The College Payoff

More Education Doesn't Always Mean More Earnings

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Explore the Data

Visit cew.georgetown.edu/collegepayoff2021 for more information on lifetime earnings broken down by education, major, occupation, industry, gender, race and ethnicity, and location.

Acknowledgments

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Introduction

Workers with more education generally earn more, and they may also benefit from greater economic stability throughout their careers. Associate's degree holders earn more at the median than those with no more than a high school diploma. Similarly, bachelor's degree holders typically earn more than those with associate's degrees, and master's degree holders earn more than those with bachelor's degrees. During the most recent recessions, job losses were concentrated among workers with lower levels of education. Nearly all the jobs created in the Great Recovery after the 2008 recession were for workers with at least some postsecondary education.[1] More recently, workers with more education were more likely to keep their jobs and work remotely during the COVID-19 pandemic than were workers with less education.[2]

Higher levels of education do not always correspond with higher earnings, however. Thirty-one percent of workers with no more than a high school diploma earn more than half of workers with an associate's degree. Likewise, 28 percent of workers with an associate's degree earn more than half of workers with a bachelor's degree, and 36 percent of workers with a bachelor's degree earn more than half of workers with a master's degree.

Earnings also vary by field of study and occupation. Workers with a bachelor's degree in architecture and engineering have median lifetime earnings of $3.8 million, well above the median lifetime earnings of $3.2 million for all master's degree holders. Associate's degree holders working in computer and mathematical occupations have median lifetime earnings of $2.8 million, the same as median lifetime earnings for all bachelor's degree holders.

In addition, earnings gaps persist by gender and race and ethnicity. Men earn more than women at the median at each level of education. Generally, women need one more degree than men to have the same earnings.[3] Among racial and ethnic groups, White workers have the highest median earnings among workers with no more than a high school diploma and workers with a bachelor's degree, while Asian workers have the highest median earnings at the master's degree level.

Furthermore, even when earnings are adjusted for the cost of living, workers earn more in some states than others. High school diploma holders earn the most in Wyoming, Alaska, and North Dakota, while bachelor's degree holders earn the most in the District of Columbia and Connecticut.

While it is generally true that higher educational attainment correlates with higher earnings, there are many exceptions. As we will show in more detail, there are variations based on age, field of study, occupation, gender, race and ethnicity, and geography. As a result, some workers earn less despite having more education, while others earn more despite having less education.

1. Carnevale et al., *America's Divided Recovery*, 2016.
2. Carnevale and Fasules, "Who's Working From Home," 2020.
3. Carnevale et al., *Women Can't Win*, 2018.

Explore the Data

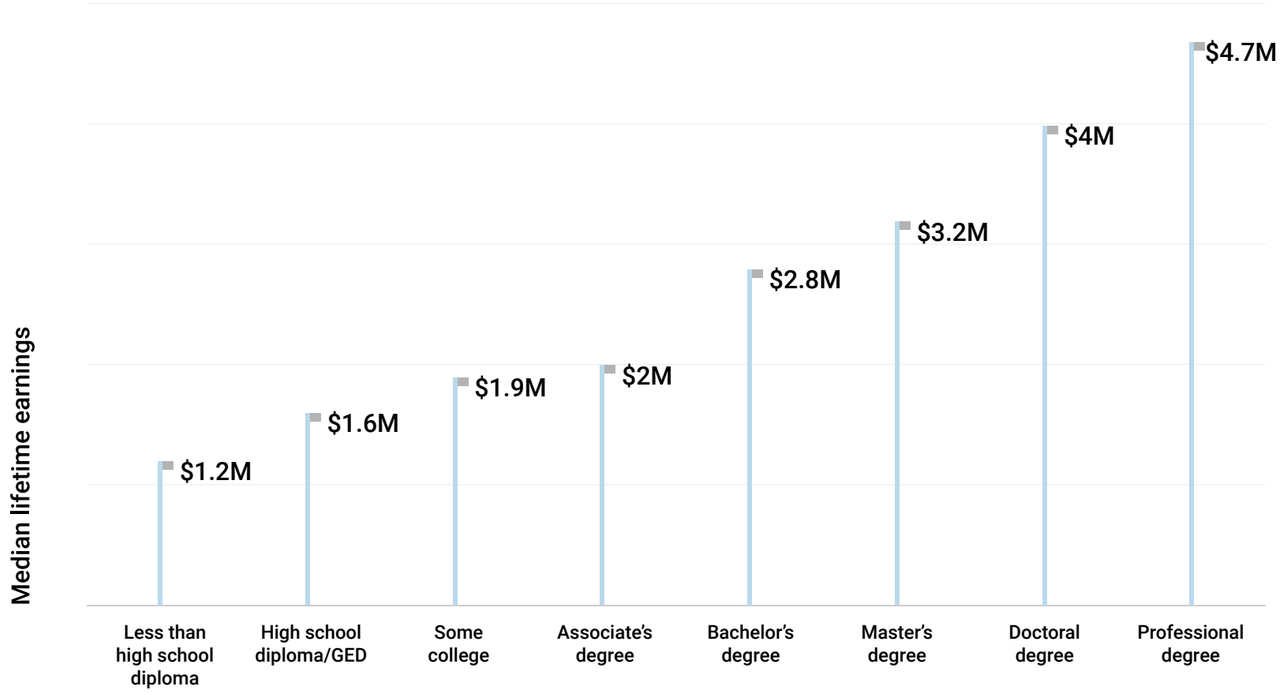
Data on lifetime earnings broken down by education level and major, occupation, industry, gender, race and ethnicity, and location are available in interactive online tools at cew.georgetown.edu/collegepayoff2021.

