

Education, Earnings, and Tax Payments

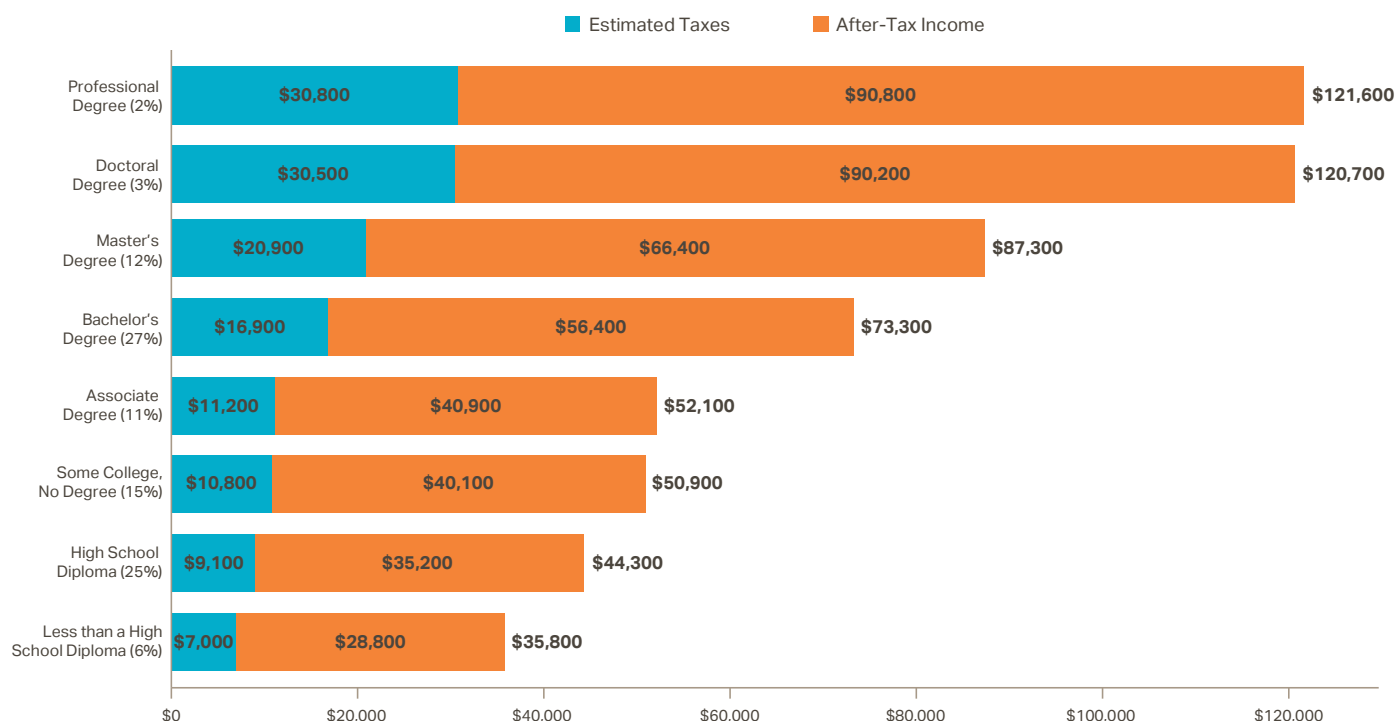
In 2021, median earnings of bachelor's degree recipients with no advanced degree working full time were \$29,000 (65%) higher than those of high school graduates. Bachelor's degree recipients paid an estimated \$7,800 (86%) more in taxes and took home \$21,200 (60%) more in after-tax income than high school graduates.

- On average, taxes take a larger share of the incomes of individuals with higher earnings, so the after-tax earnings premium is slightly smaller than the pretax earnings premium.
- Median earnings for individuals with associate degrees working full time were 18% higher than median earnings for those with only a high school diploma. After-tax earnings were 16% higher.
- The median total tax payments of full-time workers with a professional degree in 2021 were over 3.4 times as high as the median tax payments of high school graduates working full time. After-tax earnings were about 2.6 times as high.

ALSO IMPORTANT:

- In 2021, 75% of bachelor's degree recipients age 25 and older had earnings and 58% worked full time; 57% of high school graduates age 25 and older had earnings and 42% worked full time. (U.S. Census Bureau, 2022, Table PINC-03)
- Not all the differences in earnings reported here may be attributable to education level. Educational credentials are correlated with a variety of other factors that affect earnings, including, for example, parents' socioeconomic status and some personal characteristics.
- While the average high school graduate may not earn as much as the average college graduate simply by earning a bachelor's degree, rigorous research on the subject suggests that the figures cited here do not measurably overstate the financial return to higher education. (Card, 2001; Carneiro, Heckman, & Vytlačil, 2011; Harmon, Oosterbeek, & Walker, 2003; Hoekstra, 2009; Oreopoulos & Petronijevic, 2013; Rouse, 2005)

FIGURE 2.1 Median Earnings and Tax Payments of Full-Time Year-Round Workers Age 25 and Older, by Education Level, 2021



