# What It's Worth: Field of Training and Economic Status in 2009

*Household Economic Studies*

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## INTRODUCTION

The relationship between educational attainment and economic outcomes is shaped by a variety of educational experiences, including field of training, length of time spent in school, and level of attainment. This report explores the relationship between educational attainment, field of training, and eventual occupation and earnings. The report also explores sex, race, and ethnic differences in educational attainment and differences between people who received a General Educational Development (GED) certificate and a high school diploma. These analyses use data collected in the Survey of Income and Program Participation (SIPP) 2008 Panel from January through April of 2009, representing the civilian noninstitutionalized population of the United States. These analyses also use data from the SIPP 1984, 1987, 1990, 1993, 1996, 2001, and 2004 Panels to examine changes over time.

## THE SIPP DATA

The second interview ("wave") of the SIPP 2008 Panel contains the Education and Training History topical module, with detailed information on field of training at the sub-baccalaureate, baccalaureate, and advanced degree levels. This valuable information on field of training for vocational certificates, associate's degrees, and advanced degrees is unavailable in most other datasets, and SIPP allows for time series analyses from 1984 onward. Rather than collecting data on the field of training for only recently awarded degrees, as do other datasets, SIPP enables an examination of the distribution of field of training for the entire adult population.[1] Furthermore, SIPP contains information on GED receipt for adults with degrees earned beyond high school completion, enabling researchers to distinguish between respondents with postsecondary degrees who completed high school via a GED and a high school diploma. Most surveys only collect information on GED status for respondents whose highest level of education is high school completion.[2]

Although SIPP contains information on field of training for sub-baccalaureate and advanced degrees, the Census Bureau now collects detailed information on field of training at the bachelor's degree level annually in the American Community Survey (ACS). The ACS's large sample size and use of write-in responses for field of training provides valuable, detailed information. The first field of training information is available from the 2009 ACS and can be accessed on American FactFinder at <http://factfinder2.census.gov>.

## DEGREES HELD BY ADULTS IN THE UNITED STATES

The SIPP has collected detailed information on the educational attainment of the

[1] Other data sources with information on field of training include the Integrated Postsecondary Data System (IPEDS) and the National Survey of College Graduates (NSCG).

[2] The first SIPP panel with education history data was conducted in 1984, and the 2008 Panel used in this report represents the final panel in SIPP's current form. In 2014, the Census Bureau plans to initiate a new SIPP panel with an improved data collection format.

United States™ Census Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU

Table 1.

## Educational Attainment of the Population Aged 18 and Older in 1984 and 2009

(Numbers in thousands)

| Level | 1984 | | 2009 | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Doctorate degree | 768 | 0.5 | 2,486 | 1.1 |
| Professional degree | 1,744 | 1.0 | 3,232 | 1.4 |
| Master's degree | 5,795 | 3.4 | 15,132 | 6.7 |
| Bachelor's degree | 18,069 | 10.6 | 38,782 | 17.1 |
| Associate's degree | 5,768 | 3.4 | 18,429 | 8.2 |
| Vocational certificate | 3,105 | 1.8 | 24,709 | 10.9 |
| Some college | 30,301 | 17.8 | 35,337 | 15.6 |
| High school completion | 60,358 | 35.5 | 57,880 | 25.6 |
| Less than high school | 44,324 | 26.0 | 30,263 | 13.4 |

Note: The large increase in the proportion of the population with a vocational certificate partially reflects changes to the questionnaire in 2004 that captured more vocational certificate holders.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1984 and 2008.

Table 2.

## Detailed Fields of Postsecondary Degrees of the Population Aged 18 and Older: 2009

(Numbers in thousands)

| Field | Vocational certificate | Associate's degree | Bachelor's degree | Advanced degree |
|---|---|---|---|---|
| **Total** | **24,709** | **18,429** | **38,782** | **20,850** |
| Agriculture | 218 | 230 | 547 | 112 |
| Architecture | (X) | (X) | 1,208 | 288 |
| Auto mechanics | 1,499 | (X) | (X) | (X) |
| Aviation | 280 | (X) | (X) | (X) |
| Business, office | 3,129 | 3,747 | 8,371 | 2,971 |
| Communications | (X) | 217 | 1,255 | 233 |
| Computers | 1,286 | 1,165 | 1,418 | 613 |
| Construction trades | 1,153 | (X) | (X) | (X) |
| Cosmetology | 1,842 | (X) | (X) | (X) |
| Education | (X) | 784 | 4,550 | 4,421 |
| Electronics | 890 | (X) | (X) | (X) |
| Engineering, drafting | 182 | 919 | 2,795 | 1,211 |
| English, literature | (X) | (X) | 958 | 350 |
| Foreign language | (X) | (X) | 226 | 129 |
| Health care | 3,653 | 2,744 | 2,165 | (X) |
| Law | (X) | (X) | (X) | 1,513 |
| Liberal arts, humanities | (X) | 1,550 | 2,075 | 367 |
| Mathematics | (X) | (X) | 630 | 299 |
| Medicine | (X) | (X) | (X) | 1,393 |
| Natural sciences | (X) | 330 | 1,824 | 786 |
| Nursing, public health | (X) | (X) | (X) | 757 |
| Philosophy, religion, theology | (X) | (X) | 318 | 340 |
| Police and protective | 253 | 395 | (X) | (X) |
| Preprofessional | (X) | (X) | 147 | (X) |
| Psychology | (X) | (X) | 1,502 | 885 |
| Social science, history | (X) | 412 | 1,873 | 709 |
| Other vocational | 2,502 | 1,412 | (X) | (X) |
| Other[1] | 7,821 | 4,524 | 6,921 | 3,470 |

(X) Not applicable.

[1] The category "other" refers to an actual response choice rather than a combination of specific fields.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008.

U.S. population since 1984, making it one of the oldest sources of information on specific degrees rather than simply years of schooling. With the expansion of higher education over the last several decades, a greater percentage of adults held postsecondary credentials in 2009 than in 1984. In 2009, 45 percent of the adult population (aged 18 and over) had a degree or certificate above the high school level, up from 21 percent in 1984 (Table 1). This increase resulted from an increase in the proportion of the population with postsecondary educational attainment at all levels, from vocational certificates to doctorate degrees. Between 1984 and 2009, the proportion of the population with associate's, master's, and doctorate degrees doubled or more than doubled. For example, 3.4 percent of adults in 1984 held an associate's degree as their highest level of educational attainment, which increased to 8.2 percent in 2009. While only 0.5 percent of the adult population held doctorate degrees in 1984, 1.1 percent held these degrees in 2009.

SIPP respondents are asked specifically about vocational certificates, while this information is not available in most other census surveys. This affects the educational distribution in SIPP. Adults classified as vocational certificate holders in SIPP are categorized as having some college but no degree, high school completion, or less than high school completion in the ACS or the Current Population Survey (CPS). Consequently, SIPP estimates for the number of adults with less than high school completion, high school completion, or some college but no degree are sometimes lower than in the ACS or CPS.

## FIELD OF TRAINING

Postsecondary experiences are often structured around field of training. While fields such as business, computer science, engineering, and agriculture are taught at all levels of education, other fields are concentrated in fewer education levels. For example, law is taught at the professional degree level. In the adult population surveyed in SIPP during 2009, business was a common field across education levels. It was the most popular choice among those with bachelor's and associate's degrees, and one of the most popular choices among those with vocational certificates and advanced degrees (Table 2).[3] In 2009, 3.7 million adults held an associate's degree in business, 8.4 million held a bachelor's degree in business, and 3.0 million held an MBA or other advanced business degree. The education, engineering, and health care fields also attracted students.

While some fields of training directly prepare students to enter the labor market, students in other fields frequently pursue advanced degrees and gain additional skills before entering the labor market.

