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**Vocational Education in the
United States: 1969–1990**

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Commissioner's Statement

This publication represents the first comprehensive effort on the part of the National Center for Education Statistics to compile and synthesize data on vocational education in the United States. This effort is part of the Data on Vocational Education (DOVE) plan, adopted in 1987 as an approach to collecting and analyzing information on vocational education. The DOVE plan states that NCES will derive data on vocational education from general-purpose surveys instead of relying on a specific survey that solely addresses vocational education. Because vocational education is an integral part of education at the secondary and postsecondary levels, by routinely addressing it in NCES' surveys at these levels, we are able to clarify how vocational education relates to other aspects of teaching and learning. As a result of the DOVE plan and efforts to expand the collection of education data in general, NCES now has data available on vocational teachers, students, and schools.

Much of the data in this compendium of statistics has been published previously. This compendium attempts to provide a comprehensive picture of vocational education by synthesizing data available from a number of surveys.

NCES anticipates producing this compendium every few years in order to update its data. While this report addresses the numerous facets of vocational education, future versions of the report are likely to concentrate more heavily on a particular theme, such as special populations or outcomes data. I invite you to send us comments on how to make future editions more useful.

Emerson J. Elliott
Acting Commissioner of Education Statistics

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This compendium has been reviewed by many people, often under very tight time constraints and at the expense of their many other responsibilities. Their high professional standards, discerning judgment, and commitment to quality are crucial to the usefulness and relevance of this volume. At NCES, Mary Frase, Jeanne Griffith, John Ralph, Shi-Chang Wu, Aurora D'Amico, and John Mathews reviewed the manuscript. In addition, several individuals served as invited peer reviewers of the draft manuscript and made valuable contributions including John Wirt of the U.S. Department of Labor, Richard Apling of the Congressional Research Service, and Debra Nolan of the U.S. Department of Education's Office of Vocational and Adult Education.

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Executive Summary

Vocational education in America is a large and diverse enterprise. Spanning both secondary and postsecondary education, the curriculum offers programs in a wide range of subjects including agriculture, science, accounting, word processing, retailing, fashion, respiratory therapy, child care, carpentry, welding, electronics, and computer programming. Although vocational education is intended to help prepare students for work, both inside and outside the home, many educators and policymakers believe it has a broader mission: to provide a concrete, understandable context for learning and applying academic skills and concepts. To this end, the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 calls on schools to integrate vocational and academic education.

The vocational curriculum appeals to a diverse group of students. Individuals from all racial-ethnic backgrounds and all levels of academic ability and socioeconomic status take vocational education courses. The majority of secondary students preparing for college have taken at least one vocational course other than typing. Similarly, most postsecondary students enrolled in less-than-4-year institutions routinely participate in vocational education programs.

This report describes vocational education in America as it has evolved over two decades, 1969 to 1990, by examining patterns of program participation, selected student outcomes, and the characteristics of teachers. Where appropriate, it provides relevant information on the academic curriculum. Most of the information is presented for single points in time, but some time series data are also reported.

The report relies on information taken from many of the large national data systems supported by the National Center for Education Statistics. These systems are a rich source of information about vocational education and its interaction with the rest of the American education system.

Vocational Education in Secondary Schools

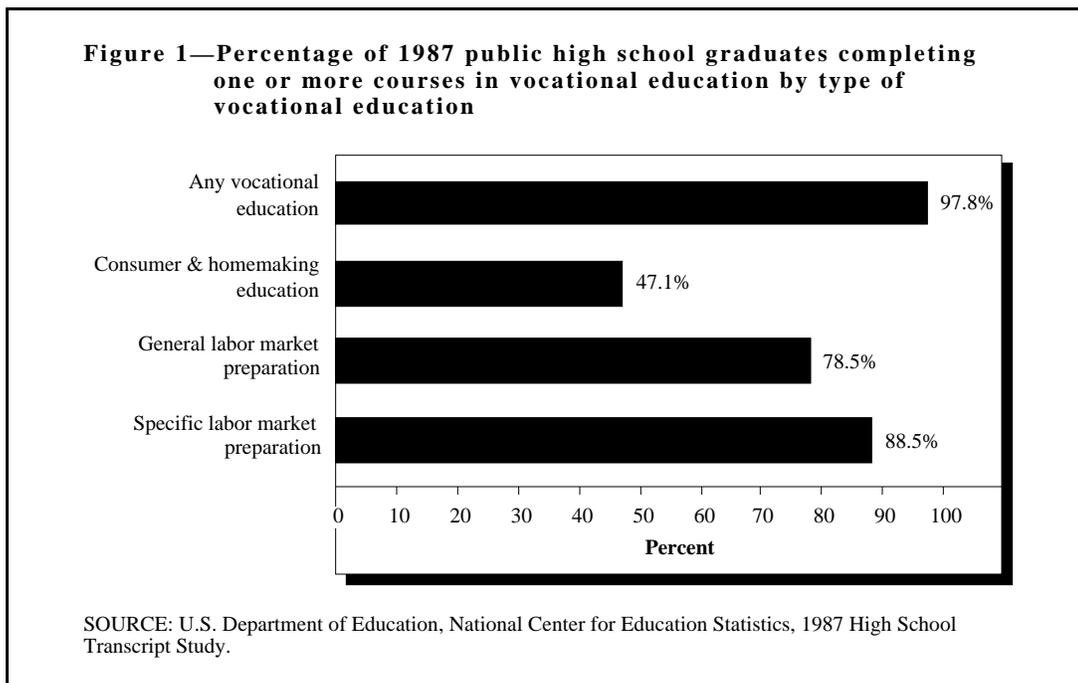
The Carl D. Perkins Vocational and Applied Technology Education Act of 1990 defines vocational education as “organized educational programs offering a sequence of courses which are directly related to the preparation of individuals in paid or unpaid employment in current or emerging occupations requiring other than a baccalaureate or advanced degree.” The definition encompasses a wide variety of classes teaching academic skills, work attitudes, general employability skills, and occupationally specific skills. Because vocational education includes such a broad array of courses, it is necessary to clearly distinguish vocational from nonvocational education and to use some internal structure for classifying different kinds of vocational courses.

For purposes of this report, the secondary curriculum is divided into three parts: academic, personal use, and vocational. The vocational curriculum is divided into three curricular areas: 1) consumer & homemaking education, 2) general labor market preparation, and 3) specific labor market preparation. Consumer & homemaking courses provide training and skills that are often necessary for activities outside of the paid labor force and include courses in child development, clothing, basic food preparation, and home management. Classes such as beginning typing, industrial arts, work experience and career exploration, business math, and business English, imparting basic skills that can be applied in a variety of personal or occupational settings, are included in general labor market preparation. Grouped together, general labor market preparation and consumer & homemaking courses make up the non-occupationally specific vocational education curriculum. Specific labor market preparation includes introductory, advanced and

elective courses in seven vocational areas: agriculture, business, marketing & distribution, health, occupational home economics, trade & industry, and technical & communication.

Secondary Program Participation

In the high school senior class of 1987, 98 percent of all public high school graduates completed at least one course in vocational education during their high school careers (figure 1). For most students this one course was not simply a typing course; in fact, almost 90 percent of all graduates completed at least one course in specific labor market preparation. Moreover, about three-fourth of the graduates completed one or more courses in general labor market preparation, and almost one-half participated in consumer & homemaking education.

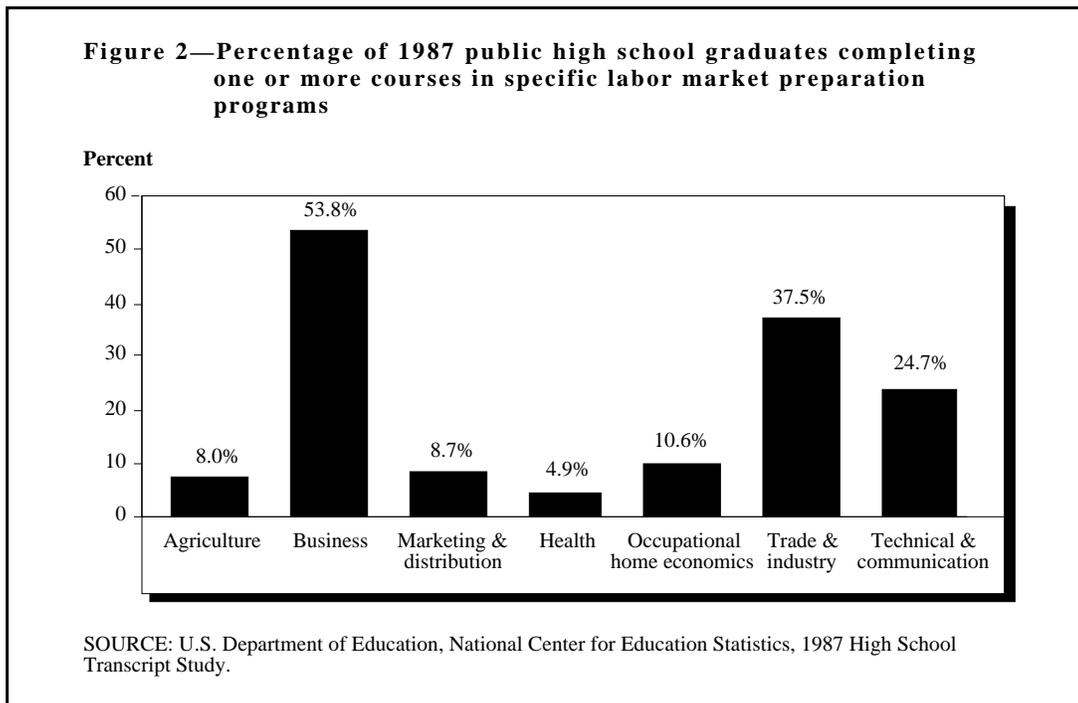


There is a widespread perception that minorities are more likely to be heavy concentrators in vocational education than white students, but the data for 1987 did not support this generalization. About 15 percent of white students earned 8.00 or more units in vocational education, compared with 11 percent of black students, 9 percent of Hispanic students, 4 percent of Asian students, and 12 percent of Native American students. With the possible exception of Native American students (where the difference was not statistically significant), white students were actually more likely to earn 8.00 or more units in vocational education than minority students.

Handicapped students were more likely than nonhandicapped students to be heavy concentrators in vocational education. About 26 percent of handicapped students earned 8.00 or more units of vocational education, compared with only 13 percent of nonhandicapped students.

Overall, public high school graduates in 1987 earned an average total of 22.8 Carnegie units in high school.¹ On average, they earned 4.4 units in vocational education, or about 20 percent of total units. These graduates accumulated 15.6 units in academic subjects and 2.7 units in personal use courses. Within the vocational education curriculum, graduates of public high schools in 1987 averaged 0.6 units in consumer & homemaking education, 0.9 units in general labor market preparation, and 2.9 units in specific labor market preparation.

In 1987, business was the most popular specific labor market program, with more than one-half of the graduates having taken courses in this subject area (figure 2) Business was followed in popularity by trade & industry programs, enrolling 38 percent of the students, and technical & communication programs, enrolling 25 percent. Less than 11 percent of all students participated in any one of the remaining program areas.

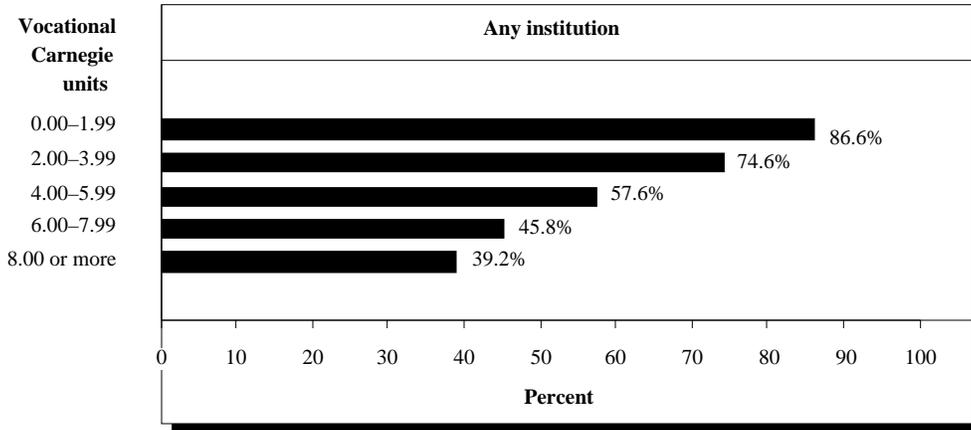


Secondary Student Outcomes

About 62 percent of students who graduated from public high school in 1982 attended at least one postsecondary institution by 1984. The most frequently attended type of postsecondary institution was the public 4-year institution, with 26 percent of graduates attending, followed by the public 2-year institution, with 23 percent of graduates attending. Generally, students who accumulated higher levels of Carnegie units in vocational education were less likely to attend a postsecondary institution (figure 3). The pattern continued for public 2-year, public 4-year, and private 4-year institutions. However, students who concentrated in vocational education in high school were actually more likely to attend a less-than-2-year institution.

¹A Carnegie unit is a standard of measurement used for secondary education that represents the completion of a course that meets 1 period per day for 1 year.

Figure 3—Percentage of 1982 public high school graduates who attended one or more postsecondary institutions by 1984, by number of Carnegie units accumulated in vocational education in high school¹



¹ This figure should not be interpreted as indicating that students opt not to attend postsecondary education because they earned a large number of Carnegie units in vocational programs. Instead, some students might have earned large numbers of Carnegie units in vocational courses because they had no plans for postsecondary education.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Base Year through Second Followup surveys.

Of 1982 public high school graduates who were not enrolled in postsecondary education 6 months after graduation, 43 percent reported they were working full time, 18 percent were working part time, 10 percent were unemployed, and 29 percent were not in the labor force. Participation in vocational education in high school was positively related with full-time employment. While only one-third (34 percent) of graduates who accumulated 0.00 to 1.99 Carnegie units in vocational education reported they were employed full time, about one-half (50 percent) of graduates who accumulated 8.00 or more units reported full-time employment. However, the amount of vocational preparation a student had in high school did not make a difference in the full-time wages earned by graduates.

Special Populations in Secondary Education

Participation in most vocational programs decreased as graduates' socioeconomic status, academic ability, and high school grades increased. Graduates in the highest socioeconomic status and academic ability quartiles were significantly less likely than graduates in the lowest quartiles to complete at least one course in agriculture, business, marketing & distribution, occupational home economics, and the construction trades. In addition, graduates in the highest academic quartile were less likely than those in the lowest academic quartile to participate in all trade & industry programs. Similarly, graduates who earned mostly As in high school were significantly less likely than graduates with lower grades to participate in agriculture, marketing & distribution, occupational home economics, and trade & industry.

Handicapped students were significantly more likely than nonhandicapped students to participate in agriculture (17 percent versus 8 percent), occupational home economics (18 percent versus 10 percent), and trade & industry (54 percent versus 37 percent), including construction, precision production, and other areas. On the other hand, handicapped students were significantly less likely to participate in business (28 percent versus 55 percent) and technical & communication programs (9 percent versus 25 percent).

Vocational and Nonvocational High School Teachers

Public vocational and nonvocational teachers of grades 9 through 12 tended to be similar demographically. During the 1987–88 school year, vocational teachers were just as likely to be from a minority group as were nonvocational teachers. Both types of teachers were predominantly white (almost 90 percent).

The educational backgrounds of vocational teachers differed slightly from those of nonvocational teachers. While less than 1 percent of nonvocational teachers did not complete a bachelor's degree, more than 7 percent of vocational teachers had less than a B.A. or B.S. Furthermore, about 46 percent of vocational teachers had a master's degree or more, compared with 54 percent of nonvocational teachers.

Vocational Education in Postsecondary Institutions

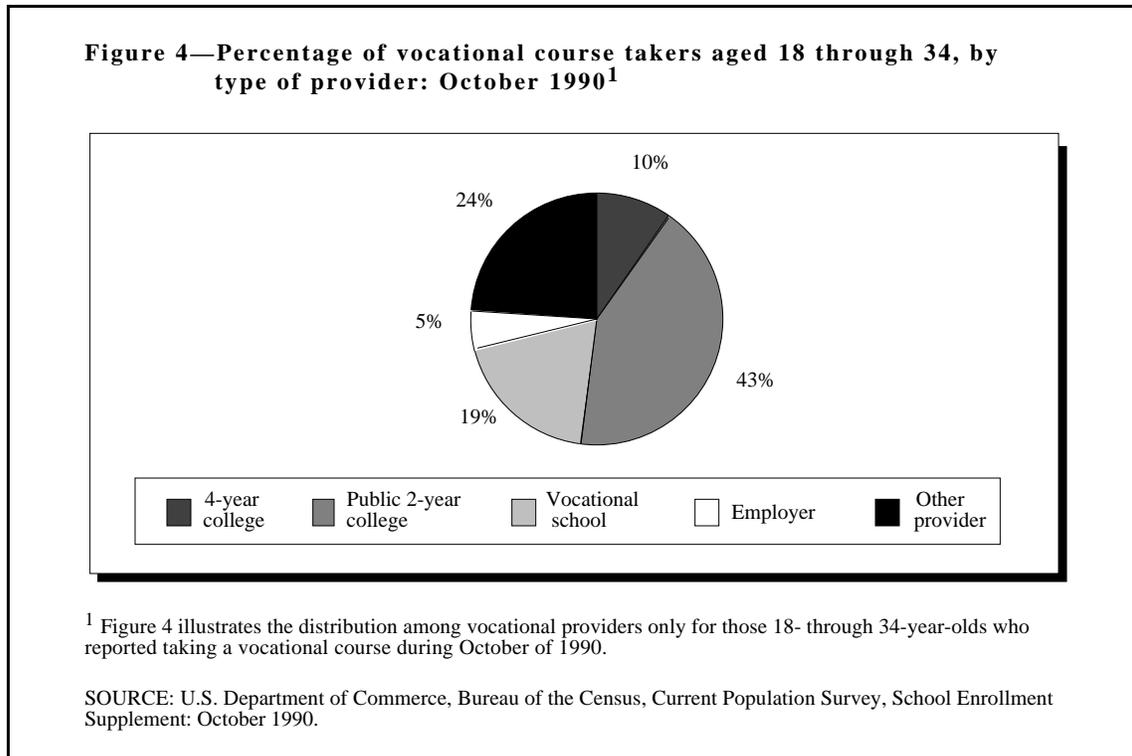
The Carl D. Perkins Vocational and Applied Technology Education Act of 1990 defines vocational education as programs that prepare students for paid or unpaid employment requiring other than a baccalaureate or advanced degree. Hence, at the postsecondary level vocational education consists of programs leading to pre-baccalaureate vocational awards, most commonly associate's degrees or certificates in programs lasting fewer than 2 years. Although most postsecondary vocational education is provided by less-than-4-year postsecondary institutions that do not offer baccalaureate degrees, some 4-year colleges and universities do offer certificates and associate's degrees in vocational education programs.

At the postsecondary level, vocational education is delivered through a variety of institutions. In 1989, 7,774 postsecondary institutions offered vocational education. The vast majority of these postsecondary institutions were private proprietary schools, numbering 5,333. In addition, 1,088 public 2-year institutions, 756 private nonprofit less-than-4-year institutions, 315 4-year institutions, and 282 public vocational-technical institutes offered vocational education programs. However, since the size of institutions varies considerably, the number of schools does not reflect the number of students being served.

Just as a taxonomy is useful for organizing the secondary curriculum, one is needed to analyze course-taking patterns in postsecondary institutions. The postsecondary taxonomy used in this report seeks first to distinguish academic from vocational courses. In addition, the taxonomy includes seven broad categories of vocational courses: 1) agriculture, 2) business and office, 3) marketing and distribution, 4) health, 5) home economics, 6) technical education, and 7) trade and industry. These seven categories of vocational courses correspond to the seven program areas of specific labor market preparation at the secondary level.

Postsecondary Program Participation

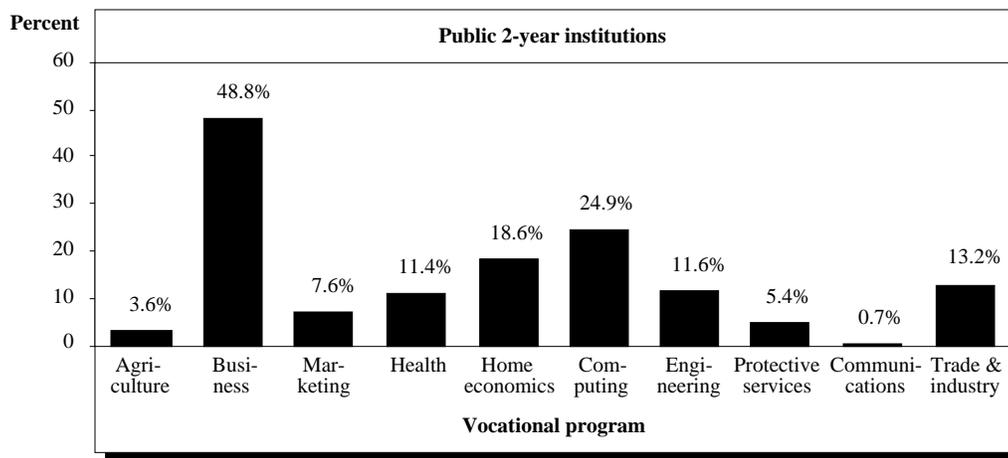
In the fall of 1990, about 6 percent of the U.S. population 18 through 34 years old were taking vocational courses. About 43 percent of those students (3 percent of all 18- through 34-year-olds) were taking vocational courses in public 2-year colleges (figure 4). About 19 percent were taking courses from a vocational, trade, or business school, while only 5 percent were taking courses provided directly by employers. About 47 percent of postsecondary vocational students 18 through 34 years old were employed full time. An additional 31 percent of vocational students were either unemployed or not in the labor force. Twenty-two percent of vocational students were employed part time.



Of the 1980 high school seniors enrolled in public 2-year postsecondary institutions by 1984, 79 percent had taken at least one course in the vocational education curriculum. At public vocational-technical institutes and private proprietary schools, virtually every student enrolled took courses in vocational education. Of those students enrolled in private less-than-4-year institutions, 88 percent took one or more courses in vocational education. At public 2-year institutions, a somewhat larger proportion of males (83 percent) took vocational courses than did females (75 percent).

Of 1980 high school seniors taking at least one vocational course in public 2-year institutions by 1984, the largest number (49 percent) had taken a business course (figure 5). The second most popular program was computers/data processing (enrolling 25 percent), followed by home economics (19 percent). Females were much more likely than males to have taken courses in health and home economics. Males were much more likely than females to have taken courses in agriculture, computers/data processing, engineering/science technologies, protective services, and trade & industry.

Figure 5—Percentage of 1980 high school seniors enrolled in public 2-year postsecondary institutions by 1984 attempting at least one course in vocational program areas



NOTE: Estimates may sum to greater than 100 percent because students may have attempted courses in more than one vocational program area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Like the vocational–technical institutes, a higher proportion of 1980 seniors attending proprietary schools between 1980 and 1984 enrolled in programs in trade & industry than did students in public 2-year institutions. About 30 percent of proprietary school students took courses in trade & industry, compared with 13 percent of students in public 2-year institutions. However, like the public 2-year institutions and the vocational–technical institutes, business programs were the most popular proprietary school offerings, enrolling 54 percent of the students.

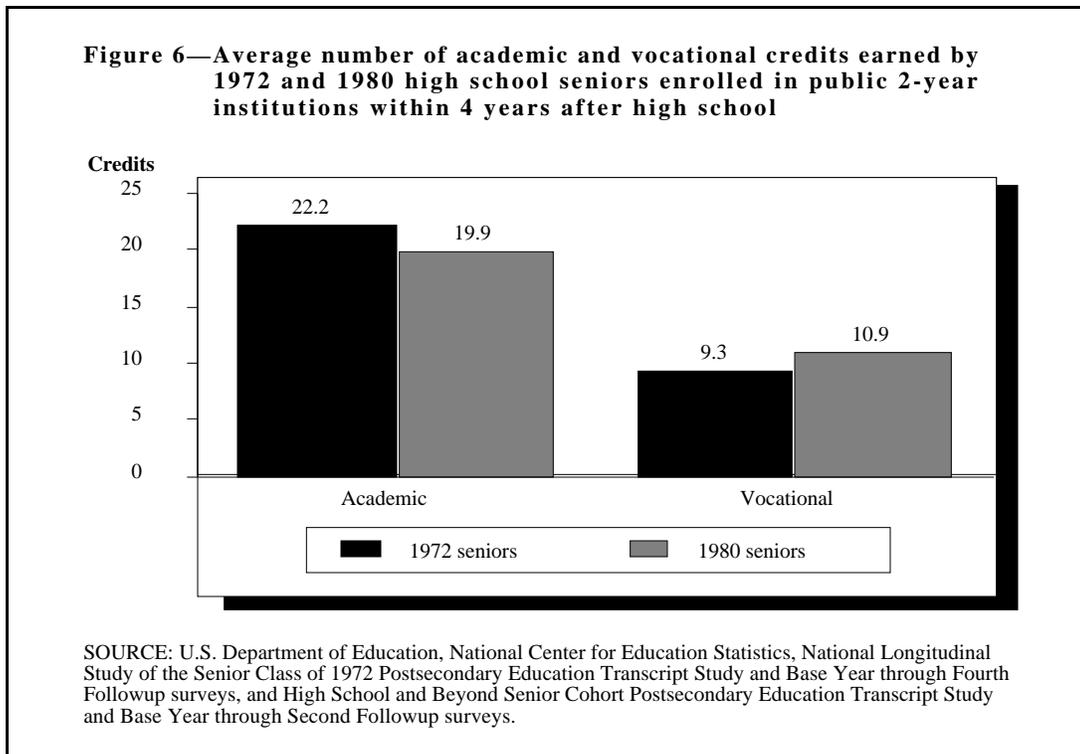
Compared with public vocational–technical institutes and private proprietary schools, students in private less-than-4-year institutions were much less likely to have taken courses in trade & industry. Only 6 percent of the students in private less-than-4-year institutions participated in trade & industry programs, compared with 32 percent of the students in public vocational–technical institutes and 30 percent of the students in proprietary schools.

Since many of the private less-than-4-year institutions were nursing schools, one would expect a larger proportion of students in these institutions to have taken courses in health. This was indeed the case. In private less-than-4-year institutions, 27 percent of the students were enrolled in health programs, compared with 9 percent in proprietary schools and 11 percent in public 2-year institutions.

Postsecondary Program Participation: 1972 and 1980 High School Seniors

For students who were high school seniors in 1972 and 1980, there was no change in the percentage of students attending public 2-year institutions within the first 4 years after high school who took academic courses. For both of these cohorts, about 85 percent of all students took courses in the academic curriculum. There was, however, a significant increase in the percentage of such students taking vocational courses. While only 60 percent of 1972 seniors took at least one vocational education course, 71 percent of 1980 seniors did so.

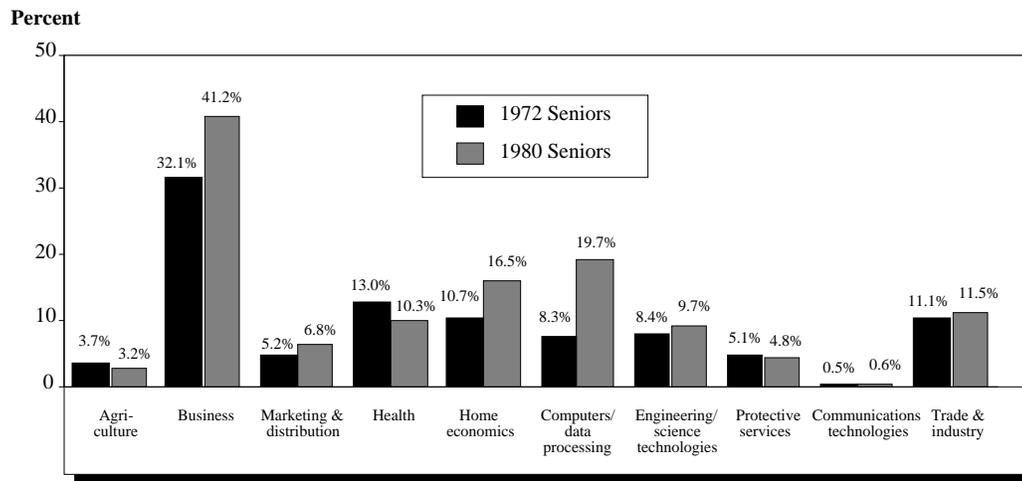
The number of credits earned by 1972 and 1980 high school seniors who enrolled in public 2-year institutions within 4 years of high school graduation changed significantly (figure 6). The average number of academic credits declined from 22 credits for 1972 seniors to 20 credits for 1980 seniors. During this same period, the average number of vocational credits increased from 9 to 11 credits.



Student participation in some postsecondary vocational program areas increased between the 1970s and 1980s. Four years after graduating from high school, a larger percentage of the high school class of 1980 than the class of 1972 had earned at least 1 credit in business, home economics, and computers/data processing at public 2-year institutions (figure 7).

In both cohorts, males were more likely than females to participate in agriculture, computers/data processing, engineering/science technologies, protective services, and trade & industry. Females were more likely than males to participate in business & office, health, and home economics. Between 1972 and 1980, the percentage of seniors in all racial-ethnic groups who took courses in computers/data processing more than doubled.

Figure 7—Percentage of 1972 and 1980 high school seniors enrolled in public 2-year institutions within 4 years after high school, earning at least one credit in vocational program areas



NOTE: Estimates may sum to greater than 100 percent because students may have earned credits in more than one vocational program area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Longitudinal Study of the Senior Class of 1972 Postsecondary Education Transcript Study and Base Year through Fourth Followup surveys, and High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Postsecondary Student Outcomes

Six months after their last enrollment in a public 2-year institution, about 48 percent of 1980 seniors were working full time. About 21 percent were working part time, 4 percent were unemployed, and 26 percent were out of the labor force.

The number of credits students earned at public 2-year institutions did not seem to affect their employment status. Regardless of how many credits they earned in vocational education, about the same percentage of students were employed full time, employed part time, were unemployed, or were out of the labor force.

Certificates and Degrees Awarded

In 1988–89, private postsecondary institutions awarded about 681,000 less-than-4-year degrees and certificates, while public postsecondary institutions awarded about 460,000 less-than-4-year degrees and certificates. About 70 percent of the private awards were less-than-1-year certificates, while only 26 percent of the public awards were of this type. In contrast, associate's degrees accounted for about one-half of all public awards, but only about 11 percent of all private awards.

At public postsecondary institutions, the largest numbers of less-than-4-year degrees and certificates were awarded in business and health programs. About 20 percent of all less-than-1-year and 1- to less-than-2-year certificates were awarded in business programs, as were about 34 percent of all associate's degrees. Health programs accounted for 19 percent of all less-than-1-year certificates, 26 percent of 1- to less-than-2-year certificates, 25 percent of associate's degrees, and 16 percent of 2- to less-than-4-year certificates. Business and health awards predominated in the 2-year and 4-year institutions. In addition, 2-year and 4-year institutions granted a higher percentage of awards in engineering & engineering technology than did less-than-2-year institutions. In contrast, 2-year and less-than-2-year institutions granted a higher percentage of awards than did 4-year institutions in the construction trades and programs for mechanics and repairers.

Special Populations in Postsecondary Education

Because participation in postsecondary vocational education is voluntary, and sometimes subject to admissions requirements, assessing access of students with special needs is somewhat more complicated at the postsecondary level than the secondary. As was done for secondary programs, four types of special-needs circumstances were considered: socioeconomic status, academic ability, home language, and handicap status.

In general, among 1980 high school seniors enrolled in public 2-year institutions by 1984, there were few real differences in the participation rates in vocational education of postsecondary students with special needs. Participation rates did not appear to differ significantly based on socioeconomic status, academic ability, home language background, or handicap status.

Postsecondary Faculty

There were no significant differences in the basic demographic characteristics of vocational and nonvocational faculty who taught in public 2-year institutions in the fall of 1987, but there were significant differences in their educational backgrounds. For example, vocational faculty were less likely to have an advanced degree than nonvocational faculty. Only 43 percent of vocational faculty had master's degrees, and only 7 percent had doctor's degrees. In comparison, 64 percent of nonvocational faculty had master's degrees and 23 percent had doctor's degrees. Vocational faculty were also more likely than nonvocational faculty to have less than a bachelor's degree (15 percent versus 2 percent).

Vocational faculty members were more likely than nonvocational faculty members to major in an occupationally specific field of study, while nonvocational faculty members were more likely than vocational faculty members to major in academic fields of study. The overwhelming majority of vocational faculty majored in an occupationally specific field (71 percent). In contrast, the majority of nonvocational faculty majored in one of the arts and sciences (53 percent).

Introduction

Vocational education in America is a large and diverse enterprise. Spanning both secondary and postsecondary education, the curriculum offers programs in a wide range of subjects including agricultural science, accounting, word processing, retailing, fashion, respiratory therapy, child care, carpentry, welding, electronics, and computer programming, to name but a few. Although vocational education is intended to help prepare students for work, both inside and outside the home, many educators believe it has a broader mission: to provide a concrete, understandable context for learning and applying academic skills and concepts. Thus, vocational education does not seek to impart only occupationally specific skills. Rather it also aims to build upon, strengthen, and enhance skills learned in the academic curriculum. Vocational education, therefore, is an integral part of the larger education system.

The vocational curriculum appeals to a diverse group of students. Individuals from all racial-ethnic backgrounds and all levels of academic ability and socioeconomic status take vocational education courses. Indeed, the majority of secondary students preparing for college have taken at least one vocational course other than typing. Similarly, most postsecondary students enrolled in less-than-4-year institutions routinely participate in vocational education programs.

This report describes vocational education in America as it has evolved over two decades, 1969 to 1990, by examining patterns of program participation, selected student outcomes, and the characteristics of teachers. Where appropriate, it provides relevant information on the academic curriculum. Most of the information is presented for single points in time, but some time series data are also reported.

This report relies on information taken from many of the large national data systems supported by the National Center for Education Statistics. Some of these systems are longitudinal studies, such as High School and Beyond and the National Longitudinal Study of 1972. Others, such as the 1987 High School Transcript Study or the Integrated Postsecondary Education Data System, are cross-sectional and periodically updated. Taken together, these data systems provide a rich source of information about vocational education and how it interacts with the rest of the American education system.

This report is organized into two main sections, with the first describing vocational education at the secondary level. Because few private schools provide vocational education to secondary school students, the analysis in this first section is limited to public institutions. The second section reports on postsecondary vocational education in both public and private institutions. A glossary of terms used in the report follows, and then appendices with tables of standard errors and an explanation of the report's methodology and technical issues.

Contemporary Issues in Vocational Education

Since the enactment of the Smith-Hughes Act in 1917, the federal government has taken an active interest in vocational education. During the last 70 years, federal policy has focused on improving vocational education programs and on increasing access to high-quality vocational education for all students, especially those with special needs. The most recently enacted federal legislation on vocational education, the Carl D. Perkins Vocational and Applied Technology Education Act of 1990, sustains these general goals and emphasizes four major themes.

First, federal policy seeks to distribute federal resources to students most in need, by directing states to allocate federal funds for vocational education to those secondary and postsecondary recipients with the highest concentrations of economically disadvantaged and handicapped students. This requirement reflects the long-standing concern on the part of Congress about the participation of students with special needs in vocational education. The legislation repeatedly stresses the importance of monitoring the enrollment of students who are academically or economically disadvantaged, handicapped, or limited English proficient in vocational education, and also emphasizes elimination of sex stereotyping in vocational education programs and full participation by minorities.

Second, the new legislation specifies that funds allocated under basic grants be used to support programs that integrate academic and vocational education. The law encourages states and localities to integrate academic and vocational education into a coherent sequence of courses that will help students acquire the academic and occupational skills needed to succeed in the workplace or in further education. Although curriculum integration may take many different forms, the general theme underscores the importance of viewing vocational education in the larger context of secondary and postsecondary education.

Third, the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 provides funds to plan and implement “tech-prep” programs. These programs, which span the last 2 years of high school and the first 2 years of postsecondary education, lead to a 2-year associate’s degree or certificate. Carried out under an articulation agreement between participating secondary and postsecondary institutions, the tech-prep programs provide technical preparation in engineering, technology, and applied science; mechanical, industrial, or practical art or trade; and agriculture, health, or business. The programs are intended to build student competence in mathematics, science, and communications through a sequential course of academic and vocational studies.

Fourth, the new law emphasizes program accountability by requiring states to develop accountability systems that include core measures and standards of performance for secondary and postsecondary vocational education. These systems must include at least one measure of learning and competency gains, including student progress in achieving basic and more advanced academic skills. Additionally, the systems must include one of the following four types of measures: 1) competency attainment, 2) job or work skill attainment, 3) retention in school or completion of high school, and 4) placement into additional training or education, military service, or employment. Thus, states and localities are expected to pay greater attention to student outcomes in assessing the effectiveness of vocational education.

It may be 4 or 5 years before it will be possible to assess how well these new objectives of federal policy have been realized. However, this report provides much information that can indicate the status of vocational education before embarking on these new policy initiatives as well as serve as a baseline for examining a variety of important issues during the 1990s. For example, it describes in detail the academic and vocational course-taking patterns of students participating in secondary and postsecondary vocational education in the 1980s; examines their participation by race, sex, and a variety of special needs; and provides information on employment outcomes, participation in further education, and attainment of associate’s degrees and certificates. Finally, the report includes data on the demographic characteristics, experience, and qualifications of secondary and postsecondary faculty in vocational education.

In short, *Vocational Education in the United States: 1969–1990* demonstrates that the various national databases on education can reveal much useful information about vocational education nationwide. There are, however, some important gaps. Given the increasing interest in integrating vocational and academic education, as well as the emphasis on student outcomes, it would be useful to know more about gains in academic skills and occupational competencies by

students participating in vocational education to varying degrees. The most recent High School Transcript Study conducted by the National Assessment of Educational Progress (NAEP), which will report transcript data and NAEP test scores for a sample of high school seniors in 1990–91, will be a valuable source of data on this topic. Similarly, more information is needed on postsecondary vocational education, especially participation by adults, and on the contribution of proprietary schools. Readers of this report will undoubtedly recognize that additional information is needed to increase the body of knowledge about vocational education in America. The National Center for Education Statistics welcomes the input and participation of individuals who are interested in supporting its ongoing efforts to improve national education data throughout the 1990s.

Vocational Education in Secondary Schools

This first section describes secondary vocational education in the United States. Typically, national data systems have not attempted to distinguish secondary vocational education offerings by type of institution. Hence, this section treats secondary vocational education as though it were a single system. The reader is reminded, however, that there are several different institutional arrangements for delivering secondary vocational education in this country. Many states, for example, rely on area vocational schools, “shared-time” facilities that students attend for part of the day to receive their vocational education, while pursuing their academic studies at their home high school. In some local school districts, especially in large cities, full-time vocational high schools offer a complete program of academic and vocational studies. These vocational high schools differ from comprehensive high schools in that their focus is vocational rather than academic and they are often organized around a particular industry—for example, aviation or health. Despite their vocational focus, however, a majority of their students go on to postsecondary education, many to 4-year colleges and universities.

This section begins with a discussion of the organization of the vocational education curriculum and its relationship to the rest of the secondary curriculum and with a description of the taxonomy of secondary vocational education programs. Using this taxonomy, the section then focuses on program participation in 1987, and subsequently turns to patterns of participation from 1969 to 1987 by analyzing four different sources of transcript data collected during that period. Next, information on selected student outcomes is presented. Finally, the section ends with data on academic and vocational teachers in public secondary schools.

Organization of the Secondary Curriculum

The Carl D. Perkins Vocational and Applied Technology Education Act of 1990 defines vocational education as “organized educational programs offering a sequence of courses which are directly related to the preparation of individuals in paid or unpaid employment in current or emerging occupations requiring other than a baccalaureate or advanced degree.”¹ The definition encompasses a wide variety of classes teaching academic skills, work attitudes, general employability skills, and occupationally specific skills. Because vocational education includes such a broad array of courses, it is necessary to clearly distinguish vocational from nonvocational education and to use some internal structure for classifying different kinds of vocational courses.

The taxonomy used in this report for organizing the secondary curriculum is displayed on the facing page.² At the most aggregated level, it divides the secondary curriculum into three parts: academic, vocational, and personal/other. Next, the academic curriculum is subdivided into six main subject areas: mathematics, science, English, social studies, fine arts, and foreign languages. Within these six subject areas, the taxonomy may be used to distinguish among topical concentrations and, when possible, among levels of coursework.

The vocational curriculum is divided into three curricular areas: 1) consumer & homemaking education, 2) general labor market preparation, and 3) specific labor market preparation. Consumer & homemaking courses provide training and skills that are often necessary for activities outside of the paid labor force and include courses in child development, clothing, basic food preparation, and home management. Classes such as beginning typing, industrial arts, work experience and career exploration, business math, and business English, imparting basic skills that can be applied in a variety of personal or occupational settings, are included in general labor market preparation. Grouped together, general labor market preparation and consumer & homemaking courses make up the non-occupationally specific vocational education curriculum. Specific labor market preparation includes introductory, advanced, and elective courses in seven vocational areas: agriculture, business, marketing & distribution, health, occupational home economics, trade & industry, and technical & communication.

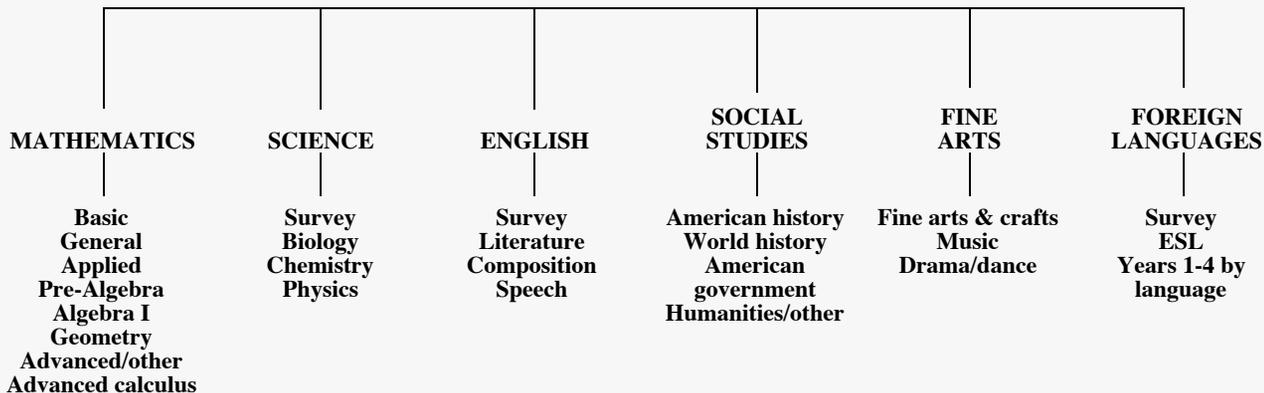
The personal/other curriculum includes such courses as physical education, personal health, driver education, religion, philosophy, and military science. The inclusion of health in both the vocational and personal/other curriculum should not cause confusion. In vocational education, the allied health programs prepare students for health occupations, whereas personal health courses teach students about caring for themselves.

¹ The Carl D. Perkins Vocational and Applied Technology Amendments of 1990, Public Law 101–392, sec. 521 (41).

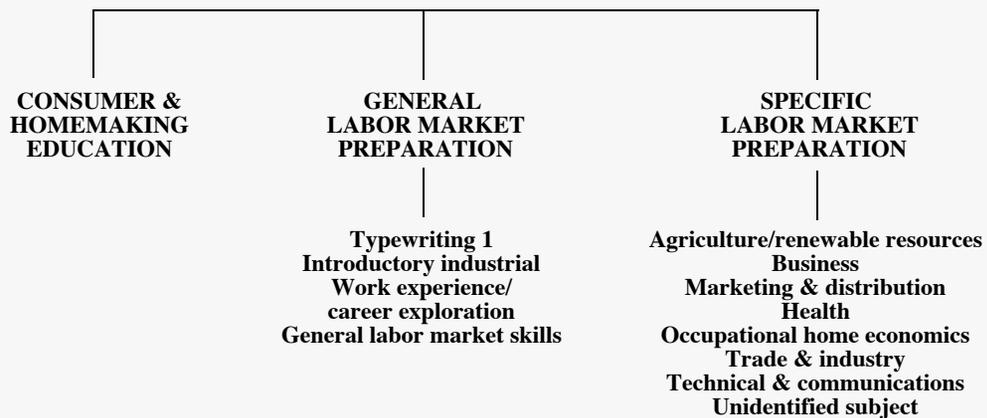
² For a detailed description of this taxonomy, see Antoinette G. Gifford, E. Gareth Hoachlander, and John E. Tuma, *The Secondary School Taxonomy Final Report*, a report prepared for the National Assessment of Vocational Education, Office of Planning, Budget, and Evaluation, U.S. Department of Education (Berkeley: MPR Associates, February 1989).

Organization of the Secondary School Taxonomy

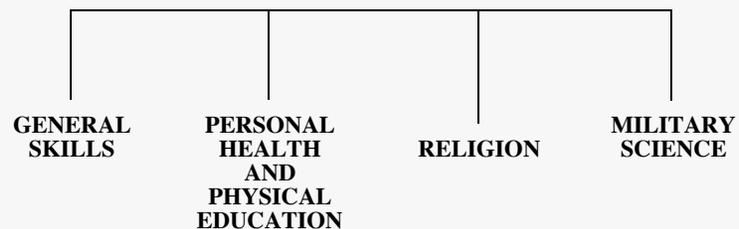
A C A D E M I C C O U R S E S



V O C A T I O N A L C O U R S E S



P E R S O N A L / O T H E R



Program Participation: 1987

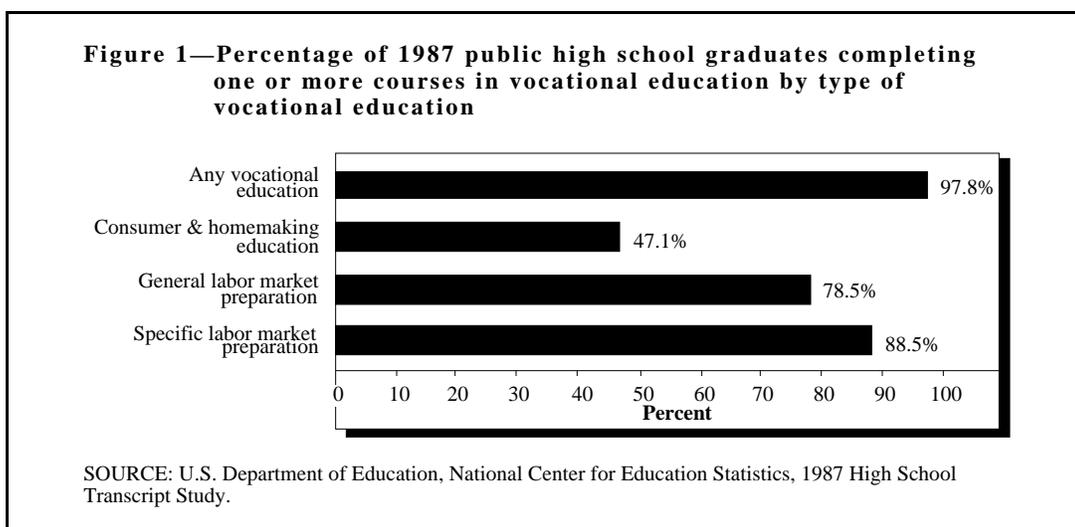
Participation in Vocational Education

In the high school senior class of 1987, 98 percent of all public high school graduates completed at least one course in vocational education during their high school careers (table 1 and figure 1). For most students this one course was not simply a typing course; in fact, almost 90 percent of all graduates completed at least one course in specific labor market preparation. Moreover, about three-fourths of the graduates completed one or more courses in general labor market preparation, and almost one-half participated in consumer & homemaking education.

Females were more likely than males to have completed a course in consumer & homemaking education. Nevertheless, 35 percent of the males completed at least one course in consumer & homemaking education, a program that was once dominated almost exclusively by females. In general labor market preparation, 74 percent of the males completed at least one course, compared with 83 percent of the females. A slightly higher percentage of males than females (91 percent versus 86 percent) participated in specific labor market preparation.

Among different racial-ethnic groups in 1987, lower percentages of Asian students than other groups participated in vocational education but these differences were not statistically significant.³ Overall, 94 percent of Asian students completed at least one vocational education course, compared with 98 percent to 99 percent of those from other racial-ethnic groups. Only 37 percent of Asian students participated in consumer & homemaking education, compared with 46 percent of white students, 54 percent of black students, and 51 percent of Hispanic students.

Virtually all handicapped and nonhandicapped students participated in vocational education. However, handicapped students were more likely than nonhandicapped students to have completed a course in consumer & homemaking education and were less likely to have completed a course in general labor market preparation. About 90 percent of both handicapped and nonhandicapped students completed a course in specific labor market preparation.



³ In all tables, data reported for whites and blacks exclude white and black Hispanics, for whom data are reported in the Hispanic category. Data for Native Americans include both American Indians and Alaskan Natives, and data for Asians include both Asians and Pacific Islanders.

Table 1—Percentage of 1987 public high school graduates completing one or more courses in vocational education by type of vocational education, by selected characteristics

	Any vocational education	Consumer & homemaking education	General labor market preparation	Specific labor market preparation
Total	97.8	47.1	78.5	88.5
Sex				
Male	97.9	34.5	73.9	91.3
Female	97.7	59.0	82.9	85.8
Race-ethnicity				
White, non-Hispanic	97.8	46.2	79.4	88.2
Black, non-Hispanic	98.7	53.6	77.7	88.3
Hispanic	97.8	51.2	76.5	89.1
Asian	93.6	36.6	69.7	82.8
Native American	98.4	51.1	78.0	92.2
Urbanicity				
Urban	97.5	39.0	75.9	87.0
Suburban	96.5	48.7	74.6	86.5
Rural	98.1	45.0	77.9	88.3
Handicap status				
Not handicapped	97.7	46.9	78.7	88.4
Handicapped	99.2	53.7	73.6	90.3
School enrollment				
500 or fewer	99.6	62.0	89.7	91.6
501 to 1,000	96.7	43.4	77.1	87.2
1,001 to 2,000	97.7	46.2	77.4	88.6
2,001 to 3,000	98.0	44.6	71.8	87.3
3,001 or more	99.3	22.5	86.9	90.7
High school grades				
Mostly As	94.0	32.5	72.5	77.8
Mostly Bs	97.4	44.4	79.6	87.4
Mostly Cs	99.0	53.6	80.1	91.9
Below C	99.5	53.8	75.8	93.9
Total vocational Carnegie units				
Zero units	0.0	0.0	0.0	0.0
0.01–1.99 units	100.0	22.2	64.3	58.8
2.00–3.99 units	100.0	44.2	79.4	92.2
4.00–5.99 units	100.0	56.5	84.4	98.1
6.00–7.99 units	100.0	59.8	85.7	99.4
8.00 or more units	100.0	57.3	86.7	99.7
Total specific labor market preparation Carnegie units				
Zero units	80.6	38.2	71.4	0.0
0.01–1.99 units	100.0	47.3	77.8	100.0
2.00–3.99 units	100.0	51.7	81.8	100.0
4.00–5.99 units	100.0	51.4	81.6	100.0
6.00 or more units	100.0	39.3	75.3	100.0

First row, first column reads: Of all 1987 public high school graduates, 97.8 percent completed one or more courses in some type of vocational education.

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 8, and unpublished tabulations, from the 1987 High School Transcript Study.

Program Participation: 1987

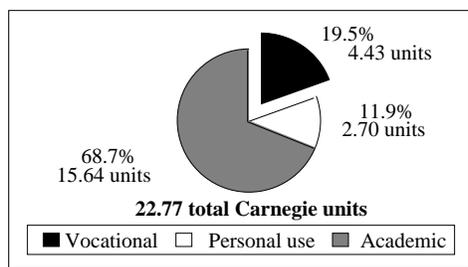
Carnegie Units Accumulated in High School

Overall, public high school graduates in 1987 earned an average total of 22.8 Carnegie units (table 2).⁴ On average, they earned 4.4 units in vocational education, or about 20 percent of total units (figure 2). These graduates accumulated 15.6 units in academic subjects and 2.7 units in personal use courses. At this level of generality in the curriculum, there were no major differences between males and females in the number of Carnegie units accumulated. However, Asian students earned more Carnegie units in academic subjects and fewer Carnegie units in vocational subjects than did students in other racial-ethnic groups. In addition, handicapped students accumulated almost 40 percent more units in vocational education than nonhandicapped students. Students with mostly As accumulated fewer units in vocational education than students with mostly Bs, and students with mostly Bs averaged fewer units than students with mostly Cs or below.

For reasons that are not immediately apparent, both the total number of all Carnegie units and the average number of vocational units accumulated tended to decrease as school size increased. Thus, in schools with fewer than 500 students enrolled, students averaged 5.8 units of vocational education, compared with 3.5 units in schools with more than 3,000 students. To some extent, higher average units in the smallest schools may reflect their tendency to be located in rural areas, where vocational agriculture has traditionally figured prominently in the curriculum. However, this fact cannot explain the steady decline in vocational units as school size increases at other levels.

As students earned more units in vocational education, the number of units they earned in academic subjects declined.⁵ For example, students accumulating 0.01 to 1.99 units in vocational education earned 19.3 academic units. At the other extreme, students accumulating 8.00 or more units in vocational education averaged only 11.7 academic units.

Figure 2—Average number of Carnegie units accumulated by 1987 public high school graduates by type of curriculum



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987 High School Transcript Study.

⁴ A Carnegie unit is a standard of measurement used for secondary education that represents the completion of a course that meets 1 period per day for 1 year.

⁵ In the National Assessment of Vocational Education's *First Interim Report*, it was found that students with no plans for postsecondary education did not tend to substitute vocational units for academic units at as high a rate as those students who planned to earn a bachelor's degree. Instead, students with no postsecondary education plans tended to increase their overall course taking as they took more vocational courses. See J. Wirt et al. *First Interim Report*, a report prepared for the National Assessment of Vocational Education, Office of Planning, Budget, and Evaluation, U.S. Department of Education (Washington, D.C.: 1988), 1-18-1-19.

Table 2—Average number of Carnegie units accumulated by 1987 public high school graduates by type of curriculum, by selected characteristics

	Total	Academic	Vocational	Personal use
Total	22.77	15.64	4.43	2.70
Sex				
Male	22.65	15.28	4.52	2.84
Female	22.89	15.98	4.36	2.56
Race–ethnicity				
White, non-Hispanic	22.91	15.74	4.52	2.64
Black, non-Hispanic	22.14	14.96	4.47	2.71
Hispanic	22.54	15.07	4.27	3.20
Asian	23.88	17.76	2.92	3.21
Native American	23.15	15.33	4.70	3.13
Urbanicity				
Urban	22.55	15.89	4.11	2.55
Suburban	22.74	15.89	3.92	2.93
Rural	22.47	15.28	4.27	2.93
Handicap status				
Not handicapped	22.81	15.76	4.37	2.68
Handicapped	21.86	12.56	5.99	3.32
School enrollment				
500 or fewer	23.70	15.16	5.76	2.78
501 to 1,000	22.75	15.80	4.36	2.60
1,001 to 2,000	22.53	15.64	4.28	2.61
2,001 to 3,000	22.75	15.77	3.73	3.25
3,001 or more	21.74	16.55	3.47	1.72
High school grades				
Mostly As	24.48	18.97	2.83	2.68
Mostly Bs	23.42	16.43	4.22	2.78
Mostly Cs	22.07	14.32	5.06	2.69
Below C	20.52	13.02	5.06	2.43
Total vocational Carnegie units				
Zero units	23.79	20.78	0.00	3.01
0.01–1.99 units	23.08	19.28	1.07	2.73
2.00–3.99 units	22.76	17.19	2.71	2.85
4.00–5.99 units	22.40	14.93	4.70	2.77
6.00–7.99 units	22.51	13.21	6.68	2.62
8.00 or more units	23.29	11.65	9.38	2.26
Total specific labor market preparation Carnegie units				
Zero units	22.90	18.79	1.25	2.87
0.01–1.99 units	22.86	17.61	2.47	2.78
2.00–3.99 units	22.66	15.55	4.32	2.78
4.00–5.99 units	22.64	13.68	6.29	2.67
6.00 or more units	22.89	11.84	8.78	2.27

First row, first column reads: 1987 public high school graduates earned on average a total of 22.77 Carnegie units in all types of curricula.

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 10, and unpublished tabulations, from the 1987 High School Transcript Study.

Program Participation: 1987

Carnegie Units in Vocational Education

About 60 percent of high school graduates in 1987 took fewer than 5.00 units in vocational education, and only 13 percent accumulated 8.00 or more Carnegie units (table 3 and figure 3). There is a widespread perception that minorities are more likely to be heavy concentrators in vocational education than white students, but the data for 1987 did not support this generalization. About 15 percent of white students earned 8.00 or more units in vocational education, compared with 11 percent of black students, 9 percent of Hispanic students, 4 percent of Asian students, and 12 percent of Native American students. With the possible exception of Native American students (where the difference was not statistically significant), white students were actually more likely to earn 8.00 or more units in vocational education than minority students.

Handicapped students were more likely than nonhandicapped students to be heavy concentrators in vocational education. About 26 percent of handicapped students earned 8.00 or more units of vocational education, compared with only 13 percent of nonhandicapped students.

Students with mostly As were less likely to concentrate heavily in vocational education than other students. Only 4 percent of students with As accumulated 8.00 or more units in vocational education, compared with 13 percent of students with mostly Bs, 17 percent of students with mostly Cs, and 14 percent of students with grades mostly below C.

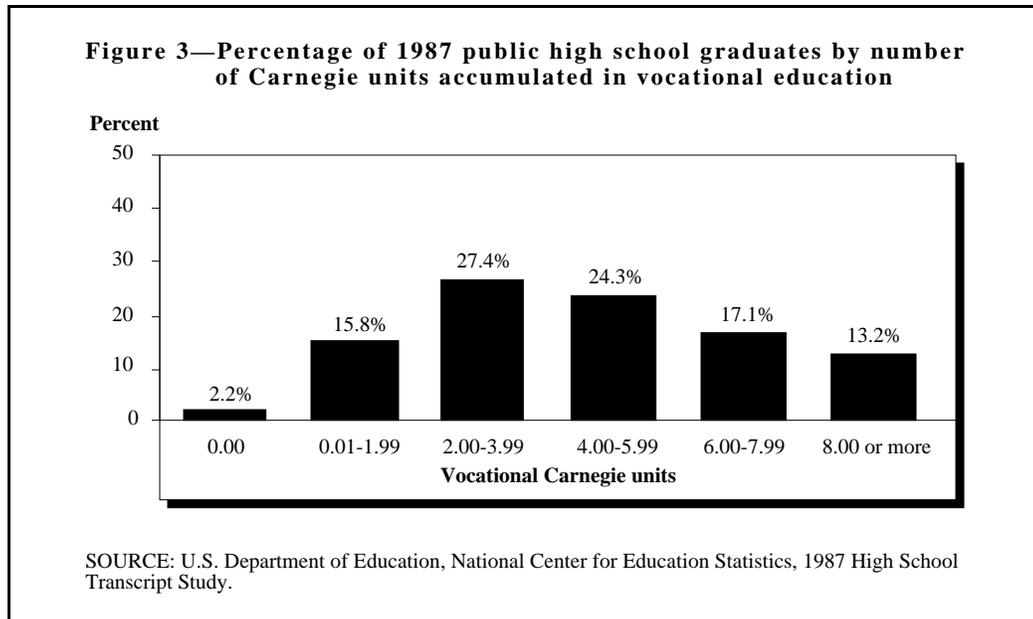


Table 3—Percentage of 1987 public high school graduates by number of Carnegie units accumulated in vocational education, by selected characteristics

	Number of Carnegie units in vocational education									
	0.00	0.01–0.99	1.00–1.99	2.00–2.99	3.00–3.99	4.00–4.99	5.00–5.99	6.00–6.99	7.00–7.99	8.00 or more
Total	2.2	3.5	12.3	14.4	13.0	12.8	11.5	9.1	8.0	13.2
Sex										
Male	2.1	3.1	11.9	14.5	12.7	12.5	12.3	8.7	8.2	14.0
Female	2.4	3.9	12.6	14.3	13.2	13.2	10.7	9.4	7.9	12.5
Race–ethnicity										
White, non-Hispanic	2.2	3.6	12.2	13.9	12.7	12.5	11.2	8.9	8.1	14.8
Black, non-Hispanic	1.3	3.4	10.9	12.6	13.2	14.5	13.6	10.2	9.8	10.7
Hispanic	2.2	2.3	11.4	15.6	14.5	13.5	13.7	10.9	7.5	8.5
Asian	6.4	5.4	20.6	24.2	15.7	10.3	6.3	4.9	2.6	3.6
Native American	1.6	1.4	5.9	14.9	14.3	15.4	15.2	9.8	10.0	11.5
Urbanicity										
Urban	2.5	5.2	12.8	15.6	13.6	13.3	11.7	9.5	6.8	9.1
Suburban	3.5	3.2	15.2	16.5	15.1	13.8	10.9	6.9	5.6	9.3
Rural	1.9	3.6	13.5	16.4	12.8	12.3	11.3	8.7	7.2	12.3
Handicap status										
Not handicapped	2.3	3.6	12.6	14.7	13.1	12.9	11.4	8.9	7.9	12.7
Handicapped	0.8	0.8	5.0	6.6	9.4	11.8	14.0	12.5	13.0	26.3
School enrollment										
500 or fewer	0.4	1.0	5.5	7.0	10.2	13.1	14.4	12.1	13.5	22.8
501 to 1,000	3.3	4.4	11.2	14.8	12.2	12.0	11.5	9.5	7.9	13.2
1,001 to 2,000	2.3	3.3	14.2	15.4	13.1	13.2	10.9	8.3	7.1	12.2
2,001 to 3,000	2.0	5.4	15.1	17.3	17.4	12.5	10.2	7.5	5.8	6.6
3,001 or more	0.8	3.2	16.9	24.0	15.4	16.6	9.9	6.3	3.6	3.3
High school grades										
Mostly As	6.0	9.5	23.7	20.0	12.9	9.4	6.4	3.9	4.1	4.1
Mostly Bs	2.6	3.8	14.1	16.1	13.3	12.4	10.5	7.6	7.3	12.6
Mostly Cs	1.0	1.6	7.8	11.6	13.0	14.0	13.4	11.3	9.4	17.0
Below C	0.5	2.1	6.9	10.4	12.0	14.8	15.0	13.5	11.1	13.8
Total specific labor market preparation Carnegie units										
Zero units	19.4	19.0	37.7	14.1	4.5	2.1	2.0	0.6	0.3	0.4
0.01–1.99 units	0.0	4.9	28.7	34.1	16.9	8.1	4.4	1.7	0.6	0.6
2.00–3.99 units	0.0	0.0	0.0	11.3	26.6	29.5	17.3	8.1	5.0	2.1
4.00–5.99 units	0.0	0.0	0.0	0.0	0.0	10.0	28.6	28.3	18.9	14.2
6.00 or more units	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	21.8	69.4

First row, first column reads: Of all 1987 public high school graduates, 2.2 percent earned no Carnegie units in vocational education.

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

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 12, and unpublished tabulations, from the 1987 High School Transcript Study.

Program Participation: 1987

Carnegie Units in Consumer & Homemaking Education, General Labor Market Preparation, and Specific Labor Market Preparation

Graduates of public high schools in 1987 averaged 0.6 units in consumer & homemaking education, 0.9 units in general labor market preparation, and 2.9 units in specific labor market preparation (table 4). Males averaged 0.3 units in consumer & homemaking, significantly less than the 0.9 units for females (figure 4). While females earned only 0.03 units in industrial arts, males averaged 0.25 units. Males averaged 3.3 units in specific labor market preparation, compared with 2.6 units for females.

The number of Carnegie units earned in consumer & homemaking, general labor market preparation and specific labor market preparation did not differ between white and other minority students, with the exception of Asians. They consistently accumulated fewer units than white students in all three areas.

Handicapped students also took more vocational education than nonhandicapped students in all three areas. The absolute difference was greatest for specific labor market preparation, where handicapped students earned an average of 3.8 units, compared with 2.9 units for nonhandicapped students. The greatest relative difference occurred for general labor market preparation, where handicapped students earned 1.5 units, compared with 0.9 units for nonhandicapped students.

Similarly, students with mostly As accumulated fewer units in all three areas than did other students. The difference was most pronounced in specific labor market preparation. In this area, students with mostly As averaged 1.7 units, compared with 2.7 units for students with mostly Bs, about 3.4 units for students with mostly Cs, and 3.5 units for students with grades mostly below C.

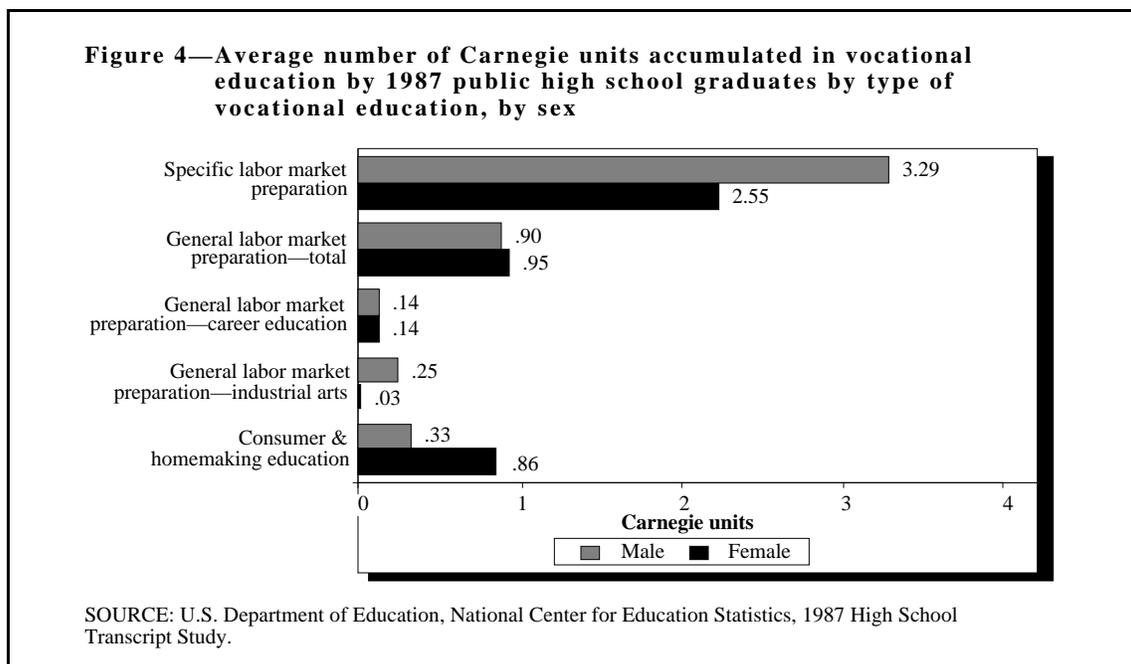


Table 4—Average number of Carnegie units accumulated in vocational education by 1987 public high school graduates by type of vocational education, by selected characteristics

	Consumer & homemaking education	General labor market preparation			Specific labor market preparation
		Industrial arts	Career education	Total	
Total	0.60	0.14	0.14	0.93	2.90
Sex					
Male	0.33	0.25	0.14	0.90	3.29
Female	0.86	0.03	0.14	0.95	2.55
Race-ethnicity					
White, non-Hispanic	0.60	0.15	0.12	0.94	2.99
Black, non-Hispanic	0.73	0.13	0.20	0.98	2.77
Hispanic	0.60	0.11	0.25	0.97	2.70
Asian	0.34	0.04	0.11	0.69	1.88
Native American	0.64	0.17	0.05	0.87	3.19
Urbanicity					
Urban	0.44	0.10	0.26	0.93	2.74
Suburban	0.56	0.10	0.10	0.77	2.59
Rural	0.57	0.12	0.18	0.93	2.77
Handicap status					
Not handicapped	0.60	0.13	0.12	0.91	2.87
Handicapped	0.75	0.27	0.81	1.46	3.77
School enrollment					
500 or fewer	0.95	0.33	0.21	1.36	3.45
501 to 1,000	0.56	0.11	0.12	0.87	2.92
1,001 to 2,000	0.56	0.11	0.12	0.88	2.84
2,001 to 3,000	0.47	0.07	0.17	0.73	2.52
3,001 or more	0.19	0.10	0.22	0.95	2.33
High school grades					
Mostly As	0.37	0.05	0.08	0.73	1.73
Mostly Bs	0.56	0.13	0.13	0.93	2.73
Mostly Cs	0.71	0.16	0.16	1.00	3.36
Below C	0.68	0.19	0.19	0.93	3.46
Total vocational Carnegie units					
Zero units	0.00	0.00	0.00	0.00	0.00
0.01–1.99 units	0.14	0.02	0.04	0.45	0.48
2.00–3.99 units	0.43	0.07	0.08	0.75	1.52
4.00–5.99 units	0.74	0.16	0.15	1.02	2.94
6.00–7.99 units	0.90	0.18	0.22	1.20	4.58
8.00 or more units	0.96	0.31	0.28	1.49	6.94
Total specific labor market preparation Carnegie units					
Zero units	0.48	0.07	0.15	0.77	0.00
0.01–1.99 units	0.63	0.10	0.14	0.83	1.01
2.00–3.99 units	0.68	0.15	0.15	1.00	2.64
4.00–5.99 units	0.65	0.16	0.13	1.02	4.61
6.00 or more units	0.44	0.20	0.11	0.97	7.38

First row, first column reads: 1987 public high school graduates earned on average 0.60 Carnegie units in consumer and homemaking education.

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 14, and unpublished tabulations, from the 1987 High School Transcript Study.

Program Participation: 1987

Carnegie Units in Specific Labor Market Preparation

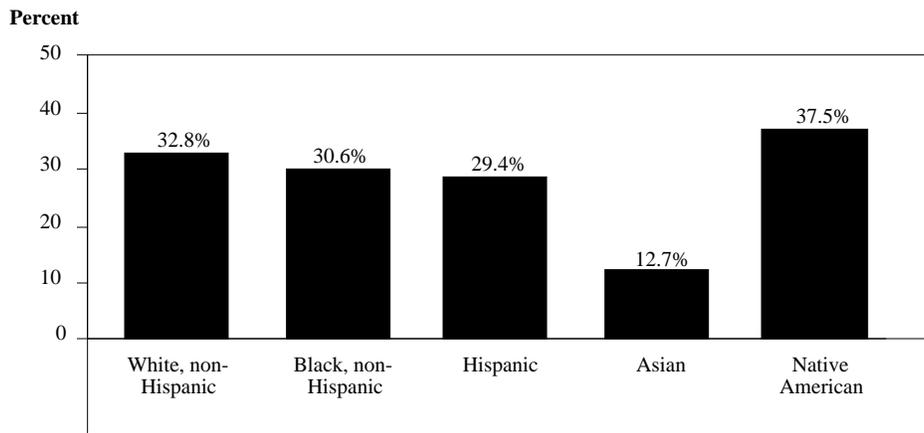
About one-third of all high school graduates earned 4.00 or more units in specific labor market preparation courses (table 5). A higher percentage of males than female (37s percent versus 27 percent) earned 4.00 or more units. A much smaller percentage of Asian graduates (13 percent) accumulate d4.00 or more units than did graduate sof other racial–ethni c groups, typically about 30 percent (figure 5).

Almost one-half of handicapped students accumulated 4.00 or more units in specific labor market preparation. In contrast, only 31 percent of nonhandicapped students did so.

Students in relatively small schools tended to be more likely to earn 4.00 or more units in specific labor market preparation. For example, 39 percent of students in schools with 500 or fewer students took 4.00 or more units, compared with only 26 percent in schools with 2,001 to 3,000 students.

Students with mostly As were much less likely to have taken 4.00 or mor units than students with mostly other grades. Only 13 percent of students with mostly As took 4.00 or more units, compared with about 40 percent of students with mostly Cs or below.

Figure 5—Percentage of 1987 public high school graduates accumulating 4.00 or more Carnegie units in specific labor market preparation courses, by race–ethnicity



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987 High School Transcript Study.

Table 5—Percentage of 1987 public high school graduates by number of Carnegie units accumulated in specific labor market preparation courses, by selected characteristics

	Number of Carnegie units in specific labor market preparation					
	0.00	0.01– 0.99	1.00– 1.99	2.00– 2.99	3.00– 3.99	4.00 or more
Total	11.5	7.6	20.2	16.1	13.2	31.6
Sex						
Male	8.7	6.4	18.1	16.2	13.8	36.9
Female	14.2	8.7	22.1	16.0	12.5	26.5
Race–ethnicity						
White, non-Hispanic	11.8	7.0	19.5	16.0	13.1	32.8
Black, non-Hispanic	11.7	8.4	19.3	15.3	14.8	30.6
Hispanic	10.9	7.0	21.2	18.5	13.0	29.4
Asian	17.2	11.3	25.8	24.1	9.0	12.7
Native American	7.8	3.1	20.5	17.3	13.8	37.5
Urbanicity						
Urban	13.1	8.1	20.0	16.1	13.5	29.3
Suburban	13.5	8.3	21.7	16.9	13.3	26.3
Rural	11.7	9.3	21.3	16.9	12.0	28.9
Handicap status						
Not handicapped	11.6	7.7	20.4	16.2	13.2	31.0
Handicapped	9.7	4.6	14.6	12.7	10.7	47.7
School enrollment						
500 or fewer	8.4	3.2	16.8	16.2	16.0	39.4
501 to 1,000	12.8	7.2	18.9	16.2	11.9	33.0
1,001 to 2,000	11.4	8.6	21.3	15.4	13.1	30.2
2,001 to 3,000	12.7	9.3	22.1	17.8	12.6	25.5
3,001 or more	9.4	10.7	26.4	18.7	14.5	20.3
High school grades						
Mostly As	22.2	13.1	25.6	16.6	10.0	12.5
Mostly Bs	12.6	8.0	21.9	16.6	12.2	28.7
Mostly Cs	8.1	5.6	16.8	16.0	15.1	38.5
Below C	6.1	6.0	18.0	13.8	14.4	41.8
Total vocational Carnegie units						
Zero units	100.0	0.0	0.0	0.0	0.0	0.0
0.01–1.99 units	41.2	29.6	29.2	0.0	0.0	0.0
2.00–3.99 units	7.8	8.7	43.0	32.4	8.0	0.0
4.00–5.99 units	1.9	1.8	12.5	23.3	33.1	27.4
6.00–7.99 units	0.6	0.2	3.5	7.5	14.9	73.3
8.00 or more units	0.3	0.1	1.1	1.9	2.8	93.8

First row, first column reads: Of 1987 public high school graduates, 11.5 percent earned no Carnegie units in specific labor market preparation courses.

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

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 16, and unpublished tabulations, from the 1987 High School Transcript Study.