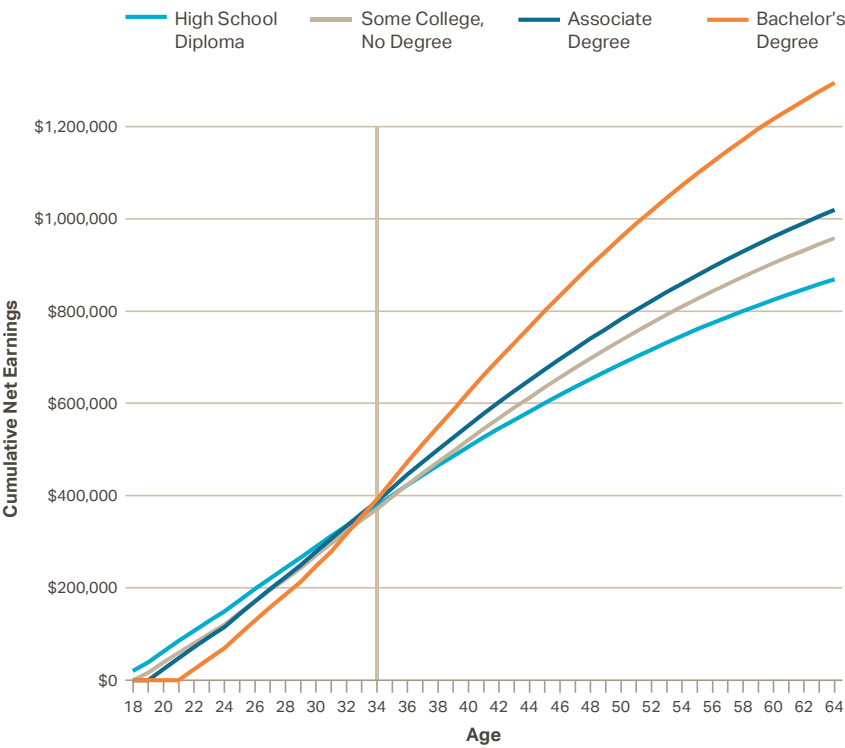
NOTE: The percentages in parentheses on the vertical axis indicate the shares of all full-time year-round workers age 25 and older with each education level in 2021. The bars show median earnings at each education level. The blue segments represent the estimated average federal income, Social Security, Medicare, state and local income, sales, and property taxes paid at these income levels. The orange segments show after-tax earnings. Percentages may not sum to 100 because of rounding.

SOURCE: U.S. Census Bureau, Income, Poverty, and Health Insurance in the United States, 2021, Table PINC-03; Internal Revenue Service, 2020; Wiehe et al., 2018; calculations by the authors.

Earnings Premium Relative to Price of Education

The typical four-year college graduate who enrolls at age 18 and graduates in four years can expect to earn enough relative to a high school graduate by age 34 to compensate for being out of the labor force for four years and for borrowing the full tuition and fees and books and supplies without any grant aid.

FIGURE 2.2A Estimated Cumulative Full-Time Median Earnings (in 2020 Dollars) Net of Loan Repayment for Tuition and Fees and Books and Supplies, by Education Level



Assumptions for Figure 2.2A

	Age Starting Full-Time Work	Price of Tuition and Fees and Books and Supplies
High School Diploma	18	None
Some College, No Degree	19	Weighted average of public two-year and public four-year price: 2020-21: \$9,870
Associate Degree	20	Average public two-year price: 2020-21: \$5,210; 2021-22: \$5,260
Bachelor's Degree	22	Weighted average of public and private nonprofit four-year price: 2020-21: \$20,030; 2021-22: \$20,400; 2022-23: \$20,940; 2023-24: \$21,570.

NOTE: This analysis excludes bachelor's degree recipients who earn advanced degrees. We assume that students borrow the cost of tuition and fees and books and supplies and pay it off over 10 years after graduation with a 4.99% annual interest rate during and after college. Tuition/loan payments and earnings are discounted at 3%, compounded every year beyond age 18. The 2023-24 price is projected using the 2022-23 price and a 3% annual increase.

SOURCE: U.S. Census Bureau, American Community Survey, 2016–2020 Five-Year Public Use Microdata Sample; College Board, *Trends in College Pricing and Student Aid 2022*; calculations by the authors.

- For the typical associate degree recipient who pays the published tuition and fees and books and supplies at a community college and earns an associate degree two years after high school graduation, total earnings exceed those of high school graduates by age 33.
- For the typical student who attends a public college for a year and leaves without a degree, total earnings exceed those of high school graduates by age 36.
- The longer college graduates remain in the workforce, the greater the payoff to their investment in higher education.

ALSO IMPORTANT:

- Figure 2.2A shows the cumulative earnings for full-time year-round workers. Individuals with higher levels of education are more likely to work full time year-round than those with lower levels of education.
- Figure 2.2A shows the cumulative earnings using median earnings and weighted average four-year tuition and fees and books and supplies. Results using some alternative assumptions are shown in Figure 2.2B.

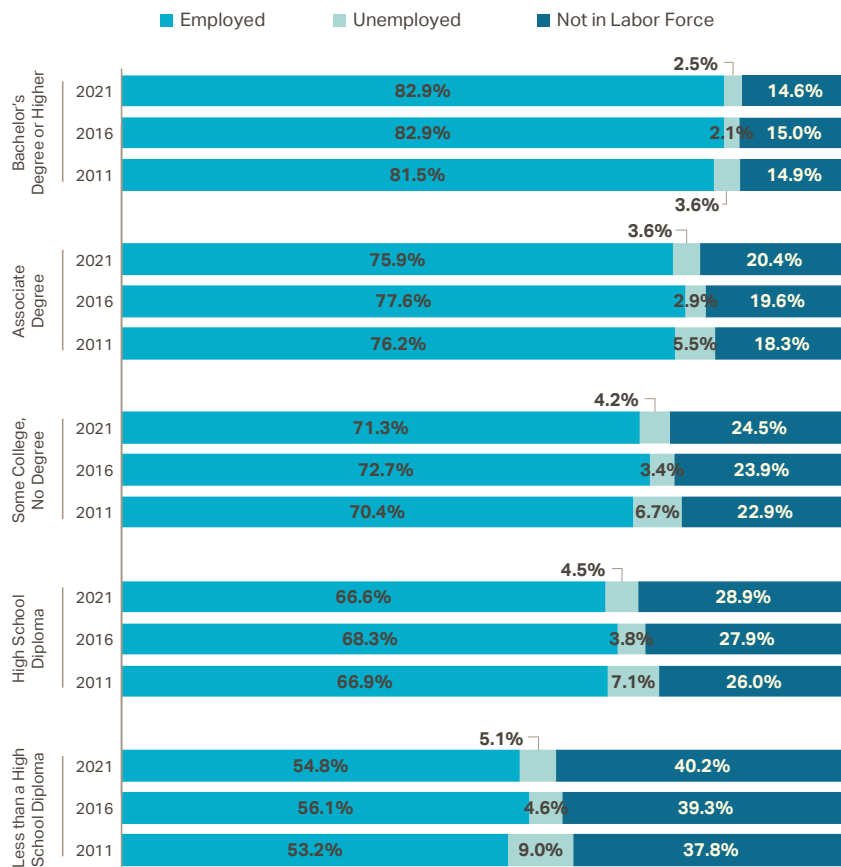
Median Earnings by Education Level and Age, 2016–2020