[3] In SIPP 2008, the proportion of advanced business degrees is not significantly different from the proportions of either natural science or social science degrees.

For example, among bachelor's degree recipients with a "pre-professional" bachelor's major, 69.3 percent went on to get an advanced degree, most often in law or medicine (Table 3). In contrast, 25 percent or less of people with a bachelor's degree in art and architecture, business, communications, or computer science went on to earn an advanced degree. From one-third to one-half of adults with a bachelor's degree in other fields such as the social sciences, education, engineering, English, and liberal arts went on for an advanced degree.

Table 3.
**Detailed Fields of Bachelor's Degrees of the Population Aged 18 and Older Who Went on to Get an Advanced Degree: 2009**
(Numbers in thousands)

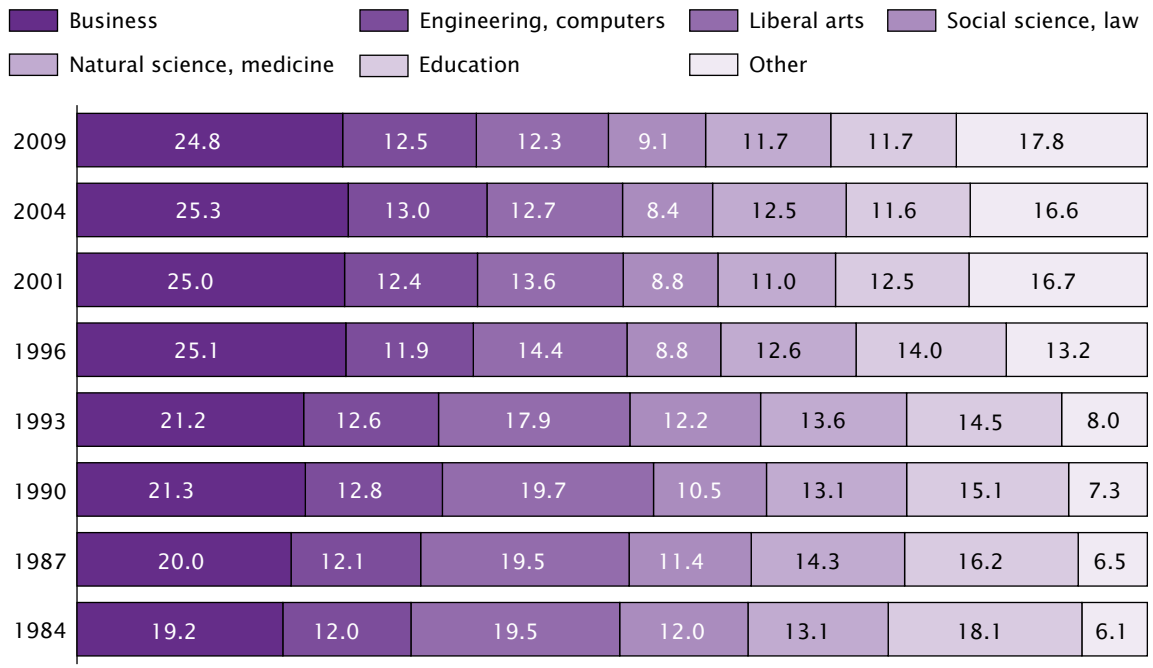
| Field | Number | Percentage of bachelor's recipients with advanced degree | Advanced field | | | | |
|---|---|---|---|---|---|---|---|
| | | | Total | Same field | Law | Medicine | Other |
| **Total** | **20,850** | **35.0** | **100** | **40.0** | **7.3** | **6.7** | **46.0** |
| Agriculture, forestry, horticulture | 193 | 26.1 | 100 | 50.6 | 4.6 | 0.6 | 44.2 |
| Art, architecture | 387 | 24.3 | 100 | 41.6 | 6.8 | 3.8 | 47.8 |
| Business | 2,367 | 22.0 | 100 | 61.9 | 8.4 | 2.1 | 27.7 |
| Communications | 334 | 21.0 | 100 | 30.2 | 6.0 | 1.1 | 62.7 |
| Computer and information science | 436 | 23.5 | 100 | 59.9 | 0.4 | 0.8 | 39.0 |
| Education | 3,493 | 43.4 | 100 | 77.8 | 1.4 | 0.8 | 20.0 |
| Engineering, drafting | 1,719 | 38.1 | 100 | 56.9 | 3.2 | 4.3 | 35.6 |
| English, literature | 831 | 46.5 | 100 | 28.0 | 6.8 | 3.4 | 61.8 |
| Foreign languages | 232 | 50.7 | 100 | 33.6 | 7.8 | 1.5 | 57.1 |
| Health care, health sciences | 860 | 28.4 | 100 | 33.1 | 3.1 | 29.3 | 34.6 |
| Liberal arts, humanities | 1,111 | 34.9 | 100 | 17.8 | 22.1 | 4.8 | 55.3 |
| Mathematics, statistics | 572 | 47.6 | 100 | 36.0 | 4.0 | 2.5 | 57.6 |
| Natural sciences | 1,722 | 48.6 | 100 | 35.1 | 1.6 | 27.7 | 35.6 |
| Preprofessional | 332 | 69.3 | 100 | (X) | 33.7 | 38.7 | 27.6 |
| Philosophy | 320 | 50.2 | 100 | 42.2 | 5.4 | 3.6 | 48.7 |
| Psychology | 1,126 | 42.8 | 100 | 39.1 | 5.8 | 4.0 | 51.2 |
| Social sciences, history | 1,287 | 40.7 | 100 | 30.2 | 16.4 | 2.1 | 51.4 |
| Other | 3,526 | 33.8 | 100 | (X) | 9.9 | 5.2 | 84.9 |

(X) Not applicable.
Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008.

Figure 1a.

## Bachelor's Degree Fields: 1984–2009

(In percent. Population aged 18 and older with a bachelor's degree)




Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008 Panel.

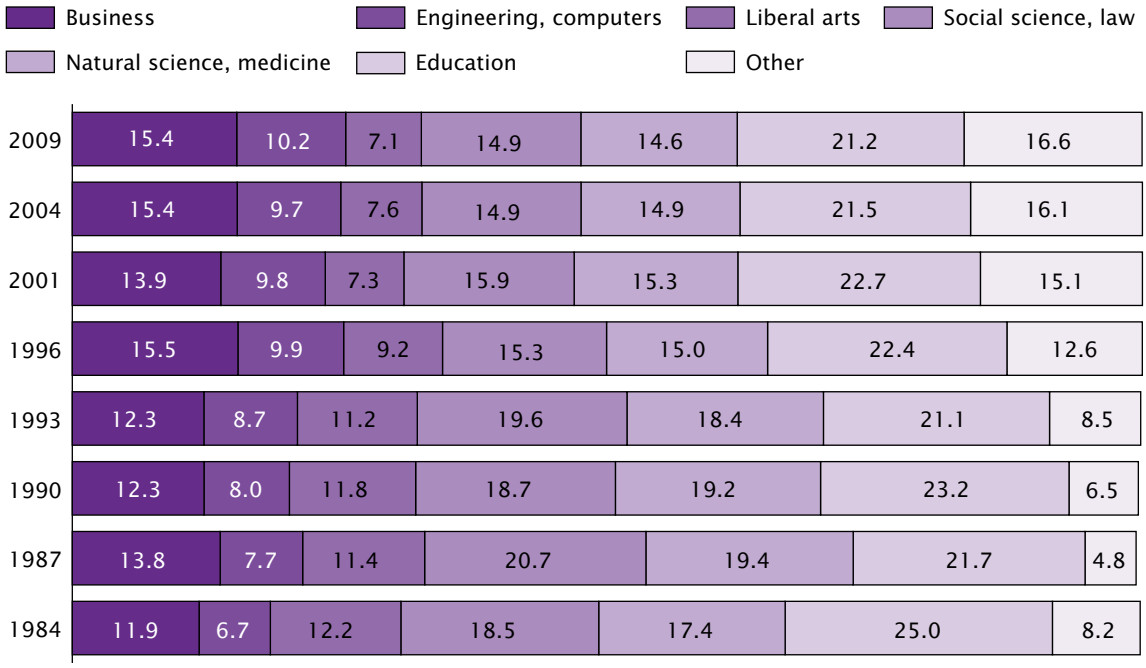
Among respondents who earned advanced degrees, there was variation in who continued in the same general field of training as their bachelor's degree. Around half of the bachelor's degree holders in agriculture went on to an advanced degree in agriculture, more than half of bachelor's degree holders in business went on to earn an advanced degree in business, and similarly more than half of computer science, education, and engineering bachelor's degree holders went on to earn advanced degrees in the same broad field. About one-third or less of the bachelor's degree recipients in communications, English, foreign language, health care, liberal arts, and social sciences that earned advanced degrees did so in the same field. Only 17.8 percent of people with a bachelor's degree in liberal arts who went on to get an advanced degree continued their studies in the same field.