Program Participation: 1987

Participation by Program

In 1987, business was the most popular specific labor market program, with more than one-half of the graduate having taken courses in this subject area (table 6 and figure 6). Business was followed in popularity by trade & industry programs, enrolling 38 percent of the students, and technical & communication programs, enrolling 25 percent. Less than 11 percent of all students participated in any one of the remaining program areas.

Males were much more likely to have participated in agriculture and trade & industry programs, while females dominated in business, health, and occupational home economics programs. Although there were differences in the percentages of males and females participating in marketing and technical programs, overall these programs were more balanced in terms of female and male participation.

About equal percentages of white, black, and Hispanic students participated in programs in business, marketing, health, and occupational home economics. In technical and communications programs, 27 percent of white students participated, compared with 17 percent of black and 15 percent of Hispanic students. Relatively few Asian students participated in agriculture (0.4 percent) or in construction (0.8 percent).

Handicapped students were more likely than nonhandicapped students to take courses in agriculture, occupational home economics, and trade & industry. However, they were less likely to participate in business (28 percent versus 55 percent) and technical & communication programs (9 percent versus 25 percent).

Higher achieving students, those with mostly As, were much more likely than other students to take courses in technical & communication programs. They were less likely to participate in agriculture, marketing, occupational home economics, or trade & industry.

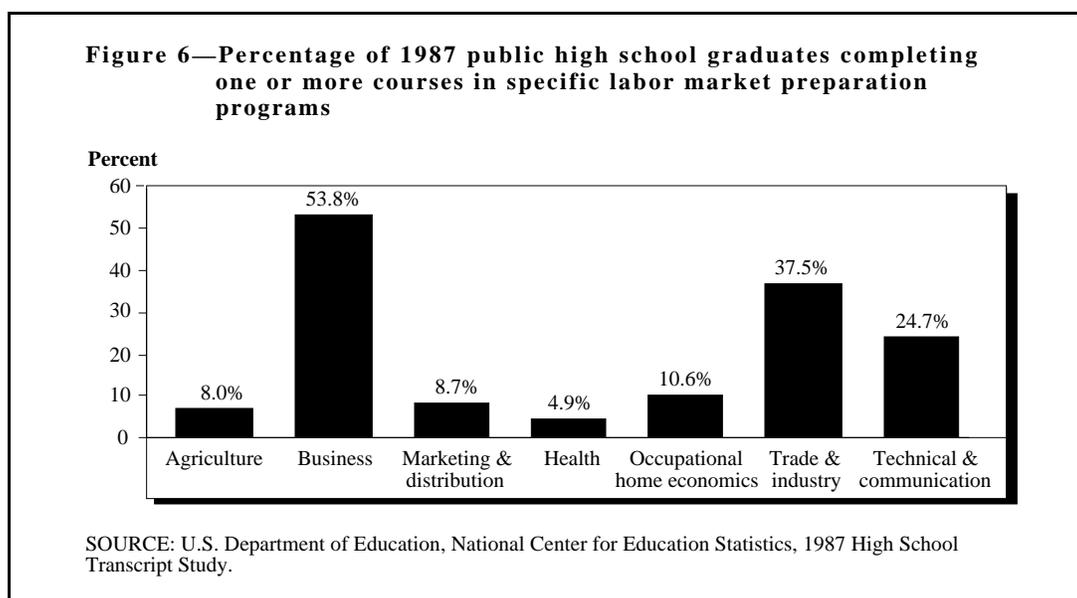


Table 6—Percentage of 1987 public high school graduates completing one or more courses in specific labor market preparation programs, by selected characteristics

	Agriculture	Business	Marketing & distribution	Health*	Occupational home economics	Trade & industry				Technical & communication
						Total	Construction	Precision production	Other	
Total	8.0	53.8	8.7	4.9	10.6	37.5	5.0	32.4	10.9	24.7
Sex										
Male	12.5	42.5	7.4	2.7	5.2	61.3	9.9	52.3	20.6	28.2
Female	3.8	64.6	9.9	6.9	15.6	15.2	0.5	13.8	1.8	21.4
Race-ethnicity										
White, non-Hispanic	9.4	53.5	8.1	4.5	10.2	37.3	4.8	32.8	10.6	26.8
Black, non-Hispanic	5.8	54.2	9.6	6.1	12.4	33.7	5.6	26.6	8.3	16.9
Hispanic	4.1	53.3	9.6	7.0	10.9	44.6	5.7	38.7	14.1	14.5
Asian	0.4	46.1	8.1	9.5	4.5	30.7	0.8	24.8	9.2	29.8
Native American	10.5	64.7	4.0	7.7	7.2	50.9	11.8	44.7	10.8	20.2
Urbanicity										
Urban	3.3	51.4	10.2	5.9	10.2	40.5	4.7	35.5	10.2	19.1
Suburban	2.2	53.3	9.3	3.5	10.2	36.8	3.2	32.3	11.4	28.4
Rural	6.0	52.8	11.9	5.7	9.8	35.9	5.0	30.3	10.7	23.1
Handicap status										
Not handicapped	7.7	54.8	8.7	4.9	10.3	36.9	4.8	32.1	10.7	25.3
Handicapped	17.0	28.2	8.8	6.2	17.5	54.2	12.1	42.6	18.5	9.0
School enrollment										
500 or fewer	20.4	63.1	4.3	3.3	11.8	36.9	5.8	31.8	8.6	24.7
501 to 1,000	9.0	52.9	7.5	6.0	8.9	37.1	5.0	32.5	11.5	26.2
1,001 to 2,000	4.9	52.4	10.3	4.5	11.5	37.1	5.1	31.9	10.9	23.9
2,001 to 3,000	2.8	49.4	10.8	5.5	9.8	40.1	4.5	34.5	12.1	25.2
3,001 or more	6.7	61.4	11.0	7.9	8.9	43.0	2.1	37.7	13.1	16.8
High school grades										
Mostly As	4.7	47.0	2.6	3.7	4.4	20.5	1.0	17.9	4.2	37.5
Mostly Bs	7.2	54.4	7.8	4.8	9.7	32.8	3.4	28.5	8.1	28.1
Mostly Cs	10.2	56.5	10.8	5.6	12.8	43.9	6.8	38.1	13.9	19.2
Below C	8.1	50.5	12.8	4.8	14.1	55.4	10.5	46.5	20.4	14.6
Total vocational Carnegie units										
Zero units	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.01–1.99 units	1.1	24.0	1.3	4.7	1.9	15.8	0.6	12.1	3.8	22.1
2.00–3.99 units	3.8	53.2	5.0	4.1	6.1	33.0	1.9	29.0	6.5	31.8
4.00–5.99 units	7.6	66.0	11.7	5.2	11.8	43.3	4.6	38.2	11.4	26.8
6.00–7.99 units	12.5	65.8	14.8	6.1	17.0	49.1	9.8	42.5	17.5	21.6
8.00 or more units	21.5	61.8	13.6	5.7	21.5	53.8	12.5	45.9	21.3	17.6
Total specific labor market preparation Carnegie units										
Zero units	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.01–1.99 units	2.4	53.0	3.5	4.9	7.5	25.0	1.2	20.5	4.7	30.9
2.00–3.99 units	6.9	67.1	10.5	6.1	11.3	42.6	3.5	37.6	9.6	30.2
4.00–5.99 units	12.6	68.6	15.7	5.9	16.2	52.3	8.5	46.9	16.7	26.7
6.00 or more units	22.2	53.6	14.0	5.4	16.7	63.9	15.5	53.7	27.8	19.2

First row, first column reads: Of 1987 public high school graduates, 8.0 percent completed one or more courses in agriculture.

* "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "personal/other."

NOTE: Estimates may sum to greater than 100 percent because students may have earned Carnegie units in more than one vocational program area.

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, pp. 17–18, and unpublished tabulations from the 1987 High School Transcript Study.

Program Participation: 1987

Carnegie Units by Program

Graduates of public high schools in 1987 earned an average of 1.0 unit in both business and in trade & industry programs (table 7). They earned less than one-quarter of a unit in each of the other program areas. While males averaged significantly more units than females in agriculture, trade & industry, and technical & communication programs, females earned more units than males in business, health, and occupational home economics (figure 7).

White, black, and Hispanic graduates averaged about the same number of units in business and technical & communication programs. Black students averaged significantly more units than white students in occupational home economics and fewer in trade & industry. Asian students earned fewer units than white, black, and Hispanic students in agriculture and occupational home economics.

Carnegie units earned varied by program for handicapped and nonhandicapped students. For example, handicapped students earned 0.4 units in occupational home economics, compared with 0.2 units for nonhandicapped students. Nonhandicapped students earned 1.0 unit in business, as opposed to 0.4 units for handicapped students. Moreover, handicapped students earned significantly more units in agriculture and trade & industry programs, while accumulating significantly fewer units in technical & communication programs.

Higher achieving students generally earned fewer units than lower achieving students in all program areas except health and technical & communication programs. In health, there were few differences in the amount of units earned between high- and low-achieving students. In technical & communication programs, students with mostly As earned 0.4 units, compared with 0.3 units for students with mostly Bs, and 0.2 units for students with mostly Cs or below.

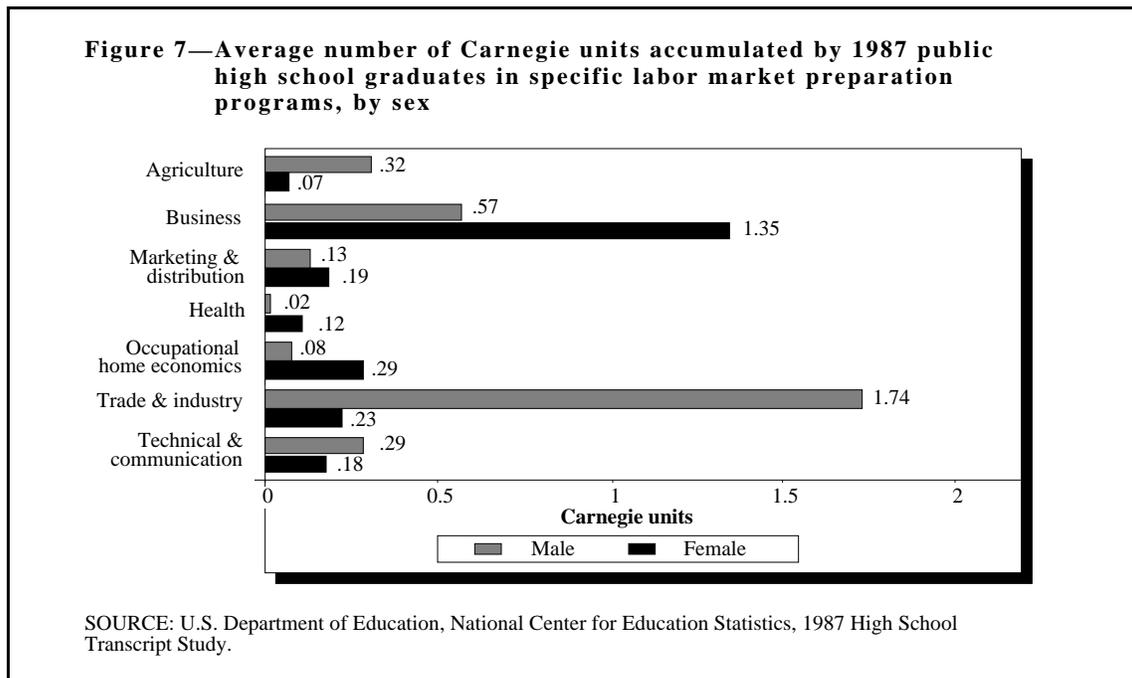


Table 7—Average number of Carnegie units accumulated by 1987 public high school graduates in specific labor market preparation programs, by selected characteristics

	Agriculture	Business	Marketing & distribution	Health*	Occupational home economics	Trade & industry				Technical & communication
						Total	Construction	Precision production	Other	
Total	0.19	0.97	0.16	0.07	0.19	0.96	0.11	0.63	0.22	0.24
Sex										
Male	0.32	0.57	0.13	0.02	0.08	1.74	0.21	1.09	0.43	0.29
Female	0.07	1.35	0.19	0.12	0.29	0.23	0.01	0.20	0.02	0.18
Race-ethnicity										
White, non-Hispanic	0.24	0.98	0.15	0.07	0.18	1.01	0.11	0.67	0.23	0.26
Black, non-Hispanic	0.09	0.99	0.17	0.12	0.26	0.75	0.12	0.45	0.18	0.16
Hispanic	0.06	0.98	0.16	0.08	0.17	0.97	0.09	0.63	0.25	0.13
Asian	0.01	0.65	0.16	0.11	0.08	0.44	0.01	0.34	0.09	0.31
Native American	0.19	1.09	0.08	0.09	0.09	1.30	0.23	0.81	0.27	0.21
Urbanicity										
Urban	0.05	0.96	0.19	0.10	0.19	0.92	0.07	0.64	0.20	0.18
Suburban	0.04	0.88	0.15	0.06	0.19	0.84	0.06	0.58	0.20	0.28
Rural	0.14	0.89	0.24	0.09	0.18	0.88	0.11	0.56	0.21	0.21
Handicap status										
Not handicapped	0.19	0.99	0.16	0.07	0.18	0.93	0.10	0.62	0.21	0.24
Handicapped	0.41	0.38	0.18	0.11	0.40	1.68	0.31	0.90	0.47	0.09
School enrollment										
500 or fewer	0.60	1.24	0.08	0.07	0.16	1.01	0.13	0.66	0.23	0.24
501 to 1,000	0.20	0.94	0.15	0.07	0.15	1.01	0.10	0.68	0.23	0.26
1,001 to 2,000	0.10	0.93	0.19	0.07	0.23	0.94	0.12	0.61	0.21	0.23
2,001 to 3,000	0.05	0.84	0.18	0.08	0.16	0.87	0.06	0.58	0.23	0.22
3,001 or more	0.06	0.97	0.09	0.12	0.13	0.69	0.02	0.53	0.13	0.13
High school grades										
Mostly As	0.12	0.76	0.04	0.04	0.05	0.33	0.01	0.27	0.05	0.36
Mostly Bs	0.18	1.03	0.14	0.07	0.18	0.77	0.08	0.55	0.15	0.27
Mostly Cs	0.24	1.01	0.21	0.09	0.24	1.22	0.15	0.76	0.30	0.18
Below C	0.17	0.84	0.23	0.06	0.24	1.58	0.20	0.96	0.43	0.15
Total vocational Carnegie units										
Zero units	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01–1.99 units	0.01	0.17	0.01	0.02	0.01	0.12	0.00	0.09	0.02	0.14
2.00–3.99 units	0.04	0.59	0.05	0.03	0.06	0.42	0.02	0.34	0.06	0.29
4.00–5.99 units	0.13	1.09	0.19	0.08	0.15	0.92	0.07	0.69	0.16	0.27
6.00–7.99 units	0.31	1.51	0.30	0.12	0.32	1.59	0.21	0.98	0.40	0.23
8.00 or more units	0.74	1.94	0.35	0.16	0.63	2.52	0.39	1.42	0.71	0.24
Total specific labor market preparation Carnegie units										
Zero units	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01–1.99 units	0.02	0.45	0.03	0.02	0.05	0.20	0.01	0.17	0.03	0.22
2.00–3.99 units	0.10	1.09	0.15	0.08	0.14	0.70	0.04	0.55	0.11	0.30
4.00–5.99 units	0.31	1.64	0.33	0.10	0.29	1.44	0.14	1.00	0.29	0.29
6.00 or more units	0.75	1.68	0.38	0.17	0.61	3.15	0.48	1.75	0.92	0.28

First row, first column reads: 1987 public high school graduates earned on average 0.19 Carnegie units in agriculture.

* "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "personal/other."

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, pp. 20–21, and unpublished tabulations from the 1987 High School Transcript Study.

Program Participation: 1987

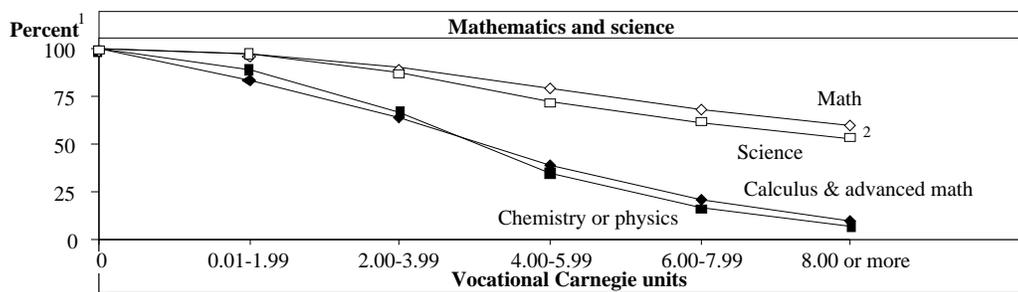
Academic Versus Vocational Course Taking

Table 8 shows how students' academic course-taking patterns in 1987 varied according to the amount of vocational education they took. The table consists of two columns for each academic subject area, with the first column indicating the number of Carnegie units earned in a particular academic subject area by the amount of vocational education taken, and the second column expressing academic Carnegie units earned as a percentage of the academic units earned by students with no vocational units. For example, students with no vocational education units earned an average of 4.3 Carnegie units in English. Students who earned from 0.01 to 1.99 units in vocational education received an average of 4.2 units in English, or 97.9 percent of the units earned by students with no vocational education units.

Compared with students who completed no vocational education courses (about 2 percent of all students), students who earned between 0.01 and 1.99 units in vocational education took about the same amount of English (97.9 percent), mathematics (97.3 percent), science (98.4 percent), and social studies (92.1 percent). However, they earned considerably fewer Carnegie units in calculus and advanced mathematics (83.7 percent) and fine arts (77.7 percent). In short, as figure 8 illustrates, students who accumulated 0.01 to 1.99 units in vocational education tended to accumulate fewer units of advanced or specialized subject than did students who completed no vocational education courses. For students who earned between 2.00 and 3.99 units in vocational education, the same pattern persisted, although to a greater degree. Thus, these students earned only 35.1 percent of the units accumulated in advanced or honors English by students who earned no vocational units, 64.7 percent of the calculus & advanced math units, 66.9 percent of the chemistry or physics units, 57.4 percent of the fine arts units, and 64.0 percent of the foreign language units.

Students who earned between 4.00 and 5.99 vocational units continued to earn fewer units in advanced subjects, but at this level of vocational course taking, students also earned significantly fewer units in the more basic academic courses. Thus, these students earned only 80.0 percent of the mathematics units, 72.6 percent of the science units, and 83.4 percent of the social studies units.

Figure 8—Average number of Carnegie units accumulated in mathematics and science by vocational course takers as a percent of units earned by nonvocational course takers: 1987



¹ Academic Carnegie units earned by 1987 graduates with varying Carnegie units in vocational education are shown as a percent of the academic Carnegie units earned by graduates with exactly zero Carnegie units in vocational education.

² This data point reads: 1987 public high school graduates earning 8.00 or more Carnegie units in vocational education earned 54.2 percent of the Carnegie units in science that graduates who had zero vocational units earned.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987 High School Transcript Study.

Table 8—Average number of Carnegie units accumulated in academic subjects by 1987 public high school graduates, by number of Carnegie units accumulated in vocational education

Total number of vocational Carnegie units	Total English		Advanced or honors English		Total math		Calculus & advanced math		Total science		Chemistry or physics		Social studies		Fine arts		Foreign language	
	Units	Percent*	Units	Percent*	Units	Percent*	Units	Percent*	Units	Percent*	Units	Percent*	Units	Percent*	Units	Percent*	Units	Percent*
Total	4.01		0.41		3.02		0.73		2.51		0.67		3.31		1.42		1.36	
Zero	4.26	100.0	1.48	100.0	3.71	100.0	1.53	100.0	3.25	100.0	1.42	100.0	3.92	100.0	2.82	100.0	2.83	100.0
0.01–1.99	4.17	97.9	0.90	60.8	3.61	97.3	1.28	83.7	3.20	98.4	1.27	89.4	3.61	92.1	2.19	77.7	2.50	88.3
2.00–3.99	4.09	96.0	0.52	35.1	3.36	90.6	0.99	64.7	2.86	88.0	0.95	66.9	3.46	88.3	1.62	57.4	1.81	64.0
4.00–5.99	3.99	93.7	0.25	17.0	2.97	80.0	0.60	39.2	2.36	72.6	0.51	35.9	3.27	83.4	1.27	45.0	1.07	37.8
6.00–7.99	3.91	91.8	0.13	8.8	2.53	68.2	0.32	20.9	2.01	61.8	0.24	16.9	3.11	79.3	1.04	36.9	0.61	21.6
8.00 or more	3.76	88.3	0.10	6.8	2.23	60.1	0.16	10.5	1.76	54.2	0.11	7.8	2.90	74.0	0.66	23.4	0.34	12.0

Third row, first and second columns read: 1987 public high school graduates earning more than zero units and up to 1.99 units in vocational education earned on average 4.17 Carnegie units in English. These 4.17 units represent 97.9 percent of the 4.26 units that graduates who had zero vocational credits earned.

* Academic Carnegie units earned by graduates with greater than zero Carnegie units in vocational education are expressed as a percent of the academic Carnegie units earned by graduates with exactly zero Carnegie units in vocational education.

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, pp. 22–23, and unpublished tabulations, from the 1987 High School Transcript Study.

Program Participation: 1969–1987

Participation in Vocational Education

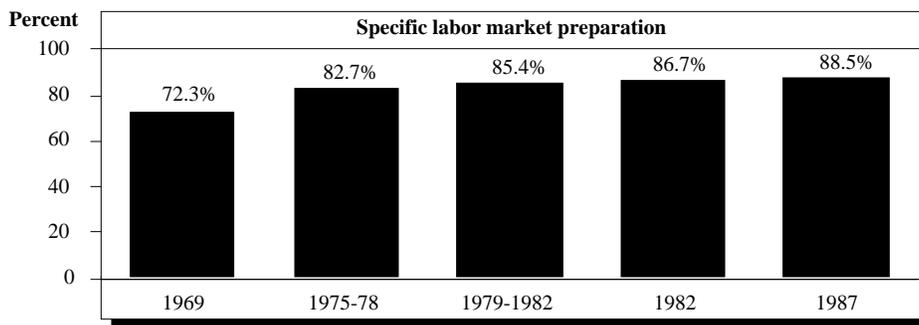
From 1969 to 1987, more than 9 out of 10 high school graduates completed one or more courses in vocational education (table 9). Nevertheless, the percentage did increase from 92 percent in 1969 to 97 percent for graduates from the classes of 1975–1978. Since then the percentage has been about 97 percent to 98 percent.

Growth over the period was greatest for programs in specific labor market preparation and consumer & homemaking education. In 1969, 72 percent of graduates participated in specific labor market programs, and by 1987, this figure had risen to 89 percent (figure 9). The percentage of students taking consumer & homemaking courses grew substantially from 32 percent in 1969 to 49 percent in 1975–1978, and since this period has held steady at about 50 percent. However, the percentage of students taking general labor market courses in 1987 was not significantly different from the percentage taking such courses in 1969.

Over the last two decades, participation by males in female-dominated programs has increased. In 1969, only 7 percent of male graduates had taken any courses in consumer & homemaking education. This figure jumped to 28 percent in 1975–1978, and then climbed to 35 percent in 1979–1982. Since this period, it has held steady. As a result, the gender gap has narrowed in this vocational area.

Comparisons of different racial-ethnic groups are somewhat complicated because the four surveys did not use the same categories for these groups. However, it is interesting to note that in 1969, white students were less likely than black students to have participated in vocational education overall. In specific labor market preparation, for example, only 68 percent of white students participated in 1969, compared with 86 percent of black students. By 1987, this difference disappeared, and white and black students participated in specific labor market preparation courses at similar rates.

Figure 9—Percentage of public high school graduates completing one or more courses in specific labor market preparation: 1969–1987



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1969 Study of Academic Growth and Prediction, National Longitudinal Survey of Labor Force Experience–Youth Cohort, High School and Beyond Sophomore Cohort 1982 Transcript Study, and 1987 High School Transcript Study.

Table 9—Percentage of public high school graduates completing one or more courses in vocational education by type of vocational education, by sex and race–ethnicity: 1969–1987

	All vocational education	Consumer & homemaking education	General labor market preparation	Specific labor market preparation
1969 graduates				
Total	91.9	31.8	76.1	72.3
Male	90.8	6.9	66.8	77.1
Female	92.9	55.2	84.5	68.0
White, non-Hispanic	90.2	30.5	74.4	68.4
Black, non-Hispanic	97.6	39.6	81.6	86.4
Hispanic	100.0	27.8	82.9	86.3
Asian	98.1	18.4	81.6	80.3
Other or unknown	97.2	26.4	82.9	79.2
1975–1978 graduates¹				
Total	96.7	48.6	83.1	82.7
Male	96.4	28.0	76.2	85.7
Female	97.0	66.6	89.2	80.0
Black, non-Hispanic	98.0	62.9	78.6	85.1
Hispanic	97.6	58.1	88.0	84.1
White, non-Hispanic/other	96.5	46.4	83.5	82.3
1979–1982 graduates²				
Total	97.7	51.8	82.3	85.4
Male	97.2	34.8	74.3	87.9
Female	98.2	68.3	90.0	82.9
Black, non-Hispanic	97.9	58.2	78.5	83.8
Hispanic	99.1	50.3	89.2	89.1
White, non-Hispanic/other	97.6	50.8	82.5	85.4
1982 graduates				
Total	97.7	49.9	78.6	86.7
Male	97.5	33.7	71.3	89.5
Female	97.8	65.0	85.4	84.0
White, non-Hispanic	97.2	47.6	79.2	86.2
Black, non-Hispanic	99.2	60.4	76.1	87.0
Hispanic	99.0	55.9	76.9	89.6
Asian	96.0	35.0	78.2	77.9
Native American	99.4	50.6	84.8	93.5
1987 graduates				
Total	97.8	47.1	78.5	88.5
Male	97.9	34.5	73.9	91.3
Female	97.7	59.0	82.9	85.8
White, non-Hispanic	97.8	46.2	79.4	88.2
Black, non-Hispanic	98.7	53.6	77.7	88.3
Hispanic	97.8	51.2	76.5	89.1
Asian	93.6	36.6	69.7	82.8
Native American	98.4	51.1	78.0	92.2

First row, first column reads: Of 1969 public high school graduates, 91.9 percent completed one or more courses in some type of vocational education.

¹ The figures are an average for sampled graduates in the years 1975–1978.

² The figures are an average for sampled graduates in the years 1979–1982.

SOURCE: John Tuma, Antoinette Gifford, Laura Horn, and E. Gareth Hoachlander, *Enrollment Trends in Vocational and Academic Education in American Public High Schools, 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education (Berkeley, CA: MPR Associates, 1989), p. 18, and E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 8, from the 1969 Study of Academic Growth and Prediction, the National Longitudinal Survey of Labor Force Experience–Youth Cohort, the High School and Beyond Sophomore Cohort 1982 Transcript Study, and the 1987 High School Transcript Study.

Program Participation: 1969–1987

Carnegie Units Accumulated in High School

In 1969, high school graduates accumulated a total of 20.5 Carnegie units in all subjects—14.9 units in academic courses, 3.7 units in vocational courses, and 1.9 units in personal use courses (table 10). By 1987, the total number of units had grown to 22.8, or an increase of 11.2 percent (figure 10). Among the different types of curriculum, the only statistically significant increase occurred in the personal use area, where the average number of Carnegie units accumulated grew from 1.9 units in 1969 to 2.7 units in 1987.

In 1969, white students averaged substantially fewer units in vocational education than black and Hispanic students—3.4 units for whites, compared with 4.8 units for blacks and 5.1 units for Hispanics. By 1987, there was relatively little difference in total vocational units for these three groups, with the average ranging from 4.3 units for Hispanic students to 4.5 units for white students.

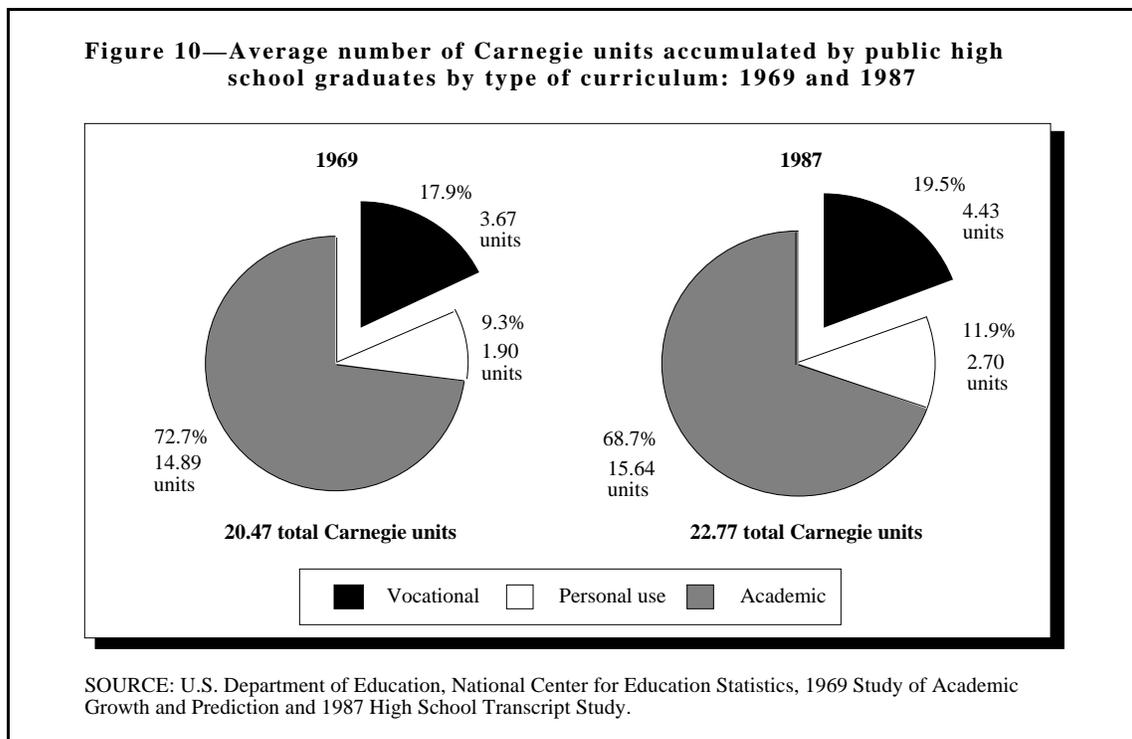


Table 10—Average number of Carnegie units accumulated by public high school graduates by type of curriculum, by sex and race–ethnicity: 1969–1987

	Total	Academic	Vocational	Personal use
1969 graduates				
Total	20.47	14.89	3.67	1.90
Male	20.21	14.94	3.37	1.89
Female	20.68	14.89	3.92	1.87
White, non-Hispanic	20.30	15.22	3.38	1.69
Black, non-Hispanic	20.73	13.53	4.76	2.44
Hispanic	21.77	13.44	5.10	3.22
Asian	22.87	15.61	3.77	3.48
Other or unknown	20.25	14.20	3.96	2.09
1975–1978 graduates¹				
Total	20.77	13.96	4.50	2.30
Male	20.61	13.89	4.34	2.38
Female	20.90	14.02	4.64	2.24
Black, non-Hispanic	20.28	13.21	4.66	2.41
Hispanic	21.31	13.59	4.69	3.03
White, non-Hispanic/other	20.80	14.08	4.47	2.25
1979–1982 graduates²				
Total	21.19	13.90	4.89	2.40
Male	21.10	13.84	4.77	2.49
Female	21.27	13.95	5.00	2.32
Black, non-Hispanic	20.59	13.34	4.78	2.47
Hispanic	21.36	13.49	4.87	3.00
White, non-Hispanic/other	21.28	14.01	4.91	2.36
1982 graduates				
Total	21.34	14.10	4.62	2.59
Male	21.21	13.85	4.61	2.72
Female	21.46	14.33	4.64	2.47
White, non-Hispanic	21.41	14.35	4.52	2.53
Black, non-Hispanic	21.03	13.62	4.79	2.58
Hispanic	21.12	12.92	5.26	2.87
Asian	22.07	15.84	3.13	3.07
Native American	21.32	13.29	5.10	2.90
1987 graduates				
Total	22.77	15.64	4.43	2.70
Male	22.65	15.28	4.52	2.84
Female	22.89	15.98	4.36	2.56
White, non-Hispanic	22.91	15.74	4.52	2.64
Black, non-Hispanic	22.14	14.96	4.47	2.71
Hispanic	22.54	15.07	4.27	3.20
Asian	23.88	17.76	2.92	3.21
Native American	23.15	15.33	4.70	3.13

First row, first column reads: 1969 public high school graduates earned on average a total of 20.47 Carnegie units in all types of curricula.

¹ The figures are an average for sampled graduates in the years 1975–1978.

² The figures are an average for sampled graduates in the years 1979–1982.

SOURCE: John Tuma, Antoinette Gifford, Laura Horn, and E. Gareth Hoachlander, *Enrollment Trends in Vocational and Academic Education in American Public High Schools, 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education (Berkeley, CA: MPR Associates, 1989), pp. 22, 49, and E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 10, from the 1969 Study of Academic Growth and Prediction, the National Longitudinal Survey of Labor Force Experience–Youth Cohort, the High School and Beyond Sophomore Cohort 1982 Transcript Study, and the 1987 High School Transcript Study.

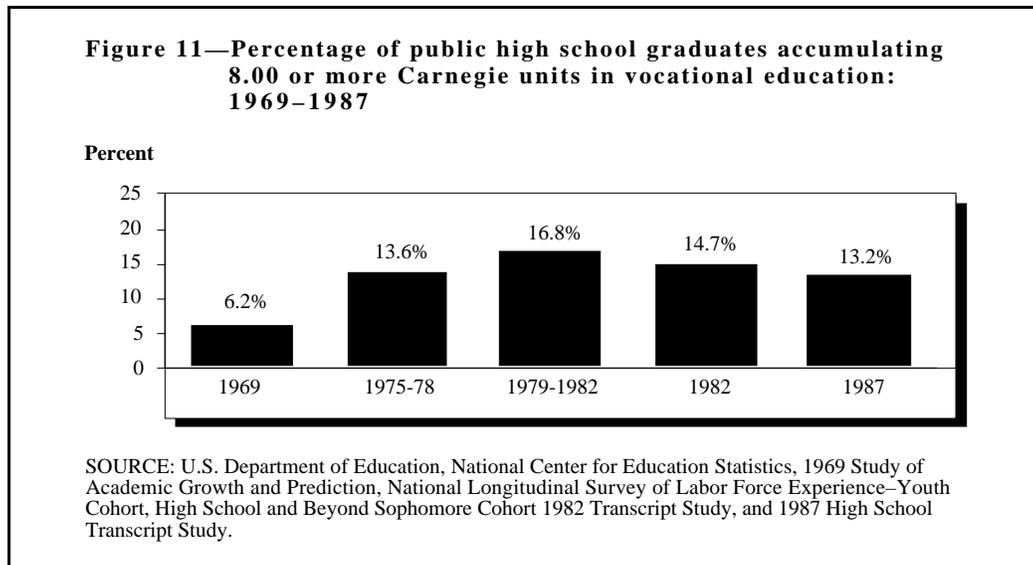
Program Participation: 1969–1987

Carnegie Units in Vocational Education

From 1969 to 1987, the percentage of high school graduates accumulating 8.00 or more Carnegie units in vocational education more than doubled (table 11 and figure 11). In 1969, only 6 percent of graduates accumulated 8.00 or more units, while in 1987, 13 percent earned this amount of vocational education. However, the change occurred primarily during the first decade, with the percentage of graduates accumulating 8.00 or more Carnegie units jumping to 14 percent in 1975–78, and then remaining fairly constant through 1987.⁶

The increase in the percentage of male graduates accumulating 8.00 or more Carnegie units in vocational education was greater than for female graduates. Specifically, 14 percent of male graduates accumulated 8.00 or more Carnegie units in 1987, while only 5 percent accumulated this level in 1969, an increase of 180 percent. In contrast, 13 percent of female graduates accumulated 8.00 or more Carnegie units in 1987, while 8 percent accumulated this level in 1969, an increase of only 60 percent. Although in 1969 male graduates accumulated 8.00 or more Carnegie units at a significantly lower rate than female graduates, by 1987 there was no statistically significant difference in the rates of male and female graduates accumulating this level of vocational units.

The only statistically significant change between 1969 and 1987 among racial-ethnic groups occurred for white graduates. While only 5 percent of white graduates in 1969 accumulated 8.00 or more Carnegie units in vocational education, the percentage increased to 15 percent in 1987.⁷



⁶ The differences in percentages from 1975–78 to 1979–82, 1979–82 to 1982, and 1982 to 1987 were not significant.

⁷ Although the changes for Hispanics and Asians appeared large, they were not statistically significant due to the relatively small number of these students who were sampled in 1969.

Table 11—Percentage of public high school graduates by number of Carnegie units accumulated in vocational education, by sex and race–ethnicity: 1969–1987

	Number of Carnegie units in vocational education									
	0.00	0.01– 0.99	1.00– 1.99	2.00– 2.99	3.00– 3.99	4.00– 4.99	5.00– 5.99	6.00– 6.99	7.00– 7.99	8.00 or more
1969 graduates										
Total	8.1	6.0	14.5	12.4	11.6	10.2	12.1	10.6	8.1	6.2
Male	9.4	6.7	16.5	13.2	11.7	10.3	10.9	9.5	7.3	4.5
Female	7.1	5.6	12.9	11.8	11.5	10.0	13.1	11.7	8.7	7.6
White, non-Hispanic	9.9	7.5	16.3	12.7	11.3	9.3	10.9	10.2	7.3	4.7
Black, non-Hispanic	2.4	1.4	7.9	10.3	11.8	12.4	16.6	13.4	12.1	11.6
Hispanic	0.0	0.0	5.2	10.4	11.7	16.9	18.2	10.4	10.4	16.9
Asian	1.9	1.9	13.3	17.7	20.9	15.2	10.8	5.1	4.4	8.9
Other or unknown	2.9	0.0	14.7	20.6	8.8	11.8	17.6	11.8	5.9	5.9
1975–1978 graduates¹										
Total	3.3	4.0	12.4	11.7	14.0	11.1	11.8	10.3	7.9	13.6
Male	3.6	4.5	14.8	12.3	13.0	10.3	10.6	9.0	8.8	13.2
Female	3.0	3.5	10.3	11.2	14.9	11.7	12.9	11.4	7.1	14.0
Black, non-Hispanic	2.0	1.4	11.3	10.6	14.7	16.1	11.3	10.5	10.6	11.6
Hispanic	2.4	3.0	8.5	12.3	12.6	15.6	10.2	14.1	9.9	11.3
White, non-Hispanic/other	3.5	4.3	12.7	11.8	14.0	10.2	12.0	10.1	7.5	14.0
1979–1982 graduates²										
Total	2.3	3.5	10.1	11.8	11.1	12.2	11.3	11.0	9.8	16.8
Male	2.8	3.6	10.5	13.4	11.6	11.5	11.0	10.4	8.3	17.0
Female	1.8	3.4	9.8	10.3	10.6	12.9	11.6	11.6	11.2	16.6
Black, non-Hispanic	2.1	1.8	8.3	10.2	14.5	16.0	13.7	12.5	8.9	11.8
Hispanic	0.9	3.4	11.4	9.4	13.9	13.1	12.4	10.5	10.7	14.3
White, non-Hispanic/other	2.4	3.8	10.4	12.2	10.4	11.6	10.8	10.8	9.9	17.8
1982 graduates										
Total	2.3	3.8	11.5	12.4	12.4	12.8	11.8	9.8	8.5	14.7
Male	2.5	3.7	11.4	12.9	12.1	13.8	11.1	8.7	9.2	14.5
Female	2.2	4.0	11.5	12.0	12.7	11.8	12.4	10.8	7.9	14.9
White, non-Hispanic	2.8	4.6	12.1	12.6	12.7	12.1	11.3	9.2	8.4	14.4
Black, non-Hispanic	0.8	1.3	10.0	11.5	13.2	16.4	15.1	10.2	7.5	14.1
Hispanic	1.0	1.5	7.9	11.3	10.5	14.4	11.9	12.2	10.0	19.3
Asian	4.0	8.2	20.2	18.4	14.3	13.4	8.3	5.3	3.5	4.5
Native American	0.6	2.7	7.3	11.0	9.1	9.7	20.4	18.0	9.0	12.1
1987 graduates										
Total	2.2	3.5	12.3	14.4	13.0	12.8	11.5	9.1	8.0	13.2
Male	2.1	3.1	11.9	14.5	12.7	12.5	12.3	8.7	8.2	14.0
Female	2.4	3.9	12.6	14.3	13.2	13.2	10.7	9.4	7.9	12.5
White, non-Hispanic	2.2	3.6	12.2	13.9	12.7	12.5	11.2	8.9	8.1	14.8
Black, non-Hispanic	1.3	3.4	10.9	12.6	13.2	14.5	13.6	10.2	9.8	10.7
Hispanic	2.2	2.3	11.4	15.6	14.5	13.5	13.7	10.9	7.5	8.5
Asian	6.4	5.4	20.6	24.2	15.7	10.3	6.3	4.9	2.6	3.6
Native American	1.6	1.4	5.9	14.9	14.3	15.4	15.2	9.8	10.0	11.5

First row, first column reads: Of 1969 public high school graduates, 8.1 percent earned no Carnegie units in vocational education.

¹ The figures are an average for sampled graduates in the years 1975–1978.

² The figures are an average for sampled graduates in the years 1979–1982.

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

SOURCE: John Tuma, Antoinette Gifford, Laura Horn, and E. Gareth Hoachlander, *Enrollment Trends in Vocational and Academic Education in American Public High Schools, 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education (Berkeley, CA: MPR Associates, 1989), p. 18, and E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 12, from the 1969 Study of Academic Growth and Prediction, the National Longitudinal Survey of Labor Force Experience–Youth Cohort studies, the High School and Beyond Sophomore Cohort 1982 Transcript Study, and the 1987 High School Transcript Study.

Program Participation: 1969–1987

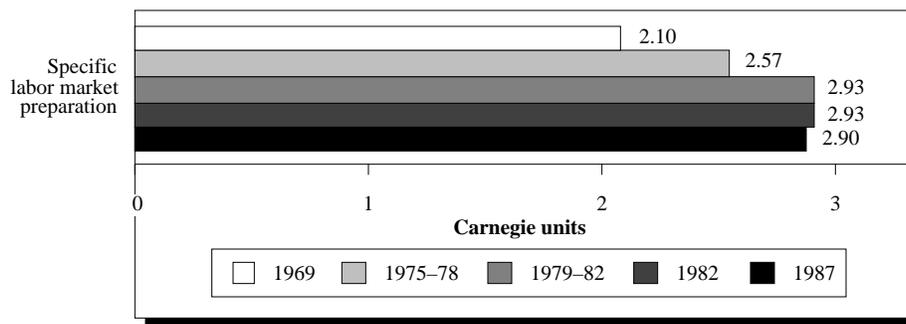
Carnegie Units in Consumer & Homemaking Education, General Labor Market Preparation, and Specific Labor Market Preparation

The average Carnegie units accumulated by high school graduates in specific labor market preparation areas increased from 1969 to 1987 (table 12 and figure 12). While 1969 graduates earned only 2.1 Carnegie units in specific labor market preparation areas, 1987 graduates earned 2.9 units. In addition, the increase occurred primarily between 1969 and 1979–82, with average units remaining relatively constant after this date. The average Carnegie units accumulated in specific labor market preparation increased significantly for female graduates, but the increase for male graduates, while large, was not significant. Similarly, average units increased significantly for white graduates, but not for other racial–ethnic groups.

The average Carnegie units accumulated by graduates in consumer & homemaking education increased from 1969 to 1975–78 and remained relatively constant through 1982. However, the average units accumulated in this vocational education area decreased by the end of the period studied. As a result, the average units accumulated by graduates in 1987 did not differ significantly from those accumulated in 1969. However, the average units accumulated by male graduates increased substantially from 1969 to 1987.

Although the average Carnegie units accumulated by graduates in industrial arts remained basically constant from 1969 to 1987, the units accumulated in career education decreased by more than one-half. In addition, the size of the decrease was greater for black, Hispanic, and Asian graduates than for white graduates. The average units earned in career education dropped during the years 1969 through 1987 from 0.7 to 0.2 for black graduates, from 1.1 to 0.3 for Hispanic graduates, and from 0.8 to 0.1 for Asian graduates. However, the average units accumulated by white graduates dropped only from 0.2 to 0.1 during this period.

Figure 12—Average number of Carnegie units accumulated by public high school graduates in specific labor market preparation courses: 1969–1987



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1969 Study of Academic Growth and Prediction, National Longitudinal Survey of Labor Force Experience–Youth Cohort, High School and Beyond Sophomore Cohort 1982 Transcript Study, and 1987 High School Transcript Study.

Table 12—Average number of Carnegie units accumulated in vocational education by public high school graduates by type of vocational education, by sex and race-ethnicity: 1969–1987

	Consumer & homemaking education	General labor market preparation			Specific labor market preparation
		Industrial arts	Career education	Total	
1969 graduates					
Total	0.48	0.12	0.31	1.10	2.10
Male	0.05	0.23	0.21	0.91	2.41
Female	0.88	0.01	0.36	1.23	1.81
White, non-Hispanic	0.44	0.14	0.17	0.95	1.99
Black, non-Hispanic	0.70	0.04	0.74	1.55	2.51
Hispanic	0.42	0.01	1.09	1.90	2.78
Asian	0.22	0.00	0.80	1.55	2.00
Other or unknown	0.32	0.20	0.51	1.67	1.98
1975–1978 graduates¹					
Total	0.67	0.17	0.38	1.26	2.57
Male	0.21	0.34	0.31	1.11	3.02
Female	1.06	0.02	0.45	1.40	2.18
Black, non-Hispanic	0.96	0.11	0.36	1.23	2.48
Hispanic	0.77	0.10	0.63	1.46	2.46
White, non-Hispanic/other	0.62	0.18	0.37	1.26	2.59
1979–1982 graduates²					
Total	0.69	0.16	0.41	1.27	2.93
Male	0.30	0.28	0.39	1.15	3.33
Female	1.07	0.04	0.42	1.38	2.55
Black, non-Hispanic	0.86	0.11	0.48	1.32	2.59
Hispanic	0.59	0.10	0.83	1.61	2.66
White, non-Hispanic/other	0.66	0.17	0.37	1.24	3.01
1982 graduates					
Total	0.68	0.17	0.18	1.01	2.93
Male	0.30	0.31	0.19	0.96	3.35
Female	1.02	0.04	0.17	1.07	2.55
White, non-Hispanic	0.62	0.16	0.15	0.99	2.90
Black, non-Hispanic	0.90	0.12	0.26	1.03	2.85
Hispanic	0.87	0.24	0.28	1.15	3.24
Asian	0.29	0.11	0.25	0.92	1.92
Native American	0.54	0.22	0.17	1.10	3.46
1987 graduates					
Total	0.60	0.14	0.14	0.93	2.90
Male	0.33	0.25	0.14	0.90	3.29
Female	0.86	0.03	0.14	0.95	2.55
White, non-Hispanic	0.60	0.15	0.12	0.94	2.99
Black, non-Hispanic	0.73	0.13	0.20	0.98	2.77
Hispanic	0.60	0.11	0.25	0.97	2.70
Asian	0.34	0.04	0.11	0.69	1.88
Native American	0.64	0.17	0.05	0.87	3.19

First row, first column reads: 1969 public high school graduates earned on average 0.48 Carnegie units in consumer and homemaking education.

¹ The figures are an average for sampled graduates in the years 1975–1978.

² The figures are an average for sampled graduates in the years 1979–1982.

SOURCE: John Tuma, Antoinette Gifford, Laura Horn, and E. Gareth Hoachlander, *Enrollment Trends in Vocational and Academic Education in American Public High Schools, 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education (Berkeley, CA: MPR Associates, 1989), pp. 52, 67 and E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 14, from the 1969 Study of Academic Growth and Prediction, the National Longitudinal Survey of Labor Force Experience–Youth Cohort, the High School and Beyond Sophomore Cohort 1982 Transcript Study, and the 1987 High School Transcript Study.

Program Participation: 1969–1987

Carnegie Units in Specific Labor Market Preparation

The percentage of high school graduates accumulating 4.00 or more Carnegie units in specific labor market preparation increased significantly from 23 percent in 1969 to 32 percent in 1987 (table 13 and figure 13). The increase occurred primarily from 1969 to 1979–82 and remained fairly constant thereafter. In addition, the specific labor market preparation units accumulated by male and female graduates increased at similar rates during this period, with 28 percent of males in 1969 and 37 percent in 1987 accumulating 4.00 or more units, and with 19 percent of females in 1969 and 27 percent in 1987 accumulating similar units. However, male graduates were more likely than female graduates during all the years studied to accumulate 4.00 or more units. Finally, while the percentage of white graduates accumulating 4.00 or more units in specific labor market preparation increased significantly from 22 percent in 1969 to 33 percent in 1987, the percentage of black, Hispanic, and Asian graduates did not change significantly over this period.

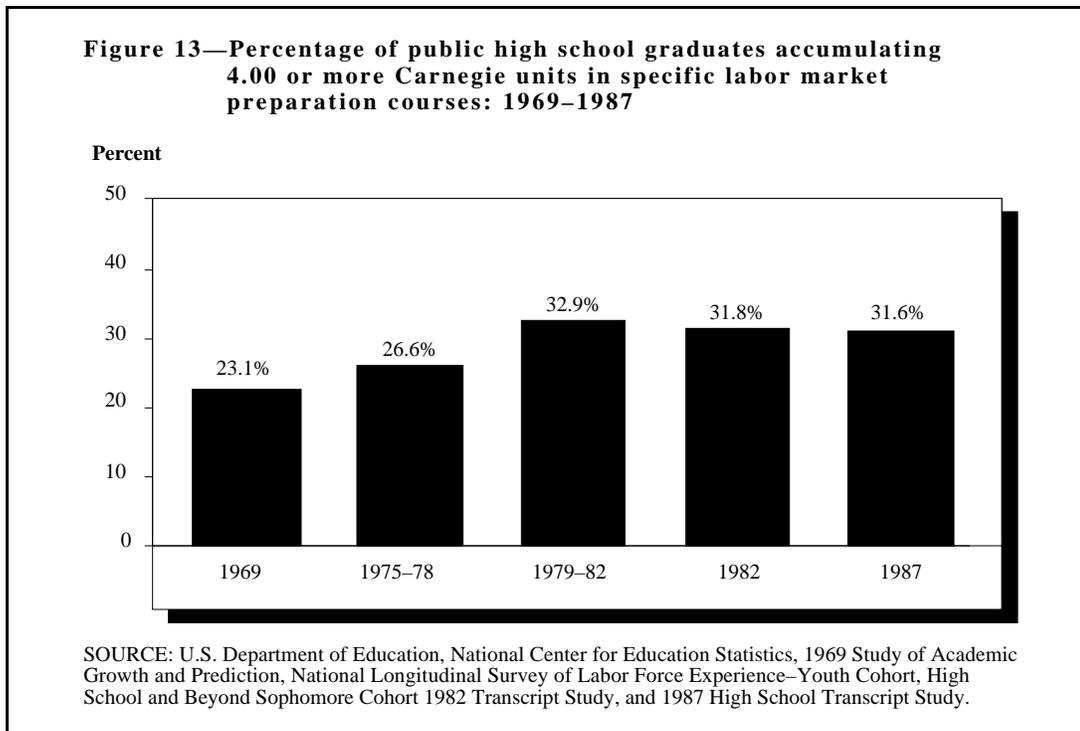


Table 13—Percentage of public high school graduates by number of Carnegie units accumulated in specific labor market preparation courses, by sex and race-ethnicity: 1969–1987

	Number of Carnegie units in specific labor market preparation					
	0.00	0.01– 0.99	1.00– 1.99	2.00– 2.99	3.00– 3.99	4.00 or more
1969 graduates						
Total	27.8	4.8	18.1	14.5	11.7	23.1
Male	23.1	6.5	17.3	14.5	10.7	28.0
Female	32.0	3.4	18.8	14.4	12.7	18.7
White, non-Hispanic	31.8	5.3	17.4	12.7	10.4	22.3
Black, non-Hispanic	13.6	3.1	19.7	20.8	16.6	26.1
Hispanic	14.3	1.3	18.2	18.2	16.9	31.2
Asian	19.6	5.1	25.9	19.0	8.9	21.5
Other or unknown	20.6	8.8	17.6	11.8	23.5	17.6
1975–1978 graduates¹						
Total	17.3	8.5	20.0	15.0	12.5	26.6
Male	14.3	6.7	17.8	15.1	12.5	33.6
Female	20.0	10.1	21.9	14.8	12.6	20.5
Black, non-Hispanic	14.9	8.5	23.3	14.7	15.5	23.2
Hispanic	15.9	9.4	19.8	18.6	11.6	24.6
White, non-Hispanic/other	17.7	8.5	19.6	14.8	12.2	27.1
1979–1982 graduates²						
Total	14.6	6.7	17.8	16.1	11.8	32.9
Male	12.1	6.1	16.9	15.3	11.3	38.3
Female	17.1	7.3	18.6	16.9	12.3	27.7
Black, non-Hispanic	16.2	10.3	20.4	18.0	12.6	26.3
Hispanic	10.9	6.5	18.7	19.6	13.6	26.9
White, non-Hispanic/other	14.6	6.5	17.3	15.6	11.6	34.4
1982 graduates						
Total	13.3	7.4	18.1	16.3	13.1	31.8
Male	10.5	6.7	15.8	15.6	13.6	37.9
Female	16.0	8.1	20.3	16.9	12.6	26.1
White, non-Hispanic	13.8	7.5	18.5	16.1	12.5	31.5
Black, non-Hispanic	13.0	7.2	17.7	18.4	13.8	29.9
Hispanic	10.4	6.6	16.1	15.9	16.1	34.9
Asian	22.1	9.6	21.5	17.8	11.2	17.8
Native American	6.5	3.9	16.5	11.9	16.1	45.1
1987 graduates						
Total	11.5	7.6	20.2	16.1	13.2	31.6
Male	8.7	6.4	18.1	16.2	13.8	36.9
Female	14.2	8.7	22.1	16.0	12.5	26.5
White, non-Hispanic	11.8	7.0	19.5	16.0	13.1	32.8
Black, non-Hispanic	11.7	8.4	19.3	15.3	14.8	30.6
Hispanic	10.9	7.0	21.2	18.5	13.0	29.4
Asian	17.2	11.3	25.8	24.1	9.0	12.7
Native American	7.8	3.1	20.5	17.3	13.8	37.5

First row, first column reads: Of 1969 public high school graduates, 27.8 percent earned no Carnegie units in specific labor market preparation courses.

¹ The figures are an average for sampled graduates in the years 1975–1978.

² The figures are an average for sampled graduates in the years 1979–1982.

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

SOURCE: John Tuma, Antoinette Gifford, Laura Horn, and E. Gareth Hoachlander, *Enrollment Trends in Vocational and Academic Education in American Public High Schools, 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education (Berkeley, CA: MPR Associates, 1989), p. 18, and E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 16, from the 1969 Study of Academic Growth and Prediction, the National Longitudinal Survey of Labor Force Experience–Youth Cohort studies, the High School and Beyond Sophomore Cohort 1982 Transcript Study, and the 1987 High School Transcript Study.

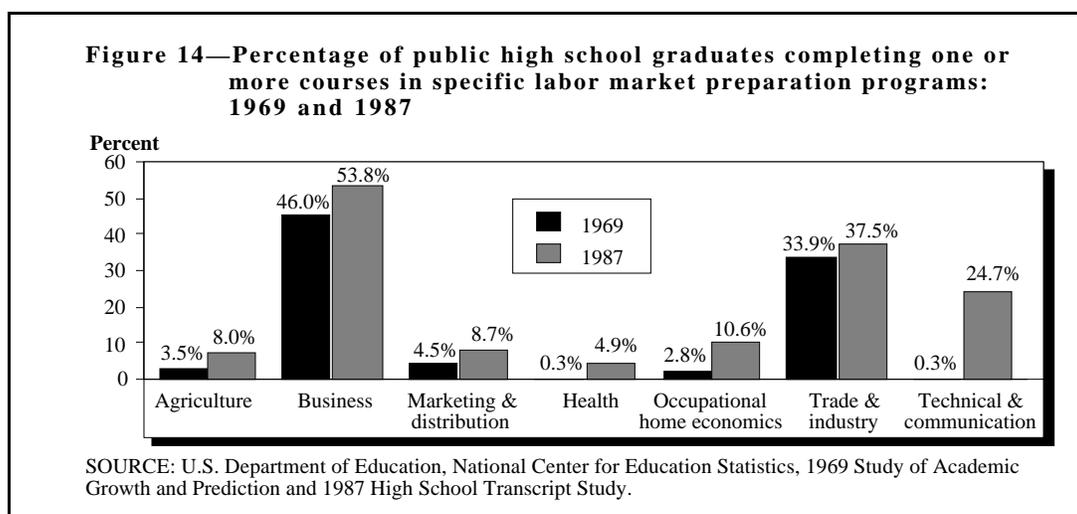
Program Participation: 1969–1987

Participation by Program

In 1969 and in 1987, the two most popular specific labor market preparation programs were business and trade & industry, with 46 percent to 54 percent of high school graduates completing at least one business course and 34 percent to 43 percent completing at least one trade & industry course during the years studied (table 14 and figure 14). However, several other program areas showed significant growth from 1969 to 1987. The percentage of graduates completing at least one course in the technical & communication area increased the most dramatically, from 0 percent in 1969 to 25 percent in 1987. Significant increases also occurred over the same years in health (from 0 percent to 5 percent), occupational home economics (from 3 percent to 11 percent), and marketing & distribution (from 5 percent to 9 percent).

The participation of both male and female graduates increased from 1969 to 1987 in the marketing & distribution, health, occupational home economics, and technical & communication areas. In addition, the participation of males increased significantly over the same time period from 5 percent to 13 percent in agriculture and from 31 percent to 43 percent in business, and the participation of females increased significantly from 6 percent to 15 percent in trade & industry. However, despite the increased participation of both male and female graduates in health, occupational home economics, and technical & communication programs, the gender gap widened in these areas from 1969 to 1987, with health and occupational home economics programs becoming more female-dominated and technical & communication programs more male-dominated.

Increases from 1969 to 1987 in the participation of different racial-ethnic groups in specific labor market preparation courses varied by program area. All groups increased their participation in technical & communication and health program areas over this period.⁸ White, black, and Hispanic graduates increased their participation in occupational home economics. However, only white graduates significantly increased their participation in marketing & distribution and business. Furthermore, only black graduates increased their participation in agriculture, and only Asian graduates decreased their participation in trade & industry.



⁸ “All groups” refers to white, black, Hispanic, and Asian graduates. A comparison between 1969 and 1987 could not be made for Native Americans because data were not reported in 1969 for this group.

Table 14—Percentage of public high school graduates completing one or more courses in specific labor market preparation programs, by sex and race–ethnicity: 1969 to 1987

	Agriculture	Business	Marketing & distribution	Health ¹	Occupational home economics	Trade & industry			Technical & communication	
						Total	Construction	Precision production		Other
1969 graduates										
Total	3.5	46.0	4.5	0.3	2.8	33.9	1.4	31.8	6.0	0.3
Male	5.4	31.0	3.8	0.0	1.2	63.0	3.0	59.1	11.7	0.3
Female	1.8	60.5	5.2	0.6	4.4	6.2	0.0	5.9	0.3	0.3
White, non-Hispanic	4.2	42.5	3.9	0.3	2.8	32.2	1.6	30.0	4.6	0.2
Black, non-Hispanic	1.4	62.6	6.6	0.3	3.2	37.0	1.0	35.3	10.1	0.6
Hispanic	1.3	42.7	9.2	0.0	1.2	54.5	0.0	51.8	18.6	2.7
Asian	0.0	36.6	5.1	0.0	3.2	48.1	0.0	47.5	12.1	1.9
Other or unknown	5.7	44.1	0.0	0.0	2.9	43.9	0.0	41.1	2.9	0.0
1975–1978 graduates²										
Total	8.0	49.7	8.3	2.0	8.1	39.5	5.3	31.9	15.0	13.5
Male	11.5	35.3	9.1	0.6	3.4	68.1	10.9	55.8	28.3	15.0
Female	4.9	62.2	7.6	3.1	12.2	14.5	0.4	11.0	3.4	12.2
Black, non-Hispanic	4.7	50.4	10.3	3.7	12.7	32.6	5.9	20.6	11.7	7.3
Hispanic	7.3	52.1	7.4	1.8	10.7	41.7	4.4	36.2	15.1	11.8
White, non-Hispanic/other	8.4	49.4	8.1	1.8	7.4	40.2	5.3	33.1	15.4	14.4
1979–1982 graduates³										
Total	11.2	50.3	10.2	3.2	9.6	42.8	7.1	34.0	15.4	13.3
Male	16.7	34.6	9.0	0.6	4.0	69.2	13.7	55.7	28.2	15.0
Female	5.8	65.5	11.4	5.8	15.0	17.1	0.6	12.9	3.0	11.6
Black, non-Hispanic	6.4	49.8	10.6	4.3	13.0	37.3	7.0	25.7	11.2	6.6
Hispanic	10.2	54.9	11.1	2.5	7.6	46.4	6.4	36.5	19.1	9.6
White, non-Hispanic/other	12.0	50.1	10.0	3.1	9.1	43.5	7.1	35.2	15.9	14.6
1982 graduates										
Total	9.9	52.9	9.1	4.5	11.5	39.6	7.3	33.2	13.3	12.9
Male	14.7	38.5	8.5	3.2	4.6	69.7	14.1	53.7	25.3	15.2
Female	5.5	66.4	9.6	5.7	17.9	16.3	0.9	14.1	2.2	10.8
White, non-Hispanic	10.2	53.6	8.9	4.0	11.3	38.6	7.1	32.5	13.3	14.1
Black, non-Hispanic	7.2	52.6	12.0	7.2	13.4	36.0	7.7	28.2	8.6	11.0
Hispanic	11.4	53.4	8.4	4.9	12.1	44.8	8.5	37.9	15.3	8.3
Asian	4.3	37.3	3.1	5.0	4.8	45.0	3.8	37.2	13.9	15.2
Native American	15.0	41.2	7.8	5.5	8.7	58.9	7.8	52.6	32.8	6.0
1987 graduates										
Total	8.0	53.8	8.7	4.9	10.6	37.5	5.0	32.4	10.9	24.7
Male	12.5	42.5	7.4	2.7	5.2	61.3	9.9	52.3	20.6	28.2
Female	3.8	64.6	9.9	6.9	15.6	15.2	0.5	13.8	1.8	21.4
White, non-Hispanic	9.4	53.5	8.1	4.5	10.2	37.3	4.8	32.8	10.6	26.8
Black, non-Hispanic	5.8	54.2	9.6	6.1	12.4	33.7	5.6	26.6	8.3	16.9
Hispanic	4.1	53.3	9.6	7.0	10.9	44.6	5.7	38.7	14.1	14.5
Asian	0.4	46.1	8.1	9.5	4.5	30.7	0.8	24.8	9.2	29.8
Native American	10.5	64.7	4.0	7.7	7.2	50.9	11.8	44.7	10.8	20.2

First row, first column reads: Of 1969 public high school graduates, 3.5 percent completed one or more courses in agriculture.

¹ "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "personal/other."

² The figures are an average for sampled graduates in the years 1975–1978.

³ The figures are an average for sampled graduates in the years 1979–1982.

NOTE: Estimates may sum to greater than 100 percent because students may have earned Carnegie units in more than one vocational program area.

SOURCE: John Tuma, Antoinette Gifford, Laura Horn, and E. Gareth Hoachlander, *Enrollment Trends in Vocational and Academic Education in American Public High Schools, 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education (Berkeley, CA: MPR Associates, 1989), and E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, pp. 17–18, from the 1969 Study of Academic Growth and Prediction, the National Longitudinal Survey of Labor Force Experience–Youth Cohort studies, the High School and Beyond Sophomore Cohort 1982 Transcript Study, and the 1987 High School Transcript Study.

Program Participation: 1969–1987

Carnegie Units by Program

In 1969 and 1987, the two specific labor market preparation programs with the highest average accumulated Carnegie units were business and trade & industry, with graduates earning about 1.0 Carnegie unit in these areas throughout the years studied (table 15 and figure 15). However, several other program areas showed significant growth from 1969 to 1987. The average units accumulated by graduates in the technical & communication area increased the most dramatically, from 0.0 units in 1969 to 0.2 units in 1987. Significant increases also occurred over the same period in health from 0.0 to 0.1 units, marketing & distribution from 0.1 to 0.2 units, and agriculture from 0.1 to 0.2 units.

The average units accumulated by both male and female graduates increased from 1969 to 1987 in agriculture, marketing & distribution, health, and technical & communication areas. In addition, the average units accumulated by males in business increased over the same period from 0.4 to 0.6 units. However, despite the increase in Carnegie units earned by both male and female graduates in agriculture, health, and technical & communication programs, the gender gap widened in these areas from 1969 to 1987, with females earning significantly more units in health and males earning significantly more units in agriculture and technical & communication areas.

Increases in the average Carnegie units accumulated by different racial-ethnic groups in specific labor market preparation courses varied by program area. White, black, and Asian graduates accumulated a greater number of units in the technical & communication area in 1987 than in 1969, while white, black, and Hispanic graduates accumulated a greater number of units in health. However, only white and black graduates accumulated a significantly greater number of units in marketing & distribution and agriculture, and only black and Hispanic graduates accumulated a significantly greater number of units in occupational home economics. In contrast, black graduates accumulated fewer units in business, and Hispanic and Asian graduates accumulated fewer units in trade & industry.

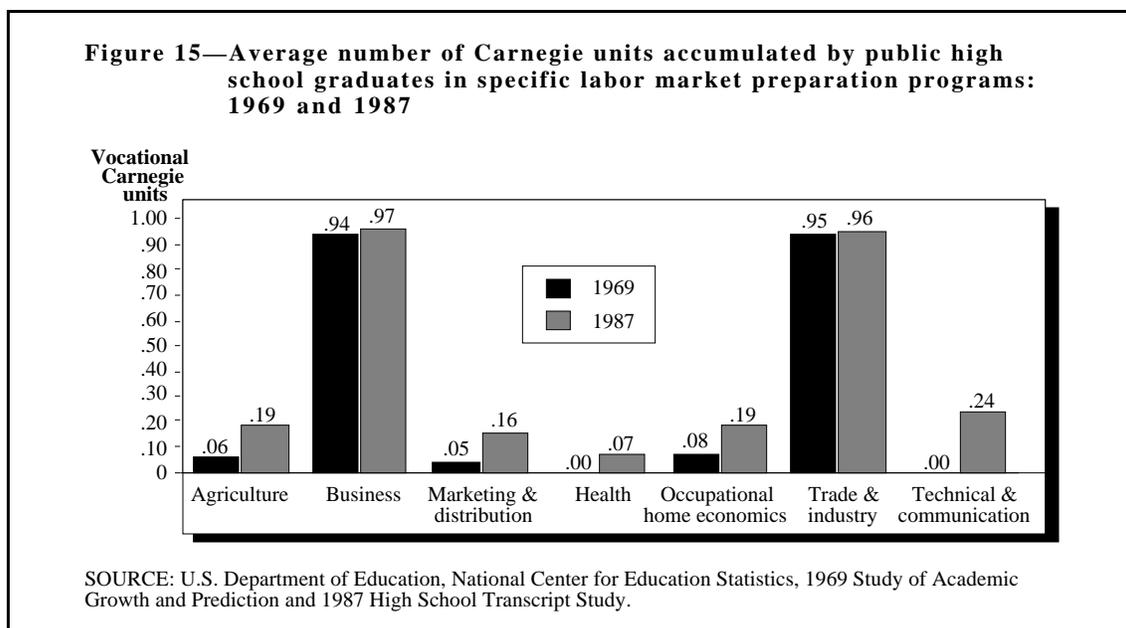


Table 15—Average number of Carnegie units accumulated by public high school graduates in specific labor market preparation programs, by sex and race-ethnicity: 1969 to 1987

	Agriculture	Business	Marketing & distribution	Health ¹	Occupational home economics	Trade & industry				Technical & communication
						Total	Construction	Precision production	Other	
1969 graduates										
Total	0.06	0.94	0.05	0.00	0.08	0.95	0.05	0.78	0.12	0.00
Male	0.12	0.39	0.04	0.00	0.04	1.82	0.09	1.48	0.24	0.00
Female	0.02	1.48	0.06	0.01	0.12	0.13	0.00	0.12	0.01	0.00
White, non-Hispanic	0.08	0.87	0.05	0.00	0.09	0.89	0.05	0.74	0.10	0.00
Black, non-Hispanic	0.01	1.27	0.07	0.00	0.04	1.11	0.02	0.88	0.20	0.00
Hispanic	0.03	0.95	0.10	0.00	0.01	1.67	0.00	1.31	0.37	0.03
Asian	0.00	0.69	0.05	0.00	0.04	1.19	0.00	1.02	0.17	0.02
Other or unknown	0.14	0.85	0.00	0.00	0.06	0.93	0.00	0.82	0.11	0.00
1975–1978 graduates²										
Total	0.15	0.95	0.13	0.04	0.12	0.99	0.11	0.63	0.23	0.09
Male	0.26	0.41	0.15	0.01	0.05	1.91	0.23	1.19	0.45	0.11
Female	0.06	1.43	0.12	0.08	0.17	0.19	0.00	0.13	0.03	0.07
Black, non-Hispanic	0.07	0.94	0.19	0.08	0.29	0.82	0.12	0.37	0.24	0.04
Hispanic	0.14	0.86	0.11	0.04	0.14	1.05	0.08	0.63	0.31	0.06
White, non-Hispanic/other	0.17	0.96	0.13	0.04	0.09	1.01	0.11	0.66	0.22	0.09
1979–1982 graduates³										
Total	0.22	0.96	0.20	0.06	0.15	1.18	0.15	0.69	0.30	0.08
Male	0.35	0.40	0.17	0.01	0.06	2.16	0.30	1.21	0.59	0.09
Female	0.09	1.51	0.23	0.11	0.24	0.23	0.01	0.17	0.02	0.07
Black, non-Hispanic	0.12	0.86	0.20	0.06	0.28	0.94	0.22	0.40	0.27	0.04
Hispanic	0.13	1.03	0.18	0.03	0.10	1.06	0.08	0.63	0.32	0.07
White, non-Hispanic/other	0.24	0.98	0.20	0.06	0.13	1.23	0.15	0.74	0.31	0.09
1982 graduates										
Total	0.21	1.03	0.16	0.05	0.17	1.06	0.13	0.66	0.26	0.11
Male	0.35	0.48	0.14	0.02	0.05	1.98	0.26	1.19	0.53	0.14
Female	0.08	1.54	0.18	0.08	0.29	0.20	0.01	0.17	0.02	0.09
White, non-Hispanic	0.23	1.06	0.15	0.04	0.17	1.00	0.11	0.64	0.25	0.12
Black, non-Hispanic	0.10	0.97	0.22	0.13	0.22	0.97	0.21	0.57	0.20	0.11
Hispanic	0.23	0.99	0.15	0.06	0.20	1.37	0.17	0.84	0.36	0.07
Asian	0.06	0.57	0.04	0.03	0.05	0.87	0.04	0.63	0.20	0.16
Native American	0.26	0.73	0.13	0.07	0.10	1.84	0.20	1.19	0.46	0.05
1987 graduates										
Total	0.19	0.97	0.16	0.07	0.19	0.96	0.11	0.63	0.22	0.24
Male	0.32	0.57	0.13	0.02	0.08	1.74	0.21	1.09	0.43	0.29
Female	0.07	1.35	0.19	0.12	0.29	0.23	0.01	0.20	0.02	0.18
White, non-Hispanic	0.24	0.98	0.15	0.07	0.18	1.01	0.11	0.67	0.23	0.26
Black, non-Hispanic	0.09	0.99	0.17	0.12	0.26	0.75	0.12	0.45	0.18	0.16
Hispanic	0.06	0.98	0.16	0.08	0.17	0.97	0.09	0.63	0.25	0.13
Asian	0.01	0.65	0.16	0.11	0.08	0.44	0.01	0.34	0.09	0.31
Native American	0.19	1.09	0.08	0.09	0.09	1.30	0.23	0.81	0.27	0.21

First row, first column reads: 1969 public high school graduates earned on average 0.06 Carnegie units in agriculture.

¹ "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "personal/other."

² The figures are an average for sampled graduates in the years 1975–1978.

³ The figures are an average for sampled graduates in the years 1979–1982.

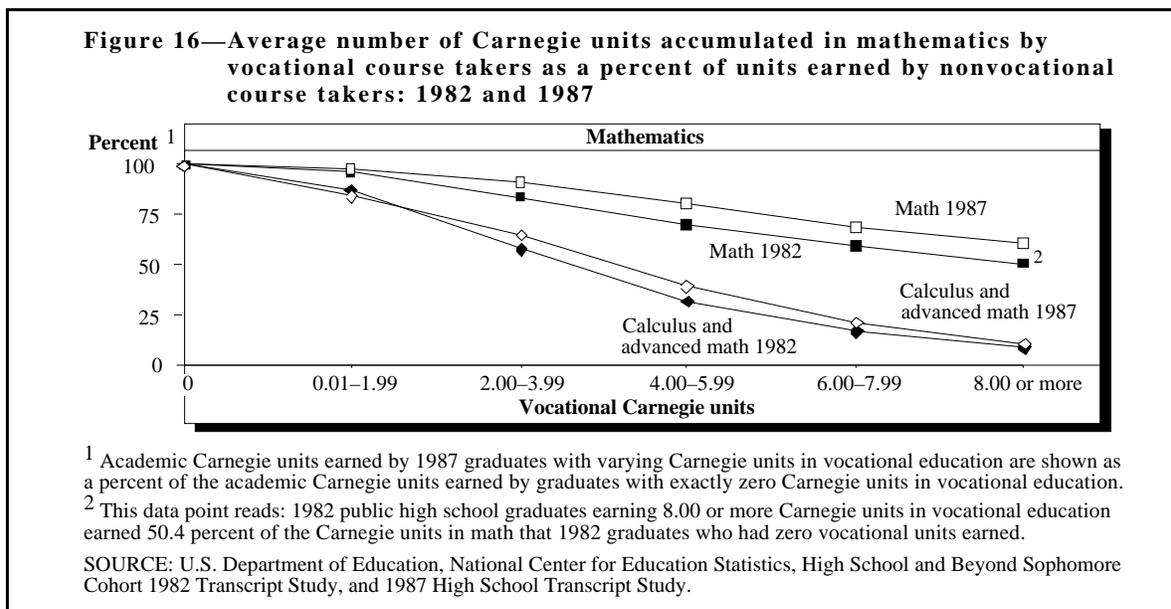
SOURCE: John Tuma, Antoinette Gifford, Laura Horn, and E. Gareth Hoachlander, *Enrollment Trends in Vocational and Academic Education in American Public High Schools, 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education (Berkeley, CA: MPR Associates, 1989), pp. 57–59, 68, and E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, pp. 20–21, from the 1969 Study of Academic Growth and Prediction, the National Longitudinal Survey of Labor Force Experience–Youth Cohort studies, the High School and Beyond Sophomore Cohort 1982 Transcript Study, and the 1987 High School Transcript Study.