Age	High School Diploma	Some College, No Degree	Associate Degree	Bachelor's Degree
18	\$20,500	\$0	\$0	\$0
19	\$20,500	\$18,700	\$0	\$0
20	\$25,600	\$25,600	\$28,200	\$0
21	\$25,600	\$25,600	\$28,200	\$0
22 to 24	\$25,600	\$25,600	\$28,200	\$38,900
25 to 29	\$31,500	\$34,200	\$37,400	\$50,300
30 to 34	\$35,200	\$40,200	\$43,500	\$60,600
35 to 39	\$39,100	\$45,400	\$50,100	\$70,400
40 to 44	\$40,600	\$48,700	\$52,200	\$75,500
45 to 49	\$42,300	\$51,100	\$54,300	\$80,100
50 to 54	\$43,500	\$52,200	\$55,500	\$80,500
55 to 59	\$43,500	\$52,300	\$56,300	\$80,500
60 to 64	\$43,000	\$52,200	\$56,300	\$76,100

Employment

In 2021, among adults between the ages of 25 and 64, 67% of high school graduates, 71% of those with some college but no degree, 76% of those with an associate degree, and 83% of those with at least a bachelor's degree were employed.

FIGURE 2.12 Civilian Population Age 25 to 64: Percentage Employed, Unemployed, and Not in Labor Force, 2011, 2016, 2021



- Within all education levels, the percentage of individuals who were unemployed declined between 2011 and 2016 and increased between 2016 and 2021.
- In 2021, among adults between the ages of 25 and 64, 15% of those with a bachelor's degree were not in the labor force, compared with 29% of high school graduates and 40% of those without a high school diploma.
- Between 2011 and 2021, the percentage of individuals not in the labor force was stable for those with a bachelor's degree (about 15%) and increased for those without a bachelor's degree. The increase ranged from 1.6 percentage points (from 22.9% to 24.5%) for those with some college education to 2.9 percentage points (from 26.0% to 28.9%) for those with a high school diploma.

ALSO IMPORTANT:

- The percentage of individuals who are unemployed (Figure 2.12) differs from the unemployment rate (Figure 2.13A), which is the ratio of unemployed individuals to the sum of employed and unemployed individuals, excluding those who are not working or actively seeking employment.
- The length of unemployment has fluctuated over time. In 2021, 2.8% of the civilian labor force was unemployed for 15 weeks or longer. This percentage reached a peak of 5.7% in 2010, at the height of the Great Recession of 2008. (Bureau of Labor Statistics, Table A-15, Alternative Measures of Labor Underutilization)
- Research has shown that the widening earnings gap between highly and less skilled workers is closely linked to the declining labor supply of men without a college degree. (Wu, 2022)

Civilian Population Age 25 to 64, Number in Millions, 2011, 2016, and 2021

	Less than a High School Diploma	High School Diploma	Some College, No Degree	Associate Degree	Bachelor's Degree or Higher
2011	17.5	47.6	28.0	16.7	52.0
2016	16.4	46.3	27.8	17.9	58.6
2021	13.9	45.5	24.8	17.9	65.9

NOTE: To be considered a member of the labor force, individuals must either be employed or be actively seeking employment. Percentages may not sum to 100 because of rounding.

SOURCE: U.S. Census Bureau, Basic Monthly Current Population Survey, January through December, 2011, 2016, and 2021; calculations by the authors.

Unemployment

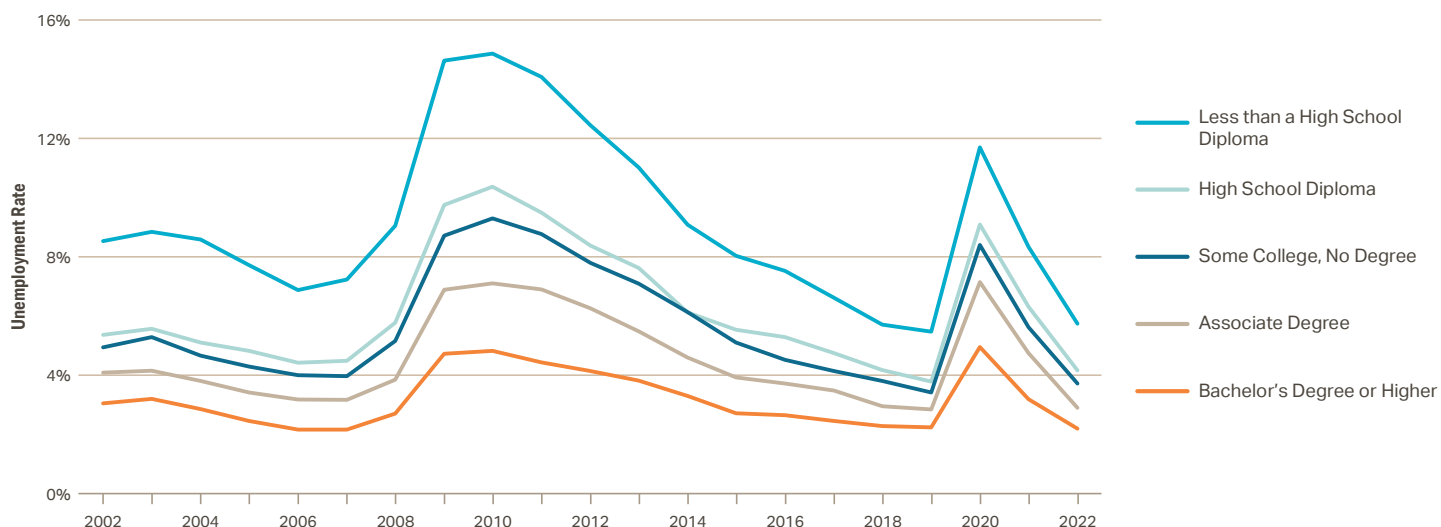
The unemployment rate for individuals age 25 and older with at least a bachelor's degree has consistently been about half of the unemployment rate for high school graduates.