Fields of training can gain or lose popularity over time. The relative proportions of adults with degrees in each field of training have changed over the last several decades, reflecting changes in labor market opportunities and student preferences. At both the bachelor's and advanced degree levels, the share of business degrees among the adult population grew between 1984 and 2009 (Figures 1a and 1b). In 1984, 19.2 percent of adults held

Figure 1b.

## Advanced Degree Fields: 1984–2009

(In percent. Population aged 18 and older with an advanced degree)




Source: U.S. Census Bureau, Survey of Income and Program Participation, 1984, 1987, 1990, 1993, 1996, 2001, 2004, and 2008 Panels.

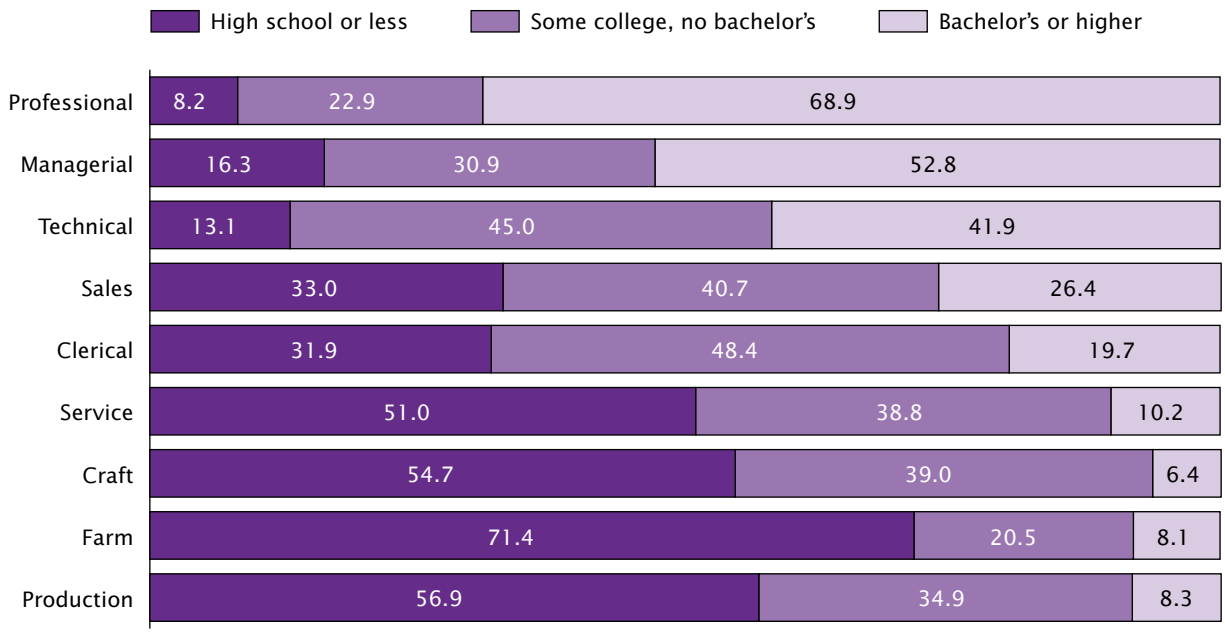
a bachelor's degree in business, which increased to 24.8 percent in 2009. The relative size of the liberal arts, education, and social science fields shrank over this time period at all education levels, as did the relative size of the natural sciences field, excluding the associate's degree level. For example, at the bachelor's degree level, the share of adults with a degree in liberal arts decreased from 19.5 percent in 1984 to 12.3 percent in 2009.

## OCCUPATIONS

Educational attainment and field of training are related to occupational attainment, and so adults tend to pursue postsecondary education in order to enter professional and managerial occupations. Fifty-three percent of people with managerial jobs held a bachelor's degree or higher and 69 percent of people in professional positions held a bachelor's or advanced degree (Figure 2). Ten percent or less of people in service, craft, farm, and production occupations held a bachelor's or advanced degree and 50 percent or more completed high school or less.

Among advanced degree holders, 75 percent were in professional or managerial occupations (Table 4). Vocational certificate holders were spread across service, clerical, craft, and production occupations, while the largest percentage of associate's degree holders were in clerical occupations.

Figure 2.
**Educational Attainment by Occupational Groups: 2009**
(In percent. Employed population aged 18 and older.)




Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008 Panel.

Managerial and professional occupations are associated not only with education level but also with field of training. Business majors were more likely than other majors of a given education level to be in a managerial occupation (Table 4). In most other fields, the likelihood of working in a professional occupation increased with education level. People with an associate's, bachelor's, or advanced degree in engineering, computers, and education, and a bachelor's or advanced degree in the arts and sciences, were more likely to work in professional than managerial positions.

## EARNINGS

Not only do occupations vary by education level, but earnings do as well. One anticipated benefit of higher educational attainment is higher possible earnings. Both mean (average) and median monthly pretax earnings reveal the same general patterns (Table 5).[4] Higher levels of educational attainment are associated with higher earnings.[5] In 2009, adults with professional degrees earned more than any other education level, with mean monthly earnings of $11,900 for full-time workers. On average, adults with a master's degree earned $6,700 per month and those with a bachelor's degree earned $5,400 per month. Adults with an associate's degree earned $4,200 per month on average while those with some college but no degree earned $3,600 monthly.

[4] Since outlying observations can notably influence the estimated average earnings, Table 5 reports both the mean and the median monthly earnings of full-time workers by education level.

[5] On average, vocational certificate holders did not earn significantly more than adults with some college but no degree.

Table 4.

