91.4	8.6
Vocational concentrators total*	82.8	93.3	6.7
Vocational concentration only	84.4	93.0	7.0
Both vocational concentration and college preparatory	73.3	95.6	4.4
Other/general	79.5	90.2	9.8
High school work experience			
None	67.0	86.0	14.0
Worked part time	77.6	93.0	7.0
Worked full time	85.8	92.0	8.0

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

- Among 1982 public high school graduates, vocational concentrators were more likely to be in the labor force in February 1984 than were either their other/general or college preparatory counterparts (81 percent versus 71 percent and 59 percent, respectively) (table 76). Among labor force participants, vocational concentrators and other/general graduates had higher unemployment rates than those of their college preparatory peers (7 percent and 6 percent, respectively, versus 2 percent). This contrasts with the experience of 1992 public high school graduates when all groups had statistically similar unemployment rates one and a half years after graduation. This difference may be due to changes over the decade in economic conditions or in the academic preparation of high school graduates, or other factors.
- Among 1992 vocational concentrators who were in the labor force in December 1993, unemployment rates appeared to vary by vocational program area (table 77). Specifically, graduates who concentrated in technology and communications, agriculture, and trade and industry appeared to have higher unemployment rates than those in marketing and distribution, health care, occupational home economics, and business. However, these differences were not statistically significant.⁹⁵
- Among 1982 and 1992 public high school graduates who were in the labor force 2 years after graduation, those with no work experience in high school had higher unemployment rates than those with part-time work experience, but they had similar unemployment rates as those employed full time in high school⁹⁶ (tables 75 and 76).

⁹⁵These groups had small sample sizes and large standard errors.

⁹⁶Although 1982 and 1992 graduates with no work experience in high school appeared to have higher unemployment rates than those working 35 or more hours per week and those working full time, respectively, these differences were not statistically significant.

Table 76—Percentage distribution of 1982 public high school graduates according to their employment status in February 1984, by curriculum specialization and hours worked per week in high school

Curriculum specialization and hours worked	Of all graduates						Percent of time in labor force	
	Total	Employed		Unemployed	Not in labor force		Employed	Unemployed
		Full-time	Part-time		In labor force			
Total	68.5	39.1	29.3	4.5	27.1	72.9	93.9	6.1
Curriculum specialization in high school								
College preparatory only	58.2	22.3	36.0	1.0	40.8	59.2	98.3	1.7
Vocational concentrators total*	75.1	49.8	25.2	5.4	19.5	80.5	93.3	6.7
Vocational concentration only	75.1	50.2	24.9	5.4	19.5	80.5	93.3	6.8
Both vocational concentration and college preparatory	76.1	31.5	44.5	3.1	20.8	79.2	96.0	4.0
Other/general	66.1	35.3	30.8	4.4	29.5	70.5	93.7	6.3
Hours worked per week in high school								
None	60.5	33.3	27.1	6.7	32.9	67.1	90.1	9.9
1–14	68.8	36.4	32.4	3.5	27.7	72.3	95.2	4.8
15–34	74.0	43.6	30.4	2.8	23.2	76.8	96.4	3.6
35 or more	75.7	56.8	18.9	7.1	17.2	82.8	91.4	8.6

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table 77—Percentage distribution of 1992 public high school graduates according to their employment status in December 1993, by program area of high school vocational concentration

Vocational concentration program area ¹	In labor force	Percent of time in labor force	
		Employed	Unemployed
Total	75.5	91.4	8.6
No concentration	73.1	90.7	9.4
Agriculture and renewable resources	82.9	90.9	9.1
Business	81.8	94.7	5.3
Marketing and distribution	83.3	96.5	3.5
Health care	60.7	94.8	5.2
Public and protective services	—	—	—
Trade and industry	86.3	92.1	7.9
Technology and communications	80.2	92.5	7.5
Occupational home economics ²	77.5	95.1	4.9
Personal and other services	77.2	95.5	4.5
Food service and hospitality	—	—	—
Child care and education	79.0	—	—

— Too few sample observations for a reliable estimate.

¹Vocational concentrators earned 3 or more credits in a single vocational program area.

²Occupational home economics combines personal and other services, food service and hospitality, and child care and education.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

Labor Market Outcomes 10 Years After High School

Vocational concentrators and other/general students had similar labor market experiences 10 years after graduation from high school. While the number of months employed and unemployed was similar regardless of one's course of study in high school, college preparatory graduates tended to enjoy higher earnings in 1991 than their peers, possibly because of their greater postsecondary attainment. Obtaining a bachelor's degree was generally associated with increased earnings and lower unemployment rates. At the other end of the educational spectrum, students who earned a postsecondary certificate had similar annual earnings and unemployment rates as their peers who did not complete a postsecondary degree or certificate. Furthermore, both postsecondary certificate and high school diploma holders earned less and were more likely to be unemployed in 1991 than graduates who earned an associate's degree or higher.

- During 1991, 1982 public high school graduates spent, on average, 11 out of 12 months, or 91 percent of their time, in the labor force (table 78). These figures were basically the same regardless of graduates' course of study in high school. Among labor force participants, the percent of time spent unemployed was also similar regardless of course of study in high school.
- Among 1982 public high school graduates who were in the labor force, percent of time spent unemployed during 1991 decreased as postsecondary attainment increased (table 79). Specifically, percent of time unemployed for graduates without a postsecondary degree or certificate was 6 percent, while the percent of time unemployed for graduates with a certificate, associate's degree, and bachelor's degree was 4 percent, 3 percent, and 3 percent, respectively.
- For 1982 public high school graduates who were in the labor force, work experience in high school was inversely related to percent of time spent unemployed 10 years later (table 79). In particular, the percent of time in the labor force spent unemployed during 1991 decreased steadily as the number of hours graduates worked per week in high school increased—ranging from 5 percent of time spent unemployed for those with no work experience to 3 percent for those with full-time employment (35 or more hours per week) during high school.

Table 78—Average number and percentage distribution of months according to employment status in 1991 for 1982 public high school graduates, by curriculum specialization in high school

Curriculum specialization	Average number of months			Percent of months		
	In labor force		Not in labor force	In labor force	Percent of time in labor force	
	Employed	Unemployed			Employed	Unemployed
Total	10.43	0.52	1.05	91.3	95.2	4.8
College preparatory only	10.56	0.37	1.07	91.1	96.7	3.4
Vocational concentrators total*	10.51	0.52	0.96	92.0	95.3	4.8
Vocational concentration only	10.52	0.53	0.95	92.1	95.2	4.8
Both vocational concentration and college preparatory	9.93	0.24	1.83	84.7	97.7	2.3
Other/general	10.37	0.54	1.09	90.9	95.0	5.0

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Averages and percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table 79—Average number and percentage distribution of months according to employment status in 1991 for 1982 public high school graduates, by hours worked in high school and degree attainment by 1992

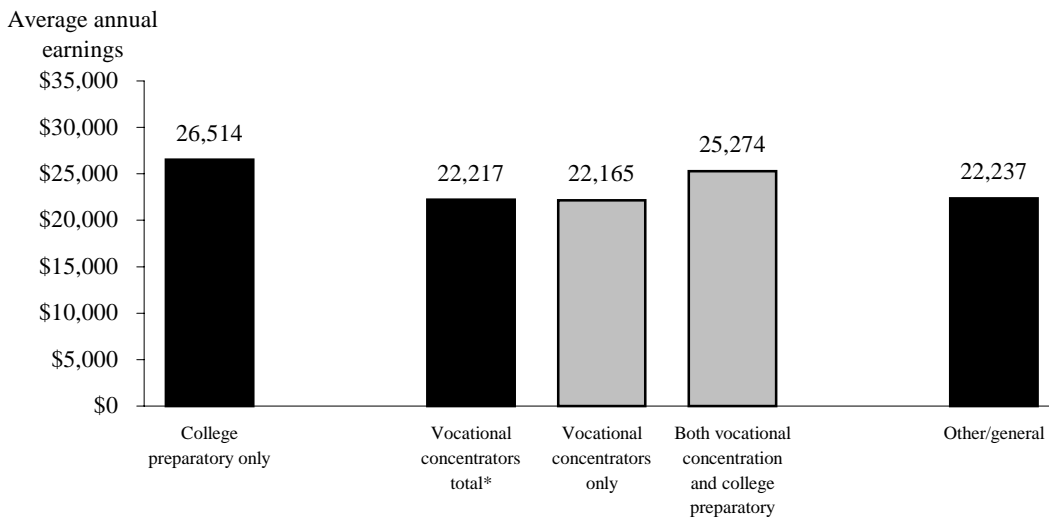
Hours worked and degree attainment	Average number of months			Percent of months		
	In labor force		Not in labor force	Percent of time in labor force		
	Employed	Unemployed		In labor force	Employed	Unemployed
Total	10.43	0.52	1.05	91.3	95.2	4.8
Hours worked per week in high school						
None	10.16	0.57	1.27	89.4	94.6	5.4
1–14	10.37	0.55	1.09	91.0	95.0	5.0
15–34	10.63	0.47	0.90	92.5	95.7	4.3
35 or more	11.00	0.37	0.63	94.7	96.8	3.2
Degree attainment by 1992						
None	10.18	0.63	1.19	90.1	94.1	5.9
Any degree or certificate	10.84	0.35	0.81	93.2	96.9	3.2
Certificate	10.82	0.49	0.69	94.2	95.7	4.3
Associate's degree	10.99	0.37	0.65	94.6	96.8	3.2
Bachelor's degree or higher	10.80	0.32	0.88	92.7	97.1	2.9

NOTE: Averages and percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

- Among 1982 vocational concentrators who were in the labor force in December 1991, unemployment rates appeared to vary by vocational program area (table 80). For example, graduates who concentrated in technology and communications, trade and industry, and agriculture appeared to have lower unemployment rates than concentrators in most other fields and graduates who concentrated in health care appeared to have a higher unemployment rate than concentrators in other fields. However, these differences were not statistically significant; there were small sample sizes and large standard errors for these groups. This finding was similar to that for 1992 graduates 2 years after high school graduation.
- Among 1982 public high school graduates, college preparatory graduates had higher annual earnings in 1991 (about \$26,500) than those of their vocational concentrator and other/general peers, who earned approximately the same amount (about \$22,000) (table 81; figure 30). In 1991, vocational concentrators who also completed a college preparatory curriculum appeared to earn, on average, about \$3,000 more during the year than both their strictly vocational and other/general peers. However, these differences were not statistically significant. Vocational concentrators who also completed a college preparatory curriculum had a small sample size and large standard errors.

Figure 30—Average annual earnings in 1991 for 1982 public high school graduates, by curriculum specialization in high school



*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table 80—Percentage distribution of 1982 public high school graduates according to their employment status in December 1991, by program area of high school vocational concentration

Vocational concentration program area ¹	Of all graduates				Percent of time in labor force	
	Total	In labor force		Not in labor force	Employed	Unemployed
		Employed	Unemployed			
Total	91.2	86.5	4.7	8.8	94.8	5.2
No concentration	91.1	86.2	4.9	8.9	94.6	5.4
Agriculture and renewable resources	93.4	90.0	3.4	6.6	96.4	3.6
Business	86.6	81.5	5.1	13.4	94.1	5.9
Marketing and distribution	85.1	80.6	4.5	14.9	94.7	5.3
Health care	88.7	70.3	18.4	11.4	79.3	20.7
Public and protective services	—	—	—	—	—	—
Trade and industry	96.8	93.7	3.1	3.2	96.8	3.2
Technology and communications	98.1	93.8	4.4	1.9	95.6	4.5
Occupational home economics ²	82.5	75.1	7.5	17.5	91.0	9.0
Personal and other services	79.4	71.6	7.8	20.6	90.1	9.9
Food service and hospitality	—	—	—	—	—	—
Child care and education	—	—	—	—	—	—

—Too few sample observations for a reliable estimate.

¹Vocational concentrators earned 3 or more credits in a single vocational program area.

²Occupational home economics combines personal and other services, food service and hospitality, and child care and education.

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table 81—Average annual and monthly earnings in 1991 for 1982 public high school graduates, by curriculum specialization in high school

Curriculum specialization	Average annual earnings ¹	Average monthly earnings ²
Total	\$22,597	\$1,983
College preparatory only	26,514	2,300
Vocational concentrators total ³	22,217	1,925
Vocational concentration only	22,165	1,920
Both vocational concentration and college preparatory	25,274	2,176
Other/general	22,237	1,970

¹Average annual earnings are for all 12 months in 1991, regardless of how many months the graduate was actually employed in 1991.

²Average monthly earnings includes the earnings for only those months that the graduate was employed during 1991.

³Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

- Among 1982 public high school graduates, men spent more time in the labor force in 1991 than did women (11.6 months versus 10.4 months) (tables 82a,b). Female 1982 graduates also spent a greater percent of their time in the labor force unemployed in 1991 than did male graduates (7 percent versus 3 percent). Male vocational concentrators were similar to male college preparatory and other/general graduates in terms of labor force participation rates and percent of time in the labor force spent unemployed. Among female graduates, there were no significant differences in labor force participation rates between vocational concentrators and college preparatory and other/general graduates. Although female vocational concentrators appeared to spend almost twice as much of their time in the labor force unemployed as female college preparatory graduates, this difference was not statistically significant.⁹⁷

⁹⁷Standard errors for female graduates were generally larger than for their male counterparts for the same columns and rows in tables 82a and 82b. This suggests that variability in labor market experiences was greater for female than male graduates.

Table 82a—Average number and percentage distribution of months according to employment status in 1991 for 1982 public high school male graduates, by curriculum specialization in high school and degree attainment by 1992

Curriculum specialization and degree attainment	Average number of months			Percent of months		
	In labor force		Not in labor force	Percent of time in labor force		
	Employed	Unemployed		In labor force	Employed	Unemployed
Total	11.28	0.31	0.41	96.6	97.3	2.7
Curriculum specialization in high school						
College preparatory only	11.20	0.24	0.56	95.3	97.9	2.1
Vocational concentrators total*	11.41	0.27	0.32	97.3	97.7	2.3
Vocational concentration only	11.42	0.27	0.31	97.4	97.7	2.3
Both vocational concentration and college preparatory	—	—	—	—	—	—
Other/general	11.21	0.35	0.45	96.3	96.9	3.1
Degree attainment by 1992						
None	11.35	0.33	0.31	97.4	97.1	2.9
Any degree or certificate	11.16	0.26	0.57	95.2	97.6	2.4
Certificate	11.51	0.31	0.18	98.5	97.4	2.6
Associate's degree	11.41	0.29	0.30	97.5	97.5	2.5
Bachelor's degree or higher	11.05	0.25	0.70	94.2	97.7	2.3

—Too few sample observations for a reliable estimate.

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Averages and percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table 82b—Average number and percentage distribution of months according to employment status in 1991 for 1982 public high school female graduates, by curriculum specialization in high school and degree attainment by 1992

Curriculum specialization and degree attainment	Average number of months			Percent of months		
	In labor force		Not in labor force	In labor force	Percent of time in labor force	
	Employed	Unemployed			Employed	Unemployed
Total	9.65	0.72	1.63	86.4	93.1	6.9
Curriculum specialization in high school						
College preparatory only	10.07	0.47	1.46	87.8	95.6	4.4
Vocational concentrators total*	9.41	0.84	1.76	85.4	91.9	8.1
Vocational concentration only	9.39	0.86	1.75	85.4	91.8	8.2
Both vocational concentration and college preparatory	9.99	0.06	1.95	83.8	99.5	0.5
Other/general	9.70	0.70	1.60	86.7	93.3	6.7
Degree attainment by 1992						
None	9.02	0.92	2.06	82.8	90.9	9.2
Any degree or certificate	10.57	0.42	1.00	91.7	96.2	3.8
Certificate	10.41	0.59	1.00	91.7	94.7	5.3
Associate's degree	10.73	0.41	0.85	92.9	96.4	3.6
Bachelor's degree or higher	10.57	0.38	1.05	91.3	96.5	3.5

—Too few sample observations for a reliable estimate.

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Averages and percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

- On average, male 1982 public high school graduates earned about \$25,500 in 1991 (table 83). Among these male graduates, college preparatory graduates had higher earnings (about \$30,000) than vocational concentrators and other/general graduates, who earned about the same amount (about \$25,000). In comparison, female 1982 public high school graduates earned, on average, about \$19,500 in 1991. Among these female graduates, vocational concentrators earned the least (about \$18,000), followed by other/general graduates (about \$20,000). Female college preparatory graduates enjoyed the highest annual earnings (about \$23,000).

Table 83—Average annual and monthly earnings in 1991 for 1982 public high school graduates, by sex, curriculum specialization in high school, and degree attainment by 1992

Curriculum specialization and degree attainment	Male		Female	
	Average annual earnings ¹	Average monthly earnings ²	Average annual earnings ¹	Average monthly earnings ²
Total	\$25,494	\$2,190	\$19,508	\$1,761
Curriculum specialization in high school				
College preparatory only	30,198	2,622	23,278	2,017
Vocational concentrators total ³	25,203	2,142	17,777	1,601
Vocational concentration only	25,181	2,139	17,606	1,589
Both vocational concentration and college preparatory	—	—	—	—
Other/general	25,019	2,163	19,719	1,794
Degree attainment by 1992				
None	24,140	2,061	16,738	1,550
Any degree or certificate	27,868	2,417	22,932	2,022
Certificate	23,382	1,990	19,305	1,707
Associate's degree	23,503	2,014	22,827	1,949
Bachelor's degree or higher	29,506	2,571	23,841	2,121

—Too few sample observations for a reliable estimate.

¹Average annual earnings are for all 12 months in 1991, regardless of how many months the graduate was actually employed in 1991.

²Average monthly earnings includes the earnings for only those months that the graduate was employed during 1991.

³Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

- Among 1982 public high school graduates, annual earnings in 1991 increased with degree attainment (table 84). Specifically, graduates with no postsecondary degree or certificate and those with a postsecondary certificate earned about \$21,000, and associate's degree holders \$23,000, while bachelor's degree holders earned \$27,000. Obtaining a postsecondary certificate did not increase earnings measurably over holding a high school diploma for this graduating class.

Table 84—Average annual and monthly earnings in 1991 for 1982 public high school graduates, by hours worked in high school and degree attainment by 1992

Hours worked and degree attainment	Average annual earnings ¹	Average monthly earnings ²
Total	\$22,597	\$1,983
Hours worked per week in high school		
None	21,559	1,922
1–14	22,088	1,917
15–34	23,408	2,060
35 or more	23,557	2,015
Degree attainment by 1992		
None	20,819	1,832
Any degree or certificate	25,223	2,206
Certificate	20,959	1,822
Associate's degree	23,092	1,974
Bachelor's degree or higher	26,643	2,344

¹Average annual earnings are for all 12 months in 1991, regardless of how many months the graduate was actually employed in 1991.

²Average monthly earnings includes the earnings for only those months that the graduate was employed during 1991.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

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VI. Trends in Postsecondary Vocational Education

OVERVIEW

This chapter describes trends in participation in postsecondary vocational education from 1990 to 1996. The data sets used in the analysis include the following:

- *Current Population Surveys (CPS)* of 1990, 1991, 1994, and 1996, October supplements (describing adults in the general U.S. population)⁹⁸
- *National Postsecondary Student Aid Studies (NPSAS)* of 1990 and 1996 (describing students enrolled for credit in postsecondary institutions)⁹⁹
- *Beginning Postsecondary Students (BPS) Longitudinal Survey* of 1990, Base Year through Second Follow-up (describing outcomes for students enrolled for credit in postsecondary institutions for the first time in 1989–90, 4 years later in 1994)

The first set of surveys (CPS) provides an overview of the postsecondary attainment status of adults aged 18–64 in the general U.S. population and their recent participation in postsecondary education. The second set of surveys (NPSAS) forms the foundation of the trend analysis in this chapter. NPSAS contains information on a representative sample of all students enrolled for credit in postsecondary institutions during the surveyed year. It does not include students taking not-for-credit “adult” or “continuing” education courses; nor does it include transcript data. The survey relies instead on information from student self-reports and from institutional records about the degrees and majors students are pursuing, among other factors. The BPS survey provides longitudinal data on students who were enrolled for credit for the first time in 1989–90. In particular, the survey provides information on postsecondary enrollment and completion and some labor market outcomes as of 1994, relying on student self-reported information. Because recent postsecondary transcript data were not available for this analysis, the information on trends at the postsecondary level is generally less detailed than that at the secondary level.¹⁰⁰

⁹⁸The specific data elements that were available differed somewhat for each year of the survey.

⁹⁹The first NPSAS survey in 1987 did not survey a comparable sample of students, so the trend analysis focuses on 1990 to 1996.

¹⁰⁰The High School and Beyond (HS&B) longitudinal study collected postsecondary transcript data for 1982 high school graduates. More recent postsecondary transcript data are not currently available.

Specifically, it was not possible to examine students' actual course-taking patterns in this chapter.

Because of the federal definition of vocational education, the analysis in this chapter focuses primarily on subbaccalaureate students, based on student reports of the degrees they were pursuing at the time of the survey.¹⁰¹ Undergraduate students who reported that they were pursuing either an associate's degree or certificate, or were not in a degree program, were included in the analysis.¹⁰² In addition, data on major field were collected directly from NPSAS students and from their institutional records; these data were then coded into categories (about 100 categories for the 1995–96 survey and about 50 categories for the 1989–90 survey). In order to classify students as either “academic” or “vocational” for comparative analysis, these fields were collapsed using the taxonomy provided in figure 2 in the Introduction. All reported majors were classified as either academic or vocational. Students for whom major field information was not known were placed in a category called “major not reported.”¹⁰³

Unlike at the high school level, vocational education at the postsecondary level is provided extensively by both public and private institutions. In total, six types of postsecondary institutions are included in the analysis in this chapter:

- public 4-year institutions
- public 2-year institutions (sometimes referred to as “community colleges”)
- public less-than-2-year institutions (sometimes referred to as “vocational–technical institutes”)
- private, not-for-profit 4-year institutions
- private, not-for-profit 2-year institutions (which includes all private, not-for-profit less-than-4-year institutions)
- private, for-profit institutions

¹⁰¹In the analyses focusing on beginning postsecondary students (primarily in the Postsecondary Completion and Other Outcomes section), we included students who reported pursuing 4-year degrees in 1989–90, in order to compare outcomes for students working toward baccalaureate and subbaccalaureate credentials.

¹⁰²The surveys generally did not specify the types of postsecondary certificates students were pursuing. For purposes of this report, all reported certificates were generally treated as subbaccalaureate certificates. However, some 4-year and post-baccalaureate certificates (such as teaching certificates) may be included.

¹⁰³The previous report in this series, *Vocational Education in the United States: The Early 1990s*, called this third category of majors “other” rather than “not reported.”

The designation “4-year” means that the institution awards bachelor’s or graduate degrees as its highest degree type. The designation “2-year” means the institution awards associate’s degrees or less-than-4-year, subbaccalaureate certificates as its highest award type. The designation “less-than-2-year” means that the institution does not award degrees but awards subbaccalaureate certificates of less than 2 years in length. Private, for-profit institutions usually offer certificates but may offer other degrees as well.

TRENDS IN EDUCATIONAL ATTAINMENT

The United States has experienced both greater educational participation and higher attainment in recent years, continuing long-standing patterns. More people are attending postsecondary institutions than ever before, and the average educational attainment of the adult population (those 18 and older) has been steadily rising.

- The average educational attainment of the adult U.S. population (those 18 and older) increased between 1992 and 1996 (table 85; figure 31). The number of adults with less than a high school diploma decreased by 5 percent (about 2 million people) from 1992 to

Table 85—Percentage distribution and number of adults aged 18 or older according to highest educational attainment: 1992 and 1996

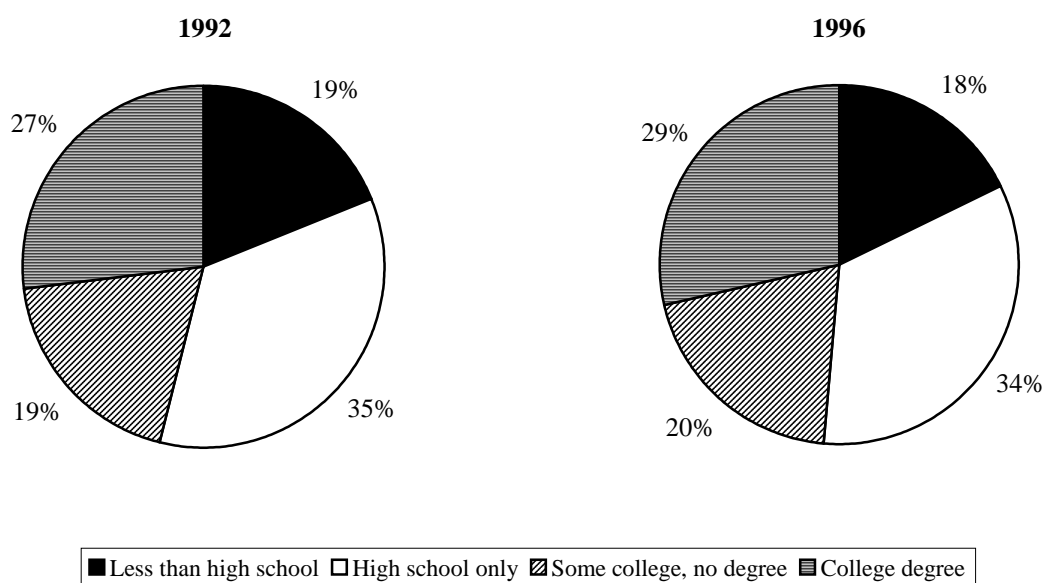
	Of all adults 18 or older				Of those who completed a degree*					
	Less than high school	High school only	Some college, no degree*	College degree*	Total	Associate’s		Bachelor’s	Master’s or higher	
						Vocational	Academic			
1992										
Total percentage of adults	19.4	35.3	18.8	26.5	24.2	13.5	10.7	50.8	25.0	
Total number of adults (in 1000s)	36,043	65,505	34,863	49,060	11,864	6,628	5,235	24,932	12,265	
1996										
Total percentage of adults	17.6	33.8	19.8	28.9	24.1	12.5	11.6	52.0	23.9	
Total number of adults (in 1000s)	34,089	65,349	38,233	55,815	13,431	6,977	6,455	29,036	13,347	

*The surveys did not ask specifically about postsecondary certificate completion. It is, therefore, not possible to know whether adults completing a postsecondary certificate, but not an associate’s or higher degree, include themselves in the “some college, no degree” or “college degree” category.