Program Participation: 1969–1987

Academic Versus Vocational Course Taking

The average number of Carnegie units accumulated by all high school graduates increased in most academic subjects areas from 1982 to 1987, with the greatest increases occurring in math and science and in foreign languages (table 16). Graduates accumulated 3.0 units in math in 1987 in contrast with only 2.5 units in 1982, 2.5 units in science in 1987 in contrast with only 2.2 units in 1982, and 1.4 units in foreign languages in 1987 in contrast with only 1.0 units in 1982.⁹ The only academic subject area where high school graduates did not accumulate a significantly greater number of units by 1987 was in fine arts.

Graduates who took no vocational education courses accumulated a similar level of Carnegie units in 1987 as they did in 1982 in all academic subjects except one.¹⁰ Graduates who accumulated zero vocational units earned a significantly greater number of units in advanced or honors English by 1987. In contrast, graduates who took a moderate amount of vocational education, accumulating between 2.00 and 5.99 vocational units, earned a significantly greater number of units in all academic subject areas except fine arts and social studies.¹¹ Finally, graduates who accumulated 8.00 or more vocational units earned a greater number of units in 1987 in English, math, science, and foreign languages than they did in 1982. As figure 16 illustrates, 1987 graduates who accumulated 8.00 or more vocational units earned 60.1 percent of the units accumulated in math by their counterparts with no vocational units, while 1982 graduates who accumulated 8.00 or more vocational units earned only 50.4 percent of the units accumulated in math by their counterparts with no vocational units.



⁹ The increase in units accumulated in math, science, and foreign languages was significantly greater than the change in all other subject areas with one exception. The increase in units accumulated in science was not statistically greater than the increase in units accumulated in advanced or honors English.

¹⁰ Since the number of graduates who took no vocational education was small, the differences between 1982 and 1987 in the academic units they accumulated were generally not statistically significant.

¹¹ In fact, graduates who accumulated 2.00–3.99 vocational units did earn a significantly greater number of units in social studies in 1987.

Table 16—Average number of Carnegie units accumulated in academic subjects by public high school graduates, by number of Carnegie units accumulated in vocational education: 1982 and 1987

Total number of vocational Carnegie units	Total English		Advanced or honors English		Total math		Calculus & advanced math		Total science		Chemistry or physics		Social studies		Fine arts		Foreign language	
	Units	Percent*	Units	Percent*	Units	Percent*	Units	Percent*	Units	Percent*	Units	Percent*	Units	Percent*	Units	Percent*	Units	Percent*
1982 graduates																		
Total	3.86		0.21		2.53		0.56		2.15		0.50		3.15		1.45		0.97	
Zero	4.05	100.0	0.67	100.0	3.47	100.0	1.32	100.0	3.25	100.0	1.37	100.0	3.25	100.0	2.55	100.0	2.48	100.0
0.01–1.99	4.13	102.0	0.42	62.7	3.34	96.2	1.15	87.1	2.99	92.0	1.11	81.0	3.33	102.5	2.05	80.4	2.03	81.8
2.00–3.99	3.97	98.0	0.26	38.2	2.89	83.3	0.77	58.3	2.47	76.0	0.68	49.6	3.30	101.5	1.77	69.4	1.31	52.8
4.00–5.99	3.83	94.6	0.15	22.4	2.40	69.2	0.42	31.8	1.97	60.6	0.34	24.8	3.20	98.5	1.35	52.9	0.69	27.8
6.00–7.99	3.72	91.8	0.09	13.4	2.04	59.0	0.23	17.4	1.68	51.7	0.17	12.4	3.02	92.9	1.08	42.4	0.36	14.5
8.00 or more	3.55	87.6	0.08	12.0	1.75	50.4	0.13	9.8	1.46	44.9	0.10	7.3	2.79	85.8	0.73	28.6	0.23	9.3
1987 graduates																		
Total	4.01		0.41		3.02		0.73		2.51		0.67		3.31		1.42		1.36	
Zero	4.26	100.0	1.48	100.0	3.71	100.0	1.53	100.0	3.25	100.0	1.42	100.0	3.92	100.0	2.82	100.0	2.83	100.0
0.01–1.99	4.17	97.9	0.90	60.8	3.61	97.3	1.28	83.7	3.20	98.4	1.27	89.4	3.61	92.1	2.19	77.7	2.50	88.3
2.00–3.99	4.09	96.0	0.52	35.1	3.36	90.6	0.99	64.7	2.86	88.0	0.95	66.9	3.46	88.3	1.62	57.4	1.81	64.0
4.00–5.99	3.99	93.7	0.25	17.0	2.97	80.0	0.60	39.2	2.36	72.6	0.51	35.9	3.27	83.4	1.27	45.0	1.07	37.8
6.00–7.99	3.91	91.8	0.13	8.8	2.53	68.2	0.32	20.9	2.01	61.8	0.24	16.9	3.11	79.3	1.04	36.9	0.61	21.6
8.00 or more	3.76	88.3	0.10	6.8	2.23	60.1	0.16	10.5	1.76	54.2	0.11	7.8	2.90	74.0	0.66	23.4	0.34	12.0

Third row, first and second columns read: 1982 public high school graduates earning more than zero units and up to 1.9 units in vocational education earned on average 4.13 Carnegie units in English. These 4.13 units represent 102 percent of the 4.05 units that graduates who had zero vocational credits earned.

* Academic Carnegie units earned by graduates with greater than zero Carnegie units in vocational education are expressed as a percent of the academic Carnegie units earned by graduates with exactly zero Carnegie units in vocational education.

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, pp. 22–23, from the High School and Beyond Sophomore Cohort 1982 High School Transcript Study and the 1987 High School Transcript Study.

Student Outcomes

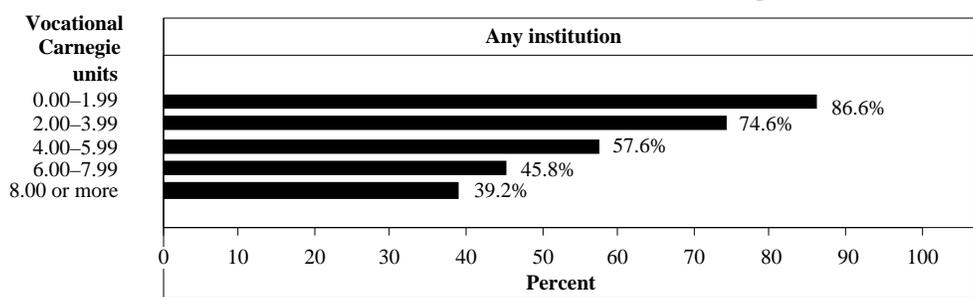
Attendance at Postsecondary Institutions

About 62 percent of students who graduated from public high school in 1982 attended at least one postsecondary institution by 1984 (table 17). Generally, students who accumulated higher levels of Carnegie units in vocational education were less likely to attend a postsecondary institution. While 87 percent of 1982 graduates who accumulated 0.00 to 1.99 Carnegie units in vocational education in high school attended at least one postsecondary institution by 1984, only 39 percent of graduates who accumulated 8.00 or more units attended a postsecondary institution by that year (figure 17). The pattern continued for public 2-year, public 4-year, and private 4-year institutions. However, students who concentrated in vocational education in high school were actually more likely to attend a less-than-2-year institution.

Male and female graduates who accumulated 8.00 or more Carnegie units in vocational education in high school were significantly less likely than their counterparts with 0.00 to 1.99 units to attend any postsecondary institution, or to attend a public or private 4-year institution. In addition, male graduates with 8.00 or more vocational units were statistically more likely than their counterparts with 0.00 to 1.99 units to attend a less-than-2-year institution.

White and Hispanic graduates who accumulated 8.00 or more vocational units in high school were less likely to attend any postsecondary institution than their counterparts accumulating 0.00 to 1.99 units. Similarly, black graduates with 8.00 or more vocational units were significantly less likely than those with 0.00 to 1.99 units to attend a private 4-year institution. Asian and Native American graduates with 4.00 or more vocational units were less likely than their counterpart with 0.00 to 3.99 units to attend a public 4-year institution. However, Asian graduates with 4.00 or more vocational units were actually more likely than those with fewer units to attend a public 2-year institution. Finally, black and Hispanic graduates with 0.00 to 1.99 vocational units were less likely than white graduates with the same level of vocational education to attend any postsecondary institution.

Figure 17—Percentage of 1982 public high school graduates who attended one or more postsecondary institutions by 1984, by number of Carnegie units accumulated in vocational education in high school¹



¹ This figure should not be interpreted as indicating that students opt not to attend postsecondary education because they earned a large number of Carnegie units in vocational programs. Instead, some students might have earned large numbers of Carnegie units in vocational courses because they had no plans for postsecondary education.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Base Year through Second Followup surveys.

Table 17—Percentage of 1982 public high school graduates who attended one or more postsecondary institutions by 1984 by type of institution, by sex, race–ethnicity, and number of Carnegie units accumulated in vocational education in high school

Number of vocational Carnegie units	Any institution	Less-than-2-year	Public 2-year	Private 4-year	Public 4-year
Total, overall	61.9	12.3	23.0	10.6	25.8
0.00–1.99	86.6	7.5	24.5	24.2	47.7
2.00–3.99	74.6	11.3	27.0	13.6	34.8
4.00–5.99	57.6	13.6	24.1	7.2	21.5
6.00–7.99	45.8	14.9	19.5	4.3	12.7
8.00 or more	39.2	14.1	16.9	3.1	8.9
Sex					
Male					
0.00–1.99	83.8	5.8	20.8	22.3	48.4
2.00–3.99	73.4	8.9	30.0	13.1	33.7
4.00–5.99	51.3	9.0	21.1	7.1	21.7
6.00–7.99	42.3	13.0	17.2	3.5	12.2
8.00 or more	34.4	13.1	14.1	2.5	8.6
Female					
0.00–1.99	89.2	9.2	28.1	25.9	47.1
2.00–3.99	75.8	13.5	24.2	14.2	35.8
4.00–5.99	63.8	18.0	27.0	7.3	21.4
6.00–7.99	48.9	16.6	21.5	5.0	13.0
8.00 or more	43.5	15.1	19.4	3.6	9.2
Race–ethnicity					
White, non-Hispanic					
0.00–1.99	89.1	7.3	24.0	25.9	49.9
2.00–3.99	78.1	11.2	27.5	14.8	37.1
4.00–5.99	61.1	13.4	24.2	8.1	24.9
6.00–7.99	46.3	15.1	20.1	3.9	12.8
8.00 or more	37.2	12.4	17.2	3.6	7.7
Black, non-Hispanic					
0.00–1.99	68.9	12.6	15.5	16.6	37.2
2.00–3.99	68.2	14.7	24.5	12.6	29.8
4.00–5.99	56.7	18.0	22.7	6.1	19.5
6.00–7.99	55.5	19.3	17.7	7.2	17.4
8.00 or more	50.5	20.5	15.0	1.9	18.3
Hispanic					
0.00–1.99	75.8	6.4	37.1	14.7	32.5
2.00–3.99	57.5	9.9	25.3	7.6	19.9
4.00–5.99	40.3	9.7	22.5	4.7	7.9
6.00–7.99	32.0	7.6	16.6	3.0	7.8
8.00 or more	37.9	18.3	14.1	1.4	7.6
Asian*					
0.00–3.99	89.4	6.0	35.3	14.3	56.6
4.00 or more	81.6	11.4	58.3	6.7	21.8
Native American*					
0.00–3.99	59.3	6.0	25.0	9.2	30.5
4.00 or more	51.0	25.2	19.6	2.1	9.3

First row, first column reads: Of all 1982 public high school graduates, 61.9 percent attended a postsecondary institution by 1984.

*The vocational Carnegie units categories for Asians and Native Americans were collapsed because of the small number of these graduates included in the sample.

NOTE: The percentages in the “any institution” column may be smaller than the sum of the percentages in the other four columns because some students attended more than one type of institution.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Base Year through Second Followup surveys.

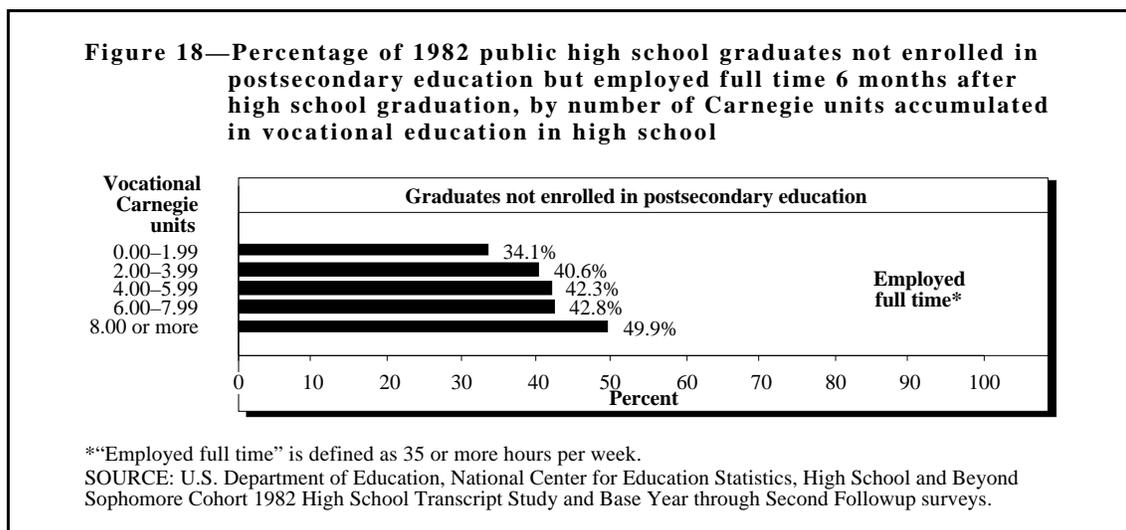
Student Outcomes

Labor Market Participation of High School Graduates Not Enrolled in Postsecondary Education

Of 1982 public high school graduates who were not enrolled in postsecondary education 6 months after graduation, 43 percent reported they were working full time, 18 percent were working part time, 10 percent were unemployed, and 29 percent were not in the labor force (table 18).¹² In addition, participation in vocational education in high school was positively related with full-time employment. While only one-third (34 percent) of graduates who accumulated 0.00 to 1.99 Carnegie units in vocational education reported they were employed full time, about one-half (50 percent) of graduates who accumulated 8.00 or more units reported full-time employment (figure 18). In contrast, participation in vocational education in high school was inversely related with part-time employment.¹³

Male graduates accumulating 8.00 or more Carnegie units in vocational education were more likely than their counterparts with 0.00 to 1.99 units to be employed full time. In addition, female graduates who accumulated 8.00 or more Carnegie units in vocational education were less likely than male graduates with the same level of vocational education to be employed full time (43 percent versus 57 percent).

When looking at labor market participation by racial-ethnic group, generally differences were not statistically significant because of the relatively small number of non-white graduates included in the study. However, white graduates with 8.00 or more Carnegie units in vocational education were more likely to be employed full time (53 percent versus 35 percent) and were less likely to be employed part time (16 percent versus 30 percent) than their counterparts with 0.00 to 1.99 units. In addition, black graduates generally appeared more likely than white graduates to be unemployed, although the difference was only significant for graduates earning 6.00 or more Carnegie units in vocational education.



¹² Enrollment status was based on whether a graduate was attending and taking classes for credit at any school at the point 6 months after high school graduation.

¹³ Although less vocational education in high school appeared to be associated with not being in the labor force, the relationship was not statistically significant.

Table 18—Percentage of 1982 public high school graduates not enrolled in postsecondary education 6 months after high school graduation by labor market participation, by sex, race–ethnicity, and number of Carnegie units accumulated in vocational education in high school

Number of vocational Carnegie units	Labor market participation*			
	Employed full time	Employed part time	Unemployed	Not in labor force
Total, overall	43.1	18.1	9.7	29.1
0.00–1.99	34.1	24.5	8.9	32.5
2.00–3.99	40.6	22.0	7.0	30.4
4.00–5.99	42.3	16.9	10.7	30.1
6.00–7.99	42.8	17.5	10.0	29.8
8.00 or more	49.9	14.6	10.5	25.0
Sex				
Male				
0.00–1.99	38.9	20.7	8.3	32.2
2.00–3.99	45.8	19.8	6.2	28.1
4.00–5.99	50.1	13.5	10.4	26.0
6.00–7.99	53.3	10.8	10.2	25.7
8.00 or more	57.0	11.8	8.3	22.9
Female				
0.00–1.99	28.4	29.0	9.7	32.9
2.00–3.99	35.1	24.3	7.8	32.8
4.00–5.99	33.2	20.9	11.0	34.9
6.00–7.99	31.9	24.3	9.9	33.9
8.00 or more	42.7	17.6	12.7	27.0
Race–ethnicity				
White, non-Hispanic				
0.00–1.99	35.2	29.5	4.9	30.4
2.00–3.99	45.0	22.2	5.3	27.5
4.00–5.99	46.2	21.0	7.9	24.9
6.00–7.99	46.5	18.2	8.0	27.3
8.00 or more	52.5	15.8	7.4	24.3
Black, non-Hispanic				
0.00–1.99	24.7	15.9	25.3	34.1
2.00–3.99	25.1	25.8	10.9	38.3
4.00–5.99	35.0	5.8	17.8	41.4
6.00–7.99	27.6	6.8	21.6	44.0
8.00 or more	32.9	7.6	35.0	24.5
Hispanic				
0.00–1.99	41.8	9.8	10.2	38.2
2.00–3.99	37.8	18.9	11.5	31.7
4.00–5.99	36.3	14.3	10.8	38.5
6.00–7.99	28.8	22.3	13.3	35.7
8.00 or more	48.7	14.1	9.8	27.4
Asian				
0.00–3.99	12.7	28.5	9.7	49.1
4.00 or more	—	—	—	—
Native American				
0.00–3.99	40.7	11.3	10.1	37.9
4.00 or more	46.1	8.5	22.5	22.9

First row, first column reads: Of 1982 high school graduates not enrolled in postsecondary education 6 months after high school graduation, 43.1 percent were participating full time in the labor force.

* “Employed full time” is defined as 35 or more hours per week, while “employed part time” is less than 35 hours per week.

“Unemployed” is defined as being without a job and looking for work, while “not in labor force” is being without a job but not looking for work.

— Sample size too small for reliable estimate.

NOTE: Estimates may not sum to 100 percent 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 Base Year through Second Followup surveys.

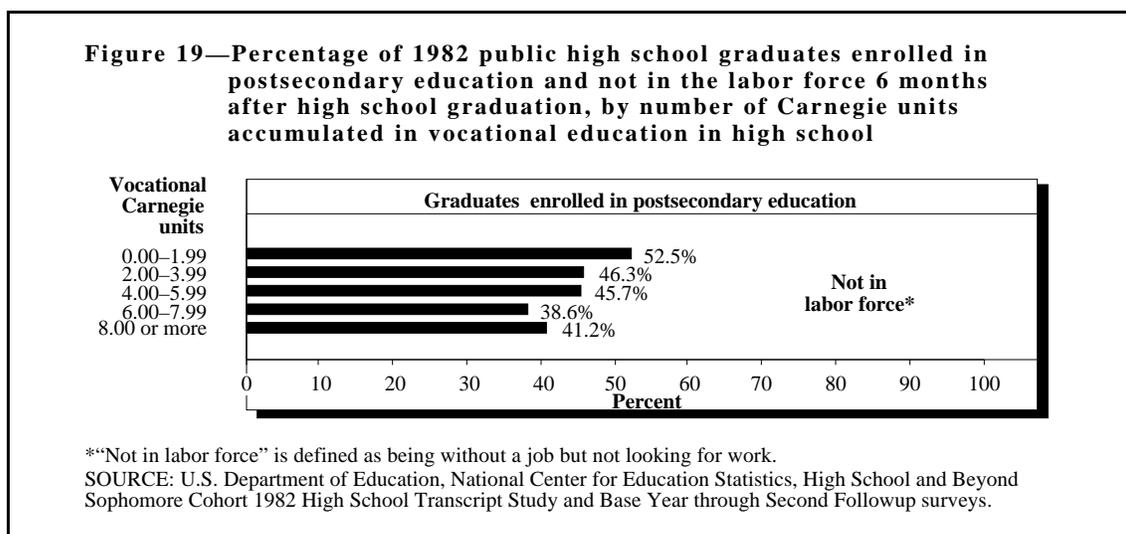
Student Outcomes

Labor Market Participation of High School Graduates Enrolled in Postsecondary Education

Of 1982 public high school graduates who were enrolled in postsecondary education 6 months after graduation, 16 percent reported they were working full time, 33 percent were working part time, 4 percent were unemployed, and 47 percent were not in the labor force (table 19).¹⁴ Participation in vocational education in high school was positively related to being in the labor force (figure 19). While 59 percent of graduates who accumulated 8.00 or more Carnegie units in vocational education reported they were either employed full time, part time, or were unemployed, only 48 percent of graduates who accumulated 0.00 to 1.99 units reported they were in the labor force.¹⁵

Both male and female graduates followed the labor force participation patterns described above. However, the differences between graduates who accumulated 8.00 or more Carnegie units in vocational education and those who accumulated only 0.00 to 1.99 units were not statistically significant. In addition, no significant differences were observed in labor market participation between male and female graduates with the same levels of vocational education.

When looking at labor market participation by racial-ethnic group, generally differences were not statistically significant because of the relatively small number of non-white graduates included in the study. However, white graduates with 8.00 or more Carnegie units in vocational education were more likely than their counterparts with 0.00 to 1.99 units to be in the labor force (63 percent versus 48 percent). Similarly, Asian graduates with 4.00 or more Carnegie units in vocational education were more likely than Asian graduates with 0.00 to 1.99 units to be labor force participants (61 percent versus 43 percent).



¹⁴ Enrollment status was based on whether a graduate was attending and taking classes for credit at any school at the point 6 months after high school graduation.

¹⁵ Although participation in vocational education in high school appeared to be positively related to full-time employment, the relationship was not statistically significant.

Table 19—Percentage of 1982 public high school graduates enrolled in postsecondary education 6 months after high school graduation by labor market participation, by sex, race–ethnicity, and number of Carnegie units accumulated in vocational education in high school

Number of vocational Carnegie units	Labor market participation*			
	Employed full time	Employed part time	Unemployed	Not in labor force
Total, overall	16.1	33.1	4.3	46.5
0.00–1.99	14.0	30.7	2.9	52.5
2.00–3.99	15.0	35.0	3.7	46.3
4.00–5.99	18.2	31.4	4.8	45.7
6.00–7.99	16.6	37.6	7.2	38.6
8.00 or more	21.2	31.9	5.7	41.2
Sex				
Male				
0.00–1.99	16.5	26.6	2.6	54.4
2.00–3.99	19.2	32.2	2.9	45.8
4.00–5.99	22.0	28.2	3.9	45.9
6.00–7.99	20.8	36.1	7.2	35.9
8.00 or more	28.3	24.6	5.7	41.4
Female				
0.00–1.99	11.9	34.2	3.1	50.9
2.00–3.99	11.4	37.4	4.5	46.8
4.00–5.99	15.2	33.8	5.5	45.5
6.00–7.99	13.9	38.5	7.2	40.4
8.00 or more	16.5	36.7	5.7	41.1
Race–ethnicity				
White, non-Hispanic				
0.00–1.99	14.2	31.1	2.5	52.2
2.00–3.99	15.2	37.9	2.9	44.1
4.00–5.99	20.3	32.2	2.5	45.1
6.00–7.99	17.7	41.9	5.0	35.4
8.00 or more	19.8	37.8	5.6	36.9
Black, non-Hispanic				
0.00–1.99	11.2	27.8	9.5	51.5
2.00–3.99	12.7	18.2	11.5	57.6
4.00–5.99	11.7	25.5	14.3	48.6
6.00–7.99	8.0	22.2	16.2	53.6
8.00 or more	26.7	7.7	8.8	56.9
Hispanic				
0.00–1.99	16.1	29.2	2.8	51.9
2.00–3.99	16.3	31.2	2.0	50.4
4.00–5.99	13.5	32.0	9.8	44.7
6.00–7.99	19.9	32.6	10.8	36.7
8.00 or more	17.0	27.1	4.0	51.9
Asian				
0.00–3.99	9.2	29.8	4.2	56.8
4.00 or more	9.2	45.1	6.3	39.3
Native American				
0.00–3.99	—	—	—	—
4.00 or more	18.7	12.6	15.8	53.0

First row, first column reads: Of 1982 public high school graduates enrolled in postsecondary education 6 months after high school graduation, 16.1 percent were participating full time in the labor force.

* “Employed full time” is defined as 35 or more hours per week, while “employed part time” is less than 35 hours per week.

“Unemployed” is defined as being without a job and looking for work, while “not in labor force” is being without a job but not looking for work.

— Sample size too small for reliable estimate.

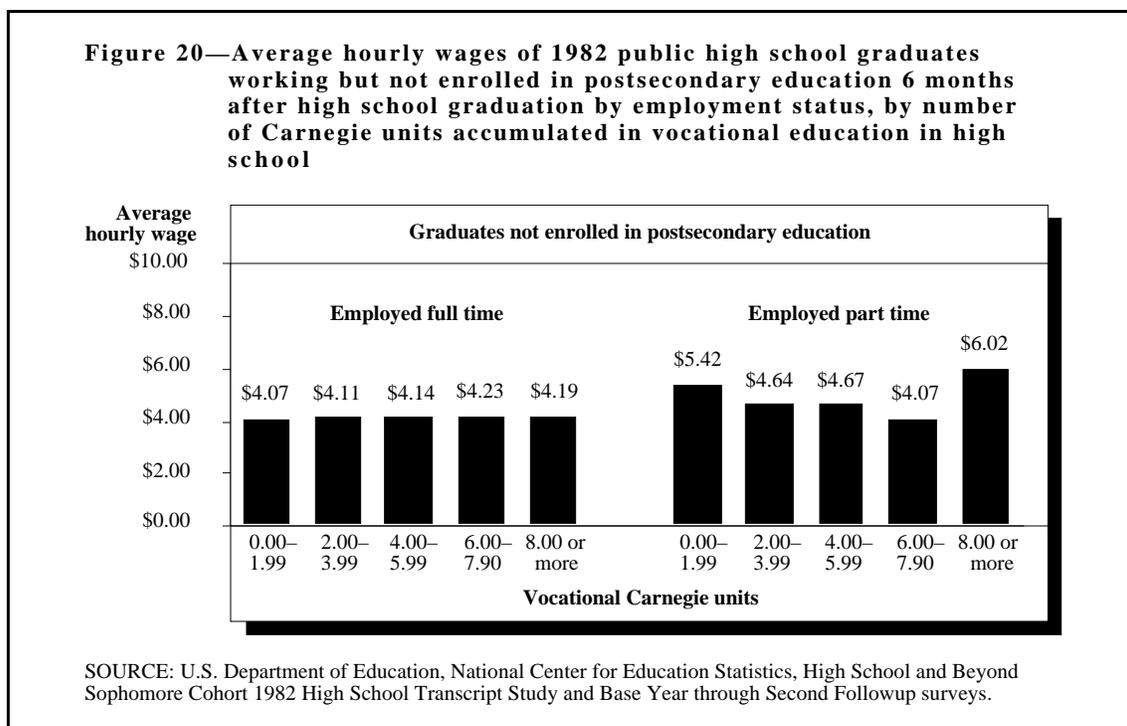
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Base Year through Second Followup surveys.

Student Outcomes

Average Hourly Wages of High School Graduates Not Enrolled in Postsecondary Education

Table 20 shows the average hourly wages of 1982 public high school graduates who were not enrolled in postsecondary education 6 months after graduation.¹⁶ Overall, graduates who were working part time earned significantly higher average hourly wages than those who were working full time (\$4.84 versus \$4.17 an hour).¹⁷ However, the amount of vocational preparation a student had in high school did not make a large or significant difference in the full-time wages earned by graduates (figure 20). Although part-time workers who accumulated a moderate amount of vocational Carnegie units (2.00 to 7.99 units) appeared to earn less than part-time workers with either a little (0.00 to 1.99 units) or a lot (8.00 units or more) of vocational preparation, the differences were not significant.

When examining the patterns separately for male and female graduates and for different racial-ethnic groups, wages once again did not vary significantly with the amount of vocational preparation in high school. However, female graduates who accumulated 8.00 or more Carnegie units in vocational education earned \$0.89, or 20 percent, less than what male graduates with the same level of vocational units earned (\$3.68 versus \$4.57).



¹⁶ Enrollment in a postsecondary institution was determined according to student questionnaire responses. The 1982 high school graduates indicated whether or not they had attended and taken classes for credit at any school after they left high school, and they indicated the type of school and dates attended. Enrollment status was examined at the point 6 months after high school graduation.

¹⁷ Those individuals working part time might actually receive less compensation on average because they might be less likely to receive benefits such as health insurance. In addition, differences in certain characteristics, such as socioeconomic status and grades, might be partly responsible for wage differences.

Table 20—Average hourly wages of 1982 public high school graduates working but not enrolled in postsecondary education 6 months after high school graduation by employment status, by sex, race–ethnicity, and number of Carnegie units accumulated in vocational education in high school

Number of vocational Carnegie units	Employed	
	Full time*	Part time*
Total, overall	\$4.17	\$4.84
0.00–1.99	4.07	5.42
2.00–3.99	4.11	4.64
4.00–5.99	4.14	4.67
6.00–7.99	4.23	4.07
8.00 or more	4.19	6.02
Sex		
Male		
0.00–1.99	4.22	5.93
2.00–3.99	4.16	5.32
4.00–5.99	4.32	5.12
6.00–7.99	4.40	4.72
8.00 or more	4.57	7.21
Female		
0.00–1.99	3.82	4.98
2.00–3.99	4.06	4.05
4.00–5.99	3.83	4.33
6.00–7.99	3.94	3.78
8.00 or more	3.68	5.22
Race–ethnicity		
White, non-Hispanic		
0.00–1.99	4.11	5.58
2.00–3.99	4.09	4.41
4.00–5.99	4.04	4.49
6.00–7.99	4.26	3.75
8.00 or more	4.18	6.22
Black, non-Hispanic		
0.00–1.99	—	—
2.00–3.99	—	—
4.00–5.99	4.50	—
6.00–7.99	—	—
8.00 or more	—	—
Hispanic		
0.00–1.99	3.80	—
2.00–3.99	4.17	3.56
4.00–5.99	4.31	5.47
6.00–7.99	4.30	4.81
8.00 or more	4.27	—
Asian		
0.00–3.99	—	—
4.00 or more	—	—
Native American		
0.00–3.99	—	—
4.00 or more	—	—

First row, first column reads: 1982 public high school graduates working full time but not enrolled in postsecondary education 6 months after high school graduation earned on average \$4.17 per hour.

* “Full time” is defined as 35 or more hours per week, while “part time” is less than 35 hours per week.

— Sample size too small for reliable estimate.

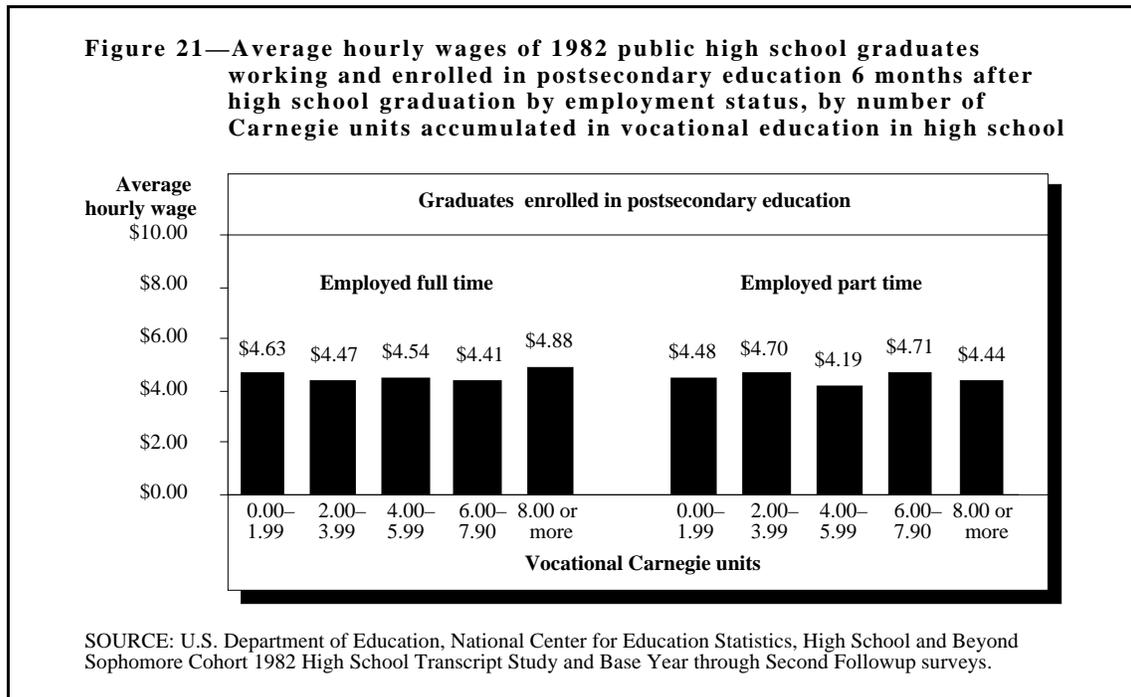
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Base Year through Second Followup surveys.

Student Outcomes

Average Hourly Wages of High School Graduates Enrolled in Postsecondary Education

Table 21 shows the average hourly wages of 1982 public high school graduates who were enrolled in postsecondary education 6 months after graduation.¹⁸ There was no significant difference in the overall hourly wages earned by graduates who were working full time and those working part time. Furthermore, no consistent relationship was observed between the amount of vocational preparation a graduate had in high school and hourly wages earned (figure 21).

When examining the patterns separately for male and female graduates and for the different racial-ethnic groups, wages once again did not vary consistently with the amount of vocational preparation. Although black graduates who accumulated 0.00 to 1.99 Carnegie units in vocational education appeared to earn higher part-time wages than their counterparts with a greater amount of vocational preparation, the differences were not statistically significant.



¹⁸ Enrollment in a postsecondary institution was determined according to student questionnaire responses. The 1982 high school graduates indicated whether or not they had attended and taken classes for credit at any school after they left high school, and they indicated the type of school and dates attended. Enrollment status was examined at the point 6 months after high school graduation.

Table 21—Average hourly wages of 1982 public high school graduates working and enrolled in postsecondary education 6 months after high school graduation by employment status, by sex, race–ethnicity, and number of Carnegie units accumulated in vocational education in high school

Number of vocational Carnegie units	Employed	
	Full time*	Part time*
Total, overall	\$4.56	\$4.52
0.00–1.99	4.63	4.48
2.00–3.99	4.47	4.70
4.00–5.99	4.54	4.19
6.00–7.99	4.41	4.71
8.00 or more	4.88	4.44
Sex		
Male		
0.00–1.99	4.25	4.85
2.00–3.99	4.52	4.81
4.00–5.99	5.18	4.00
6.00–7.99	4.26	5.56
8.00 or more	5.43	—
Female		
0.00–1.99	5.07	4.23
2.00–3.99	4.39	4.62
4.00–5.99	3.82	4.30
6.00–7.99	4.55	4.21
8.00 or more	—	4.40
Race–ethnicity		
White, non-Hispanic		
0.00–1.99	4.69	4.29
2.00–3.99	4.49	4.78
4.00–5.99	4.63	4.24
6.00–7.99	4.55	4.79
8.00 or more	5.21	4.43
Black, non-Hispanic		
0.00–1.99	—	6.46
2.00–3.99	—	4.00
4.00–5.99	—	3.68
6.00–7.99	—	—
8.00 or more	—	—
Hispanic		
0.00–1.99	—	4.34
2.00–3.99	5.22	4.33
4.00–5.99	—	3.90
6.00–7.99	—	3.61
8.00 or more	—	—
Asian		
0.00–3.99	—	4.51
4.00 or more	—	—
Native American		
0.00–3.99	—	—
4.00 or more	—	—

First row, first column reads: 1982 public high school graduates working full time and enrolled in postsecondary education earned on average \$4.56 per hour.

* “Full time” is defined as 35 or more hours per week, while “part time” is less than 35 hours per week.

— Sample size too small for reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Base Year through Second Followup surveys.

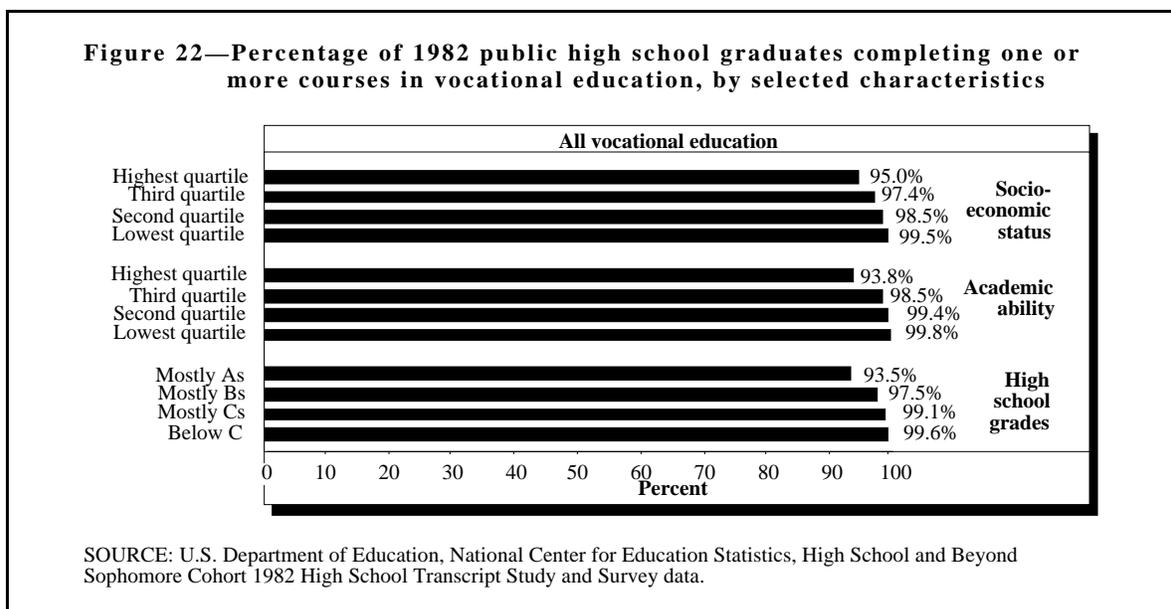
Special Populations

Participation in Vocational Education

Some statistically significant differences in course-taking patterns were observed between students with and without special needs (table 22).¹⁹ Graduates in the highest socioeconomic status and academic ability quartiles were somewhat less likely than those in the lower three quartiles to complete at least one course in vocational education (figure 22). Furthermore, graduates who earned mostly As in high school were less likely than their counterparts earning lower grades to participate in vocational education (94 percent versus 98 percent to 99 percent). However, there were no significant differences in rates of participation in vocational education overall when examining home language background or handicap status.

Participation in consumer & homemaking education generally decreased as graduates' socioeconomic status, academic ability, and high school grades increased. In addition, graduates whose home language was other than English were less likely than those whose home language was English to complete at least one course in consumer & homemaking education (40 percent versus 49 percent).

Overall, participation in general labor market preparation did not vary significantly by graduates' socioeconomic status, grades earned in high school, home language background, or handicap status. However, participation in specific labor market preparation generally decreased as graduates' socioeconomic status, academic ability, and high school grades increased. Graduates whose home language was other than English, however, were slightly more likely than those whose home language was English to complete at least one course in specific labor market preparation (90 percent versus 86 percent).



¹⁹ The federal regulations regarding the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 define special populations as individuals with disabilities, educationally and economically disadvantaged individuals, individuals of limited English proficiency, individuals who participate in programs designed to eliminate sex bias, and individuals in correctional institutions.

Table 22—Percentage of 1982 public high school graduates completing one or more courses in vocational education by type of vocational education, by selected characteristics

	All vocational education	Consumer & homemaking education	General labor market preparation	Specific labor market preparation
Total	97.7	49.9	78.6	86.7
Socioeconomic status				
Lowest quartile	99.5	59.5	77.8	91.2
Second quartile	98.5	53.4	81.1	90.0
Third quartile	97.4	48.3	78.8	86.3
Highest quartile	95.0	36.8	77.0	78.2
Academic ability				
Lowest quartile	99.8	63.4	76.9	91.7
Second quartile	99.4	58.2	82.4	92.4
Third quartile	98.5	48.5	81.6	87.4
Highest quartile	93.8	33.1	74.9	76.8
High school grades				
Mostly As	93.5	36.7	79.7	74.5
Mostly Bs	97.5	48.9	79.6	86.0
Mostly Cs	99.1	55.6	78.5	91.7
Below C	99.6	54.5	72.8	89.9
Home language background ¹				
English	97.7	49.1	79.0	86.1
Other than English	97.9	40.2	75.6	90.3
Handicap status ²				
Not handicapped	97.3	47.9	78.9	85.9
Handicapped	98.2	51.4	78.6	87.3

First row, first column reads: Of 1982 public high school graduates, 97.7 percent completed one or more courses in some type of vocational education.

¹ Home language background refers to the sole or dominant language spoken in the home.

² Handicap status indicates whether a student ever reported having a handicap, participating in a program for the handicapped, or receiving handicap benefits.

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

Special Populations

Participation by Program

Participation in most vocational program areas generally decreased as graduates' socioeconomic status, academic ability, and high school grades increased (table 23). Graduates in the highest socioeconomic status and academic ability quartiles were significantly less likely than graduates in the lowest quartiles to complete at least one course in agriculture, business, marketing & distribution, occupational home economics, and the construction trades. In addition, graduates in the highest academic quartile were less likely than those in the lowest academic quartile to participate in all trade & industry programs. Similarly, graduates who earned mostly As in high school were significantly less likely than graduates with lower grades to participate in agriculture, marketing & distribution, occupational home economics, and trade & industry. Although participation in health generally followed the same downward pattern, differences were not statistically significant.

One notable exception to the above pattern occurred in the technical & communication program area. Participation in this program area generally increased as graduates' socioeconomic status, academic ability, and high school grades increased (figure 23). Specifically, graduates in the highest socioeconomic status and academic ability quartiles were about twice as likely as graduates in the lowest quartiles to complete at least one course in this area. In addition, 17 percent of graduates who earned mostly As in high school participated in this program, in comparison with only 11 percent of graduates who predominantly earned grades below C.

When examining home language background and handicap status, participation rates differed significantly in only a few areas. Graduates whose home language was other than English and graduates who were handicapped were more likely than their counterparts to participate in trade & industry programs. In addition, handicapped graduates were slightly more likely than nonhandicapped graduates to complete at least one course in agriculture (12 percent versus 9 percent). Finally, graduates whose home language was other than English were less likely than graduates whose home language was English to participate in the technical & communication program (9 percent versus 14 percent).

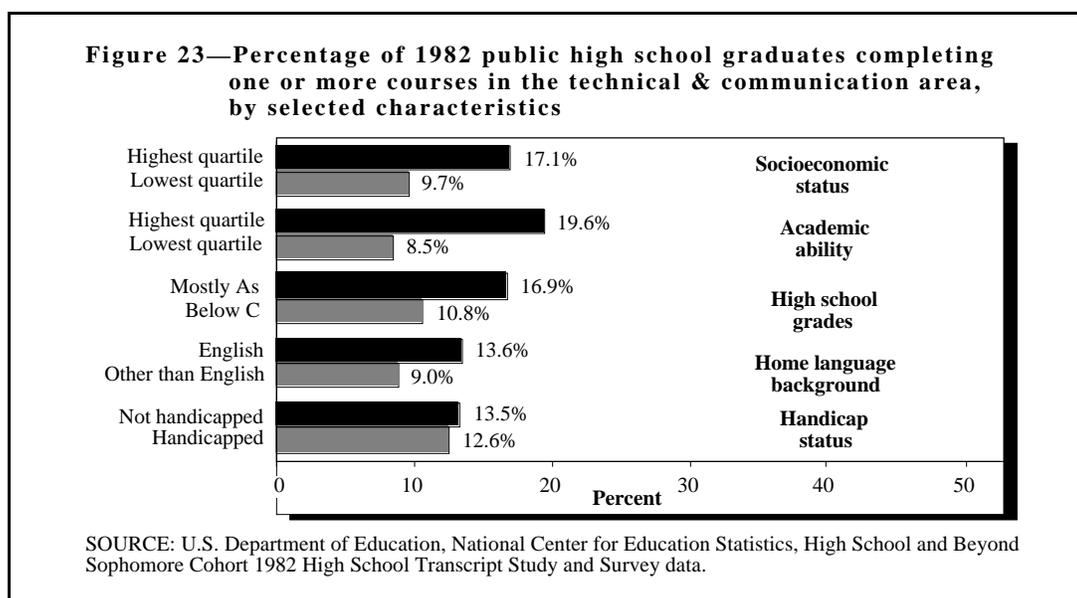


Table 23—Percentage of 1982 public high school graduates completing one or more courses in specific labor market preparation programs, by selected characteristics

	Agriculture	Business	Marketing & distribution	Health ¹	Occupational home economics	Trade & industry				Technical & communication
						Total	Construction	Precision production	Other	
Total	9.9	52.9	9.1	4.5	11.5	39.6	7.3	33.2	13.3	12.9
Socioeconomic status										
Lowest quartile	11.2	58.3	10.7	5.4	14.5	39.2	9.1	31.1	14.0	9.7
Second quartile	11.8	56.5	8.7	4.5	12.5	41.7	7.4	35.8	14.3	11.5
Third quartile	10.8	52.7	9.6	4.8	10.9	39.3	7.2	33.5	13.6	13.8
Highest quartile	5.6	43.6	7.1	3.4	7.9	37.2	5.3	31.7	10.7	17.1
Academic ability										
Lowest quartile	14.1	51.7	11.3	5.6	16.9	43.0	9.5	33.3	17.0	8.5
Second quartile	12.9	59.6	11.6	5.0	13.8	43.6	8.2	36.2	15.0	8.8
Third quartile	8.8	58.0	9.6	3.9	10.9	39.5	7.2	33.5	13.3	13.5
Highest quartile	5.9	43.1	4.6	3.8	6.4	32.7	4.9	28.6	8.9	19.6
High school grades										
Mostly As	4.8	48.6	3.6	2.8	6.3	22.6	2.4	19.3	5.0	16.9
Mostly Bs	10.5	55.2	8.1	4.2	11.8	36.0	5.9	30.6	11.1	13.4
Mostly Cs	10.4	53.4	11.5	5.3	13.0	48.0	9.5	39.8	18.1	11.3
Below C	13.4	47.3	13.1	5.5	12.6	50.7	12.9	41.8	18.6	10.8
Home language background ²										
English	10.1	53.2	8.9	4.4	11.4	38.4	7.1	32.0	12.5	13.6
Other than English	7.6	53.1	10.0	6.3	8.9	49.2	7.5	41.9	18.3	9.0
Handicap status ³										
Not handicapped	9.0	53.6	8.5	4.2	11.6	38.1	7.1	32.0	12.9	13.5
Handicapped	12.0	50.6	10.1	5.0	11.2	42.0	7.3	34.8	13.5	12.6

First row, first column reads: Of 1982 public high school graduates, 9.9 percent completed one or more courses in agriculture.

¹ "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "personal/other."

² Home language background refers to the sole or dominant language spoken in the home.

³ Handicap status indicates whether a student ever reported having a handicap, participating in a program for the handicapped, or receiving handicap benefits.

NOTE: Estimates may sum to greater than 100 percent because students may have earned Carnegie units in more than one vocational program area.

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

Special Populations

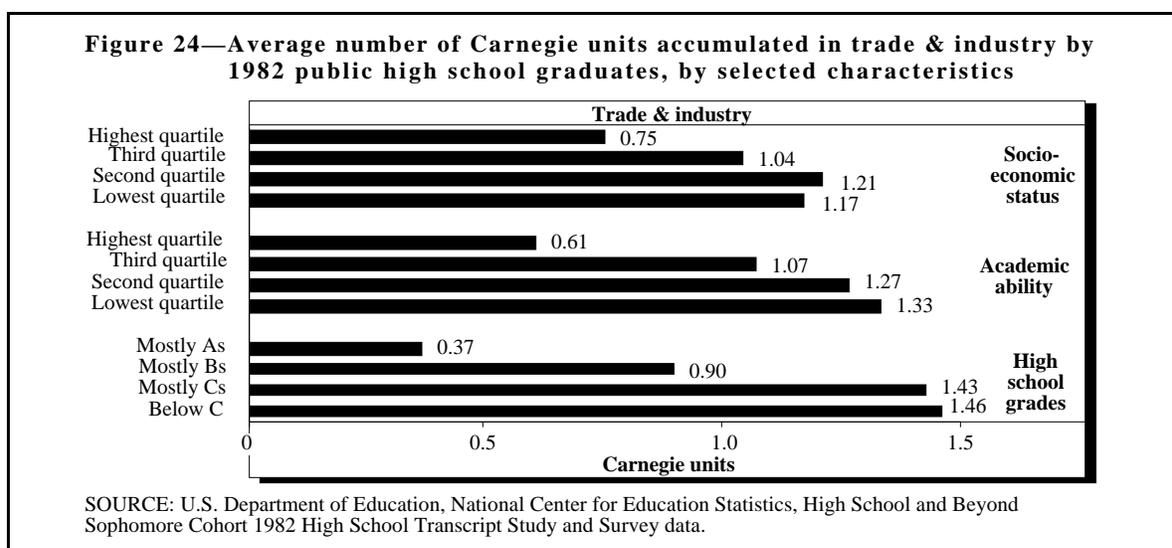
Carnegie Units by Program

As shown previously in table 15, 1982 public high school graduates accumulated on average a greater number of Carnegie units in business and trade & industry (about 1.0 units) than in any other vocational program area (table 24). In contrast, graduates earned the fewest units in health (0.1 units).

The number of Carnegie units accumulated in most vocational program areas was related to graduates' socioeconomic status, academic ability, and high school grades. Graduates in the highest socioeconomic status and academic ability quartiles accumulated significantly fewer units than graduates in the lowest quartiles in agriculture, business, marketing & distribution, health, occupational home economics, and trade & industry. Similarly, graduates who earned mostly As in high school accumulated significantly fewer units than graduates with lower grades in these vocational program areas.²⁰ Figure 24 illustrates these relationships for the trade & industry program area.

The one notable exception to the above pattern occurred in the technical & communication program area. Graduates in the highest academic quartile accumulated significantly more units in this program area than graduates in the lower three quartiles (0.2 units versus 0.1 units). In addition, the number of Carnegie units accumulated in the technical & communication program area did not vary significantly with socioeconomic status or high school grades.

When examining home language background and handicap status, differences in the number of Carnegie units accumulated by graduates occurred in only a few program areas. Graduates whose home language was other than English accumulated significantly fewer Carnegie units in the agriculture and technical & communication areas than graduates whose home language was English. No significant differences were found in the number of units accumulated in different program areas between graduates who were handicapped and those who were not.



²⁰ Graduates who earned mostly As actually accumulated significantly more credits in business than graduates who earned grades below C.

Table 24—Average number of Carnegie units accumulated by 1982 public high school graduates in specific labor market preparation programs, by selected characteristics

	Agriculture	Business	Marketing & distribution	Health ¹	Occupational home economics	Trade & industry				Technical & communication
						Total	Construction	Precision production	Other	
Total	0.21	1.03	0.16	0.05	0.17	1.06	0.13	0.66	0.26	0.11
Socioeconomic status										
Lowest quartile	0.24	1.29	0.20	0.08	0.26	1.17	0.18	0.66	0.33	0.10
Second quartile	0.25	1.13	0.16	0.04	0.19	1.21	0.15	0.77	0.29	0.11
Third quartile	0.26	0.98	0.16	0.05	0.13	1.04	0.11	0.67	0.25	0.12
Highest quartile	0.08	0.69	0.12	0.03	0.10	0.75	0.08	0.51	0.16	0.13
Academic ability										
Lowest quartile	0.31	1.05	0.20	0.09	0.34	1.33	0.22	0.71	0.40	0.07
Second quartile	0.29	1.28	0.24	0.05	0.22	1.27	0.17	0.78	0.32	0.09
Third quartile	0.17	1.14	0.14	0.04	0.12	1.07	0.10	0.70	0.26	0.11
Highest quartile	0.10	0.69	0.07	0.03	0.07	0.61	0.05	0.45	0.10	0.17
High school grades										
Mostly As	0.10	1.03	0.05	0.02	0.08	0.37	0.02	0.29	0.06	0.14
Mostly Bs	0.22	1.11	0.15	0.05	0.16	0.90	0.10	0.60	0.19	0.11
Mostly Cs	0.23	1.00	0.20	0.07	0.22	1.43	0.18	0.85	0.40	0.11
Below C	0.27	0.74	0.22	0.05	0.22	1.46	0.22	0.84	0.40	0.10
Home language background ²										
English	0.21	1.03	0.16	0.05	0.17	1.01	0.13	0.63	0.25	0.12
Other than English	0.11	0.96	0.17	0.06	0.13	1.13	0.12	0.73	0.29	0.07
Handicap status ³										
Not handicapped	0.19	1.05	0.15	0.05	0.17	1.01	0.12	0.63	0.25	0.11
Handicapped	0.25	0.96	0.16	0.05	0.17	1.09	0.13	0.70	0.26	0.12

First row, first column reads: 1982 public high school graduates earned on average 0.21 Carnegie units in agriculture.

¹ "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "personal/other."

² Home language background refers to the sole or dominant language spoken in the home.

³ Handicap status indicates whether a student ever reported having a handicap, participating in a program for the handicapped, or receiving handicap benefits.

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

Special Populations

Participation by Program for Students with Different Handicapping Conditions

The participation patterns of handicapped students differed from those of nonhandicapped students in a number of vocational program areas (table 25 and figure 25). Handicapped students were significantly more likely than nonhandicapped students to participate in agriculture (17 percent versus 8 percent), occupational home economics (18 percent versus 10 percent), and trade & industry (54 percent versus 37 percent), including construction, precision production, and other areas. On the other hand, handicapped students were significantly less likely to participate in business (28 percent versus 55 percent) and technical & communication programs (9 percent versus 25 percent). There was no significant difference between the participation rates of handicapped and nonhandicapped students in marketing & distribution or in health.

Participation in vocational program areas varied somewhat by type of handicapping condition. Students who were mentally retarded, seriously emotionally disturbed, and learning disabled were less likely than nonhandicapped students to participate in business and technical & communication programs. In addition, students who were mentally retarded were less likely than nonhandicapped students to participate in precision production trades, but they were more likely to participate in agriculture, occupational home economics, and construction trades. Students who were seriously emotionally disturbed were significantly more likely than nonhandicapped students to participate in trade & industry overall, and in precision production specifically. Students who were learning disabled were significantly more likely than nonhandicapped students to participate in agriculture, occupational home economics, and all trade & industry areas. Finally, students who were orthopedically handicapped were less likely than nonhandicapped students to participate in construction trades and in other trade & industry areas.

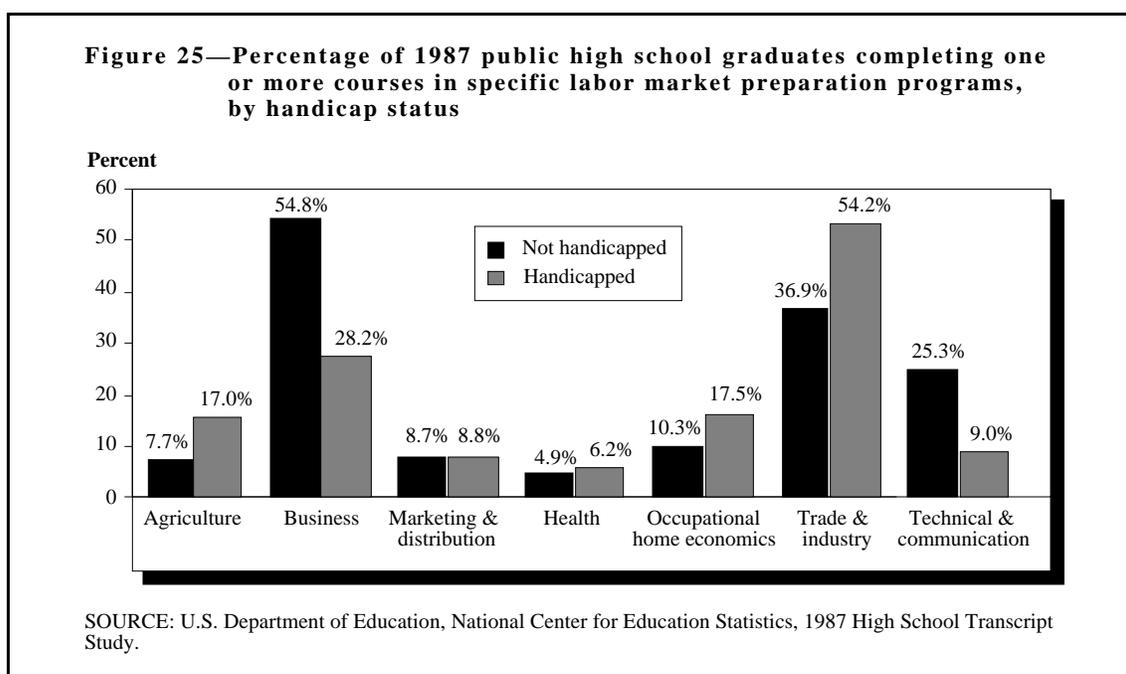


Table 25—Percentage of 1987 public high school graduates completing one or more courses in specific labor market preparation programs, by handicap status and handicapping condition

Handicapping condition ¹	Agriculture	Business	Marketing & distribution	Health ²	Occupational home economics	Trade & industry				Technical & communication
						Total	Construction	Precision production	Other	
Total										
Not handicapped	7.7	54.8	8.7	4.9	10.3	36.9	4.8	32.1	10.7	25.3
Handicapped	17.0	28.2	8.8	6.2	17.5	54.2	12.1	42.6	18.5	9.0
Multihandicapped	—	—	—	—	—	—	—	—	—	—
Mentally retarded	18.3	21.1	4.7	4.3	20.3	37.7	15.3	20.5	9.7	1.7
Hard of hearing	—	—	—	—	—	—	—	—	—	—
Deaf	—	—	—	—	—	—	—	—	—	—
Speech impaired	—	—	—	—	—	—	—	—	—	—
Visually handicapped	—	—	—	—	—	—	—	—	—	—
Deaf/blind	—	—	—	—	—	—	—	—	—	—
Seriously emotionally disturbed	4.0	28.1	6.9	9.1	27.7	67.0	10.7	56.5	23.7	10.9
Orthopedically handicapped	7.1	45.8	3.2	3.2	18.4	18.5	0.0	18.5	0.0	17.8
Learning disabled	19.7	28.8	10.0	7.2	17.1	57.9	12.6	46.7	20.5	9.8
Other health impaired	—	—	—	—	—	—	—	—	—	—

First row, first column reads: Of 1987 public high school graduates who were not handicapped, 7.7 percent completed one or more courses in agriculture.

¹ The handicapping conditions listed in this table are mutually exclusive.

² "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "Personal/other."

— Sample size too small for reliable estimate.

NOTE: Estimates may sum to greater than 100 percent because students may have earned Carnegie units in more than one vocational program area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987 High School Transcript Study.

Special Populations

Carnegie Units by Program for Students with Different Handicapping Conditions

The pattern of Carnegie units earned in vocational program areas by handicapped students was very similar to the participation patterns discussed in the previous section (table 26 and figure 26). Handicapped students earned a significantly greater number of Carnegie units than nonhandicapped students in agriculture (0.4 units versus 0.2 units), occupational home economics (0.4 units versus 0.2 units), and trade & industry (1.7 units versus 0.9 units), including construction, precision production, and other trade areas. On the other hand, handicapped students earned a significantly smaller number of Carnegie units than nonhandicapped students in business (0.4 units versus 1.0 units) and in technical & communication programs (0.1 units versus 0.2 units). There was no significant difference between the units earned by handicapped and nonhandicapped students in marketing & distribution and in health.

Carnegie units earned in vocational program areas varied somewhat by type of handicapping condition. Students who were mentally retarded, seriously emotionally disturbed, and learning disabled earned significantly fewer units than nonhandicapped students in business and technical & communication programs. In addition, students who were mentally retarded earned significantly more units than nonhandicapped students in occupational home economics and construction trades. Compared with nonhandicapped students, seriously emotionally disturbed students earned significantly fewer units in agriculture, and learning disabled students earned significantly more units in agriculture, occupational home economics, and all trade & industry areas. Finally, students who were orthopedically handicapped earned fewer units than nonhandicapped students in trade & industry, including construction and other areas.

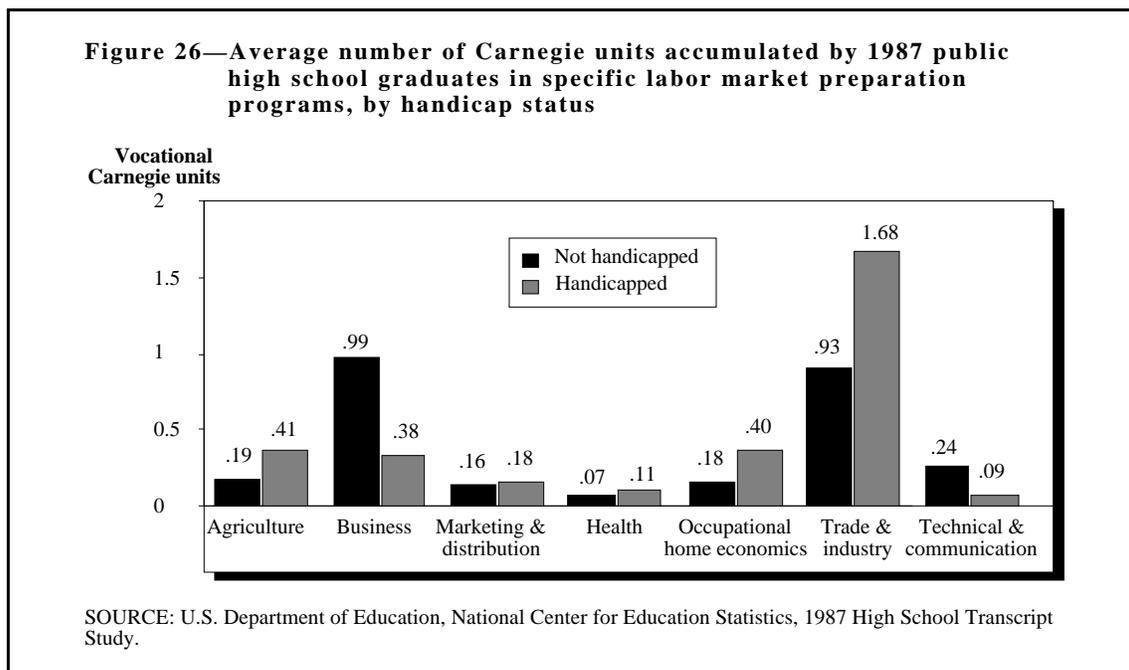


Table 26—Average number of Carnegie units accumulated by 1987 public high school graduates in specific labor market preparation programs, by handicap status and handicapping condition

Handicapping condition ¹	Agriculture	Business	Marketing & distribution	Health ²	Occupational home economics	Trade & industry				
						Total	Construction	Precision production	Other	Technical & communication
Total										
Not handicapped	0.19	0.99	0.16	0.07	0.18	0.93	0.10	0.62	0.21	0.24
Handicapped	0.41	0.38	0.18	0.11	0.40	1.68	0.31	0.90	0.47	0.09
Multihandicapped	—	—	—	—	—	—	—	—	—	—
Mentally retarded	0.37	0.26	0.10	0.06	0.64	1.25	0.43	0.44	0.38	0.03
Hard of hearing	—	—	—	—	—	—	—	—	—	—
Deaf	—	—	—	—	—	—	—	—	—	—
Speech impaired	—	—	—	—	—	—	—	—	—	—
Visually handicapped	—	—	—	—	—	—	—	—	—	—
Deaf/blind	—	—	—	—	—	—	—	—	—	—
Seriously emotionally disturbed	0.07	0.27	0.09	0.39	0.34	1.51	0.30	0.69	0.52	0.09
Orthopedically handicapped	0.23	0.80	0.16	0.10	0.33	0.27	0.00	0.27	0.00	0.14
Learning disabled	0.48	0.40	0.21	0.11	0.39	1.87	0.31	1.04	0.52	0.09
Other health impaired	—	—	—	—	—	—	—	—	—	—

First row, first column reads: 1987 public high school graduates who were not handicapped earned on average 0.19 Carnegie units in agriculture.

¹ The handicapping conditions listed in this table are mutually exclusive.

² "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "personal/other."

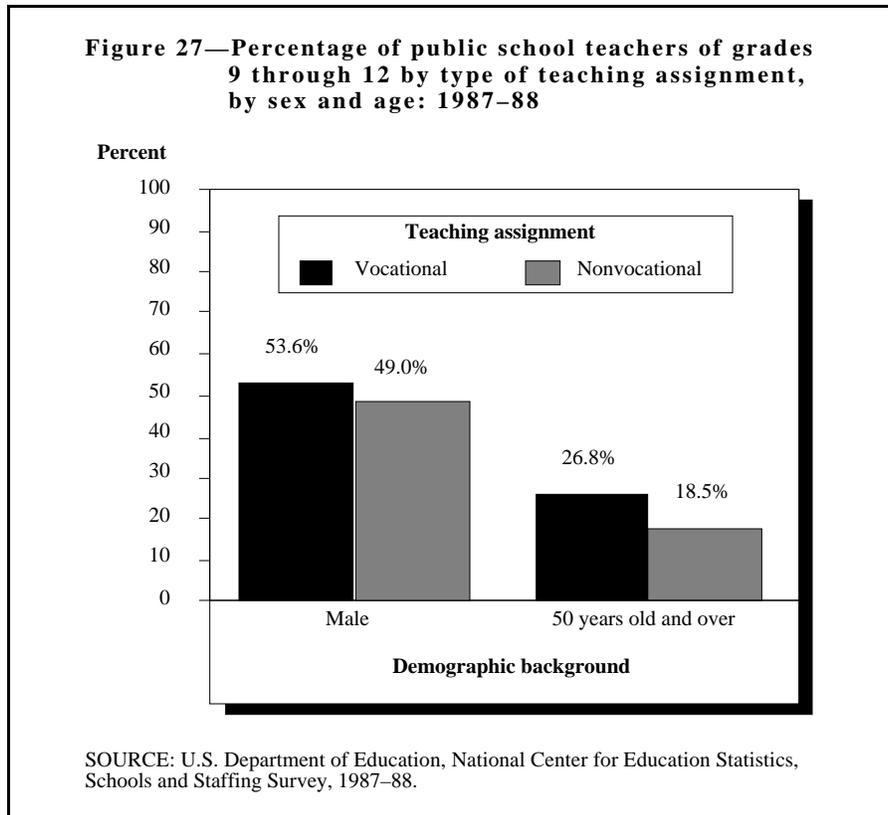
— Sample size too small for reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987 High School Transcript Study.

Public Vocational and Nonvocational Teachers

Demographic Characteristics of Vocational and Nonvocational Teachers

Public vocational and nonvocational teachers of grades 9 through 12 tended to be similar demographically.²¹ During the 1987–88 school year, vocational teachers were just as likely to be from a minority group as were nonvocational teachers (table 27). Both types of teachers were predominantly white, with almost 90 percent of each group classifying themselves in this racial–ethnic category. However, vocational teachers were slightly more likely to be male. More than 53 percent of vocational teachers were male, compared with only 49 percent of nonvocational teachers (figure 27). In addition, vocational teachers were somewhat older than nonvocational teachers, with 27 percent of vocational teachers aged 50 and over, in comparison with only 19 percent of nonvocational teachers.



²¹ The analysis is restricted to teachers in public schools only.

Table 27—Percentage of public school teachers of grades 9 through 12 by type of teaching assignment, by sex, race–ethnicity, and age: 1987–1988

	All teachers	Vocational	Nonvocational
Total*	100.0	100.0	100.0
Sex			
Male	49.9	49.0	
Female	50.1	46.5	51.0
Race–ethnicity			
White, non-Hispanic	88.6	87.5	88.9
Black, non-Hispanic	7.1	8.2	6.8
Hispanic	2.5	2.2	2.5
Asian	0.8	0.7	0.8
Native American	1.1	1.4	1.0
Age			
Under 30 years	10.7	8.6	11.2
30 to 39 years	31.8	29.0	32.5
40 to 49 years	37.4	35.7	37.9
50 years and over	20.1	26.8	18.5

Second row, first column reads: Of all public school teachers of grades 9 through 12 in 1987–88, 49.9 percent were male.

* Percentages sum vertically within each teacher category.

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

SOURCE: Phillip Kaufman, *A Comparison of Vocational and Nonvocational Teachers in Grades 9 through 12*, prepared for the National Center for Education Statistics, U.S. Department of Education, forthcoming, p. 5, from the 1987–88 Schools and Staffing Survey.

Public Vocational and Nonvocational Teachers

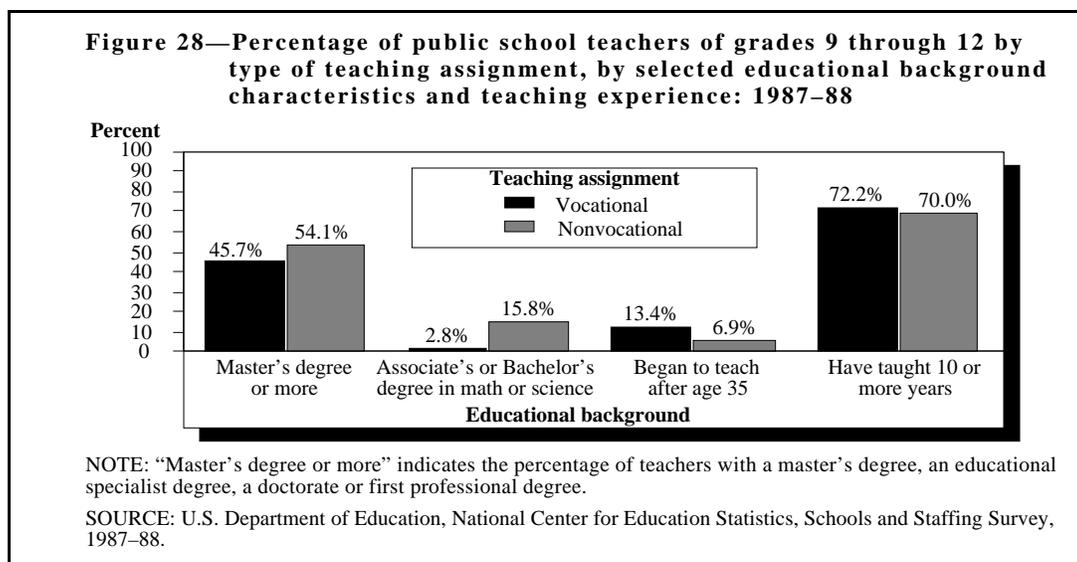
Educational Background of Vocational and Nonvocational Teachers

For decades, vocational education has employed specialists from the private sector to serve as vocational teachers for job skill classes. In fact, the Smith-Hughes Vocational Education Act of 1917 specifically stated that instructors teaching in federally funded vocational education programs must have work experience in the specific occupational area in which they are hired to teach. Many states, therefore, have enacted policies and offered classes that enable skilled workers to become employed and credentialed as vocational teachers without the educational requirements that most teachers must meet.

The educational backgrounds of vocational teachers differed somewhat from those of nonvocational teachers (table 28 and figure 28). While less than 1 percent of nonvocational teachers did not complete a bachelor's degree, more than 7 percent of vocational teachers had less than a B.A. or B.S. Furthermore, about 46 percent of vocational teachers had a master's degree or more, compared with 54 percent of nonvocational teachers.

The college majors of vocational and nonvocational teachers differed significantly. As one might expect, nonvocational teachers were more likely to have majored in academic subjects, while vocational teachers were more likely to have majored in vocational education or occupationally specific areas. Nevertheless, most teachers, whether vocational or nonvocational, majored in education. Seventy-one percent of vocational teachers majored in education as compared with 55 percent of nonvocational teachers.²²

Vocational teachers were more likely to have 10 or more years of teaching experience than were nonvocational teachers. Moreover, vocational teachers were more likely than nonvocational teachers to have started teaching after age 35. However, these differences, while statistically significant, were small. Seventy percent of nonvocational teachers and 62 percent of vocational teachers started teaching before they were 26 years old, and 70 percent of nonvocational teachers and 72 percent of vocational teachers had 10 or more years of teaching experience.



²² The difference between the percentage of vocational and nonvocational teachers majoring in education was statistically significant.

Table 28—Percentage of public school teachers of grades 9 through 12 by type of teaching assignment, by educational background, teaching experience, and type of credential: 1987–1988

Experience and educational background	All teachers	Vocational	Nonvocational
Total ¹	100.0	100.0	100.0
Highest college degree			
Less than a bachelor's	1.7	7.4	0.3
Bachelor's	45.9	46.9	45.6
Master's	44.1	39.3	45.3
Education specialist ²	7.0	5.8	7.3
Doctor's or first professional	1.4	0.6	1.5
Major field of study (associate's or bachelor's degree)			
Mathematics and sciences	13.3	2.8	15.8
Social sciences	9.5	3.6	10.9
Letters and humanities	8.5	1.4	10.3
Education			
General	41.7	11.1	49.0
Special education	3.6	0.6	4.3
Vocational education	12.8	59.0	1.8
Occupationally specific ³	6.6	19.3	3.6
Other	3.9	2.3	4.2
Age at which first began to teach full time			
25 years or under	68.4	61.8	70.1
26–35 years	23.4	24.9	23.0
36–45 years	6.3	9.8	5.5
46–55 years	1.5	3.1	1.1
Over 55 years	0.4	0.5	0.3
Number of years of teaching experience			
Less than 3 years	6.2	5.4	6.4
3–9 years	23.4	22.5	23.6
10–20 years	45.5	46.6	45.3
Over 20 years	24.9	25.6	24.7
Type of credential in primary assignment field			
None	3.0	2.1	3.2
Standard state certificate	89.7	91.3	89.3
Probationary certificate	3.1	2.9	3.2
Temporary, provisional, or emergency certificate	4.0	3.4	4.1
Other	0.1	0.2	0.1

Second row, first column reads: Of all public school teachers of grades 9 through 12 in 1987–88, 1.7 percent had less than a bachelor's degree.

¹ Percentages sum vertically within teacher categories.

² Education specialist degrees or certificates are generally awarded for one year's work beyond the master's level.

³ Occupationally specific degrees include all vocational fields of study listed in the Secondary School Taxonomy.