## Occupation by Educational Attainment and Field of Training Among the Employed Population Aged 18 and Older: 2009

(Numbers in thousands)

| Level and field | Total | Occupation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Manage-rial | Profes-sional | Technical | Service | Sales | Clerical | Farming | Craft | Produc-tion |
| **Total** | | | | | | | | | | |
| Number | 149,863 | 21,341 | 25,457 | 10,893 | 22,761 | 15,754 | 20,242 | 1,339 | 14,142 | 17,934 |
| Percent | 100 | 14.2 | 17.0 | 7.3 | 15.2 | 10.5 | 13.5 | 0.9 | 9.4 | 12.0 |
| **Advanced Degree** | | | | | | | | | | |
| Number | 16,361 | 3,803 | 8,441 | 2,061 | 345 | 680 | 607 | 30 | 111 | 283 |
| Percent | 100 | 23.2 | 51.6 | 12.6 | 2.1 | 4.2 | 3.7 | 0.2 | 0.7 | 1.7 |
| Business | 100 | 53.9 | 23.1 | 2.2 | 1.7 | 9.3 | 5.8 | 0.0 | 0.8 | 3.2 |
| Engineering, computers | 100 | 23.6 | 61.8 | 2.7 | 1.7 | 3.2 | 3.2 | 0.0 | 1.9 | 1.9 |
| Arts, sciences | 100 | 14.1 | 50.8 | 25.1 | 2.4 | 3.2 | 2.8 | 0.3 | 0.5 | 0.9 |
| Education | 100 | 15.1 | 74.4 | 1.8 | 1.4 | 1.8 | 4.0 | 0.3 | 0.6 | 0.6 |
| Other | 100 | 24.3 | 47.1 | 13.1 | 3.0 | 4.8 | 3.8 | 0.1 | 0.4 | 3.4 |
| **Bachelor's Degree** | | | | | | | | | | |
| Number | 29,969 | 7,473 | 9,101 | 2,500 | 1,980 | 3,472 | 3,376 | 80 | 787 | 1,200 |
| Percent | 100 | 24.9 | 30.4 | 8.3 | 6.6 | 11.6 | 11.3 | 0.3 | 2.6 | 4.0 |
| Business | 100 | 39.5 | 13.9 | 1.9 | 5.0 | 18.7 | 15.1 | 0.1 | 2.6 | 3.3 |
| Engineering, computers | 100 | 21.2 | 51.8 | 1.5 | 2.7 | 8.1 | 5.3 | 0.2 | 4.7 | 4.5 |
| Arts, sciences | 100 | 19.5 | 29.5 | 16.7 | 7.3 | 9.2 | 11.5 | 0.4 | 1.9 | 3.9 |
| Education | 100 | 9.2 | 59.8 | 2.2 | 7.4 | 6.4 | 10.2 | 0.1 | 1.5 | 3.1 |
| Other | 100 | 25.2 | 23.8 | 11.0 | 10.0 | 10.9 | 10.2 | 0.3 | 3.1 | 5.3 |
| **Associate's Degree** | | | | | | | | | | |
| Number | 13,896 | 2,012 | 1,988 | 2,089 | 1,861 | 1,201 | 2,358 | 68 | 1,133 | 1,186 |
| Percent | 100 | 14.5 | 14.3 | 15.0 | 13.4 | 8.6 | 17.0 | 0.5 | 8.2 | 8.5 |
| Business | 100 | 22.2 | 11.0 | 2.2 | 12.6 | 12.0 | 27.8 | 0.2 | 4.7 | 7.2 |
| Engineering, computers | 100 | 14.5 | 32.0 | 0.9 | 9.1 | 5.4 | 13.1 | 0.2 | 11.2 | 13.5 |
| Arts, sciences | 100 | 10.0 | 8.3 | 34.5 | 14.9 | 8.5 | 14.8 | 0.7 | 3.4 | 4.8 |
| Education | 100 | 12.9 | 41.8 | 4.8 | 12.8 | 6.8 | 15.3 | 1.1 | 0.9 | 3.5 |
| Other vocational | 100 | 13.3 | 7.1 | 5.8 | 7.9 | 4.6 | 9.0 | 0.8 | 34.9 | 16.7 |
| Other | 100 | 14.5 | 14.1 | 11.6 | 15.8 | 9.0 | 15.3 | 0.3 | 9.0 | 10.4 |
| **Vocational Certificate** | | | | | | | | | | |
| Number | 16,380 | 1,502 | 1,227 | 1,698 | 2,828 | 1,449 | 2,421 | 108 | 2,560 | 2,587 |
| Percent | 100 | 9.2 | 7.5 | 10.4 | 17.3 | 8.8 | 14.8 | 0.7 | 15.6 | 15.8 |
| Business | 100 | 14.7 | 8.8 | 3.1 | 11.9 | 12.0 | 37.2 | 0.1 | 3.0 | 9.3 |
| Computer, technical | 100 | 10.2 | 18.2 | 1.4 | 12.5 | 6.7 | 13.4 | 0.4 | 19.9 | 17.4 |
| Vocational | 100 | 6.5 | 4.0 | 15.6 | 19.4 | 7.3 | 10.0 | 1.1 | 18.3 | 17.9 |
| Other | 100 | 10.9 | 9.0 | 7.9 | 17.5 | 10.8 | 14.1 | 0.3 | 15.0 | 14.5 |
| **Some College** | | | | | | | | | | |
| Number | 24,137 | 3,068 | 2,614 | 1,119 | 4,150 | 3,757 | 5,025 | 100 | 1,819 | 2,485 |
| Percent | 100 | 12.7 | 10.8 | 4.6 | 17.2 | 15.6 | 20.8 | 0.4 | 7.5 | 10.3 |
| **High School Completion** | | | | | | | | | | |
| Number | 35,097 | 2,952 | 1,816 | 1,167 | 7,216 | 4,045 | 5,646 | 403 | 4,949 | 6,903 |
| Percent | 100 | 8.4 | 5.2 | 3.3 | 20.6 | 11.5 | 16.1 | 1.1 | 14.1 | 19.7 |
| **Less Than High School** | | | | | | | | | | |
| Number | 14,027 | 529 | 267 | 260 | 4,382 | 1,152 | 809 | 553 | 2,783 | 3,292 |
| Percent | 100 | 3.8 | 1.9 | 1.9 | 31.2 | 8.2 | 5.8 | 3.9 | 19.8 | 23.5 |

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008.

Table 5.

## Monthly Earnings by Educational Attainment Among the Population Aged 18 and Older With Earnings: 2009

(Earnings in dollars. Earners have been employed full-time for the 4 months before the survey)

| Level | Mean earnings | Median earnings |
|---|---|---|
| Elementary | 2,136 | 1,732 |
| Some high school | 2,434 | 2,000 |
| High school completion | 3,179 | 2,550 |
| Some college | 3,598 | 2,917 |
| Vocational certificate | 3,538 | 2,950 |
| Associate's degree | 4,166 | 3,456 |
| Bachelor's degree | 5,445 | 4,355 |
| Master's degree | 6,731 | 5,417 |
| Professional degree | 11,927 | 7,417 |
| Doctorate degree | 8,434 | 6,833 |

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008.

High school completion paid off compared to those who did not complete high school. High school graduates earned on average $3,200 per month, or $750 more than those who attended but did not complete high school.[6]

Even within education levels, some fields are more lucrative than others, as can be seen in the mean and median earnings by field of training

[6] For an examination of earnings by educational attainment in the CPS, please see Sarah Crissey's report, "Educational Attainment in the United States: 2007," available on the Census Bureau's Web site at <www.census.gov/prod/2009pubs/p20-560.pdf>.

Table 6.