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

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys, 1992 and 1996.

Figure 31—Percentage distribution of adults aged 18 or older according to highest educational attainment: 1992 and 1996



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

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys, 1992 and 1996.

1996. In contrast, the number of adults with some college education increased by 10 percent (about 3 million people), and the number of those who earned a college degree increased by 14 percent (close to 7 million additional people).¹⁰⁴ These changes should be viewed in the context of an overall population increase of about 4 percent during the same time period.

- Among adults who completed a college degree, the percentage who held associate’s degrees remained fairly steady at about 24 percent between 1992 and 1996 (table 85). While there appeared to be a small increase in the total number of adults who earned vocational associate’s degrees, this difference was not statistically significant. However, the total number of adults who held academic associate’s degrees increased between 1992 and 1996 by approximately an additional 1 million people.

¹⁰⁴The CPS surveys did not ask specifically about postsecondary certificate completion. It is, therefore, not possible to know whether adults completing a postsecondary certificate, but not an associate’s or higher degree, included themselves in the “some college, no degree” or “college degree” category.

- In 1996, slightly more men than women had completed a college degree (30 percent versus 28 percent) (table 86). This difference was due to a higher proportion of men having bachelor’s or advanced degrees. Women, on the other hand, were somewhat more likely than men to have earned an associate’s degree (8 percent versus 6 percent). This gender gap held for both academic and vocational associate’s degrees.
- Educational attainment differed by race–ethnicity in 1996. For example, substantial differences appeared in the proportion of adults completing a college degree, with 32 percent of whites, 19 percent of blacks, and 14 percent of Hispanics doing so (table 86).¹⁰⁵ Differences were modest in 1996 in terms of the percentages of adults who had earned associate’s degrees: 8 percent of whites, 6 percent of blacks, and 4 percent of Hispanics had this level of attainment.¹⁰⁶

Table 86—Percentage distribution of adults aged 18 or older according to highest educational attainment, by sex and race–ethnicity: 1996

Sex and race–ethnicity	Of all adults 18 or older				Of those who completed a degree ¹				
	Less than high school	High school only	Some college, no degree ¹	College degree ¹	Associate’s			Bachelor’s	Master’s or higher
					Total	Vocational	Academic		
Total	17.6	33.8	19.8	28.9	6.9	3.6	3.3	15.0	6.9
Sex									
Male	17.5	32.6	19.6	30.2	6.2	3.2	3.0	15.8	8.3
Female	17.7	34.9	19.9	27.6	7.6	4.0	3.7	14.3	5.6
Race–ethnicity ²									
Black, non-Hispanic	23.8	36.2	21.5	18.5	5.5	2.6	2.9	9.1	3.8
Hispanic	43.8	28.0	14.5	13.6	4.4	2.3	2.1	6.7	2.6
White, non-Hispanic	13.5	34.6	20.2	31.7	7.5	4.0	3.5	16.6	7.7

¹The surveys did not ask specifically about postsecondary certificate completion. It is, therefore, not possible to know whether adults completing a postsecondary certificate, but not an associate’s or higher degree, include themselves in the “some college, no degree” or “college degree” category.

²Non-Hispanic adults who are neither black nor white are included in the total row but not shown separately.

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

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Survey, 1996.

¹⁰⁵All differences among the three groups were statistically significant.

¹⁰⁶The differences between whites and blacks and whites and Hispanics were statistically significant, but the difference between blacks and Hispanics was not.

TRENDS IN POSTSECONDARY ENROLLMENT

Vocational coursework is a substantial component of subbaccalaureate students' education. Among all subbaccalaureate students, about one-half majored in a vocational program area in 1996; the proportion decreased from 54 to 49 percent over the 6 years from 1990 to 1996.¹⁰⁷

Although postsecondary enrollments overall have shown recent increases, there is no evidence that bachelor's degree holders are returning in large numbers for additional undergraduate schooling, as some have speculated. In particular, small proportions of students who were pursuing associate's degrees or certificates had already earned a bachelor's or advanced degree. The vast majority of students who enroll in postsecondary education are pursuing a higher level credential than the one they currently possess. However, this report focused on students participating in for-credit postsecondary programs. It may be that a significant number of bachelor's degree holders are taking noncredit, "adult" or "continuing" education courses.

There was an increase between 1990 and 1996 in the proportion of all vocational students being served by community colleges, with a corresponding decrease at private proprietary institutions.

- About 8 percent of adults age 18 and older in the United States were enrolled in postsecondary courses in October 1994, nearly all of them working toward a degree (94 percent) (table 87). About 4 percent of enrolled adults were working toward a license, diploma, or certificate; 22 percent toward an associate's degree; and 68 percent toward a bachelor's or advanced degree.¹⁰⁸
- In 1994, the 22 percent of postsecondary students who were seeking an associate's degree were split about evenly between vocational and academic majors (table 87). The percentage of adults seeking a vocational associate's degree declined somewhat since 1991, from about 14 to 11 percent, while the percentage seeking an academic associate's degree rose from 9 to 11 percent.

¹⁰⁷There were substantial amounts of missing data on student's major field in both NPSAS surveys. About 24 percent of subbaccalaureate students in 1990 and 28 percent in 1996 did not report their major field.

¹⁰⁸The CPS surveys did not specify whether the postsecondary certificate students were pursuing were subbaccalaureate certificates or 4-year or post-baccalaureate certificates (such as teaching certificates).

Table 87—Percentage distribution of adults aged 18 or older according to postsecondary enrollment and degree-seeking status, by sex and race-ethnicity: 1991 and 1994

Sex and race-ethnicity	Enrolled in post- secondary	Not working toward a degree	Of those enrolled					
			Total	License, diploma, or certificate	Working toward a degree			Bachelor's or higher
					Total	Associate's Vocational	Academic	
1991								
Total	7.6	6.4	93.6	4.9	22.3	13.8	8.5	66.4
Sex								
Male	7.3	5.6	94.4	4.0	20.9	12.6	8.3	69.5
Female	7.8	7.1	92.9	5.8	23.4	14.7	8.7	63.7
Race-ethnicity*								
Black, non-Hispanic	7.0	5.2	94.8	7.1	30.3	21.4	9.0	57.4
Hispanic	5.8	8.3	91.7	5.5	30.8	18.6	12.2	55.4
White, non-Hispanic	7.6	6.4	93.6	4.7	20.9	12.9	8.1	68.0
1994								
Total	7.8	5.8	94.2	4.2	21.7	10.5	11.2	68.3
Sex								
Male	7.4	5.2	94.8	3.5	19.3	8.7	10.6	72.1
Female	8.2	6.3	93.7	4.8	23.7	12.0	11.7	65.2
Race-ethnicity*								
Black, non-Hispanic	8.1	6.8	93.2	4.8	23.4	14.4	9.0	65.0
Hispanic	6.8	8.3	91.7	5.1	32.1	13.0	19.1	54.5
White, non-Hispanic	7.6	5.4	94.6	4.2	20.7	9.9	10.7	69.7

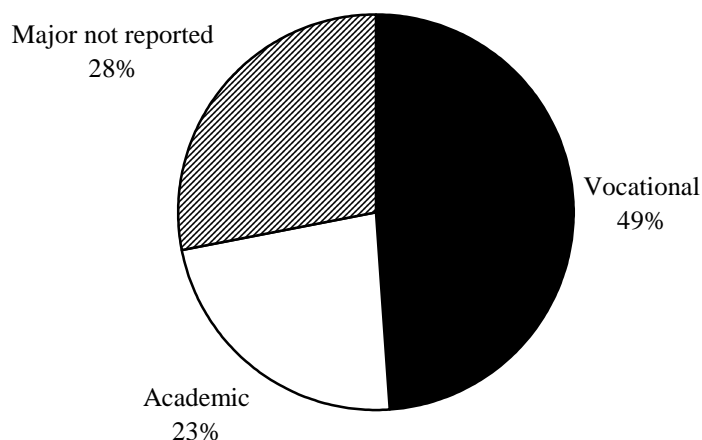
*Non-Hispanic adults who are neither black nor white are included in the total row but not shown separately.

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

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys, 1991 and 1994.

- About one-half of all subbaccalaureate students reported majoring in a vocational field in 1995–96 (figure 32). The proportion of all subbaccalaureate students who declared a vocational major decreased slightly, from 54 percent in 1989–90 to 49 percent in 1995–96 (table 88).¹⁰⁹

Figure 32—Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field: 1995–96



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

Table 88—Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field, by sex: 1989–90 and 1995–96

Sex	1989–90			1995–96		
	Academic	Vocational	Major not reported	Academic	Vocational	Major not reported
Total	21.8	54.3	23.9	22.6	49.2	28.2
Male	21.7	54.7	23.6	19.8	49.2	31.1
Female	23.1	51.9	25.0	24.5	49.3	26.2

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

¹⁰⁹There were substantial amounts of missing data on student’s major field in both NPSAS surveys. About 24 percent of subbaccalaureate students in 1989–90 and 28 percent in 1995–96 did not report their major field.

- In 1995–96, 20 percent of subbaccalaureate students held a previous postsecondary degree or certificate, and 2 percent held a bachelor’s or higher degree (table 89). Among community college students, 19 percent held a previous postsecondary degree or certificate, and 1 percent held a bachelor’s or higher degree. Whether subbaccalaureate students had previously earned a baccalaureate degree did not differ by students’ major: 2 percent of academic majors and 1 percent of vocational majors had bachelor’s or advanced degrees. Among previous degree holders, certificate seekers were about twice as likely as associate’s degree seekers to hold a bachelor’s or advanced degree in 1995–96 (12 versus 6 percent). About one-third of subbaccalaureate students who were not pursuing a degree or certificate held a bachelor’s or advanced degree in 1995–96. (Data on prior degrees earned are not available for 1989–90.)

Table 89—Percentage distribution of subbaccalaureate students who had previously earned various degrees, by type of previous degree and selected student enrollment characteristics: 1995–96

Selected student enrollment characteristics	Of all subbaccalaureate students			Of previous degree holders	
	Any previous degree	Baccalaureate degree or higher	Subbaccalaureate degree	Baccalaureate degree or higher	Subbaccalaureate degree
Total	20.4	2.2	18.3	10.7	89.3
Institution type					
Public 4-year	28.7	14.4	14.2	50.3	49.7
Private, not-for-profit 4-year	27.1	9.6	17.5	35.5	64.5
Public 2-year	19.3	1.4	17.9	7.2	92.8
Public vocational–technical	36.0	0.7	35.2	2.0	98.0
Private, not-for-profit less-than-4-year	23.0	1.0	22.0	4.4	95.6
Private, for-profit	20.0	0.6	19.4	3.0	97.0
Major field category					
Vocational	22.6	1.2	21.4	5.4	94.6
Academic	17.1	2.0	15.1	11.9	88.1
Major not reported	19.3	4.2	15.1	21.7	78.3
Degree pursuing					
Certificate	29.7	3.4	26.3	11.5	88.5
Associate’s	16.7	1.1	15.7	6.4	93.6
Nondegree program	27.7	9.4	18.2	34.0	66.0

NOTE: Percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

- Public 2-year institutions served a greater proportion of all subbaccalaureate students in 1995–96 than in 1989–90 (79 percent versus 67 percent) (table 90). This was true for each major field category (vocational, academic, and not reported). About 60 percent of students with vocational majors attended community colleges in 1989–90, for example, while 71 percent of them did so in 1995–96. There was a corresponding decline in attendance at private, for-profit schools: 16 percent of subbaccalaureate vocational students attended this type of school in 1995–96, down from 23 percent 6 years earlier.