- Between 2002 and 2022, unemployment rates peaked in 2010 for those without a college degree. The unemployment rates for those with an associate degree or higher were highest in 2020.
- Between 2010 and 2019, unemployment rates declined every year across all education groups. In 2019, the unemployment rates were 2.1% for those with at least a bachelor's degree, 2.7% for associate degree holders, and 3.7% for those with a high school diploma.
- Unemployment rates spiked in 2020 at the beginning of the covid-19 pandemic. Unemployment rates had declined to pre-pandemic levels by 2022.
- Over the 20-year period from 2002 to 2022, the largest gaps between the unemployment rates of bachelor's degree recipients and high school graduates occurred between 2009 and 2011 (about 5 to 6 percentage point gaps). The smallest gaps occurred in 2018, 2019, and 2022 (2 percentage points or less).

ALSO IMPORTANT:

- Among individuals with the same level of educational attainment, the unemployment rates differ by age and by race/ethnicity. (Figures 2.13B and 2.13C)

FIGURE 2.13A Unemployment Rates of Individuals Age 25 and Older, by Education Level, 2002 to 2022



Unemployment Rates of Individuals Age 25 and Older, by Education Level, 2002 to 2022, Selected Years

	Less than a HS Diploma	High School Diploma	Some College, No Degree	Associate Degree	Bachelor's Degree or Higher	BA/HS Unemployment Rate Ratio
2002	8.4%	5.3%	4.8%	4.0%	2.9%	0.55
2006	6.8%	4.3%	3.9%	3.0%	2.0%	0.47
2010	14.9%	10.3%	9.2%	7.0%	4.7%	0.46
2019	5.4%	3.7%	3.3%	2.7%	2.1%	0.57
2020	11.7%	9.0%	8.3%	7.1%	4.8%	0.54
2022	5.6%	4.0%	3.6%	2.8%	2.1%	0.51

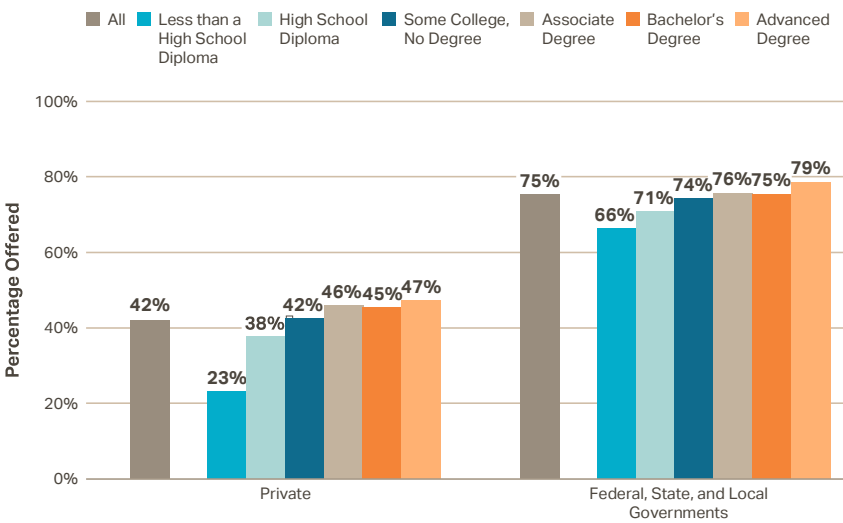
NOTE: The unemployment rates for 2022 are based on data from January through September.

SOURCE: Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey, 2002 through 2022; calculations by the authors.

Retirement Plans

Individuals with higher education levels are more likely than others to be offered and to participate in retirement plans provided by their employers.

FIGURE 2.14 Percentage of Full-Time Year-Round Workers Age 25 and Older Offered Employer Retirement Plan, by Sector and Education Level, 2021



Participation Rates in Employment-Provided Retirement Plans Among Eligible Full-Time Year-Round Workers Age 25 and Older, by Sector and Education Level, 2021

Sector	All	Less than a High School Diploma	High School Diploma	Some College, No Degree	Associate Degree	Bachelor's Degree	Advanced Degree
Private	86%	79%	81%	83%	84%	89%	90%
Government	94%	89%	90%	92%	93%	95%	96%

Percentage of Full-Time Year-Round Private Sector Workers Age 25 and Older Offered Employer Retirement Plan, by Employer Size and Education Level, 2021

Number of Employees	All	Less than a High School Diploma	High School Diploma	Some College, No Degree	Associate Degree	Bachelor's Degree	Advanced Degree
Less than 100	26%	12%	22%	27%	30%	30%	35%
100 - 999	45%	34%	42%	45%	50%	45%	48%
1000 or More	53%	41%	52%	54%	56%	54%	52%

SOURCE: U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplement, 2022; calculations by the authors.

- In 2021, 38% of high school graduates age 25 and older working full time year-round in the private sector were offered a retirement plan, compared with 45% of those whose highest degree was a bachelor's degree. In the public sector, these percentages were 71% and 75%, respectively.
- Among those to whom these plans were available, participation rates were higher for individuals with higher education levels. In the private sector, participation rates ranged from 79% among full-time year-round workers with less than a high school diploma to 90% among those with advanced degrees. Participation rates ranged from 89% to 96% in the public sector.
- Within the private sector, larger employers were more likely to offer retirement plans than smaller employers.

ALSO IMPORTANT:

- In 2021, the percentage of part-time workers (those who worked at least 20 hours a week for at least 26 weeks but less than full time year-round) who were offered retirement plans ranged from 16% for those without a high school diploma and 26% for high school graduates to 35% for bachelor's degree recipients and 47% for those with an advanced degree. (U.S. Census Bureau, 2022 Annual Social and Economic Supplement; calculations by the authors)
- The payout of defined contribution plans depends on the amount accumulated in a personal account. Over time, these plans have become more common than defined benefits plans, which provide a predetermined income level each year after retirement.
- Low earnings levels, which are more common among individuals with lower education levels, may explain some of the difference in participation rates in employer-provided retirement plans that require workers to contribute a portion of their wages.

Health Insurance

Among both full-time and part-time workers, those with higher levels of educational attainment are more likely than others to be covered by employer-provided health insurance.