## Monthly Earnings by Educational Attainment and Field of Training Among the Population Aged 18 and Older With Earnings: 2009

(Earnings in dollars. Earners have been employed full-time for the 4 months before the survey)

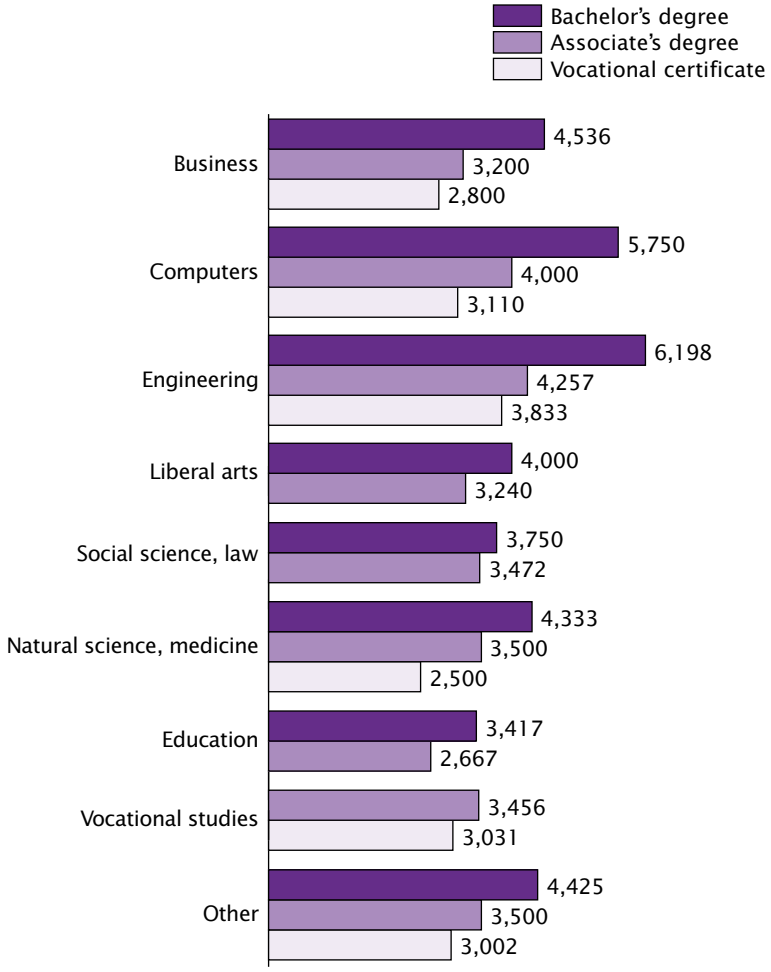
| Field | Total | Educational attainment | | | | | |
|---|---|---|---|---|---|---|---|
| | | Vocational certificate | Associate's degree | Bachelor's degree | Master's degree | Professional degree | Doctorate degree |
| **Mean Monthly Earnings** | | | | | | | |
| **Total** | **5,398** | **3,538** | **4,166** | **5,445** | **6,731** | **11,927** | **8,434** |
| Business | 5,737 | 3,336 | 3,720 | 5,843 | 8,849 | (B) | (B) |
| Computers | 5,856 | 3,600 | 4,922 | 6,743 | 8,072 | (B) | (B) |
| Engineering | 6,833 | 4,314 | 4,813 | 7,106 | 8,221 | (B) | (B) |
| Liberal arts | 5,346 | (X) | 6,156 | 5,017 | 5,741 | (B) | (B) |
| Social science, law | 6,962 | (B) | 3,919 | 4,810 | 5,483 | 14,354 | 9,144 |
| Natural science, medicine | 5,385 | 2,851 | 3,867 | 4,956 | 6,881 | 12,236 | 10,017 |
| Education | 4,433 | (B) | 3,114 | 3,806 | 5,019 | (B) | (B) |
| Vocational studies | 3,746 | 3,722 | 3,859 | (X) | (X) | (X) | (X) |
| Other | 4,869 | 3,656 | 4,075 | 5,377 | 6,221 | (B) | 6,451 |
| **Median Monthly Earnings** | | | | | | | |
| **Total** | **4,167** | **2,950** | **3,456** | **4,355** | **5,417** | **7,417** | **6,833** |
| Business | 4,320 | 2,800 | 3,200 | 4,536 | 6,600 | (B) | (B) |
| Computers | 4,833 | 3,110 | 4,000 | 5,750 | 7,500 | (B) | (B) |
| Engineering | 5,833 | 3,833 | 4,257 | 6,198 | 7,578 | (B) | (B) |
| Liberal arts | 4,082 | (X) | 3,240 | 4,000 | 5,000 | (B) | (B) |
| Social science, law | 4,583 | (B) | 3,472 | 3,750 | 4,833 | 8,333 | 6,480 |
| Natural science, medicine | 4,000 | 2,500 | 3,500 | 4,333 | 5,600 | 8,333 | 8,583 |
| Education | 4,000 | (B) | 2,667 | 3,417 | 4,667 | (B) | (B) |
| Vocational studies | 3,120 | 3,031 | 3,456 | (X) | (X) | (X) | (X) |
| Other | 4,000 | 3,002 | 3,500 | 4,425 | 5,400 | (B) | 6,000 |

(B) Base less than 200,000.
(X) Not applicable.
Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008.

(Table 6). The fields of engineering and social science (which includes the field of law at the professional degree level) had the highest mean earnings, with mean monthly earnings of approximately $6,800 and $7,000, respectively.[7] The education and vocational studies fields had the lowest mean monthly earnings ($4,400 and $3,800, respectively).

Certain fields of training seem to provide high earnings at any education level. People with professional and doctorate degrees in medicine, the natural sciences, and law earned the most out of all education level and field of training combinations.[8] Degrees in technical fields, including engineering and computer science, pay off at all education levels. People with bachelor's and associate's degrees in technical fields and people with vocational certificates in engineering fields earned more than those with degrees in nontechnical fields (Figure 3). For example, among bachelor's degree recipients, those with degrees in engineering earned 87 percent more than those with degrees in education. In some cases, technical fields can pay off more than higher degrees in nontechnical fields. Vocational certificate holders in engineering and associate's degree holders in the fields of computer science and engineering had earnings higher than those with a bachelor's degree in education. People with an associate's degree in social science, natural science, medicine, and vocational studies earned the same as those with a bachelor's degree in education. A degree in business is relatively more lucrative at the bachelor's and master's degree level

Figure 3.
**Median Monthly Earnings by Field of Training for Selected Education Levels: 2009**
(In dollars. Population aged 18 and older employed full-time in previous 4 months)




Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008 Panel.

[7] The mean monthly earnings of engineering and social science fields are not statistically different.

[8] The mean monthly earnings between doctorates in social science, associate's degrees in liberal arts, and master's degrees in business, computers, and engineering did not significantly differ. Furthermore, earnings between doctorates in social science and natural science did not significantly differ. Earnings for doctorates in social science and master's degrees in business did not statistically differ.

Table 7.

## Median Monthly Earnings in Related Occupation by Educational Attainment and Selected Fields of Training Among the Population Aged 18 and Older With Earnings: 2009

(Earnings in dollars. Earners have been employed full-time for the 4 months before the survey)

| Level and field | Percent in related occupation | Median earnings | |
|---|---|---|---|
| | | Related occupation | Unrelated occupation |
| Vocational certificate | 34.9 | 2,999 | 2,944 |
| Business | 64.2 | 2,917 | 2,667 |
| Engineering, computers | 13.8 | 4,806 | *3,200 |
| Arts, sciences | 52.6 | 2,592 | 2,333 |
| Vocational | 52.7 | 3,000 | 2,417 |
| Associate's degree | 32.6 | 3,750 | *3,250 |
| Business | 61.6 | 3,333 | *2,980 |
| Engineering, computers | 30.0 | 4,833 | *3,646 |
| Arts, sciences | 42.6 | 4,000 | *2,917 |
| Education | 42.9 | 2,400 | 3,000 |
| Bachelor's degree | 38.4 | 4,750 | *4,167 |
| Business | 66.9 | 4,950 | *4,000 |
| Engineering, computers | 44.6 | 6,495 | *5,500 |
| Arts, sciences | 24.3 | 4,752 | *3,850 |
| Education | 56.9 | 3,456 | 3,333 |
| Advanced degree | 48.2 | 6,000 | *5,583 |
| Business | 67.7 | 7,125 | *5,500 |
| Engineering, computers | 42.4 | 8,167 | *7,083 |
| Arts, sciences | 46.7 | 6,912 | *5,400 |
| Education | 74.6 | 4,833 | 4,650 |

* Denotes significant difference at the .10 level.
Note: Table does not display majors with less than 10 percent in a related occupation.
Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008.

than at the vocational certificate and associate's degree levels. Mean earnings for bachelor's and master's degree holders in business were greater than overall mean earnings at those educational levels. Mean earnings for vocational certificate holders in business were the same as mean earnings for all certificate holders combined. Mean earnings for associate's degree holders in business were less than the overall mean earnings at that level.