Table 90—Percentage distribution of subbaccalaureate students according to type of institution, by major field category: 1989–90 and 1995–96

Major field category	Public 4-year	Private, not-for-profit 4-year	Public 2-year	Private, not-for-profit less-than-4-year	Public vocational–technical	Private, for-profit
1989–90						
Total	10.1	4.6	67.1	2.6	2.3	13.2
Vocational	7.0	3.6	59.7	3.4	3.8	22.5
Academic	14.1	5.9	73.2	2.4	0.7	3.7
Major not reported	13.5	5.9	78.3	1.1	0.2	1.0
1995–96						
Total	5.4	2.9	78.5	2.3	2.1	8.8
Vocational	3.4	2.0	71.0	3.5	4.0	16.1
Academic	6.2	3.9	86.3	1.4	0.4	1.8
Major not reported	8.2	3.6	85.3	0.8	0.3	1.7

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

STUDENT CHARACTERISTICS

Subbaccalaureate students with vocational majors were older, more likely to have family responsibilities, more likely to receive financial aid, more likely to have a previous postsecondary degree or certificate, and reported higher postsecondary grade-point averages (GPAs) than their academic counterparts (figure 33). These students with vocational majors also tended to have parents with lower educational attainment: as the education level of their parents increased, students' likelihood of reporting a vocational major generally decreased. Differences by race–ethnicity among subbaccalaureate students in the probability of having a vocational major were either minimal or not statistically significant. Also, among subbaccalaureate students, there was no clear association between majoring in a vocational field and disability status.

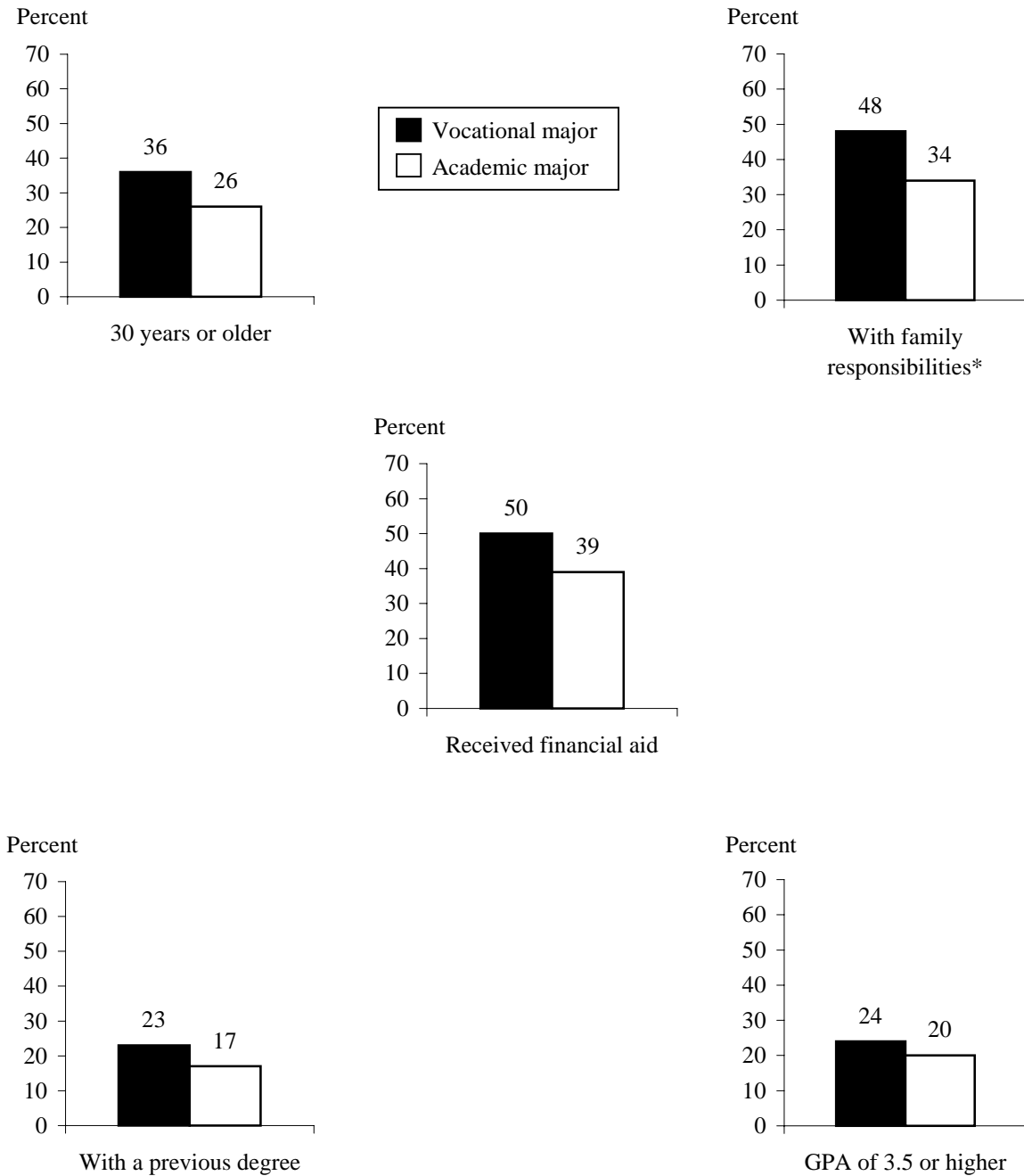
- A slightly higher proportion of U.S. women than men were enrolled in postsecondary courses in 1994 (8 percent versus 7 percent) (table 87). Among those enrolled, women tended to be concentrated more in subbaccalaureate programs than men (29 percent versus 23 percent), and a higher percentage of women than men were earning vocational associate's degrees (12 percent versus 9 percent).
- Among subbaccalaureate students, about 58 percent of vocational majors were women in 1995–96, compared with 64 percent of academic majors (table 91). While subbaccalaureate males appeared to be slightly more likely than their female counterparts to report a vocational major in both 1989–90 and 1995–96, these small differences were not statistically significant (table 88).

Table 91—Percentage distribution of subbaccalaureate students according to sex, by major field category: 1995–96

Major field category	Male	Female
Total	41.7	58.3
Vocational	41.6	58.4
Academic	36.5	63.5
Major not reported	45.9	54.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

Figure 33—Percentage of vocational and academic subbaccalaureate students with selected characteristics, by major: 1995–96



*Included in the figure are students who were married (with or without dependents) or unmarried with dependents.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

- Subbaccalaureate students were more likely to have vocational than academic majors in 1995–96; this pattern held for all racial–ethnic groups except American Indian/Alaska Native students, where the sample size was small (table 92). The percentage within each racial–ethnic group (except black) that had a vocational major did not differ significantly from the overall total of 49 percent.¹¹⁰ About 58 percent of black students had a vocational major in 1995–96, a higher proportion than that of all subbaccalaureate students.
- Among black students, the likelihood of majoring in a vocational field decreased between 1989–90 and 1995–96 (table 92). While 68 percent of black students reported a vocational major in 1989–90, 58 percent of these students did so in 1995–96. For other racial–ethnic groups, the decrease was not statistically significant.

Table 92—Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field, by race–ethnicity: 1989–90 and 1995–96

Race–ethnicity	1989–90			1995–96		
	Academic	Vocational	Major not reported	Academic	Vocational	Major not reported
Total	21.8	54.3	23.9	22.6	49.2	28.2
American Indian/Alaska Native	22.4	52.5	25.1	25.2	44.1	30.7
Asian/Pacific Islander	20.6	49.9	29.6	26.1	44.6	29.2
Black, non-Hispanic	15.4	67.7	16.9	21.2	57.7	21.2
Hispanic	20.7	55.8	23.5	21.2	48.4	30.3
Other	—	—	—	14.1	57.3	28.6
White, non-Hispanic	23.1	52.3	24.6	22.8	48.1	29.1

—Data not available.

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

¹¹⁰For simplicity’s sake, this report refers to “black, non-Hispanic” students as “black” and “white, non-Hispanic” students as “white.” However, it should be remembered that all Hispanic students, regardless of race, are included in the Hispanic group.

- Subbaccalaureate students with and without disabilities were equally likely to report a vocational major in 1995–96 (table 93). There was no change between 1989–90 and 1995–96 in the probability that subbaccalaureate students with and without disabilities had a vocational major. However, these estimates should be viewed with caution because of the high proportion of missing disability status data (45 percent missing data).

Table 93—Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field, by disability status: 1989–90 and 1995–96

Disability status	1989–90			1995–96		
	Academic	Vocational	Major not reported	Academic	Vocational	Major not reported
Total	21.9	54.3	23.9	22.6	49.2	28.2
Has disability	22.3	51.8	25.9	23.7	49.0	27.3
No disability	22.6	52.7	24.7	24.1	50.3	25.7
Disability status not reported	20.7	57.0	22.3	20.3	47.8	31.9

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

- Among subbaccalaureate students in 1995–96, vocational majors reported higher postsecondary GPAs than academic majors (table 94). For example, 24 percent of vocational majors reported GPAs of 3.5 or more in 1995–96, in contrast with 20 percent of academic majors. There were no consistent changes over time in the percentage of students with various GPAs who reported a vocational major.

Table 94—Percentage distribution of subbaccalaureate students according to their postsecondary grade point average (GPA), by major field category: 1989–90 and 1995–96

Major field category	GPA in 1989–90				GPA in 1995–96			
	3.5 or more	2.6–3.49	1.6–2.59	1.59 or less	3.5 or more	2.6–3.49	1.6–2.59	1.59 or less
Total	27.9	31.5	27.7	13.0	23.3	35.0	23.7	18.0
Vocational	27.6	32.1	28.1	12.2	23.7	38.9	22.9	14.5
Academic	27.7	32.6	28.2	11.4	20.2	35.4	29.4	15.0
Major not reported	28.5	29.0	26.3	16.2	25.2	28.2	20.2	26.4

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

- Students in their late 20s were more likely to report a vocational major in 1995–96 than those aged 20 or younger. In 1995–96, while 44 percent of students 20 years or younger reported a vocational major, about 54 percent of those ages 24–29 did so (table 95). In 1995–96, 36 percent of vocational majors versus 26 percent of academic majors were 30 years or older (table 96 and figure 33). Between 1989–90 and 1995–96, the proportion of vocational students who were 20 or younger decreased, and the proportion who were 30 or older increased.

Table 95—Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field, by age: 1989–90 and 1995–96

Age	1989–90			1995–96		
	Academic	Vocational	Major not reported	Academic	Vocational	Major not reported
Total	21.9	54.3	23.9	22.6	49.2	28.2
20 years or younger	24.4	51.5	24.0	28.8	44.4	26.9
21–23 years	24.6	54.2	21.2	26.9	49.9	23.2
24–29 years	20.4	56.6	23.0	21.0	53.7	25.3
30 years or older	20.7	52.0	27.3	16.6	50.1	33.3

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Table 96—Percentage distribution of subbaccalaureate students according to age, by major field category: 1989–90 and 1995–96

Major field category	1989–90				1995–96			
	20 years or younger	21–23 years	24–29 years	30 years or older	20 years or younger	21–23 years	24–29 years	30 years or older
Total	30.9	16.7	18.8	33.6	27.2	16.8	20.6	35.4
Vocational	30.0	17.1	20.1	32.9	24.5	17.0	22.5	36.0
Academic	33.5	18.3	17.1	31.0	34.7	20.0	19.2	26.1
Major not reported	30.3	14.5	17.7	37.5	25.9	13.8	18.5	41.8

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

- Among subbaccalaureate students in 1995–96, vocational majors were more likely than academic majors to have a previous postsecondary degree or certificate (table 89 and figure 33). About 23 percent of vocational majors versus 17 percent of academic majors reported a previous postsecondary credential of some type.
- Among subbaccalaureate students in 1995–96, vocational majors were more likely than academic majors to receive financial aid (table 97 and figure 33). From 1989–90 to 1995–96, there was no significant change in the proportions of vocational majors receiving financial aid. In contrast, academic majors had a greater likelihood of receiving aid in 1995–96 than in 1989–90.

Table 97—Percentage distribution of subbaccalaureate students according to their financial aid status, by major field category: 1989–90 and 1995–96

Major field category	1989–90		1995–96	
	Received aid	No aid	Received aid	No aid
Total	38.1	61.9	40.7	59.3
Vocational	46.3	53.7	49.8	50.2
Academic	31.6	68.4	39.3	60.7
Major not reported	25.5	74.5	25.8	74.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

- Among subbaccalaureate students, higher proportions of vocational majors than academic majors had family responsibilities in both 1989–90 and 1995–96 (table 98). Vocational majors were generally more likely to be financially independent and to be married and/or have dependents (figure 33). These characteristics may be related to the older age of vocational majors. Between 1989–90 and 1995–96, the percentage of subbaccalaureate students who were unmarried with dependents (mainly single parents) more than doubled, from about 7 to 17 percent. This increase held for both vocational and academic majors.