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

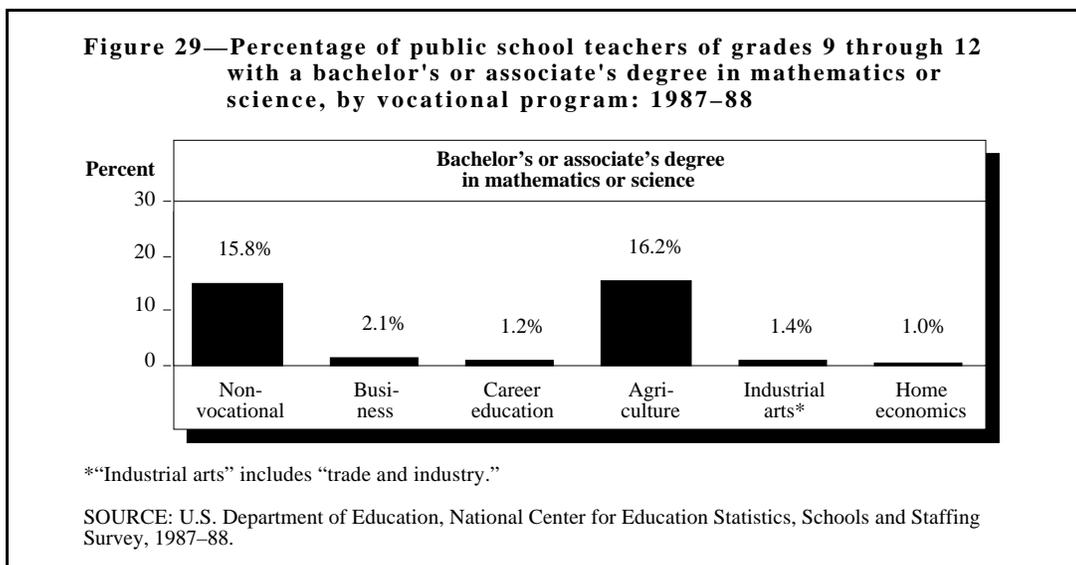
SOURCE: Phillip Kaufman, *A Comparison of Vocational and Nonvocational Teachers in Grades 9 through 12*, prepared for the National Center for Education Statistics, U.S. Department of Education, forthcoming, p. 7, from the 1987–88 Schools and Staffing Survey.

Public Vocational and Nonvocational Teachers

Educational Background of Teachers of Different Vocational Subjects

In general, most vocational teachers had similar educational levels (table 29). More than 50 percent of career education and business teachers completed a master's, educational specialist, or doctorate degree, while slightly less than 50 percent of industrial arts, agriculture, and home economics teachers had this level of education. Only about 37 percent of vocational teachers classified as "other" in this analysis and about 29 percent of "subject area unknown" teachers had achieved this level of education.

Among vocational teachers, agriculture teachers were most likely to have earned their bachelor's or associate's degree in mathematics and sciences, with more than 16 percent earning their degree in these subject areas (figure 29). Home economics teachers were generally most likely to have attained their degree in an occupationally specific subject area.²³ Industrial arts teachers, however, were most likely to hold a degree in vocational education. Vocational teachers whose subject area was classified as "other" or "unknown" were much more likely to have less than a bachelor's degree than were other vocational teachers. In fact, about one in four "other" teachers and about one in three "unknown" teachers had less than a bachelor's degree.



²³ Home economics teachers were significantly more likely than business, industrial arts, "other," "mixed," and "unknown" teachers to have an occupationally specific degree. However, they were not statistically more likely than career education and agriculture teachers to hold this type of degree.

Table 29—Percentage of public school teachers of grades 9 through 12 by vocational program, by educational background, teaching experience, and type of credential: 1987–1988

Experience and educational background	Vocational program area								
	Nonvocational	Business	Career education	Agriculture	Industrial arts/ trade & industry	Home economics	Other ¹	Mixed ²	Unknown ³
Total ⁴	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Highest college degree									
Less than a bachelor's	0.3	0.2	2.7	0.0	1.3	0.1	25.4	3.1	33.0
Bachelor's	45.6	44.7	45.3	53.4	49.7	59.9	37.8	47.9	38.0
Master's	45.3	49.0	38.3	36.4	42.2	35.7	30.0	42.1	23.4
Education specialist ⁵	7.3	5.6	12.7	8.8	6.3	4.3	5.7	6.9	5.1
Doctor's or first professional	1.5	0.5	1.1	1.4	0.6	0.1	1.0	0.0	0.5
Major field of study (associate's or bachelor's degree)									
Mathematics and sciences	15.8	2.1	1.2	16.2	1.4	1.0	3.0	0.0	1.9
Social sciences	10.9	2.7	4.4	3.5	2.6	1.8	7.7	0.0	6.2
Letters and humanities	10.3	0.6	3.1	1.0	1.7	0.5	2.8	2.6	2.5
Education									
General	49.0	13.6	18.3	10.4	9.6	4.5	12.2	15.5	12.9
Special education	4.3	0.0	6.1	0.3	0.2	0.0	2.2	0.0	1.4
Vocational education	1.8	57.3	45.1	42.4	80.7	56.0	53.8	70.7	50.9
Occupationally specific ⁶	3.6	20.2	20.7	26.1	3.1	36.2	14.4	11.3	19.9
Other	4.2	3.6	1.2	0.1	0.8	0.0	3.9	0.0	4.2
Age at which first began to teach full-time									
25 years or under	70.1	70.3	68.1	76.0	60.9	78.4	40.3	50.0	30.9
26–35 years	23.0	20.2	25.1	20.4	31.8	15.0	35.8	43.3	29.8
36–45 years	5.5	7.4	5.6	2.8	5.8	5.4	16.7	2.5	26.5
46–55 years	1.1	1.4	1.2	0.8	1.6	1.0	6.3	4.3	11.3
Over 55 years	0.3	0.7	0.0	0.0	0.0	0.1	0.9	0.0	1.5
Number of years of teaching experience									
Less than 3 years	6.4	4.6	4.9	5.7	3.9	5.8	5.8	9.0	9.0
3–9 years	23.6	19.2	19.0	35.9	20.5	20.4	25.9	27.3	26.6
10–20 years	45.3	45.1	43.7	40.0	44.4	52.0	49.7	40.7	47.7
Over 20 years	24.7	31.1	32.4	18.4	31.2	21.8	18.6	23.0	16.7
Type of credential in primary assignment field									
None	3.2	2.2	6.2	7.1	1.2	0.9	1.5	0.0	2.5
Standard state certificate	89.3	93.5	86.3	82.7	93.5	94.1	88.4	96.0	85.4
Probationary certificate	3.2	2.5	4.1	5.0	3.0	1.8	3.1	4.1	4.4
Temporary, provisional, or emergency certificate	4.1	1.6	3.3	4.9	2.2	2.3	7.1	0.0	7.8
Other	0.1	0.2	0.0	0.3	0.1	0.9	0.0	0.0	0.0

Second row, first column reads: Of public school teachers of grades 9 through 12 who were in a nonvocational program area in 1987–88, 0.3 percent had less than a bachelor's degree.

¹ Other vocational, trade, and industrial education.

² "Mixed" indicates that the teacher taught equal proportions in two or more vocational subject areas.

³ "Unknown" indicates that the teacher taught vocational education but did not indicate the specific subject area.

⁴ Percentages sum vertically within each teacher category.

⁵ Education specialist degrees or certificates are generally awarded for one year's work beyond the master's level.

⁶ Occupationally specific degrees include all vocational fields of study listed in the Secondary School Taxonomy.

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

SOURCE: Phillip Kaufman, *A Comparison of Vocational and Nonvocational Teachers in Grades 9 through 12*, prepared for the National Center for Education Statistics, U.S. Department of Education, forthcoming, p. 18–19, from 1987–88 Schools and Staffing Survey.

Public Vocational and Nonvocational Teachers

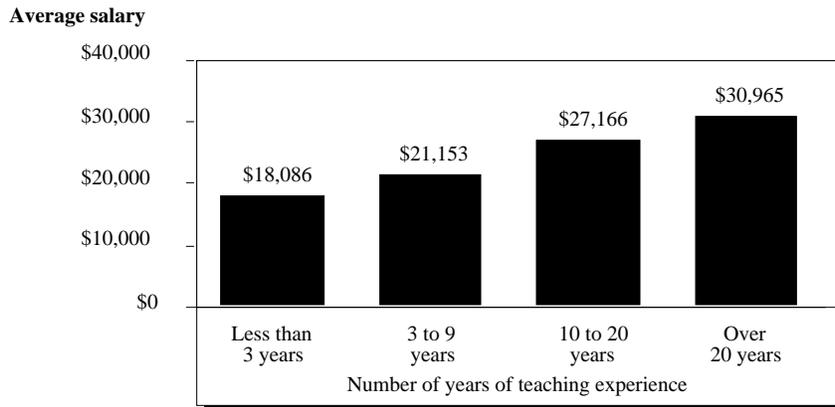
Salaries of Vocational Teachers

School districts generally pay all secondary teachers, whether vocational or nonvocational, according to the same salary schedule. Consequently, any differences in the salaries of vocational and nonvocational teachers should be the result of differences in the educational background or number of years of teaching experience of teachers, or the result of differences in salary levels among school districts. Table 30 presents data on the salaries of vocational teachers only.

Vocational teachers who had a master's degree in 1987–88 earned significantly more than their counterparts who had only a bachelor's degree. In fact, teachers with a master's degree earned on average \$5,500 more than teachers with a bachelor's degree. Although vocational teachers who had less than a bachelor's degree appeared to earn a higher salary than those with a bachelor's degree, this difference was not statistically significant.

Vocational teachers who had more years of teaching experience consistently earned higher salaries than vocational teachers with less teaching experience (figure 30). Specifically, vocational teachers with 3 to 9 years of experience earned approximately \$3,000 more than teachers with less than 3 years of experience; teachers with 10 to 20 years of experience earned about \$6,000 more than teachers with 3 to 9 years of experience; and teachers with over 20 years of experience earned almost \$4,000 more than teachers with 10 to 20 years of experience.

Figure 30—Average salaries of vocational public school teachers of grades 9 through 12, by number of years of teaching experience



SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1987–88.

Table 30—Average salaries of vocational public school teachers of grades 9 through 12, by educational background and teaching experience: 1987–1988

Experience and educational background	Salary ¹
Total	\$26,234
Highest college degree	
Less than a bachelor's	24,679
Bachelor's	23,544
Master's	29,023
Education specialist ²	30,847
Doctor's or first professional	—
Number of years of teaching experience	
Less than 3 years	18,086
3–9 years	21,153
10–20 years	27,166
Over 20 years	30,965

First row, first column reads: Public school vocational teachers of grades 9 through 12 earned an average salary of \$26,234 in 1987–88.

¹ Amount reflects only academic base-year salaries.

² Education specialist degrees or certificates are generally awarded for one year's work beyond the master's level.

— Sample size was too small for reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, the 1987–88 Schools and Staffing Survey.

Vocational Education in Postsecondary Institutions

This section examines vocational education in postsecondary institutions. The Carl D. Perkins Vocational and Applied Technology Education Act of 1990 defines vocational education as programs that prepare students for paid or unpaid employment requiring other than a baccalaureate or advanced degree. Hence, at the postsecondary level, vocational education consists of programs leading to pre-baccalaureate vocational awards, most commonly associate's degrees or certificates in programs lasting fewer than 2 years. Although most postsecondary vocational education is provided by less-than-4-year postsecondary institutions that do not offer baccalaureate degrees, some 4-year colleges and universities do offer certificates and associate's degrees in vocational education programs. However, as noted later in this section, it is difficult to isolate vocational education in 4-year institutions because students preparing for both baccalaureate and pre-baccalaureate degrees often enroll in the same courses. Consequently, most of this section is limited to describing vocational education in less-than-4-year institutions, but it does report on the number and kinds of associate's degrees and certificates awarded by 4-year institutions in vocational education.

The section begins by describing the delivery system for postsecondary education, discussing institutional arrangements and the organization of curriculum. Next, participation in postsecondary vocational education programs is examined for a variety of population subgroups. Data are reported for selected points in time, and trends over time are analyzed for two cohorts, the high school senior class of 1972 and the high school senior class of 1980.²⁴ The section then reports information on selected student outcomes, including employment, wages, and attainment of degrees or certificates. In addition, some information is included on the participation of special populations. Finally, the section concludes by reporting on postsecondary vocational and nonvocational faculty.

²⁴ 1972 and 1980 high school seniors from both public and private high schools are included in the analysis.

The Delivery System

Organization of Institutions

At the postsecondary level, vocational education is delivered through a variety of institutions. In 1989, 7,774 postsecondary institutions offered vocational education (table 31).²⁵ The vast majority of these postsecondary institutions were private proprietary schools, numbering 5,333. In addition, 1,088 public 2-year institutions, 756 private nonprofit less-than-4-year institutions, 315 4-year institutions, and 282 public vocational–technical institutes offered vocational education programs.²⁶ However, since the size of institutions varies considerably, the number of schools does not reflect the number of students being served.

Typically, vocational–technical institutes differ from public 2-year institutions in that the institutes do not award associate’s degrees and are more likely to provide programs lasting 1 year or less. Vocational education in 4-year institutions consists of pre-baccalaureate programs that may be short-term or lead to an associate’s degree or certificate. Proprietary schools offer a variety of vocational programs ranging from very short programs (6 weeks, for example) in truck driving to 2-year associate’s degree programs in business, allied health, or other subjects.

With the exception of Wyoming, every state provided vocational education in both 4-year and public 2-year institutions. California had the largest number of public 2-year institutions, 102, followed by Texas with 65, and North Carolina with 60. California also had the largest number of proprietary schools, 644, followed by Illinois with 284, and Pennsylvania with 280. Arkansas, Florida, Ohio, and Tennessee had the largest systems of public vocational–technical institutes, while 12 states and the District of Columbia reported having none.

²⁵ Integrated Postsecondary Education Data System questionnaires requested that respondents indicate all types of instruction offered at their institutions using the following classifications: occupational, academic, continuing, recreational, and adult basic education. The analysis includes only those institutions that indicated they offered occupational instruction.

²⁶ Numbers reported include branch campuses.

Table 31—Number of postsecondary institutions offering vocational education by type of institution and by state: 1988–89*

State	Total	4-year	Public 2-year	Public vocational–technical	Private proprietary	Private less-than-4-year
Total	7,774	315	1,088	282	5,333	756
Alabama	100	3	39	3	45	10
Alaska	54	1	12	2	34	5
Arizona	160	1	16	3	134	6
Arkansas	115	5	9	25	71	5
California	873	30	102	18	644	79
Colorado	120	4	15	5	91	5
Connecticut	131	2	14	0	95	20
Delaware	21	1	3	1	14	2
District of Columbia	32	3	0	0	22	7
Florida	296	7	37	24	220	8
Georgia	149	3	34	5	94	13
Hawaii	44	3	6	2	32	1
Idaho	49	3	3	0	38	5
Illinois	416	15	53	5	284	59
Indiana	156	11	20	6	114	5
Iowa	90	3	21	1	57	8
Kansas	98	4	32	3	52	7
Kentucky	122	7	16	14	79	6
Louisiana	198	4	38	18	134	4
Maine	34	5	5	0	16	8
Maryland	172	4	19	1	131	17
Massachusetts	178	9	19	4	110	36
Michigan	345	18	29	5	250	43
Minnesota	139	6	44	6	69	14
Mississippi	73	5	20	0	45	3
Missouri	228	11	22	17	160	18
Montana	48	1	10	1	29	7
Nebraska	55	2	14	0	34	5
Nevada	66	3	4	0	59	0
New Hampshire	42	1	6	0	31	4
New Jersey	226	3	18	6	172	27
New Mexico	49	3	14	2	26	4
New York	397	12	34	6	268	77
North Carolina	121	3	60	1	50	7
North Dakota	28	3	7	0	12	6
Ohio	306	18	25	23	209	31
Oklahoma	87	4	17	7	57	2
Oregon	151	7	14	1	126	3
Pennsylvania	399	28	19	3	280	69
Rhode Island	32	1	1	0	29	1
South Carolina	78	2	13	1	59	3
South Dakota	19	1	4	0	8	6
Tennessee	155	4	27	26	85	13
Texas	382	13	65	4	279	21
Utah	60	3	6	6	45	0
Vermont	13	1	3	3	3	3
Virginia	176	2	25	11	120	18
Washington	172	4	30	3	123	12
West Virginia	61	7	10	9	25	10
Wisconsin	116	5	17	0	78	16
Wyoming	19	0	8	0	10	1
American Samoa	1	0	1	0	0	0
Guam	2	0	1	0	1	0
Puerto Rico	115	14	4	1	80	16
Virgin Islands	2	2	0	0	0	0
Northern Marianas	1	0	1	0	0	0
Trust Territories	2	0	2	0	0	0

First row, first column reads: There were 7,774 postsecondary institutions in the United States in 1988–89 offering vocational education.

*“4-year” includes only public and private nonprofit 4-year institutions. “Public 2-year” includes public less-than-4-year degree-granting institutions, while “public vocational–technical” includes public less-than-2-year nondegree-granting institutions. “Private proprietary” includes private for-profit less-than-4-year institutions, while “private less-than-4-year” includes private nonprofit less-than-4-year institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System.

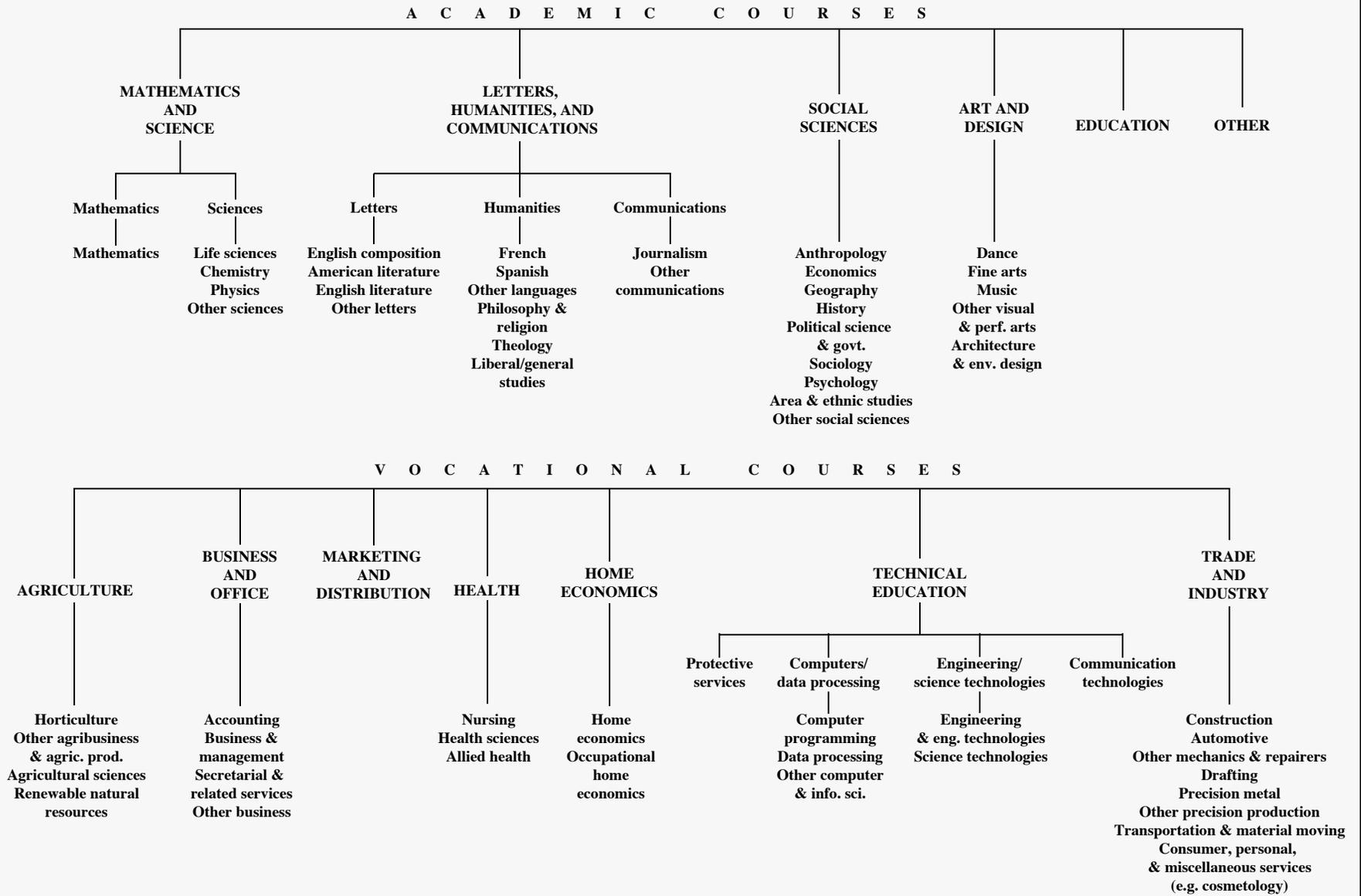
Organization of Postsecondary Curriculum

Just as a taxonomy is useful for organizing the secondary curriculum, one is needed to analyze course-taking patterns in postsecondary institutions. The taxonomy displayed on the facing page seeks first to distinguish academic from vocational courses. It divides academic courses into six broad areas: 1) mathematics and science; 2) letters, humanities, and communications; 3) social sciences; 4) art and design; 5) education; and 6) other. The taxonomy includes seven broad categories of vocational courses: 1) agriculture, 2) business and office, 3) marketing and distribution, 4) health, 5) home economics, 6) technical education, and 7) trade and industry. These seven categories of vocational courses correspond to the seven program areas of specific labor market preparation at the secondary level.

The taxonomy was designed specifically for less-than-4-year postsecondary institutions, which include public 2-year institutions, public vocational–technical institutes, private proprietary institutions, and private less-than-4-year institutions. Although some 4-year institutions offer certificate and associate’s degree programs in vocational education, they typically do not distinguish vocational from academic courses. For example, students pursuing an associate’s degree in accounting would take the same introductory courses in accounting as students pursuing a baccalaureate degree. Similar overlap exists in other fields, business and engineering being prominent examples. Consequently, it is not possible to develop a taxonomy that distinguishes vocational from academic courses in 4-year colleges and universities.

In this report, therefore, analyses of course taking are limited to less-than-4-year institutions. Analyses of the number of vocational certificates and associate’s degrees awarded by 4-year institutions, however, suggest the magnitude of vocational education provided in these institutions. Information on degrees and certificates awarded is reported in subsequent sections of this report.

Taxonomy of Academic and Vocational Courses for Less-than-4-Year Postsecondary Institutions



SOURCE: Susan P. Choy and Laura J. Horn, *A Guide to Using Postsecondary Transcript Data and an Overview of Course Taking in Less-than-4-Year Postsecondary Institutions*, a report prepared for the National Center for Research in Vocation Education (Berkeley: University of California), forthcoming.

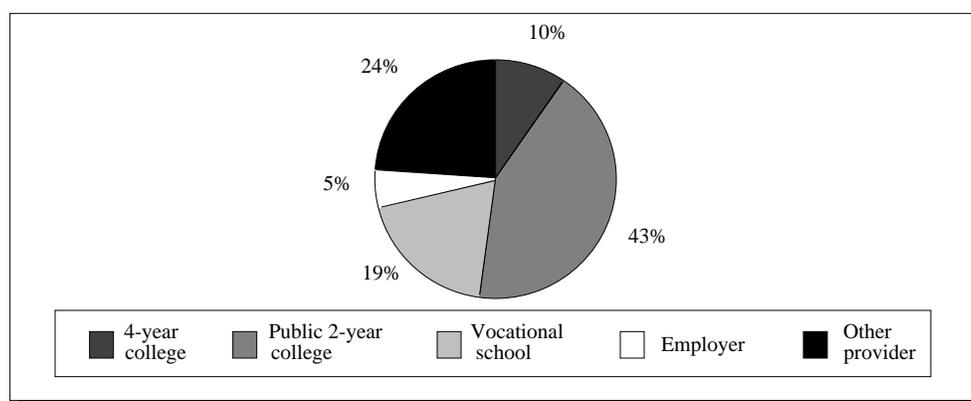
Program Participation: 1990 U.S. Population

Enrollment in Vocational Education

In the fall of 1990, about 6 percent of the U.S. population 18 through 34 years old were taking vocational courses (table 32).²⁷ About 43 percent of those students (3 percent of all 18-through 34-year-olds) were taking vocational courses in public 2-year colleges (figure 32). About 19 percent were taking courses from a vocational, trade, or business school, while only 5 percent were taking courses provided directly by employers.

Females 18 through 34 years old were more likely than males in this age group to be taking vocational courses. About 5 percent of males were enrolled in vocational courses in October of 1990, compared with 6 percent of females. Younger students were also more likely to be taking vocational courses, with 12 percent of 18- and 19-year-olds enrolled in vocational courses, compared with 7 percent of 20- through 24-year-olds and 4 percent of 25- through 34-year-olds. However, students presumably most in need of further training (those without a high school credential) were the least likely to be taking vocational courses. Only 3 percent of persons without high school credentials were enrolled in vocational courses, compared with 6 percent of high school completers, 8 percent of persons with some college, and 4 percent of persons who had completed 4 years of college.²⁸ This was due in part to the low enrollment rate of high school noncompleters in 2-year public schools.

Figure 32—Percentage of vocational course takers aged 18 through 34, by type of provider: October 1990¹



¹ Figure 32 illustrates the distribution among vocational providers only for those 18- through 34-year-olds who reported taking a vocational course during October of 1990. That is, the base of the figure corresponds to the 5.8 percent of the U.S. population included in the "Total" row in table 32.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, School Enrollment Supplement: October 1990.

²⁷ Only civilian, noninstitutionalized 18- to 34-year-olds who were not in high school are included in the analysis. Vocational course taking includes courses that lead to an occupational associate's degree or certificate as well as other business, vocational, technical, secretarial, trade, or correspondence courses whether or not they are taken for credit.

²⁸ Due to small sample sizes, the differences in the overall enrollment rates among racial-ethnic groups are not statistically significant. Furthermore, the differences in the enrollment rates for different providers among groups defined by sex or race-ethnicity are also not statistically significant.

Table 32—Percentage of U.S. population 18 through 34 years old taking vocational courses by type of provider, by selected characteristics: October 1990¹

	All providers	4-year college or university ²	Public 2-year college	Vocational, trade, technical, or business school	Employer	Other provider ³
Total	5.8	0.6	2.5	1.1	0.3	1.4
Sex						
Male	5.1	0.5	2.2	1.0	0.2	1.1
Female	6.4	0.6	2.7	1.2	0.3	1.6
Race-ethnicity ⁴						
White, non-Hispanic	5.6	0.5	2.5	1.1	0.3	1.3
Black, non-Hispanic	6.3	0.5	2.7	1.6	0.2	1.3
Hispanic	5.6	0.4	2.2	1.0	0.1	1.9
Age						
18–19 years	12.1	1.7	7.2	1.8	0.0	1.3
20–24 years	7.2	1.0	3.2	1.4	0.2	1.2
25–34 years	4.4	0.2	1.6	0.9	0.3	1.4
Region ⁵						
Northeast	5.1	0.5	2.3	0.9	0.2	1.4
Midwest	6.3	0.5	2.6	1.4	0.3	1.4
South	5.3	0.6	2.2	1.1	0.3	1.2
West	6.5	0.6	3.1	1.1	0.2	1.6
Educational attainment						
Less than high school graduation	2.6	0.1	0.2	0.9	0.1	1.3
High school graduation	6.3	0.5	2.6	1.6	0.2	1.4
Some college	8.2	1.1	4.9	0.9	0.2	1.1
College graduation	3.6	0.3	0.6	0.5	0.5	1.7

First row, first column reads: In October of 1990, 5.8 percent of the population 18 through 34 years old were taking courses in postsecondary vocational education.

¹ The base includes only civilian, noninstitutionalized persons who were not in high school.

² Includes programs that lead to an occupational associate's degree only.

³ Includes 4-year college or university (other than leading to an occupational associate's degree), other school, private business or company, government agency, or other nonschool provider.

⁴ The number of Asians and Native Americans included in the survey was too small to be reported separately.

⁵ Geographic regions are defined in the glossary of this report.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, School Enrollment Supplement: October 1990.

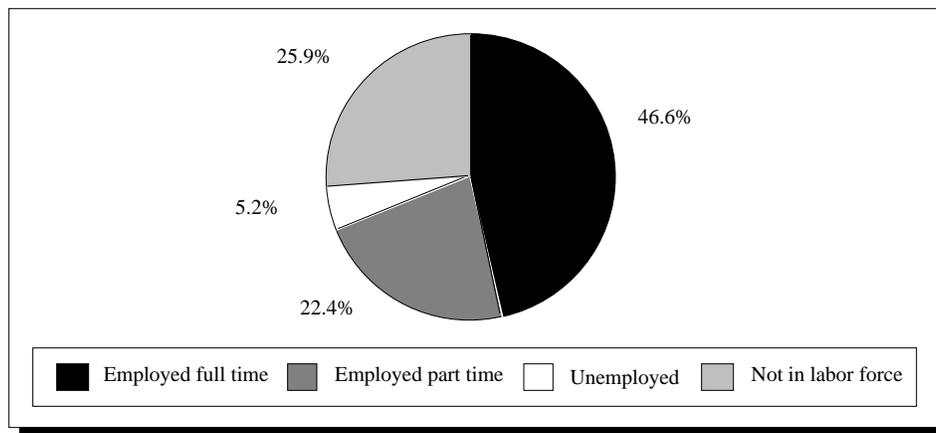
Program Participation: 1990 U.S. Population

Labor Market Participation of Vocational Education Students

About 47 percent of postsecondary vocational students 18 through 34 years old were employed full time (table 33 and figure 33). An additional 31 percent of vocational students were either unemployed or not in the labor force. Twenty-two percent of vocational students were employed part time.

Compared with males, female vocational students were more likely not to be in the labor force. About 31 percent of female and 18 percent of male vocational students 18 through 34 years old were not in the labor force. Compared with whites, blacks taking vocational courses were less likely to be working full time and were more likely to be out of the labor force. Vocational students 18 and 19 years old were also less likely than older vocational students to be working full time and were more likely to be out of the labor force. Almost 79 percent of 18- and 19-year-old vocational students were working part time or were out of the labor force. In contrast, only about 34 percent of 25- through 34-year-old vocational students were working part time or were not in the labor force.

Figure 33—Percentage of students aged 18 through 34 taking vocational courses, by labor market participation: October 1990



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

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, School Enrollment Supplement: October 1990.

Table 33—Percentage of U.S. population 18 through 34 years old taking vocational courses by labor market participation, by selected characteristics: October 1990¹

	Labor market participation ²			
	Employed full time	Employed part time	Unemployed	Not in labor force
Total	46.6	22.4	5.2	25.9
Sex				
Male	56.9	19.6	5.9	17.6
Female	39.1	25.0	4.7	31.3
Race-ethnicity ³				
White, non-Hispanic	51.8	25.0	3.6	21.4
Black, non-Hispanic	28.6	19.0	9.5	42.9
Hispanic	44.6	17.9	10.7	28.6
Age				
18–19 years	13.2	41.3	8.3	37.2
20–24 years	38.9	25.0	5.6	25.0
25–34 years	65.9	13.6	4.5	20.5
Region ⁴				
Northeast	47.1	21.6	5.9	27.5
Midwest	44.4	25.4	4.8	25.4
South	49.1	24.5	5.7	22.6
West	46.2	20.0	4.6	29.2
Educational attainment				
Less than high school graduation	38.5	7.7	7.7	46.2
High school graduation	41.3	22.2	6.3	28.6
Some college	43.9	31.7	4.9	22.0
College graduation	80.6	11.1	2.8	11.1

First row, first column reads: In October of 1990, 46.6 percent of 18- through 34-year-olds enrolled in postsecondary vocational education were employed full time.

¹ The base includes only civilian, noninstitutionalized persons who are not in high school.

² “Employed full time” is defined as 35 or more hours per week, while “employed part time” is less than 35 hours per week. “Unemployed” is defined as being without a job and looking for work, while “not in labor force” is being without a job but not looking for work.

³ The number of Asians and Native Americans included in the survey was too small to be reported separately.

⁴ Geographic regions are defined in the glossary of this report.

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

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, School Enrollment Supplement: October 1990.

Program Participation: 1990 U.S. Population

Enrollment Status of Vocational Education Students

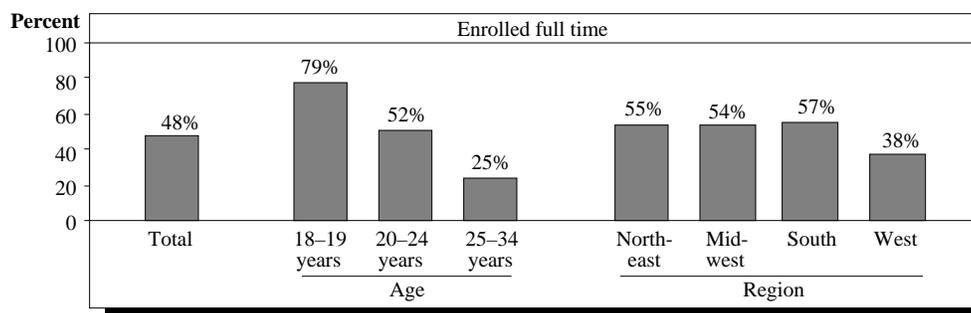
In October of 1990, about 3 percent of the U.S. population 18 through 34 years old were enrolled in vocational courses at public 2-year colleges. About 49 percent of those students were attending full time, while about 50 percent were enrolled part time—each representing about 1 percent of all 18- through 34-year-olds (table 34).

Females and younger persons were more likely than males and older persons to be taking vocational courses. About 3 percent of females were enrolled in 2-year vocational courses, compared with 2 percent of males. In addition, 7 percent of 18- and 19-year-olds were enrolled in such courses, compared with only 3 percent of 20- through 24-year-olds and 2 percent of 25- through 34-year-olds. Almost all of the difference in the enrollment rate for 18- and 19-year-olds was due to the increased likelihood of persons in this age group to be enrolled full time (figure 34).

Persons 18 through 34 years old who resided in the West were more likely to be enrolled in vocational coursework in public 2-year colleges than were residents of the South or Northeast. This difference was due in part to the larger proportion of 18- through 34-year-olds in the West who were enrolled part time. About 2 percent of 18- through 34-year-olds in the West were enrolled part time in vocational courses in public 2-year colleges, compared with only 1 percent in the South and 1 percent in the Northeast. In other words, more than 63 percent of vocational students in public 2-year colleges in the West were enrolled part time, compared with 48 percent in the South and 45 percent in the Northeast.

The vast majority of college graduates taking vocational courses at public 2-year colleges were enrolled on a part-time basis. In contrast, for all other education levels, an approximately equal proportion of students were enrolled full time and part time. While about 83 percent of vocational students who had completed 4 years of college were enrolled part time, only 50 percent of vocational students who had less than a high school credential, who had only a high school credential, or who had some college education were enrolled part time.

Figure 34—Percentage of vocational course takers aged 18 through 34 taking courses in public 2-year colleges who were enrolled full time, by age and region: October 1990¹



¹ Figure 34 includes full-time enrollment rates only for those 18- through 34-year-olds who were taking vocational courses in public 2-year colleges in October of 1990. That is, the base for the figure corresponds to the 2.5 percent of the U.S. population included in the "Total" row in table 34.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, School Enrollment Supplement: October 1990.

Table 34—Percentage of U.S. population 18 through 34 years old enrolled in public 2-year colleges taking vocational courses by enrollment status, by selected characteristics: October 1990^{1,2}

	Enrolled		
	Total	Full time	Part time
Total	2.5	1.2	1.3
Sex			
Male	2.2	1.1	1.0
Female	2.8	1.3	1.4
Race-ethnicity ³			
White, non-Hispanic	2.4	1.2	1.3
Black, non-Hispanic	2.7	1.7	0.9
Hispanic	2.2	0.9	1.3
Age			
18–19 years	7.2	5.7	1.5
20–24 years	3.1	1.6	1.6
25–34 years	1.6	0.4	1.1
Region ⁴			
Northeast	2.2	1.2	1.0
Midwest	2.6	1.4	1.2
South	2.1	1.2	1.0
West	3.2	1.2	2.0
Educational attainment			
Less than high school graduation	0.2	0.1	0.1
High school graduation	2.6	1.3	1.2
Some college	4.8	2.4	2.4
College graduation	0.6	0.1	0.5

First row, first column reads: in October of 1990, 2.5 percent of the population 18 through 34 years old were taking vocational courses in public 2-year colleges.

¹ The base includes only civilian, noninstitutionalized persons who are not in high school.

² Vocational courses in this table refer to all vocational work at a public 2-year college, including courses leading to an occupational associate's degree or certificate, as well as noncredit courses.

³ The number of Asians and Native Americans included in the survey was too small to be reported separately.

⁴ Geographic regions are defined in the glossary of this report.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, School Enrollment Supplement: October 1990.

Program Participation: 1980 High School Seniors

Attendance at Postsecondary Institutions

Of 1980 high school seniors enrolled in postsecondary education by 1984, 42 percent had attended a public 2-year institution, 3 percent a public vocational–technical institute, and 5 percent a private proprietary school—the three types of institutions delivering the bulk of vocational education (table 35). With two exceptions, about the same percentages of males and females attended each type of postsecondary institution. Females were much more likely than males to have attended private proprietary schools and private less-than-4-year institutions.

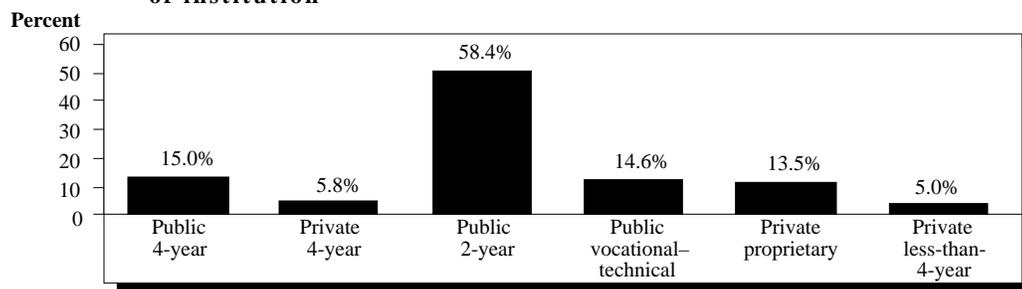
There were no significant differences in the percentages of black and white students attending public 2-year institutions and public vocational–technical institutes. About 40 percent of both racial–ethnic groups attended public 2-year institutions and about 3 or 4 percent had enrolled in vocational–technical institutes. A higher percentage of black students (7 percent) attended proprietary schools than did white students (5 percent).

With respect to socioeconomic status, about 46 percent of students in the three lowest quartiles attended public 2-year institutions, compared with only 33 percent in the highest quartile. Students in the lowest quartile were also more likely than students in the highest quartile to have attended public vocational–technical institutes and private proprietary schools.

While about one-third of the seniors whose parents had a college degree attended public 2-year institutions, only 1 percent attended public vocational–technical institutes, and 3 percent attended private proprietary schools. In contrast, 8 percent of students whose parents had no high school diploma attended vocational–technical institutes, and 10 percent attended proprietary schools.

Postsecondary students who, as high school seniors, said their postsecondary plans were “vocational–technical” were more likely to have attended public 2-year institutions than other types of institutions (figure 35). About 60 percent attended public 2-year institutions, while only 15 percent attended public vocational–technical institutes, and 14 percent attended private proprietary schools.

Figure 35—Percentage of 1980 high school seniors with vocational–technical education plans enrolled in postsecondary education by 1984, by type of institution¹



¹ 1980 high school seniors were asked in the spring of 1980 how far in school they thought they would get. Figure 35 includes only those students from table 35 who reported they had vocational–technical postsecondary education plans. Vocational–technical plans were defined as attendance at a vocational, trade or business school after high school.

NOTE: Estimates sum to greater than 100 percent because some 1980 high school seniors attended more than one type of postsecondary institution by 1984.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table 35—Percentage of 1980 high school seniors enrolled in postsecondary education by 1984 by type of institution, by selected characteristics¹

	Public 4-year	Private 4-year	Public 2-year	Public vocational– technical	Private proprietary	Private less-than- 4-year
Total	48.6	21.9	41.7	3.1	5.3	2.6
Sex						
Male	50.5	22.7	41.6	3.6	3.0	1.7
Female	47.0	21.1	41.8	2.6	7.2	3.4
Race–ethnicity						
White, non-Hispanic	49.3	23.1	40.7	2.9	5.0	2.7
Black, non-Hispanic	46.6	17.9	40.1	3.9	7.4	2.9
Hispanic	38.0	13.9	58.1	4.4	5.9	1.0
Asian	59.0	17.5	47.1	0.0	4.2	0.8
Native American	40.4	13.5	58.2	9.3	4.0	3.7
Socioeconomic status						
Lowest quartile	38.7	14.3	45.9	5.9	7.6	3.2
Second quartile	42.1	17.2	46.7	4.4	6.5	2.2
Third quartile	49.4	18.7	45.1	2.6	5.1	2.7
Highest quartile	57.5	31.7	33.4	1.1	3.4	2.4
Parent’s highest education						
Less than high school graduation	40.0	17.1	40.9	7.7	10.2	2.5
High school graduation	40.9	16.5	46.0	4.9	7.5	2.3
Some college	45.4	16.3	47.6	3.9	4.9	3.2
College graduation	57.3	30.4	34.4	0.7	3.4	2.2
Postsecondary education plans						
None	13.8	7.1	57.7	10.8	14.7	1.9
Vocational–technical	15.0	5.8	58.4	14.6	13.5	5.0
Less than 4 years	28.9	11.9	63.2	2.0	8.5	4.0
Bachelor’s degree	61.6	26.4	35.3	0.6	2.5	1.7
Advanced degree	64.4	31.6	28.0	0.4	2.0	1.8

First row, first column reads: Of 1980 high school seniors enrolled in postsecondary education by 1984, 48.6 percent attended public 4-year institutions.

¹ Data reported in the National Assessment of Vocational Education’s Second Interim Report (table 1-2) differs slightly from the data presented in this table.

NOTE: Estimates sum to greater than 100 percent because some 1980 high school seniors attended more than one type of postsecondary institution by 1984.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Program Participation: 1980 High School Seniors

In the tables that follow, the course-taking patterns of 1980 high school seniors enrolled in the four types of less-than-4-year institutions are compared. The analysis examines postsecondary courses attempted through 1984. Because of the large amount of missing data on credits in public vocational–technical and private proprietary institutions, this section of the report examines only courses attempted rather than credits earned in order to discuss course taking in these institutions.

Curriculum Participation

Of the 1980 high school seniors enrolled in public 2-year postsecondary institutions by 1984, 79 percent had taken at least one course in the vocational education curriculum (table 36 and figure 36). At public vocational–technical institutes and private proprietary schools, virtually every student enrolled took courses in vocational education. Of those students enrolled in private less-than-4-year institutions, 88 percent took one or more courses in vocational education. At public 2-year institutions, a somewhat larger proportion of males (83 percent) took vocational courses than did females (75 percent).

About 91 percent of students attending public 2-year and private less-than-4-year institutions took at least one course in the academic curriculum. At public vocational–technical institutes and proprietary schools, about 60 percent of the students enrolled took academic courses.

In private proprietary schools and private less-than-4-year institutions, significantly more females than males took academic courses. This pattern also appeared to be present in public vocational–technical institutes, although the difference was not statistically significant. No difference was found in the percentages of males and females taking academic courses in public 2-year institutions.

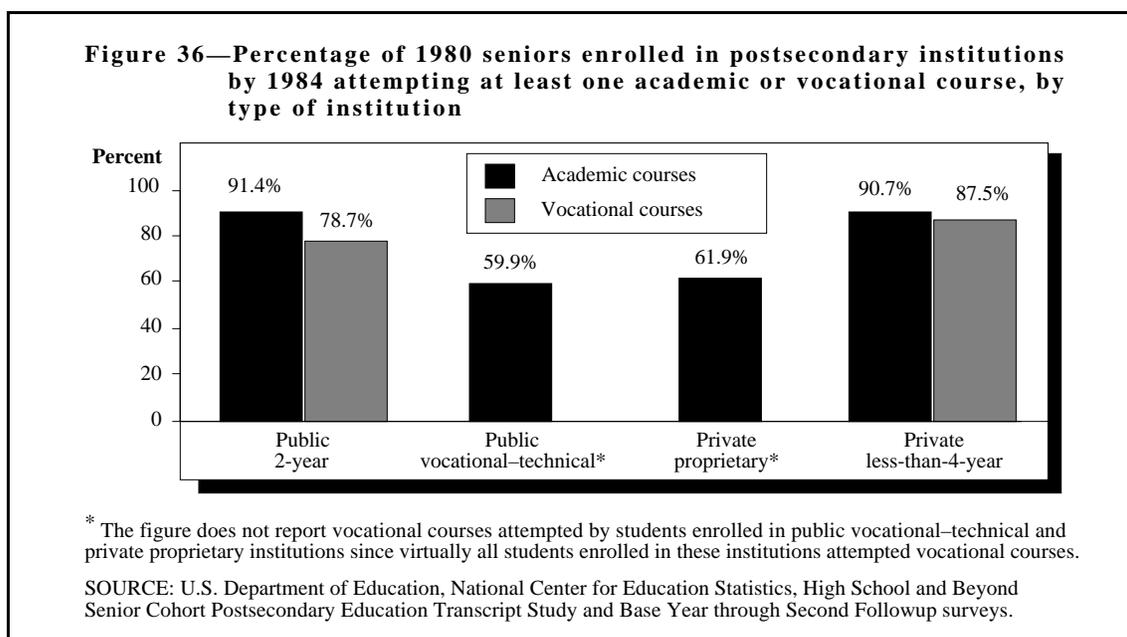


Table 36—Percentage of 1980 high school seniors enrolled in postsecondary institutions by 1984 attempting at least one academic or one vocational course by type of institution, by selected characteristics

	Public 2-year		Public vocational– technical	Private proprietary	Private less-than-4-year	
	Academic	Vocational	Academic*	Academic*	Academic	Vocational
Total	91.4	78.7	59.9	61.9	90.7	87.5
Sex						
Male	91.3	82.5	54.3	43.5	74.2	87.0
Female	91.5	75.4	66.7	68.9	97.3	87.7
Race–ethnicity						
White, non-Hispanic	91.0	79.3	60.7	61.6	89.9	89.0
Black, non-Hispanic	93.7	71.9	45.3	66.1	99.4	74.3
Hispanic	92.5	81.0	74.9	62.1	—	—
Asian	94.7	76.2	—	—	—	—
Native American	96.6	76.3	—	—	—	—
Socioeconomic status						
Lowest quartile	92.6	80.6	64.2	59.1	91.1	83.0
Second quartile	90.5	81.0	65.3	63.1	—	—
Third quartile	91.6	81.0	56.2	70.6	90.9	83.4
Highest quartile	92.6	73.2	—	75.2	95.2	89.4
Parent’s highest education						
Less than high school graduation	94.8	75.1	66.6	69.9	—	—
High school graduation	90.1	84.0	68.1	50.4	82.1	93.4
Some college	91.6	78.4	54.5	66.7	89.8	88.3
College graduation	92.3	76.2	—	69.9	94.5	83.7
Postsecondary education plans						
None	83.9	80.6	—	56.9	—	—
Vocational–technical	85.0	85.5	69.5	55.8	70.9	98.6
Less than 4 years	92.8	84.4	—	76.5	98.6	97.6
Bachelor’s degree	95.5	74.6	—	78.9	92.1	80.1
Advanced degree	94.2	71.3	—	64.4	100.0	75.0

First row, first column reads: Of 1980 high school seniors enrolled in public 2-year postsecondary institutions by 1984, 91.4 percent attempted at least one academic course.

* The table does not report vocational courses attempted by students enrolled in public vocational–technical and private proprietary institutions since virtually all students enrolled in these institutions attempted vocational courses.

— Sample size too small for reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Program Participation: 1980 High School Seniors

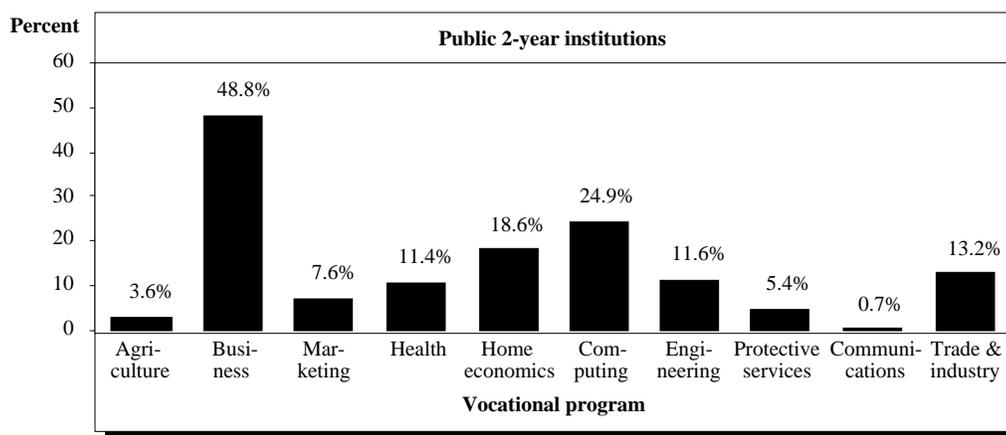
Program Participation: Public 2-Year Institutions

Of 1980 high school seniors taking at least one vocational course in public 2-year institutions by 1984, the largest number (49 percent) had taken a business course (table 37 and figure 37). The second most popular program was computers/data processing (enrolling 25 percent), followed by home economics (19 percent). Females were much more likely than males to have taken courses in health and home economics. Males were much more likely than females to have taken courses in agriculture, computers/data processing, engineering/science technologies, protective services, and trade & industry. Although more females than males took courses in business, this program was relatively well balanced, with 44 percent of males and 53 percent of the females having participated.

White students were more likely than black students to have taken courses in agriculture, home economics, and trade & industry. In addition, white students were more likely than Asian and Native American students to have taken courses in communications technologies.

Students whose postsecondary plans were vocational–technical were more likely than students planning to pursue a bachelor’s or advanced degree to have taken courses in trade & industry. However, they were less likely to have taken courses in home economics.

Figure 37—Percentage of 1980 high school seniors enrolled in public 2-year postsecondary institutions by 1984 attempting at least one course in vocational program areas



NOTE: Estimates may sum to greater than 100 percent because students may have attempted courses in more than one vocational program area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table 37—Percentage of 1980 high school seniors enrolled in public 2-year postsecondary institutions by 1984 attempting at least one course in vocational program areas, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communications technologies	Trade & industry
Total	3.6	48.8	7.6	11.4	18.6	24.9	11.6	5.4	0.7	13.2
Sex										
Male	5.0	43.7	7.6	6.4	13.5	30.6	22.4	7.3	0.8	23.9
Female	2.4	53.2	7.6	15.7	22.9	20.0	2.2	3.8	0.5	4.0
Race-ethnicity										
White, non-Hispanic	3.8	49.1	7.7	11.3	19.0	25.3	12.3	5.6	0.7	13.4
Black, non-Hispanic	0.8	49.9	7.0	9.4	13.0	22.5	7.3	3.6	0.6	8.1
Hispanic	3.0	49.7	8.6	16.1	20.3	22.3	10.7	5.6	0.4	14.9
Asian	6.0	38.7	8.7	13.3	27.6	29.7	9.2	6.4	0.0	15.1
Native American	7.6	40.7	3.3	8.2	17.7	16.9	16.0	9.6	0.0	15.1
Socioeconomic status										
Lowest quartile	4.9	54.5	8.8	12.4	17.3	24.5	11.0	4.1	1.1	14.2
Second quartile	6.2	49.2	6.8	14.4	19.7	21.8	12.7	5.8	0.3	17.1
Third quartile	2.5	50.1	6.4	12.3	20.1	25.1	9.9	6.9	0.3	11.9
Highest quartile	2.1	46.7	8.8	8.9	17.3	26.5	13.6	5.2	1.4	10.9
Parent's highest education										
Less than high school graduation	4.1	50.2	9.0	10.1	12.2	30.7	11.8	4.3	1.5	15.8
High school graduation	3.5	52.7	9.5	12.6	19.7	24.8	13.1	4.8	0.6	15.5
Some college	4.7	47.1	6.1	13.4	18.4	21.6	10.1	6.3	0.2	12.2
College graduation	2.0	48.0	8.0	8.5	19.7	28.4	12.6	5.3	1.2	11.9
Postsecondary education plans										
None	4.3	46.5	9.2	10.2	10.9	23.3	14.8	8.8	0.1	21.8
Vocational-technical	3.5	52.8	7.6	7.7	11.4	22.9	16.5	6.2	1.3	23.5
Less than 4 years	6.0	58.6	9.3	15.7	25.8	25.6	10.5	5.9	0.3	10.9
Bachelor's degree	2.6	46.4	6.2	13.1	18.2	26.0	10.4	4.9	0.4	10.6
Advanced degree	2.3	42.3	7.8	10.5	19.9	23.8	10.1	4.5	1.7	9.1

First row, first column reads: Of 1980 high school seniors enrolled in public 2-year institutions by 1984, 3.6 percent attempted at least one course in agriculture.

NOTE: Estimates may sum to greater than 100 percent because students may have attempted courses in more than one vocational program area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Program Participation: 1980 High School Seniors

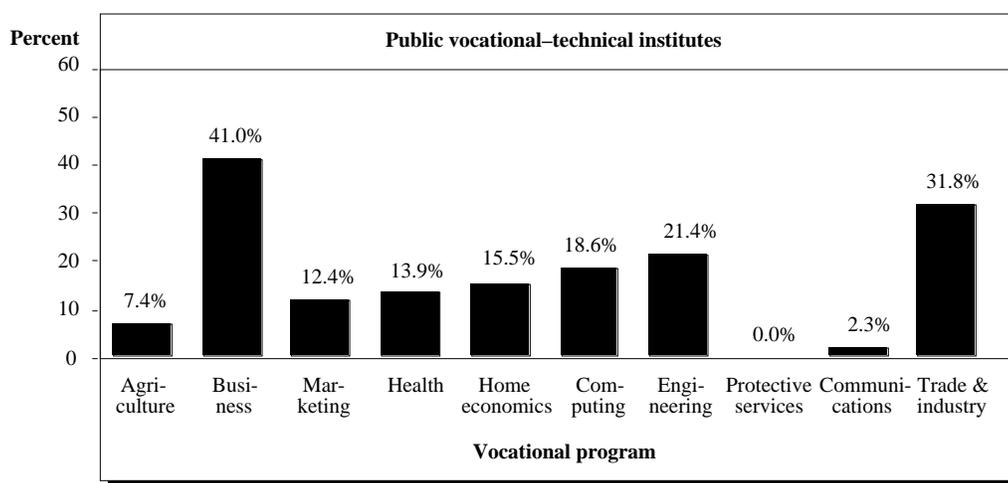
Program Participation: Public Vocational–Technical Institutes

Of 1980 high school seniors attending public vocational–technical institutes from 1980 to 1984, more students were likely to be enrolled in programs in trade & industry than were those attending public 2-year institutions (table 38 and figure 38). Thus, about 32 percent of students in the institutes took at least one course in trade & industry, compared with 13 percent in public 2-year institutions, as shown in table 37. About 21 percent of students attending the institutes took courses in engineering/science technologies, compared with 12 percent in public 2-year institutions.

More females than males took courses in business, health, home economics, and computers/data processing. More males than females took courses in agriculture, engineering/science technologies, and trade & industry. The participation differences by sex in these programs were quite marked. For example, while 53 percent of males participated in trade & industry programs, only 6 percent of females did so. Similarly, 39 percent of males took courses in engineering/science technologies, compared with only 1 percent of females.

Higher percentages of white than black students participated in agriculture, marketing & distribution, and engineering/science technologies. Although 34 percent of white students participated in trade & industry programs, versus 20 percent of black students, the difference was not statistically significant. Similarly, while it appeared that black students were more likely than white students to have taken courses in computers/data processing, the difference was also not significant.

Figure 38—Percentage of 1980 high school seniors enrolled in public vocational–technical institutes by 1984 attempting at least one course in vocational program areas



NOTE: Estimates may sum to greater than 100 percent because students may have attempted courses in more than one vocational program area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table 38—Percentage of 1980 high school seniors enrolled in public vocational–technical institutes by 1984 attempting at least one course in vocational program areas, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communications technologies	Trade & industry
Total	7.4	41.0	12.4	13.9	15.5	18.6	21.4	0.0	2.3	31.8
Sex										
Male	13.1	27.3	10.3	3.3	7.4	11.0	38.5	0.0	1.5	53.2
Female	0.5	57.7	15.0	26.8	25.3	27.9	0.6	0.0	3.3	5.8
Race–ethnicity										
White, non-Hispanic	9.7	39.9	12.9	14.9	16.8	17.4	23.4	0.0	2.0	33.7
Black, non-Hispanic	0.0	39.3	3.0	12.2	14.2	28.7	10.1	0.0	1.6	20.4
Hispanic	0.0	55.8	30.5	9.8	1.3	6.7	18.4	0.0	4.0	33.7
Asian	—	—	—	—	—	—	—	—	—	—
Native American	—	—	—	—	—	—	—	—	—	—
Socioeconomic status										
Lowest quartile	11.5	54.8	20.6	10.9	13.0	8.4	15.8	0.0	0.9	23.3
Second quartile	5.6	49.9	9.7	22.5	25.5	27.6	11.5	0.0	0.0	15.4
Third quartile	8.8	19.4	8.6	15.5	14.7	23.7	27.5	0.0	6.9	56.3
Highest quartile	—	—	—	—	—	—	—	—	—	—
Parent’s highest education										
Less than high school graduation	11.9	50.7	18.2	20.1	24.0	5.3	9.0	0.0	0.0	25.1
High school graduation	1.3	57.1	12.4	17.7	21.3	26.4	16.4	0.0	0.8	18.6
Some college	12.3	21.8	13.0	5.6	9.4	18.1	29.9	0.0	4.3	45.0
College graduation	—	—	—	—	—	—	—	—	—	—
Postsecondary education plans										
None	—	—	—	—	—	—	—	—	—	—
Vocational–technical	12.2	44.9	11.2	9.7	12.7	19.2	23.2	0.0	3.5	35.1
Less than 4 years	—	—	—	—	—	—	—	—	—	—
Bachelor’s degree	—	—	—	—	—	—	—	—	—	—
Advanced degree	—	—	—	—	—	—	—	—	—	—

First row, first column reads: Of 1980 high school seniors enrolled in public vocational–technical institutes by 1984, 7.4 percent attempted at least one course in agriculture.
 — Sample size too small for reliable estimate.

NOTE: Estimates may sum to greater than 100 percent because students may have attempted courses in more than one vocational program area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

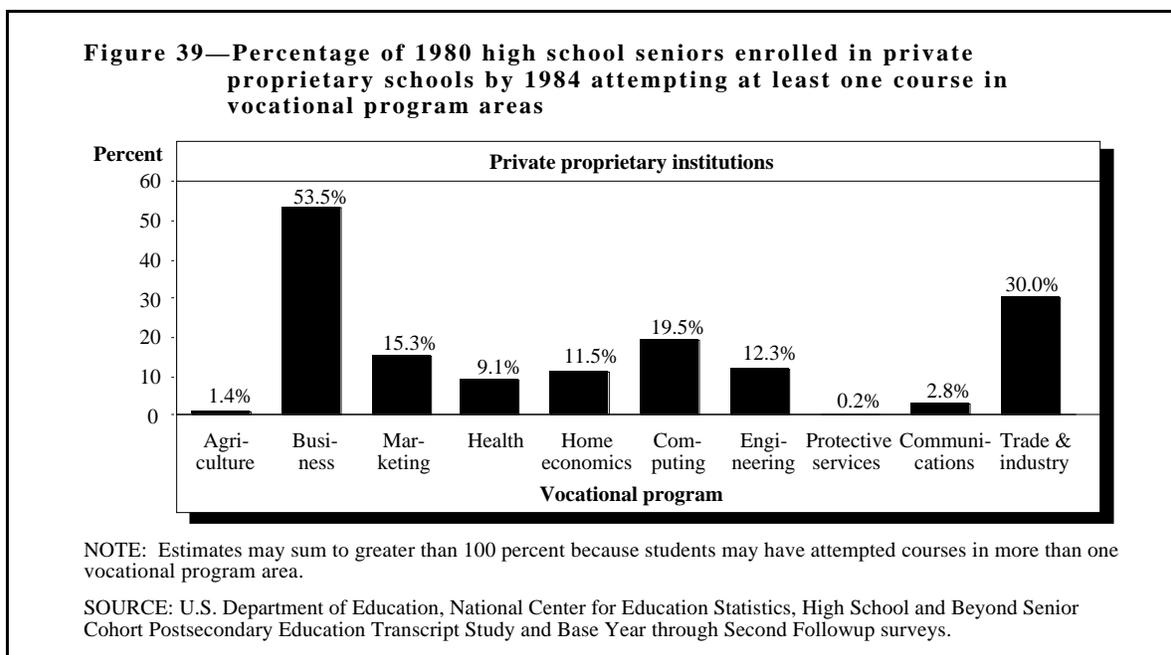
Program Participation: 1980 High School Seniors

Program Participation: Private Proprietary Schools

Like the vocational–technical institutes, a higher proportion of 1980 seniors attending proprietary schools between 1980 and 1984 enrolled in programs in trade & industry than did students in public 2-year institutions (table 39 and figure 39). About 30 percent of proprietary school students took courses in trade & industry, compared with 13 percent of students in public 2-year institutions, as shown in table 37. However, like the public 2-year institutions and the vocational–technical institutes, business programs were the most popular proprietary school offerings, enrolling 54 percent of the students.

In proprietary schools, females were much more likely than males to be enrolled in business, marketing & distribution, health, and home economics. In engineering/science technologies, 41 percent of the males took courses, compared with only 2 percent of the females. Interestingly, 26 percent of females in proprietary schools participated in trade & industry programs, compared with only 4 percent in public 2-year institutions and 6 percent in vocational–technical institutes. However, most of these females (three-fourths) were enrolled in programs in personal services, such as cosmetology, rather than other trade & industry areas which have traditionally been male programs.²⁹

There were few statistically significant differences in program participation by race–ethnicity in proprietary schools. More white students than black and Hispanic students participated in communications technologies programs. In addition, about 22 percent of white students took courses in computers/data processing, compared with only 2 percent of Hispanic students.



²⁹ Of 1980 female high school seniors attending private proprietary institutions by 1984, 19.5 percent took courses in personal services while only 6.4 percent took courses in other trade & industry areas.

Table 39—Percentage of 1980 high school seniors enrolled in private proprietary institutions by 1984 attempting at least one course in vocational program areas, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communications technologies	Trade & industry
Total	1.4	53.5	15.3	9.1	11.5	19.5	12.3	0.2	2.8	30.0
Sex										
Male	2.5	25.0	2.4	0.9	1.1	15.4	40.6	0.1	5.4	40.4
Female	0.9	64.3	20.2	12.2	15.5	21.0	1.5	0.2	1.9	25.9
Race-ethnicity										
White, non-Hispanic	0.8	52.2	15.1	8.6	11.6	21.9	13.1	0.2	3.6	30.2
Black, non-Hispanic	0.0	55.3	18.1	11.3	12.5	12.7	8.9	0.0	0.0	30.9
Hispanic	12.8	64.3	12.1	7.7	6.8	2.2	11.9	0.0	0.2	28.7
Asian	—	—	—	—	—	—	—	—	—	—
Native American	—	—	—	—	—	—	—	—	—	—
Socioeconomic status										
Lowest quartile	0.0	51.7	13.9	9.4	7.3	18.3	9.2	0.0	0.0	33.4
Second quartile	0.0	54.5	19.3	11.7	10.7	19.4	12.2	0.1	5.3	23.0
Third quartile	0.0	68.6	25.5	12.1	17.7	15.6	8.5	0.6	5.9	28.2
Highest quartile	7.2	54.7	8.2	6.8	16.5	25.0	11.4	0.0	1.0	26.1
Parent's highest education										
Less than high school graduation	0.0	61.2	16.2	2.0	1.4	36.5	5.1	0.0	0.0	20.0
High school graduation	0.0	50.4	17.3	10.7	10.0	11.6	12.4	0.0	0.0	34.5
Some college	0.0	51.3	15.6	12.6	9.2	19.6	12.9	0.6	8.7	29.4
College graduation	5.6	54.0	12.8	5.9	21.9	22.8	15.8	0.0	0.8	30.9
Postsecondary education plans										
None	0.0	50.3	13.4	12.5	0.0	15.3	7.1	0.0	0.0	32.0
Vocational-technical	0.0	45.6	10.7	4.6	9.2	12.3	18.2	0.5	4.9	36.0
Less than 4 years	0.0	68.2	19.9	11.8	22.0	30.8	3.3	0.0	0.0	15.8
Bachelor's degree	0.0	66.3	34.2	15.6	19.7	5.1	6.7	0.0	9.4	32.3
Advanced degree	13.4	66.1	10.0	12.1	8.4	31.9	10.0	0.2	0.0	13.4

First row, first column reads: Of 1980 high school seniors enrolled in private proprietary institutions by 1984, 1.4 percent attempted at least one course in agriculture.

— Sample size too small for reliable estimate.

NOTE: Estimates may sum to greater than 100 percent because students may have attempted courses in more than one vocational program area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Program Participation: 1980 High School Seniors

Program Participation: Private Less-than-4-Year Institutions

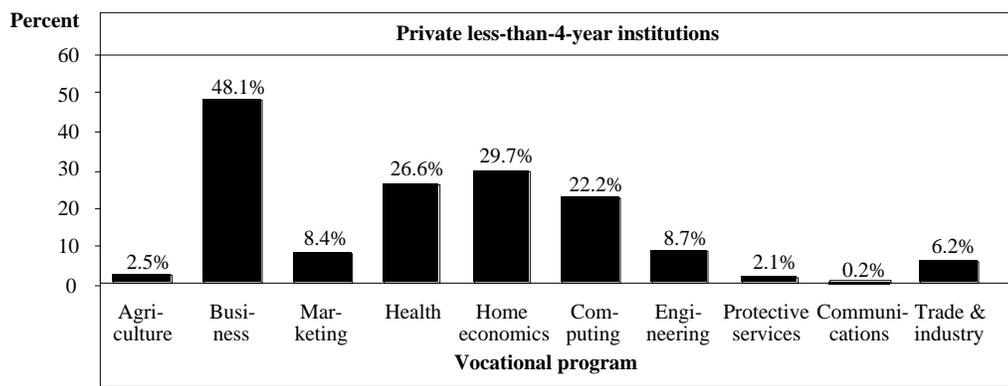
Compared with public vocational–technical institutes and private proprietary schools, students in private less-than-4-year institutions were much less likely to have taken courses in trade & industry (table 40 and figure 40). Only 6 percent of the students in private less-than-4-year institutions participated in trade & industry programs, compared with 32 percent of the students in public vocational–technical institutes and 30 percent of the students in proprietary schools. The percentage for private less-than-4-year institutions also appeared lower than the 13 percent for public 2-year institutions; however, the difference was not statistically significant.

Since many of the private less-than-4-year institutions were nursing schools, one would expect a larger proportion of students in these institutions to have taken courses in health. This was indeed the case. In private less-than-4-year institutions, 27 percent of the students were enrolled in health programs, compared with 9 percent in proprietary schools and 11 percent in public 2-year institutions.

Students in private less-than-4-year institutions were also more likely to have taken courses in home economics. In private less-than-4-year institutions, 30 percent of the students participated in home economics, compared with 12 percent in proprietary schools, 16 percent in public vocational–technical institutes, and 19 percent in public 2-year institutions. Since private less-than-4-year institutions include a number of “finishing schools,” which enroll only females, as well as nursing schools, where students may combine nursing with institutional home economics, their higher rate of participation in home economics is to be expected.

In private less-than-4-year institutions, 36 percent of females took courses in health, compared with only 3 percent of males. Females were also more likely to have taken courses in home economics. Males were much more likely to have taken courses in engineering/science technologies.

Figure 40—Percentage of 1980 high school seniors enrolled in private less-than-4-year institutions by 1984 attempting at least one course in vocational program areas



NOTE: Estimates may sum to greater than 100 percent because students may have attempted courses in more than one vocational program area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table 40—Percentage of 1980 high school seniors enrolled in private less-than-4-year postsecondary institutions by 1984 attempting at least one course in vocational program areas, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communications technologies	Trade & industry
Total	2.5	48.1	8.4	26.6	29.7	22.2	8.7	2.1	0.2	6.2
Sex										
Male	6.5	39.7	13.1	3.2	16.5	29.8	27.1	7.4	0.8	8.4
Female	0.9	51.5	6.5	35.9	35.0	19.2	1.3	0.0	0.0	5.3
Race-ethnicity										
White, non-Hispanic	3.0	49.0	8.7	29.4	31.0	23.2	8.5	2.1	0.0	6.0
Black, non-Hispanic	0.0	40.9	6.4	5.6	26.1	15.0	5.9	3.1	1.9	6.5
Hispanic	—	—	—	—	—	—	—	—	—	—
Asian	—	—	—	—	—	—	—	—	—	—
Native American	—	—	—	—	—	—	—	—	—	—
Socioeconomic status										
Lowest quartile	1.8	47.2	3.7	22.2	31.2	24.1	11.9	0.0	1.1	3.7
Second quartile	—	—	—	—	—	—	—	—	—	—
Third quartile	0.9	48.4	13.9	34.7	21.0	25.6	7.4	1.2	0.0	7.1
Highest quartile	5.9	50.3	5.5	27.1	42.9	23.5	6.2	5.6	0.0	0.0
Parent's highest education										
Less than high school graduation	—	—	—	—	—	—	—	—	—	—
High school graduation	1.8	59.0	13.7	22.2	19.8	33.2	16.4	0.0	1.1	2.5
Some college	1.9	41.4	4.8	30.3	25.3	10.4	6.2	0.7	0.0	14.2
College graduation	4.2	48.6	11.3	18.8	41.5	31.1	5.1	5.5	0.0	0.0
Postsecondary education plans										
None	—	—	—	—	—	—	—	—	—	—
Vocational-technical	0.0	59.2	17.1	24.0	7.9	13.6	16.3	0.0	0.0	9.4
Less than 4 years	1.5	71.4	15.0	30.8	45.1	34.8	3.5	0.0	0.9	0.9
Bachelor's degree	2.0	26.8	1.3	17.9	28.1	21.9	4.0	7.9	0.0	14.4
Advanced degree	8.3	43.7	1.4	36.0	36.1	19.5	7.0	1.3	0.0	1.4

First row, first column reads: Of 1980 high school seniors enrolled in private less-than-4-year institutions by 1984, 2.5 percent attempted at least one course in agriculture.
 — Sample size too small for reliable estimate.

NOTE: Estimates may sum to greater than 100 percent because students may have attempted courses in more than one vocational program area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Program Participation: 1972 and 1980 High School Seniors

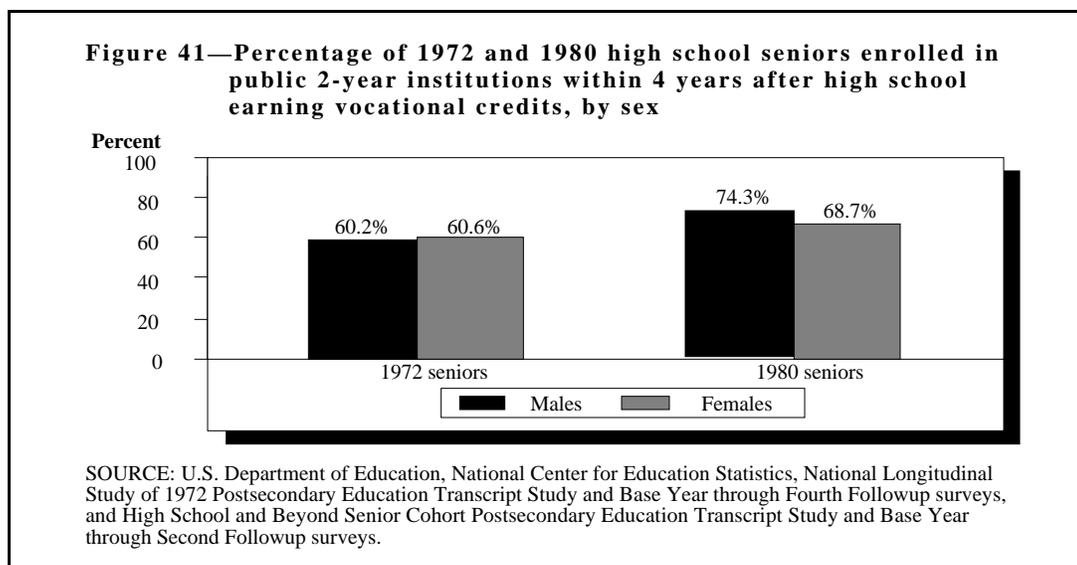
In the tables that follow, the course-taking patterns of 1972 and 1980 high school seniors in public 2-year institutions are compared. For both cohorts, the analysis examines postsecondary coursework completed within 4 years of graduating from high school.³⁰ Thus, for 1972 seniors, any courses taken through 1976 are included; for 1980 seniors, any courses taken through 1984 are included.

Curriculum Participation

For these two cohorts, there was no change in the percentage of students attending public 2-year institutions within the first 4 years after high school who took academic courses (table 41). For both cohorts, about 85 percent of all students took courses in the academic curriculum. There was, however, a significant increase in the percentage of such students taking vocational courses. While only 60 percent of 1972 seniors took at least one vocational education course, 71 percent of 1980 seniors did so.

As figure 41 illustrates, about 60 percent of male and female 1972 seniors earned credits in vocational education by 1976, but for the 1980 cohort, more male than female seniors earned vocational credits (74.3 percent versus 68.7 percent). Among 1980 seniors, 62 percent of black students participated in vocational education, compared with 72 percent of white students.

There was no relationship between changes in vocational education participation and socioeconomic status or parents' education. Participation in vocational education increased in all four quartiles of socioeconomic status and all but the lowest parental education category.



³⁰ Unlike the previous section that looked at courses attempted, the following tables examine postsecondary courses completed; that is, courses for which credits were earned. Standard collegiate institutions report credits based on similar credit scales. The typical academic course in these institutions carries a value of 3 credits, and most fall between 3 and 5 credits. However, a credit earned under a quarter system is not equivalent to a credit earned under a semester system. To standardize credit numbers, all credits were converted to a semester metric. In most cases, this meant multiplying quarter credits by two-thirds (so that 45 quarter credits would be converted to 30 semester credits).