FIGURE 2.15A Employer-Provided Health Insurance Coverage Among Full-Time Year-Round Workers Age 25 and Older, by Education Level, 2001, 2011, and 2021

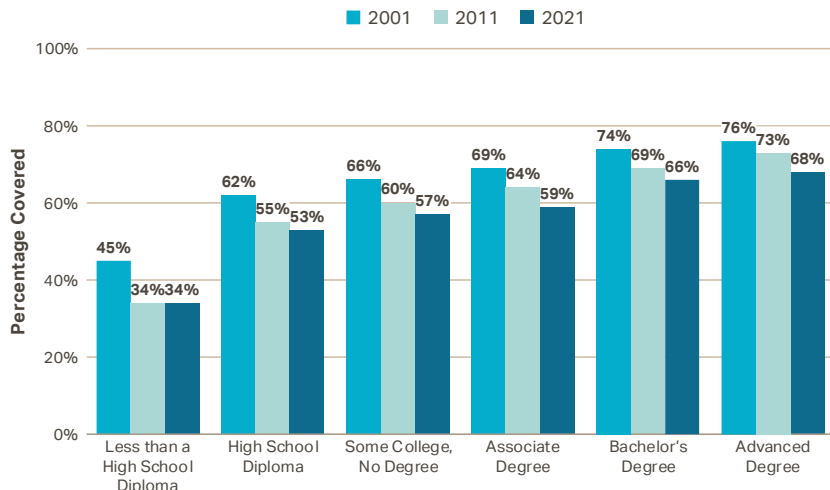
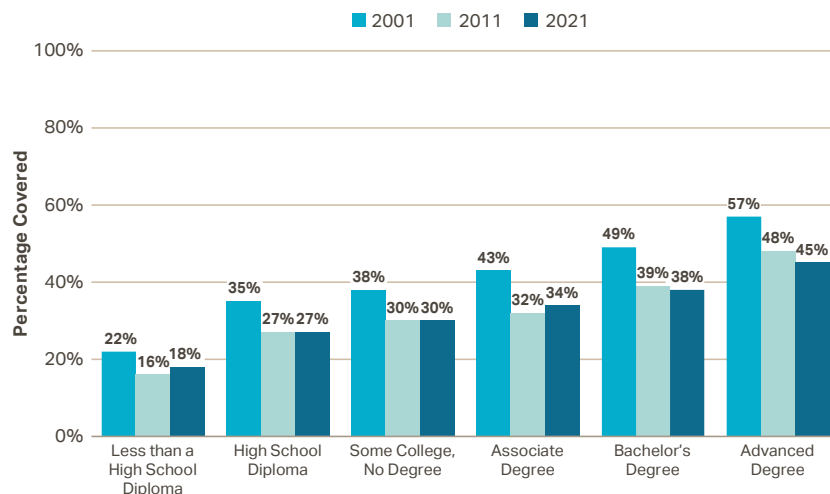


FIGURE 2.15B Employer-Provided Health Insurance Coverage Among Part-Time Year-Round Workers Age 25 and Older, by Education Level, 2001, 2011, and 2021



NOTE: Part-time workers are those who worked at least 20 hours a week for at least 26 weeks during the year, but did not work full time year-round.

SOURCE: U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplement, 2002, 2012, and 2022; calculations by the authors.

- In 2021, 53% of high school graduates age 25 and older working full time year-round were covered by employer-provided health insurance, compared with 66% of those with a bachelor's degree and 68% of those with advanced degrees.
- Employer-provided health insurance coverage has declined over the past 20 years for both full-time and part-time workers. Between 2001 and 2021, health insurance coverage declined by 8 percentage points for individuals with at least a bachelor's degree working full time year-round. The decline was 9 to 11 percentage points for individuals with an associate degree or lower.
- In 2001, 57% of advanced degree holders, 49% of bachelor's degree holders, and 35% of high school graduates working part time were covered by employer-provided health insurance. By 2021, those percentages had declined to 45%, 38%, and 27%, respectively.
- Between 2011 and 2021, employer-provided health insurance coverage increased slightly or remained unchanged among individuals with an associate degree or lower working part time.

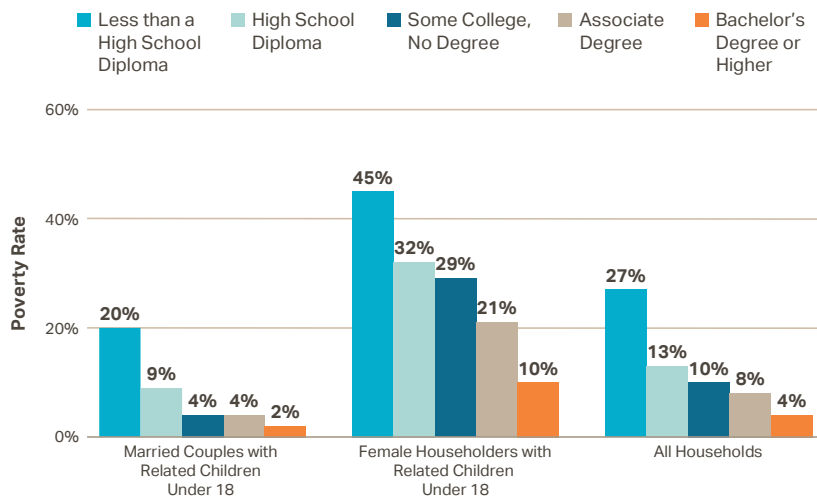
ALSO IMPORTANT:

- In 2021, when 11% of adults age 26 to 64 were not covered by health insurance at any time during the year, 5% of those with a bachelor's degree and 3% of those with advanced degrees were not covered. This was the case for 8% of those with associate degrees, 11% of those with some college but no degree, and 16% of high school graduates. (U.S. Census Bureau, Health Insurance Coverage Status and Type by Age and Selected Characteristics: 2020 and 2021, Table C-2)

Poverty

The poverty rate falls as the level of education increases. Among all household types, the 2021 poverty rate for individuals with an associate degree was 8%, compared with 13% for high school graduates with no college experience and 27% for those without a high school diploma.