## RELATED FIELDS OF TRAINING AND OCCUPATIONS

Although education fosters the development of general skills that can be applied to a variety of jobs, some fields of training develop specific skills that are directly related to particular occupations. Occupations that require these more specific skill sets may consequently offer higher pay. This report uses an indicator for being in a related occupation that is based on the National Crosswalk Service Center's (NCSC) identification of fields of training whose subject matter is directly related to the work tasks of particular occupations.[9, 10]

About 35 percent of vocational certificate recipients worked in an occupation related to their field of training while 33 percent of associate's degree and 38 percent of bachelor's degree holders did so (Table 7). People with advanced degrees were more likely than other education levels to work in related fields (48 percent). Regardless of education level, over half of people with business degrees worked in a related occupation, and over half of people with education degrees at the bachelor's and advanced degree levels worked in a related occupation.

[9] Please see National Crosswalk Service Center, "Crosswalk File Documentation," available online at <www.xwalkcenter.org/index.php?option=com_content&task=view&id=39&Itemid=46>, accessed December 23, 2010.

[10] Prior research has shown that being in an occupation related to field of training is associated with higher earnings. Please see Sarah Crissey and Kurt Bauman, "Between a Diploma and a Bachelor's Degree: The Effects of Sub-Baccalaureate Postsecondary Educational Attainment and Field of Training on Earnings," presented at the Annual Meeting of the Population Association of America, Dallas, TX, April 15–17, 2010. This report also explores the concept of related occupation with the SIPP data. These analyses constructed an indicator for being in an occupation related to field of training using the crosswalk between the Classification of Instructional Programs (CIP) and the Standard Occupational Classification (SOC) from the NCSC. The crosswalk to the CIP utilizes expert opinions on occupation training requirements for various occupations in the Dictionary of Occupational Titles to identify content relationships between programs of training and occupations. Consequently, the NCSC crosswalk identifies fields of training whose materials are directly related to the work tasks of particular occupations. At each degree level, detailed fields of training in the crosswalk were collapsed into broader fields to match those reported by SIPP respondents. These analyses then created a dichotomous variable indicating that SIPP respondents reported a field of degree and occupation designated as associated by the NCSC crosswalk.

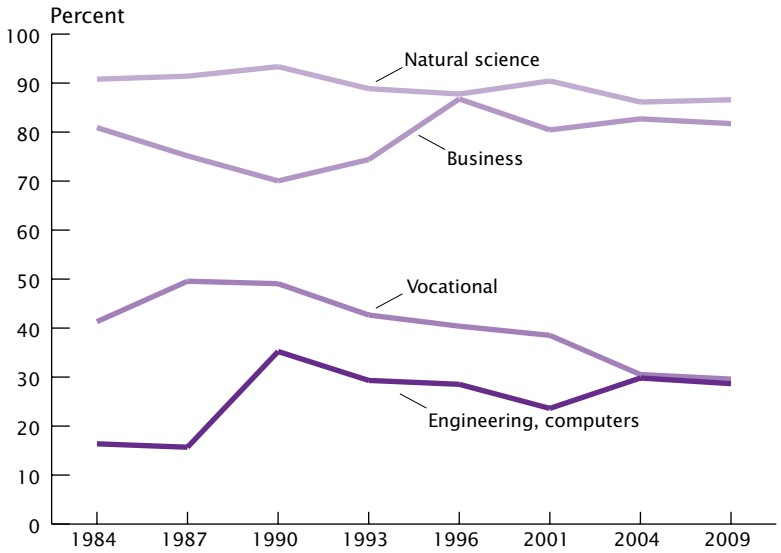
At the associate's, bachelor's, and advanced degree levels, people working in related occupations earned more than people working in unrelated occupations. For example, the median monthly earnings for adults with a bachelor's degree were $4,750 for those working in related occupations and $4,167 for those working in unrelated occupations. This payoff for working in a related occupation is also found for specific fields of training, including business, engineering and computer science, and the arts and sciences at the associate's, bachelor's, and advanced degree levels. There were not significant payoffs for working in a related occupation for education majors at any degree level.

At the vocational certificate level, only adults with degrees in engineering and computers earned more working in a related occupation than in an unrelated occupation.

## DIFFERENCES BETWEEN MEN AND WOMEN

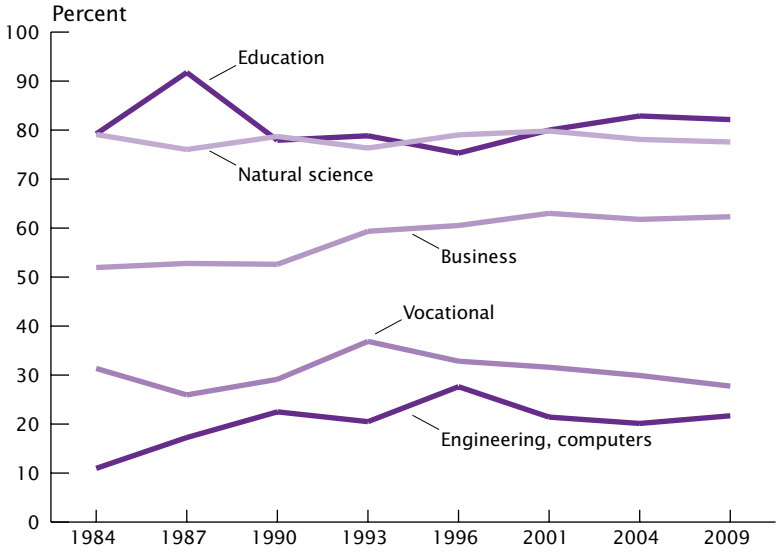
Over time, women and men have concentrated in different fields of training. In every panel between 1984 and 2009, a high proportion of adults with an education degree were women while a high proportion of adults with an engineering and computer science degree were men (Figures 4a–4d). In every panel between 1984 and 2009, women held 75 percent or more of associate's and bachelor's degrees in education and 60 percent or more of advanced degrees in education. In contrast, women held 25 percent or less of bachelor's and advanced degrees in engineering fields and less than 35 percent of associate's and vocational certificates in engineering during the same period.

Figure 4a.
### Percentage Female for Selected Fields: 1984–2009
### Vocational Certificate
(Population aged 18 and older with a vocational certificate)




Note: Only selected fields displayed.
Source: U.S. Census Bureau, Survey of Income and Program Participation, 1984, 1987, 1990, 1993, 1996, 2001, 2004, and 2008 Panels.

Figure 4b.
### Percentage Female for Selected Fields: 1984–2009
### Associate's Degree
(Population aged 18 and older with an associate's degree)

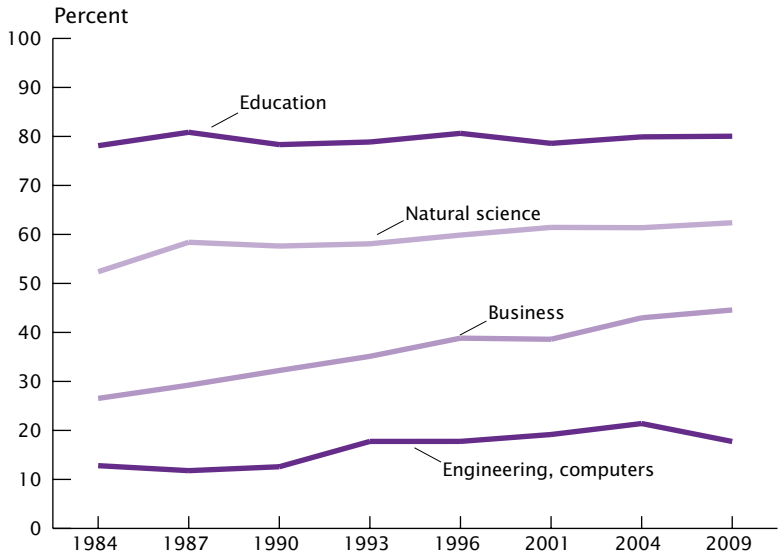



Note: Only selected fields displayed.
Source: U.S. Census Bureau, Survey of Income and Program Participation, 1984, 1987, 1990, 1993, 1996, 2001, 2004, and 2008 Panels.