Table 41—Percentage of 1972 and 1980 high school seniors enrolled in public 2-year institutions within 4 years after high school earning academic and vocational credits, by selected characteristics

	1972 seniors		1980 seniors	
	Academic	Vocational	Academic	Vocational
Total	85.7	60.4	85.2	71.3
Sex				
Male	85.4	60.2	84.7	74.3
Female	86.1	60.6	85.5	68.7
Race–ethnicity				
White, non-Hispanic	86.3	61.8	85.3	72.3
Black, non-Hispanic	83.7	50.3	85.2	61.9
Hispanic	83.7	58.4	82.4	72.3
Asian	91.6	54.9	90.1	72.8
Native American	76.0	50.9	92.4	68.5
Socioeconomic status*				
Lowest quartile	81.2	60.3	83.8	72.5
Second quartile	85.6	61.8	84.3	73.0
Third quartile			86.3	72.8
Highest quartile	89.3	57.7	87.9	67.3
Parent’s highest education				
Less than high school graduation	82.2	60.8	83.0	67.2
High school graduation	84.3	61.6	84.4	74.7
Some college	86.8	61.0	84.7	72.2
College graduation	89.2	58.0	88.2	68.9
Postsecondary education plans				
None	67.1	55.0	75.6	70.4
Vocational–technical	78.0	67.8	75.8	78.8
Less than 4 years	87.5	70.2	86.8	76.3
Bachelor’s degree	90.7	54.2	91.0	67.3
Advanced degree	94.0	48.9	88.7	64.1

First row, first column reads: Of 1972 high school seniors enrolled in public 2-year institutions by 1976, 85.7 percent earned at least one academic credit.

* The socioeconomic status data for 1972 seniors are grouped into three levels: “low” corresponds to the lowest quartile, “medium” corresponds to the second and third quartiles combined, and “high” corresponds to the highest quartile.

SOURCE: U.S. Department of Education, National Center for Education Statistics, the National Longitudinal Study of 1972 Postsecondary Education Transcript Study and Base Year through Fourth Followup surveys, and the High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Program Participation: 1972 and 1980 High School Seniors

Credits Earned in Academic and Vocational Curricula

The number of credits earned by 1972 and 1980 high school seniors who enrolled in public 2-year institutions within 4 years of high school graduation changed significantly (table 42 and figure 42). The average number of academic credits declined from 22 credits for 1972 seniors to 20 credits for 1980 seniors. During this same period, the average number of vocational credits increased from 9 to 11 credits.

On average, males in the high school class of 1980 earned 3 fewer credits in academic subjects than did males in the high school class of 1972. Males in the 1980 cohort earned an average of 3 more credits in vocational education than males in the 1972 cohort. Academic credits earned by females also declined, from 22 credits for the 1972 cohort to 20 credits for the 1980 cohort, but credits earned by females in vocational education were not appreciably different for the high school classes of 1972 and 1980.

Academic credits earned by white students declined from 23 credits for 1972 seniors to 20 credits for 1980 seniors. Academic credits earned by black students fell from 19 credits for 1972 seniors to 15 credits for 1980 seniors. In contrast, academic credits earned by Native American students almost doubled, from 12 credits for 1972 seniors to 23 credits for 1980 seniors. The credits earned in vocational education by 1972 and 1980 seniors increased for white, black and Hispanic students.

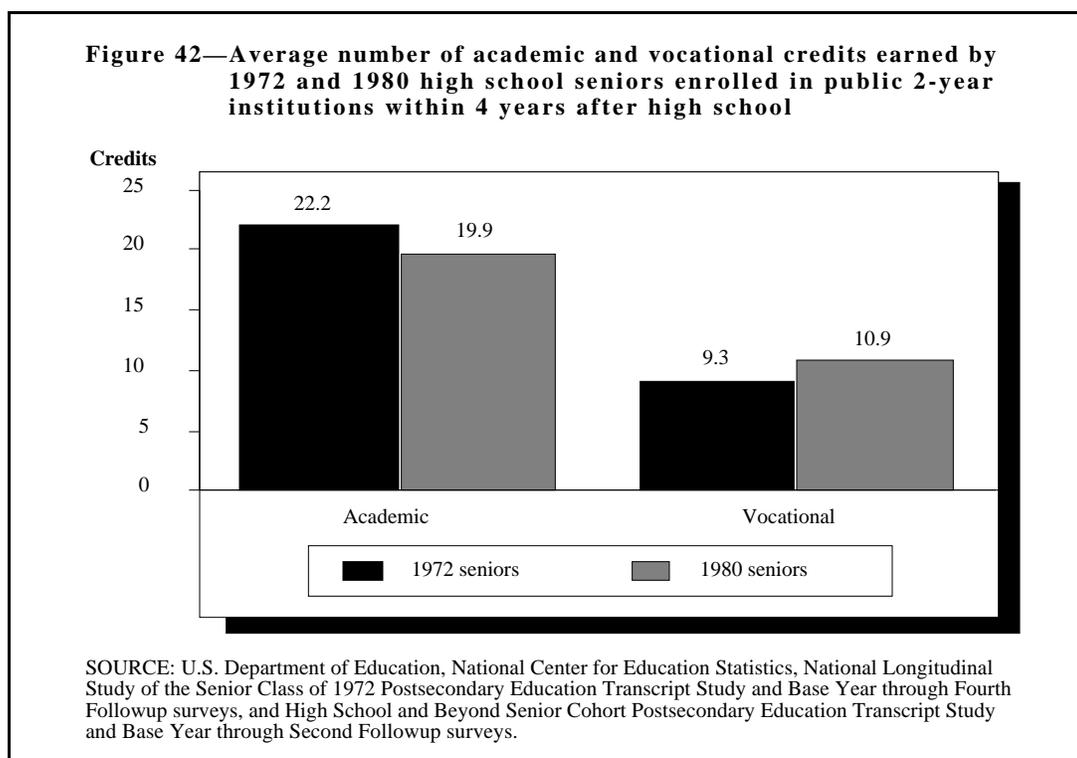


Table 42—Average number of academic and vocational credits earned by 1972 and 1980 high school seniors enrolled in public 2-year institutions within 4 years after high school, by selected characteristics

	1972 seniors		1980 seniors	
	Academic	Vocational	Academic	Vocational
Total	22.2	9.3	19.9	10.9
Sex				
Male	22.6	9.4	20.0	12.2
Female	21.7	9.2	19.8	9.7
Race–ethnicity				
White, non-Hispanic	22.8	9.9	20.3	11.3
Black, non-Hispanic	18.5	6.1	14.9	8.0
Hispanic	18.4	7.7	20.0	10.4
Asian	25.5	9.0	28.7	9.4
Native American	12.4	8.8	22.8	8.9
Socioeconomic status*				
Lowest quartile	19.2	10.0	16.8	11.8
Second quartile	22.0	9.8	18.8	13.5
Third quartile			20.5	11.6
Highest quartile	24.5	8.1	22.9	8.7
Parent’s highest education				
Less than high school graduation	19.3	9.2	20.2	12.5
High school graduation	20.9	10.5	19.1	13.0
Some college	23.3	9.2	19.7	11.2
College graduation	24.6	8.0	21.1	8.4
Postsecondary education plans				
None	9.8	6.0	8.7	10.5
Vocational–technical	12.3	14.0	12.8	16.0
Less than 4 years	22.2	12.4	20.8	14.4
Bachelor’s degree	27.6	6.9	23.5	8.3
Advanced degree	30.4	5.0	24.1	7.4

First row, first column reads: 1972 high school seniors enrolled in public 2-year institutions by 1976 earned on average 22.2 academic credits.

* The socioeconomic status data for 1972 seniors are grouped into three levels: “low” corresponds to the lowest quartile, “medium” corresponds to the second and third quartiles combined, and “high” corresponds to the highest quartile.

SOURCE: U.S. Department of Education, National Center for Education Statistics, the National Longitudinal Study of 1972 Postsecondary Education Transcript Study and Base Year through Fourth Followup surveys, and the High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Program Participation: 1972 and 1980 High School Seniors

Vocational Credits Earned

As noted previously, the percentage of students taking any postsecondary vocational education in public 2-year institutions increased significantly from 60 percent for 1972 seniors to 71 percent for 1980 seniors. Specifically, the percentage of students earning greater than zero and up to 5.0 credits in vocational education increased between the 1972 and 1980 cohorts (table 43 and figure 43). No significant changes occurred, however, in the percentages of students earning more than 5.0 credits.

In short, while more 1980 seniors participated in postsecondary vocational education compared with 1972 seniors, the 1980 cohort tended to earn small to moderate numbers of credits, rather than to concentrate heavily in the vocational curriculum. These overall patterns appeared to persist for most subgroups of students, although the differences were generally not statistically significant.

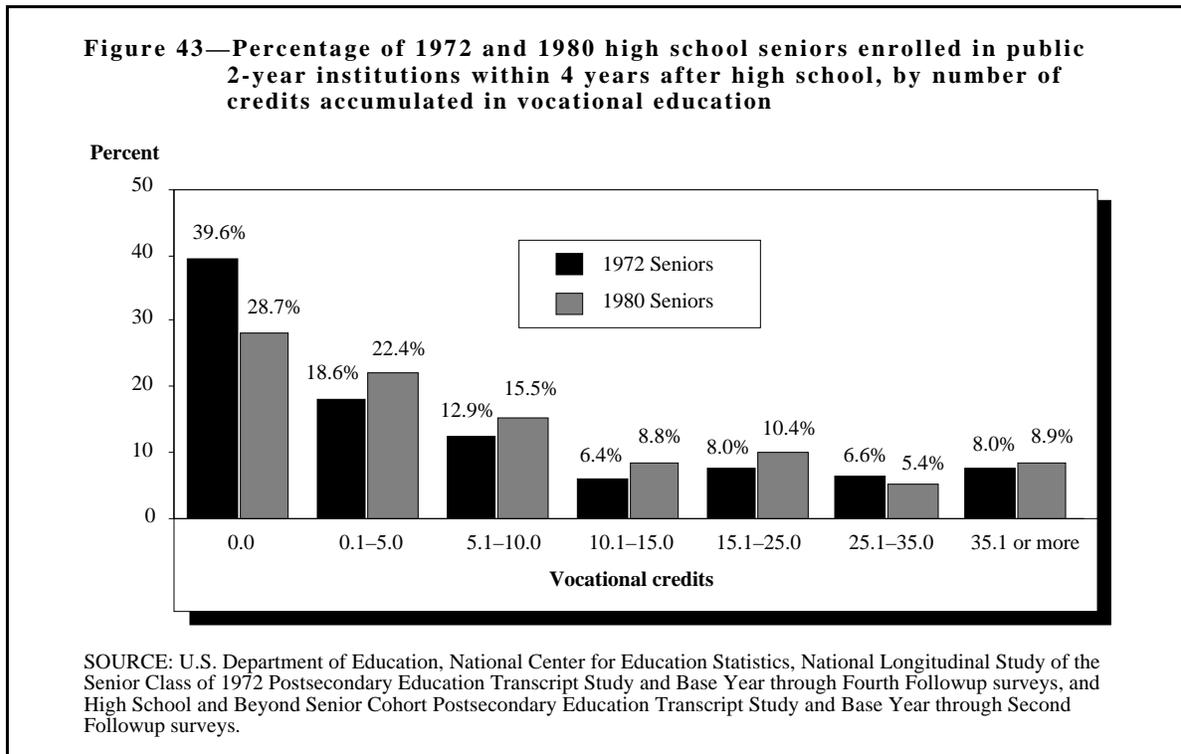


Table 43—Percentage of 1972 and 1980 high school seniors enrolled in public 2-year institutions within 4 years after high school by number of credits accumulated in vocational education, by selected characteristics

	Number of credits in vocational education						35.1 or more
	0.0	0.1– 5.0	5.1– 10.0	10.1– 15.0	15.1– 25.0	25.1– 35.0	
1972 seniors							
Total	39.6	18.6	12.9	6.4	8.0	6.6	8.0
Sex							
Male	39.8	18.0	12.7	7.0	8.5	6.1	7.9
Female	39.4	19.3	13.1	5.7	7.3	7.1	8.2
Race–ethnicity							
White, non-Hispanic	38.2	18.1	13.2	6.6	8.2	7.0	8.6
Black, non-Hispanic	49.7	21.1	11.0	4.7	4.8	4.8	3.9
Hispanic	41.6	21.2	14.0	6.5	6.4	4.4	6.0
Asian	45.1	16.6	10.2	4.3	10.7	3.1	10.1
Native American	49.1	16.4	4.7	8.6	7.1	7.4	6.8
Socioeconomic status*							
Lowest quartile	39.7	17.6	11.7	7.2	7.8	7.0	9.0
Second quartile	38.2	18.8	13.4	5.7	7.8	7.2	8.9
Third quartile							
Highest quartile	42.3	18.9	12.4	7.1	8.6	5.1	5.7
1980 seniors							
Total	28.7	22.4	15.5	8.8	10.4	5.4	8.9
Sex							
Male	25.7	21.0	15.6	10.3	11.5	5.6	10.4
Female	31.3	23.6	15.4	7.5	9.4	5.2	7.6
Race–ethnicity							
White, non-Hispanic	27.7	23.1	14.7	8.9	10.7	5.5	9.4
Black, non-Hispanic	38.1	20.3	18.2	5.2	7.3	4.7	6.1
Hispanic	27.7	19.3	18.3	11.0	12.0	4.8	6.9
Asian	27.2	19.1	20.4	13.9	10.9	4.3	4.4
Native American	31.5	24.6	19.5	5.5	8.6	2.2	8.1
Socioeconomic status							
Lowest quartile	27.5	20.8	15.3	8.6	12.2	6.6	9.0
Second quartile	27.0	20.9	16.0	5.6	8.4	7.2	14.9
Third quartile	27.2	24.8	13.0	8.7	9.6	6.4	10.3
Highest quartile	32.7	19.8	17.4	11.6	10.9	3.0	4.7

First row, first column reads: Of 1972 high school seniors enrolled in public 2-year institutions by 1976, 39.6 percent earned no vocational credits.

* The socioeconomic status data for 1972 seniors are grouped into three levels: “low” corresponds to the lowest quartile, “medium” corresponds to the second and third quartiles combined, and “high” corresponds to the highest quartile.

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, the National Longitudinal Study of 1972 Postsecondary Education Transcript Study and Base Year through Fourth Followup surveys, and the High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

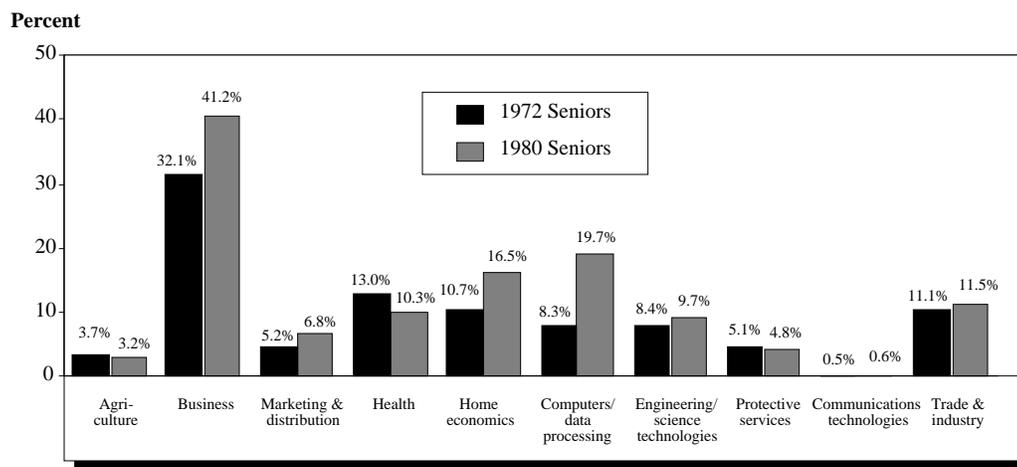
Program Participation: 1972 and 1980 High School Seniors

Program Participation

Student participation in some postsecondary vocational program areas increased between the 1970s and 1980s. Four years after graduating from high school, a larger percentage of the high school class of 1980 than the class of 1972 had earned at least 1 credit in business, home economics, and computers/data processing at public 2-year institutions (table 44 and figure 44). By 1984, 41 percent of the class of 1980 had taken business courses, 17 percent had taken home economics courses, and 20 percent had taken computers/data processing courses. In comparison, 32 percent of the class of 1972 had taken business courses, 11 percent had taken home economics courses, and only 8 percent had taken computers/data processing courses.

In both cohorts, males were more likely than females to participate in agriculture, computers/data processing, engineering/science technologies, protective services, and trade & industry. Females were more likely than males to participate in business & office, health, and home economics. Between 1972 and 1980, the percentage of seniors in all racial-ethnic groups taking courses in computers/data processing more than doubled. Moreover, in 1980 a greater percentage of white, black and Asian seniors took courses in home economics, a greater percentage of white, black and Hispanic seniors took courses in business, and a greater percentage of black, Hispanic and Asian seniors took courses in marketing & distribution than took such courses in 1972. Students from all socioeconomic groups in the 1980 cohort participated at higher rates in business, home economics and computers/data processing than did their counterparts in the 1972 cohort.

Figure 44—Percentage of 1972 and 1980 high school seniors enrolled in public 2-year institutions within 4 years after high school, earning at least one credit in vocational program areas



NOTE: Estimates may sum to greater than 100 percent because students may have earned credits in more than one vocational program area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Longitudinal Study of the Senior Class of 1972 Postsecondary Education Transcript Study and Base Year through Fourth Followup surveys, and High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table 44—Percentage of 1972 and 1980 high school seniors enrolled in public 2-year institutions within 4 years after high school earning at least one credit in vocational program areas, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communications technologies	Trade & industry
1972 seniors										
Total	3.7	32.1	5.2	13.0	10.7	8.3	8.4	5.1	0.5	11.1
Sex										
Male	5.2	28.3	5.9	7.7	4.8	9.9	15.0	7.4	0.7	18.4
Female	2.0	36.4	4.4	19.0	17.4	6.3	1.2	2.5	0.3	2.9
Race-ethnicity										
White, non-Hispanic	4.4	32.5	5.7	13.6	11.1	8.7	8.7	5.5	0.4	11.3
Black, non-Hispanic	0.0	30.4	3.7	10.1	7.2	7.4	4.5	2.6	1.4	6.6
Hispanic	0.3	30.8	2.4	11.0	11.4	4.8	6.1	4.2	1.0	11.9
Asian	0.0	28.9	0.0	9.5	6.5	9.8	12.3	1.4	0.0	10.7
Native American	0.8	30.4	2.6	6.5	9.3	0.8	16.4	1.4	0.0	13.6
Socioeconomic status*										
Lowest quartile	1.9	33.2	4.2	12.0	10.2	7.6	8.1	4.5	0.8	13.3
Second quartile	4.2	32.7	5.4	13.6	10.9	9.0	9.0	5.5	0.4	10.7
Third quartile										
Highest quartile	4.0	30.4	5.4	12.6	10.9	7.2	7.4	4.7	0.5	10.0
1980 seniors										
Total	3.2	41.2	6.8	10.3	16.5	19.7	9.7	4.8	0.6	11.5
Sex										
Male	4.3	35.8	6.9	5.7	12.5	24.1	18.9	6.2	0.8	21.2
Female	2.2	45.9	6.7	14.3	19.9	15.8	1.8	3.6	0.5	3.1
Race-ethnicity										
White, non-Hispanic	3.3	41.7	6.9	10.3	17.0	20.2	10.3	5.1	0.7	11.7
Black, non-Hispanic	0.4	39.7	6.2	8.1	11.2	15.5	6.3	2.8	0.5	6.3
Hispanic	3.0	42.1	7.8	14.4	17.2	17.6	8.8	4.4	0.4	13.4
Asian	5.5	34.3	6.9	10.9	23.0	25.6	8.9	6.4	0.0	14.6
Native American	5.1	36.3	2.9	7.5	15.8	9.4	15.1	9.5	0.0	10.4
Socioeconomic status										
Lowest quartile	4.2	46.0	7.5	11.7	15.2	18.5	9.8	3.6	1.2	11.7
Second quartile	5.4	40.6	6.2	13.6	17.9	16.5	10.1	5.1	0.2	14.5
Third quartile	2.3	41.7	5.4	10.5	17.2	19.4	8.5	6.0	0.3	10.6
Highest quartile	2.0	41.4	8.0	8.4	16.3	22.0	11.4	5.1	1.3	9.0

First row, first column reads: Of 1972 high school seniors enrolled in public 2-year institutions by 1976, 3.7 percent earned at least one credit in agriculture.

* The socioeconomic status data for 1972 seniors are grouped into three levels: "low" corresponds to the lowest quartile, "medium" corresponds to the second and third quartiles combined, and "high" corresponds to the highest quartile.

NOTE: Estimates may sum to greater than 100 percent because students may have earned credits in more than one vocational program area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, the National Longitudinal Study of 1972 Postsecondary Education Transcript Study and Base Year through Fourth Followup surveys, and the High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Program Participation: 1972 and 1980 High School Seniors

Credits Earned by Program

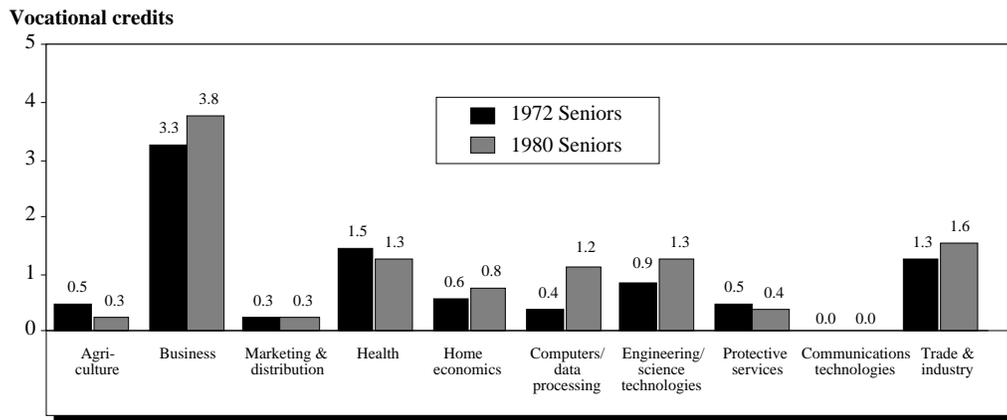
Four years after their senior year in high school, students from the class of 1980 enrolled in public 2-year institutions had earned about the same number of credits in various vocational subjects as had students from the high school class of 1972 (table 45 and figure 45). The exceptions occurred in computers/data processing, where the 1972 cohort earned on average 0 credits and the 1980 cohort earned 1 credit, and in business, where the 1972 cohort earned 3 credits and the 1980 cohort earned 4 credits.

In both cohorts, compared with female students, male students earned more credits in agriculture, engineering/science technologies, and trade & industry. Males earned fewer credits than females in business, health, and home economics. However, the difference in the average number of credits earned in health between males and females in the 1980 cohort was smaller than this difference between males and females in the 1972 cohort.

Seniors in all racial-ethnic groups and socioeconomic quartiles increased the number of credits earned in computers/data processing between 1972 and 1980. White seniors in the 1980 cohort earned fewer credits in agriculture and more credits in home economics than their counterparts in the 1972 cohort. In addition, Hispanic seniors in the 1980 cohort earned more credits in agriculture than their counterparts in the 1972 cohort. Asian seniors in the 1980 cohort earned a greater number of credits in agriculture, marketing & distribution, and protective services than their counterparts in the 1972 cohort.

Black seniors in both the 1972 and 1980 cohorts earned fewer credits than white seniors in agriculture and trade & industry, and black and Asian seniors in both cohorts earned fewer credits than white seniors in health. However, when examining the relationship of socioeconomic status to credits earned, no consistent differences were observed between the 1972 and 1980 cohorts.

Figure 45—Average number of credits earned in vocational program areas by 1972 and 1980 high school seniors enrolled in public 2-year institutions within 4 years after high school



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Longitudinal Study of the Senior Class of 1972 Postsecondary Education Transcript Study and Base Year through Fourth Followup surveys, and High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table 45—Average number of credits earned in vocational program areas by 1972 and 1980 high school seniors enrolled in public 2-year institutions within 4 years after high school, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communications technologies	Trade & industry
1972 seniors										
Total	0.5	3.3	0.3	1.5	0.6	0.4	0.9	0.5	0.0	1.3
Sex										
Male	0.8	2.5	0.3	0.3	0.2	0.4	1.7	0.8	0.0	2.2
Female	0.2	4.2	0.3	2.9	0.9	0.3	0.1	0.2	0.0	0.3
Race-ethnicity										
White, non-Hispanic	0.6	3.4	0.3	1.7	0.6	0.4	1.0	0.6	0.0	1.3
Black, non-Hispanic	0.0	3.2	0.2	0.6	0.3	0.4	0.4	0.1	0.1	0.7
Hispanic	0.0	2.9	0.2	0.7	0.5	0.3	0.8	0.5	0.1	1.8
Asian	0.0	4.0	0.0	0.7	1.0	0.3	1.2	0.0	0.0	1.8
Native American	0.4	3.6	0.1	0.9	0.3	0.0	1.3	0.1	0.0	2.1
Socioeconomic status*										
Lowest quartile	0.3	3.9	0.2	1.5	0.6	0.4	1.2	0.4	0.0	1.6
Second quartile	0.6	3.3	0.3	1.7	0.5	0.4	1.0	0.6	0.0	1.3
Third quartile										
Highest quartile	0.4	2.8	0.3	1.3	0.6	0.3	0.7	0.5	0.0	1.0
1980 seniors										
Total	0.3	3.8	0.3	1.3	0.8	1.2	1.3	0.4	0.0	1.6
Sex										
Male	0.5	2.7	0.3	0.5	0.5	1.5	2.7	0.5	0.0	3.0
Female	0.1	4.7	0.4	1.9	1.0	0.9	0.1	0.3	0.0	0.3
Race-ethnicity										
White, non-Hispanic	0.3	3.7	0.3	1.4	0.8	1.3	1.4	0.4	0.0	1.6
Black, non-Hispanic	0.0	3.9	0.3	0.6	0.5	0.7	1.0	0.2	0.1	0.6
Hispanic	0.2	4.0	0.5	0.9	0.7	0.8	0.9	0.3	0.1	1.9
Asian	0.2	3.0	0.2	0.5	1.2	1.0	1.0	0.5	0.0	1.9
Native American	0.4	3.2	0.1	0.6	0.5	0.4	1.8	0.4	0.0	1.4
Socioeconomic status										
Lowest quartile	0.7	4.0	0.3	1.3	0.7	0.9	1.3	0.3	0.0	2.3
Second quartile	0.6	5.0	0.3	1.5	0.8	1.4	1.2	0.3	0.0	2.3
Third quartile	0.1	3.7	0.3	1.7	0.8	1.4	1.8	0.7	0.0	1.1
Highest quartile	0.1	3.2	0.4	0.8	0.8	0.9	1.3	0.2	0.1	0.9

First row, first column reads: 1972 high school seniors enrolled in public 2-year institutions by 1976 earned on average 0.5 credits in agriculture.

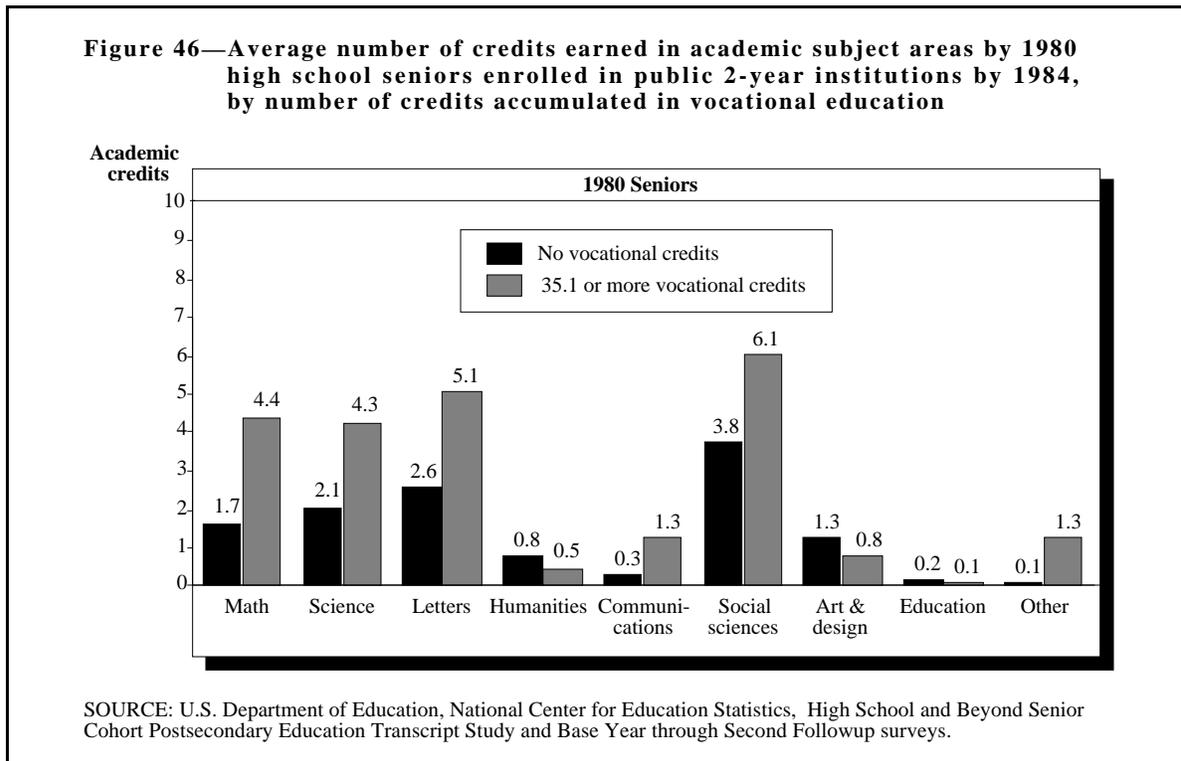
* The socioeconomic status data for 1972 seniors are grouped into three levels: "low" corresponds to the lowest quartile, "medium" corresponds to the second and third quartiles combined, and "high" corresponds to the highest quartile.

SOURCE: U.S. Department of Education, National Center for Education Statistics, the National Longitudinal Study of 1972 Postsecondary Education Transcript Study and Base Year through Fourth Followup surveys, and the High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Program Participation: 1972 and 1980 High School Seniors

Academic Versus Vocational Course Taking

Among 1972 and 1980 high school seniors who attended public 2-year schools within 4 years of graduation, those who had taken 35.1 or more credits in vocational education earned more credits in mathematics and letters than those with no vocational credits (table 46 and figure 46).³¹ Students in the senior classes of 1972 and 1980 with no vocational credits earned on average 2 credits in mathematics, while students with 35.1 or more vocational credits earned 4 credits in mathematics. Students from the senior class of 1972 with 35.1 or more vocational credits earned fewer credits in the humanities and art & design and more credits in communications than did their counterparts with no vocational credits. Students from the senior class of 1980 who had 35.1 or more vocational credits accumulated fewer credits in the humanities and more credits in science and the social sciences than did their counterparts with no vocational credits.



³¹ Credits earned in vocational education may have a positive relationship with credits earned in some academic courses because those students earning more credits in vocational courses might have earned more total credits.

Table 46—Average number of credits earned in academic subject areas by 1972 and 1980 high school seniors enrolled in public 2-year institutions within 4 years after high school, by number of credits accumulated in vocational education

Vocational credits	Math	Science	Letters	Human-ities	Commun-ications	Social sciences	Art & design	Education	Other
1972 seniors									
Total	2.6	3.9	4.2	1.4	0.9	6.8	1.7	0.4	0.3
No credits	1.9	3.6	3.5	1.4	0.6	5.8	1.6	0.3	0.2
0.1–5.0 credits	2.3	4.3	4.3	1.7	0.9	7.3	2.3	0.5	0.3
5.1–10.0 credits	2.6	3.8	4.5	1.4	0.8	7.2	1.9	0.6	0.3
10.1–15.0 credits	3.2	4.7	5.3	1.5	1.1	8.5	1.9	0.4	0.4
15.1–25.0 credits	4.2	3.5	5.2	1.3	1.4	8.7	2.1	0.4	0.7
25.1–35.0 credits	3.5	4.1	4.6	1.0	1.5	7.2	1.2	0.4	0.4
35.1 or more credits	3.7	4.1	4.8	0.7	1.5	6.4	0.7	0.2	0.3
1980 seniors									
Total	3.0	3.2	3.8	1.0	0.7	5.8	1.4	0.3	0.6
No credits	1.7	2.1	2.6	0.8	0.3	3.8	1.3	0.2	0.1
0.1–5.0 credits	2.2	3.6	3.4	1.0	0.5	5.3	1.6	0.1	0.3
5.1–10.0 credits	3.3	2.9	3.9	1.3	0.8	6.0	1.5	0.4	0.5
10.1–15.0 credits	4.0	4.1	4.9	1.5	1.1	7.9	2.0	0.7	1.1
15.1–25.0 credits	4.8	3.9	5.0	1.5	1.1	9.0	1.5	0.7	1.5
25.1–35.0 credits	4.6	4.2	5.5	0.8	1.4	6.9	1.3	0.2	1.2
35.1 or more credits	4.4	4.3	5.1	0.5	1.3	6.1	0.8	0.1	1.3

First row, first column reads: 1972 high school seniors enrolled in public 2-year institutions by 1976 earned on average 2.6 credits in math.

SOURCE: U.S. Department of Education, National Center for Education Statistics, the National Longitudinal Study of 1972 Postsecondary Education Transcript Study and Base Year through Fourth Followup surveys, and the High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

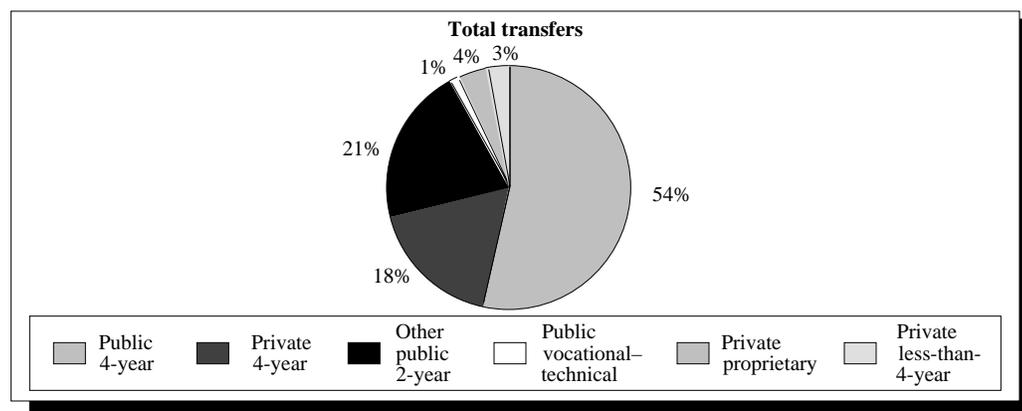
Student Outcomes

Transfers to Other Postsecondary Institutions

Many students at public 2-year institutions eventually transfer to other postsecondary institutions. About one-quarter of the high school class of 1980 who enrolled in public 2-year institutions within 4 years of graduation had transferred to another postsecondary institution by 1984 (table 47). Of those who transferred, about 54 percent went on to public 4-year institutions, about 18 percent went to private 4-year institutions, 21 percent went to another public 2-year institution, about 1 percent went to public vocational–technical institutes, about 4 percent went to private proprietary institutions and about 3 percent went to private less-than-4-year institutions (figure 47).

Students who earned greater amounts of academic credits at their public 2-year institutions were generally more likely than other students to transfer to another institution and were specifically more likely to transfer to a public 4-year institution.³² About 48 percent of students earning 35.1 or more academic credits transferred to another institution, and 34 percent transferred to a public 4-year institution. In contrast, students who earned a relatively large amount of vocational credits at their 2-year institutions were just as likely as those earning a relatively small amount to transfer to another postsecondary institution. Students earning few or no vocational credits at their 2-year institution transferred to a 4-year institution, to a public vocational–technical institute, to a private proprietary institution, or to a private less-than-4-year institution at about the same rate as did students with 15.1 or more vocational credits. However, students with 15.1 or more vocational credits were more likely than students with no vocational credits to transfer to another public 2-year institution.

Figure 47—Percentage of 1980 high school seniors enrolled in public 2-year institutions who transferred to other postsecondary institutions by 1984, by type of institution¹



¹ Figure 47 illustrates the distribution among postsecondary institutions only for those 1980 high school seniors who transferred to another institution by 1984. That is, the base of the figure corresponds to the 24.3 percent of seniors included in the “Total” row in table 47.

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

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

³² The difference in the transfer rate to all institutions between students who earned 5.1 to 15.0 credits and those who earned 15.1 to 35.0 credits is not statistically significant.

Table 47—Percentage of 1980 high school seniors enrolled in public 2-year institutions transferring to other postsecondary institutions by 1984 by type of institution, by number of vocational and academic credits accumulated in public 2-year institutions

Credits accumulated	Transfer to						
	All institutions	Public 4-year	Private 4-year	Other public 2-year	Public vocational–technical	Private proprietary	Private less-than-4-year
Total	24.3	13.1	4.3	5.2	0.2	0.9	0.7
Vocational credits							
No credits*	23.5	13.4	6.4	2.3	0.1	0.6	0.7
0.1–5.0 credits	23.9	13.5	4.5	3.4	0.0	1.3	1.2
5.1–15.0 credits	26.7	14.1	3.7	6.5	0.5	1.3	0.5
15.1 or more credits	23.5	11.5	2.6	8.5	0.1	0.4	0.4
Academic credits							
0.0–5.0 credits	10.0	1.7	3.2	3.1	0.0	0.9	1.2
5.1–15.0 credits	18.2	6.5	4.6	5.4	0.0	1.2	0.5
15.1–35.0 credits	26.1	14.1	4.1	6.0	0.3	0.7	1.0
35.1 or more credits	47.9	34.3	5.9	6.6	0.5	0.6	0.0
Vocational credits as percent of total credits							
0.0%*	27.2	15.9	7.5	2.6	0.1	0.7	0.3
0.1–25.0%	40.1	26.6	5.6	5.7	—	1.3	0.9
25.1–50.0%	26.9	11.9	4.0	8.9	0.7	1.4	—
50.1% or greater	11.7	3.5	1.8	5.0	—	0.5	1.0

First row, first column reads: Of 1980 high school seniors enrolled in public 2-year institutions, 24.3 percent transferred to another postsecondary institution by 1984.

* The “No credits” and “0.0%” rows are not the same because students who had zero total credits recorded on their transcripts are excluded from the “0.0%” row.

— The numerator was too small to be reported.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

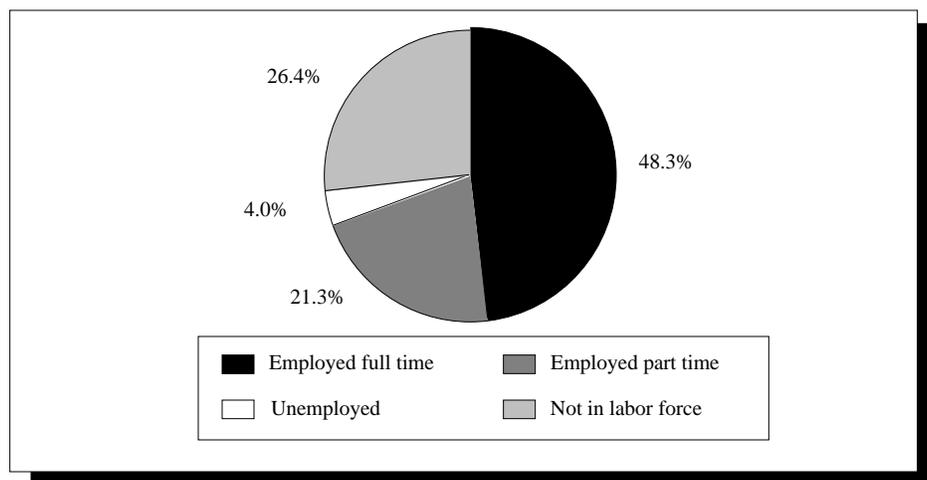
Student Outcomes

Labor Market Participation

Six months after their last enrollment in a public 2-year institution, about 48 percent of 1980 seniors were working full time (table 48 and figure 48). About 21 percent were working part time, 4 percent were unemployed, and 26 percent were out of the labor force.

The number of credits students earned at public 2-year institutions did not seem to affect their employment status. Regardless of how many credits they earned in vocational education, about the same percentage of students were employed full time, employed part time, were unemployed, or were out of the labor force. In contrast, students with 0.0 to 5.0 academic credits were more likely than students with 35.1 or more academic credits to be employed full time and were less likely to be employed part time. However, as shown in table 47, students who had earned 35.1 or more academic credits at public 2-year institutions were more likely than other students to transfer to other postsecondary institutions. Only about 10 percent of those with 0.0 to 5.0 academic credits transferred, compared with 47 percent of those who had earned 35.1 or more credits. Consequently, it is likely that some proportion of those students who accumulated 35.1 or more credits at public 2-year institutions were enrolled in another postsecondary institution 6 months after their last enrollment in a public 2-year institution. Therefore, it is not surprising that fewer of these students were employed full time or that more were employed part time.

Figure 48—Percentage of 1980 high school seniors participating in the labor market 6 months after last enrollment in a public 2-year institution by 1984, by employment status



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

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table 48—Percentage of 1980 high school seniors participating in the labor market 6 months after last enrollment by 1984 in a public 2-year institution by employment status, by number of vocational and academic credits accumulated in public 2-year institutions¹

Credits accumulated	Labor market participation ²			
	Employed full time	Employed part time	Unemployed	Not in labor force
Total	48.3	21.3	4.0	26.4
Vocational credits				
No credits ³	46.4	22.2	2.8	28.6
0.1–5.0 credits	45.1	23.3	5.5	26.1
5.1–15.0 credits	48.2	19.9	4.8	27.1
15.1 or more credits	53.2	20.0	3.2	23.5
Academic credits				
0.0–5.0 credits	56.6	16.0	2.8	24.5
5.1–15.0 credits	50.5	20.7	4.8	24.0
15.1–35.0 credits	50.2	20.3	3.5	25.9
35.1 or more credits	32.7	30.1	5.2	32.0
Vocational credits as percent of total credits				
0.0% ³	44.4	24.1	2.7	28.9
0.1–25.0%	34.8	28.3	6.8	30.1
25.1–50.0%	48.7	23.0	3.8	24.4
50.1% or greater	60.2	14.0	3.1	22.8

First row, first column reads: 48.3 percent of 1980 high school seniors participated full time in the labor force 6 months after last enrollment in a public institution by 1984.

¹ “Last enrollment” is defined as the last date for which a student had a transcript at a public 2-year institution during the period 1980–84. Consequently, the table includes both students who are out of school and some students who may still be enrolled in a public 2-year institution 6 months after the end of 1984 or who may have transferred to a different postsecondary institution.

² “Employed full time” is defined as 35 or more hours per week, while “employed part time” is less than 35 hours per week. “Unemployed” is defined as being without a job and looking for work, while “not in labor force” is being without a job but not looking for work.

³ The “No credits” and “0.0%” rows are not the same because students who had zero total credits recorded on their transcripts are excluded from the “0.0%” row.

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

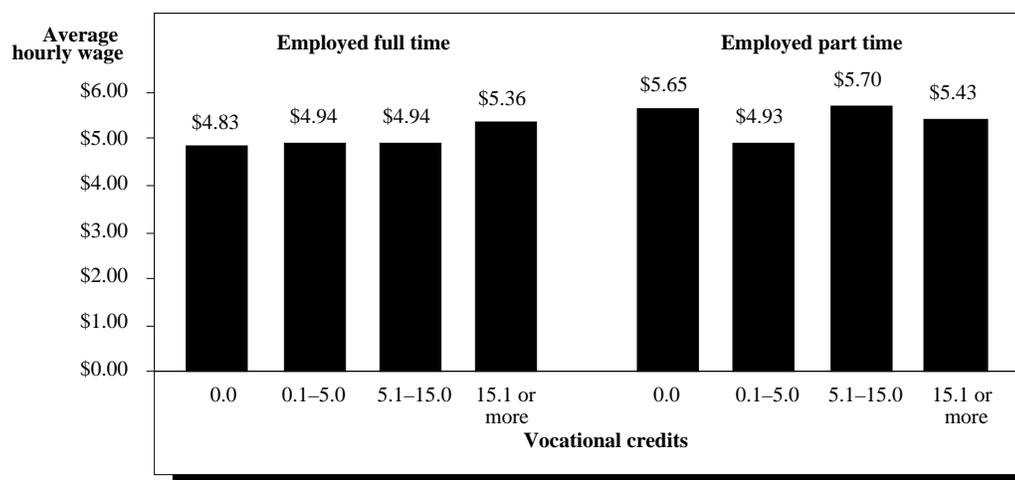
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Student Outcomes

Average Hourly Wages

In the 1980s, regardless of the number of vocational or academic credits students earned in public 2-year institutions, there were essentially no differences in the hourly wages of students working full time or part time 6 months after their last enrollment in a public 2-year institution. Students employed either full time or part time earned about \$5.00 an hour, and students with more academic or vocational credits earned just as much as those with fewer credits (table 49 and figure 49). However, the incremental increase in earnings due to increases in vocational or academic credits earned may not affect starting salaries as much as it may affect future earning potential. Therefore, examining hourly wages 6 months after last enrollment may not prove that useful, because 6 months may be too short a timespan for the advantages of greater amounts of education to appear.³³

Figure 49—Average hourly wages earned by 1980 high school seniors 6 months after last enrollment by 1984 in a public 2-year institution by employment status, by number of vocational credits accumulated in public 2-year institutions



SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

³³ It is also possible that there are few economic advantages to the accumulation of more academic or vocational credits per se. It has been hypothesized that the major economic outcome of a college education is its credentialing or labeling consequences. Differences in potential earnings might arise, other things being equal, not only because further education imparts useful knowledge to workers, but also because employers use educational attainment such as degrees or certificates earned as a convenient screening device for filtering persons into specific jobs. Incremental increases in credits earned, short of actual degree attainment, therefore, may not influence earning potential. See G.K. Douglass, "Economic Returns on Investments in Higher Education," in *Investment in Learning*, ed. H. Bowen (San Francisco: Jossey-Bass Publishers, 1977).

Table 49—Average hourly wages earned by 1980 high school seniors 6 months after last enrollment by 1984 in a public 2-year institution by employment status, by number of vocational and academic credits accumulated in public 2-year institutions¹

Credits accumulated	Employed ²	
	Full time	Part time
Total	\$5.03	\$5.43
Vocational credits		
No credits ³	4.83	5.65
0.1–5.0 credits	4.94	4.93
5.1–15.0 credits	4.94	5.70
15.1 or more credits	5.36	5.43
Academic credits		
0.0–5.0 credits	4.94	5.20
5.1–15.0 credits	4.68	5.54
15.1–35.0 credits	5.34	5.75
35.1 or more credits	5.31	5.25
Vocational credits as percent of total credits		
0.0% ³	4.92	5.71
0.1–25.0%	4.89	4.96
25.1–50.0%	5.24	5.81
50.1% or greater	5.11	5.41

First row, first column reads: 1980 high school seniors earned on average \$5.03 per hour in full-time employment 6 months after last enrollment in a public 2-year institution by 1984.

¹ “Last enrollment” is defined as the last date for which a student had a transcript at a public 2-year institution during the period 1980–84. Consequently, the table includes both students who are out of school and some students who may still be enrolled in a public 2-year institution 6 months after the end of 1984 or who may have transferred to a different postsecondary institution.

² “Employed full time” is defined as 35 or more hours per week, while “employed part time” is less than 35 hours per week.

³ The “No credits” and “0.0%” rows are not the same because students who had zero total credits recorded on their transcripts are excluded from the “0.0%” row.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Student Outcomes

Program Completion

One-fourth of 1980 high school seniors enrolled in public 2-year institutions had earned degrees or certificates by 1984 (table 50 and figure 50). Five percent earned a bachelor's degree as their highest award during this period, 17 percent an associate's degree, and only 4 percent a certificate.

As one would expect, the likelihood of earning a degree or certificate increased significantly as the number of vocational and academic credits earned increased. Thus, 40 percent of those students accumulating 15.1 or more credits in vocational education earned an associate's degree, compared with only 15 percent accumulating from 5.1 to 15.0 vocational credits and 7 percent with 0.1 to 5.0 vocational credits. Students with 15.1 or more vocational credits were somewhat less likely to obtain a bachelor's degree than students with no vocational credits; however, among students who earned vocational credits, about 4 percent earned bachelor's degrees regardless of the number of vocational credits they accumulated.

Similar patterns existed with respect to the accumulation of academic credits. Among students with 35.1 or more academic credits, 41 percent earned an associate's degree, compared with 24 percent of students with 15.1 to 35.0 academic credits, and 5 percent of students with 5.1 to 15.0 academic credits. Although a somewhat higher percentage of students with 35.1 or more academic credits earned a bachelor's degree (7 percent), this percentage was not significantly different from those students earning fewer academic credits.

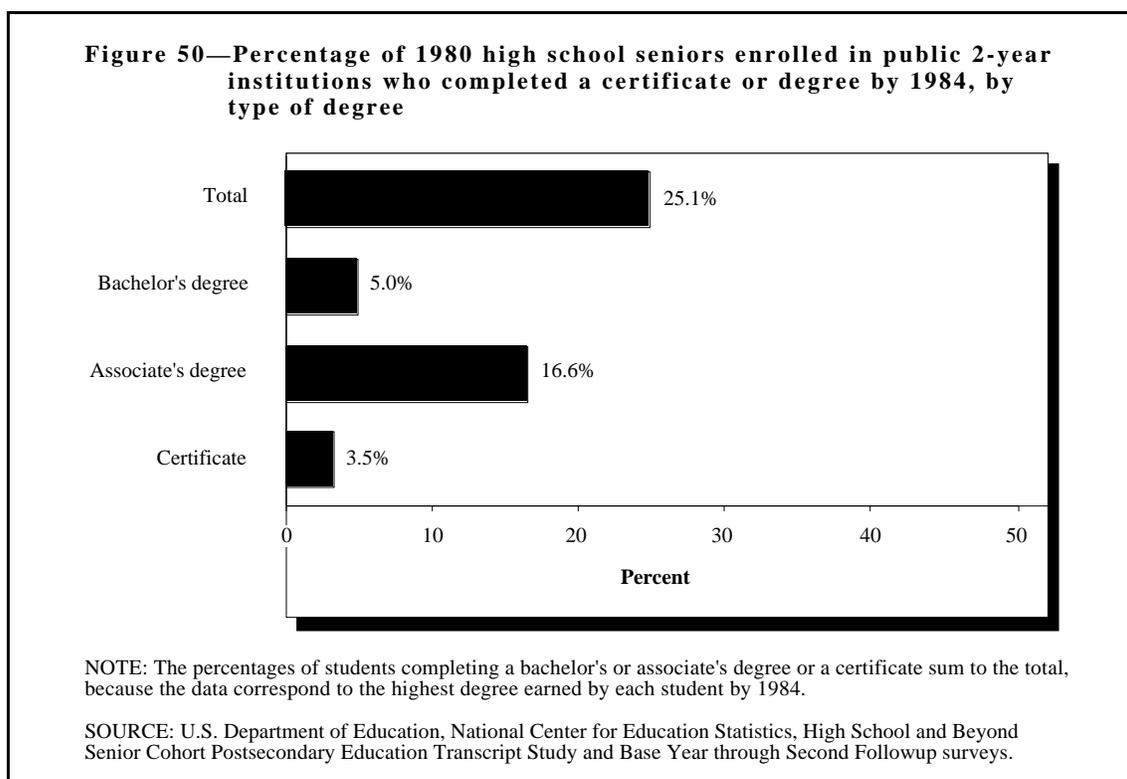


Table 50—Percentage of 1980 high school seniors enrolled in public 2-year institutions who completed a certificate or degree by 1984 by type of degree, by number of vocational and academic credits accumulated in public 2-year institutions

Credits accumulated	Total ¹	Certificate	Associate's degree	Bachelor's degree
Total	25.1	3.5	16.6	5.0
Vocational credits				
No credits ²	13.4	1.3	4.7	7.4
0.1–5.0 credits	12.4	1.3	6.9	4.1
5.1–15.0 credits	21.6	2.5	14.6	4.5
15.1 or more credits	52.1	8.8	39.6	3.7
Academic credits				
0.0–5.0 credits	9.6	3.6	1.7	4.3
5.1–15.0 credits	13.9	4.4	5.2	4.3
15.1–35.0 credits	33.8	5.1	23.9	4.8
35.1 or more credits	48.7	0.7	40.9	7.0
Vocational credits as percent of total credits				
0.0% ²	15.3	1.5	5.6	8.3
0.1–25.0%	29.3	1.3	21.5	6.4
25.1–50.0%	27.6	3.5	19.9	4.1
50.1% or greater	31.3	7.3	21.7	2.3

First row, first column reads: Of 1980 high school seniors enrolled in public 2-year institutions, 25.1 percent completed a certificate or degree by 1984.

¹ The percentages of students completing a bachelor's or associate's degree or a certificate sum to the total, because the data correspond to the highest degree earned by each student by 1984.

² The "No credits" and "0.0%" rows are not the same because students who had zero total credits recorded on their transcripts are excluded from the "0.0%" row.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Student Outcomes

Certificates and Degrees: Public Institutions

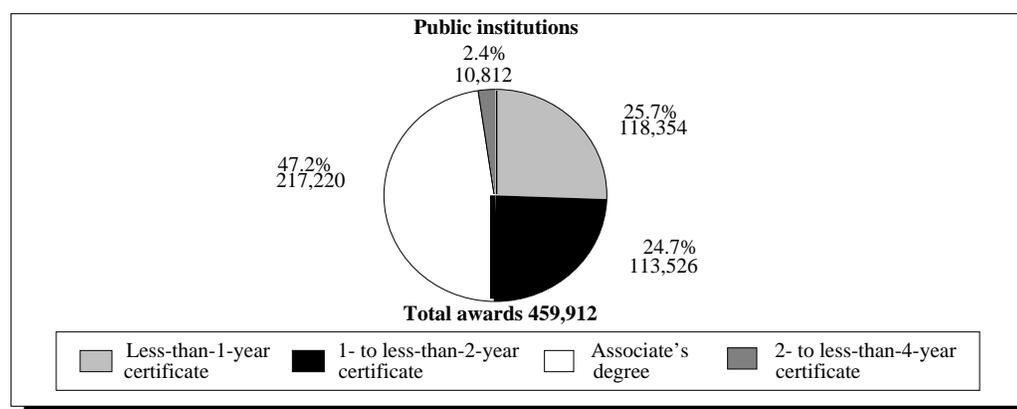
In 1988–89, public postsecondary institutions in the United States awarded about 460,000 less-than-4-year degrees and certificates (table 51). Associate’s degrees accounted for about one-half of this total (figure 51). Additionally, 118,000 less-than-1-year certificates, 114,000 1- to less-than-2-year certificates, and 11,000 2- to less-than-4-year certificates were awarded.

Two-year and less-than-2-year institutions awarded the majority of all types of degrees and certificates conferred by public institutions. Four-year institutions awarded only 12 percent of all associate’s degrees, 2 percent of less-than-1-year certificates, 3 percent of 1- to less-than-2-year certificates, and 4 percent of 2- to less-than-4-year certificates. Hence, while 4-year institutions offered some vocational education programs, they represented a relatively small proportion of the public postsecondary vocational education enterprise.

The largest numbers of degrees and certificates were awarded in business and health programs. About 20 percent of all less-than-1-year and 1- to less-than-2-year certificates were awarded in business programs, as were about 34 percent of all associate’s degrees. Health programs accounted for 19 percent of all less-than-1-year certificates, 26 percent of 1- to less-than-2-year certificates, 25 percent of associate’s degrees, and 16 percent of 2- to less-than-4-year certificates.

Business and health awards predominated in the 2-year and 4-year institutions. About 28 percent of all awards conferred by both 2-year and 4-year institutions were in business, and 24 percent of all awards conferred by 2-year institutions and 30 percent of all awards conferred by 4-year institutions were in health fields. In addition, 4-year and 2-year institutions granted a higher percentage of awards in engineering & engineering technology than did less-than-2-year institutions (15 percent and 11 percent versus 3 percent respectively). In contrast, the less-than-2-year and 2-year institutions granted a higher percentage of awards than did 4-year institutions in the construction trades and programs for mechanics and repairers (14 percent and 12 percent versus 3 percent respectively).

Figure 51—Percentage of less-than-4-year degrees and certificates awarded by public postsecondary institutions, by type of award: 1988–89



SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System.

Table 51—Percentage of less-than-4-year degrees and certificates awarded by public postsecondary institutions by type of institution and type of award, by vocational program: 1988–89

Vocational program	Total number of awards	All public institutions				Less-than-2-year institutions ¹		2-year institutions				4-year institutions			
		Less-than-1-year certificate	1- to less-than-2-year certificate	2- to less-than-4-year certificate	Associate's degree	Less-than-1-year certificate	1- to less-than-2-year certificate	Less-than-1-year certificate	1- to less-than-2-year certificate	2- to less-than-4-year certificate	Associate's degree	Less-than-1-year certificate	1- to less-than-2-year certificate	2- to less-than-4-year certificate	Associate's degree
Total, number	459,912	118,354	113,526	10,812	217,220	42,823	25,540	72,609	85,080	10,298	191,693	2,922	2,906	423	25,302
Total, percent ²	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Agribusiness & agriculture production	6,576	1.6	1.3	3.6	1.3	1.0	0.7	1.4	1.2	3.6	1.2	17.5	7.1	2.6	1.7
Agricultural science	1,264	0.2	0.1	0.1	0.4	0.0	0.0	0.0	0.1	0.0	0.4	7.5	0.6	1.9	0.6
Renewable natural resources	1,134	0.1	0.1	0.2	0.4	0.0	0.0	0.1	0.2	0.2	0.4	0.8	0.0	0.0	0.5
Business & management	48,060	3.4	3.0	4.2	18.5	4.2	0.5	2.0	3.4	4.1	19.2	24.6	14.1	7.8	13.0
Business & office	75,313	17.0	18.3	5.0	15.6	18.6	13.8	16.5	19.5	4.5	15.9	3.9	22.7	18.0	13.8
Marketing & distribution	13,295	2.4	2.1	1.8	3.6	1.4	1.3	3.1	2.4	1.9	3.5	0.0	0.6	0.0	4.2
Communications technology	2,645	0.6	0.3	0.2	0.7	0.2	0.2	0.8	0.3	0.2	0.8	0.0	0.0	0.0	0.3
Computer & information science	7,188	0.4	1.0	0.7	2.5	0.3	0.1	0.4	1.3	0.7	2.6	2.0	0.7	1.4	2.2
Engineering	2,519	0.0	0.1	0.2	1.1	0.0	0.0	0.0	0.1	0.1	1.2	1.5	0.3	2.4	0.4
Engineering & engineering technology	46,657	8.2	6.3	11.5	13.2	2.3	4.1	11.6	7.0	12.0	12.6	9.9	4.1	2.6	17.6
Allied health	70,340	19.0	24.2	9.3	8.9	13.3	17.7	22.6	26.1	7.5	8.5	13.7	25.3	55.1	12.1
Health sciences	37,350	0.4	1.3	6.8	15.9	0.4	0.5	0.4	1.5	7.1	15.5	0.8	2.4	0.7	19.6
Home economics	914	0.0	0.2	0.1	0.3	0.1	0.0	0.0	0.3	0.1	0.1	0.0	0.2	0.0	1.3
Vocational home economics	16,126	4.0	4.7	1.9	2.7	2.4	2.1	4.6	5.6	1.9	2.7	11.9	2.9	1.4	2.5
Science technology	1,020	0.0	0.1	0.2	0.4	0.0	0.0	0.0	0.1	0.2	0.4	0.0	0.0	0.0	0.4
Protective services	19,850	5.4	1.9	0.1	5.2	4.4	0.1	6.2	2.3	0.1	5.4	0.2	4.8	0.0	4.2
Construction trades	14,184	6.3	4.0	7.5	0.6	3.1	3.6	8.5	4.2	7.8	0.7	1.3	0.9	3.1	0.4
Mechanics & repairers	37,595	10.0	13.4	31.0	3.3	10.4	12.3	10.1	13.8	32.4	3.6	1.5	9.7	1.9	1.4
Precision production	24,584	5.3	8.9	13.7	3.1	6.6	9.1	4.7	9.1	14.2	3.1	1.5	2.1	1.2	3.3
Transportation & moving	8,122	4.7	0.7	0.6	0.8	3.4	1.7	5.6	0.3	0.6	0.9	1.5	1.2	0.0	0.5
Unknown ³	25,176	10.9	8.1	1.2	1.4	27.9	32.3	1.3	1.1	0.6	1.4	0.0	0.1	0.0	0.0

Second column, third row reads: Of all less-than-1-year certificates awarded by public postsecondary institutions in 1988–89, 1.6 percent were in agribusiness & agriculture production areas.

¹ Associate's degrees and 2- to less-than-4-year certificates are not likely to be awarded by less-than-2-year institutions. Public less-than-2-year institutions awarded only 225 associate's degrees and 91 2- to less-than-4-year certificates in 1988-89.

² Columns may not sum to 100 percent due to rounding.

³ "Unknown" includes all awards that were missing vocational program information.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System.

Student Outcomes

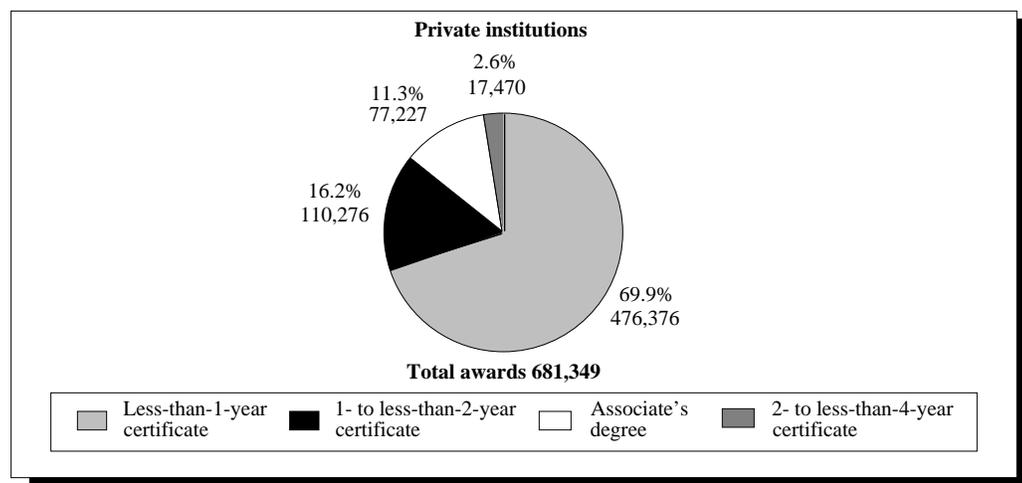
Certificates and Degrees: Private Institutions

In 1988–89, private postsecondary institutions awarded about 681,000 less-than-4-year degrees and certificates (table 52). Private institutions awarded a much larger number of less-than-1-year certificates than did public institutions (476,000 versus 118,000). In fact, less-than-1-year certificates accounted for about two-thirds of all awards granted by private institutions (figure 52). More than 90 percent of these private less-than-1-year certificates were awarded by less-than-2-year institutions. In contrast, private institutions awarded far fewer associate’s degrees than did public institutions (77,000 versus 217,000).

In the private institutions, for all but associate’s degrees a substantial percentage of awards lacked program codes. Consequently, it was not possible to describe accurately the distribution of certificates by program area or to make comparisons with public institutions. However, about 31 percent of associate’s degrees awarded by private institutions were in business, 22 percent in engineering & engineering technology, and 9 percent in health programs.

Four-year institutions awarded about 30 percent of all the associate’s degrees conferred by private institutions. Business and engineering & engineering technology programs each accounted for 30 percent of the associate’s degrees awarded by private 4-year institutions.

Figure 52—Percentage of less-than-4-year degrees and certificates awarded by private postsecondary institutions, by type of award: 1988–89



SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System.

Table 52—Percentage of less-than-4-year degrees and certificates awarded by private postsecondary institutions by type of institution and type of award, by vocational program: 1988–89

Vocational program	Total number of awards	All private institutions				Less-than-2-year institutions ¹		2-year institutions				4-year institutions			
		Less-than-1-year certificate	1- to less-than-2-year certificate	2- to less-than-4-year certificate	Associate's degree	Less-than-1-year certificate	1- to less-than-2-year certificate	Less-than-1-year certificate	1- to less-than-2-year certificate	2- to less-than-4-year certificate	Associate's degree	Less-than-1-year certificate	1- to less-than-2-year certificate	2- to less-than-4-year certificate	Associate's degree
Total, number	681,349	476,376	110,276	17,470	77,227	440,404	72,808	31,646	33,287	14,890	53,656	4,326	4,181	2,580	23,252
Total, percent ²	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Agribusiness & agriculture production	297	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	1.0	0.3	1.2	0.4
Agricultural science	62	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Renewable natural resources	119	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0
Business & management	25,949	2.5	1.5	2.6	15.7	2.5	0.3	1.3	3.2	2.4	13.4	6.8	8.0	4.0	20.6
Business & office	65,059	7.4	15.2	6.3	15.2	6.6	10.6	18.7	25.6	7.2	17.5	9.4	13.5	1.4	9.8
Marketing & distribution	25,610	3.1	3.7	0.6	8.5	3.1	1.4	3.4	8.5	0.5	9.2	6.2	5.9	1.4	7.0
Communications technology	3,054	0.5	0.1	0.0	0.6	0.5	0.0	0.3	0.1	0.0	0.6	0.2	1.0	0.0	0.8
Computer & information science	22,352	3.7	1.1	1.8	4.0	3.8	0.5	2.8	2.2	1.9	3.2	6.9	1.6	1.4	6.0
Engineering	1,991	0.1	0.7	0.2	0.7	0.2	0.0	0.0	2.2	0.0	0.9	0.2	0.0	1.1	0.3
Engineering & engineering technology	29,462	0.8	5.9	10.4	22.4	0.7	2.7	2.2	11.8	11.8	18.9	5.7	14.6	2.6	30.3
Allied health	45,051	5.5	12.3	9.9	4.6	5.1	13.6	10.5	9.7	9.8	4.5	8.3	11.1	10.4	5.0
Health sciences	7,340	0.0	0.1	22.1	4.3	0.0	0.0	0.1	0.3	25.4	2.6	0.1	0.5	3.3	8.1
Home economics	1,173	0.0	0.3	0.1	1.1	0.0	0.0	0.0	0.8	0.1	1.3	0.6	0.4	0.3	0.5
Vocational home economics	10,855	1.3	0.8	0.4	4.6	1.4	0.8	0.6	1.0	0.5	4.4	0.5	0.1	0.0	5.1
Science technology	408	0.1	0.0	0.3	0.1	0.1	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.1
Protective services	1,879	0.2	0.3	0.0	0.5	0.2	0.3	1.3	0.2	0.0	0.4	0.7	1.4	0.3	0.7
Construction trades	4,246	0.4	1.9	0.7	0.4	0.3	2.6	0.5	0.6	0.0	0.5	0.0	0.8	4.5	0.4
Mechanics & repairers	54,883	8.2	10.0	15.0	2.9	8.5	12.5	4.6	5.0	17.4	3.5	6.6	8.2	0.7	1.4
Precision production	12,004	1.5	1.6	2.2	3.5	1.5	1.7	1.5	1.5	2.0	4.3	2.1	1.5	3.2	1.6
Transportation & moving	39,555	8.2	0.2	0.4	0.5	8.7	0.0	1.8	0.7	0.5	0.2	0.0	0.0	0.0	1.0
Unknown ³	330,000	56.4	44.2	26.7	10.1	57.0	53.1	50.6	26.5	20.2	14.1	44.6	31.1	64.3	0.9

Second column, third row reads: Of all less-than-1-year certificates awarded by private postsecondary institutions in 1988–89, 0.0 percent were in agribusiness & agriculture production areas.

¹ Associate's degrees and 2- to less-than-4-year certificates are not likely to be awarded by less-than-2-year institutions. Private less-than-2-year institutions awarded only 319 associate's degrees and no 2- to less-than-4-year certificates in 1988-89.

² Columns may not sum to 100 percent due to rounding.

³ "Unknown" includes all awards that were missing vocational program information.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System.

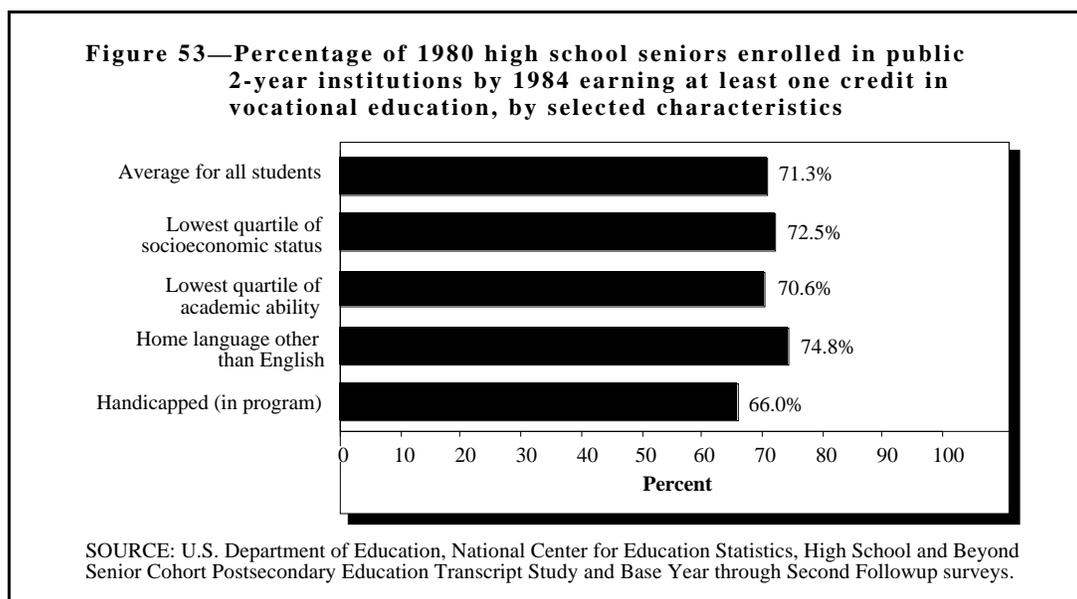
Special Populations

Because participation in postsecondary vocational education is voluntary, and sometimes subject to admissions requirements, assessing access of students with special needs is somewhat more complicated at the postsecondary level than the secondary. The tables that follow examine participation patterns of 1980 high school seniors enrolled in public 2-year institutions by 1984. As was done for secondary programs in the first section of this report, four types of special-needs circumstances are considered: socioeconomic status, academic ability, home language, and handicap status.³⁴

Curriculum Participation

The most noteworthy aspect of table 53 is the absence of any real difference in the participation rates in vocational education of postsecondary students with special needs. Among 1980 high school seniors enrolled in public 2-year institutions by 1984, 73 percent of students in the lowest socioeconomic status quartile took courses in postsecondary vocational education, a figure that was not significantly different from the 67 percent of students in the highest quartile (figure 53). Similarly, 71 percent of students in the lowest academic ability quartile participated in vocational education, about the same rate of participation as students in the highest quartile (70 percent). Among students whose home language was English, 81 percent took courses in vocational education, and this percentage was not significantly different from the 75 percent of students whose home language was not English. Finally, handicapped and nonhandicapped students also participated at the same rates.

In fact, the only significant difference in participation occurred in the academic curriculum. Ninety percent of the students in the highest academic ability quartile took courses in the academic curriculum, compared with 79 percent of students in the lowest quartile.



³⁴ The federal regulations regarding the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 define special populations as individuals with disabilities, educationally and economically disadvantaged individuals, individuals of limited English proficiency, individuals who participate in programs designed to eliminate sex bias, and individuals in correctional institutions.

Table 53—Percentage of 1980 high school seniors enrolled in public 2-year postsecondary institutions by 1984 earning at least one credit in academic, vocational, and personal skills education, by selected characteristics

	Academic	Vocational	Personal skill
Total	85.2	71.3	50.0
Socioeconomic status			
Lowest quartile	83.8	72.5	54.7
Second quartile	84.3	73.0	53.2
Third quartile	86.3	72.8	48.0
Highest quartile	87.9	67.3	47.7
Academic ability			
Lowest quartile	79.1	70.6	53.7
Second quartile	85.7	74.3	51.6
Third quartile	87.2	73.3	53.5
Highest quartile	90.0	69.7	44.7
Home language background ¹			
English	91.6	81.1	70.5
Other than English	84.5	74.8	65.9
Handicap status ²			
In program	88.8	66.0	62.6
Consistent handicap	86.2	70.2	40.5
Inconsistent handicap	83.8	69.2	52.1
Not handicapped	85.3	71.9	49.3

First row, first column reads: Of 1980 high school seniors enrolled in public 2-year institutions by 1984, 85.2 percent earned at least one academic credit.

¹ Home language background refers to the sole or dominant language spoken in the home.

² The handicap status categories are mutually exclusive. “In program” includes students who reported participating in a handicap program or receiving handicap benefits. “Consistent” includes students who did not report participating in a handicap program but who reported having a handicap in both the base year and followup surveys, while “inconsistent” includes students who did not report participating in a handicap program but who reported having a handicap in either the base year or followup surveys but not both. “Not handicapped” students did not report participating in a handicap program and never reported having a handicap.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Special Populations

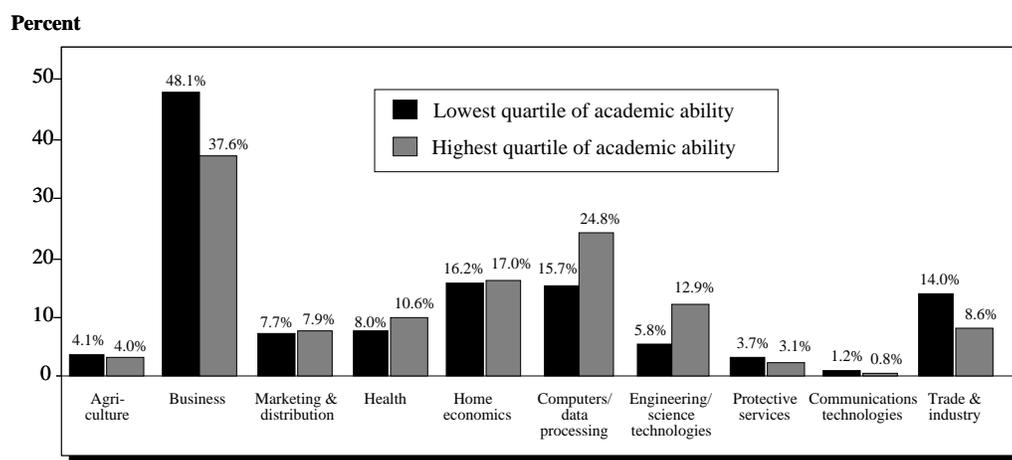
Program Participation

The rates of participation in the various vocational program areas by students with and without special needs were usually similar (table 54). Although 12 percent to 15 percent of students in the two lowest socioeconomic status quartiles took courses in trade & industry versus 9 percent of students in the highest quartile, this difference was not statistically significant.