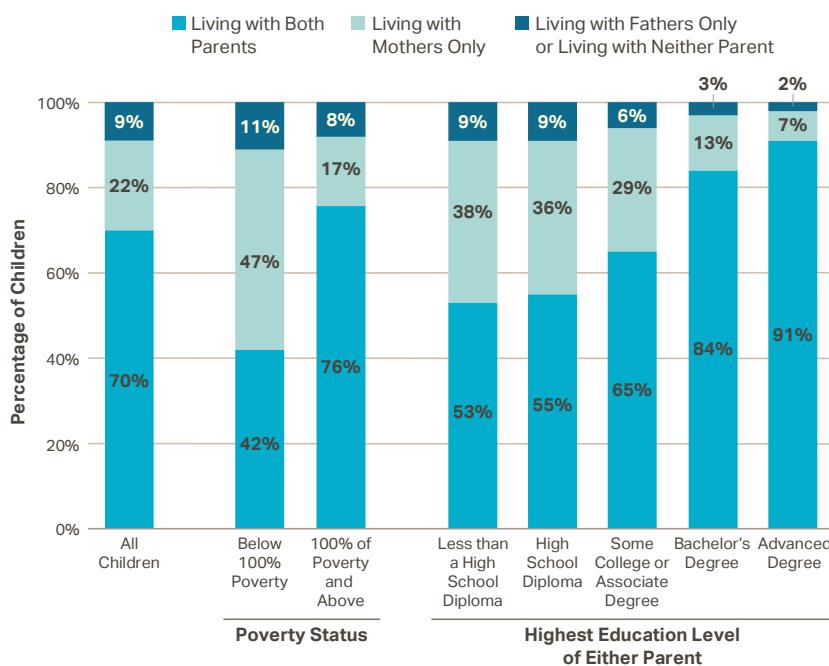
FIGURE 2.16A Percentage of Individuals Age 25 and Older Living in Households in Poverty, by Household Type and Education Level, 2021



SOURCE: U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplement, 2022; calculations by the authors.

- Within each education level, individuals living in households headed by unmarried females with children under 18 had much higher poverty rates than those living in other household types. For example, the 2021 poverty rate for individuals with some college but no degree was 29% for those living in households headed by unmarried females with children, compared with 10% overall for this education group.
- In 2021, 70% of all children under age 18 lived with both parents. Among children under 18 who were below 100% poverty thresholds, 42% lived with both parents, compared with 76% of children above 100% poverty thresholds.
- The percentage of children under age 18 who lived with both parents ranged from 53% of those whose parents did not graduate from high school and 55% of those whose parents had a high school diploma to 91% of those whose parents had an advanced degree.

FIGURE 2.16B Living Arrangements of Children Under 18 Years of Age, by Poverty Status and Highest Education of Either Parent, 2021



NOTE: In 2021, 4% of children under 18 did not live with either parent. Percentages may not sum to 100 because of rounding.

SOURCE: U.S. Census Bureau, America's Families and Living Arrangements, 2021, Table C-3.

ALSO IMPORTANT:

- In 2021, 5% of all adults and 14% of adults below the poverty threshold lived in households headed by unmarried females with children. (U.S. Census Bureau, Current Population Survey, 2021 Annual Social and Economic Supplement; calculations by the authors)
- The official poverty threshold varies with family size, number of children under 18, and senior citizen status. In 2021, the poverty threshold was \$14,097 for a single person under age 65, \$21,831 for a family of 3 with 2 children, and \$27,479 for a family of 4 with 2 children. (U.S. Census Bureau, Poverty Thresholds, 2021)
- The poverty threshold is the official measure of poverty and is slightly different from the poverty guidelines used to determine eligibility for public programs. In 2021, the poverty guideline for families of 4 issued by the Department of Health and Human Services was \$26,500. (U.S. Department of Health and Human Services, Federal Register Notices, Vol. 86, No. 19, February 21, 2021.)

Public Assistance Programs

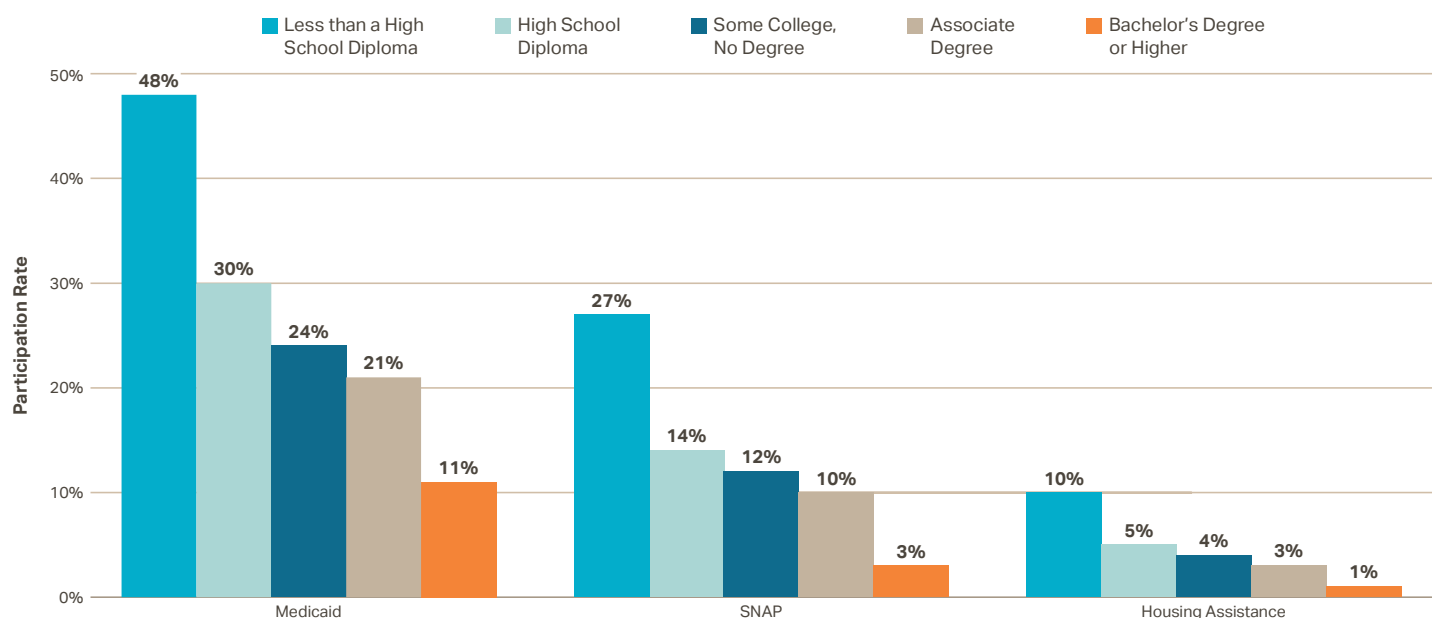
Individuals with higher education levels are less likely to live in households that receive public assistance.