In some instances in this report, we provide a few data points as examples to illustrate our points. However, the interactive online tools have data for education levels and categories not included in these examples.

Earnings Generally Increase with More Education

Having more education typically pays off. Completing high school puts workers on track to earn a median of $1.6 million during their lifetimes, roughly 33 percent more than the $1.2 million that they would earn if they had not graduated (Figure 1). The payoff increases with each additional level of education. At the median, those with some college education but no degree earn $1.9 million during a career, averaging $47,500 per year. This is an earnings boost of about 19 percent over high school diploma holders. An associate's degree increases lifetime earnings over a high school diploma by 25 percent. Associate's degree holders earn a median of $2 million during their lifetimes, averaging $50,000 per year. Today, workers with bachelor's degrees earn 75 percent more than those with no more than a high school diploma. A bachelor's degree holder earns, at the median, $2.8 million during a lifetime, which translates into average annual earnings of about $70,000.

Figure 1. Median earnings rise with each additional level of education.



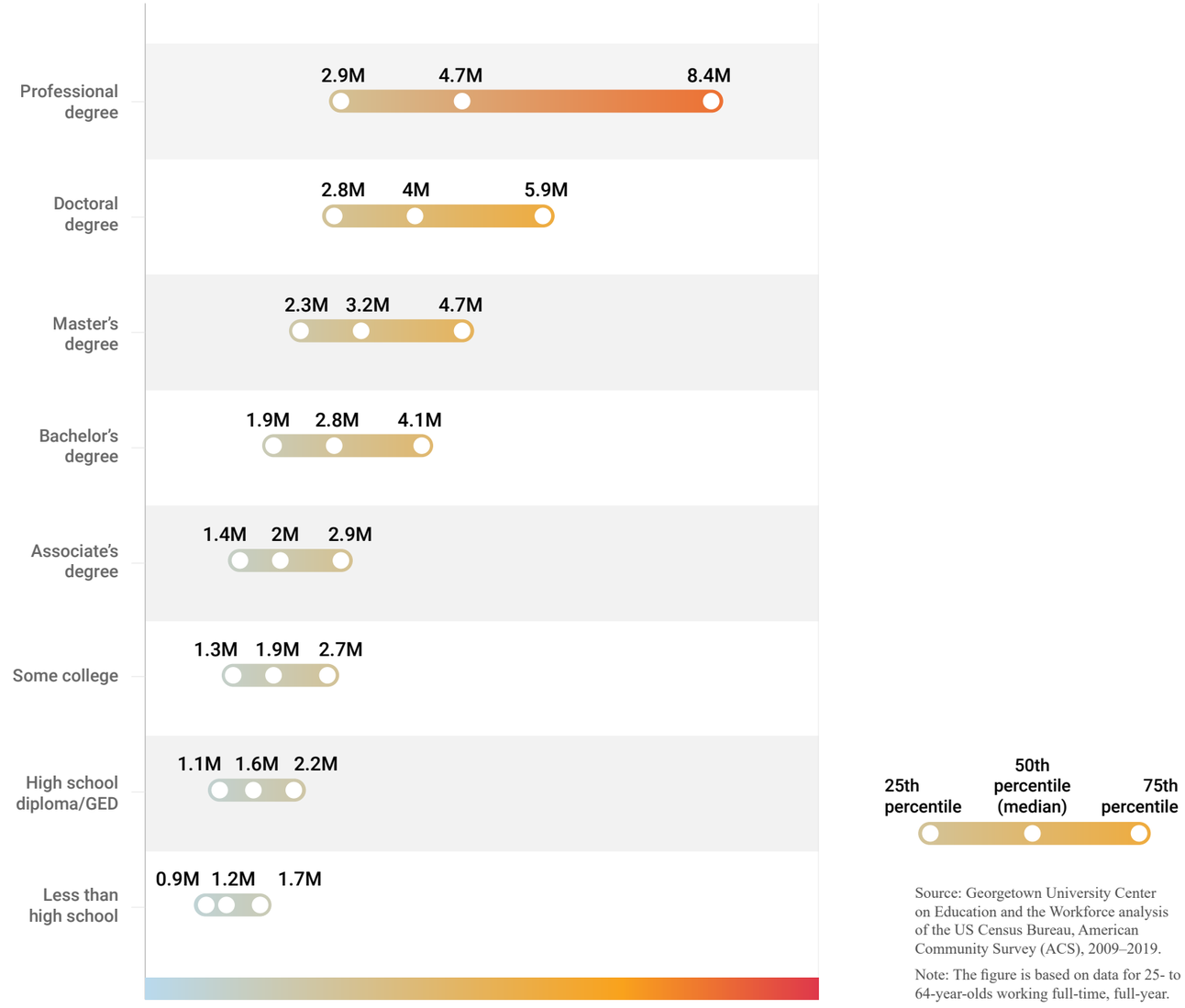
Source: Georgetown University Center on Education and the Workforce analysis of the US Census Bureau, American Community Survey (ACS), 2009–2019.