Differences in participation between students with high and low academic ability were significant in two program areas (figure 54). Twenty-five percent of students with the highest academic ability took courses in computers/data processing, compared with only 16 percent of students with the lowest academic ability. Thirteen percent of students with the highest academic ability participated in engineering/science technology programs, whereas only 6 percent of the lowest ability students did so.

When examining home language background and handicap status, there were only a few significant differences in participation patterns between students with and without special needs. Students whose home language was other than English were more than twice as likely to take courses in health as were students whose home language was English (20 percent versus 8 percent). Students who had participated in a handicap program were less likely than nonhandicapped students to take courses in communications technologies (0 percent versus 1 percent), and students who were inconsistent in reporting a handicap were less likely than nonhandicapped students to take courses in health (6 percent versus 11 percent).

Figure 54—Percentage of 1980 high school seniors enrolled in public 2-year postsecondary institutions by 1984 earning at least one credit in vocational program areas, by academic ability



SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Second Followup surveys.

Table 54—Percentage of 1980 high school seniors enrolled in public 2-year postsecondary institutions by 1984 earning at least one credit in vocational program areas, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communications technologies	Trade & industry
Total	3.2	41.2	6.8	10.3	16.5	19.7	9.7	4.8	0.6	11.5
Socioeconomic status										
Lowest quartile	4.2	46.0	7.5	11.7	15.2	18.5	9.8	3.6	1.2	11.7
Second quartile	5.4	40.6	6.2	13.6	17.9	16.5	10.1	5.1	0.2	14.5
Third quartile	2.3	41.7	5.4	10.5	17.2	19.4	8.5	6.0	0.3	10.6
Highest quartile	2.0	41.4	8.0	8.4	16.3	22.0	11.4	5.1	1.3	9.0
Academic ability										
Lowest quartile	4.1	48.1	7.7	8.0	16.2	15.7	5.8	3.7	1.2	14.0
Second quartile	3.2	45.3	6.8	11.5	15.3	18.8	9.3	6.2	0.9	13.6
Third quartile	2.8	43.4	6.4	12.9	17.1	20.2	12.4	5.7	0.1	11.1
Highest quartile	4.0	37.6	7.9	10.6	17.0	24.8	12.9	3.1	0.8	8.6
Home language background ¹										
English	0.1	40.7	3.5	8.3	18.8	26.1	11.2	6.4	0.6	16.5
Other than English	2.0	39.5	10.1	19.9	22.5	29.4	9.8	5.6	0.5	23.5
Handicap status ²										
In program	3.4	38.7	5.1	8.0	21.0	22.0	7.7	4.7	0.0	12.9
Consistent handicap	10.3	34.2	10.6	11.6	19.8	12.8	11.1	5.3	0.4	10.7
Inconsistent handicap	2.4	41.6	5.6	5.8	11.7	20.4	10.8	6.0	0.2	9.9
Not handicapped	2.9	41.5	7.0	11.3	17.0	19.6	9.6	4.6	0.7	11.6

First row, first column reads: Of 1980 high school seniors enrolled in public 2-year institutions by 1984, 3.2 percent earned at least one credit in agriculture.

¹ Home language background refers to the sole or dominant language spoken in the home.

² The handicap status categories are mutually exclusive. "In program" includes students who reported participating in a handicap program or receiving handicap benefits. "Consistent" includes students who did not report participating in a handicap program but who reported having a handicap in both the base year and followup surveys, while "inconsistent" includes students who did not report participating in a handicap program but who reported having a handicap in either the base year or followup surveys but not both. "Not handicapped" students did not report participating in a handicap program and never reported having a handicap.

NOTE: Estimates may sum to greater than 100 percent because students may have earned credits in more than one vocational program area.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Special Populations

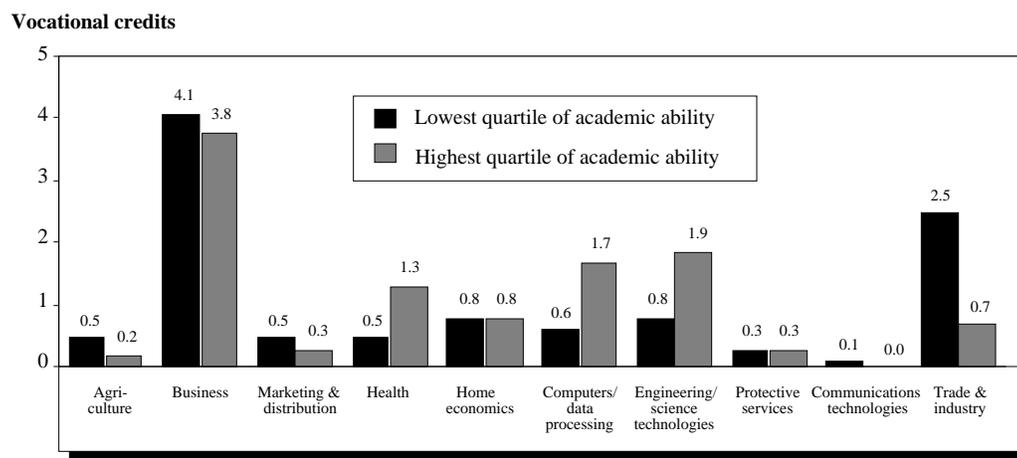
Credits Earned by Program

Just as there were few differences in the program participation rates of students with and without special needs, there were also few differences in the number of credits earned by 1980 seniors in postsecondary vocational education programs in public 2-year institutions (table 55). Students in the highest socioeconomic status quartile earned an average of 1 credit in trade & industry programs, compared with 2 credits for students in the lowest two quartiles.

Students with higher academic ability earned more credits in computers/data processing and engineering/science technologies (figure 55). Students in the highest quartile earned an average of 2 credits in computers/data processing, compared with 1 credit for students in the lowest quartile. Similarly, high achieving students averaged 2 credits in engineering/science technologies, while those in the lowest quartile earned 1 credit. Students in the lowest academic ability quartile averaged 3 units in trade & industry, compared with 1 unit for students in the highest quartile.

The number of credits earned by students whose home language was English and those whose home language was not English did not differ significantly. Likewise, the number of credits earned by handicapped and nonhandicapped students did not differ significantly.

Figure 55—Average number of credits earned in vocational program areas by 1980 high school seniors enrolled in public 2-year postsecondary institutions by 1984, by academic ability



SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table 55—Average number of credits earned in vocational program areas by 1980 high school seniors enrolled in public 2-year postsecondary institutions by 1984, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communications technologies	Trade & industry
Total	0.3	3.8	0.3	1.3	0.8	1.2	1.3	0.4	0.0	1.6
Socioeconomic status										
Lowest quartile	0.7	4.0	0.3	1.3	0.7	0.9	1.3	0.3	0.0	2.3
Second quartile	0.6	5.0	0.3	1.5	0.8	1.4	1.2	0.3	0.0	2.3
Third quartile	0.1	3.7	0.3	1.7	0.8	1.4	1.8	0.7	0.0	1.1
Highest quartile	0.1	3.2	0.4	0.8	0.8	0.9	1.3	0.2	0.1	0.9
Academic quartile										
Lowest quartile	0.5	4.1	0.5	0.5	0.8	0.6	0.8	0.3	0.1	2.5
Second quartile	0.3	4.3	0.4	1.3	0.7	0.9	1.1	0.3	0.0	2.2
Third quartile	0.4	4.1	0.2	1.8	0.8	1.5	2.1	0.6	0.0	1.2
Highest quartile	0.2	3.8	0.3	1.3	0.8	1.7	1.9	0.3	0.0	0.7
Home language background ¹										
English	0.0	3.4	0.4	0.5	0.9	1.3	1.4	0.5	0.1	2.3
Other than English	0.1	4.4	0.9	1.9	1.1	1.4	1.3	0.2	0.0	2.3
Handicap status ²										
In program	0.2	2.3	0.2	0.4	1.4	0.8	1.1	0.3	0.0	2.2
Consistent handicap	1.1	3.3	0.6	1.1	0.9	0.7	0.9	0.1	0.0	2.4
Inconsistent handicap	0.4	3.0	0.3	0.4	0.4	0.9	1.3	0.6	0.0	1.4
Not handicapped	0.3	4.0	0.3	1.5	0.8	1.3	1.4	0.3	0.0	1.5

First row, first column reads: 1980 high school seniors enrolled in public 2-year institutions by 1984 earned on average 0.3 credits in agriculture.

¹ Home language background refers to the sole or dominant language spoken in the home.

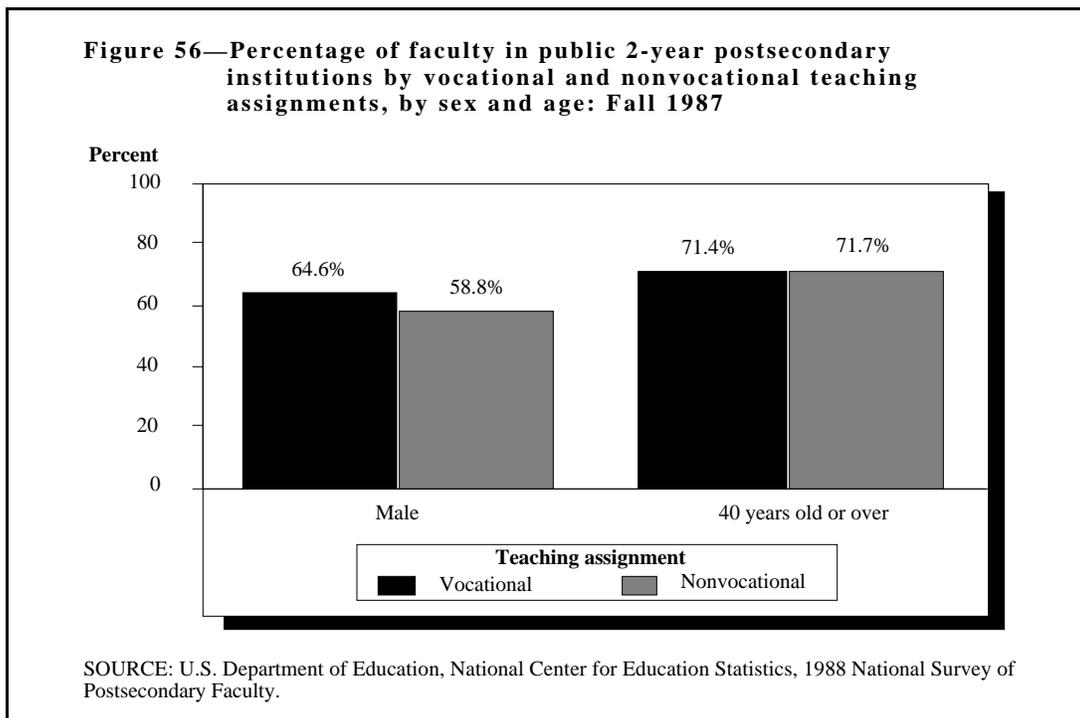
² The handicap status categories are mutually exclusive. "In program" includes students who reported participating in a handicap program or receiving handicap benefits. "Consistent" includes students who did not report participating in a handicap program but who reported having a handicap in both the base year and followup surveys, while "inconsistent" includes students who did not report participating in a handicap program but who reported having a handicap in either the base year or followup surveys but not both. "Not handicapped" students did not report participating in a handicap program and never reported having a handicap.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Postsecondary Faculty

Demographic Characteristics of Vocational and Nonvocational Faculty

In the fall of 1987, a majority of both vocational and nonvocational faculty in public 2-year institutions were male, were white, non-Hispanic, and were 40 years old or older (table 56).³⁵ About 60 percent of vocational and nonvocational faculty were male, more than 90 percent were white and non-Hispanic, and more than 70 percent were age 40 or older. Furthermore, no statistically significant differences were found in the demographic characteristics of vocational and nonvocational postsecondary faculty (figure 56).



³⁵ No data are included on proprietary school faculty members because less-than-2-year institutions are not included in the National Survey of Postsecondary Faculty.

Table 56—Demographic characteristics of faculty in public 2-year postsecondary institutions by teaching assignment: Fall 1987¹

	All faculty	Vocational	Nonvocational ²
Total ³	100.0	100.0	100.0
Sex			
Male ^{61.3}	64.6	58.8	
Female	38.7	35.4	41.2
Race–ethnicity			
White, non-Hispanic	91.0	90.7	91.2
Black, non-Hispanic	3.1	3.3	3.0
Hispanic	3.5	3.7	3.4
Asian	1.7	1.3	2.0
Native American	0.7	1.0	0.4
Age			
Under 30 years	3.2	4.7	2.1
30 to 39 years	25.3	23.9	26.2
40 to 49 years	38.5	35.7	40.6
50 years or over	33.1	35.7	31.1

Second row, first column reads: Of all faculty in public 2-year postsecondary institutions in the fall of 1987, 61.3 percent were male.

¹ The 1988 National Survey of Postsecondary Faculty included only those faculty who had instructional duties related to for-credit courses during the fall of 1987. The Survey excluded faculty from nondegree-granting institutions.

² Faculty were classified as either vocational or nonvocational based on their principal teaching field.

³ Percentages sum vertically within each teacher category.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

Postsecondary Faculty

Experience and Educational Background of Vocational and Nonvocational Faculty

While there were no significant differences in the basic demographic characteristics of vocational and nonvocational faculty who taught in public 2-year institutions in the fall of 1987, significant differences appeared in their educational backgrounds (table 57). For example, vocational faculty were less likely to have an advanced degree than nonvocational faculty. Only 43 percent of vocational faculty had master's degrees, and only 7 percent had doctor's degrees (figure 57). In comparison, 64 percent of nonvocational faculty had master's degrees and 23 percent had doctor's degrees. Vocational faculty were also more likely than nonvocational faculty to have less than a bachelor's degree (15 percent versus 2 percent). Postsecondary vocational faculty were also more likely than public secondary vocational teachers to have less than a bachelor's degree. Vocational faculty members were more likely than nonvocational faculty members to major in an occupationally specific field of study, while nonvocational faculty members were more likely than vocational faculty members to major in academic fields of study. The overwhelming majority of vocational faculty majored in an occupationally specific field (71 percent). In contrast, the majority of nonvocational faculty majored in one of the arts and sciences (53 percent).

There were no significant differences between vocational and nonvocational faculty in tenure status, academic rank, or age at which the faculty member first began to teach at the postsecondary level. However, vocational faculty were more likely than nonvocational faculty to have taught only 3 to 9 years.

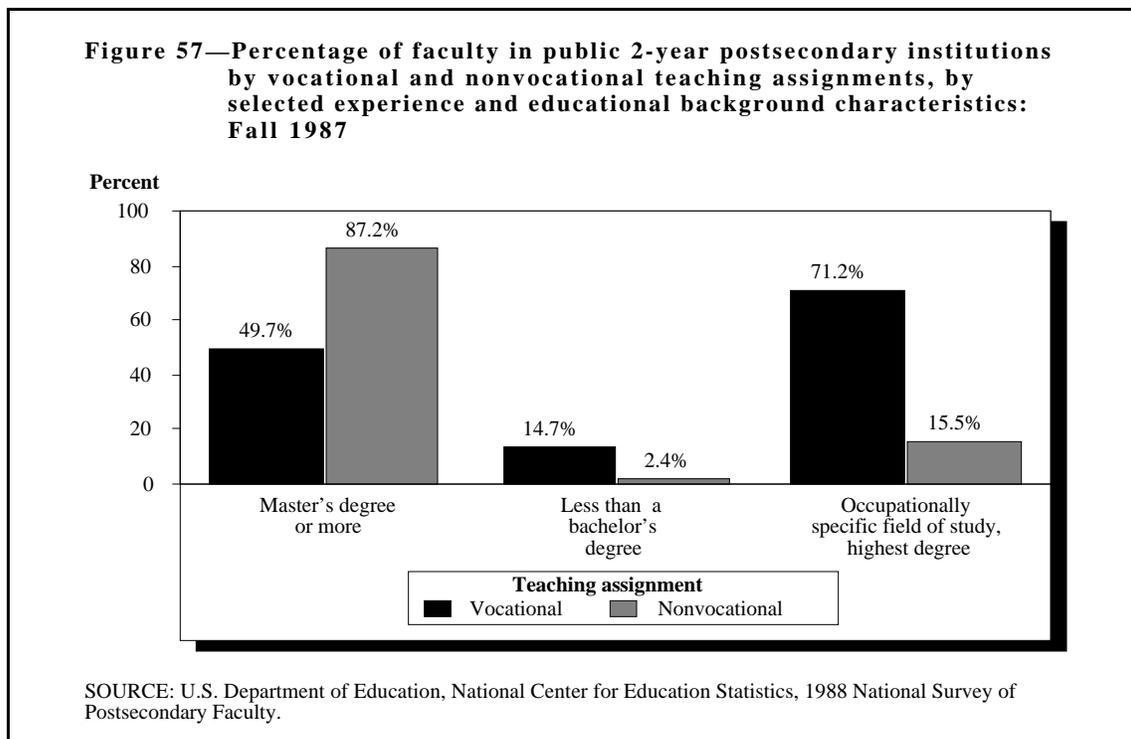


Table 57—Experience and educational background of faculty in public 2-year postsecondary institutions by teaching assignment: Fall 1987

Experience and educational background	All faculty	Vocational	Nonvocational
Total ¹	100.0	100.0	100.0
Highest college degree			
Less than a bachelor's	7.6	14.7	2.4
Bachelor's	20.9	35.5	10.4
Master's	55.5	43.1	64.4
Doctor's or first professional	16.1	6.6	22.8
Major field of study (highest degree)			
Mathematics and sciences	11.9	2.2	18.9
Social sciences	5.3	2.5	7.3
Letters, humanities, and communications	10.9	0.3	18.5
Art & design	5.2	0.5	8.5
Education	25.8	21.9	28.5
Occupationally specific ²	38.8	71.2	15.5
Other	0.7	0.6	0.8
Tenure status			
Tenured	29.6	26.3	32.0
On tenure track/not tenured	5.2	5.7	4.8
Not on tenure track	11.8	12.2	11.4
Not applicable	53.5	55.7	51.8
Academic rank			
Professor	9.8	7.0	11.8
Associate professor	5.2	5.8	4.7
Assistant professor	6.3	7.7	5.2
Instructor	52.8	58.7	48.4
Lecturer	2.8	3.6	2.3
Other	2.9	2.8	2.9
Not applicable	20.3	14.4	24.7
Age at which first began to teach at postsecondary level ³			
25 years or under	14.8	15.4	14.4
26–35 years	51.4	46.6	54.7
36–45 years	23.9	26.8	21.9
46–55 years	7.2	8.4	6.4
Over 55 years	2.7	2.8	2.6
Number of years of postsecondary teaching experience ³			
Less than 3 years	15.0	13.7	15.8
3–9 years	32.7	40.1	27.7
10–20 years	31.5	28.9	33.2
Over 20 years	20.8	17.2	23.2

Second row, first column reads: Of all faculty in public 2-year postsecondary institutions in the fall of 1987, 7.6 percent had less than a bachelor's degree.

¹ Percentages sum vertically within each teacher category.

² Occupationally specific degrees include all vocational fields of study listed in the taxonomy for less-than-4-year postsecondary institutions.

³ "Age at which faculty first began to teach at the postsecondary level" and "Number of years of postsecondary teaching experience" reflect only those years in which teaching was part of the faculty member's primary job responsibility.

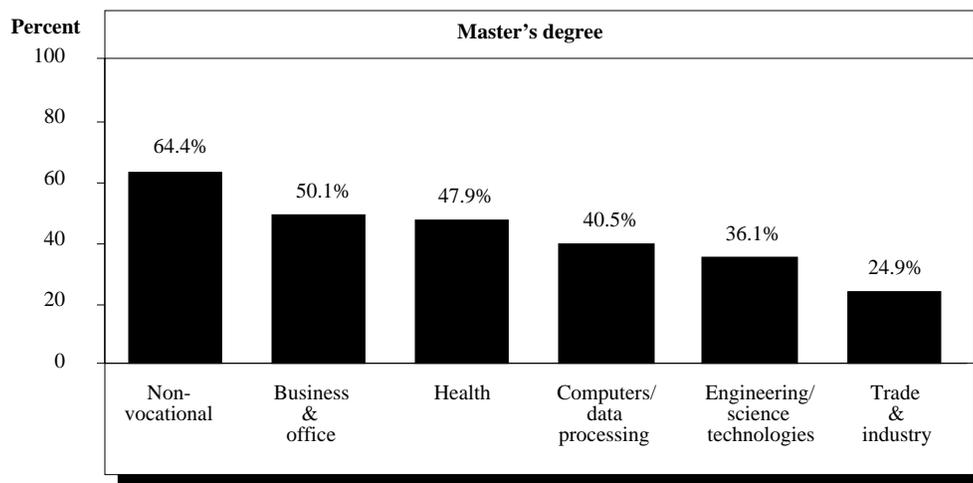
SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

Postsecondary Faculty

Vocational Faculty by Program Area

Table 58 presents data on the experience and educational background of postsecondary faculty who taught various vocational subjects at public 2-year institutions in the fall of 1987. In a few cases, there were statistically significant differences in the characteristics of vocational faculty teaching different vocational subjects. For example, a smaller percentage of trade & industry faculty had master's degrees than did business or health faculty (figure 58). An estimated 25 percent of trade & industry faculty members had master's degrees as their highest degree, compared with 50 percent of business faculty and 48 percent of health faculty. In addition, trade & industry and business faculty were more likely than engineering/science technology faculty to be teaching at the instructor rank (71 percent versus 30 percent). Although trade & industry faculty appeared more likely than other faculty to have degrees in education, the differences were not statistically significant.

Figure 58—Percentage of faculty in public 2-year postsecondary institutions by vocational program area, with a master's degree as the highest college degree: Fall 1987



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

Table 58—Experience and educational background of faculty in public 2-year postsecondary institutions by vocational program area: Fall 1987

Experience and educational background	Vocational program area					
	Non-vocational	Business & office	Health	Computers/ data processing	Engineering/ science technologies	Trade & industry
Total ¹	100.0	100.0	100.0	100.0	100.0	100.0
Highest college degree						
Less than a bachelor's	2.4	4.2	12.3	18.4	28.5	33.2
Bachelor's	10.4	36.3	35.1	37.4	29.2	38.5
Master's	64.4	50.1	47.9	40.5	36.1	24.9
Doctor's or first professional	22.8	9.3	4.6	3.7	6.2	3.4
Major field of study (highest degree)						
Mathematics and sciences	18.9	0.0	2.8	9.1	6.0	0.0
Social sciences	7.3	4.4	2.5	1.6	0.0	0.6
Letters, humanities, and communications	18.5	1.1	0.0	0.0	0.0	0.0
Art & design	8.5	0.0	0.0	0.0	1.3	0.0
Education	28.5	18.4	19.9	16.0	17.2	34.1
Occupationally specific ²	15.5	74.5	74.8	69.9	74.4	63.5
Other	0.8	0.9	0.0	3.4	0.0	0.0
Tenure status						
Tenured	32.0	18.3	31.8	28.3	25.7	35.9
On tenure track/not tenured	4.8	2.0	9.9	3.7	7.6	10.1
Not on tenure track	11.4	18.4	12.8	7.1	14.1	3.7
Not applicable	51.8	61.3	45.5	61.0	52.6	50.3
Academic rank						
Professor	11.8	5.2	6.2	4.4	16.6	6.7
Associate professor	4.7	1.7	9.6	3.0	9.5	4.7
Assistant professor	5.2	3.9	11.5	8.4	14.0	7.4
Instructor	48.4	70.5	58.3	48.8	30.1	70.6
Lecturer	2.3	3.1	0.7	16.6	2.4	0.9
Other	2.9	1.1	0.5	3.3	16.3	0.0
Not applicable	24.7	14.4	13.2	15.5	11.1	9.8
Age at which first began to teach at postsecondary level ³						
25 years or under	14.4	7.6	17.1	12.1	24.9	12.6
26–35 years	54.7	52.5	51.4	53.0	41.6	37.2
36–45 years	21.9	24.5	25.1	24.3	26.3	32.4
46–55 years	6.4	11.7	5.2	9.4	7.2	10.5
Over 55 years	2.6	3.7	1.2	1.1	0.0	7.3
Number of years of postsecondary teaching experience ³						
Less than 3 years	15.8	9.4	18.6	10.8	17.5	15.1
3–9 years	27.7	41.9	39.8	51.6	19.2	37.9
10–20 years	33.2	28.4	30.1	28.2	32.3	28.0
Over 20 years	23.2	20.3	11.5	9.4	31.0	19.0

Second row, first column reads: Of nonvocational faculty in public 2-year postsecondary institutions in the fall of 1987, 2.4 percent had less than a bachelor's degree.

¹ Percentages sum vertically within each teacher category.

² Occupationally specific degrees include all vocational fields of study listed in the taxonomy for less-than-4-year postsecondary institutions.

³ "Age at which faculty first began to teach at the postsecondary level" and "Number of years of postsecondary teaching experience" reflect only years in which teaching was part of the faculty's primary job responsibility.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

Postsecondary Faculty

Salaries of Full-Time Faculty

The average annual salary of full-time vocational faculty who taught in public 2-year institutions during the fall of 1987 was slightly less than the average salary for full-time nonvocational faculty (table 59). Vocational faculty earned \$30,953 on average for the 1987 calendar year, while nonvocational faculty earned \$33,460. However, faculty salaries in public 2-year institutions, much like secondary teacher salaries, are typically linked to the faculty member's years of experience. Furthermore, table 57 indicates that vocational faculty on average were more likely to have been teaching for a shorter period of time than nonvocational faculty. Therefore, the apparent difference in the average salaries of vocational and nonvocational faculty members may be due in part to the differences in the teaching experience of these two groups and not to differential pay scales for vocational and nonvocational faculty. Indeed, no significant differences were observed in the annual salaries of vocational and nonvocational faculty teaching in the fall of 1987 who had similar years of teaching experience (figure 59).

In addition to years of teaching experience, salary schedules in public 2-year institutions typically are determined by the highest degree obtained. The average annual salary of vocational faculty with doctor's or first professional degrees was substantially higher than the average salary of nonvocational faculty members with similar degrees. Vocational faculty with doctor's or first professional degrees averaged \$41,487, while nonvocational faculty with doctor's or first professional degrees averaged \$34,524. However, it is not possible to determine from the data in table 59 whether vocational faculty with doctor's degrees had more years of teaching experience than nonvocational faculty with doctor's degrees.

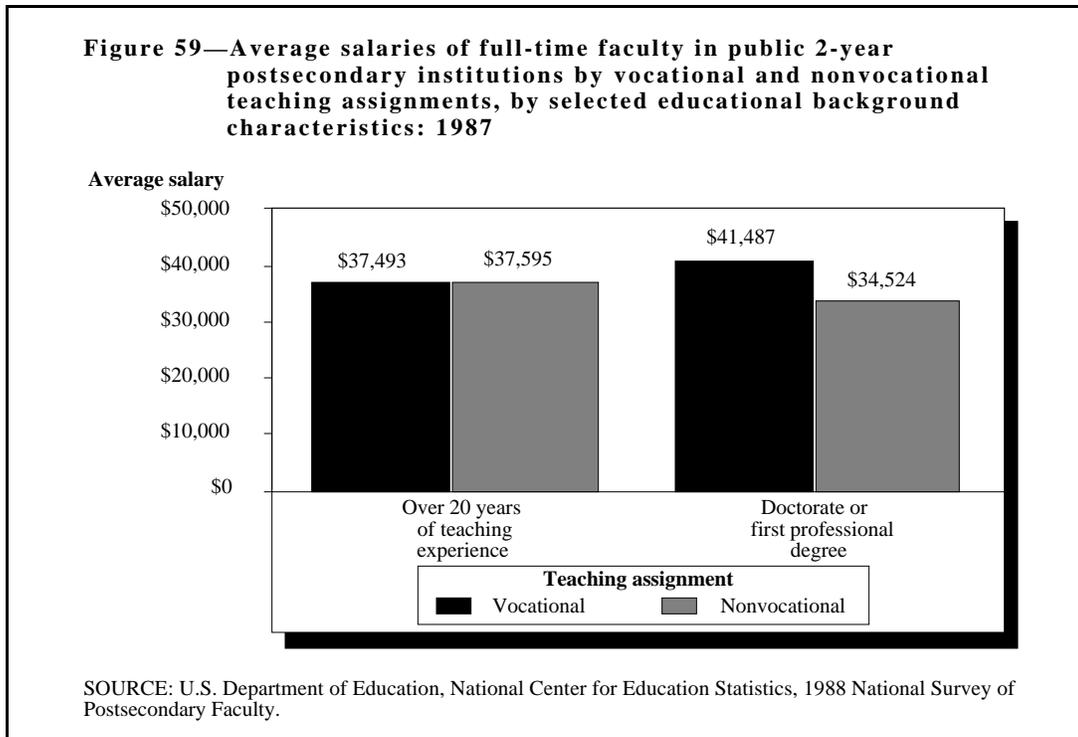


Table 59—Average salaries of full-time faculty in public 2-year postsecondary institutions by teaching assignment, by experience and educational background: 1987

Experience and educational background	All faculty	Vocational	Nonvocational
Total	\$32,387	\$30,953	\$33,460
Highest college degree			
Less than a bachelor's	—	—	—
Bachelor's	27,837	27,579	—
Master's	32,695	31,616	33,341
Doctor's or first professional	35,766	41,487	34,524
Major field of study (highest degree)			
Mathematics and sciences	32,138	—	32,501
Social sciences	33,966	—	34,443
Letters, humanities, and communications	33,530	—	33,456
Art & design	31,394	—	31,304
Education	32,893	31,595	33,864
Occupationally specific ¹	31,572	30,548	35,088
Other	—	—	—
Tenure status			
Tenured	35,853	34,326	36,799
On tenure track/not tenured	24,851	24,282	25,352
Not on tenure track	—	—	—
Not applicable	27,887	27,860	27,916
Academic rank			
Professor	39,247	39,972	38,887
Associate professor	34,872	33,247	36,103
Assistant professor	30,132	29,263	31,165
Instructor	29,785	29,247	30,412
Lecturer	—	—	—
Other	—	—	—
Not applicable	32,304	30,053	33,373
Age at which first began to teach at postsecondary level ²			
25 years or under	31,739	30,503	32,310
26–35 years	33,518	32,648	34,082
36–45 years	32,472	30,932	34,229
46–55 years	28,477	27,640	—
Over 55 years	—	—	—
Number of years of postsecondary teaching experience ²			
Less than 3 years	25,339	—	—
3–9 years	27,079	27,053	27,115
10–20 years	32,927	32,398	33,298
Over 20 years	37,562	37,493	37,595

First row, first column reads: Full-time faculty who taught in public 2-year institutions in the fall of 1987 earned on average a basic institutional salary of \$32,387 during the 1987 calendar year.

— Sample size too small for reliable estimate.

¹ Occupationally specific degrees include all vocational fields of study listed in the taxonomy for less-than-4-year postsecondary institutions.

² “Age at which faculty first began to teach at the postsecondary level” and “Number of years of postsecondary teaching experience” reflect only those years in which teaching was part of the faculty member’s primary job responsibility.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

Postsecondary Faculty

Salaries of Part-Time Faculty

The average annual salary of part-time vocational faculty who taught in public 2-year institutions during the fall of 1987 was slightly less than the average salary for part-time nonvocational faculty (table 60 and figure 60). Vocational faculty earned \$3,716 on average for the 1987 calendar year, while nonvocational faculty earned \$4,985. These differences may reflect the fact that nonvocational faculty with master's degrees and with 3 to 9 years of teaching experience had higher salaries than vocational faculty with similar characteristics. These differences, however, were not statistically significant.

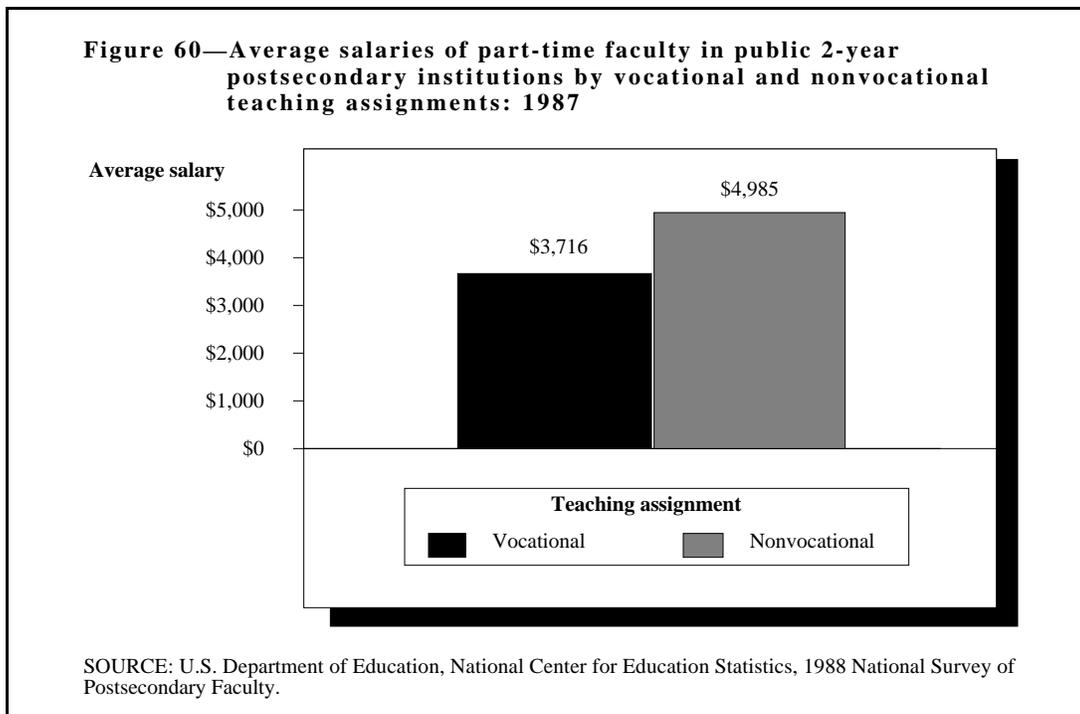


Table 60—Average salaries of part-time faculty in public 2-year postsecondary institutions by teaching assignment, by experience and educational background: 1987

Experience and educational background	All faculty	Vocational	Nonvocational
Total	\$4,448	\$3,716	\$4,985
Highest college degree			
Less than a bachelor's	3,366	3,592	—
Bachelor's	3,652	3,577	3,799
Master's	4,938	3,960	5,283
Doctor's or first professional	5,285	—	5,699
Major field of study (highest degree)			
Mathematics and sciences	6,058	—	—
Social sciences	—	—	—
Letters, humanities, and communications	5,770	—	5,850
Art & design	—	—	—
Education	4,628	—	4,779
Occupationally specific ¹	3,765	3,690	4,007
Other	—	—	—
Tenure status			
Tenured	—	—	—
On tenure track/not tenured	—	—	—
Not on tenure track	4,480	2,967	5,708
Not applicable	4,122	3,588	4,510
Academic rank			
Professor	—	—	—
Associate professor	—	—	—
Assistant professor	—	—	—
Instructor	4,019	3,753	4,232
Lecturer	—	—	—
Other	—	—	—
Not applicable	5,418	—	6,093
Age at which first began to teach at postsecondary level ²			
25 years or under	3,491	—	—
26–35 years	5,268	4,457	5,649
36–45 years	5,006	3,729	5,783
46–55 years	4,088	—	—
Over 55 years	—	—	—
Number of years of postsecondary teaching experience ²			
Less than 3 years	3,228	3,553	3,072
3–9 years	4,785	3,934	5,451
10–20 years	6,507	—	7,207
Over 20 years	—	—	—

First row, first column reads: Part-time faculty who taught in public 2-year institutions in the fall of 1987 earned on average a basic institutional salary of \$4,448 during the 1987 calendar year.

— Sample size too small for reliable estimate.

¹ Occupationally specific degrees include all vocational fields of study listed in the taxonomy for less-than-4-year postsecondary institutions.

² “Age at which faculty first began to teach at the postsecondary level” and “Number of years of postsecondary teaching experience” reflect only those years in which teaching was part of the faculty member’s primary job responsibility.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

Glossary

Academic ability: Academic ability is based on student performance on vocabulary, reading, and mathematics tests.

Academic subjects: The academic curriculum is divided into the main subject areas listed below. These courses are not exhaustive of the courses included in each subject area.

Secondary level:

Mathematics: Includes courses in basic and remedial math, general math, applied math, pre-algebra, algebra, geometry, calculus, and other advanced math such as statistics and probability.

Science: Includes courses in biology, chemistry, and physics, as well as survey courses and those in other areas.

English: Includes survey and skills courses, as well as courses in literature, composition and writing, and speech.

Social studies: Includes courses in American history, world history, American government and politics, social sciences such as economics and anthropology, and humanities such as philosophy.

Fine arts: Includes courses that fulfill a general art requirement, as well as performing arts and advanced courses. Media courses include arts and crafts, music, drama, and dance.

Foreign languages: Includes all courses that teach second languages, including English as a second language, as well as classes in languages other than English.

Postsecondary level:

Mathematics: Includes courses in algebra, geometry, calculus, logic, topology, applied math, and mathematical statistics.

Science: Includes courses in biological/life sciences, chemistry, physics, and other sciences such as astronomy and geology.

Letters: Includes courses in English composition, English creative writing, American and English literature, and other English language courses.

Humanities: Includes courses in French, Spanish, and other foreign languages and literatures, philosophy and religion, theology, liberal arts and sciences, general studies, humanities, and multidisciplinary studies such as peace and conflict studies and systems science.

Communications: Includes courses in journalism, general communications, advertising, public relations, and radio and television broadcasting.

Social sciences: Includes courses in anthropology, economics, geography, history, political science and government, sociology, psychology, and area, ethnic, and cultural studies.

Art & design: Includes courses in architecture and related programs, dance, fine arts such as graphic design and commercial photography, music, and other visual and performing arts.

Education: Includes courses in curriculum and instruction, education administration, special education, teacher education, and counseling and guidance.

Other: Includes courses in law, library science, social work, public affairs, parks and recreation, and military sciences.

Attendance: A student was said to have attended a postsecondary institution if the student had a transcript at that institution (postsecondary section) or if the student reported attending that institution (secondary section). See **enrollment**.

Carnegie unit: A standard of measurement used for secondary education that represents the completion of a course that meets 1 period per day for 1 year.

Cohort: A group of individuals who have a statistical factor in common, for example, year of high school graduation.

Courses attempted: Includes all courses that are listed on a student's postsecondary transcript. Because of the large amount of missing data on credits in public vocational–technical and private proprietary institutions, this compendium examined in some cases only courses attempted rather than credits earned in order to describe course taking in these institutions.

Courses completed: Students were said to have completed a course if there was a record of their earning Carnegie units or postsecondary credits for that course.

Credits: Postsecondary credits were reported as standardized semester credits, with 1 credit generally equivalent to 1 hour of classroom work. Standard collegiate institutions report credits based on similar credit scales. The typical academic course in these institutions carries a value of 3 credits, and most fall between 3 and 5 credits. However, a credit earned under a quarter system is not equivalent to a credit earned under a semester system. To standardize credit numbers, all credits were converted to a semester metric. In most cases, this meant multiplying quarter credits by two-thirds (so that 45 quarter credits would be converted to 30 semester credits).

Curriculum: At its most aggregated level, the Secondary School Taxonomy divides the high school curriculum into three distinct curricula:

Academic: See **academic subjects**.

Vocational: See **vocational education**.

Personal use/other: Included in this curriculum are courses intended for personal development, such as courses in driver's education, personal health and physical education, religion, and military science.

Degrees: Degrees awarded by postsecondary institutions are defined as follows:

Associate's degree: A degree granted for the successful completion of a sub-baccalaureate program of studies, usually requiring at least 2 years (or equivalent) of full-time college-level study. This includes degrees granted in a cooperative or work-study program.

Bachelor's degree: A degree granted for the successful completion of a baccalaureate program of studies, usually requiring at least 4 years (or equivalent) of full-time college-level study. This includes degrees granted in a cooperative or work-study program.

Master's degree: A degree awarded for successful completion of a program generally requiring 1 or 2 years of full-time college-level study beyond the bachelor's degree. One type of master's degree including the Master of Arts degree, or M.A., and the Master of Science degree, or M.S., is awarded in the liberal arts and sciences for advanced scholarship in a subject field or discipline and for demonstrated ability to perform scholarly research. A second type of master's degree is awarded for the completion of a professionally oriented program, for example, an M.Ed. in education, an M.B.A. in business administration, an M.F.A. in fine arts, an M.M. in music, an M.S.W. in social work, and an M.P.A. in public administration. A third type of master's degree is awarded in professional fields for study beyond the first professional degree, for example, the Master of Laws (LL.M.) and Master of Science in various medical specializations.

Doctor's degree: An earned degree carrying the title of Doctor. The Doctor of Philosophy degree (Ph.D.) is the highest academic degree and requires mastery within a field of knowledge and demonstrated ability to perform scholarly research. Other doctorates are awarded for fulfilling specialized requirements in professional fields, such as education (Ed.D.), musical arts (D.M.A.), business administration (D.B.A.), and engineering (D.Eng. or D.E.S.). Many doctor's degrees in both academic and professional fields require an earned master's degree as a prerequisite. First professional degrees, such as M.D. and D.D.S., are not included under this heading.

First professional degree: A degree that signifies both completion of the academic requirement for beginning practice in a given profession and a level of professional skill beyond that normally required for a bachelor's degree. This degree is usually based on a program requiring at least 2 academic years of work prior to entrance and a total of at least 6 academic years of work to complete the degree program, including both previously required college work and the professional program itself. As defined by the National Center for Education Statistics, first professional degrees are awarded in the fields of dentistry (D.D.S. or D.M.D.), medicine (M.D.), optometry (O.D.), osteopathic medicine (D.O.), pharmacy (D.Pharm.), podiatric medicine (D.P.M.), veterinary medicine (D.V.M.), chiropractic (D.C. or D.C.M.), law (J.D.), and theological professional (M.Div. or M.H.L.).

Employment: See **labor market participation**.

Enrollment: A student was said to have enrolled at a postsecondary institution if the student had a transcript at that institution (postsecondary section) or if the student reported enrolling at that institution (secondary section). See **attendance**.

Geographic region: One of four regions used by the Bureau of the Census of the U.S. Department of Commerce as in the following:

Northeast	Midwest	South	West
Maine	Ohio	Delaware	Montana
New Hampshire	Indiana	Maryland	Idaho
Vermont	Illinois	District of Columbia	Wyoming
Massachusetts	Michigan	Virginia	Colorado
Connecticut	Wisconsin	West Virginia	New Mexico
Rhode Island	Iowa	North Carolina	Arizona
New York	Minnesota	South Carolina	Utah
New Jersey	Missouri	Georgia	Nevada
Pennsylvania	North Dakota	Florida	Washington
	South Dakota	Kentucky	Oregon
	Nebraska	Tennessee	California
	Kansas	Alabama	Alaska
		Mississippi	Hawaii
		Arkansas	
		Louisiana	
		Oklahoma	
		Texas	

Handicap status: For tables 1–7 and 25–26, handicap status was based on a determination of whether a student had an Individualized Education Program (IEP). For tables 22–24, handicap status indicates whether a student ever reported having a handicap, participating in a program for the handicapped, or receiving handicap benefits. For tables 53–55, handicap status categories were mutually exclusive and were assigned as follows:

In program: Includes students who reported participating in a handicap program or receiving handicap benefits.

Consistent handicap: Includes students who did not report participating in a handicap program but who reported having a handicap in both the base year and followup surveys.

Inconsistent handicap: Includes students who did not report participating in a handicap program but who reported having a handicap in either the base year or followup surveys but not both.

Not handicapped: Includes students who did not report participating in a handicap program and never reported having a handicap.

Handicapping conditions: For tables 25–26, special education students were identified as having one of the following handicapping conditions:

Multihandicapped: Having concomitant impairments (such as being mentally retarded/blind, mentally retarded/orthopedically impaired, and so on), the combination of which causes such severe educational problems that these children cannot be accommodated in special education programs solely for one of the impairments. The term does not include deaf/blind children.

Mentally retarded: Having significantly subaverage general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period, that adversely affects a child’s educational performance.

Hard of hearing: Having a hearing impairment, whether permanent or fluctuating, that adversely affects a child's educational performance, but that is not included under the definition of "deaf" below.

Deaf: Having such a severe hearing impairment that the child is impaired in processing linguistic information through hearing, with or without amplification, and that adversely affects educational performance.

Speech impaired: Having a communication disorder, such as stuttering, impaired articulation, a language impairment, or a voice impairment, that adversely affects a child's educational performance.

Visually handicapped: Having a visual impairment that, even with correction, adversely affects a child's educational performance. The term includes both partially seeing and **blind** children.

Deaf/blind: Having concomitant hearing and visual impairments, the combination of which causes such severe communication and other developmental and educational problems that these children cannot be accommodated in special educational programs solely for deaf or blind children.

Seriously emotionally disturbed: (sometimes referred to as "behaviorally disordered") is defined as follows:

- (a) The term means having a condition exhibiting one or more of the following characteristics that adversely affect educational performance over a long period of time and to a marked degree:
 - An inability to learn that cannot be explained by intellectual, sensory, or health factors;
 - An inability to build or maintain satisfactory interpersonal relationships with peers and teachers;
 - Inappropriate types of behavior or feelings under normal circumstances;
 - A general pervasive mood of unhappiness or depression; and
 - A tendency to develop physical symptoms or fears associated with personal or school problems.
- (b) The term includes children who are schizophrenic, but does not include children who are socially maladjusted, unless it is determined that they are seriously emotionally disturbed.

Orthopedically impaired: Having a severe orthopedic impairment that adversely affects a child's educational performance. The term includes impairments caused by a congenital anomaly (for example, clubfoot, absence of some member, and so on), impairments caused by diseases (for example, poliomyelitis, bone tuberculosis, and so on), and impairments from other causes (for example, cerebral palsy, amputations, fractures or burns that cause contractures).

Specific learning disabled: Having a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, or do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include children who have learning problems that are primarily the result of visual, hearing, or motor handicaps, of mental retardation, or of environmental, cultural, or economic disadvantage.

Other health impaired: Means (1) having an autistic condition that is manifested by severe communication and other developmental and educational problems; or (2) having limited strength, vitality, or alertness due to chronic or acute health problems, such as a heart condition, tuberculosis, rheumatic fever, nephritis, asthma, sickle cell anemia, hemophilia, epilepsy, lead poisoning, leukemia, or diabetes, that adversely affect a child's educational performance.

Home language background: Refers to the sole or dominant language a student reported was spoken at home.

Labor market participation: Participation in the labor market includes paid jobs, volunteer jobs, work without pay on a family farm or business, apprenticeships, on-the-job training, and military service.

Employed full time: A person was said to have been employed full time if that person worked 35 or more hours per week.

Employed part time: A person was said to have been employed part time if that person worked fewer than 35 hours per week.

Unemployed: A person was said not to be unemployed if that person was without a job and was looking for work.

Not in the labor force: A person was said not to be in the labor force if that person was without a job but was not looking for work.

Postsecondary education plans: 1980 high school seniors in the spring of 1980 reported how far in school they thought they would get. Categories used in the report are defined as follows:

None: Includes less than high school graduation or high school graduation only.

Vocational–technical: Includes course taking in a vocational, trade, or business school after high school.

Less than 4 years: Includes course taking in a college program, including completion of a 2-year degree.

Bachelors' degree: Includes completion of a 4- or 5-year college degree.

Advanced degree: Includes completion of a master's degree or equivalent, or a Ph.D., M.D., or other advanced professional degree.

Postsecondary less-than-4-year institutions: Institutions are defined as follows:

Public 2-year: Includes public less-than-4-year degree-granting institutions.

Public vocational–technical: Includes public less-than-2-year nondegree-granting institutions.

Private proprietary: Includes private for-profit less-than-4-year institutions.

Private less-than-4-year: Includes private nonprofit less-than-4-year institutions.

Race–ethnicity: Classification indicating general racial or ethnic heritage based on self-identification. These categories are in accordance with the Office of Management and Budget standard classification scheme presented below:

White, non-Hispanic: A person having origins in any of the peoples of Europe, North Africa, or the Middle East, excluding persons of Hispanic origin.

Black, non-Hispanic: A person having origins in any of the black racial groups in Africa, excluding persons of Hispanic origin.

Hispanic: A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.

Asian: A person having origins in any of the peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands including, for example, China, India, Japan, Korea, the Philippine Islands, and Samoa.

Native American: A person having origins in any of the peoples of North America and maintaining cultural identification through tribal affiliation or community recognition.

Socioeconomic status: Constructed from data on father’s occupation, father’s education, mother’s education, family income, and material possessions in the household.

Special needs: See **special populations**.

Special populations: The federal regulations regarding the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 define special populations as individuals with disabilities, educationally and economically disadvantaged individuals, individuals of limited English proficiency, individuals who participate in programs designed to eliminate sex bias, and individuals in correctional institutions.

Teaching assignment: Secondary teachers were assigned vocational teaching status if 50 percent or more of the courses they taught were in a vocational area as defined by the Secondary School Taxonomy, or their primary assignment was in a vocational area when course information was not available. Postsecondary faculty were assigned vocational teaching status if their principal field of teaching was in a vocational area as defined by the taxonomy for less-than-4-year postsecondary institutions.

Transfer: A student was said to have transferred from one postsecondary institution to another if the student had a transcript at the subsequent institution or if a transcript recorded transfer credits.

Urbanicity: Schools were classified according to the following characteristics:

Urban: A school was located within the limits of a city with a population greater than 200,000 (“big city”).

Suburban: A school was located either outside the limits of a city with a population greater than 200,000 (“urban fringe”) or within the limits of a city with a population between 25,000 and 200,000 (“medium city”).

Rural: A school was located in a community with a population less than 25,000 (“small place”).

Vocational education: Organized educational programs, services, and activities that are directly related to the preparation of individuals for paid or unpaid employment or for additional preparation for a career, requiring other than a bachelor’s or an advanced degree. The compendium refers to the following types of vocational education at the secondary level:

Consumer & homemaking education: Consists of courses intended to prepare students for roles outside the paid labor market. Topics covered include child care, meal preparation, nutrition, and household management.

General labor market preparation: Consists of courses that teach general employment skills but do not have as their primary objective preparing students for paid employment in a specific field. These courses include introductory typewriting, introductory industrial courses, work experience/career exploration courses, and general labor market skills courses such as agricultural math or business English.

Specific labor market preparation: Consists of courses that teach skills and provide information required in a particular vocation. See **vocational program areas**.

Vocational program areas:

Secondary:

Agriculture: Includes courses that prepare students for employment in farming, horticulture, fishing, or forestry. In addition, courses in natural resources teach skills in conservation, wildlife, forestry, logging, and paper production.

Business: Offers training in business support and business management, including data processing, accounting, shorthand, stenography, advanced typing, and recordkeeping, as well as finance, investments, personnel, and other aspects of management. Also included are courses in library sciences and security services.

Marketing & distribution: Includes courses related to the selling and distribution of goods and services, teaching skills ranging from cash register operation to marketing and management research.

Health: Includes courses intended to prepare students for careers in the health professions, such as those that train students to become nurses and dental assistants, lab technicians, and ambulance operators.

Occupational home economics: Includes courses intended to prepare students for employment in the service sector, such as child care, food preparation, cleaning services, plant maintenance, and protection services. Unlike consumer & homemaking education, occupational home economics emphasizes skills and training for the paid labor force.

Trade & industry: Includes coursework in construction, mechanics and repairs, precision production, and transportation. Construction includes courses in carpentry, plumbing, electrical wiring, and welding. Mechanics and repairs includes courses in repairing a variety of consumer goods. Precision production includes courses that teach students how to design and manufacture goods, such as woodworking, graphic design, printing, sheet metal, and architecture.

Technical & communication: Includes courses related to skills used in television and radio, as well as computer courses such as programming.

Postsecondary:

Agriculture: Includes courses in agricultural business and production including horticulture, agricultural sciences such as animal sciences, and conservation and renewable natural resources.

Business & office: Includes courses in business administration and management such as accounting, and in administrative and secretarial services such as typing and word processing.

Marketing & distribution: Includes courses in marketing operations of apparel and accessories, business and personal services, financial services, and hospitality and recreation, as well as retailing and wholesaling operations.

Health: Includes courses in nursing and other allied health fields such as dental and physical therapy assisting, and in health sciences such as medical laboratory and clinical anatomy.

Home economics: Includes courses in family and community studies, foods and nutrition science, child care provider/assistant, and clothing, apparel, and textile workers and managers.

Technical education: Includes the following subgroupings:

Protective services: Includes courses in criminal justice and fire protection.

Computers/data processing: Includes courses in computer programming, data processing, and computer and information sciences.

Engineering/science technologies: Includes courses in architectural engineering technology, computer engineering technology, heating, air conditioning, and refrigeration technology, industrial/manufacturing technology, biological technology, and nuclear and industrial radiologic technologies.

Communication technologies: Includes courses in educational media, photographic technology, and radio and television broadcasting technology.

Trade & industry: Includes courses in construction, automotive and other mechanics and repairers, drafting and other precision production, transportation and materials moving, and consumer, personal, and miscellaneous services.

SOURCES:

Choy, Susan P., and Horn, Laura J. *A Guide to Using Postsecondary Transcript Data and an Overview of Course Taking in Less-than-4-Year Postsecondary Institutions*. A report prepared for the National Center for Research in Vocational Education. Berkeley: University of California, forthcoming.

Gifford, Antoinette G., Hoachlander, E. Gareth, and Tuma, John E. *The Secondary School Taxonomy Final Report*. A report prepared for the National Assessment of Vocational Education. Office of Planning, Budgeting, and Evaluation. U.S. Department of Education. Washington, D.C.: February 1989.

U.S. Department of Commerce. Bureau of the Census. Current Population Reports, Series P-20. *School Enrollment—Social and Economic Characteristics of Students: October 1988 and 1987*.

U.S. Department of Education. National Center for Education Statistics. *A Classification of Instructional Programs*. Washington, D.C.: U.S. Government Printing Office, 1990 Edition.

U.S. Department of Education. National Center for Education Statistics. High School and Beyond Sophomore Cohort and Senior Cohort Studies. *User's Manuals*.

U.S. Department of Education. National Center for Education Statistics. *The Condition of Education, 1991, Volume 1, Elementary and Secondary Education*. Washington, D.C.: 1991.

U.S. Department of Education. National Center for Education Statistics. *The Condition of Education, 1991, Volume 2, Postsecondary Education*. Washington, D.C.: 1991.

U.S. Department of Education. National Center for Education Statistics. 1987 High School Transcript Study. *Special Education Student Questionnaire*.

U.S. Department of Education. National Center for Education Statistics. 1987 High School Transcript Study. *User's Guide*.

Appendix A—Standard Errors for Tables

Table A1—Standard errors for table 1: Percentage of 1987 public high school graduates completing one or more courses in vocational education by type of vocational education, by selected characteristics

	Any vocational education	Consumer & homemaking education	General labor market preparation	Specific labor market preparation	Unweighted Ns
Total	0.35	1.22	1.04	0.61	24,430
Sex					
Male	0.28	1.43	1.08	0.61	12,254
Female	0.47	1.46	1.21	0.77	12,106
Race–ethnicity					
White, non-Hispanic	0.33	1.43	1.18	0.71	15,630
Black, non-Hispanic	0.25	2.09	1.59	1.24	3,585
Hispanic	0.80	3.53	2.44	1.19	2,783
Asian	3.12	6.91	9.21	2.98	844
Native American	0.84	4.02	2.83	2.73	302
Urbanicity					
Urban	1.00	2.58	2.04	2.21	4,693
Suburban	1.11	2.96	2.48	1.31	6,451
Rural	0.30	2.82	2.13	1.12	4,081
Handicap status					
Not handicapped	0.36	1.23	1.09	0.62	21,549
Handicapped	0.21	2.32	1.46	1.58	2,881
School enrollment					
500 or fewer	0.16	2.73	1.48	1.43	3,301
501 to 1,000	1.11	2.76	2.67	1.51	5,534
1,001 to 2,000	0.34	2.00	1.28	0.75	10,827
2,001 to 3,000	0.32	3.37	2.18	1.05	4,180
3,001 or more	0.35	5.61	2.56	1.52	588
High school grades					
Mostly As	1.15	2.39	3.22	1.55	2,783
Mostly Bs	0.47	1.46	1.22	0.88	9,966
Mostly Cs	0.15	1.29	0.85	0.59	8,989
Below C	0.13	2.41	1.29	1.00	2,687
Total vocational Carnegie units					
Zero units	0.00	0.00	0.00	0.00	504
0.01–1.99 units	0.00	1.87	2.86	2.60	3,574
2.00–3.99 units	0.00	1.60	1.21	0.65	6,743
4.00–5.99 units	0.00	1.61	0.93	0.42	6,023
6.00–7.99 units	0.00	1.79	0.93	0.13	4,337
8.00 or more units	0.00	1.91	1.07	0.11	3,249
Total specific labor market preparation Carnegie units					
Zero units	2.51	2.47	2.54	0.00	2,818
0.01–1.99 units	0.00	1.68	2.01	0.00	6,482
2.00–3.99 units	0.00	1.59	1.09	0.00	7,225
4.00–5.99 units	0.00	1.84	1.09	0.00	4,312
6.00 or more units	0.00	1.77	1.47	0.00	3,593

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 8, and unpublished tabulations from the 1987 High School Transcript Study.

Table A2—Standard errors for table 2: Average number of Carnegie units accumulated by 1987 public high school graduates by type of curriculum, by selected characteristics

	Total	Academic	Vocational	Personal use	Unweighted Ns
Total	0.086	0.105	0.070	0.066	24,430
Sex					
Male	0.091	0.117	0.079	0.069	12,254
Female	0.091	0.112	0.078	0.068	12,106
Race–ethnicity					
White, non-Hispanic	0.098	0.126	0.088	0.075	15,630
Black, non-Hispanic	0.149	0.154	0.096	0.105	3,585
Hispanic	0.143	0.195	0.155	0.104	2,783
Asian	0.628	0.621	0.262	0.294	844
Native American	0.544	0.344	0.181	0.183	302
Urbanicity					
Urban	0.191	0.263	0.200	0.138	4,693
Suburban	0.224	0.226	0.140	0.152	6,451
Rural	0.232	0.263	0.116	0.124	4,081
Handicap status					
Not handicapped	0.088	0.106	0.071	0.067	21,549
Handicapped	0.139	0.131	0.133	0.115	2,881
School enrollment					
500 or fewer	0.189	0.176	0.128	0.160	3,301
501 to 1,000	0.256	0.300	0.169	0.133	5,534
1,001 to 2,000	0.126	0.133	0.088	0.102	10,827
2,001 to 3,000	0.215	0.242	0.129	0.168	4,180
3,001 or more	0.314	0.501	0.283	0.495	588
High school grades					
Mostly As	0.165	0.210	0.124	0.115	2,783
Mostly Bs	0.101	0.129	0.084	0.078	9,966
Mostly Cs	0.087	0.091	0.070	0.062	8,989
Below C	0.098	0.115	0.105	0.090	2,687
Total vocational Carnegie units					
Zero units	0.481	0.192	0.000	0.373	504
0.01–1.99 units	0.153	0.176	0.014	0.112	3,574
2.00–3.99 units	0.103	0.107	0.014	0.069	6,743
4.00–5.99 units	0.104	0.106	0.013	0.062	6,023
6.00–7.99 units	0.122	0.077	0.015	0.085	4,337
8.00 or more units	0.136	0.112	0.065	0.076	3,249
Total specific labor market preparation Carnegie units					
Zero units	0.188	0.193	0.070	0.117	2,818
0.01–1.99 units	0.114	0.171	0.056	0.090	6,482
2.00–3.99 units	0.107	0.108	0.046	0.067	7,225
4.00–5.99 units	0.102	0.099	0.045	0.065	4,312
6.00 or more units	0.144	0.103	0.075	0.074	3,593

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 10, and unpublished tabulations from the 1987 High School Transcript Study.

Table A3—Standard errors for table 3: Percentage of 1987 public high school graduates by number of Carnegie units accumulated in vocational education, by selected characteristics

	Number of Carnegie units in vocational education										Un-weighted Ns
	0.00	0.01–0.99	1.00–1.99	2.00–2.99	3.00–3.99	4.00–4.99	5.00–5.99	6.00–6.99	7.00–7.99	8.00 or more	
Total	0.35	0.42	0.49	0.46	0.42	0.43	0.40	0.32	0.40	0.60	24,430
Sex											
Male	0.28	0.38	0.59	0.61	0.45	0.41	0.55	0.39	0.50	0.72	12,254
Female	0.47	0.52	0.59	0.54	0.56	0.68	0.48	0.47	0.48	0.71	12,106
Race–ethnicity											
White, non-Hispanic	0.33	0.51	0.63	0.53	0.46	0.52	0.46	0.43	0.50	0.81	15,630
Black, non-Hispanic	0.25	0.87	1.19	1.05	0.83	0.99	0.86	0.73	1.04	0.92	3,585
Hispanic	0.80	0.44	1.16	1.26	1.34	1.18	0.94	1.02	1.24	1.32	2,783
Asian	3.12	1.22	2.66	2.33	3.33	1.89	1.33	1.29	0.76	1.00	844
Native American	0.84	0.75	1.36	2.14	3.06	2.46	2.39	1.48	1.63	2.17	302
Urbanicity											
Urban	1.00	1.30	1.07	1.03	0.99	0.81	0.87	1.13	1.07	1.53	4,693
Suburban	1.11	0.39	1.01	0.85	0.90	0.96	0.81	0.54	0.47	1.07	6,451
Rural	0.30	0.64	1.19	1.04	0.84	0.86	0.70	0.72	0.60	1.17	4,081
Handicap status											
Not handicapped	0.36	0.44	0.50	0.47	0.43	0.43	0.41	0.34	0.41	0.60	21,549
Handicapped	0.21	0.18	1.16	0.53	0.67	0.82	0.89	1.24	0.97	1.73	2,881
School enrollment											
500 or fewer	0.16	0.33	1.13	0.87	0.83	0.97	1.15	0.93	1.90	1.66	3,301
501 to 1,000	1.11	1.31	1.14	0.88	0.90	0.90	0.91	0.83	0.64	1.25	5,534
1,001 to 2,000	0.34	0.35	0.70	0.68	0.53	0.61	0.55	0.48	0.49	0.87	10,827
2,001 to 3,000	0.32	0.77	1.06	1.09	1.16	0.84	0.92	0.61	0.76	0.99	4,180
3,001 or more	0.35	1.15	2.67	2.90	1.25	2.32	1.45	2.11	0.98	2.22	588
High school grades											
Mostly As	1.15	1.67	1.21	1.15	1.03	0.82	0.76	0.49	1.08	0.55	2,783
Mostly Bs	0.47	0.45	0.76	0.67	0.61	0.66	0.59	0.48	0.52	0.86	9,966
Mostly Cs	0.15	0.21	0.56	0.56	0.59	0.60	0.64	0.48	0.52	0.82	8,989
Below C	0.13	0.78	0.99	0.88	0.94	0.97	1.05	1.13	1.00	1.12	2,687
Total specific labor market preparation Carnegie units											
Zero units	2.51	1.95	2.30	1.27	0.52	0.31	0.72	0.18	0.09	0.13	2,818
0.01–1.99 units	0.00	0.00	1.31	1.20	0.92	0.61	0.55	0.28	0.20	0.25	6,482
2.00–3.99 units	0.00	0.00	0.00	0.87	1.08	0.93	0.80	0.49	0.88	0.23	7,225
4.00–5.99 units	0.00	0.00	0.00	0.00	0.00	0.78	1.14	1.04	0.96	1.04	4,312
6.00 or more units	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93	1.21	1.50	3,593

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 12, and unpublished tabulations from the 1987 High School Transcript Study.

Table A4—Standard errors for table 4: Average number of Carnegie units accumulated in vocational education by 1987 public high school graduates by type of vocational education, by selected characteristics

	Consumer & homemaking education	General labor market preparation			Specific labor market preparation	Un- weighted Ns
		Industrial arts	Career education	Total		
Total	0.019	0.010	0.012	0.023	0.055	24,430
Sex						
Male	0.016	0.017	0.011	0.025	0.071	12,254
Female	0.029	0.005	0.015	0.026	0.054	12,106
Race-ethnicity						
White, non-Hispanic	0.024	0.012	0.013	0.028	0.066	15,630
Black, non-Hispanic	0.033	0.013	0.026	0.032	0.091	3,585
Hispanic	0.063	0.021	0.038	0.057	0.094	2,783
Asian	0.068	0.010	0.025	0.094	0.128	844
Native American	0.058	0.070	0.023	0.099	0.164	302
Urbanicity						
Urban	0.038	0.015	0.049	0.061	0.154	4,693
Suburban	0.036	0.015	0.012	0.035	0.105	6,451
Rural	0.044	0.020	0.026	0.050	0.107	4,081
Handicap status						
Not handicapped	0.020	0.009	0.012	0.023	0.054	21,549
Handicapped	0.041	0.031	0.079	0.080	0.139	2,881
School enrollment						
500 or fewer	0.055	0.041	0.056	0.067	0.128	3,301
501 to 1,000	0.044	0.017	0.022	0.047	0.128	5,534
1,001 to 2,000	0.026	0.011	0.014	0.026	0.077	10,827
2,001 to 3,000	0.040	0.013	0.030	0.042	0.107	4,180
3,001 or more	0.059	0.029	0.047	0.023	0.252	588
High school grades						
Mostly As	0.031	0.008	0.023	0.045	0.074	2,783
Mostly Bs	0.022	0.012	0.013	0.028	0.063	9,966
Mostly Cs	0.025	0.012	0.015	0.024	0.064	8,989
Below C	0.041	0.018	0.023	0.030	0.103	2,687
Total vocational Carnegie units						
Zero units	0.000	0.000	0.000	0.000	0.000	504
0.01–1.99 units	0.014	0.004	0.006	0.024	0.024	3,574
2.00–3.99 units	0.019	0.006	0.008	0.018	0.022	6,743
4.00–5.99 units	0.028	0.014	0.019	0.029	0.037	6,023
6.00–7.99 units	0.037	0.017	0.034	0.042	0.054	4,337
8.00 or more units	0.052	0.029	0.028	0.047	0.096	3,249
Total specific labor market preparation Carnegie units						
Zero units	0.038	0.011	0.034	0.047	0.000	2,818
0.01–1.99 units	0.033	0.010	0.015	0.032	0.010	6,482
2.00–3.99 units	0.025	0.012	0.020	0.029	0.013	7,225
4.00–5.99 units	0.030	0.017	0.013	0.029	0.014	4,312
6.00 or more units	0.025	0.021	0.014	0.034	0.061	3,593

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 14, and unpublished tabulations from the 1987 High School Transcript Study.

Table A5—Standard errors for table 5: Percentage of 1987 public high school graduates by number of Carnegie units accumulated in specific labor market preparation courses, by selected characteristics

	Number of Carnegie units in specific labor market preparation						Un-weighted Ns
	0.00	0.01– 0.99	1.00– 1.99	2.00– 2.99	3.00– 3.99	4.00 or more	
Total	0.61	0.56	0.53	0.42	0.44	0.95	24,430
Sex							
Male	0.61	0.59	0.63	0.49	0.55	1.18	12,254
Female	0.77	0.66	0.69	0.55	0.61	1.03	12,106
Race–ethnicity							
White, non-Hispanic	0.71	0.66	0.71	0.52	0.54	1.15	15,630
Black, non-Hispanic	1.24	1.22	1.20	0.70	0.96	1.66	3,585
Hispanic	1.19	0.82	1.28	1.06	1.02	2.13	2,783
Asian	2.98	3.38	2.74	2.43	1.73	2.17	844
Native American	2.73	1.04	2.67	2.92	2.67	3.22	302
Urbanicity							
Urban	2.21	0.72	1.19	1.07	0.83	2.57	4,693
Suburban	1.31	0.84	0.96	0.80	0.81	1.88	6,451
Rural	1.12	1.04	1.05	0.99	0.74	1.81	4,081
Handicap status							
Not handicapped	0.62	0.58	0.53	0.43	0.46	0.95	21,549
Handicapped	1.58	0.61	1.44	0.94	0.73	2.16	2,881
School enrollment							
500 or fewer	1.43	0.49	1.57	1.10	1.76	2.35	3,301
501 to 1,000	1.51	1.44	1.22	0.90	0.70	2.48	5,534
1,001 to 2,000	0.75	0.72	0.75	0.53	0.57	1.28	10,827
2,001 to 3,000	1.05	1.02	1.19	1.21	0.90	2.11	4,180
3,001 or more	1.52	2.56	2.90	1.21	1.79	4.73	588
High school grades							
Mostly As	1.55	1.92	1.19	1.11	1.22	1.12	2,783
Mostly Bs	0.88	0.69	0.80	0.62	0.60	1.21	9,966
Mostly Cs	0.59	0.51	0.80	0.59	0.61	1.13	8,989
Below C	1.00	1.14	1.19	0.90	0.89	1.83	2,687
Total vocational Carnegie units							
Zero units	0.00	0.00	0.00	0.00	0.00	0.00	504
0.01–1.99 units	2.60	2.04	1.83	0.00	0.00	0.00	3,574
2.00–3.99 units	0.65	0.78	1.02	1.06	0.62	0.00	6,743
4.00–5.99 units	0.42	0.26	0.82	0.98	1.00	1.26	6,023
6.00–7.99 units	1.13	0.07	0.58	0.62	1.52	1.68	4,337
8.00 or more units	0.11	0.07	0.53	0.27	0.38	0.79	3,249

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 16, and unpublished tabulations from the 1987 High School Transcript Study.

Table A6—Standard errors for table 6: Percentage of 1987 public high school graduates completing one or more courses in specific labor market preparation programs, by selected characteristics

	Agriculture	Business	Marketing & distribution	Health*	Occupational home economics	Trade & industry				Technical & communication	Un- weighted Ns
						Total	Construction	Precision production	Other		
Total	0.58	1.05	0.66	0.60	0.56	0.81	0.42	0.82	0.53	1.21	24,430
Sex											
Male	0.93	1.25	0.71	0.53	0.56	1.20	0.82	1.22	0.99	1.42	12,254
Female	0.39	1.14	0.80	0.74	0.80	0.76	0.09	0.75	0.22	1.22	12,106
Race-ethnicity											
White, non-Hispanic	0.68	1.32	0.79	0.70	0.69	0.84	0.41	0.87	0.62	1.47	15,630
Black, non-Hispanic	1.11	1.88	1.21	0.79	1.15	2.03	0.86	1.98	1.04	1.99	3,585
Hispanic	0.79	2.10	1.29	2.20	1.33	1.87	0.81	1.97	1.47	1.49	2,783
Asian	0.19	5.08	3.60	3.31	1.47	4.60	0.35	3.90	2.40	5.68	844
Native American	3.58	8.71	1.53	2.65	2.76	3.31	3.65	3.44	2.30	6.15	302
Urbanicity											
Urban	0.93	2.47	1.62	1.23	1.13	2.77	1.13	2.89	1.01	2.24	4,693
Suburban	0.58	1.84	1.32	0.63	1.14	1.77	0.57	1.54	1.16	2.12	6,451
Rural	1.73	2.45	1.75	1.17	1.32	2.14	0.83	2.09	1.32	2.38	4,081
Handicap status											
Not handicapped	0.57	1.06	0.66	0.60	0.57	0.82	0.42	0.83	0.53	1.24	21,549
Handicapped	1.71	2.06	1.21	0.99	1.80	1.81	1.25	1.97	1.12	1.19	2,881
School enrollment											
500 or fewer	2.27	3.07	1.74	0.72	0.96	1.79	0.88	2.20	1.16	2.90	3,301
501 to 1,000	1.51	2.40	1.29	1.57	1.18	1.85	0.73	1.83	1.43	2.45	5,534
1,001 to 2,000	0.68	1.44	1.03	0.77	0.83	1.21	0.69	1.21	0.70	1.78	10,827
2,001 to 3,000	0.91	2.45	1.52	1.17	1.12	2.19	0.62	2.25	1.27	2.76	4,180
3,001 or more	2.53	5.66	2.53	3.23	2.70	4.74	0.90	3.92	4.01	3.27	588
High school grades											
Mostly As	0.68	2.17	0.44	1.41	0.81	1.69	0.23	1.61	1.09	2.01	2,783
Mostly Bs	0.65	1.34	0.74	0.71	0.67	1.02	0.35	1.01	0.59	1.55	9,966
Mostly Cs	0.84	1.15	0.82	0.60	0.79	1.11	0.61	1.06	0.75	1.17	8,989
Below C	0.87	1.82	1.29	0.64	1.33	1.59	1.48	1.70	1.60	1.49	2,687
Total vocational Carnegie units											
Zero units	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	504
0.01–1.99 units	0.32	1.45	0.47	0.92	0.46	1.58	0.20	1.07	1.19	1.88	3,574
2.00–3.99 units	0.51	1.30	0.54	0.61	0.61	1.21	0.26	1.15	0.54	2.08	6,743
4.00–5.99 units	0.76	1.20	0.98	0.61	0.89	1.10	0.49	1.09	0.84	1.66	6,023
6.00–7.99 units	1.05	1.54	1.34	0.66	1.15	1.59	1.09	1.70	1.12	1.33	4,337
8.00 or more units	1.73	1.80	1.32	0.74	1.46	1.62	1.23	1.83	1.37	1.40	3,249
Total specific labor market preparation Carnegie units											
Zero units	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2,818
0.01–1.99 units	0.39	1.90	0.51	1.25	0.67	1.30	0.26	1.03	0.71	1.82	6,482
2.00–3.99 units	0.74	1.20	0.95	0.72	0.78	1.12	0.39	1.12	0.72	1.84	7,225
4.00–5.99 units	1.02	1.29	1.20	0.64	1.21	1.43	0.99	1.51	1.07	1.46	4,312
6.00 or more units	1.70	1.97	1.36	0.73	1.28	1.66	1.36	2.04	1.47	1.33	3,593

* "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "personal/other."

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, pp. 17–18, and unpublished tabulations from the 1987 High School Transcript Study.