- Medicaid provides health insurance to many low-income families and other eligible individuals. The Supplemental Nutrition Assistance Program (SNAP) subsidizes food purchases for eligible low-income households. Housing assistance includes public housing or rent subsidies for eligible low-income households.
- In 2021, 14% of individuals age 25 and older with only a high school diploma and 27% of those without a high school diploma lived in households that benefited from SNAP. Participation rates were 12% for those with some college but no degree, 10% for those with an associate degree, and 3% for those with at least a bachelor's degree.
- In 2021, 30% of adult high school graduates and 48% of those without a high school diploma lived in households that received Medicaid coverage. Participation rates were 24% for those with some college but no degree, 21% for those with an associate degree, and 11% for those with at least a bachelor's degree.
- In 2021, 5% of adult high school graduates and 10% of those without a high school diploma lived in households that received housing assistance. Participation rates were 4% for those with some college but no degree, 3% for those with an associate degree, and 1% for those with at least a bachelor's degree.

ALSO IMPORTANT:

- In fiscal year 2021, 41.6 million individuals in 21.6 million households received an average of \$218 (\$418 per household) per month in SNAP benefits. (U.S. Department of Agriculture Food and Nutrition Service)
- The covid relief package enacted in December 2020 included a 15% increase in SNAP's maximum benefit for January through June 2021, which was later extended through September 2021. This resulted in an increase of about \$28 more in SNAP benefits per person per month, or just over \$100 per month in food assistance for a family of four. (Center on Budget and Policy Priorities, 2022)
- Research suggests that access to safety net programs as children improved individuals' health and economic outcomes as adults. (Hoynes, Schanzenbach, & Almond, 2016)

FIGURE 2.17 Percentage of Individuals Age 25 and Older Living in Households That Participated in Various Public Assistance Programs, by Education Level, 2021

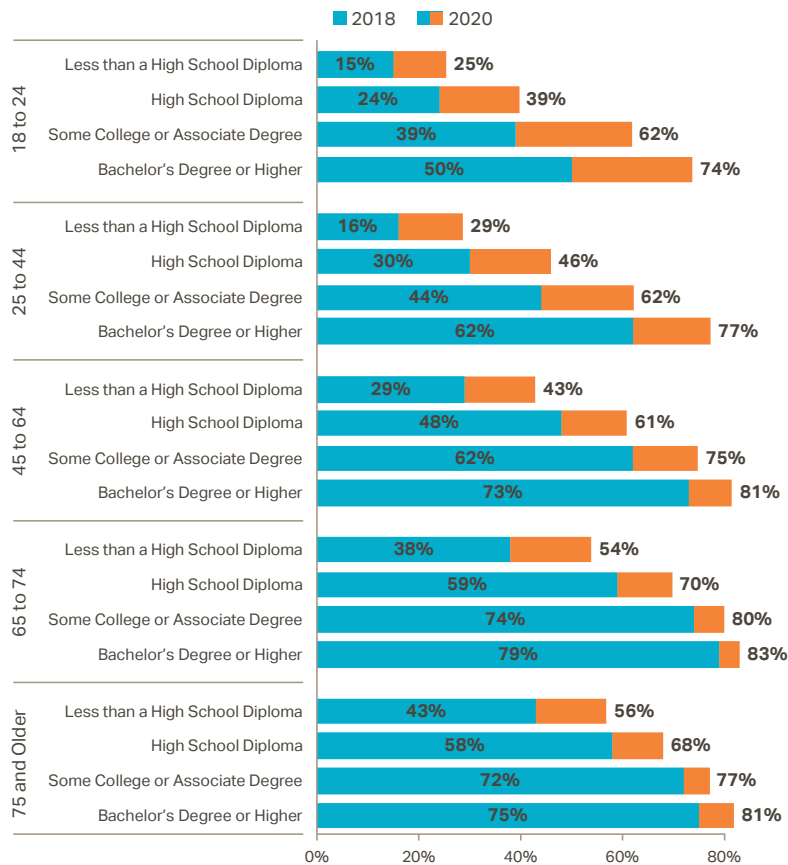


SOURCE: U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplement, 2022; calculations by the authors.

Voting

Voting rates are higher for individuals with higher levels of education. In the 2020 presidential election, 77% of 25- to 44-year-old U.S. citizens with at least a bachelor's degree voted, compared with 46% of high school graduates in the same age group.

FIGURE 2.18A Voting Rates Among U.S. Citizens, by Age and Education Level, 2018 and 2020



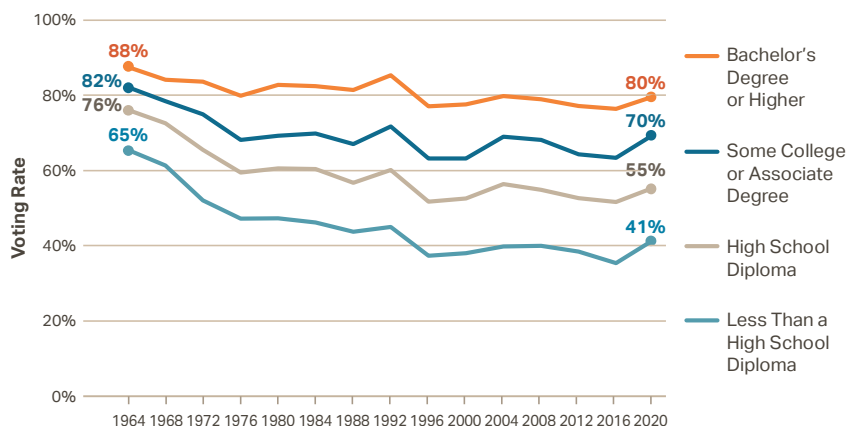
SOURCE: U.S. Census Bureau, Voting and Registration Tables, 2018 and 2020, Table 5; calculations by the authors.