Table 98—Percentage distribution of subbaccalaureate students according to their dependency and marital status, by major field category: 1989–90 and 1995–96

Major field category	1989–90						1995–96					
	Dependency status		Marital status*				Dependency status		Marital status*			
			Not married, no dependents	Not married, with dependents	Married, no dependents	Married, with dependents			Not married, no dependents	Not married, with dependents	Married, no dependents	Married, with dependents
Depen- dent	Indepen- dent	no depen- dents	with depen- dents	depen- dents	depen- dents	Depen- dent	Indepen- dent	no depen- dents	with depen- dents	depen- dents	depen- dents	
Total	36.8	63.2	57.6	7.4	13.9	21.2	37.5	62.5	57.0	16.9	10.8	15.3
Vocational	34.0	66.0	54.8	9.1	14.4	21.6	33.5	66.5	52.2	20.0	10.9	16.9
Academic	42.9	57.1	63.7	5.0	11.8	19.5	47.9	52.1	66.0	14.3	8.6	11.1
Major not reported	37.3	62.7	57.7	5.9	14.7	21.7	36.1	63.9	58.2	13.7	12.4	15.7

*The data in the “Marital status” columns for 1989–90 and 1995–96 are not directly comparable due to missing data in 1989–90 on this variable (about 23 percent missing) and no missing data in 1995–96.

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

- As the education level of their parents increased, subbaccalaureate students were generally less likely to major in vocational fields, and were more likely to major in academic fields (table 99). For example, in 1995–96, 59 percent of subbaccalaureate students whose parents had a high school diploma but no postsecondary education reported a vocational major, compared with 35 percent of those whose parents had a graduate or professional degree.

Table 99—Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field, by parental education: 1995–96

Parental education	Academic	Vocational	Major not reported
Total	22.6	49.2	28.2
Less than high school	21.5	50.8	27.6
High school completion	20.5	58.8	20.7
Some trade/vocational	27.4	42.7	29.9
Some college	26.7	51.8	21.5
Bachelor’s degree	28.6	44.5	26.9
Graduate degree	35.3	35.2	29.5
Not reported	19.9	45.7	34.3

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

SPECIFIC OCCUPATIONAL PREPARATION

This section examines student preparation in specific occupational program areas. Business, health, and technical fields continued to account for large numbers of vocational students’ majors. However, between 1989–90 and 1995–96, there were small decreases in the proportion of subbaccalaureate students reporting majors in business, marketing, computers/data processing, and engineering/science technologies.

Among subbaccalaureate students, gender gaps persisted in the fields of business, health, and “other vocational” fields (where women predominated), as well as trade and industry, protective services, computers/data processing, and engineering/science technologies (where men predominated). A particularly large gap between men and women occurred in 1995–96 in engineering/science technologies, in which 12 percent of male students and only 2 percent of female students declared a major.

- Among subbaccalaureate students in 1995–96, popular vocational majors included business (about 14 percent of subbaccalaureate students reported this major); health (11 percent); and engineering/science technologies (6 percent) (table 100). Technical education as a whole, which includes computers/data processing, engineering/science technologies, and protective services, accounted for 12 percent of all subbaccalaureate majors.
- The percentage of subbaccalaureate students reporting majors in business, marketing, computers/data processing, and engineering/science technologies, declined significantly between 1989–90 and 1995–96 (table 100). Although percentages in other fields may appear to have changed, these differences were not statistically significant.
- Among subbaccalaureate students, gender gaps remained in 1995–96 in the following fields: business, health, and “other vocational” (where women predominated), as well as trade and industry, protective services, computers and data processing, and engineering/science technologies (where men predominated) (table 100 and figure 34).¹¹¹ In particular, in engineering/science technologies, the ratio of male to female majors was about 7:1 in 1995–96. However, that difference was slightly smaller than in 1990, when the ratio was about 8:1.

¹¹¹The “other vocational” category includes cosmetology, consumer/personal services, dental/medical technology, and legal assisting, among other miscellaneous fields.

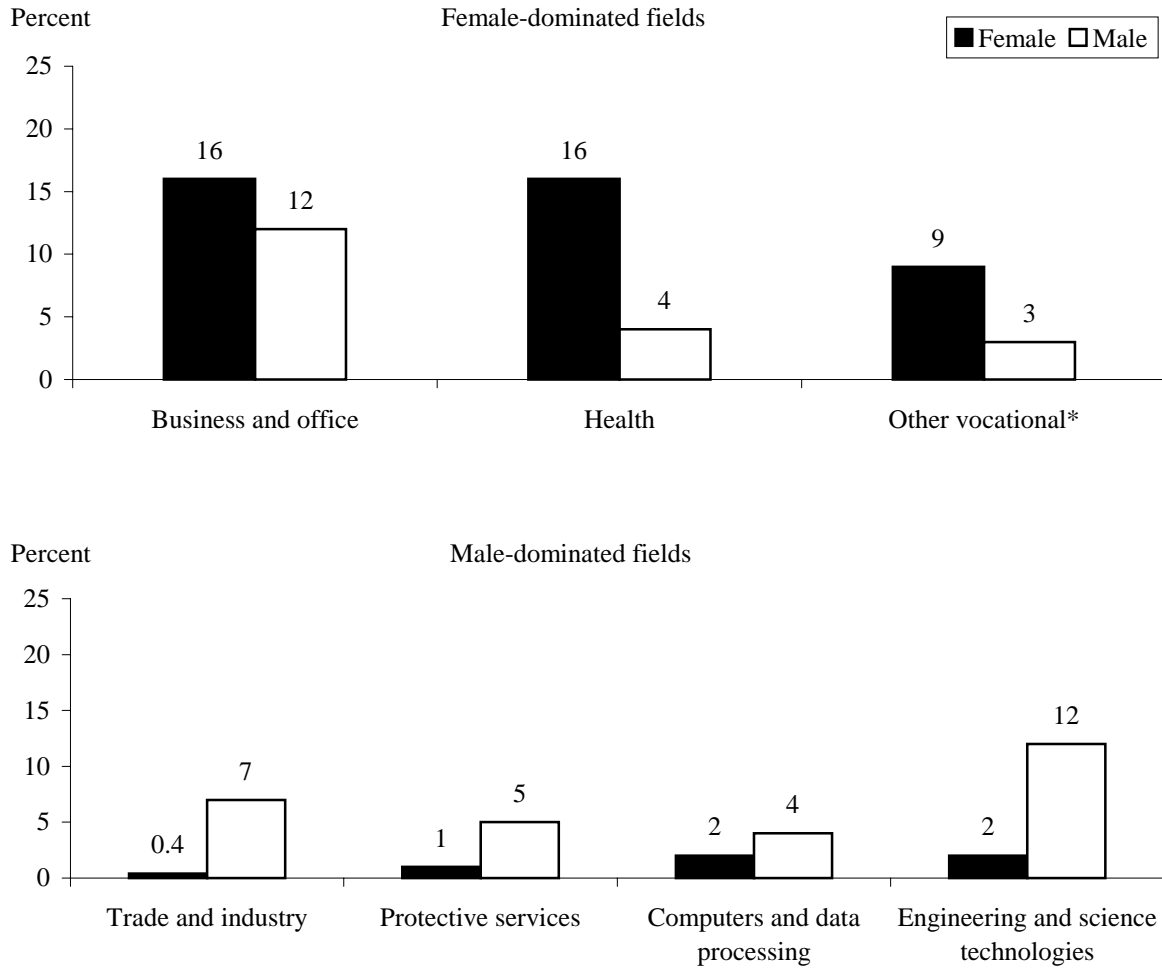
Table 100—Percentage distribution of subbaccalaureate students according to vocational major subcategory, by sex: 1989–90 and 1995–96

Sex	Any vocational major	Agri-culture	Business and office	Marketing and distri-bution	Health	Home economics	Technical education					
							Total	Protective services	Computers/ data processing	Engineering/ science tech-nologies	Trade and industry	Other vocational
1989–90												
Total	54.3	0.4	17.1	1.1	10.6	2.2	14.3	2.2	3.8	8.3	2.5	6.1
Male	54.7	0.6	14.6	0.9	5.1	1.4	24.4	3.8	4.0	16.6	5.1	2.7
Female	51.9	0.3	18.4	1.2	14.5	3.0	6.4	0.9	3.5	2.0	0.4	7.8
1995–96												
Total	49.2	0.7	14.1	0.5	10.9	1.8	11.6	2.8	2.7	6.1	3.1	6.6
Male	49.2	0.9	11.5	0.3	4.1	1.7	20.8	5.0	3.7	12.1	7.0	2.9
Female	49.3	0.5	15.9	0.6	15.8	1.9	4.9	1.1	2.1	1.7	0.4	9.2

NOTE: Percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Figure 34—Percentage of subbaccalaureate students in selected vocational major fields, by sex: 1995–96



*The “other vocational” category includes cosmetology, consumer/personal services, and legal assisting, among other fields.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

WORK EXPERIENCE WHILE ENROLLED

While many subbaccalaureate students were employed while they were enrolled in school, work experience that was directly related to coursework (such as internships, apprenticeships, or cooperative education) was relatively rare. In general, whether subbaccalaureate students had a vocational or academic major was not related to whether they worked in general or had a job linked to their schoolwork.

- Among subbaccalaureate students, working while enrolled in school was a very common practice. In both 1989–90 and 1995–96, about four in five students worked for pay at some point during the school year (table 101). Moreover, of those who worked for pay in 1995–96, 58 percent worked at least 35 hours a week, and 31 percent worked 20–34 hours a week. About 12 percent of subbaccalaureate students worked fewer than 20 hours a week. Students with vocational and academic majors were equally likely to have worked for pay in 1989–90, while in 1995–96, vocational majors were slightly less likely than academic majors to have worked for pay during the school year (77 versus 82 percent). However, among employed students in 1995–96, vocational majors were more likely than their academic peers to work 35 or more hours per week (figure 35).

Table 101—Percentage of subbaccalaureate students who worked while enrolled and, of those who worked, percentage distribution according to average hours worked per week, by major field category: 1989–90 and 1995–96

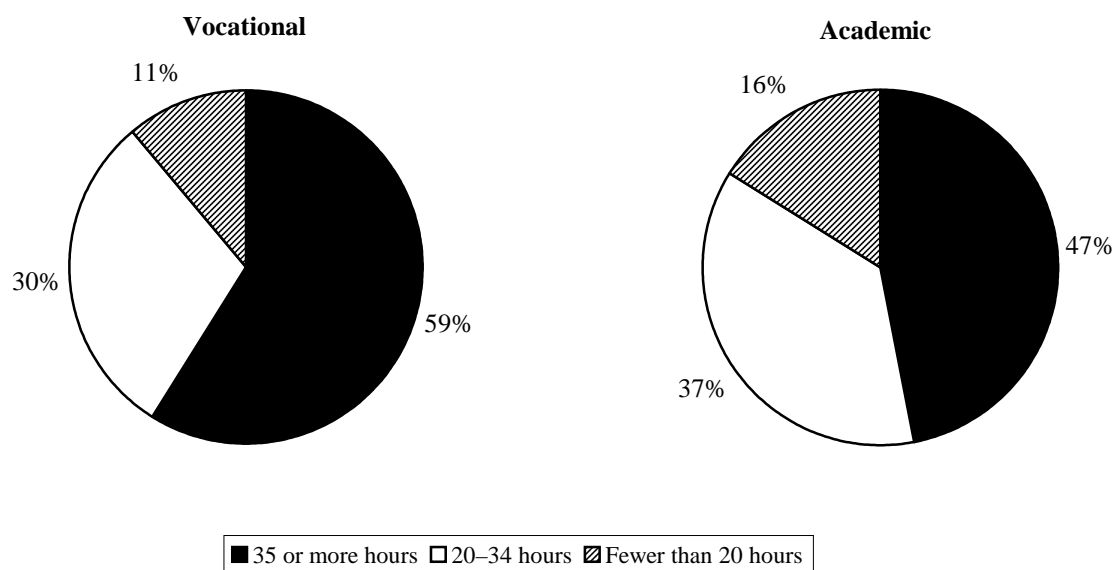
Major field category	Worked for pay	Hours worked per week		
		Fewer than 20	20–34	35 or more
1989–90				
Total	79.7	—	—	—
Vocational	79.0	—	—	—
Academic	80.1	—	—	—
Major not reported	80.9	—	—	—
1995–96				
Total	80.6	11.6	30.9	57.5
Vocational	77.3	10.8	30.1	59.1
Academic	82.3	15.8	37.1	47.1
Major not reported	85.4	9.5	27.0	63.5

—Data not available.