Figure 4c.

## Percentage Female for Selected Fields: 1984–2009 Bachelor's Degree

(Population aged 18 and older with a bachelor's degree)

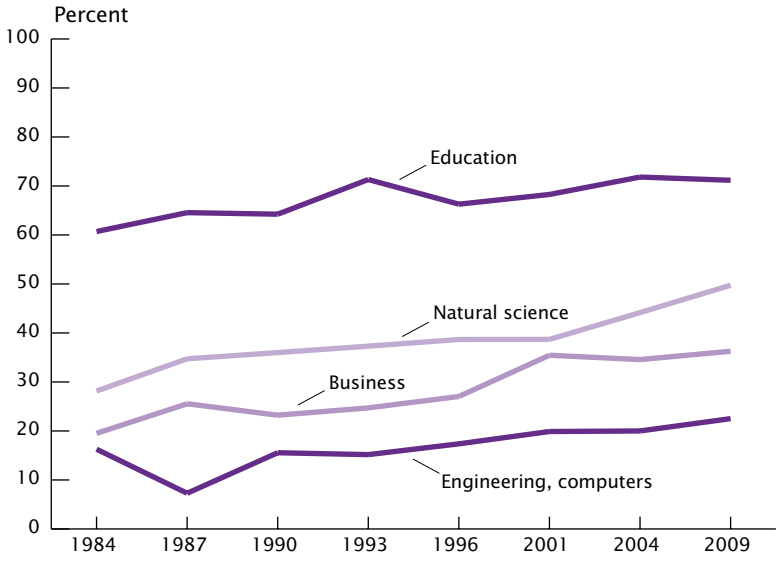



Note: Only selected fields displayed.
Source: U.S. Census Bureau, Survey of Income and Program Participation, 1984, 1987, 1990, 1993, 1996, 2001, 2004, and 2008 Panels.

Figure 4d.

## Percentage Female for Selected Fields: 1984–2009 Advanced Degree

(Population aged 18 and older with an advanced degree)




Note: Only selected fields displayed.
Source: U.S. Census Bureau, Survey of Income and Program Participation, 1984, 1987, 1990, 1993, 1996, 2001, 2004, and 2008 Panels.

The proportion of women in some fields grew from 1984 to 2009, with similar trends at the associate's, bachelor's, and advanced degree levels. For example, the proportion of women with a degree in business increased during this period for those with an associate's, bachelor's, and advanced degree.

At the vocational certificate level, women held around 80 percent of degrees in business at the beginning and end of this period, reflecting women's concentration in clerical occupations over time. Similarly, women held around 90 percent of vocational certificates in the natural sciences in 1984 and 87 percent of these certificates in 2009, reflecting women's continued concentration in the field of nursing.[11]

In 2009, men continued to earn more than women. Men's overall median monthly earnings were $3,750 and women's earnings were $2,917 (Table 8). Women earned less per month than men at every degree level. For example, at the advanced degree level, women's median monthly earnings were $5,000 while men's were $6,667. Furthermore, women earned less than men in most fields of training, including business and education. However, in the natural sciences, men's and women's median monthly earnings did not significantly differ at the associate's and bachelor's degree levels, while women earned significantly less than men at the advanced degree level. Therefore, women with degrees in a natural science field have reduced the earnings gap at the associate's and bachelor's degree levels but still lag behind men at the advanced degree level. Women still earn considerably less

[11] The change from 90 percent to 87 percent is not statistically different.

than men, and any overall improvement is likely due to their increased relative levels of educational attainment.[12]

## HIGH SCHOOL EQUIVALENCY

Further disparities in educational and occupational outcomes exist by mode of high school completion. There are several avenues for high school completion, including earning a traditional high school diploma or passing the GED test. Most states and many federal programs consider the GED to be formally equivalent to a high school diploma. In recent years, almost 800,000 people have taken at least part of the GED exam each year, with the majority passing and receiving certification.[13]

In 2009, 16.9 million adults with a high school certification completed it via a GED (Table 9). While 73 percent of those who received a high school diploma went on to complete at least some postsecondary education, less than half (43 percent) of GED recipients pursued postsecondary schooling. Only 5 percent earned a bachelor's degree or higher. In contrast, of high school diploma holders, 33 percent earned a bachelor's degree or higher.

GED holders earned less than high school diploma recipients at all education levels and across sex, race and ethnicity, and age. Overall, high school diploma holders earned approximately $4,700 in mean monthly earnings compared with GED holders who earned $3,100. This difference in earnings is only

[12] See Sarah Crissey, *Educational Attainment in the United States: 2007*, Current Population Reports, P20-560, Washington, DC, U.S. Census Bureau, 2009.

[13] See American Council on Education, *The 2009 GED Testing Program Statistical Report*, Washington, DC, American Council on Education, 2010.

Table 8.

### Median Monthly Earnings by Educational Attainment, Sex, and Field of Training Among the Population Aged 18 and Older With Earnings: 2009

(Earnings in dollars. Earners have been employed full-time for the 4 months before the survey)

| Level and field | Median earnings | |
|---|---|---|
| | Men | Women |
| **Total** | **3,750** | ***2,917** |
| Vocational certificate | 3,464 | *2,468 |
| Business | 3,168 | *2,678 |
| Computers | 3,507 | *2,631 |
| Engineering | 4,000 | (B) |
| Social science | (B) | (B) |
| Natural science | 3,000 | *2,417 |
| Education | (B) | (B) |
| Vocational studies | 3,464 | *2,097 |
| Other | 3,583 | *2,400 |
| Associate's degree | 4,000 | *3,048 |
| Business | 4,000 | *2,808 |
| Computers | 4,167 | (B) |
| Engineering | 4,273 | (B) |
| Liberal arts | 4,155 | *2,750 |
| Social science | 3,933 | (B) |
| Natural science | 3,528 | 3,500 |
| Education | (B) | 2,511 |
| Vocational studies | 3,500 | (B) |
| Other | 4,250 | *3,000 |
| Bachelor's degree | 5,117 | *3,750 |
| Business | 5,000 | *4,000 |
| Computers | 5,833 | 4,900 |
| Engineering | 6,250 | (B) |
| Liberal arts | 4,600 | *3,599 |
| Social science | 4,314 | 3,417 |
| Natural science | 4,583 | 4,200 |
| Education | 3,984 | *3,333 |
| Other | 5,000 | *4,000 |
| Advanced degree | 6,667 | *5,000 |
| Business | 7,250 | *5,833 |
| Computers | 8,333 | (B) |
| Engineering | 7,794 | (B) |
| Liberal arts | 5,000 | 4,500 |
| Social science | 7,416 | *5,400 |
| Natural science | 8,334 | *5,724 |
| Education | 5,167 | *4,642 |
| Other | 6,250 | *5,000 |

(B) Base <200,000.
* Denotes significant difference at the .10 level.
Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008.

Table 9.