- Within each age group and education level, voting rates were higher in the 2020 presidential election than in the 2018 midterm election.
- At all levels of education, voting rates increase with age.
- Between 2016 and 2020, voting rates during presidential elections increased across all education groups. In the 2020 election, voting rates ranged from 41% among those without a high school diploma to 80% among those with at least a bachelor's degree.

ALSO IMPORTANT:

- Only U.S. citizens are eligible to vote in presidential elections. Voting rates in Figures 2.18A and 2.18B represent percentages of U.S. citizens who voted. In 2020, 8.7% of the U.S. population ages 18 and older were noncitizens. (U.S. Census Bureau, Voting and Registration in the Election of November 2020, Table 5; calculations by the authors).

FIGURE 2.18B Voting Rates Among U.S. Citizens During Presidential Elections, by Education Level, 1964 to 2020



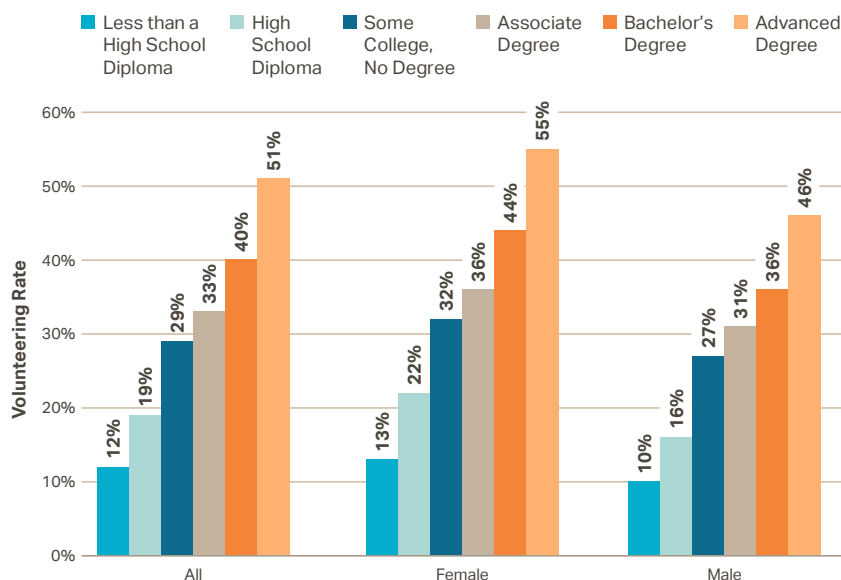
NOTE: Citizenship status for 1976 and earlier is not available and voting rates represent percentages of all U.S. age-eligible population who voted.

SOURCE: U.S. Census Bureau, Voting and Registration Tables, 1964 to 2020; calculations by the authors.

Civic Involvement

The share of adults who perform unpaid volunteer activities increases with education. Among those age 25 and older, the volunteering rate in 2019 ranged from 12% for those without a high school diploma to 51% for those with advanced degrees.

FIGURE 2.19A Percentage of Individuals Age 25 and Older Who Volunteered, by Gender and Education Level, 2019

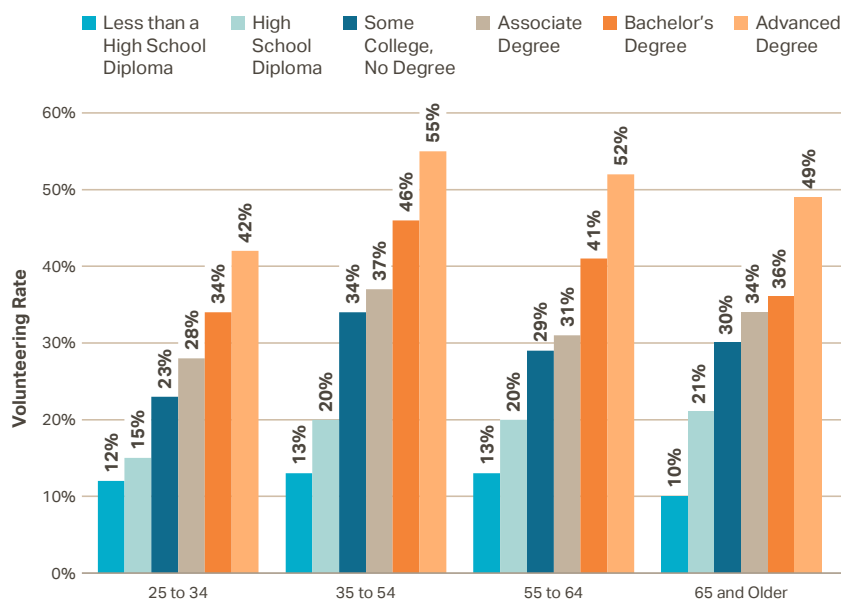


- At each education level, higher percentages of women than of men volunteered. In 2019, among adults whose highest education was a bachelor's degree, 44% of women volunteered while 36% of men did. The gender gap in volunteering rates was 6 percentage points among individuals with a high school diploma (22% for women versus 16% for men).
- Among individuals with at least some college education, volunteering rates were highest for those between the ages of 35 and 54.

ALSO IMPORTANT:

- In 2019, an estimated 30% of individuals of any age reported volunteering for an organization or association in the previous year. This volunteering rate is comparable to 2017 and has remained largely stable over the past two decades. (AmeriCorps, 2021)
- Volunteers were more likely to donate to charity and to invest in community-building than those who did not volunteer. (Fidelity Charitable, 2021)
- As is the case with most of the indicators included in this report, the correlation seen here should not necessarily be interpreted as causation. Personal characteristics may make people more likely both to pursue higher education and to volunteer. However, statistical analysis suggests that the actual increments in volunteer activity attributable to increased education are similar to those described here. Enrolling in college significantly increases the likelihood of volunteering, controlling for other demographic characteristics. (Dee, 2004; Oreopoulos & Salvanes, 2011)

FIGURE 2.19B Percentage of Individuals Age 25 and Older Who Volunteered, by Age and Education Level, 2019



NOTE: Volunteers are defined as individuals who performed unpaid volunteer activities for organizations at any point from September 2018 through September 2019.

SOURCE: U.S. Census Bureau, September 2019 Supplement to the Current Population Survey; calculations by the authors.