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Figure 35—Percentage distribution of employed subbaccalaureate students according to hours worked per week, by major field category: 1995–96



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

- Work experience that is connected to postsecondary coursework is uncommon. In 1995–96, about 8 percent of subbaccalaureate students reported participating in an internship, apprenticeship, or cooperative education during their postsecondary careers (table 102). Half of those participating had worked in internships. Vocational and academic students were equally likely to have had school-linked work experiences. (These data were not available for 1989–90.)
- Among students who first enrolled in postsecondary education in 1989–90 and were no longer enrolled in February 1994, a minority of vocational majors (13 percent) reported having at least one job while they were enrolled that was related to their studies (table 103). Vocational majors were no more likely than academic majors to have worked in a related job while they were enrolled. Students who had pursued a bachelor's degree were more likely to have had a related job than those seeking other degrees. (This difference may reflect the duration of a bachelor's degree program.)

Table 102—Percentage of subbaccalaureate students participating in various school-related work experience programs, by major field category: 1995–96

Major field category	Any school-related work experience program	Internship	Apprenticeship	Cooperative education
Total	8.3	4.4	2.2	2.3
Vocational	9.5	4.5	3.3	2.4
Academic	10.0	6.9	1.6	2.0
Major not reported	4.4	1.6	0.6	2.3

NOTE: Percentages may not add to totals because some students may have participated in more than one type of work experience program.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

Table 103—Percentage of 1989–90 beginning postsecondary students not enrolled in February 1994 who reported various links between their postsecondary education and their most recent principal job, and who had at least one job related to their studies, by major field category and degrees attained: 1994

Major field category and degrees attained	Apply skills from school	Use tools/equipment trained on at school	Needed education to get job	First job after postsecondary education different from last job during postsecondary education	Had at least one job while enrolled that was related to studies
Total	76.8	84.9	57.0	31.9	13.1
Most recent major					
Academic	71.1	84.0	61.8	31.0	16.5
Vocational	77.6	85.2	58.2	30.1	13.3
Types of degrees attained 1989–94					
None	69.6	75.8	38.6	30.7	5.9
Certificate	85.4	92.8	68.5	40.2	9.2
Associate's	90.5	95.2	71.7	24.2	20.4
Bachelor's	72.7	87.6	70.7	32.9	29.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

- Among students who first enrolled in postsecondary education in 1989–90 and were enrolled in February 1994, about two-thirds were working (table 104). Neither the level or the control of their 1989–90 postsecondary institution nor their most recently reported major (vocational or academic) was related to whether these enrolled students were working in February 1994.

Table 104—Percentage distribution of 1989–90 beginning postsecondary students who were enrolled in 1994 according to their February 1994 employment status and of those employed, type of primary occupation in 1993, by selected student and institutional characteristics

Selected student and institutional characteristics	Employment status in Feb. 1994		Primary occupation in 1993					
	Not employed	Employed	Clerical	Services/sales	Man-gerial/computer	Profes-sional	Craft/re-pair/labor/machining	Other
Total	34.7	65.3	27.2	26.4	19.8	10.2	11.1	5.4
Most recent major								
Academic	37.2	62.8	30.7	30.8	14.5	9.8	9.1	5.2
Vocational	32.6	67.4	25.4	22.7	24.4	9.8	13.2	4.5
Level of institution in 1989–90								
4-year	35.9	64.1	26.8	27.2	17.9	13.0	9.1	6.0
Less-than-4-year	33.2	66.8	27.7	25.4	22.4	6.2	13.8	4.5
Control of institution in 1989–90								
Public	34.1	65.9	26.6	27.4	20.5	9.0	11.0	5.6
Private, not-for-profit	37.8	62.2	29.9	23.5	17.1	15.7	8.8	5.0
Private, for-profit	34.4	65.6	26.0	14.2	16.1	12.4	31.4	0.0
Primary occupation in 1990								
Clerical	19.8	80.2	60.9	7.8	20.8	5.2	3.9	1.4
Services/sales	19.8	80.2	31.0	44.2	11.9	3.6	4.5	4.9
Managerial/computer*	24.2	75.8	26.4	15.2	30.0	9.3	6.2	13.0
Professional	—	—	—	—	—	—	—	—
Craft/repair/labor/machining	36.8	63.3	8.4	20.1	9.0	7.4	47.6	7.6
Other	—	—	—	—	—	—	—	—

—Too few sample observations for a reliable estimate.

*Includes students who reported they were in either a manager/administrator or technical/computer occupation.

NOTE: Percentages may not add to 100 due to rounding. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

POSTSECONDARY COMPLETION AND OTHER OUTCOMES

This section examines differences in postsecondary degree completion, licensure, and labor market outcomes.¹¹² Among the group of students who first began their postsecondary studies in 1989–90, those with academic majors were more likely than students with vocational majors to have completed at least one postsecondary credential 4 years later. However, a majority of both academic and vocational majors completed some type of degree or certificate within 4 years. A large majority of beginning postsecondary students were employed 4 years later, and this was even more pronounced among those who were not enrolled in 1994. The likelihood of being employed did not differ between vocational and academic majors.

Postsecondary Completion

- Educational aspirations were high among students beginning their postsecondary education in 1989–90. About one-third of those who declared either a vocational or an academic major in their first year planned to eventually earn a bachelor's degree, and an additional 37 percent of vocational majors expected to earn a graduate or professional degree (table 105). An even higher proportion, 58 percent, of first-year academic majors aspired to a graduate or professional degree. Long-term aspirations, the degree sought when enrolling for the first time, and one's major field (vocational or academic) may all influence the length of time it takes a student to attain a postsecondary credential. Indirectly, such factors may also influence employment outcomes.

¹¹²In this section, we included students who reported pursuing 4-year degrees in 1989–90, in order to be able to compare outcomes for students working toward baccalaureate and subbaccalaureate credentials.

Table 105—Percentage distribution of 1989–90 beginning postsecondary students according to their educational aspirations, by major field category and degree goal in 1989–90

Major field category and degree goal	Highest level of education ever expected to complete			
	Trade school, including credential	Some college, associate's degree	Bachelor's degree	Graduate/professional degree
Total	9.1	12.8	35.9	42.1
Major in 1989–90				
Academic	1.3	7.3	33.5	57.9
Vocational	12.2	15.0	36.0	36.9
Degree working toward in 1989–90				
Certificate/license	42.4	23.8	21.8	12.0
Associate's total	5.3	22.7	42.5	29.5
Academic associate's	3.4	16.1	47.2	33.3
Vocational associate's	6.1	25.6	40.5	27.9
Bachelor's	0.6	1.2	35.0	63.2
No credential	9.5	44.9	26.8	18.8

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

- About one in four students (26 percent) who began their postsecondary education in 1989–90 were enrolled in spring 1994 (table 106). The three-quarters (74 percent) who were not enrolled were equally likely to have earned or not earned a credential (37 percent in each group).

Table 106—Percentage distribution of 1989–90 beginning postsecondary students according to their enrollment and attainment status in spring 1994, by selected student characteristics

Selected student characteristics	Not enrolled in spring 1994			Enrolled in spring 1994		
	Total	No degree	Attained degree	Total	No degree	Attained degree
Total	73.6	36.8	36.8	26.4	13.2	13.2
Major in 1989–90						
Academic	65.3	24.3	41.1	34.7	16.7	18.0
Vocational	75.8	36.0	39.7	24.2	12.4	11.9
Degree working toward in 1989–90						
Certificate/license	89.6	31.7	57.9	10.4	4.1	6.4
Associate's total	73.7	40.7	33.0	26.3	12.9	13.4
Academic associate's	63.8	30.6	33.2	36.2	12.6	23.6
Vocational associate's	77.9	45.0	32.9	22.1	13.1	9.1
Bachelor's	65.1	23.7	41.4	34.9	17.4	17.5
No credential	82.2	71.7	10.6	17.8	14.0	3.8
Transfer status through first degree						
Did not transfer	78.3	39.2	39.1	21.7	9.0	12.7
Transferred	62.0	31.0	31.0	38.0	23.8	14.3

NOTE: Percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

- Half of beginning postsecondary students had attained at least one postsecondary credential by 1994 (table 107). Of those who received a credential, a little more than half earned bachelor's degrees; one-fourth earned certificates; and slightly less than one-fourth earned associate's degrees.
- Beginning postsecondary students with an academic major were more likely than vocational majors to have attained a credential by 1994 (59 percent versus 52 percent) (table 107). In spring 1994, a minority of vocational and academic majors (36 percent and 24 percent, respectively) both were not enrolled and had not earned a degree (table 106). Among those who had completed a degree, vocational majors were more likely than academic majors to have earned a certificate, about equally likely to have earned an associate's degree, and less likely to have earned a bachelor's degree by 1994 (table 107).

Table 107—Percentage distribution of 1989–90 beginning postsecondary students according to their attainment status in spring 1994 and, of those who attained a degree, type of degree, by selected student characteristics

Selected student characteristics	No degree total	Attained degree total	Type of degree attained		
			Certificate	Associate's	Bachelor's
Total	50.1	49.9	25.9	22.5	51.6
Major in 1989–90					
Academic	40.9	59.1	8.6	19.4	72.0
Vocational	48.4	51.6	36.7	22.7	40.6
Degree working toward in 1989–90					
Certificate/license	35.8	64.2	89.3	8.0	2.8
Associate's total	53.6	46.4	25.5	54.1	20.4
Academic associate's	43.2	56.8	14.1	58.1	27.9
Vocational associate's	58.0	42.0	32.1	51.9	16.1
Bachelor's	41.1	58.9	5.3	11.4	83.4
No credential	85.7	14.4	—	—	—
Transfer status through first degree					
Did not transfer	48.2	51.8	21.4	21.8	56.7
Transferred	54.8	45.3	38.7	24.3	37.0

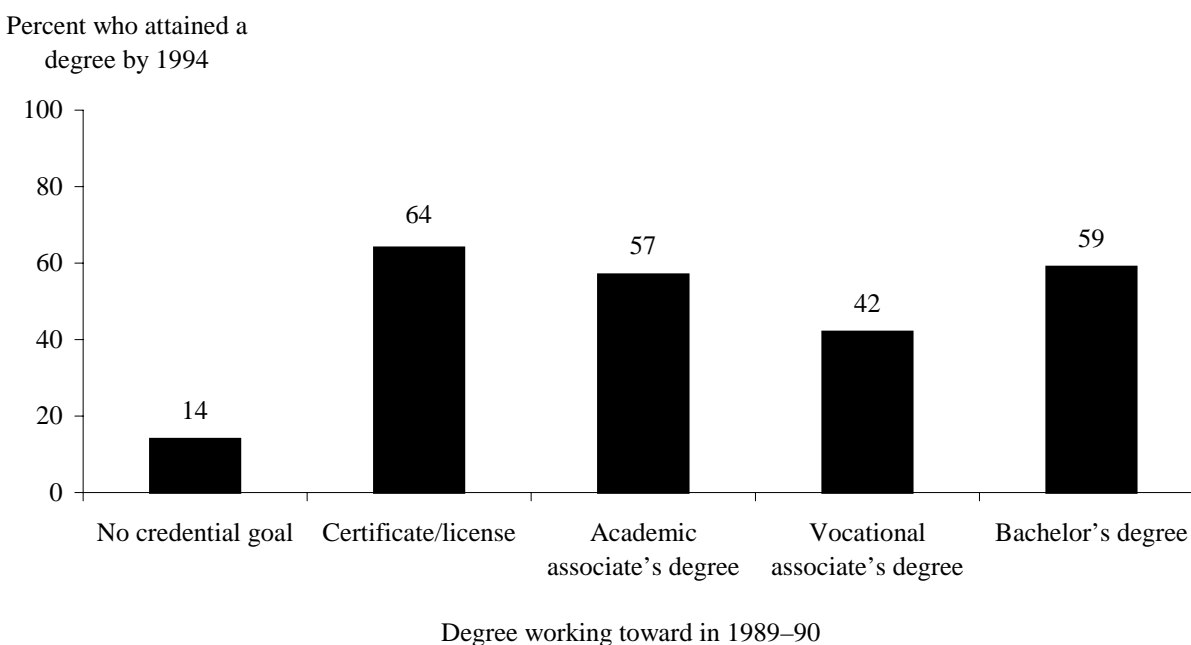
—Too few sample observations for a reliable estimate.