Note: The figure is based on data for 25- to 64-year-olds working full-time, full-year.

Median lifetime earnings continue to rise with attainment of master's, doctoral, and professional degrees. Master's degree holders have median lifetime earnings of $3.2 million, or $80,000 in average annual earnings, and they earn 14 percent more than the median for bachelor's degree holders. Doctoral degree holders earn a median of $4 million over their lifetimes, which translates into average annual earnings of $100,000, an earnings boost of 43 percent over bachelor's degree holders. Professional degree holders earn a median of $4.7 million over their lifetimes, with average annual earnings of $117,500, and their earnings are 68 percent higher than those of workers with bachelor's degrees.

Even though workers with more education tend to earn more, there is substantial variation in earnings at each level of education. A higher level of education does not guarantee higher earnings, while less education does not always result in lower earnings. For example, workers with no more than a high school diploma make $2.2 million in lifetime earnings at the 75th percentile—more than the median for workers with an associate's degree (Figure 2). In other words, at least one quarter of high school diploma holders without additional education earn more than half of the workers with associate's degrees. Likewise, at the 75th percentile, workers with an associate's degree earn $2.9 million over their lifetimes, more than the median for a worker with a bachelor's degree. This means that at least one quarter of workers with an associate's degree earn more than half the workers with a bachelor's degree. At the 75th percentile, those with a bachelor's degree earn $4.1 million over their lifetimes, more than the median for workers with a master's or doctoral degree. In other words, at least one quarter of workers with a bachelor's degree earn more than half of the workers with master's or doctoral degrees over their lifetimes. Much of the variation in earnings within education levels results from differences in field of study and occupation.

Figure 2. Substantial variations in earnings within education levels mean that some workers with less education can earn more than others with more education.



Source: Georgetown University Center on Education and the Workforce analysis of the US Census Bureau, American Community Survey (ACS), 2009–2019.

Note: The figure is based on data for 25- to 64-year-olds working full-time, full-year.

With more education, median lifetime earnings increase, as does the spread in earnings. Toward the high end (75th percentile) of earnings, workers with professional and doctoral degrees make $8.4 million and $5.9 million, respectively, over their lifetimes. Master's and bachelor's degree holders have lifetime earnings of $4.7 million and $4.1 million, respectively, at the 75th percentile. For workers with less than a bachelor's degree, earnings at the 75th percentile are consistently below $3 million. Data on individual lifetime earnings are not available. Nevertheless, the variation in median annual earnings shows that some workers with less education have higher earnings than workers with more education.