## Pathways to High School Completion and Characteristics of GED and High School Diploma Holders Among the Population Aged 18 and Older: 2009

(Numbers in thousands. Earnings in dollars. Earners have been employed full-time for the 4 months before the survey)

| Characteristic | GED holders | | | High school diploma holders | | |
|---|---|---|---|---|---|---|
| | Number | Percent | Mean monthly earnings | Number | Percent | Mean monthly earnings |
| **Total** | **16,885** | **100** | **3,149** | **177,181** | **100** | **4,690** |
| **Education** | | | | | | |
| High school completion | 9,669 | 57.3 | 2,922 | 48,210 | 27.2 | 3,222 |
| Some college | 6,409 | 38.0 | 3,192 | 70,146 | 39.6 | 3,794 |
| Bachelor's degree or higher | 807 | 4.8 | 4,852 | 58,825 | 33.2 | 6,305 |
| **Sex** | | | | | | |
| Male | 8,775 | 52.0 | 3,481 | 84,133 | 47.5 | 5,439 |
| Female | 8,111 | 48.0 | 2,672 | 93,048 | 52.5 | 3,770 |
| **Race and Hispanic Origin** | | | | | | |
| White | 13,296 | 78.7 | 3,160 | 145,644 | 82.2 | 4,837 |
| White, non-Hispanic | 10,784 | 63.9 | 3,315 | 130,501 | 73.7 | 5,009 |
| Black | 2,336 | 13.8 | 2,729 | 19,419 | 11.0 | 3,579 |
| Hispanic (any race) | 2,850 | 16.9 | 2,659 | 16,603 | 9.4 | 3,487 |
| **Age** | | | | | | |
| 18 to 29 years | 3,882 | 23.0 | 2,496 | 38,069 | 21.5 | 3,088 |
| 30 to 49 years | 6,525 | 38.6 | 3,317 | 66,698 | 37.6 | 4,957 |
| 50 years and older | 6,479 | 38.4 | 3,316 | 72,414 | 40.9 | 5,210 |

Note: Table excludes those with some college or more but no recorded high school completion.
Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008.

partly due to the lower levels of educational attainment of those who earned a GED rather than a high school diploma. Among adults who attained a bachelor's degree or higher, the mean earnings of those who earned a high school diploma were approximately $6,300 while the earnings of those who earned a GED were approximately $4,900.

## TIME SPENT COMPLETING DEGREES

The process of earning a postsecondary degree is lengthy, and people on average took longer than the target number of years to complete a degree or certificate. On average, people completed vocational certificates (typically 1-year programs) in slightly less than 2 years and took over 4 years to complete associate's degrees, which are typically 2-year programs (Figure 5). People spent over 5 years earning bachelor's and advanced degrees.[14] People spent the longest amount of time completing doctorate degrees, in an average of 9.3 years.[15] People often take longer than the target amount of time to complete a degree when they take time off or enroll part-time in order to balance work, family, and other responsibilities.

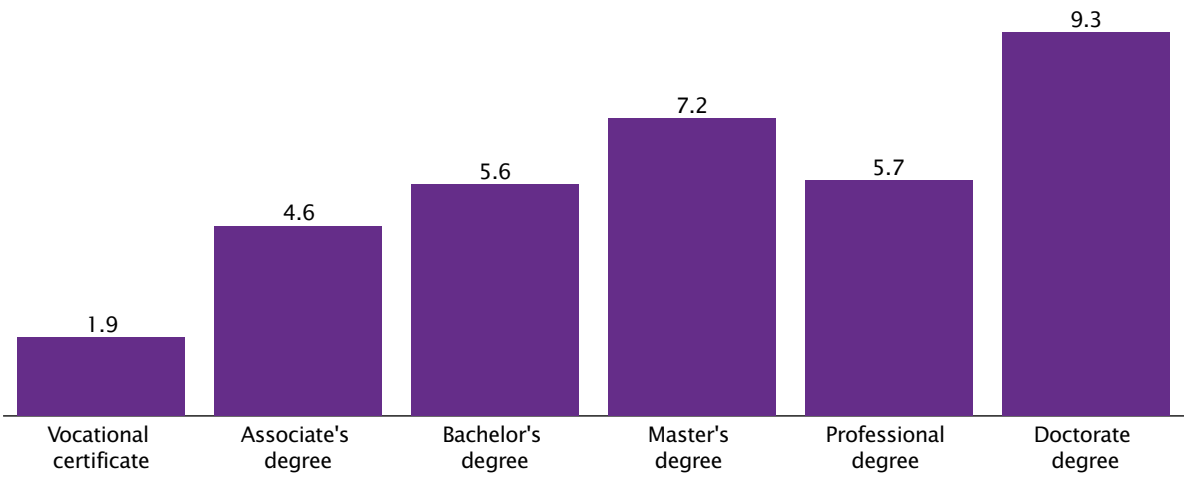
[14] For additional information on the number of adults who completed bachelor's degrees in 4 years or less, please see the detailed tables for "What It's Worth: Field of Training and Economic Status in 2009" available on the Census Bureau's Web site at <www.census.gov/hhes/socdemo/education/data/sipp/index.html>.

[15] The years taken to complete advanced degrees are measured as the number of years between bachelor's degree completion and advanced degree completion. Therefore, the mean of 7 years taken to complete master's degrees also reflects adults who worked for several years after completing their undergraduate degrees before returning to school to earn a master's degree.

## ACCURACY OF THE DATA

Statistics from surveys are subject to sampling and nonsampling error. All comparisons presented in this report have taken sampling error into account and are statistically significant at the 90 percent confidence level unless otherwise noted. This means the 90 percent confidence interval for the difference between the estimates being compared does not include zero. Nonsampling errors in surveys may be attributed to a variety of sources, such as how the survey is designed, how respondents interpret questions, how able and willing respondents are to provide correct answers, and how accurately the answers are coded and classified. The U.S. Census Bureau employs quality control procedures throughout the production process, including the overall design of

Figure 5.
**Mean Years to Complete Postsecondary Certification and Degrees: 2009**
(In years. Population aged 18 and older with a postsecondary degree)




Note: Years to completion measured as years from start of postsecondary education to degree for vocational, associate's, and bachelor's degrees, and as years from bachelor's degree to graduate degree completion for advanced degrees.
Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008 Panel.

surveys, the wording of questions, the review of the work of interviewers and coders, and the statistical review of reports to minimize these errors.

The SIPP weighting procedure uses ratio estimation, whereby sample estimates are adjusted to independent estimates of the national population by age, race, sex, and Hispanic origin. This weighting partially corrects for bias due to undercoverage, but biases may still be present when people who are missed by the survey differ from those interviewed in ways other than age, race, sex, and Hispanic origin. How this weighting procedure affects other variables in the survey is not precisely known. All of these considerations affect comparisons across different surveys or data sources.

For further information on statistical standards and the computation and use of standard errors, go to <www.census.gov/sipp/source.html> or contact Evan Wong of the Census Bureau's Demographic Statistical Methods Division via e-mail at <Evan.Wong@census.gov>.

## MORE INFORMATION

A detailed set of tables has been prepared showing income, earnings, occupation, and time to degree by highest degree, field of training, and various social and demographic characteristics. The table package is available on the Census Bureau's Web site at <www.census.gov/hhes/socdemo/education/data/sipp/index.html>.

See also these SIPP Web sites for additional information:

SIPP Home Page:
<www.census.gov/sipp/>

SIPP Quality Profile:
<www.census.gov/sipp/workpapr/wp230.pdf>

SIPP User's Guide:
<www.census.gov/sipp/usrguide.html>

## CONTACTS

Contact the U.S. Census Bureau Customer Services Center at 1-800-923-8282 (toll free) or visit <ask.census.gov> for further information.

For additional questions or comments, contact Stephanie Ewert at 301-763-2464 or via e-mail at <Stephanie.Ewert@census.gov>.

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