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

- Among students who first began their postsecondary studies in 1989–90, there was little difference between certificate and bachelor’s degree seekers in their likelihood of attaining a postsecondary credential within 4 years (table 107 and figure 36). However, those who began by pursuing a vocational associate’s degree were less likely than other students to have earned a credential within 4 years. About 42 percent of vocational associate’s degree seekers attained a degree or certificate in comparison with 57 percent of academic associate’s degree seekers, 59 percent of bachelor’s degree seekers, and 64 percent of certificate seekers.

Figure 36—Percentage of 1989–90 beginning postsecondary students who attained a degree by 1994, by degree working toward in 1989–90



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

- Among students who first began their postsecondary studies in 1989–90, students pursuing an academic associate’s degree were more likely than all other groups to transfer¹¹³ to a different postsecondary institution (58 percent did so) (table 108). Students seeking a certificate or license were least likely to transfer (19 percent did so). One in three students seeking a vocational associate’s degree transferred. Of this last group, about half transferred to 4-year institutions, and 77 percent to public institutions. Among all beginning postsecondary students, those who transferred were slightly less likely than non-transfer students to have attained a degree by 1994 (45 versus 52 percent) (table 107).

Table 108—Percentage distribution of 1989–90 beginning postsecondary students according to their transfer status in spring 1994 and, of those who transferred, type of destination institution, by selected student and institutional characteristics

Selected student and institutional characteristics	Did not transfer	Total transferred	Destination institution			
			Level		Control	
			4-year	Less than 4-year	Public	Private
Total	65.5	34.5	51.6	48.4	77.9	22.1
Major in 1989–90						
Academic	63.5	36.5	61.3	38.7	78.2	21.8
Vocational	70.7	29.3	52.1	47.9	78.2	21.8
Degree working toward in 1989–90						
Certificate/license	81.0	19.0	27.0	73.0	49.3	50.7
Associate’s total	59.3	40.8	54.8	45.2	79.7	20.3
Academic associate’s	42.3	57.7	62.8	37.2	83.9	16.1
Vocational associate’s	66.5	33.5	48.9	51.1	76.7	23.3
Bachelor’s	69.3	30.7	64.1	36.0	83.5	16.5
No credential	63.9	36.1	29.6	70.5	59.1	40.9
Level of institution in 1989–90						
4-year	70.1	29.9	57.0	43.0	80.7	19.3
Less-than-4-year	61.9	38.2	48.4	51.6	76.1	23.9
Control of institution in 1989–90						
Public	63.6	36.4	52.9	47.1	80.0	20.0
Private, not-for-profit	67.9	32.2	57.5	42.5	73.0	27.0
Private, for-profit	75.4	24.6	26.3	73.8	64.8	35.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

¹¹³Transferring is defined here as enrolling in a different institution from the first one and not returning, regardless of whether a credential was completed at the first institution or whether credits were transferred.

Licensure

Taking an occupational licensing exam was not very common among beginning postsecondary students. Those who started with a vocational major were no more likely to have taken a licensing exam by 1994 than those with an academic major. However, vocational majors were more likely to have taken a licensing exam in the business/finance, nursing, cosmetology/barbering, and engineering-related fields, while academic majors were more likely to have taken a teaching exam. Pass rates for licensing exams were generally high.

- A minority (14 percent) of students who first began their postsecondary studies in 1989–90 had taken an occupational licensing exam within 4 years (table 109). Students who began with a vocational or academic major were equally likely to have taken a licensing exam. Vocational majors were more likely to have taken a licensing exam in the business/finance, nursing, cosmetology/barbering, and engineering-related fields. Academic majors were more likely to have taken a licensing exam in the teaching field.

Table 109—Percentage of 1989–90 beginning postsecondary students who took an occupational licensing exam by 1994, and, of those who took at least one exam, percentage who took an exam in various fields, by major field category and degree goal

Major field category and degree goal	Took a licensing exam	Type of licensing exam							
		Teachers	Business/finance	Nursing	Other medical	Cosmetology/barbering	Engineering-related	Communications	Other licensing exam
Total	14.0	20.9	12.1	9.4	21.8	8.9	3.1	1.3	28.9
Major in 1989–90									
Academic	14.0	58.1	7.7	2.2	15.3	2.2	0.0	0.1	25.1
Vocational	14.6	2.2	15.3	13.4	23.1	12.8	4.3	1.4	32.0
Degree working toward in 1989–90									
Certificate/license	20.7	0.9	3.4	13.8	25.7	30.1	0.0	0.2	29.6
Associate's total	12.7	17.3	6.3	14.5	18.9	3.9	0.2	2.6	41.6
Academic associate's	11.1	64.6	0.7	0.6	9.1	0.6	0.0	0.0	30.5
Vocational associate's	13.4	1.0	8.2	19.3	22.2	5.0	0.2	3.4	45.4
Bachelor's	13.9	33.6	19.1	5.2	19.5	1.8	5.4	0.5	24.1
No credential	11.6	—	—	—	—	—	—	—	—

—Too few sample observations for a reliable estimate.

NOTE: Percentages in the last eight columns add to more than 100 because some students took exams in more than one field. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

- The pass rates for licensing exams were quite high—generally at least 90 percent (table 110). The business/finance field appeared to be an exception, with an 81 percent pass rate. However, few students took licensing exams; sample sizes were small and differences between the rates for business and other fields were not statistically significant.

Table 110—Among 1989–90 beginning postsecondary students who took an occupational licensing exam, percentage who passed at least one exam by 1994, and the pass rate by occupational field

Passed a licensing exam	Type of licensing exam								
	Teachers	Business/finance	Nursing	Other medical	Cosmetology/barbering	Engineering-related	Communications	Other licensing exam	
Total	91.1	92.7	80.5	97.3	99.0	97.4	95.8	100.0	92.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

Labor Market Participation

- Data on all adults 18 or older in the United States in 1996 indicate that both rates of employment and labor force participation rise with educational attainment. For example, in 1996, 39 percent of adults who had not completed high school were employed, while bachelor’s or higher degree holders were employed at about twice that rate (table 111 and figure 37). Similarly, more than half of adults lacking a high school diploma were not in the labor force, compared with 19 percent of those with at least a bachelor’s degree. The unemployment rate of those who had not completed high school was roughly five times that of bachelor’s or graduate degree holders (10 percent versus 2 percent).

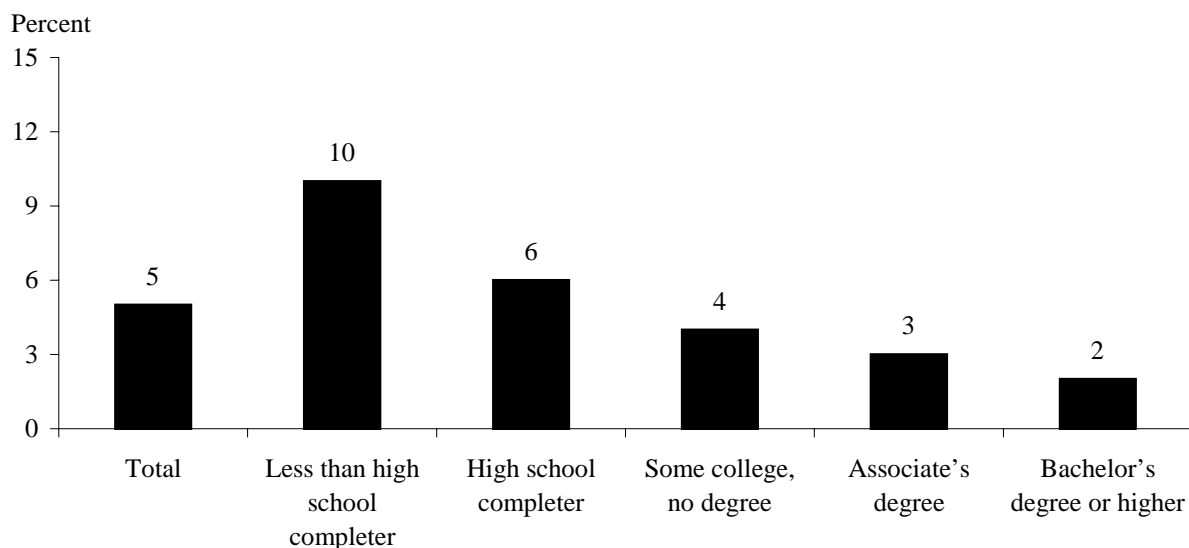
Table 111—Percentage distribution of all adults aged 18 years or older and of those in the labor force according to their employment status, by educational attainment: 1996

Educational attainment	Of all adults			Of those in the labor force	
	Employed	Unemployed	Not in labor force	Employed	Unemployed
Total	65.1	3.2	31.8	95.3	4.7
Less than high school completion	39.4	4.4	56.2	90.0	10.0
High school completion	63.7	3.7	32.6	94.5	5.5
Some college, no degree	69.7	3.0	27.3	95.9	4.2
Associate’s degree	77.5	2.6	20.0	96.8	3.2
Bachelor’s degree or higher	79.6	1.7	18.7	97.9	2.1

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

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Survey, 1996.

Figure 37—Percentage of labor force participants aged 18 years or older who were unemployed, by educational attainment: 1996



SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Survey, 1996.

- Among students who first began their postsecondary studies in 1989–90 and were no longer enrolled in the spring of 1994, about four-fifths had a job in February 1994 (table 112). The likelihood of being employed did not differ substantially for vocational and academic majors.
- Among employed respondents who first began their postsecondary studies in 1989–90 and were no longer enrolled in the spring of 1994, the most common occupations were clerical (about 25 percent), service/sales (22 percent), and managerial/computers (21 percent) (table 112). The level of institution in which students started their postsecondary studies was not related to their likelihood of having a job in spring 1994. However, the control of institution was relevant: those who enrolled initially at private, for-profit institutions, and were no longer enrolled 4 years later, were somewhat less likely to have a job. One explanation may be that private, for-profit institutions prepare their students less well for the labor market; alternatively, these institutions may enroll a higher proportion of students with low prior achievement than other types of schools.

- Among students who first began their postsecondary studies in 1989–90, those who were no longer enrolled in the spring of 1994 were more likely to be employed than those still enrolled (78 versus 65 percent) (tables 112 and 104). Enrolled students were somewhat more likely to be working in a service or sales job, while those no longer enrolled were more likely to hold a job in trade and industry (crafts, repair, labor, or machining).
- Among students who first began their postsecondary studies in 1989–90 and were no longer enrolled in the spring of 1994, a majority of vocational majors reported that in their most recent principal job they applied skills and used equipment or tools similar to the ones they used in school, and that they needed their postsecondary education to get that job (78 percent, 85 percent, and 58 percent, respectively, reported these work-school linkages) (table 103). About 70 percent of vocational majors reported that their first job after leaving postsecondary education was the same as their last job while enrolled.

Table 112—Percentage distribution of 1989–90 beginning postsecondary students who were not enrolled in 1994 according to their February 1994 employment status and of those employed, type of primary occupation in 1993, by selected student and institutional characteristics

Selected student and institutional characteristics	Employment status in Feb. 1994		Primary occupation in 1993					
	Not employed	Employed	Clerical	Services/sales	Managerial/computer	Professional	Craft/repair/labor/machining	Other
Total	21.8	78.2	24.7	21.6	21.0	9.7	15.5	7.6
Most recent major								
Academic	22.5	77.5	27.4	22.6	19.3	11.4	8.2	11.1
Vocational	20.8	79.2	23.4	21.7	22.2	9.9	17.8	5.0
Level of institution in 1989–90								
4-year	21.7	78.3	24.6	21.9	21.1	14.8	9.4	8.2
Less-than-4-year	21.8	78.2	24.7	21.5	20.9	6.5	19.3	7.1
Control of institution in 1989–90								
Public	20.9	79.1	24.0	22.3	21.2	8.3	15.6	8.6
Private, not-for-profit	17.9	82.1	23.6	18.9	22.7	18.9	8.1	7.7
Private, for-profit	30.3	69.7	29.6	21.4	17.5	5.8	24.1	1.8

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

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VII. Conclusion

This publication describes vocational education at the turn of the century as an enterprise in transition. The traditional focus on preparing students for entry-level jobs after high school or subbaccalaureate postsecondary vocational training is giving way to a greater emphasis on academic preparation and preparing students for a wider range of career choices. The available data signal that change is occurring in the directions advocated by recent reform efforts, although such change is often small and preliminary. Evidence of change includes findings that the academic preparation of high school students participating in vocational education increased between 1982 and 1994; about half of public comprehensive high schools reported integrating academic and vocational education, and a similar proportion reported offering tech prep, by 1997; and over the decade from 1982 to 1992, postsecondary enrollment rates within 2 years of high school graduation increased for vocational concentrators.

This chapter revisits the key questions that were identified in the Executive Summary and expanded on in Chapter II, and summarizes the relevant findings.

KEY QUESTIONS AND RELEVANT FINDINGS

What are the major national economic and labor market trends and their implications for vocational education programs and policies?