Table A7—Standard errors for table 7: Average number of Carnegie units accumulated by 1987 public high school graduates in specific labor market preparation programs, by selected characteristics

	Agriculture	Business	Marketing & distribution	Health*	Occupational home economics	Trade & industry				Technical & communication	Un- weighted Ns
						Total	Construction	Precision production	Other		
Total	0.017	0.025	0.014	0.007	0.012	0.031	0.009	0.023	0.010	0.013	24,430
Sex											
Male	0.027	0.021	0.013	0.000	0.010	0.056	0.019	0.040	0.021	0.018	12,254
Female	0.010	0.038	0.018	0.011	0.019	0.016	0.000	0.016	0.004	0.011	12,106
Race-ethnicity											
White, non-Hispanic	0.020	0.034	0.018	0.007	0.013	0.034	0.010	0.028	0.012	0.017	15,630
Black, non-Hispanic	0.020	0.051	0.021	0.021	0.030	0.055	0.020	0.034	0.025	0.021	3,585
Hispanic	0.014	0.084	0.025	0.020	0.022	0.058	0.016	0.033	0.030	0.016	2,783
Asian	0.006	0.082	0.094	0.040	0.023	0.066	0.004	0.052	0.026	0.077	844
Native American	0.065	0.181	0.037	0.020	0.037	0.141	0.073	0.125	0.067	0.072	302
Urbanicity											
Urban	0.012	0.072	0.025	0.021	0.022	0.088	0.019	0.066	0.027	0.022	4,693
Suburban	0.011	0.046	0.028	0.010	0.023	0.053	0.011	0.032	0.021	0.026	6,451
Rural	0.043	0.050	0.034	0.021	0.031	0.066	0.021	0.051	0.027	0.027	4,081
Handicap status											
Not handicapped	0.016	0.026	0.014	0.007	0.012	0.032	0.010	0.024	0.010	0.013	21,549
Handicapped	0.049	0.033	0.039	0.023	0.045	0.066	0.034	0.049	0.034	0.015	2,881
School enrollment											
500 or fewer	0.081	0.082	0.039	0.018	0.026	0.093	0.023	0.089	0.030	0.028	3,301
501 to 1,000	0.032	0.057	0.029	0.012	0.019	0.064	0.015	0.050	0.023	0.031	5,534
1,001 to 2,000	0.016	0.037	0.021	0.011	0.020	0.044	0.017	0.029	0.014	0.019	10,827
2,001 to 3,000	0.012	0.075	0.025	0.012	0.022	0.064	0.010	0.044	0.030	0.028	4,180
3,001 or more	0.028	0.169	0.022	0.047	0.048	0.085	0.009	0.060	0.031	0.028	588
High school grades											
Mostly As	0.023	0.052	0.007	0.012	0.011	0.037	0.004	0.030	0.012	0.025	2,783
Mostly Bs	0.018	0.035	0.014	0.009	0.014	0.036	0.008	0.032	0.011	0.017	9,966
Mostly Cs	0.025	0.032	0.019	0.010	0.018	0.044	0.018	0.027	0.018	0.014	8,989
Below C	0.022	0.046	0.028	0.013	0.029	0.081	0.022	0.056	0.038	0.016	2,687
Total vocational Carnegie units											
Zero units	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	504
0.01–1.99 units	0.000	0.000	0.000	0.005	0.000	0.011	0.000	0.009	0.006	0.014	3,574
2.00–3.99 units	0.005	0.017	0.006	0.007	0.009	0.019	0.000	0.018	0.005	0.022	6,743
4.00–5.99 units	0.015	0.033	0.018	0.010	0.014	0.032	0.009	0.026	0.014	0.018	6,023
6.00–7.99 units	0.028	0.051	0.030	0.015	0.029	0.067	0.020	0.048	0.024	0.020	4,337
8.00 or more units	0.075	0.082	0.049	0.024	0.053	0.114	0.046	0.091	0.049	0.030	3,249
Total specific labor market preparation Carnegie units											
Zero units	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2,818
0.01–1.99 units	0.000	0.018	0.004	0.004	0.005	0.010	0.000	0.009	0.004	0.014	6,482
2.00–3.99 units	0.011	0.033	0.014	0.010	0.012	0.023	0.006	0.021	0.010	0.021	7,225
4.00–5.99 units	0.029	0.053	0.028	0.012	0.023	0.049	0.015	0.041	0.020	0.020	4,312
6.00 or more units	0.072	0.087	0.051	0.028	0.054	0.106	0.050	0.090	0.046	0.031	3,593

* "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "personal/other."

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, pp. 20–21 and unpublished tabulations from the 1987 High School Transcript Study.

Table A8—Standard errors for table 8: Average number of Carnegie units accumulated in academic subjects by 1987 public high school graduates, by number of Carnegie units accumulated in vocational education

Total number of vocational Carnegie units	Total English	Advanced or honors English	Total math	Calculus & advanced math	Total science	Chemistry or physics	Social Studies	Fine Arts	Foreign language	Unweighted Ns
Total	0.019	0.031	0.027	0.024	0.031	0.027	0.033	0.034	0.042	24,430
Zero	0.085	0.233	0.069	0.079	0.089	0.088	0.257	0.207	0.103	504
0.01–1.99	0.036	0.071	0.044	0.043	0.052	0.046	0.052	0.081	0.120	3,574
2.00–3.99	0.026	0.037	0.037	0.035	0.047	0.040	0.034	0.049	0.040	6,743
4.00–5.99	0.024	0.023	0.031	0.026	0.036	0.027	0.036	0.042	0.035	6,023
6.00–7.99	0.028	0.021	0.034	0.016	0.034	0.018	0.035	0.043	0.027	4,337
8.00 or more	0.035	0.036	0.037	0.015	0.040	0.015	0.046	0.042	0.026	3,249

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, a draft report prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, pp. 22–23, and unpublished tabulations from 1987 High School Transcript Study.

Table A9—Standard errors for table 9: Percentage of public high school graduates completing one or more courses in vocational education by type of vocational education, by sex and race–ethnicity: 1969–1987

	All vocational education	Consumer & homemaking education	General labor market preparation	Specific labor market preparation	Unweighted Ns
1969 graduates					
Total	1.06	2.88	1.50	3.04	5,633
Male	1.38	1.20	2.19	2.71	2,658
Female	1.15	3.97	1.20	4.11	2,863
White, non-Hispanic	1.58	2.73	2.04	3.16	4,315
Black, non-Hispanic	0.54	2.49	3.60	0.73	1,049
Hispanic	0.00	1.17	5.10	1.62	77
Asian	0.55	3.98	2.03	3.70	158
Other or unknown	0.64	5.58	1.87	6.65	34
1975–1978 graduates¹					
Total	0.51	1.59	1.00	1.04	2,309
Male	0.84	2.00	1.69	1.43	1,003
Female	0.61	2.00	1.06	1.48	1,306
Black, non-Hispanic	0.72	2.77	2.07	1.83	448
Hispanic	1.28	3.54	2.52	2.95	267
White, non-Hispanic/other	0.59	1.82	1.14	1.19	1,594
1979–1982 graduates²					
Total	0.37	1.49	1.78	0.89	3,005
Male	0.61	1.99	2.03	1.31	1,453
Female	0.43	1.65	0.98	1.16	1,552
Black, non-Hispanic	0.56	2.50	2.02	1.50	793
Hispanic	0.65	2.99	1.89	1.58	416
White, non-Hispanic/other	0.44	1.76	1.40	1.06	1,796
1982 graduates					
Total	0.21	0.92	0.71	0.53	9,409
Male	0.29	1.16	1.02	0.62	4,564
Female	0.28	1.06	0.76	0.74	4,845
White, non-Hispanic	0.28	1.06	0.78	0.62	5,547
Black, non-Hispanic	0.20	2.29	2.02	1.32	1,311
Hispanic	0.25	1.82	1.51	1.06	2,019
Asian	1.26	4.86	3.33	3.41	294
Native American	0.62	7.86	3.58	2.16	159
1987 graduates					
Total	0.35	1.22	1.04	0.61	24,430
Male	0.28	1.43	1.08	0.61	12,254
Female	0.47	1.46	1.21	0.77	12,106
White, non-Hispanic	0.33	1.43	1.18	0.71	15,630
Black, non-Hispanic	0.25	2.09	1.59	1.24	3,585
Hispanic	0.80	3.53	2.44	1.19	2,783
Asian	3.12	6.91	9.21	3.48	844
Native American	0.84	4.02	2.83	2.73	302

¹ The figures are an average for sampled graduates in the years 1975–1978.

² The figures are an average for sampled graduates in the years 1979–1982.

SOURCE: John Tuma, Antoinette Gifford, Laura Horn, and E. Gareth Hoachlander, *Enrollment Trends in Vocational and Academic Education in American Public High Schools, 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education (Berkeley, CA: MPR Associates, 1989), p. 18, and E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 8, from the 1969 Study of Academic Growth and Prediction, the National Longitudinal Survey of Labor Force Experience–Youth Cohort, the High School and Beyond Sophomore Cohort 1982 Transcript Study, and the 1987 High School Transcript Study.

Table A10—Standard errors for table 10: Average number of Carnegie units accumulated by public high school graduates by type of curriculum, by sex and race–ethnicity: 1969–1987

	Total	Academic	Vocational	Personal use	Unweighted Ns
1969 graduates					
Total	0.000	0.276	0.292	0.000	5,633
Male	0.000	0.310	0.389	0.000	2,658
Female	0.000	0.294	0.292	0.000	2,863
White, non-Hispanic	0.234	0.281	0.289	0.144	4,315
Black, non-Hispanic	0.537	0.177	0.311	0.145	1,049
Hispanic	0.250	0.341	0.597	0.115	77
Asian	0.234	0.811	0.484	0.140	158
Other or unknown	0.212	0.532	0.204	0.219	34
1975–1978 graduates¹					
Total	0.081	0.106	0.086	0.050	2,309
Male	0.132	0.168	0.135	0.068	1,003
Female	0.099	0.134	0.110	0.072	1,306
Black, non-Hispanic	0.152	0.149	0.144	0.092	448
Hispanic	0.159	0.237	0.174	0.145	267
White, non-Hispanic/other	0.093	0.123	0.099	0.056	1,594
1979–1982 graduates²					
Total	0.099	0.113	0.091	0.053	3,005
Male	0.141	0.165	0.138	0.078	1,453
Female	0.138	0.154	0.117	0.073	1,552
Black, non-Hispanic	0.143	0.119	0.117	0.088	793
Hispanic	0.159	0.188	0.187	0.116	416
White, non-Hispanic/other	0.118	0.135	0.109	0.063	1,796
1982 graduates					
Total	0.063	0.070	0.056	0.035	9,409
Male	0.071	0.080	0.069	0.043	4,564
Female	0.071	0.084	0.067	0.036	4,845
White, non-Hispanic	0.070	0.081	0.064	0.040	5,547
Black, non-Hispanic	0.157	0.193	0.144	0.082	1,311
Hispanic	0.109	0.109	0.104	0.067	2,019
Asian	0.172	0.253	0.184	0.119	294
Native American	0.290	0.256	0.267	0.125	159
1987 graduates					
Total	0.086	0.105	0.070	0.066	24,430
Male	0.091	0.117	0.079	0.069	12,254
Female	0.091	0.112	0.078	0.068	12,106
White, non-Hispanic	0.098	0.126	0.088	0.075	15,630
Black, non-Hispanic	0.149	0.154	0.096	0.105	3,585
Hispanic	0.143	0.195	0.155	0.104	2,783
Asian	0.628	0.621	0.262	0.294	844
Native American	0.544	0.344	0.181	0.183	302

¹ The figures are an average for sampled graduates in the years 1975–1978.

² The figures are an average for sampled graduates in the years 1979–1982.

SOURCE: John Tuma, Antoinette Gifford, Laura Horn, and E. Gareth Hoachlander, *Enrollment Trends in Vocational and Academic Education in American Public High Schools, 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education (Berkeley, CA: MPR Associates, 1989), pp. 22, 49, and E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 10, from the 1969 Study of Academic Growth and Prediction, the National Longitudinal Survey of Labor Force Experience–Youth Cohort, the High School and Beyond Sophomore Cohort 1982 Transcript Study, and the 1987 High School Transcript Study.

Table A11—Standard errors for table 11: Percentage of public high school graduates by number of Carnegie units accumulated in vocational education, by sex and race—ethnicity: 1969–1987

	Number of Carnegie units in vocational education										Un-weighted Ns
	0.00	0.01–0.99	1.00–1.99	2.00–2.99	3.00–3.99	4.00–4.99	5.00–5.99	6.00–6.99	7.00–7.99	8.00 or more	
1969 graduates											
Total	0.36	0.32	0.47	0.44	0.43	0.40	0.43	0.41	0.36	0.32	5,633
Male	0.57	0.48	0.72	0.66	0.62	0.59	0.60	0.57	0.50	0.40	2,658
Female	0.48	0.43	0.63	0.60	0.60	0.56	0.63	0.60	0.53	0.50	2,863
White, non-Hispanic	0.46	0.40	0.56	0.51	0.48	0.44	0.47	0.46	0.40	0.32	4,315
Black, non-Hispanic	0.47	0.37	0.83	0.94	1.00	1.02	1.15	1.05	1.01	0.99	1,049
Hispanic	0.00	0.00	2.55	3.50	3.69	4.30	4.42	3.50	3.50	4.30	77
Asian	1.09	1.09	2.71	3.05	3.24	2.86	2.47	1.75	1.64	2.27	158
Other or unknown	2.94	0.00	6.17	7.04	4.94	5.61	6.64	5.61	4.10	4.10	34
1975–1978 graduates¹											
Total	0.51	0.53	0.84	0.77	0.85	0.72	0.87	0.75	0.66	0.96	2,309
Male	0.84	0.85	1.32	1.17	1.24	1.03	1.12	0.98	1.09	1.44	1,003
Female	0.61	0.65	1.08	1.03	1.15	1.01	1.29	1.11	0.77	1.29	1,306
Black, non-Hispanic	0.72	0.65	1.71	1.68	1.76	1.83	1.60	1.58	1.47	1.55	448
Hispanic	1.28	1.41	2.35	2.18	2.24	2.40	1.84	2.33	1.81	1.98	267
White, non-Hispanic/other	0.59	0.61	0.96	0.88	0.96	0.80	0.99	0.85	0.74	1.10	1,594
1979–1982 graduates²											
Total	0.37	0.45	0.75	0.81	0.65	0.73	0.65	0.64	0.68	1.03	3,005
Male	0.61	0.69	1.16	1.16	0.98	1.03	0.90	0.89	0.84	1.50	1,453
Female	0.43	0.59	0.95	1.14	0.85	1.02	0.95	0.92	1.05	1.42	1,552
Black, non-Hispanic	0.56	0.50	1.29	1.16	1.30	1.44	1.43	1.22	1.10	1.37	793
Hispanic	0.65	0.98	2.05	1.72	2.01	1.54	1.80	1.83	1.69	2.24	416
White, non-Hispanic/other	0.44	0.54	0.88	0.97	0.76	0.85	0.75	0.75	0.80	1.24	1,796
1982 graduates											
Total	0.21	0.29	0.51	0.48	0.44	0.51	0.47	0.44	0.38	0.63	9,409
Male	0.29	0.39	0.63	0.64	0.63	0.75	0.65	0.58	0.58	0.82	4,564
Female	0.28	0.37	0.68	0.67	0.66	0.65	0.66	0.57	0.46	0.78	4,845
White, non-Hispanic	0.28	0.38	0.60	0.59	0.55	0.61	0.56	0.50	0.45	0.70	5,547
Black, non-Hispanic	0.20	0.33	1.44	1.22	1.21	1.36	1.38	1.27	0.94	1.90	1,311
Hispanic	0.25	0.34	0.79	1.06	0.88	1.16	1.02	1.10	1.15	1.51	2,019
Asian	1.26	1.69	2.79	3.16	2.07	2.28	3.23	1.72	1.22	1.70	294
Native American	0.62	1.17	2.19	3.28	2.73	2.96	6.64	9.81	3.20	3.11	159
1987 graduates											
Total	0.35	0.42	0.49	0.46	0.42	0.43	0.40	0.32	0.40	0.60	24,430
Male	0.28	0.38	0.59	0.61	0.45	0.41	0.55	0.39	0.50	0.72	12,254
Female	0.47	0.52	0.59	0.54	0.56	0.68	0.48	0.47	0.48	0.71	12,106
White, non-Hispanic	0.33	0.51	0.63	0.53	0.46	0.52	0.46	0.43	0.50	0.81	15,630
Black, non-Hispanic	0.25	0.87	1.19	1.05	0.83	0.99	0.86	0.73	1.04	0.92	3,585
Hispanic	0.80	0.44	1.16	1.26	1.34	1.18	0.94	1.02	1.24	1.32	2,783
Asian	3.12	1.22	2.66	2.33	3.33	1.89	1.33	1.29	0.76	1.00	844
Native American	0.84	0.75	1.36	2.14	3.06	2.46	2.39	1.48	1.63	2.17	302

¹ The figures are an average for sampled graduates in the years 1975–1978.

² The figures are an average for sampled graduates in the years 1979–1982.

SOURCE: John Tuma, Antoinette Gifford, Laura Horn, and E. Gareth Hoachlander, *Enrollment Trends in Vocational and Academic Education in American Public High Schools, 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education (Berkeley, CA: MPR Associates, 1989), p. 18, and E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 12, from the 1969 Study of Academic Growth and Prediction, the National Longitudinal Survey of Labor Force Experience–Youth Cohort studies, the High School and Beyond Sophomore Cohort 1982 Transcript Study, and the 1987 High School Transcript Study.

Table A12—Standard errors for table 12: Average number of Carnegie units accumulated in vocational education by public high school graduates by type of vocational education, by sex and race–ethnicity: 1969–1987

	Consumer & homemaking education	General labor market preparation			Specific labor market preparation	Un-weighted Ns
		Industrial arts	Career education	Total		
1969 graduates						
Total	0.055	0.000	0.000	0.000	0.279	5,633
Male	0.011	0.000	0.000	0.052	0.421	2,658
Female	0.080	0.000	0.000	0.000	0.176	2,863
White, non-Hispanic	0.047	0.018	0.000	0.052	0.323	4,315
Black, non-Hispanic	0.048	0.011	0.122	0.170	0.156	1,049
Hispanic	0.083	0.011	0.145	0.252	0.408	77
Asian	0.053	0.000	0.125	0.229	0.215	158
Other or unknown	0.081	0.075	0.261	0.371	0.330	34
1975–1978 graduates¹						
Total	0.030	0.016	0.030	0.038	0.069	2,309
Male	0.016	0.030	0.038	0.055	0.109	1,003
Female	0.047	0.006	0.045	0.049	0.080	1,306
Black, non-Hispanic	0.059	0.021	0.048	0.059	0.126	448
Hispanic	0.070	0.028	0.077	0.086	0.142	267
White, non-Hispanic/other	0.034	0.018	0.035	0.043	0.079	1,594
1979–1982 graduates²						
Total	0.029	0.017	0.030	0.038	0.072	3,005
Male	0.019	0.033	0.043	0.058	0.113	1,453
Female	0.043	0.007	0.042	0.048	0.087	1,552
Black, non-Hispanic	0.064	0.031	0.047	0.062	0.105	793
Hispanic	0.058	0.021	0.088	0.100	0.123	416
White, non-Hispanic/other	0.033	0.020	0.035	0.045	0.087	1,796
1982 graduates						
Total	0.016	0.010	0.011	0.018	0.049	9,409
Male	0.013	0.019	0.015	0.025	0.068	4,564
Female	0.025	0.005	0.012	0.021	0.052	4,845
White, non-Hispanic	0.019	0.012	0.011	0.020	0.055	5,547
Black, non-Hispanic	0.047	0.018	0.034	0.046	0.145	1,311
Hispanic	0.043	0.025	0.035	0.047	0.098	2,019
Asian	0.032	0.036	0.045	0.073	0.147	294
Native American	0.073	0.060	0.048	0.087	0.239	159
1987 graduates						
Total	0.019	0.010	0.012	0.023	0.055	24,430
Male	0.016	0.017	0.011	0.025	0.071	12,254
Female	0.029	0.005	0.015	0.026	0.054	12,106
White, non-Hispanic	0.024	0.012	0.013	0.028	0.066	15,630
Black, non-Hispanic	0.033	0.013	0.026	0.032	0.091	3,585
Hispanic	0.063	0.021	0.038	0.057	0.094	2,783
Asian	0.065	0.010	0.025	0.094	0.128	844
Native American	0.058	0.070	0.023	0.099	0.164	302

¹ The figures are an average for sampled graduates in the years 1975–1978.

² The figures are an average for sampled graduates in the years 1979–1982.

SOURCE: John Tuma, Antoinette Gifford, Laura Horn, and E. Gareth Hoachlander, *Enrollment Trends in Vocational and Academic Education in American Public High Schools, 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education (Berkeley, CA: MPR Associates, 1989), pp. 52, 67 and E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 14, from the 1969 Study of Academic Growth and Prediction, the National Longitudinal Survey of Labor Force Experience–Youth Cohort, the High School and Beyond Sophomore Cohort 1982 Transcript Study, and the 1987 High School Transcript Study.

Table A13—Standard errors for table 13: Percentage of public high school graduates by number of Carnegie units accumulated in specific labor market preparation courses, by sex and race–ethnicity: 1969–1987

	Number of Carnegie units in specific labor market preparation						Un-weighted Ns
	0.00	0.01–0.99	1.00–1.99	2.00–2.99	3.00–3.99	4.00 or more	
1969 graduates							
Total	0.60	0.29	0.51	0.47	0.43	0.56	5,633
Male	0.82	0.48	0.73	0.68	0.60	0.87	2,658
Female	0.87	0.34	0.73	0.66	0.62	0.73	2,863
White, non-Hispanic	0.71	0.34	0.58	0.51	0.47	0.63	4,315
Black, non-Hispanic	1.06	0.54	1.23	1.25	1.15	1.36	1,049
Hispanic	4.01	1.30	4.42	4.42	4.30	5.31	77
Asian	3.17	1.75	3.50	3.13	2.27	3.28	158
Other or unknown	7.04	4.94	6.64	5.61	7.38	6.64	34
1975–1978 graduates¹							
Total	1.04	0.70	1.01	0.93	0.89	1.30	2,309
Male	1.43	0.97	1.39	1.49	1.33	2.02	1,003
Female	1.48	0.99	1.44	1.17	1.20	1.54	1,306
Black, non-Hispanic	1.83	1.54	1.93	1.98	1.89	2.22	448
Hispanic	2.95	2.07	2.32	2.28	2.06	3.01	267
White, non-Hispanic/other	1.19	0.80	1.15	1.06	1.02	1.49	1,594
1979–1982 graduates²							
Total	0.89	0.59	0.83	0.76	0.70	1.22	3,005
Male	1.31	0.79	1.13	1.06	0.91	1.79	1,453
Female	1.16	0.87	1.22	1.08	1.06	1.66	1,552
Black, non-Hispanic	1.50	0.91	1.73	1.44	1.24	1.82	793
Hispanic	1.58	1.82	2.34	2.11	1.75	2.39	416
White, non-Hispanic/other	1.06	0.69	0.96	0.89	0.82	1.46	1,796
1982 graduates							
Total	0.53	0.41	0.54	0.54	0.48	0.81	9,409
Male	0.62	0.52	0.72	0.76	0.68	1.16	4,564
Female	0.74	0.60	0.77	0.77	0.66	0.92	4,845
White, non-Hispanic	0.62	0.50	0.65	0.67	0.56	0.93	5,547
Black, non-Hispanic	1.32	0.99	1.51	1.41	1.28	2.27	1,311
Hispanic	1.06	0.78	1.14	1.20	1.17	1.71	2,019
Asian	3.41	1.94	2.33	2.55	3.33	3.12	294
Native American	2.16	1.52	3.76	2.72	3.75	7.90	159
1987 graduates							
Total	0.61	0.56	0.53	0.42	0.44	0.95	24,430
Male	0.61	0.59	0.63	0.49	0.55	1.18	12,254
Female	0.77	0.66	0.69	0.55	0.61	1.03	12,106
White, non-Hispanic	0.71	0.66	0.71	0.52	0.54	1.15	15,630
Black, non-Hispanic	1.24	1.22	1.20	0.70	0.96	1.66	3,585
Hispanic	1.19	0.82	1.28	1.06	1.02	2.13	2,783
Asian	2.98	3.38	2.74	2.43	1.73	2.17	844
Native American	2.73	1.04	2.67	2.92	2.67	3.22	302

¹ The figures are an average for sampled graduates in the years 1975–1978.

² The figures are an average for sampled graduates in the years 1979–1982.

SOURCE: John Tuma, Antoinette Gifford, Laura Horn, and E. Gareth Hoachlander, *Enrollment Trends in Vocational and Academic Education in American Public High Schools, 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education (Berkeley, CA: MPR Associates, 1989), p. 18, and E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, p. 16, from the 1969 Study of Academic Growth and Prediction, the National Longitudinal Survey of Labor Force Experience–Youth Cohort studies, the High School and Beyond Sophomore Cohort 1982 Transcript Study, and the 1987 High School Transcript Study.

Table A14—Standard errors for table 14: Percentage of public high school graduates completing one or more courses in specific labor market preparation programs, by sex and race-ethnicity: 1969–1987

	Agriculture	Business	Marketing & distribution	Health*	Occupational home economics	Trade & industry				Technical & communication	Un- weighted Ns
						Total	Construction	Precision production	Other		
1969 graduates											
Total	1.55	3.11	0.77	0.08	1.09	3.07	0.61	2.63	0.00	0.20	5,633
Male	1.89	2.60	0.94	0.00	0.78	3.70	1.19	2.82	0.00	0.21	2,658
Female	1.38	4.35	0.81	0.17	1.70	1.16	0.04	1.20	0.21	0.21	2,863
White, non-Hispanic	1.99	3.07	0.77	0.09	1.35	3.85	0.74	3.34	1.05	0.08	4,315
Black, non-Hispanic	0.78	2.90	2.34	0.08	1.12	2.52	0.53	1.97	4.55	0.43	1,049
Hispanic	1.12	4.28	3.06	0.00	0.97	5.01	0.00	4.79	7.99	3.59	77
Asian	0.00	3.32	2.19	0.00	1.97	3.55	0.00	3.33	4.06	1.99	158
Other or unknown	1.29	6.03	0.00	0.00	3.16	5.66	0.00	6.59	3.16	0.00	34
1975–1978 graduates											
Total	0.84	1.42	0.72	0.36	0.73	1.57	0.63	1.44	1.19	0.98	2,309
Male	1.54	1.92	1.15	0.41	0.72	1.94	1.25	2.08	2.09	1.53	1,003
Female	0.80	1.82	0.89	0.58	1.17	1.30	0.21	1.15	0.66	1.26	1,306
Black, non-Hispanic	1.11	2.47	1.41	1.07	2.00	2.66	1.66	2.45	2.08	1.50	448
Hispanic	1.76	3.65	1.63	0.89	2.16	3.79	1.40	3.72	2.17	2.87	267
White, non-Hispanic/other	0.98	1.62	0.82	0.40	0.81	1.80	0.70	1.65	1.36	1.11	1,594
1979–1982 graduates											
Total	1.11	1.27	0.74	0.45	0.79	1.63	0.67	1.49	1.12	1.07	3,005
Male	2.02	1.75	1.01	0.21	0.60	2.01	1.23	2.13	1.87	1.61	1,453
Female	0.86	1.60	1.09	0.84	1.40	1.30	0.26	1.13	0.54	1.38	1,552
Black, non-Hispanic	1.34	2.42	1.31	0.99	1.56	2.28	1.30	2.25	1.48	1.28	793
Hispanic	2.00	3.05	1.77	0.77	1.40	3.14	1.07	3.24	2.45	1.79	416
White, non-Hispanic/other	1.33	1.50	0.88	0.52	0.93	1.96	0.79	1.77	1.34	1.28	1,796
1982 graduates											
Total	0.58	0.83	0.48	0.48	0.57	0.80	0.41	0.82	0.57	0.67	9,409
Male	0.92	1.11	0.62	0.51	0.51	1.10	0.80	1.23	1.07	0.91	4,564
Female	0.54	1.03	0.61	0.56	0.87	0.84	0.19	0.82	0.31	0.71	4,845
White, non-Hispanic	0.66	0.98	0.56	0.50	0.66	0.92	0.49	0.93	0.68	0.80	5,547
Black, non-Hispanic	1.20	2.33	1.41	1.44	1.51	2.20	1.06	2.11	1.01	1.44	1,311
Hispanic	1.16	1.84	0.82	0.96	1.22	1.74	0.98	1.77	1.33	0.89	2,019
Asian	1.28	3.59	1.42	2.16	1.28	3.99	1.21	4.06	3.59	2.67	299
Native American	4.82	7.02	2.48	1.27	2.26	6.71	2.68	7.38	9.32	2.03	159
1987 graduates											
Total	0.58	1.04	0.66	0.60	0.56	0.81	0.42	0.82	0.53	1.21	24,430
Male	0.93	1.25	0.71	0.53	0.56	1.20	0.82	1.22	0.99	1.42	12,254
Female	0.39	1.14	0.80	0.74	0.80	0.76	0.09	0.75	0.22	1.22	12,106
White, non-Hispanic	0.68	1.32	0.79	0.70	0.69	0.84	0.41	0.87	0.62	1.47	15,630
Black, non-Hispanic	1.11	1.88	1.21	0.79	1.15	2.03	0.86	1.98	1.04	1.99	3,585
Hispanic	0.79	2.10	1.29	2.20	1.33	1.87	0.81	1.97	1.47	1.49	2,783
Asian	0.19	5.08	3.60	3.31	1.47	4.60	0.35	3.90	2.40	5.68	844
Native American	3.58	8.71	1.53	2.65	2.76	3.31	3.65	3.44	3.30	6.15	302

* "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "personal/other."

SOURCE: John Tuma, Antoinette Gifford, Laura Horn, and E. Gareth Hoachlander, *Enrollment Trends in Vocational and Academic Education in American Public High Schools, 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education (Berkeley, CA: MPR Associates, 1989), and E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, pp. 17–18, from the 1969 Study of Academic Growth and Prediction, the National Longitudinal Survey of Labor Force Experience–Youth Cohort studies, the High School and Beyond Sophomore Cohort 1982 Transcript Study, and the 1987 High School Transcript Study.

Table A15—Standard errors for table 15—Average number of Carnegie units accumulated by public high school graduates in specific labor market preparation programs, by sex and race-ethnicity: 1969–1987

	Agriculture	Business	Marketing & distribution	Health*	Occupational home economics	Trade & industry				Technical & communication	Un-weighted Ns
						Total	Construction	Precision production	Other		
1969 graduates											
Total	0.012	0.088	0.008	0.001	0.052	0.238	0.030	0.179	0.036	0.002	5,633
Male	0.016	0.031	0.008	0.000	0.036	0.406	0.058	0.297	0.066	0.001	2,658
Female	0.012	0.149	0.011	0.002	0.073	0.041	0.002	0.041	0.004	0.002	2,863
White, non-Hispanic	0.020	0.084	0.010	0.001	0.068	0.285	0.036	0.217	0.037	0.000	4,315
Black, non-Hispanic	0.008	0.059	0.015	0.000	0.015	0.181	0.018	0.106	0.084	0.003	1,049
Hispanic	0.022	0.250	0.031	0.000	0.010	0.153	0.000	0.112	0.216	0.036	77
Asian	0.000	0.037	0.022	0.000	0.036	0.245	0.000	0.195	0.050	0.019	158
Other or unknown	0.032	0.211	0.000	0.000	0.063	0.095	0.000	0.124	0.126	0.000	34
1975–1978 graduates											
Total	0.021	0.043	0.015	0.009	0.014	0.059	0.018	0.043	0.025	0.008	2,309
Male	0.042	0.027	0.024	0.006	0.013	0.093	0.038	0.072	0.049	0.014	1,003
Female	0.012	0.067	0.018	0.017	0.024	0.023	0.003	0.019	0.007	0.008	1,306
Black, non-Hispanic	0.018	0.077	0.034	0.025	0.063	0.094	0.043	0.051	0.058	0.008	448
Hispanic	0.038	0.072	0.033	0.020	0.043	0.135	0.027	0.097	0.070	0.018	267
White, non-Hispanic/other	0.024	0.050	0.016	0.011	0.014	0.068	0.021	0.050	0.028	0.009	1,594
1979–1982 graduates											
Total	0.025	0.043	0.020	0.011	0.015	0.063	0.019	0.039	0.026	0.007	3,005
Male	0.048	0.026	0.024	0.003	0.014	0.101	0.036	0.064	0.047	0.011	1,453
Female	0.015	0.069	0.031	0.021	0.027	0.023	0.009	0.019	0.005	0.009	1,552
Black, non-Hispanic	0.027	0.062	0.029	0.017	0.043	0.087	0.051	0.047	0.044	0.008	793
Hispanic	0.030	0.095	0.033	0.014	0.030	0.116	0.016	0.084	0.056	0.019	416
White, non-Hispanic/other	0.031	0.052	0.024	0.013	0.017	0.076	0.022	0.046	0.030	0.009	1,796
1982 graduates											
Total	0.016	0.023	0.011	0.005	0.013	0.034	0.010	0.024	0.016	0.007	9,409
Male	0.029	0.018	0.013	0.004	0.008	0.063	0.020	0.042	0.032	0.011	4,564
Female	0.009	0.038	0.017	0.009	0.024	0.015	0.000	0.014	0.004	0.007	4,845
White, non-Hispanic	0.018	0.029	0.014	0.005	0.016	0.037	0.010	0.025	0.019	0.008	5,547
Black, non-Hispanic	0.020	0.062	0.031	0.031	0.043	0.093	0.037	0.065	0.034	0.019	1,311
Hispanic	0.032	0.050	0.018	0.018	0.028	0.088	0.027	0.057	0.049	0.009	2,019
Asian	0.021	0.093	0.021	0.012	0.018	0.100	0.016	0.074	0.066	0.050	294
Native American	0.088	0.135	0.042	0.038	0.039	0.407	0.087	0.302	0.159	0.017	159
1987 graduates											
Total	0.017	0.025	0.014	0.007	0.012	0.031	0.009	0.023	0.010	0.013	24,430
Male	0.027	0.021	0.013	0.000	0.010	0.056	0.019	0.040	0.021	0.018	12,254
Female	0.010	0.038	0.018	0.011	0.019	0.016	0.000	0.016	0.004	0.011	12,106
White, non-Hispanic	0.020	0.034	0.018	0.007	0.013	0.034	0.010	0.028	0.012	0.017	15,630
Black, non-Hispanic	0.020	0.051	0.021	0.021	0.030	0.055	0.020	0.034	0.025	0.021	3,585
Hispanic	0.014	0.084	0.025	0.020	0.022	0.058	0.016	0.033	0.030	0.016	2,783
Asian	0.006	0.082	0.094	0.040	0.023	0.066	0.004	0.052	0.026	0.077	844
Native American	0.065	0.181	0.037	0.020	0.037	0.141	0.073	0.125	0.067	0.072	302

* "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "personal/other."

SOURCE: John Tuma, Antoinette Gifford, Laura Horn, and E. Gareth Hoachlander, *Enrollment Trends in Vocational and Academic Education in American Public High Schools, 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education (Berkeley, CA: MPR Associates, 1989), pp. 57–59, 68, and E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, pp. 20–21, from the 1969 Study of Academic Growth and Prediction, the National Longitudinal Survey of Labor Force Experience–Youth Cohort studies, the High School and Beyond Sophomore Cohort 1982 Transcript Study, and the 1987 High School Transcript Study.

Table A16—Standard errors for table 16: Average number of Carnegie units accumulated in academic subjects by public high school graduates, by number of Carnegie units accumulated in vocational education: 1982 and 1987

Total number of vocational Carnegie units	Total English	Advanced or honors English	Total math	Calculus & advanced math	Total science	Chemistry or physics	Social Studies	Fine Arts	Foreign language	Unweighted Ns
1982 graduates										
Total	0.019	0.015	0.019	0.014	0.021	0.013	0.022	0.029	0.023	9,409
Zero	0.087	0.110	0.072	0.071	0.121	0.085	0.074	0.186	0.119	225
0.01–1.99	0.041	0.040	0.034	0.038	0.046	0.036	0.042	0.072	0.050	1,438
2.00–3.99	0.027	0.023	0.029	0.023	0.035	0.025	0.030	0.057	0.038	2,435
4.00–5.99	0.029	0.021	0.030	0.020	0.030	0.018	0.033	0.048	0.030	2,312
6.00–7.99	0.032	0.016	0.032	0.015	0.030	0.015	0.031	0.051	0.022	1,671
8.00 or more	0.042	0.014	0.040	0.016	0.032	0.017	0.039	0.043	0.021	1,328
1987 graduates										
Total	0.019	0.031	0.027	0.024	0.031	0.027	0.033	0.034	0.042	24,430
Zero	0.085	0.233	0.069	0.079	0.089	0.088	0.257	0.207	0.103	504
0.01–1.99	0.036	0.071	0.044	0.043	0.052	0.046	0.052	0.081	0.120	3,574
2.00–3.99	0.026	0.037	0.037	0.035	0.047	0.040	0.034	0.049	0.040	6,743
4.00–5.99	0.024	0.023	0.031	0.026	0.036	0.027	0.036	0.042	0.035	6,023
6.00–7.99	0.028	0.021	0.034	0.016	0.034	0.018	0.035	0.043	0.027	4,337
8.00 or more	0.035	0.036	0.037	0.015	0.040	0.015	0.046	0.042	0.026	3,249

SOURCE: E. Gareth Hoachlander, *Participation in Secondary Vocational Education, 1982–1987*, prepared for the U.S. Department of Education, National Center for Education Statistics, forthcoming, pp. 22–23, from the High School and Beyond Sophomore Cohort High School Transcript Study and the 1987 High School Transcript Study.

Table A17—Standard errors for table 17: Percentage of 1982 public high school graduates who attended one or more postsecondary institutions by 1984 by type of institution, by sex, race–ethnicity, and number of Carnegie units accumulated in vocational education in high school

Number of vocational Carnegie units	Any institution	Less-than-2-year	Public 2-year	Private 4-year	Public 4-year	Unweighted Ns
Total, overall	0.78	0.59	0.76	0.49	0.71	7,077
0.00–1.99	1.22	1.03	1.64	1.57	1.81	1,367
2.00–3.99	1.28	0.96	1.38	1.05	1.39	1,879
4.00–5.99	1.52	1.05	1.26	0.78	1.27	1,675
6.00–7.99	1.65	1.38	1.35	0.64	1.14	1,224
8.00 or more	1.95	1.33	1.43	0.63	1.12	932
Sex						
Male						
0.00–1.99	1.88	1.22	2.04	1.99	2.46	665
2.00–3.99	1.80	1.13	1.99	1.36	1.89	926
4.00–5.99	2.33	1.34	1.69	1.22	1.76	815
6.00–7.99	2.70	2.12	2.06	0.89	1.60	550
8.00 or more	2.56	1.68	1.85	0.91	1.52	437
Female						
0.00–1.99	1.42	1.45	2.42	2.16	2.34	702
2.00–3.99	1.79	1.44	1.69	1.46	1.91	953
4.00–5.99	1.99	1.63	1.92	1.00	1.69	860
6.00–7.99	2.18	1.74	1.81	0.92	1.49	674
8.00 or more	2.63	2.06	2.05	0.89	1.55	495
Race–ethnicity						
White, non-Hispanic						
0.00–1.99	1.20	1.19	1.88	1.74	2.03	885
2.00–3.99	1.52	1.15	1.69	1.28	1.70	1,135
4.00–5.99	1.91	1.31	1.60	1.01	1.66	959
6.00–7.99	1.97	1.47	1.65	0.71	1.31	759
8.00 or more	2.23	1.45	1.68	0.82	1.15	589
Black, non-Hispanic						
0.00–1.99	5.26	3.41	4.70	3.55	4.73	143
2.00–3.99	4.27	2.64	3.49	3.04	3.31	229
4.00–5.99	3.84	3.11	3.11	1.73	2.67	243
6.00–7.99	4.57	4.37	3.57	2.70	3.99	134
8.00 or more	5.93	4.49	3.88	1.36	5.09	98
Hispanic						
0.00–1.99	4.54	2.57	5.02	3.17	4.44	216
2.00–3.99	3.91	2.55	3.20	1.65	2.91	378
4.00–5.99	3.61	2.06	3.06	1.54	1.61	380
6.00–7.99	3.60	2.12	2.84	1.20	2.11	270
8.00 or more	4.54	3.58	3.53	1.00	2.37	208
Asian*						
0.00–3.99	2.44	2.04	4.04	2.80	3.76	198
4.00 or more	3.98	3.39	7.08	2.94	5.01	81
Native American*						
0.00–3.99	8.28	4.14	7.17	3.86	7.36	53
4.00 or more	10.66	13.55	5.90	1.29	4.02	95

* The vocational Carnegie units categories for Asians and Native Americans were collapsed because of the small number of these graduates included in the sample.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort High School Transcript Study and Base-year through Second Followup surveys.

Table A18—Standard errors for table 18: Percentage of 1982 public high school graduates not enrolled in postsecondary education 6 months after high school graduation by labor market participation, by sex, race–ethnicity, and number of Carnegie units accumulated in vocational education in high school

Number of vocational Carnegie units	Labor market participation*				Unweighted Ns
	Employed full time	Employed part time	Unemployed	Not in labor force	
Total, overall	1.12	0.82	0.65	1.01	3,288
0.00–1.99	3.54	3.07	2.08	3.44	310
2.00–3.99	2.32	1.90	1.13	2.23	677
4.00–5.99	2.22	1.80	1.36	1.95	863
6.00–7.99	2.36	1.56	1.20	2.07	785
8.00 or more	2.19	1.70	1.54	1.85	653
Sex					
Male					
0.00–1.99	4.54	4.09	2.89	4.36	171
2.00–3.99	3.29	2.68	1.43	2.88	355
4.00–5.99	3.25	2.46	2.00	2.59	453
6.00–7.99	3.16	1.70	1.77	2.62	386
8.00 or more	3.03	2.08	1.61	2.80	328
Female					
0.00–1.99	5.22	4.77	2.97	5.08	139
2.00–3.99	3.21	2.77	1.66	3.47	322
4.00–5.99	3.03	2.65	1.69	2.98	410
6.00–7.99	2.81	2.56	1.70	2.95	399
8.00 or more	3.04	2.63	2.52	2.75	325
Race–ethnicity					
White, non-Hispanic					
0.00–1.99	4.38	4.03	1.88	4.19	173
2.00–3.99	3.03	2.40	1.29	2.70	370
4.00–5.99	3.08	2.55	1.45	2.52	442
6.00–7.99	2.72	1.95	1.27	2.34	487
8.00 or more	2.60	2.13	1.66	2.21	422
Black, non-Hispanic					
0.00–1.99	9.52	6.63	8.16	8.42	45
2.00–3.99	4.75	5.27	3.48	5.86	92
4.00–5.99	4.56	1.93	4.08	4.65	129
6.00–7.99	5.69	2.80	5.06	6.09	77
8.00 or more	7.24	3.41	7.44	6.54	61
Hispanic					
0.00–1.99	8.82	3.77	5.84	8.64	69
2.00–3.99	5.57	4.52	3.65	5.57	169
4.00–5.99	3.90	3.04	2.42	3.97	249
6.00–7.99	4.39	3.99	3.36	5.29	185
8.00 or more	5.29	3.66	3.07	4.64	147
Asian					
0.00–3.99	6.05	9.32	5.52	9.12	33
4.00 or more	—	—	—	—	29
Native American					
0.00–3.99	10.77	6.29	5.39	10.80	32
4.00 or more	14.63	4.69	12.31	9.21	64

* “Employed full time” is defined as 35 or more hours per week, while “employed part time” is less than 35 hours per week. “Unemployed” is defined as being without a job and looking for work, while “not in labor force” is being without a job but not looking for work.

— Sample size too small for reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort High School Transcript Study and Base-year through Second Followup surveys.

Table A19—Standard errors for table 19: Percentage of 1982 public high school graduates enrolled in postsecondary education 6 months after high school graduation by labor market participation, by sex, race–ethnicity, and number of Carnegie units accumulated in vocational education in high school

Number of vocational Carnegie units	Labor market participation*				Unweighted Ns
	Employed full time	Employed part time	Unemployed	Not in labor force	
Total, overall	0.74	0.95	0.38	1.02	3,789
0.00–1.99	1.34	1.75	0.61	1.90	1,057
2.00–3.99	1.33	1.71	0.64	1.80	1,202
4.00–5.99	1.63	1.99	0.91	2.17	812
6.00–7.99	1.99	2.89	1.41	3.01	439
8.00 or more	2.82	3.16	1.47	3.53	279
Sex					
Male					
0.00–1.99	2.25	2.47	0.88	2.82	494
2.00–3.99	2.09	2.55	0.83	2.72	571
4.00–5.99	2.72	3.15	1.18	3.40	362
6.00–7.99	3.64	4.85	2.26	4.64	164
8.00 or more	4.94	4.37	2.37	5.53	109
Female					
0.00–1.99	1.71	2.45	0.84	2.74	563
2.00–3.99	1.73	2.36	0.97	2.41	631
4.00–5.99	1.94	2.58	1.34	2.84	450
6.00–7.99	2.39	3.58	1.83	3.73	275
8.00 or more	3.33	4.32	1.90	4.52	170
Race–ethnicity					
White, non-Hispanic					
0.00–1.99	1.52	1.94	0.63	2.14	712
2.00–3.99	1.53	2.06	0.65	2.11	765
4.00–5.99	1.98	2.29	0.76	2.45	517
6.00–7.99	2.44	3.50	1.39	3.47	272
8.00 or more	3.33	3.97	1.74	4.17	167
Black, non-Hispanic					
0.00–1.99	4.03	5.96	4.34	6.40	98
2.00–3.99	3.45	3.58	3.48	4.51	137
4.00–5.99	3.61	5.24	4.16	6.11	114
6.00–7.99	4.19	7.04	5.62	8.31	57
8.00 or more	8.64	4.31	5.03	11.04	37
Hispanic					
0.00–1.99	4.39	5.43	2.43	5.82	147
2.00–3.99	4.12	4.66	0.77	5.21	209
4.00–5.99	3.74	5.86	4.63	6.30	131
6.00–7.99	6.15	7.36	5.25	7.55	85
8.00 or more	6.23	8.33	3.88	9.25	61
Asian					
0.00–3.99	2.84	3.98	1.59	4.44	165
4.00 or more	4.57	8.96	3.51	7.38	52
Native American					
0.00–3.99	—	—	—	—	21
4.00 or more	9.18	6.96	7.63	11.19	31

* “Employed full time” is defined as 35 or more hours per week, while “employed part time” is less than 35 hours per week. “Unemployed” is defined as being without a job and looking for work, while “not in labor force” is being without a job but not looking for work.

— Sample size too small for reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort High School Transcript Study and Base-year through Second Followup surveys.

Table A20—Standard errors for table 20: Average hourly wages of 1982 public high school graduates working but not enrolled in postsecondary education 6 months after high school graduation by employment status, by sex, race–ethnicity, and number of Carnegie units accumulated in vocational education in high school

Number of vocational Carnegie units	Employed			
	Full time*	Unweighted Ns	Part time*	Unweighted Ns
Total, overall	0.063	1,374	0.206	629
0.00–1.99	0.144	106	0.745	76
2.00–3.99	0.160	258	0.396	158
4.00–5.99	0.123	355	0.309	144
6.00–7.99	0.119	327	0.234	151
8.00 or more	0.126	328	0.790	100
Sex				
Male				
0.00–1.99	0.218	69	1.345	36
2.00–3.99	0.189	154	0.778	71
4.00–5.99	0.178	223	0.592	61
6.00–7.99	0.171	198	0.579	50
8.00 or more	0.210	186	1.574	41
Female				
0.00–1.99	0.193	37	0.790	40
2.00–3.99	0.278	104	0.233	87
4.00–5.99	0.142	132	0.314	83
6.00–7.99	0.118	129	0.204	101
8.00 or more	0.091	142	0.770	59
Race–ethnicity				
White, non-Hispanic				
0.00–1.99	0.196	59	0.882	57
2.00–3.99	0.197	161	0.475	89
4.00–5.99	0.144	194	0.353	92
6.00–7.99	0.143	225	0.187	91
8.00 or more	0.149	228	0.961	67
Black, non-Hispanic				
0.00–1.99	—	9	—	6
2.00–3.99	—	22	—	26
4.00–5.99	0.464	44	—	14
6.00–7.99	—	20	—	8
8.00 or more	—	20	—	6
Hispanic				
0.00–1.99	0.152	30	—	10
2.00–3.99	0.334	65	0.286	35
4.00–5.99	0.247	102	0.699	34
6.00–7.99	0.319	65	0.834	45
8.00 or more	0.330	70	—	23
Asian				
0.00–3.99	—	4	—	8
4.00 or more	—	14	—	6
Native American				
0.00–3.99	—	13	—	3
4.00 or more	—	23	—	8

* “Full time” is defined as 35 or more hours per week, while “part time” is less than 35 hours per week.

— Sample size too small for reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort High School Transcript Study and Base-year through Second Followup surveys.

Table A21—Standard errors for table 21: Average hourly wages of 1982 public high school graduates working and enrolled in postsecondary education 6 months after high school graduation by employment status, by sex, race–ethnicity, and number of Carnegie units accumulated in vocational education in high school

Number of vocational Carnegie units	Employed			
	Full time*	Unweighted Ns	Part time*	Unweighted Ns
Total, overall	0.159	591	0.123	1,267
0.00–1.99	0.396	139	0.231	335
2.00–3.99	0.257	170	0.260	418
4.00–5.99	0.324	150	0.192	271
6.00–7.99	0.389	74	0.360	154
8.00 or more	0.557	58	0.403	89
Sex				
Male				
0.00–1.99	0.253	79	0.445	142
2.00–3.99	0.337	104	0.458	180
4.00–5.99	0.582	78	0.283	104
6.00–7.99	0.399	36	0.701	53
8.00 or more	1.051	31	—	27
Female				
0.00–1.99	0.807	60	0.237	193
2.00–3.99	0.396	66	0.309	238
4.00–5.99	0.157	72	0.263	167
6.00–7.99	0.617	38	0.396	101
8.00 or more	—	27	0.502	62
Race–ethnicity				
White, non-Hispanic				
0.00–1.99	0.456	102	0.245	232
2.00–3.99	0.308	114	0.302	293
4.00–5.99	0.379	111	0.241	177
6.00–7.99	0.489	51	0.423	106
8.00 or more	0.816	31	0.465	63
Black, non-Hispanic				
0.00–1.99	—	8	1.278	33
2.00–3.99	—	17	0.264	30
4.00–5.99	—	14	0.201	32
6.00–7.99	—	5	—	10
8.00 or more	—	8	—	5
Hispanic				
0.00–1.99	—	20	0.451	43
2.00–3.99	0.718	30	0.227	71
4.00–5.99	—	21	0.205	46
6.00–7.99	—	15	0.241	31
8.00 or more	—	14	—	16
Asian				
0.00–3.99	—	13	0.494	46
4.00 or more	—	6	—	23
Native American				
0.00–3.99	—	4	—	4
4.00 or more	—	4	—	4

* “Full time” is defined as 35 or more hours per week, while “part time” is less than 35 hours per week.

— Sample size too small for reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort High School Transcript Study and Base-year through Second Followup surveys.

Table A22—Standard errors for table 22: Percentage of 1982 public high school graduates completing one or more courses in vocational education by type of vocational education, by selected characteristics

	All vocational education	Consumer & homemaking education	General labor market preparation	Specific labor market preparation	Un-weighted Ns
Total	0.21	0.92	0.71	0.53	9,409
Socioeconomic status					
Lowest quartile	0.16	1.42	1.28	0.77	2,930
Second quartile	0.28	1.53	1.19	0.78	2,260
Third quartile	0.42	1.59	1.13	0.97	2,096
Highest quartile	0.63	1.50	1.27	1.28	1,965
Academic ability					
Lowest quartile	0.09	1.72	1.62	1.01	1,387
Second quartile	0.24	1.75	1.33	0.79	1,556
Third quartile	0.34	1.61	1.15	1.01	2,101
Highest quartile	0.68	1.47	1.32	1.22	2,267
High school grades					
Mostly As	0.86	1.96	1.43	1.61	1,322
Mostly Bs	0.32	1.25	0.93	0.76	3,990
Mostly Cs	0.24	1.29	1.14	0.62	3,172
Below C	0.25	2.49	2.28	1.90	911
Home language background ¹					
English	0.23	1.03	0.76	0.61	6,314
Other than English	0.67	3.60	3.08	1.55	578
Handicap status ²					
Not handicapped	0.28	1.15	0.86	0.70	5,205
Handicapped	0.38	1.52	1.27	0.92	2,190

¹ Home language background refers to the sole or dominant language spoken in the home.

² Handicap status indicates whether a student ever reported having a handicap, participating in a program for the handicapped, or receiving handicap benefits.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort High School Transcript Study and survey data.

Table A23—Standard errors for table 23: Percentage of 1982 public high school graduates completing one or more courses in specific labor market preparation programs, by selected characteristics

	Agriculture	Business	Marketing & distribution	Health ¹	Occupational home economics	Trade & industry				Technical & communication	Un-weighted Ns
						Total	Construction	Precision production	Other		
Total	0.58	0.83	0.48	0.48	0.57	0.80	0.41	0.82	0.57	0.67	9,409
Socioeconomic status											
Lowest quartile	0.94	1.43	0.89	0.72	1.07	1.46	0.83	1.46	0.97	0.91	2,930
Second quartile	1.04	1.44	0.78	0.73	1.00	1.44	0.69	1.43	1.12	0.98	2,260
Third quartile	0.96	1.53	0.90	0.74	0.99	1.46	0.71	1.41	1.05	1.12	2,096
Highest quartile	0.72	1.60	0.77	0.61	0.86	1.46	0.65	1.38	0.99	1.33	1,965
Academic ability											
Lowest quartile	1.40	1.80	1.13	0.87	1.57	1.84	1.16	1.83	1.50	1.08	1,387
Second quartile	1.23	1.68	1.04	0.71	1.22	1.61	0.84	1.66	1.24	0.98	1,556
Third quartile	0.90	1.48	0.87	0.65	1.00	1.61	0.77	1.53	1.14	1.12	2,101
Highest quartile	0.73	1.47	0.63	0.72	0.73	1.40	0.54	1.37	0.78	1.45	2,267
High school grades											
Mostly As	0.85	1.93	0.79	0.73	0.91	1.70	0.66	1.53	0.91	1.58	1,322
Mostly Bs	0.82	1.12	0.57	0.54	0.84	1.04	0.52	1.03	0.70	0.89	3,990
Mostly Cs	0.83	1.25	0.81	0.61	0.92	1.28	0.71	1.34	1.11	0.87	3,172
Below C	1.69	2.63	1.53	1.12	1.45	2.54	1.62	2.55	1.81	1.53	911
Home language background ²											
English	0.64	0.94	0.51	0.52	0.63	0.88	0.43	0.89	0.65	0.77	6,314
Other than English	1.76	3.19	2.41	1.98	1.92	3.22	2.09	3.33	2.71	1.44	578
Handicap status ³											
Not handicapped	0.63	1.07	0.57	0.57	0.68	0.98	0.51	1.01	0.72	0.79	5,205
Handicapped	1.06	1.44	0.90	0.66	0.96	1.49	0.69	1.42	1.01	1.14	2,190

¹ "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "personal/other."

² Home language background refers to the sole or dominant language spoken in the home.

³ Handicap status indicates whether a student ever reported having a handicap, participating in a program for the handicapped, or receiving handicap benefits.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort High School Transcript Study and Survey data.

Table A24—Standard errors for table 24: Average number of Carnegie units accumulated by 1982 public high school graduates in specific labor market preparation programs, by selected characteristics

	Agriculture	Business	Marketing & distribution	Health ¹	Occupational home economics	Trade & industry				Technical & communication	Un-weighted Ns
						Total	Construction	Precision production	Other		
Total	0.016	0.023	0.011	0.005	0.013	0.034	0.010	0.024	0.016	0.007	9,409
Socioeconomic status											
Lowest quartile	0.029	0.048	0.021	0.015	0.029	0.064	0.020	0.043	0.032	0.012	2,930
Second quartile	0.024	0.042	0.019	0.007	0.023	0.062	0.019	0.044	0.029	0.011	2,260
Third quartile	0.029	0.041	0.022	0.009	0.022	0.058	0.014	0.040	0.035	0.012	2,096
Highest quartile	0.013	0.036	0.017	0.006	0.029	0.042	0.019	0.030	0.021	0.012	1,965
Academic ability											
Lowest quartile	0.045	0.054	0.023	0.022	0.053	0.085	0.034	0.058	0.045	0.011	1,387
Second quartile	0.035	0.054	0.039	0.010	0.036	0.068	0.027	0.046	0.035	0.012	1,556
Third quartile	0.022	0.046	0.018	0.009	0.014	0.069	0.013	0.049	0.037	0.011	2,101
Highest quartile	0.015	0.033	0.012	0.005	0.013	0.034	0.008	0.027	0.011	0.016	2,267
High school grades											
Mostly As	0.022	0.058	0.015	0.005	0.016	0.036	0.007	0.028	0.013	0.016	1,322
Mostly Bs	0.021	0.035	0.015	0.008	0.016	0.039	0.012	0.030	0.018	0.008	3,990
Mostly Cs	0.025	0.035	0.019	0.010	0.029	0.064	0.021	0.040	0.034	0.011	3,172
Below C	0.044	0.062	0.032	0.011	0.045	0.098	0.035	0.069	0.049	0.018	911
Home language background ²											
English	0.017	0.027	0.013	0.007	0.014	0.037	0.011	0.026	0.019	0.008	6,314
Other than English	0.027	0.102	0.042	0.015	0.032	0.118	0.060	0.078	0.062	0.011	578
Handicap status ³											
Not handicapped	0.018	0.030	0.015	0.006	0.018	0.042	0.012	0.030	0.020	0.008	5,205
Handicapped	0.026	0.042	0.018	0.012	0.021	0.054	0.017	0.040	0.028	0.013	2,190

¹ "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "personal/other."

² Home language background refers to the sole or dominant language spoken in the home.

³ Handicap status indicates whether a student ever reported having a handicap, participating in a program for the handicapped, or receiving handicap benefits.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort High School Transcript Study and Survey data.

Table A25—Standard errors for table 25: Percentage of 1987 public high school graduates completing one or more courses in specific labor market preparation programs, by handicap status and handicapping condition

Handicapping condition ¹	Agriculture	Business	Marketing & distribution	Health ²	Occupational home economics	Trade & industry				Technical & communication	Un-weighted Ns
						Total	Construction	Precision production	Other		
Total											
Not handicapped	0.57	1.06	0.66	0.60	0.57	0.82	0.42	0.83	0.53	1.24	21,549
Handicapped	1.71	2.06	1.21	0.99	1.80	1.81	1.25	1.97	1.12	1.19	2,881
Multihandicapped	—	—	—	—	—	—	—	—	—	28	
Mentally retarded	3.63	3.98	1.56	1.37	3.06	4.14	3.33	3.48	2.63	0.84	390
Hard of hearing	—	—	—	—	—	—	—	—	—	21	
Deaf	—	—	—	—	—	—	—	—	—	9	
Speech impaired	—	—	—	—	—	—	—	—	—	28	
Visually handicapped	—	—	—	—	—	—	—	—	—	16	
Deaf/blind	—	—	—	—	—	—	—	—	—	2	
Seriously emotionally disturbed	1.72	9.04	2.70	3.73	13.15	6.81	3.15	8.29	5.46	3.76	193
Orthopedically handicapped	3.93	10.92	3.06	3.27	8.79	9.75	0.00	9.75	0.00	6.53	41
Learning disabled	2.08	2.00	1.62	1.56	2.07	1.72	1.69	1.93	1.41	1.31	1,840
Other health impaired	—	—	—	—	—	—	—	—	—	16	

¹ The handicapping conditions listed in this table are mutually exclusive.

² "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "personal/other."

— Sample size too small for reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987 High School Transcript Study.

Table A26—Standard errors for table 26: Average number of Carnegie units accumulated by 1987 public high school graduates in specific labor market preparation programs, by handicap status and handicapping condition

Handicapping condition ¹	Agriculture	Business	Marketing & distribution	Health ²	Occupational home economics	Trade & industry				Technical & communication	Un-weighted Ns
						Total	Construction	Precision production	Other		
Total											
Not handicapped	0.016	0.026	0.014	0.007	0.012	0.032	0.010	0.024	0.010	0.013	21,549
Handicapped	0.049	0.033	0.039	0.023	0.045	0.066	0.034	0.049	0.034	0.015	2,881
Multihandicapped	—	—	—	—	—	—	—	—	—	28	
Mentally retarded	0.070	0.052	0.039	0.025	0.123	0.212	0.112	0.109	0.120	0.018	390
Hard of hearing	—	—	—	—	—	—	—	—	—	21	
Deaf	—	—	—	—	—	—	—	—	—	9	
Speech impaired	—	—	—	—	—	—	—	—	—	28	
Visually handicapped	—	—	—	—	—	—	—	—	—	16	
Deaf/blind	—	—	—	—	—	—	—	—	—	2	
Seriously emotionally disturbed	0.030	0.075	0.035	0.206	0.091	0.285	0.132	0.085	0.158	0.040	193
Orthopedically handicapped	0.158	0.315	0.153	0.098	0.184	0.158	0.000	0.158	0.000	0.046	41
Learning disabled	0.057	0.041	0.058	0.024	0.055	0.080	0.045	0.059	0.045	0.016	1,840
Other health impaired	—	—	—	—	—	—	—	—	—	16	

¹ The handicapping conditions listed in this table are mutually exclusive.

² "Health" includes only vocational courses preparing students for work in health fields. General health or personal health courses are classified as "personal/other."
 — Sample size too small for reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1987 High School Transcript Study.

Table A27—Standard errors for table 27: Percentage of public school teachers of grades 9 through 12 by type of teaching assignment, by sex, race–ethnicity and age: 1987–1988

	All teachers	Vocational	Nonvocational
Total			
Unweighted Ns	18,178	3,863	14,315
Sex			
Male	0.43	0.83	0.48
Female	0.43	0.83	0.48
Unweighted Ns	18,114	3,854	14,254
Race–ethnicity			
White, non-Hispanic	0.28	0.76	0.34
Black, non-Hispanic	0.28	0.56	0.31
Hispanic	0.13	0.22	0.17
Asian	0.07	0.14	0.09
Native American	0.09	0.20	0.11
Unweighted Ns	17,940	3,825	14,115
Age			
Under 30 years	0.23	0.45	0.28
30 to 39 years	0.38	0.75	0.38
40 to 49 years	0.34	1.00	0.40
50 years or over	0.32	1.05	0.28
Unweighted Ns	17,986	3,832	14,154

SOURCE: Phillip Kaufman, *A Comparison of Vocational and Nonvocational Teachers in Grades 9 through 12*, prepared for the National Center for Education Statistics, U.S. Department of Education, forthcoming, p. 5, from the 1987–88 Schools and Staffing Survey.

Table A28—Standard errors for table 28: Percentage of public school teachers of grades 9 through 12 by type of teaching assignment, by educational background, teaching experience and type of credential: 1987–88

	All teachers	Vocational	Nonvocational
Total			
Unweighted Ns	18,178	3,863	14,315
Highest college degree			
Less than a bachelor's	0.12	0.50	0.05
Bachelor's	0.39	0.84	0.43
Master's	0.40	0.78	0.42
Education specialist ¹	0.19	0.48	0.19
Doctor's or first professional	0.09	0.13	0.11
Unweighted Ns	18,178	3,863	14,315
Major field of study (associate's or bachelor's degree)			
Mathematics and sciences	0.23	0.32	0.29
Social sciences	0.26	0.40	0.33
Letters and humanities	0.22	0.15	0.28
Education			
General	0.46	0.63	0.50
Special education	0.16	0.15	0.20
Vocational education	0.25	0.88	0.15
Occupationally specific ²	0.23	0.85	0.18
Other	0.17	0.26	0.20
Unweighted Ns	17,511	3,607	13,904
Age at which first began to teach full time			
25 years or under	0.38	0.86	0.43
26–35 years	0.39	0.71	0.39
36–45 years	0.19	0.60	0.17
46–55 years	0.09	0.26	0.09
Over 55 years	0.05	0.14	0.06
Unweighted Ns	17,880	3,796	14,084
Number of years of teaching experience			
Less than 3 years	0.15	0.39	0.21
3–9 years	0.32	0.63	0.40
10–20 years	0.36	0.91	0.44
Over 20 years	0.30	0.83	0.32
Unweighted Ns	18,178	3,863	14,315
Type of credential in primary assignment field			
None	0.13	0.27	0.15
Standard state certificate	0.27	0.49	0.30
Probationary certificate	0.15	0.36	0.17
Temporary, provisional, or emergency certificate	0.19	0.33	0.21
Other	0.03	0.07	0.03
Unweighted Ns	14,521	2,970	11,551

¹ Education specialist degrees or certificates are generally awarded for one year's work beyond the master's level.

² Occupationally specific degrees include all vocational fields of study listed in the Secondary School Taxonomy.

SOURCE: Phillip Kaufman, *A Comparison of Vocational and Nonvocational Teachers in Grades 9 through 12*, prepared for the National Center for Education Statistics, U.S. Department of Education, forthcoming, p. 7, from the 1987–88 Schools and Staffing Survey.

Table A29—Standard errors for table 29: Percentage of public school teachers of grades 9 through 12 by vocational program, by educational background, teaching experience, and type of credential: 1987–1988

Experience and educational background	Vocational program area								
	Nonvocational	Business	Career education	Agriculture	Industrial arts/ Trade & industry	Home economics	Other ¹	Mixed ²	Unknown ³
Total									
Unweighted Ns	14,315	1,201	84	261	631	606	544	34	502
Highest college degree									
Less than a bachelor's	0.05	0.11	2.03	0.00	0.35	0.08	1.88	3.67	2.83
Bachelor's	0.43	1.71	6.02	2.78	2.21	1.91	2.56	9.29	2.43
Master's	0.42	1.72	5.18	2.66	2.17	1.96	2.18	10.55	2.28
Education specialist ⁴	0.19	0.74	4.03	1.89	0.97	0.81	1.54	3.83	1.08
Doctor's or first professional	0.11	0.20	1.17	0.69	0.29	0.09	0.51	0.00	0.29
Unweighted Ns	14,315	1,201	84	261	631	606	544	34	502
Major field of study (associate's or bachelor's degree)									
Mathematics and sciences	0.29	0.53	1.20	2.07	0.58	0.48	0.87	0.00	0.79
Social sciences	0.33	0.65	2.52	1.16	0.75	0.83	1.32	0.00	1.43
Letters and humanities	0.28	0.18	1.59	0.75	0.52	0.28	0.85	2.68	0.75
Education									
General	0.50	1.26	3.79	2.30	1.14	1.02	1.53	10.06	1.84
Special education	0.20	0.00	2.80	0.31	0.20	0.00	0.66	0.00	0.75
Vocational education	0.15	1.50	5.65	3.10	1.52	2.04	2.48	9.99	2.20
Occupationally specific ⁵	0.18	1.65	5.71	3.18	0.83	1.92	2.17	6.00	2.23
Other	0.20	0.60	1.24	0.13	0.39	0.00	1.05	0.00	1.16
Unweighted Ns	13,904	1,166	80	257	604	589	478	33	400
Age at which first began to teach full time									
25 years or under	0.43	1.63	5.32	3.53	1.96	1.86	2.21	11.95	2.37
26–35 years	0.39	1.35	5.14	3.46	1.96	1.68	2.10	12.42	2.47
36–45 years	0.17	0.84	1.71	1.29	1.05	1.29	1.92	1.81	2.60
46–55 years	0.09	0.49	1.20	0.69	0.58	0.47	1.12	3.80	1.36
Over 55 years	0.26	0.52	0.00	0.00	0.00	0.10	0.38	0.00	1.36
Unweighted Ns	14,084	1,180	83	257	627	592	537	33	487
Number of years' teaching experience									
Less than 3 years	0.21	0.59	2.63	1.31	1.02	1.16	1.00	8.76	1.49
3–9 years	0.40	1.24	4.73	3.79	1.46	1.57	2.30	8.47	2.34
10–20 years	0.44	1.54	5.52	3.30	2.44	1.91	2.29	11.17	2.75
Over 20 years	0.32	1.34	6.61	2.59	2.03	1.89	2.06	7.98	2.01
Unweighted Ns	14,315	1,201	84	261	631	606	544	34	502
Type of credential in primary assignment field									
None	0.15	0.46	3.56	2.86	0.47	0.47	0.48	—	0.96
Standard state certificate	0.30	0.83	5.28	3.93	1.21	1.07	1.82	—	1.51
Probationary certificate	0.17	0.55	3.22	2.06	0.96	0.69	0.93	—	1.15
Temporary, provisional, or emergency certificate	0.21	0.34	2.00	1.42	0.65	0.85	1.36	—	1.38
Other	0.03	0.11	0.00	0.25	0.07	0.39	0.00	—	0.00
Unweighted Ns	11,551	953	61	200	445	500	436	27	348

¹ Other vocational, trade, and industrial education.

² "Mixed" indicates that the teacher taught equal proportions in two or more vocational subject areas.

³ "Unknown" indicates that the teacher taught vocational education but did not indicate the specific subject area.

⁴ Education specialist degrees or certificates are generally awarded for one year's work beyond the master's level.

⁵ Occupationally specific degrees include all vocational fields of study listed in the Secondary School Taxonomy.

— Sample size too small for reliable estimate.

SOURCE: Phillip Kaufman, *A Comparison of Vocational and Nonvocational Teachers in Grades 9 through 12*, prepared for the National Center for Education Statistics, U.S. Department of Education, forthcoming, p. 18–19, from the 1987–88 Schools and Staffing Survey.

Table A30—Standard errors for table 30: Average salaries of vocational public school teachers of grades 9 through 12, by educational background and teaching experience: 1987–88

Educational background and experience	Standard errors	Unweighted Ns
Total	171	3,618
Highest educational degree		
Less than a bachelor's	479	330
Bachelor's	213	1,724
Master's	246	1,332
Education specialist ¹	706	205
Doctor's or first professional	—	27
Number of years of teaching experience		
Less than 3 years	282	222
3–9 years	195	877
10–20 years	247	1,664
Over 20 years	365	855

¹ Education specialist degrees or certificates are generally awarded for one year's work beyond the master's level.
 — Sample size too small for reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, the 1987–88 Schools and Staffing Survey.

Table A31—Standard errors for table 31: Number of postsecondary institutions offering vocational education by type of institution and by state: 1988–89*

*Standard errors are not reported for this table because the sample is the whole universe of institutions.

Table A32—Standard errors for table 32: Percentage of U.S. population 18 through 34 years old taking vocational courses by type of provider, by selected characteristics: October 1990¹

	All providers	4-year college or university ²	Public 2-year college	Vocational, trade, technical, or business school	Employer	Other provider ³	Weighted Ns (in thousands)
Total	0.15	0.05	0.10	0.07	0.04	0.08	66,185
Sex							
Male	0.20	0.06	0.13	0.09	0.04	0.10	32,413
Female	0.22	0.07	0.15	0.10	0.05	0.11	33,771
Race-ethnicity ⁴							
White, non-Hispanic	0.17	0.05	0.12	0.08	0.04	0.08	48,880
Black, non-Hispanic	0.46	0.13	0.29	0.24	0.09	0.22	8,435
Hispanic	0.50	0.14	0.30	0.22	0.07	0.30	6,582
Age							
18–19 years	0.70	0.28	0.55	0.28	0.00	0.24	6,039
20–24 years	0.32	0.12	0.22	0.15	0.06	0.14	17,650
25–34 years	0.16	0.04	0.10	0.08	0.04	0.09	42,495
Region ⁵							
Northeast	0.32	0.10	0.22	0.14	0.06	0.17	13,274
Midwest	0.32	0.09	0.21	0.15	0.07	0.15	15,998
South	0.25	0.08	0.16	0.11	0.06	0.12	22,739
West	0.34	0.11	0.24	0.15	0.06	0.17	14,174
Educational attainment							
Less than high school graduation	0.28	0.05	0.08	0.16	0.05	0.20	9,144
High school graduation	0.24	0.07	0.16	0.12	0.04	0.12	27,951
Some college	0.35	0.13	0.27	0.12	0.06	0.13	17,103
College graduation	0.28	0.08	0.12	0.11	0.11	0.20	11,986

¹ The base includes only civilian, noninstitutionalized persons who were not in high school.

² Includes programs that lead to an occupational associate's degree only.

³ Includes 4-year college or university (other than leading to an occupational associate's degree), other school, private business or company, government agency, or other nonschool provider.

⁴ The number of Asians and Native Americans included in the survey was too small to be reported separately.

⁵ Geographic regions are defined in the glossary of this report.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, School Enrollment Supplement: October 1990.

Table A33—Standard errors for table 33: Percentage of U.S. population 18 through 34 years old taking vocational courses by labor market participation, by selected characteristics: October 1990¹

	Labor market participation ²				Weighted Ns (in thousands)
	Employed full time	Employed part time	Unemployed	Not in labor force	
Total	1.33	1.11	0.59	1.17	3,839
Sex					
Male	2.02	1.62	0.96	1.55	1,653
Female	1.74	1.54	0.75	1.65	2,161
Race-ethnicity ³					
White, non-Hispanic	1.58	1.37	0.59	1.30	2,737
Black, non-Hispanic	3.25	2.82	2.11	3.56	531
Hispanic	4.29	3.30	2.67	3.90	369
Age					
18–19 years	2.08	3.02	1.69	2.96	731
20–24 years	2.27	2.01	1.06	2.01	1,271
25–34 years	1.82	1.31	0.80	1.55	1,870
Region ⁴					
Northeast	3.18	2.62	1.50	2.84	677
Midwest	2.59	2.27	1.11	2.27	1,008
South	2.39	2.05	1.10	2.00	1,205
West	2.72	2.18	1.15	2.48	921
Educational attainment					
Less than high school graduation	0.84	0.46	0.46	0.86	9,144
High school graduation	0.49	0.41	0.24	0.45	27,951
Some college	0.63	0.59	0.27	0.52	17,103
College graduation	0.60	0.48	0.25	0.48	11,986

¹ The base includes only civilian, noninstitutionalized persons who are not in high school.

² “Employed full time” is defined as 35 or more hours per week, while “employed part time” is less than 35 hours per week. “Unemployed” is defined as being without a job and looking for work, while “not in labor force” is being without a job but not looking for work.

³ The number of Asians and Native Americans included in the survey was too small to be reported separately.

⁴ Geographic regions are defined in the glossary of this report.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, School Enrollment Supplement: October 1990.

Table A34—Standard errors for table 34: Percentage of U.S. population 18 through 34 years old enrolled in public 2-year colleges taking vocational courses by enrollment status, by selected characteristics: October 1990^{1,2}

	Enrolled			Weighted Ns (in thousands)
	Total	Full time	Part time	
Total	0.10	0.07	0.07	66,185
Sex				
Male	0.13	0.10	0.09	32,413
Female	0.15	0.10	0.11	33,771
Race-ethnicity ³				
White, non-Hispanic	0.11	0.08	0.08	48,880
Black, non-Hispanic	0.31	0.23	0.17	8,435
Hispanic	0.32	0.19	0.23	6,582
Age				
18–19 years	0.55	0.49	0.26	6,039
20–24 years	0.22	0.16	0.16	17,650
25–34 years	0.10	0.05	0.08	42,495
Region ⁴				
Northeast	0.21	0.16	0.14	13,274
Midwest	0.21	0.15	0.14	15,998
South	0.16	0.12	0.11	22,739
West	0.24	0.15	0.19	14,174
Educational attainment				
Less than high school graduation	0.08	0.05	0.06	9,144
High school graduation	0.16	0.11	0.11	27,951
Some college	0.27	0.19	0.19	17,103
College graduation	0.12	0.03	0.11	11,986

¹ The base includes only civilian, noninstitutionalized persons who are not in high school.

² Vocational courses in this table refer to all vocational work at a public 2-year college, including courses leading to an occupational associate's degree or certificate, as well as noncredit courses.