The United States is shifting from a manufacturing- to a service- and information-based economy. These trends have two important implications for vocational education programs. They signal an ongoing shift in the education and training fields that are required of the U.S. work force as well as the levels of that education and training. The occupations with the highest projected growth rates are generally in the computer technology and health fields. Those with the highest projected increase in number of jobs are somewhat more varied, although they also include several health occupations. While the occupations with the highest projected growth rates have relatively high education and training requirements, those with the highest projected increase in number of jobs have relatively low education and training requirements. Implications are that some emerging occupations require high education and training requirements, while the majority of jobs still demand relatively low education and training levels. There is consensus in the research literature that there are trends toward greater education and training requirements

and a greater need for critical thinking, personal responsibility, and social skills among work force participants. However, these trends are not uniform across industries and occupations, and some disagree about their magnitude. Although researchers have long identified the association between increased educational attainment and better labor market outcomes, the disparity in incomes between those with more and less education has increased in recent years. Some argue that this means that education and training are increasingly crucial for narrowing the income gap and for preventing the creation of a society of haves and have nots. (Chapter II)

What skills do employers value and how have skill requirements changed in recent years? Are employers implementing high-performance workplaces?

Employers do not rate years of completed schooling or academic performance as important as attitude and communication skills, when hiring front-line workers from among an established applicant pool. Nevertheless, most employers report that front-line skill requirements are increasing. There is evidence that some employers are transforming their firms into high-performance workplaces, with larger firms being more likely than smaller firms to undergo certain changes. These firms, however, are still in the minority. Both good critical-thinking and social skills are necessary in the decentralized and team-based environment of the high-performance workplace. However, the extent to which these practices will be implemented and these skills be required in the future is uncertain. (Chapter III)

How large is the vocational education enterprise and is it growing, shrinking, or holding constant over time?

From 1982 to 1994, there was a general decline in the participation of high school students in vocational education. The percentage of public high school graduates taking at least one vocational education course decreased slightly. However, the decline in the percentage of graduates completing a sequence of related occupational courses was more dramatic. These decreases may be partly due to increases in high school graduation requirements implemented by many states after the publication of *A Nation at Risk* in 1983. As students have been required to take more academic coursework, they may have elected to take fewer vocational courses. (Chapter IV)

At the postsecondary level, vocational coursework is a substantial component of subbaccalaureate students' education. Among all subbaccalaureate students, about one-half majored in a vocational program area in 1996; the proportion decreased from 54 to 49 percent over the 6 years from 1990 to 1996. (Chapter VI)

What types of and how much vocational education do students take and is this changing?

In particular, what are the trends in specific occupational preparation at the high school and postsecondary levels? Is there a shift from participation in traditional manufacturing programs (such as trade and industrial programs) toward service-sector and information-age programs (such as health and technology programs)?

Trade and industry and business were the most popular occupational programs in 1994—about 8 percent of graduates concentrated in each of these areas. These were also the most popular programs in earlier years; however, the percentage of graduates concentrating in trade and industry, as well as the percentage concentrating in business, declined over the period studied. In 1982, about 15 percent of graduates had concentrated in trade and industry and 12 percent in business. In contrast, fewer students concentrated in health care and in technology and communications than in business and in trade and industry in all the surveyed years. However, the proportions of students who concentrated in health care and in technology and communications increased between 1982 to 1994 (from .6 to 1 percent for health care, and from .5 to .9 percent for technology and communications). (Chapter IV)

At the postsecondary level, popular vocational majors in 1996 included business (about 14 percent of subbaccalaureate students reported this major); health (11 percent); and engineering/science technologies (6 percent). Technical education as a whole, which includes computers/data processing, engineering/science technologies, and protective services, accounted for 12 percent of all subbaccalaureate majors. However, between 1990 and 1996, there were small decreases in the proportion of subbaccalaureate students reporting majors in business, marketing, computers/data processing, and engineering/science technologies. (Chapter VI)

Who participates in vocational education and is this changing?

In public high schools, although participation in the specific occupational curriculum declined for most groups of students between 1982 and 1994, there were a few exceptions to this trend. The percentage of black and Asian/Pacific Islander students concentrating in vocational education stayed about the same over this period, and the concentration rate of students with disabilities increased. In addition, the average number of specific occupational credits earned by blacks stayed about the same and increased for Asians/Pacific Islanders and students with disabilities. The increase in participation of students with disabilities is consistent with the emphasis of the 1990 Perkins Act on serving students with special needs. In all the surveyed years from 1982 to 1994, male students, students in rural schools, and students with lower grade-point

averages (GPAs) completed more specific occupational coursework and were more likely to be vocational concentrators than female students, students in urban and suburban schools, and students with higher GPAs. (Chapter IV)

At the postsecondary level, subbaccalaureate students with vocational majors were older, more likely to have family responsibilities, more likely to receive financial aid, more likely to have a previous postsecondary degree or certificate, and reported higher postsecondary grade-point averages (GPAs) than their academic counterparts. These students with vocational majors also tended to have parents with lower educational attainment: as the education level of their parents increased, students' likelihood of reporting a vocational major generally decreased. Differences by race–ethnicity among subbaccalaureate students in the probability of having a vocational major were either minimal or not statistically significant. Unlike at the secondary level, there was no clear association between majoring in a vocational field and disability status among subbaccalaureate postsecondary students. (Chapter VI)

Is the academic preparation of students who participate in vocational education improving over time?

In public high schools, the academic preparation of students participating in vocational education increased between 1982 and 1994, in both absolute and relative terms. While public high school graduates in general increased their course taking in the core academic subjects (English, mathematics, science, and social studies), the rate of increase over the period studied was greater for vocational concentrators than for either college preparatory or other/general students. However, in 1994, vocational concentrators still completed fewer total credits in each of the core academic subjects than did either college preparatory or other/general students. Vocational concentrators also generally increased the rigor of their academic coursework, particularly in mathematics, science, and social studies. (Chapter IV) Comparable data were not available at the postsecondary level.

Are high school students enrolling in courses that teach technological skills?

The percentage of public high school graduates taking at least one computer education course increased substantially between 1982 and 1990, and then remained relatively steady through 1994. In that year, about 80 percent of graduates had completed at least one semester of computer education. Participation in the more traditional “industrial arts” declined over the 1982–1994 period, while participation in the newer “technology education” increased. However, it is not possible to determine from the available data the extent to which this shift reflects

relabeling, rather than a change in course objectives or content. In 1994, fewer graduates completed coursework in the combined introductory technology fields than in 1982. (Chapter IV)

What is the role of work experience and work-based learning in students' courses of study?

Most public high school graduates work during their senior year of high school, although most of these students work part time. In addition to student-found employment, many schools offer work-based learning experiences, with cooperative education being the most common form of work-based learning, followed by job shadowing, internships, and mentoring. Although participation in occupational education decreased between 1982 and 1994, the percentage of public high school graduates earning cooperative education credits increased somewhat over the same time period. By 1994, about one in ten graduates participated in cooperative education. (Chapter IV)

At the postsecondary level, many subbaccalaureate students were employed while they were enrolled in school in 1995–96. However, work experience that was directly related to coursework (such as internships, apprenticeships, or cooperative education) was relatively rare. In general, whether subbaccalaureate students had a vocational or academic major was not related to whether they worked in general or had a job linked to their schoolwork. (Chapter VI) Among 1992 public high school graduates who were both employed and enrolled in postsecondary education 2 years after high school, those who were vocational concentrators in high school had a stronger work orientation than other students. About one quarter (26 percent) of postsecondary students who were vocational concentrators in high school identified themselves primarily as workers rather than as students, in comparison with 7 percent of college preparatory graduates and 21 percent of other/general graduates. (Chapter V)

The majority of employers with production employees who participated in work-based learning reported that these employees were superior to comparable new hires in terms of productivity and attitude. Virtually no employers reported that employees with work-based learning experience were inferior in these two respects to comparable new hires. (Chapter III)

To what extent have recent vocational education reform efforts taken hold at the local level?

By 1997, public comprehensive high schools reported implementing some vocational education-related reforms, although the quality and specific forms of these efforts were not discernible from the available survey data. About half of these schools reported integrating academic and

vocational education, and a similar proportion reported offering tech prep. Fewer schools reported having block scheduling, career majors, school-based enterprises, skill standards, or skill or occupational certificates. Generally, schools with career academies and larger schools were more likely to report these reforms, while rural schools were less likely to do so. (Chapter IV)

What are the trends in vocational teacher qualifications and experience over time?

The available teacher trend data were for school years 1990–91 and 1993–94, and the changes noted were generally small for the 3-year period. However, these changes included a teaching force that grew older and accrued more years of teaching experience. This trend held for vocational and academic teachers alike. The educational attainment of vocational teachers as a group remained about the same over the 3-year period. About the same proportions of vocational and academic teachers held bachelor's degrees. However, about 8 percent of vocational teachers had less than a bachelor's degree, in comparison with less than 1 percent of academic teachers. There were some variations among vocational teachers who taught in different program areas and school settings. For example, trade and industry and technical teachers and those teaching in more than one vocational field were generally least likely to have a bachelor's or advanced degree than other vocational teachers. This may reflect the practice in some states of counting industry experience in place of education in hiring some vocational teachers. Similar percentages of vocational and academic teachers held either standard or advanced certification. A small percentage of vocational and academic teachers were teaching either without a credential or with a probationary, temporary, provisional, emergency, or alternative certificate. (Chapter IV)

What are the postsecondary education outcomes associated with participation in vocational education?

In particular, are more students in secondary vocational education programs enrolling in and completing postsecondary education than in the past? Between 1982 and 1992, postsecondary enrollment rates increased for vocational concentrators and students completing general coursework in high school, but not for college preparatory graduates. While the gap in enrollment rates among the three main curriculum-based groups appeared to be narrowing, 1992 vocational concentrators were still less likely than their college preparatory and other/general peers to enroll in a postsecondary institution within 2 years. However, vocational concentrators who also completed a college preparatory curriculum had enrollment outcomes that were more like those of their college preparatory peers than did strictly vocational concentrators. With regard to completing postsecondary education, among 1982 public high school graduates who enrolled in

postsecondary education by 1992, vocational concentrators had lower postsecondary completion rates overall than their peers. However, vocational concentrators who also completed a college preparatory curriculum were as likely as college preparatory graduates to earn a postsecondary degree during this period. Among graduates who enrolled in postsecondary education by 1992, vocational concentrators were less likely than their peers to earn a bachelor's degree, but more likely to obtain a certificate or an associate's degree. (Chapter V)

Are more adults obtaining postsecondary vocational education credentials than before? The United States has experienced both greater educational participation and higher attainment in recent years, continuing long-standing patterns. More people are attending postsecondary institutions than ever before, and the average educational attainment of the adult population (those 18 and older) has been steadily rising. Among adults who completed a college degree, the percentage who held associate's degrees remained fairly steady at about 24 percent between 1992 and 1996. While there appeared to be a small increase in the total number of adults who earned vocational associate's degrees, this difference was not statistically significant. However, the total number of adults who held academic associate's degrees increased between 1992 and 1996 by approximately an additional 1 million people. The percentage of adults seeking a vocational associate's degree declined somewhat since 1991, from about 14 to 11 percent, while the percentage seeking an academic associate's degree rose from 9 to 11 percent. Among the group of students who first began their postsecondary studies in 1989–90, those with academic majors were more likely than students with vocational majors to have completed at least one postsecondary credential 4 years later. However, a majority of both academic and vocational majors completed some type of degree or certificate within 4 years. (Chapter VI)

What are the labor market outcomes associated with participation in vocational education? How do these outcomes compare with other kinds of preparation?

Labor market experiences 2 years after leaving high school were similar for the graduating classes of 1982 and 1992. In both cases, about three out of four public high school graduates were in the labor force. Vocational concentrators in both graduating classes were more likely than their peers to be in the labor force 2 years after graduation. While 1992 public high school graduates had similar labor market experiences regardless of their course of study in high school, 1982 college preparatory graduates tended to have lower unemployment rates than their vocational concentrator and other/general peers. Vocational concentrators and other/general students had similar labor market experiences 10 years after graduation from high school. While the number of months employed and unemployed was similar regardless of one's course of study in high

school, college preparatory graduates tended to enjoy higher earnings in 1991 than their peers, possibly because of their greater postsecondary attainment. Obtaining a bachelor's degree was generally associated with increased earnings and lower unemployment rates. At the other end of the education spectrum, students who earned a postsecondary certificate had similar annual earnings and unemployment rates as their peers who did not complete a postsecondary degree or certificate. Furthermore, both postsecondary certificate and high school diploma holders earned less and were more likely to be unemployed in 1991 than graduates who earned an associate's degree or higher. (Chapter V)