³ The number of Asians and Native Americans included in the survey was too small to be reported separately.

⁴ Geographic regions are defined in the glossary of this report.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, School Enrollment Supplement: October 1990.

Table A35—Standard errors for table 35: Percentage of 1980 high school seniors enrolled in postsecondary education by 1984 by type of institution, by selected characteristics*

	Public 4-year	Private 4-year	Public 2-year	Public vocational- technical	Private proprietary	Private less-than- 4-year	Un- weighted Ns
Total	1.02	0.82	1.14	0.40	0.44	0.32	6,391
Sex							
Male	1.42	1.20	1.57	0.56	0.46	0.34	2,845
Female	1.30	1.05	1.34	0.45	0.70	0.50	3,546
Race-ethnicity							
White, non-Hispanic	1.19	0.95	1.30	0.45	0.51	0.38	3,322
Black, non-Hispanic	1.73	1.31	1.83	0.80	0.86	0.64	1,504
Hispanic	2.45	1.72	2.98	1.78	1.31	0.52	1,167
Asian	4.21	3.15	4.74	0.00	1.43	0.57	285
Native American	6.98	4.05	6.17	3.24	1.91	2.13	100
Socioeconomic status							
Lowest quartile	1.80	1.21	2.06	1.13	1.04	0.70	1,883
Second quartile	1.98	1.40	1.98	1.00	1.06	0.58	1,325
Third quartile	1.80	1.40	1.94	0.56	0.82	0.59	1,457
Highest quartile	1.79	1.66	1.76	0.36	0.59	0.53	1,615
Parent's highest education							
Less than high school graduation	2.99	2.33	2.92	1.97	1.95	0.89	780
High school graduation	1.90	1.37	2.01	1.04	1.07	0.55	1,559
Some college	1.65	1.22	1.78	0.69	0.75	0.60	1,931
College graduation	1.56	1.54	1.60	0.22	0.58	0.49	2,072
Postsecondary education plans							
None	2.73	2.23	4.69	3.26	3.42	1.32	258
Vocational-technical	1.84	1.14	2.85	2.17	1.76	1.17	750
Less than 4 years	2.17	1.56	2.28	0.66	1.37	0.87	992
Bachelor's degree	1.61	1.41	1.59	0.16	0.47	0.43	2,220
Advanced degree	1.72	1.70	1.63	0.18	0.44	0.43	2,052

* Data reported in the National Assessment of Vocational Education's Second Interim Report (table 1-2) differs slightly from the data presented in this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A36—Standard errors for table 36: Percentage of 1980 high school seniors enrolled in postsecondary institutions by 1984 attempting at least one academic or one vocational course by type of institution, by selected characteristics

	Public 2-year			Public vocational–technical*	
	Academic	Vocational	Unweighted Ns	Academic	Unweighted Ns
Total	0.7	1.1	3,033	4.1	193
Sex					
Male	1.2	1.5	1,358	6.2	99
Female	1.0	1.6	1,675	4.9	94
Race–ethnicity					
White, non-Hispanic	0.9	1.3	1,481	5.1	92
Black, non-Hispanic	1.3	3.0	624	6.7	54
Hispanic	2.3	3.0	710	13.1	36
Asian	2.0	5.5	153	—	0
Native American	2.2	9.7	58	—	11
Socioeconomic status					
Lowest quartile	1.6	2.1	895	8.2	88
Second quartile	1.7	2.2	676	8.9	43
Third quartile	1.4	1.8	707	8.5	35
Highest quartile	1.4	2.4	607	—	18
Parent’s highest education					
Less than high school graduation	1.6	4.1	396	11.0	42
High school graduation	1.6	2.0	765	6.9	66
Some college	1.2	1.8	1,043	7.2	59
College graduation	1.3	2.2	797	—	23
Postsecondary education plans					
None	4.0	4.4	161	—	24
Vocational–technical	2.4	2.4	479	5.1	103
Less than 4 years	1.4	2.0	698	—	19
Bachelor’s degree	1.1	2.3	866	—	26
Advanced degree	1.4	2.5	680	—	11

**Table A36—Standard errors for table 36: Percentage of 1980 high school seniors enrolled in different postsecondary institutions by 1984 attempting at least one academic and vocational course by type of institution, by selected characteristics—
Continued**

	Private proprietary*		Private less-than-4-year		
	Academic	Unweighted Ns	Academic	Vocational	Unweighted Ns
Total	3.9	331	2.7	3.1	145
Sex					
Male	6.6	105	6.4	5.2	47
Female	4.4	226	2.6	3.7	98
Race-ethnicity					
White, non-Hispanic	4.9	156	3.4	3.7	91
Black, non-Hispanic	6.4	101	0.1	4.8	39
Hispanic	10.3	61	—	—	6
Asian	—	8	—	—	5
Native American	—	5	—	—	4
Socioeconomic status					
Lowest quartile	6.6	129	7.1	8.2	42
Second quartile	7.7	73	—	—	24
Third quartile	7.0	65	4.5	5.2	43
Highest quartile	7.3	52	4.5	6.8	31
Parent's highest education					
Less than high school graduation	9.2	63	—	—	17
High school graduation	6.9	104	9.9	3.5	35
Some college	6.9	95	6.0	5.3	50
College graduation	7.6	62	4.2	6.5	39
Postsecondary education plans					
None	12.2	30	—	—	2
Vocational-technical	6.7	105	10.4	1.5	30
Less than 4 years	6.0	75	0.3	1.7	35
Bachelor's degree	5.8	62	6.1	8.5	43
Advanced degree	10.3	48	0.0	7.5	30

* The table does not report vocational courses attempted by students enrolled in public vocational-technical and private proprietary institutions since virtually all students enrolled in these institutions attempted vocational courses.
— Sample size too small for reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A37—Standard errors for table 37: Percentage of 1980 high school seniors enrolled in public 2-year postsecondary institutions by 1984 attempting at least one course in vocational program areas, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communi- cations technologies	Trade & industry	Unweighted Ns
Total	0.6	1.4	0.7	0.8	1.2	1.2	0.9	0.6	0.2	0.9	3,033
Sex											
Male	0.9	2.0	1.1	1.0	1.4	1.9	1.7	1.0	0.3	1.7	1,358
Female	0.5	1.8	0.9	1.3	1.6	1.4	0.5	0.7	0.2	0.7	1,675
Race-ethnicity											
White, non-Hispanic	0.6	1.6	0.8	1.0	1.4	1.4	1.1	0.7	0.2	1.1	1,481
Black, non-Hispanic	0.4	2.7	1.0	1.4	1.3	2.2	1.7	0.8	0.3	1.4	624
Hispanic	1.7	3.6	2.5	3.0	2.5	2.6	1.6	1.0	0.2	2.1	710
Asian	2.1	5.7	3.1	3.9	6.3	5.2	2.8	2.7	0.0	3.2	153
Native American	4.1	7.5	1.9	3.4	5.4	5.2	6.0	4.2	0.0	5.2	58
Socioeconomic status											
Lowest quartile	1.3	2.7	1.6	1.8	2.0	2.3	1.7	0.9	0.7	1.9	895
Second quartile	1.5	2.8	1.4	2.0	2.2	2.2	1.9	1.3	0.2	2.0	676
Third quartile	0.8	2.6	1.1	1.6	2.2	2.2	1.5	1.3	0.2	1.6	707
Highest quartile	0.7	2.8	1.6	1.5	2.1	2.6	2.0	1.2	0.6	1.6	607
Parent's highest education											
Less than high school graduation	2.0	4.4	2.8	2.2	2.4	4.3	2.8	1.2	1.4	3.3	396
High school graduation	1.0	2.7	1.6	1.7	2.1	2.3	1.8	1.1	0.4	1.9	765
Some college	1.2	2.2	1.0	1.5	1.8	1.9	1.3	1.1	0.1	1.5	1,043
College graduation	0.6	2.5	1.3	1.3	2.0	2.3	1.7	1.0	0.5	1.5	797
Postsecondary education plans											
None	2.3	5.5	3.4	3.6	3.3	4.8	4.0	3.2	0.1	4.7	161
Vocational-technical	1.1	3.4	1.7	1.7	2.0	2.8	2.3	1.5	0.7	2.8	479
Less than 4 years	1.4	2.9	1.7	2.0	2.3	2.4	1.8	1.3	0.1	1.8	698
Bachelor's degree	0.7	2.4	1.1	1.6	2.0	2.1	1.7	1.0	0.2	1.5	866
Advanced degree	1.0	2.9	1.6	1.6	2.6	2.5	1.8	1.2	0.8	1.7	680

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A38—Standard errors for table 38: Percentage of 1980 high school seniors enrolled in public vocational–technical institutes by 1984 attempting at least one course in vocational program areas by program, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communi- cations technologies	Trade & industry	Unweighted Ns
Total	2.6	4.5	3.8	3.6	3.5	4.1	4.0	0.0	1.5	4.3	193
Sex											
Male	4.5	5.2	3.6	0.6	3.7	3.4	6.0	0.0	0.7	6.5	99
Female	0.5	6.5	6.3	7.5	5.7	7.5	0.6	0.0	3.3	1.7	94
Race–ethnicity											
White, non-Hispanic	3.5	5.7	4.2	4.8	4.4	5.3	5.4	0.0	2.0	5.7	92
Black, non-Hispanic	0.0	4.3	2.1	4.3	3.4	4.7	3.4	0.0	1.5	4.6	54
Hispanic	0.0	10.6	17.8	4.7	1.3	4.1	4.0	0.0	1.4	8.3	36
Asian	—	—	—	—	—	—	—	—	—	—	0
Native American	—	—	—	—	—	—	—	—	—	—	11
Socioeconomic status											
Lowest quartile	5.9	6.8	8.2	4.2	4.2	3.7	5.6	0.0	0.1	6.5	88
Second quartile	4.9	11.6	6.3	8.7	7.9	10.2	6.1	0.0	0.0	5.1	43
Third quartile	5.4	8.9	5.9	8.7	7.7	8.1	8.9	0.0	7.0	9.0	35
Highest quartile	—	—	—	—	—	—	—	—	—	—	18
Parent’s highest education											
Less than high school graduation	9.0	13.7	13.4	10.9	11.3	2.0	4.3	0.0	0.0	9.0	42
High school graduation	0.9	10.0	6.5	7.1	7.0	9.3	5.9	0.0	0.1	5.0	66
Some college	5.4	6.8	5.5	3.0	4.5	5.0	6.5	0.0	3.6	7.2	59
College graduation	—	—	—	—	—	—	—	—	—	—	23
Postsecondary education plans											
None	—	—	—	—	—	—	—	—	—	—	24
Vocational–technical	4.3	5.5	4.3	4.5	4.6	5.0	5.2	0.0	2.5	5.5	103
Less than 4 years	—	—	—	—	—	—	—	—	—	—	19
Bachelor’s degree	—	—	—	—	—	—	—	—	—	—	26
Advanced degree	—	—	—	—	—	—	—	—	—	—	11

— Sample size too small for reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A39—Standard errors for table 39: Percentage of 1980 high school seniors enrolled in private proprietary institutions by 1984 attempting at least one course in vocational program areas, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communi- cations technologies	Trade & industry	Unweighted Ns
Total	1.0	4.1	2.6	2.0	2.5	3.1	2.5	0.2	0.9	3.6	331
Sex											
Male	2.5	5.4	0.9	0.7	0.6	5.0	6.7	0.1	2.4	6.8	105
Female	0.9	4.5	3.4	2.7	3.4	3.7	1.0	0.2	0.9	4.1	226
Race-ethnicity											
White, non-Hispanic	0.8	5.1	3.1	2.4	3.1	3.9	2.9	0.2	1.2	4.2	156
Black, non-Hispanic	0.0	6.6	4.3	3.7	5.2	3.3	4.9	0.0	0.0	6.8	101
Hispanic	11.3	9.3	5.5	4.3	2.8	1.2	5.3	0.0	0.2	8.3	61
Asian	—	—	—	—	—	—	—	—	—	—	8
Native American	—	—	—	—	—	—	—	—	—	—	5
Socioeconomic status											
Lowest quartile	0.0	6.9	4.4	3.6	3.2	5.0	4.1	0.0	0.0	6.8	129
Second quartile	0.0	7.7	6.2	5.0	6.3	6.1	4.9	0.1	2.6	6.1	73
Third quartile	0.0	6.2	6.0	4.9	5.3	4.5	4.2	0.7	2.8	6.4	65
Highest quartile	4.9	8.8	4.7	3.6	6.7	7.6	5.3	0.0	0.9	7.7	52
Parent's highest education											
Less than high school graduation	0.0	9.7	6.6	1.5	1.1	10.1	2.4	0.0	0.0	8.3	63
High school graduation	0.0	6.9	4.9	4.0	5.0	4.1	3.8	0.0	0.0	6.5	104
Some college	0.0	7.3	4.6	4.1	3.2	5.6	4.7	0.5	3.0	6.3	95
College graduation	3.9	7.9	4.4	3.0	6.1	7.1	6.3	0.0	0.7	7.6	62
Postsecondary education plans											
None	0.0	12.3	7.7	8.2	0.0	8.5	5.5	0.0	0.0	11.7	30
Vocational-technical	0.0	7.0	3.8	2.8	4.1	3.9	5.2	0.5	2.2	6.3	105
Less than 4 years	0.0	6.2	5.5	3.9	5.4	6.5	1.7	0.0	0.0	4.0	75
Bachelor's degree	0.0	7.7	8.9	6.5	7.9	1.7	4.7	0.0	4.4	7.9	62
Advanced degree	9.0	9.7	6.3	6.6	6.3	11.1	6.6	0.2	0.0	6.6	48

— Sample size too small for reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A40—Standard errors for table 40: Percentage of 1980 high school seniors enrolled in private less-than-4-year postsecondary institutions by 1984 attempting at least one course in vocational program areas, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communi-cations technologies	Trade & industry	Unweighted Ns
Total	1.5	5.1	2.7	4.0	3.9	3.8	2.6	1.5	0.2	2.9	145
Sex											
Male	4.9	8.3	6.9	1.5	7.8	8.2	8.3	5.0	0.8	5.8	47
Female	0.5	5.9	2.4	5.2	5.0	4.2	0.9	0.0	0.0	3.4	98
Race-ethnicity											
White, non-Hispanic	1.8	5.9	3.1	4.6	4.5	4.4	3.2	1.8	0.0	3.3	91
Black, non-Hispanic	0.0	7.4	3.4	5.4	9.1	3.9	2.6	0.5	1.9	3.5	39
Hispanic	—	—	—	—	—	—	—	—	—	—	6
Asian	—	—	—	—	—	—	—	—	—	—	5
Native American	—	—	—	—	—	—	—	—	—	—	4
Socioeconomic status											
Lowest quartile	1.8	10.2	1.8	3.7	4.1	9.8	7.2	0.0	1.1	2.1	42
Second quartile	—	—	—	—	—	—	—	—	—	—	24
Third quartile	0.2	9.1	6.9	8.9	9.1	8.3	4.5	0.2	0.0	5.5	43
Highest quartile	4.5	11.0	4.6	7.5	7.8	7.2	4.5	4.7	0.0	0.0	31
Parent's highest education											
Less than high school graduation	—	—	—	—	—	—	—	—	—	—	17
High school graduation	1.8	9.6	3.7	7.5	4.7	9.6	9.9	0.0	1.1	1.8	35
Some college	1.3	8.2	3.9	7.9	6.9	5.3	1.9	0.1	0.0	6.9	50
College graduation	4.0	10.2	6.0	6.8	8.0	8.1	4.0	4.3	0.0	0.0	39
Postsecondary education plans											
None	—	—	—	—	—	—	—	—	—	—	2
Vocational-technical	0.0	10.7	8.3	8.7	6.0	6.9	7.7	0.0	0.0	7.6	30
Less than 4 years	1.5	7.8	6.0	9.1	9.9	10.0	2.5	0.0	0.9	0.9	35
Bachelor's degree	2.0	7.0	1.4	3.6	7.0	6.5	2.2	6.1	0.0	8.3	43
Advanced degree	6.6	9.4	1.4	9.8	9.9	9.0	6.6	0.2	0.0	1.5	30

— Sample size too small for reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A41—Standard errors for table 41: Percentage of 1972 and 1980 high school seniors enrolled in public 2-year institutions within 4 years after high school earning academic and vocational credits, by selected characteristics

	1972 seniors			1980 seniors		
	Academic	Vocational	Unweighted Ns	Academic	Vocational	Unweighted Ns
Total	0.6	0.8	4,560	1.0	1.2	3,011
Sex						
Male	0.8	1.0	2,425	1.4	1.7	1,351
Female	0.7	1.1	2,128	1.2	1.7	1,660
Race-ethnicity						
White, non-Hispanic	0.6	0.9	3,542	1.1	1.4	1,469
Black, non-Hispanic	1.7	2.4	490	2.1	3.1	620
Hispanic	3.1	3.7	257	3.0	3.1	706
Asian	2.9	6.1	81	2.6	5.3	153
Native American	5.4	8.1	49	3.4	10.1	56
Socioeconomic status*						
Lowest quartile	1.5	1.6	936	2.0	2.3	891
Second quartile	0.8	1.0	2,338	2.1	2.4	673
Third quartile				1.8	2.1	703
Highest quartile	0.8	1.6	1,223	1.8	2.6	597
Parent's highest education						
Less than high school graduation	1.8	2.0	685	3.5	4.4	394
High school graduation	1.0	1.3	1,579	2.0	2.4	762
Some college	1.0	1.5	1,225	1.7	1.9	1,002
College graduation	1.1	2.0	678	1.6	2.2	821
Postsecondary education plans						
None	2.7	2.6	334	4.7	5.0	158
Vocational-technical	1.6	1.7	792	2.8	2.6	477
Less than 4 years	1.0	1.4	1,180	1.8	2.4	694
Bachelor's degree	0.7	1.2	1,540	1.6	2.4	861
Advanced degree	0.9	2.2	540	1.9	2.7	673

* The socioeconomic status data for 1972 seniors are grouped into three levels: "low" corresponds to the lowest quartile, "medium" corresponds to the second and third quartiles combined, and "high" corresponds to the highest quartile.

SOURCE: U.S. Department of Education, National Center for Education Statistics, the National Longitudinal Study of 1972 Postsecondary Education Transcript Study and Base Year through Fourth Followup surveys, and the High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A42—Standard errors for table 42: Average number of academic and vocational credits earned by 1972 and 1980 high school seniors enrolled in public 2-year institutions within 4 years after high school, by selected characteristics

	1972 seniors			1980 seniors		
	Academic	Vocational	Unweighted Ns	Academic	Vocational	Unweighted Ns
Total	0.4	0.2	4,560	0.5	0.4	3,011
Sex						
Male	0.5	0.3	2,425	0.8	0.6	1,351
Female	0.5	0.3	2,128	0.7	0.5	1,660
Race-ethnicity						
White, non-Hispanic	0.4	0.3	3,542	0.6	0.5	1,469
Black, non-Hispanic	1.1	0.5	490	0.7	0.6	620
Hispanic	1.3	0.7	257	1.4	0.8	706
Asian	3.3	1.8	81	4.2	1.4	153
Native American	2.0	2.2	49	3.7	2.2	56
Socioeconomic status*						
Lowest quartile	0.7	0.5	936	1.0	0.9	891
Second quartile	0.5	0.3	2,338	1.1	1.0	673
Third quartile				1.0	0.8	703
Highest quartile	0.7	0.4	1,223	1.2	0.6	597
Parent's highest education						
Less than high school graduation	0.9	0.5	685	2.1	1.7	394
High school graduation	0.5	0.4	1,579	1.1	0.8	762
Some college	0.6	0.4	1,225	0.8	0.7	1,002
College graduation	1.0	0.5	678	1.0	0.5	821
Postsecondary education plans						
None	0.8	0.5	334	1.1	1.7	158
Vocational-technical	0.5	0.7	792	1.0	1.3	477
Less than 4 years	0.6	0.4	1,180	1.0	0.9	694
Bachelor's degree	0.7	0.3	1,540	1.1	0.5	861
Advanced degree	1.0	0.4	540	1.3	0.6	673

* The socioeconomic status data for 1972 seniors are grouped into three levels: "low" corresponds to the lowest quartile, "medium" corresponds to the second and third quartiles combined, and "high" corresponds to the highest quartile.

SOURCE: U.S. Department of Education, National Center for Education Statistics, the National Longitudinal Study of 1972 Postsecondary Education Transcript Study and Base Year through Fourth Followup surveys, and the High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A43—Standard errors for table 43: Percentage of 1972 and 1980 high school seniors enrolled in public 2-year institutions within 4 years after high school by number of credits accumulated in vocational education, by selected characteristics

	Number of credits in vocational education							Un-weighted Ns
	0.0	0.1–5.0	5.1–10.0	10.1–15.0	15.1–25.0	25.1–35.0	35.1 or more	
1972 seniors								
Total	0.8	0.6	0.5	0.4	0.4	0.4	0.4	4,560
Sex								
Male	1.0	0.8	0.7	0.6	0.6	0.5	0.6	2,425
Female	1.1	0.9	0.8	0.5	0.6	0.6	0.6	2,128
Race–ethnicity								
White, non-Hispanic	0.9	0.6	0.6	0.5	0.5	0.4	0.5	3,542
Black, non-Hispanic	2.4	2.2	1.5	0.9	0.8	0.9	0.8	490
Hispanic	3.7	2.8	2.1	1.4	1.6	1.3	1.3	257
Asian	6.1	4.5	3.6	2.8	3.5	1.8	3.9	81
Native American	8.1	5.1	3.4	4.4	4.0	2.7	4.2	49
Socioeconomic status*								
Lowest quartile	1.6	1.2	1.1	0.8	1.1	0.8	0.9	936
Second quartile	1.0	0.8	0.7	0.5	0.6	0.5	0.6	2,338
Third quartile								
Highest quartile	1.6	1.1	1.0	0.9	0.9	0.7	0.8	1,223
1980 seniors								
Total	1.2	1.1	1.0	0.8	0.8	0.6	0.8	3,011
Sex								
Male	1.7	1.6	1.4	1.2	1.3	1.0	1.2	1,351
Female	1.7	1.6	1.3	1.0	1.1	0.8	0.9	1,660
Race–ethnicity								
White, non-Hispanic	1.4	1.4	1.1	1.0	1.0	0.7	0.9	1,469
Black, non-Hispanic	3.1	2.0	2.3	1.0	1.6	0.9	1.3	620
Hispanic	3.1	2.5	2.8	2.1	2.5	1.0	1.8	706
Asian	5.3	3.3	5.8	3.0	3.3	2.0	1.9	153
Native American	10.1	6.3	5.9	2.6	3.7	1.7	4.2	56
Socioeconomic status								
Lowest quartile	2.3	2.2	1.7	1.7	1.9	1.4	1.5	891
Second quartile	2.4	2.3	2.0	1.2	1.5	1.4	2.1	673
Third quartile	2.1	2.3	1.6	1.4	1.5	1.3	1.6	703
Highest quartile	2.6	2.1	1.9	1.7	1.7	1.0	1.1	597

* The socioeconomic status data for 1972 seniors are grouped into three levels: “low” corresponds to the lowest quartile, “medium” corresponds to the second and third quartiles combined, and “high” corresponds to the highest quartile.

SOURCE: U.S. Department of Education, National Center for Education Statistics, the National Longitudinal Study of 1972 Postsecondary Education Transcript Study and Base Year through Fourth Followup surveys, and the High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A44—Standard errors for table 44: Percentage of 1972 and 1980 high school seniors enrolled in public 2-year institutions within 4 years after high school earning at least one credit in vocational program areas, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communications technologies	Trade & industry	Unweighted Ns
1972 seniors											
Total	0.3	0.7	0.4	0.6	0.5	0.4	0.4	0.4	0.1	0.5	4,560
Sex											
Male	0.5	0.9	0.6	0.6	0.5	0.6	0.8	0.6	0.2	0.8	2,425
Female	0.4	1.1	0.5	1.0	1.0	0.6	0.2	0.3	0.1	0.3	2,128
Race-ethnicity											
White, non-Hispanic	0.4	0.8	0.5	0.7	0.6	0.5	0.5	0.4	0.1	0.5	2,338
Black, non-Hispanic	0.0	2.1	0.7	2.0	1.4	1.2	0.8	0.7	0.6	1.1	490
Hispanic	0.3	2.6	0.9	2.3	2.4	1.2	1.3	1.3	0.6	1.9	257
Asian	0.0	4.5	0.0	3.7	1.5	3.6	4.1	1.4	0.0	4.0	81
Native American	0.8	7.0	2.5	3.6	4.4	0.8	5.9	1.4	0.0	4.1	49
Socioeconomic status*											
Lowest quartile	0.4	1.6	0.7	1.1	1.1	0.9	0.8	0.7	0.3	1.1	936
Second quartile	0.5	0.9	0.6	0.8	0.7	0.6	0.6	0.5	0.1	0.6	2,338
Third quartile											
Highest quartile	0.6	1.3	0.8	1.1	1.0	0.8	0.7	0.7	0.2	0.9	1,223
1980 seniors											
Total	0.5	1.4	0.7	0.8	1.1	1.0	0.8	0.5	0.2	0.9	3,011
Sex											
Male	0.9	1.9	1.0	0.9	1.4	1.7	1.6	0.9	0.3	1.7	1,351
Female	0.5	1.9	0.9	1.2	1.5	1.2	0.5	0.7	0.2	0.6	1,660
Race-ethnicity											
White, non-Hispanic	0.6	1.6	0.8	0.9	1.3	1.3	1.0	0.7	0.2	1.0	1,469
Black, non-Hispanic	0.3	2.8	1.0	1.3	1.3	1.9	1.7	0.7	0.3	1.2	620
Hispanic	1.7	3.7	2.5	2.8	2.4	2.4	1.4	0.9	0.2	2.0	706
Asian	2.1	5.2	2.5	3.4	6.2	4.8	2.8	2.7	0.0	3.2	153
Native American	3.6	7.3	2.0	3.4	5.2	4.3	6.1	4.3	0.0	4.8	56
Socioeconomic status											
Lowest quartile	1.3	2.8	1.5	1.8	1.9	2.1	1.7	0.9	0.7	1.7	891
Second quartile	1.4	2.8	1.4	1.9	2.1	2.0	1.7	1.3	0.1	1.8	673
Third quartile	0.8	2.5	1.1	1.6	2.0	2.0	1.4	1.2	0.2	1.6	703
Highest quartile	0.7	2.9	1.4	1.5	2.0	2.3	1.9	1.2	0.6	1.6	597

* The socioeconomic status data for 1972 seniors are grouped into three levels: "low" corresponds to the lowest quartile, "medium" corresponds to the second and third quartiles combined, and "high" corresponds to the highest quartile.

SOURCE: U.S. Department of Education, National Center for Education Statistics, the National Longitudinal Study of 1972 Postsecondary Education Transcript Study and Base Year through Fourth Followup surveys, and the High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A45—Standard errors for table 45: Average number of credits earned in vocational program areas by 1972 and 1980 high school seniors enrolled in public 2-year institutions within 4 years after high school, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communications technologies	Trade & industry	Unweighted Ns
1972 seniors											
Total	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	4,560
Sex											
Male	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	2,425
Female	0.1	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.1	2,128
Race-ethnicity											
White, non-Hispanic	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	3,542
Black, non-Hispanic	0.0	0.3	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	490
Hispanic	0.0	0.4	0.1	0.2	0.1	0.1	0.3	0.2	0.0	0.5	257
Asian	0.0	1.2	0.0	0.1	0.4	0.1	0.6	0.0	0.0	0.8	81
Native American	0.4	1.5	0.1	0.8	0.2	0.0	0.4	0.1	0.0	0.9	49
Socioeconomic status*											
Lowest quartile	0.1	0.3	0.0	0.2	0.1	0.1	0.2	0.1	0.0	0.2	936
Second quartile	0.1	0.2	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	2,338
Third quartile											
Highest quartile	0.1	0.2	0.1	0.2	0.1	0.0	0.1	0.1	0.0	0.1	1,223
1980 seniors											
Total	0.1	0.2	0.0	0.2	0.1	0.1	0.2	0.1	0.0	0.2	3,011
Sex											
Male	0.1	0.2	0.1	0.1	0.1	0.2	0.3	0.1	0.0	0.4	1,351
Female	0.1	0.3	0.1	0.3	0.1	0.1	0.0	0.1	0.0	0.1	1,660
Race-ethnicity											
White, non-Hispanic	0.1	0.3	0.0	0.2	0.1	0.1	0.2	0.1	0.0	0.2	1,469
Black, non-Hispanic	0.0	0.4	0.1	0.2	0.1	0.1	0.4	0.1	0.0	0.1	620
Hispanic	0.1	0.6	0.2	0.2	0.1	0.1	0.2	0.1	0.0	0.4	706
Asian	0.1	0.6	0.1	0.2	0.4	0.2	0.4	0.2	0.0	0.8	153
Native American	0.3	1.1	0.1	0.3	0.2	0.2	1.2	0.2	0.0	0.9	56
Socioeconomic status											
Lowest quartile	0.3	0.4	0.1	0.3	0.1	0.1	0.3	0.1	0.0	0.6	891
Second quartile	0.2	0.7	0.1	0.4	0.1	0.3	0.3	0.1	0.0	0.5	673
Third quartile	0.0	0.4	0.1	0.4	0.1	0.3	0.4	0.2	0.0	0.3	703
Highest quartile	0.0	0.3	0.1	0.2	0.2	0.1	0.3	0.0	0.0	0.2	597

* The socioeconomic status data for 1972 seniors are grouped into three levels: "low" corresponds to the lowest quartile, "medium" corresponds to the second and third quartiles combined, and "high" corresponds to the highest quartile.

SOURCE: U.S. Department of Education, National Center for Education Statistics, the National Longitudinal Study of 1972 Postsecondary Education Transcript Study and Base Year through Fourth Followup surveys, and the High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A46—Standard errors for table 46: Average number of credits earned in academic subject areas by 1972 and 1980 high school seniors enrolled in public 2-year institutions within 4 years after high school, by number of credits accumulated in vocational education

Vocational credits	Math	Science	Letters	Humanities	Communications	Social sciences	Art & design	Education	Other	Un-weighted Ns
1972 seniors										
Total	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	4,560
Vocational credits										
No credits	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.0	0.0	1,817
0.1–5.0 credits	0.1	0.3	0.2	0.2	0.1	0.3	0.2	0.1	0.0	844
5.1–10.0 credits	0.2	0.3	0.2	0.1	0.1	0.4	0.2	0.1	0.1	585
10.1–15.0 credits	0.3	0.4	0.3	0.2	0.2	0.5	0.2	0.1	0.1	303
15.1–25.0 credits	0.3	0.3	0.2	0.1	0.1	0.4	0.3	0.2	0.1	361
25.1–35.0 credits	0.2	0.4	0.2	0.1	0.1	0.4	0.1	0.1	0.1	291
35.1 or more credits	0.2	0.3	0.2	0.1	0.1	0.3	0.1	0.1	0.1	359
1980 seniors										
Total	0.1	.02	0.1	0.1	0.1	0.2	0.1	0.1	0.1	3,011
Vocational credits										
No credits	0.1	0.2	0.2	0.1	0.1	0.3	0.2	0.1	0.0	882
0.1–5.0 credits	0.2	0.5	0.3	0.2	0.1	0.4	0.2	0.0	0.1	641
5.1–10.0 credits	0.3	0.4	0.3	0.2	0.2	0.5	0.2	0.2	0.1	493
10.1–15.0 credits	0.4	0.5	0.4	0.2	1.2	0.7	0.3	0.4	0.2	270
15.1–25.0 credits	0.4	0.5	0.4	0.3	1.2	0.9	0.3	0.3	0.3	293
25.1–35.0 credits	0.5	0.7	0.5	0.2	1.3	0.6	0.3	0.1	0.2	168
35.1 or more credits	0.3	0.6	0.4	0.1	1.2	0.5	0.2	0.0	0.6	264

SOURCE: U.S. Department of Education, National Center for Education Statistics, the National Longitudinal Study of 1972 Postsecondary Education Transcript Study and Base Year through Fourth Followup surveys, and the High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A47—Standard errors for table 47: Percentage of 1980 high school seniors enrolled in public 2-year institutions transferring to other postsecondary institutions by 1984 by type of institution, by number of vocational and academic credits accumulated in public 2-year institutions

Credits accumulated	Transfer to							Un-weighted Ns
	All institutions	Public 4-year	Private 4-year	Other public 2-year	Public vocational-technical	Private proprietary	Private less-than-4-year	
Total	1.28	1.02	0.62	0.62	0.10	0.25	0.24	2,777
Vocational credits								
No credits*	2.27	1.80	1.46	0.77	0.08	0.39	0.41	800
0.1–5.0 credits	2.65	2.18	1.45	1.01	0.00	0.69	0.71	588
5.1–15.0 credits	2.60	2.10	1.09	1.34	0.41	0.61	0.41	707
15.1 or more credits	2.60	2.05	0.91	1.55	0.06	0.37	0.39	682
Academic credits								
0.0–5.0 credits	1.62	0.57	1.00	0.93	0.00	0.52	0.62	716
5.1–15.0 credits	2.36	1.36	1.35	1.30	0.00	0.57	0.40	719
15.1–35.0 credits	2.57	2.11	1.20	1.38	0.14	0.49	0.49	697
35.1 or more credits	3.05	2.89	1.40	1.47	0.44	0.46	0.00	645
Vocational credits as percent of total credits								
0.0%*	2.52	2.09	1.71	0.90	0.10	0.47	0.21	665
0.1–25.0%	2.98	2.75	1.50	1.25	—	0.68	0.49	650
25.1–50.0%	2.92	2.14	1.24	1.80	0.51	0.73	—	581
50.1%	1.68	1.07	0.75	1.06	—	0.34	0.57	746

* The “No credits” and “0.0%” rows are not the same because students who had zero total credits recorded on their transcripts are excluded from the “0.0%” row.

—The numerator was too small to be reported.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A48—Standard errors for table 48: Percentage of 1980 high school seniors participating in the labor market 6 months after last enrollment by 1984 in a public 2-year institution by employment status, by number of vocational and academic credits accumulated in public 2-year institutions¹

Credits accumulated	Labor market participation ²			Not in labor force	Un-weighted Ns
	Employed full time	Employed part time	Unemployed		
Total	1.36	1.12	0.52	1.18	2,657
Vocational credits					
No credits ³	2.58	2.30	0.74	2.33	754
0.1–5.0 credits	2.92	2.69	1.36	2.52	562
5.1–15.0 credits	2.83	2.09	1.14	2.35	683
15.1 or more credits	2.84	2.27	0.90	2.35	658
Academic credits					
0.0–5.0 credits	2.55	2.07	0.80	2.31	674
5.1–15.0 credits	2.79	2.30	1.19	2.27	680
15.1–35.0 credits	2.82	2.28	0.83	2.46	674
35.1 or more credits	2.69	2.76	1.39	2.76	629
Vocational credits as percent of total credits					
0.0% ³	2.82	2.54	0.77	2.55	629
0.1–25.0%	2.76	2.66	1.45	2.53	629
25.1–50.0%	3.20	2.72	1.08	2.60	555
50.1%	2.48	1.80	0.86	2.17	719

¹ “Last enrollment” is defined as the last date for which a student had a transcript at a public 2-year institution during the period 1980–84. Consequently, the table includes both students who are out of school and some students who may still be enrolled in a public 2-year institution 6 months after the end of 1984 or who may have transferred to a different postsecondary institution.

² “Employed full time” is defined as 35 or more hours per week, while “employed part time” is less than 35 hours per week. “Unemployed” is defined as being without a job and looking for work, while “not in labor force” is being without a job but not looking for work.

³ The “No credits” and “0.0%” rows are not the same because students who had zero total credits recorded on their transcripts are excluded from the “0.0%” row.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A49—Standard errors for table 49: Average hourly wages earned by 1980 high school seniors 6 months after last enrollment by 1984 in a public 2-year institution by employment status, by number of vocational and academic credits accumulated in public 2-year institutions¹

Credits accumulated	Employed ²			
	Full time	Unweighted Ns	Part time	Unweighted Ns
Total	0.100	1,231	0.214	585
Vocational credits				
No credits ³	0.175	330	0.480	166
0.1–5.0 credits	0.210	253	0.372	127
5.1–15.0 credits	0.197	309	0.495	152
15.1 or more credits	0.178	339	0.414	140
Academic credits				
0.0–5.0 credits	0.160	377	0.505	109
5.1–15.0 credits	0.137	342	0.519	137
15.1–35.0 credits	0.223	312	0.500	150
35.1 or more credits	0.311	200	0.305	189
Vocational credits as percent of total credits				
0.0% ³	0.213	261	0.520	153
0.1–25.0%	0.244	215	0.287	175
25.1–50.0%	0.243	259	0.497	134
50.1%	0.135	427	0.525	110

¹ “Last enrollment” is defined as the last date for which a student had a transcript at a public 2-year institution during the period 1980–84. Consequently, the table includes both students who are out of school and some students who may still be enrolled in a public 2-year institution 6 months after the end of 1984 or who may have transferred to a different postsecondary institution.

² “Employed full time” is defined as 35 or more hours per week, while “employed part time” is less than 35 hours per week.

³ The “No credits” and “0.0%” rows are not the same because students who had zero total credits recorded on their transcripts are excluded from the “0.0%” row.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A50—Standard errors for table 50: Percentage of 1980 high school seniors enrolled in public 2-year institutions who completed a certificate or degree by 1984 by type of degree, by number of vocational and academic credits accumulated in public 2-year institutions

Credits accumulated	Total	Certificate	Associate's degree	Bachelor's degree	Unweighted Ns
Total	1.21	0.54	1.01	0.68	2,777
Vocational credits					
No credits*	1.75	0.63	1.13	1.36	800
0.1–5.0 credits	2.04	0.74	1.53	1.29	588
5.1–15.0 credits	2.38	0.92	2.07	1.14	707
15.1 or more credits	2.72	1.55	2.68	1.22	682
Academic credits					
0.0–5.0 credits	1.52	0.98	0.76	1.03	716
5.1–15.0 credits	1.83	1.16	1.23	1.04	719
15.1–35.0 credit	2.68	1.31	2.31	1.36	697
35.1 or more credits	3.02	0.53	2.96	1.68	645
Vocational credits as percent of total credits					
0.0%*	2.07	0.74	1.34	1.58	665
0.1–25.0%	2.77	0.73	2.47	1.57	650
25.1–50.0%	2.91	1.24	2.50	1.29	581
50.1%	2.44	1.31	2.15	0.76	746

* The “No credits” and “0.0%” rows are not the same because students who had zero total credits recorded on their transcripts are excluded from the “0.0%” row.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A51—Standard errors for table 51: Percentage of less-than-4-year degrees and certificates awarded by public postsecondary institutions by type of institution and type of award, by vocational program: 1988–89*

*Standard errors are not reported for this table because the sample is the whole universe of institutions.

Table A52—Standard errors for table 52: Percentage of less-than-4-year degrees and certificates awarded by private postsecondary institutions by type of institution and type of award, by vocational program: 1988–89*

*Standard errors are not reported for this table because the sample is the whole universe of institutions.

Table A53—Standard errors for table 53: Percentage of 1980 high school seniors enrolled in public 2-year postsecondary institutions by 1984 earning at least one credit in academic, vocational, and personal skills education, by selected characteristics

	Academic	Vocational	Personal skills	Unweighted Ns
Total	0.96	1.24	1.40	3,011
Socioeconomic status				
Lowest quartile	2.03	2.31	2.69	891
Second quartile	2.09	2.43	2.82	673
Third quartile	1.84	2.15	2.61	703
Highest quartile	1.82	2.57	2.90	597
Academic ability				
Lowest quartile	2.43	2.59	2.91	699
Second quartile	1.99	2.32	2.64	706
Third quartile	1.79	2.47	2.70	674
Highest quartile	1.75	2.69	2.85	545
Home language background ¹				
English	2.06	3.31	4.06	287
Other than English	6.22	4.42	5.06	146
Handicap status ²				
In program	3.56	6.07	5.97	142
Consistent handicap	5.97	7.30	8.15	81
Inconsistent handicap	2.60	3.05	3.27	492
Not handicapped	1.09	1.37	1.61	2,293

¹ Home language background refers to the sole or dominant language spoken in the home.

² The handicap status categories are mutually exclusive. “In program” includes students who reported participating in a handicap program or receiving handicap benefits. “Consistent” includes students who did not report participating in a handicap program but who reported having a handicap in both the base year and followup surveys, while “inconsistent” includes students who did not report participating in a handicap program but who reported having a handicap in either the base year or followup surveys but not both. “Not handicapped” students did not report participating in a handicap program and never reported having a handicap.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A54—Standard errors for table 54: Percentage of 1980 high school seniors enrolled in public 2-year postsecondary institutions by 1984 earning at least one credit in vocational program areas, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communications technologies	Trade & industry	Un-weighted Ns
Total	0.52	1.35	0.65	0.80	1.10	1.02	0.85	0.53	0.19	0.89	3,011
Socioeconomic status											
Lowest quartile	1.26	2.76	1.49	1.78	1.88	2.13	1.69	0.88	0.72	1.75	891
Second quartile	1.45	2.75	1.41	1.95	2.13	1.96	1.67	1.26	0.12	1.84	673
Third quartile	0.80	2.51	1.06	1.57	2.03	2.01	1.43	1.19	0.16	1.58	703
Highest quartile	0.70	2.89	1.43	1.47	1.98	2.35	1.91	1.22	0.60	1.58	597
Academic quartile											
Lowest quartile	1.25	2.81	1.62	1.42	2.05	2.18	1.40	0.96	0.61	2.36	699
Second quartile	1.21	2.77	1.39	1.70	1.97	1.90	1.57	1.39	0.55	1.99	706
Third quartile	0.85	2.84	1.30	1.79	2.11	2.14	1.84	1.25	0.06	1.67	674
Highest quartile	1.25	3.00	1.62	1.98	2.20	2.60	2.13	0.94	0.49	1.78	545
Home language background ¹											
English	0.11	4.94	1.37	1.96	4.47	5.59	3.71	1.77	0.47	3.96	287
Other than English	1.59	6.41	6.28	4.77	4.80	6.52	2.95	2.66	0.51	6.47	146
Handicap status ²											
In program	2.36	6.36	2.69	2.80	5.37	5.31	3.32	2.59	0.00	4.52	142
Consistent handicap	5.34	7.47	5.29	4.71	6.74	4.86	4.93	3.41	0.38	4.60	81
Inconsistent handicap	1.00	3.20	1.38	1.28	1.96	2.44	2.16	1.49	0.17	1.78	492
Not handicapped	0.53	1.49	0.76	0.94	1.31	1.20	0.92	0.62	0.24	1.01	2,293

¹ Home language background refers to the sole or dominant language spoken in the home.

² The handicap status categories are mutually exclusive. "In program" includes students who reported participating in a handicap program or receiving handicap benefits. "Consistent" includes students who did not report participating in a handicap program but who reported having a handicap in both the base year and followup surveys, while "inconsistent" includes students who did not report participating in a handicap program but who reported having a handicap in either the base year or followup surveys but not both. "Not handicapped" students did not report participating in a handicap program and never reported having a handicap.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A55—Standard errors for table 55: Average number of credits earned in vocational program areas by 1980 high school seniors enrolled in public 2-year postsecondary institutions by 1984, by selected characteristics

	Agriculture	Business & office	Marketing & distribution	Health	Home economics	Computers/ data processing	Engineering/ science technologies	Protective services	Communications technologies	Trade & industry	Un-weighted Ns
Total	0.06	0.21	0.04	0.16	0.07	0.12	0.16	0.06	0.01	0.19	3,011
Socioeconomic status											
Lowest quartile	0.26	0.37	0.07	0.35	0.13	0.11	0.30	0.06	0.01	0.61	891
Second quartile	0.18	0.70	0.11	0.35	0.14	0.31	0.28	0.08	0.00	0.47	673
Third quartile	0.03	0.37	0.06	0.37	0.12	0.32	0.41	0.21	0.02	0.28	703
Highest quartile	0.04	0.33	0.07	0.24	0.16	0.13	0.30	0.05	0.03	0.24	597
Academic quartile											
Lowest quartile	0.19	0.49	0.11	0.11	0.14	0.09	0.24	0.14	0.04	0.61	699
Second quartile	0.14	0.48	0.10	0.33	0.15	0.11	0.29	0.08	0.01	0.55	706
Third quartile	0.14	0.45	0.05	0.38	0.14	0.37	0.46	0.21	0.00	0.24	674
Highest quartile	0.07	0.48	0.09	0.38	0.14	0.32	0.43	0.12	0.03	0.20	545
Home language background ¹											
English	0.01	0.48	0.23	0.15	0.22	0.28	0.49	0.14	0.09	0.74	287
Other than English	0.05	0.86	0.58	0.71	0.31	0.31	0.63	0.08	0.04	0.78	146
Handicap status ²											
In program	0.14	0.50	0.08	0.16	0.57	0.20	0.51	0.15	0.00	1.22	142
Consistent handicap	0.64	1.25	0.35	0.48	0.37	0.28	0.40	0.10	0.01	1.54	81
Inconsistent handicap	0.16	0.38	0.10	0.11	0.07	0.12	0.38	0.21	0.03	0.35	492
Not handicapped	0.06	0.25	0.05	0.20	0.08	0.15	0.18	0.07	0.01	0.20	2,293

¹ Home language background refers to the sole or dominant language spoken in the home.

² The handicap status categories are mutually exclusive. "In program" includes students who reported participating in a handicap program or receiving handicap benefits. "Consistent" includes students who did not report participating in a handicap program but who reported having a handicap in both the base year and followup surveys, while "inconsistent" includes students who did not report participating in a handicap program but who reported having a handicap in either the base year or followup surveys but not both. "Not handicapped" students did not report participating in a handicap program and never reported having a handicap.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Senior Cohort Postsecondary Education Transcript Study and Base Year through Second Followup surveys.

Table A56—Standard errors for table 56: Demographic characteristics of faculty in public 2-year postsecondary institutions by teaching assignment: Fall 1987¹

	All faculty	Vocational	Nonvocational ²
Sex			
Male	1.91	2.69	
Female	2.31		2.69
Unweighted Ns	1,266	553	713
Race-ethnicity			
White, non-Hispanic	1.43	1.88	1.71
Black, non-Hispanic	0.68	0.78	0.87
Hispanic	0.92	1.27	1.04
Asian	0.35	0.48	0.47
Native American	0.20	0.41	0.14
Unweighted Ns	1,266	553	713
Age			
Under 30 years	0.67	1.28	0.63
30 to 39 years	2.12	2.38	2.39
40 to 49 years	1.68	3.15	2.11
50 years or over	1.70	2.08	2.54
Unweighted Ns	1,264	553	711

¹ The 1988 National Survey of Postsecondary Faculty included only those faculty who had instructional duties related to for-credit courses during the fall of 1987. The Survey excluded faculty from nondegree-granting institutions.

² Faculty were classified as either vocational or nonvocational based on their principal teaching field.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

Table A57—Standard errors for table 57: Experience and educational background of faculty in public 2-year postsecondary institutions by teaching assignment: Fall 1987

Experience and educational background	All faculty	Vocational	Nonvocational
Highest college degree			
Less than a bachelor's	1.71	2.55	1.48
Bachelor's	1.81	3.60	1.50
Master's	2.02	2.63	2.80
Doctor's or first professional	2.10	1.29	2.71
Unweighted Ns	1,223	521	702
Major field of study (highest degree)			
Mathematics and sciences	1.25	0.72	2.23
Social sciences	0.70	0.79	1.06
Letters, humanities, and communications	1.67	0.22	2.87
Art & design	0.67	0.29	1.13
Education	1.42	2.35	2.36
Occupationally specific ¹	1.66	2.43	1.97
Other	0.24	0.45	0.25
Unweighted Ns	1,223	521	702
Tenure status			
Tenured	2.70	2.53	3.26
On tenure track/not tenured	0.90	1.18	1.06
Not on tenure track	1.17	2.09	1.60
Not applicable	3.11	3.75	3.74
Unweighted Ns	1,266	553	713
Academic rank			
Professor	2.30	1.58	3.04
Associate professor	1.01	1.41	0.99
Assistant professor	1.41	1.78	1.36
Instructor	2.52	3.58	2.96
Lecturer	0.88	1.21	0.79
Other	0.97	1.95	0.93
Not applicable	2.18	1.13	3.34
Unweighted Ns	1,266	553	713
Age at which first began to teach at postsecondary level ²			
25 years or under	1.57	2.48	2.00
26–35 years	1.65	3.69	1.53
36–45 years	1.23	2.52	1.52
46–55 years	0.83	1.38	1.29
Over 55 years	0.89	0.90	1.22
Unweighted Ns	1,114	469	645
Number of years of postsecondary teaching experience ²			
Less than 3 years	1.72	1.73	3.03
3–9 years	2.04	3.87	3.00
10–20 years	2.20	2.69	2.86
Over 20 years	2.36	2.34	2.69
Unweighted Ns	1,114	469	645

¹ Occupationally specific degrees include all vocational fields of study listed in the taxonomy for less-than-4-year postsecondary institutions.

² "Age at which faculty first began to teach at the postsecondary level" and "Number of years of postsecondary teaching experience" reflect only those years in which teaching was part of the faculty member's primary job responsibility.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

Table A58—Standard errors for table 58: Experience and educational background of faculty in public 2-year postsecondary institutions by vocational program area: Fall 1987

Experience and educational background	Vocational program area					
	Non-vocational	Business & office	Health	Computers/ data processing	Engineering/ science technologies	Trade & industry
Highest college degree						
Less than a bachelor's	1.48	2.04	4.12	8.98	14.66	4.56
Bachelor's	1.50	5.41	4.35	11.74	8.80	7.17
Master's	2.80	3.66	2.97	8.61	8.23	4.31
Doctor's or first professional	2.71	2.18	2.04	2.60	2.53	2.43
Unweighted Ns	702	152	122	49	59	84
Major field of study (highest degree)						
Mathematics and sciences	2.23	0.00	1.82	4.39	4.24	0.00
Social sciences	1.06	2.05	1.26	1.57	0.00	0.58
Letters, humanities, and communications	2.87	0.69	0.00	0.00	0.00	0.00
Art & design	1.13	0.00	0.00	0.00	1.36	0.00
Education	2.36	3.35	3.21	6.53	6.12	5.78
Occupationally specific ¹	1.97	3.36	3.26	8.05	7.25	5.19
Other	0.25	0.89	0.00	3.74	0.00	0.00
Unweighted Ns	702	152	122	49	59	84
Tenure status						
Tenured	3.26	3.54	6.08	5.73	6.76	4.84
On tenure track/not tenured	1.06	1.01	3.23	2.50	3.34	3.28
Not on tenure track	1.60	5.94	3.83	4.44	6.87	1.69
Not applicable	3.74	6.29	5.69	9.09	9.63	6.05
Unweighted Ns	713	156	126	51	63	100
Academic rank						
Professor	3.04	1.43	2.97	2.66	6.21	2.66
Associate professor	0.99	0.95	2.69	2.42	4.58	2.13
Assistant professor	1.36	1.79	3.79	3.57	5.39	3.28
Instructor	2.96	4.05	7.67	9.01	10.24	5.29
Lecturer	0.79	1.70	0.73	7.87	1.49	0.91
Other	0.93	0.78	0.52	3.59	13.92	0.00
Not applicable	3.34	2.03	3.90	5.61	5.06	2.83
Unweighted Ns	713	156	126	51	63	100
Age at which first began to teach at postsecondary level²						
25 years or under	2.00	2.63	4.16	2.90	7.68	3.95
26–35 years	1.53	6.00	5.92	12.45	7.53	7.27
36–45 years	1.52	4.38	4.30	8.73	7.37	5.75
46–55 years	1.29	3.64	2.38	7.27	4.11	3.79
Over 55 years	1.22	2.37	1.22	1.35	0.00	3.30
Unweighted Ns	645	126	111	42	50	88
Number of years of postsecondary teaching experience²						
Less than 3 years	3.03	3.61	5.05	6.27	6.68	4.47
3–9 years	3.00	9.79	5.89	8.45	7.19	7.22
10–20 years	2.86	6.48	4.77	9.79	9.86	5.77
Over 20 years	2.69	4.82	3.16	4.53	10.58	4.44
Unweighted Ns	645	126	111	42	50	88

¹ Occupationally specific degrees include all vocational fields of study listed in the taxonomy for less-than-4-year postsecondary institutions.

² "Age at which faculty first began to teach at the postsecondary level" and "Number of years of postsecondary teaching experience" reflect only years in which teaching was part of the faculty member's primary job responsibility.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

Table A59—Standard errors for table 59: Average salaries of full-time faculty in public 2-year postsecondary institutions by teaching assignment, by experience and educational background: 1987

Experience and educational background	All faculty	Vocational	Nonvocational
Total	615.1	657.5	677.8
Unweighted Ns	886	375	511
Highest college degree			
Less than a bachelor's	—	—	—
Unweighted Ns	29	26	3
Bachelor's	1,232.2	1,367.3	—
Unweighted Ns	107	85	22
Master's	612.5	561.0	727.7
Unweighted Ns	558	209	349
Doctor's or first professional	1,025.4	829.7	1,018.9
Unweighted Ns	166	32	134
Major field of study (highest degree)			
Mathematics and sciences	696.6	—	912.7
Unweighted Ns	113	9	104
Social sciences	1,140.1	—	1,150.6
Unweighted Ns	63	9	54
Letters, humanities, and communications	1,365.2	—	1,407.5
Unweighted Ns	95	1	94
Art & design	1,128.2	—	1,144.7
Unweighted Ns	50	1	49
Education	817.9	645.3	1,123.2
Unweighted Ns	232	102	130
Occupationally specific ¹	876.3	948.2	1,422.7
Unweighted Ns	293	227	66
Other	—	—	—
Unweighted Ns	6	0	6
Tenure status			
Tenured	670.2	643.4	762.2
Unweighted Ns	524	195	329
On tenure track/not tenured	657.3	974.6	853.1
Unweighted Ns	89	40	49
Not on tenure track	—	—	—
Unweighted Ns	29	17	12
Not applicable	966.0	1,233.5	858.3
Unweighted Ns	244	123	121
Academic rank			
Professor	1,326.2	1,349.4	1,485.6
Unweighted Ns	154	51	103
Associate professor	1,079.3	1,834.3	1,457.8
Unweighted Ns	96	38	58
Assistant professor	750.2	934.0	1,405.5
Unweighted Ns	114	60	54
Instructor	908.3	958.4	1,214.4
Unweighted Ns	273	145	128
Lecturer	—	—	—
Unweighted Ns	9	4	5
Other	—	—	—
Unweighted Ns	8	2	6
Not applicable	1,012.4	1,617.9	830.0
Unweighted Ns	232	75	157

Table A59—Standard errors for table 59: Average salaries of full-time faculty in public 2-year postsecondary institutions by teaching assignment, by experience and educational background: 1987—Continued

Experience and educational background	All faculty	Vocational	Nonvocational
Age at which first began to teach at postsecondary level ²			
25 years or under	888.3	1,126.2	1,038.2
Unweighted Ns	152	48	104
26–35 years	637.3	826.3	745.3
Unweighted Ns	451	174	277
36–45 years	842.3	1,086.4	774.7
Unweighted Ns	182	96	86
46–55 years	1,040.4	1,122.1	—
Unweighted Ns	45	30	15
Over 55 years	—	—	—
Unweighted Ns	6	5	1
Number of years of postsecondary teaching experience ²			
Less than 3 years	1,408.9	—	—
Unweighted Ns	40	23	17
3–9 years	595.2	658.8	760.1
Unweighted Ns	192	107	85
10–20 years	579.7	494.1	987.5
Unweighted Ns	329	135	194
Over 20 years	763.0	975.5	886.7
Unweighted Ns	275	88	187

— Sample size too small for reliable estimate.

¹ Occupationally specific degrees include all vocational fields of study listed in the taxonomy for less-than-4-year postsecondary institutions.

² “Age at which faculty first began to teach at the postsecondary level” and “Number of years of postsecondary teaching experience” reflect only those years in which teaching was part of the faculty member’s primary job responsibility.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

Table A60—Standard errors for table 60: Average salaries of part-time faculty in public 2-year postsecondary institutions by teaching assignment, by experience and educational background: 1987

Experience and educational background	All faculty	Vocational	Nonvocational
Total	364.9	385.8	445.1
Unweighted Ns	380	178	202
Highest college degree			
Less than a bachelor's	757.4	635.4	—
Unweighted Ns	38	33	5
Bachelor's	545.0	674.3	768.6
Unweighted Ns	101	70	31
Master's	584.9	626.6	619.5
Unweighted Ns	182	57	125
Doctor's or first professional	1,085.3	—	1,365.2
Unweighted Ns	42	9	33
Major field of study (highest degree)			
Mathematics and sciences	1,691.7	—	—
Unweighted Ns	31	3	28
Social sciences	—	—	—
Unweighted Ns	16	6	10
Letters, humanities, and communications	1,011.5	—	977.6
Unweighted Ns	40	2	38
Art & design	—	—	—
Unweighted Ns	21	2	19
Education	760.4	—	708.8
Unweighted Ns	84	21	63
Occupationally specific ¹	286.3	363.1	510.1
Unweighted Ns	166	132	34
Other	—	—	—
Unweighted Ns	2	2	0
Tenure status			
Tenured	—	—	—
Unweighted Ns	12	4	8
On tenure track/not tenured	—	—	—
Unweighted Ns	7	3	4
Not on tenure track	1,057.6	224.5	1,867.9
Unweighted Ns	72	33	39
Not applicable	323.3	414.9	351.0
Unweighted Ns	289	138	151
Academic rank			
Professor	—	—	—
Unweighted Ns	15	6	9
Associate professor	—	—	—
Unweighted Ns	6	4	2
Assistant professor	—	—	—
Unweighted Ns	8	3	5
Instructor	415.5	457.9	482.0
Unweighted Ns	267	131	136
Lecturer	—	—	—
Unweighted Ns	22	12	10
Other	—	—	—
Unweighted Ns	10	4	6
Not applicable	1,271.1	—	1,639.6
Unweighted Ns	52	18	34

Table A60—Standard errors for table 60: Average salaries of part-time faculty in public 2-year postsecondary institutions by teaching assignment, by experience and educational background: 1987—Continued

Experience and educational background	All faculty	Vocational	Nonvocational
Age at which first began to teach at postsecondary level ²			
25 years or under	924.9	—	—
Unweighted Ns	33	16	17
26–35 years	571.5	449.7	804.6
Unweighted Ns	125	47	78
36–45 years	969.4	915.7	1,063.4
Unweighted Ns	78	35	43
46–55 years	721.9	—	—
Unweighted Ns	30	11	19
Over 55 years	—	—	—
Unweighted Ns	12	7	5
Number of years of postsecondary teaching experience ²			
Less than 3 years	455.8	878.2	370.5
Unweighted Ns	76	31	45
3–9 years	456.7	710.4	505.6
Unweighted Ns	109	53	56
10–20 years	1,179.7	—	1,499.6
Unweighted Ns	65	20	45
Over 20 years	—	—	—
Unweighted Ns	28	12	16

— Sample size too small for reliable estimate.

¹ Occupationally specific degrees include all vocational fields of study listed in the taxonomy for less-than-4-year postsecondary institutions.

² “Age at which faculty first began to teach at the postsecondary level” and “Number of years of postsecondary teaching experience” reflect only those years in which teaching was part of the faculty member’s primary job responsibility.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1988 National Survey of Postsecondary Faculty.

Appendix B—Data Sources and Technical Notes

This appendix describes data sources and the methods used to prepare the data for analysis. It discusses issues affecting the accuracy of the estimates and describes the statistical procedures for assessing significance.

Data Sources

This report has used data from a wide variety of sources. These include:

- 1987 High School Transcript Study
- High School and Beyond
- Educational Testing Service Study of Academic Prediction and Growth
- National Longitudinal Survey—Youth Cohort
- Schools and Staffing Survey
- Current Population Survey
- National Longitudinal Study of the Senior Class of 1972
- Integrated Postsecondary Data System
- National Survey of Postsecondary Faculty

Each of these will be described briefly.

1987 High School Transcript Study

For the 1987 High School Transcript Study (HSTS), NCES collected information on students who were eleventh graders in 1986. The HSTS transcript file is organized by student ID number. For each course taken by the student, the file contains the school year and term the course was taken, the number of credits earned, and the final grade received. Courses are coded using a six-digit course identification number that is based on the Classification of Instructional Programs. All tables were prepared using the transcript weight FINSTUWT. The HSTS final sample size was 24,430 students. For more information on HSTS, readers should consult Judy Thorne et al., *1987 High School Transcript Study Data File User's Manual* (Washington, D.C.: National Center for Education Statistics, February 1989).

High School and Beyond (Secondary Transcripts)

The estimates for high school seniors in 1982 are based on a subsample of 1980 sophomores whose high school transcripts were collected as part of the High School and Beyond Study (HS&B). This subsample was limited to high school graduates whose graduation status was determined using the student exit status variable (EXSTAT). Once a student's graduation status was determined, the sample was further restricted to those from public schools (STYPE). The final HS&B sample included 9,409 students.

Both the HS&B and HSTS samples of transcripts include all academic and vocational education courses taken by students. In HS&B, however, it is not possible to distinguish courses taken at area vocational schools from other vocational courses. The HSTS transcripts do identify courses taken at area vocational schools, and separate analyses of these courses could be undertaken. As this report was concerned with making comparisons between all types of courses taken, no attempt was made to analyze separately course taking in area schools.

Educational Testing Service Study of Academic Prediction and Growth

In 1969, the Educational Testing Service collected transcripts for a sample of 6,117 high school graduates. The sample included data on students from 24 schools in 17 communities, selected to provide a representative group based on geographic location, size of school system, and the proportion of students continuing on to higher education. The sample included only public school students. While strictly speaking the sample was not random, subsequent work with the ETS data has shown it to be approximately representative of the population of high school graduates in 1969.¹ However, none of the largest metropolitan areas of the country were represented in the sample. In addition, because of problems with incomplete transcripts, the South is underrepresented in the transcript sample.

For purposes of this report, the sample was limited to students who had completed between 16 and 32 credits and at least one course in English in high school. After these restrictions were applied, the final sample consisted of 5,637 cases. The ETS sample contains no weights. To carry out the analysis on the 5,637 cases, the analysts reweighted the sample by strata constructed of race-ethnicity and sex to correct for the attrition caused by limiting the sample to those with 16 to 32 credits. For more information, see John Tuma et al., *Enrollment Trends in Vocational and Academic Education in American Public High Schools 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education, Berkeley, Ca.: MPR Associates, Inc., April 1989.

National Longitudinal Survey—Youth Cohort

The National Longitudinal Survey of Labor Force Experience—Youth Cohort (NLS—Youth) is a longitudinal study maintained by the U.S. Department of Labor. It maintains data on a sample of students ranging in age from 14 to 24 in 1979. The NLS—Youth transcript sample contains 9,010 cases and is a subsample of the base year survey, which contains 12,686 cases. The transcript sample is not strictly representative of the population 14 to 24 years old because transcripts were collected only from respondents who agreed to supply them; the survey made no attempt to correct for non-response bias in the transcript study. Additionally, students in the NLS—Youth sample had dates of graduation ranging from 1971 to 1984. Because the number graduating prior to 1975 and after 1982 was very small, the sample for this report was limited to students graduating from 1975 to 1982. Because the sample size of each cohort was relatively small, the data were aggregated across cohorts to form two groups, one from 1975 to 1978 and the other from 1979 to 1982.

To correct for non-response and other potential biases, the sample was reweighted. For details, see John Tuma et al., *Enrollment Trends in Vocational and Academic Education in American Public High Schools 1969 to 1987*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education, Berkeley, Ca.: MPR Associates, Inc., April 1989.

Schools and Staffing Survey

The Schools and Staffing Survey (SASS) collected data on elementary and secondary teachers who were teaching during the 1987-88 school year. SASS included approximately 12,800 schools, 65,000 teachers, and 5,600 public school districts. This report used data on approximately 18,000 public secondary school teachers to analyze differences between academic and vocational teachers. Teachers who taught 50 percent or more of their courses in vocational

¹See Thomas L. Hilton, "ETS Study of Academic Growth and Prediction," *New Directions for Testing and Measurement*, Vol. 2 (1979), 29.

subjects were considered vocational. For a detailed description of the procedures employed, see Phillip Kaufman, *A Comparison of Vocational and Non-Vocational Public School Teachers in Grades 9 to 12*, Washington, D.C.: National Center for Education Statistics, U.S. Department of Education, December 1991.

Current Population Survey

The Current Population Survey (CPS) is a nationally representative sample survey of all households. The survey is conducted in approximately 60,000 dwelling units in 729 primary sampling units. Dwelling units are in-sample for four successive monthly interviews, out-of-sample for the next eight months, and then returned to the sample for the following four months. An adult member of each household serves as the informant for that household. Data for each member of the household are supplied by the informant. In addition, supplementary questions regarding school enrollment are asked about eligible household members 3 years old and over. Some interviews are conducted by telephone.

The sampling frame is a complete list of dwelling-unit addresses at the Census updated by demolitions and new construction and field listings. The population surveyed excludes members of the Armed Forces, inmates of correctional institutions, and patients in long-term medical or custodial facilities; it is referred to as the civilian, non-institutionalized population. Typically, about four percent of dwelling units are not interviewed, because occupants are not at home after repeated callbacks, or for some other reason.

The October Supplement obtains information about school enrollment and educational attainment for each member of a household. Since 1988, questions about enrollment in vocational coursework outside of “regular school” have been added to the October Supplement. Coursework in regular school leads to a college degree. These items include:

1. Excluding (regular college courses and) on-the-job training, is ... taking any business, vocational, technical, secretarial, trade, or correspondence courses?
2. Who provides the instruction for the business, vocational, technical, secretarial, trade, or correspondence courses?
3. Is ... attending classes full or part time?
4. What is ...’s main reason for taking (business, vocational, technical, secretarial, trade, or correspondence) courses?

National Longitudinal Study of the Senior Class of 1972

The National Longitudinal Study of the Senior Class of 1972 (NLS:72) is a nationally representative sample of over 22,000 1972 high school seniors. In addition to the base year survey in 1972, five follow-up surveys have been conducted in 1973, 1974, 1976, 1979, and 1986. The base year and follow-up surveys obtained extensive information on each student, including demographic characteristics, education, employment, and family formation. For further information on the base year and follow-up surveys, interested readers should consult Roger Tourangeau et al., *National Longitudinal Study of the High School Senior Class of 1972 Fifth Follow-Up (1986) Data File User’s Manual*, Chicago: National Opinion Research Center, 1987.

In addition to the survey data, the Postsecondary Education Transcript Study was conducted in 1984. This study collected transcripts from academic and vocational postsecondary

institutions that respondents reported attending between 1972 and 1979. Data from these transcripts were merged with information reported in the base year and follow-up surveys to provide the information included in this report. To make valid comparisons with postsecondary transcripts for the 1980 seniors in *High School and Beyond*, only transcripts for institutions attended between 1972 and 1976 (the first four years following high school graduation) were included in the analysis. For further details concerning the transcript data, the reader should consult Calvin Jones et al., *National Longitudinal Study of the High School Senior Class of 1972 Postsecondary Education Transcript Study Data File User's Manual*, Chicago: National Opinion Research Center, 1986.

High School and Beyond (Postsecondary Transcripts)

HS&B collected postsecondary transcripts for both 1980 high school seniors and 1980 high school sophomores. The sample for the 1980 sophomores, however, was limited to those pursuing postsecondary education immediately following high school and is less complete than the sample of 1980 seniors. Consequently, the analysis of postsecondary course-taking patterns in this report was limited to the 1980 high school seniors. Moreover, this decision facilitated comparisons with data from the postsecondary transcripts collected as part of NLS:72 (see below).

Because it is not possible to distinguish vocational courses in 4-year institutions from academic courses, the analysis was limited to students in less-than-4-year institutions. The 1980 high school senior cohort of HS&B contains approximately 3,700 students taking courses in less-than-4-year institutions between 1980 and 1984. To analyze participation by type of postsecondary institution, a variable called COFCON, college offerings and control, was defined using information derived from the Higher Education General Information Survey (HEGIS).

Two other adjustments were made to transcript level data. Duplicate transcripts were deleted. Additionally, errors in degree codes were corrected. For complete details, see Susan P. Choy and Laura J. Horn, *Course-Taking in Less-Than-4-Year Postsecondary Institutions*, Berkeley, California: University of California, National Center for Research in Vocational Education, December 1991.

Integrated Postsecondary Data System

The Integrated Postsecondary Data System (IPEDS) replaced the Higher Education General Information System (HEGIS) and began collecting data in 1987. IPEDS includes all HEGIS institutions, as well as nonaccredited institutions of postsecondary education and proprietary institutions—for a total of about 12,000 postsecondary institutions. This report used only the completions component of IPEDS, reporting on the number of associate degrees and less-than-2-year degrees earned in postsecondary institutions during the 1988-89 academic year.

National Survey of Postsecondary Faculty

The National Survey of Postsecondary Faculty (NSOPF) is a comprehensive survey of postsecondary instructional faculty that was conducted by NCES for the first time in the 1987-88 academic year. There were three major components of the study: a survey of institutional-level respondents at a stratified random sample of 480 institutions; a survey of a stratified random sample of 11,013 eligible faculty members within the participating institutions; and a survey of a stratified random sample of 3,029 eligible department chairpersons (or their equivalent) within the participating 2- and 4-year institutions. Response rates to the three surveys were 88 percent, 76 percent, and 80 percent respectively.

The universe from which the institutions were selected were all nonproprietary U.S. postsecondary institutions that grant a two-year (A.A.) or higher degree, and whose higher education accreditation is recognized by the U.S. Department of Education. This includes religious, medical, and other specialized postsecondary institutions, as well as 2- and 4-year non-specialized institutions. According to the 1987 Integrated Postsecondary Education Data System (IPEDS), this universe comprised 3,159 institutions.

The 1988 NSOPF gathered information regarding the backgrounds, responsibilities, workloads, salaries, benefits, and attitudes of both full- and part-time faculty in their postsecondary institutions. In addition, information was gathered from institutional and department-level respondents on such issues as faculty composition and turnover and recruitment, retention, and tenure policies. The survey is being conducted again in the 1991-92 academic year so that changes over time in institutional policies with regard to faculty characteristics, behaviors, and attitudes can be assessed.

Accuracy of Estimates

The statistics in this report are estimates derived from samples. Two broad categories of error occur in such estimates: sampling and nonsampling error. Sampling errors happen because observations are made only on samples of students, not on entire populations. Nonsampling errors occur not only in surveys of sample groups but also in complete censuses of entire populations.

Nonsampling errors can be caused by a number of factors: inability to obtain complete information about all students in all schools in the sample (some students or schools refused to participate, or students participated but answered only certain items); ambiguous definitions; differences in interpreting questions; inability or unwillingness to give correct information; mistakes in recording or coding data; and other errors in collecting, processing, sampling, and estimating missing data.

The accuracy of a survey result is determined by the effect of sampling and nonsampling errors. In surveys with sample sizes as large as those used in this report, the sampling errors generally are not the primary concern, except where separate estimates are made for relatively small subpopulations, such as Asian Americans or Native Americans. In this report, small sample sizes were generally not a problem.

Statistical Procedures

The descriptive comparisons in this report were based on **Student's t** statistics. Comparisons based on the tables include the estimates of the probability of a Type I error, or significance level. The significance levels were determined by calculating **Student's t** values for the differences between each pair of means or proportions and comparing these to published tables of significance levels for two-tailed hypothesis testing.

NLS:72, HSTS, HS&B, NSOPF, CPS and SASS samples, while representative, are not simple random samples. Students in NLS:72, HSTS and HS&B were initially selected within high schools grouped within strata. Sampling rates for schools within different strata varied, resulting in better data for policy purposes, but at a cost to statistical efficiency. Hence, simple random techniques for the estimation of standard errors frequently underestimate the true standard errors for some estimates. To overcome this problem, standard errors for most estimates in this report were calculated using either replication procedures or Taylor residual techniques. The standard errors for the estimates using CPS were calculated using generalized variance equations. All estimates, standard errors, unweighted Ns and weighted Ns are available from NCES in comma separated form for use with all major spreadsheet software and microcomputers. In addition, a hardcopy of the taxonomy used to categorize courses is also available, as well as hardcopy of the standard errors, unweighted Ns, and weighted Ns for tables in Appendix C. Those interested in this information should contact the Data Development Division, National Center for Education Statistics, 555 New Jersey Avenue NW, Washington, DC 20208.

Standard errors and unweighted Ns for tables in the main text are included in Appendix B. **Student's t** values may be computed for comparisons using the estimates with the following formula:

$$t = \frac{P_1 - P_2}{\sqrt{se_1^2 + se_2^2}}$$

where P_1 and P_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors.

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

There is a second hazard in reporting statistical tests for each comparison. When making multiple comparisons among categories of an independent variable (for example, different levels of income), the probability of a Type I error for these comparisons taken as a group is larger than the probability for a single comparison. When more than one difference between groups of related characteristics or "families" are tested for statistical significance, we must apply a standard that assures a level of significance for all of those comparisons taken together.

To reduce the probability of Type I error in a set of multiple comparisons, the Bonferroni procedure was used for families of **Student's t** tests. Families of tests were defined as pairwise tests comparing an outcome for two or more related categories of students. For example, a comparison of the average number of Carnegie units earned in vocational education among Native American, Hispanic, Asian, black, and white postsecondary concentrators makes up a family of tests, with 10 comparisons possible: white vs. black, white vs. Asian, white vs. Hispanic, white vs. Native American, black vs. Asian, black vs. Hispanic, black vs. Native American, Asian vs. Hispanic, Asian vs. Native American, and Hispanic vs. Native American.

The critical value for a Bonferroni **t** test depends upon the number of comparisons within a family. When only one pairwise comparison is possible, the Bonferroni critical value is the same as the ordinary value obtained from a **Student's t** test. The more comparisons that are possible, the larger the Bonferroni critical value and the greater the **t** statistic needed for each difference to guarantee a significance level of $\leq .05$ for all of the possible comparisons taken together.²

Comparisons were made in this report only when $p \leq .05/k$ was present for a particular pairwise comparison, where that comparison was one of k tests within a family. This guarantees both that the individual comparison would have $p \leq .05$ and that when k comparisons were made within a family of possible tests, the significance level of the comparisons would sum to $p \leq .05$.³

For example, in a comparison of the Carnegie units earned among different racial and ethnic groups, ten comparisons are possible. In this family, $k = 10$, and the significance level of each test must be $p \leq .05/10$ or $.005$.

²For a discussion of familywise error rates, see Alan J. Klockars and Gilbert Sax, *Multiple Comparisons* (Beverly Hills, CA: Sage Publications), 1986, 17.

³The standard that $p \leq .05/k$ for each comparison is more stringent than the criterion that the significance level of the comparisons should sum to $p \leq .05$. For tables showing the **t** statistic required to insure that $p \leq .05/k$ for a particular family size and degrees of freedom, see Oliver Jean Dunn, "Multiple Comparisons Among Means," *Journal of the American Statistical Association* 56: 52-64.