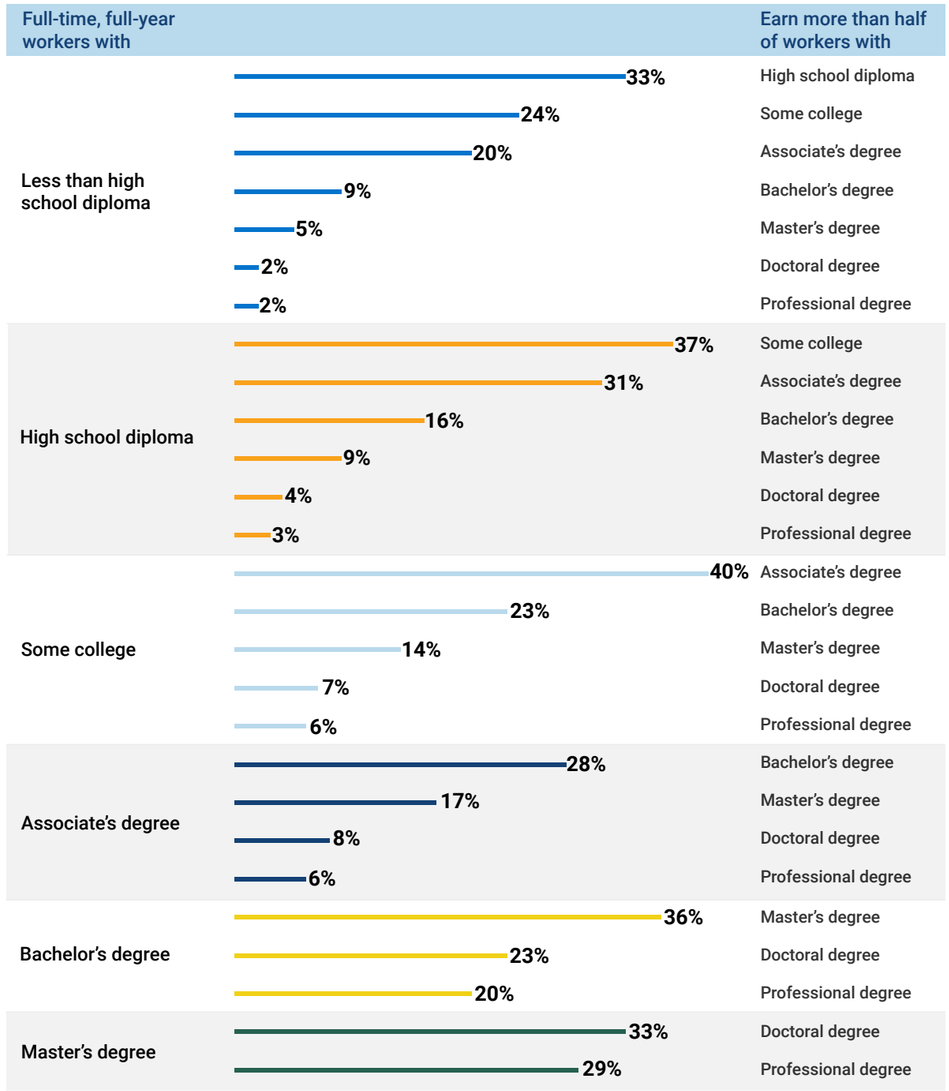
• Among high school diploma holders, 37 percent earn more than half of workers with some college education, 31 percent earn more than half of workers with an associate's degree, and 16 percent earn more earn more than half of workers with a bachelor's degree (Figure 3).

• Among workers with some college education, 40 percent earn more than half of workers with an associate's degree, and 23 percent earn more than half of workers with a bachelor's degree.

• Among associate's degree holders, 28 percent earn more than half of workers with a bachelor's degree.

• Among bachelor's degree holders, 36 percent earn more than half of workers with a master's degree, 23 percent earn more than half of workers with a doctoral degree, and 20 percent earn more than half of workers with a professional degree.

Figure 3. Sixteen percent of high school diploma holders and 28 percent of associate's degree holders earn more than half of workers with bachelor's degrees.



Source: Georgetown University Center on Education and the Workforce analysis of the US Census Bureau, American Community Survey (ACS), 2017–2019.

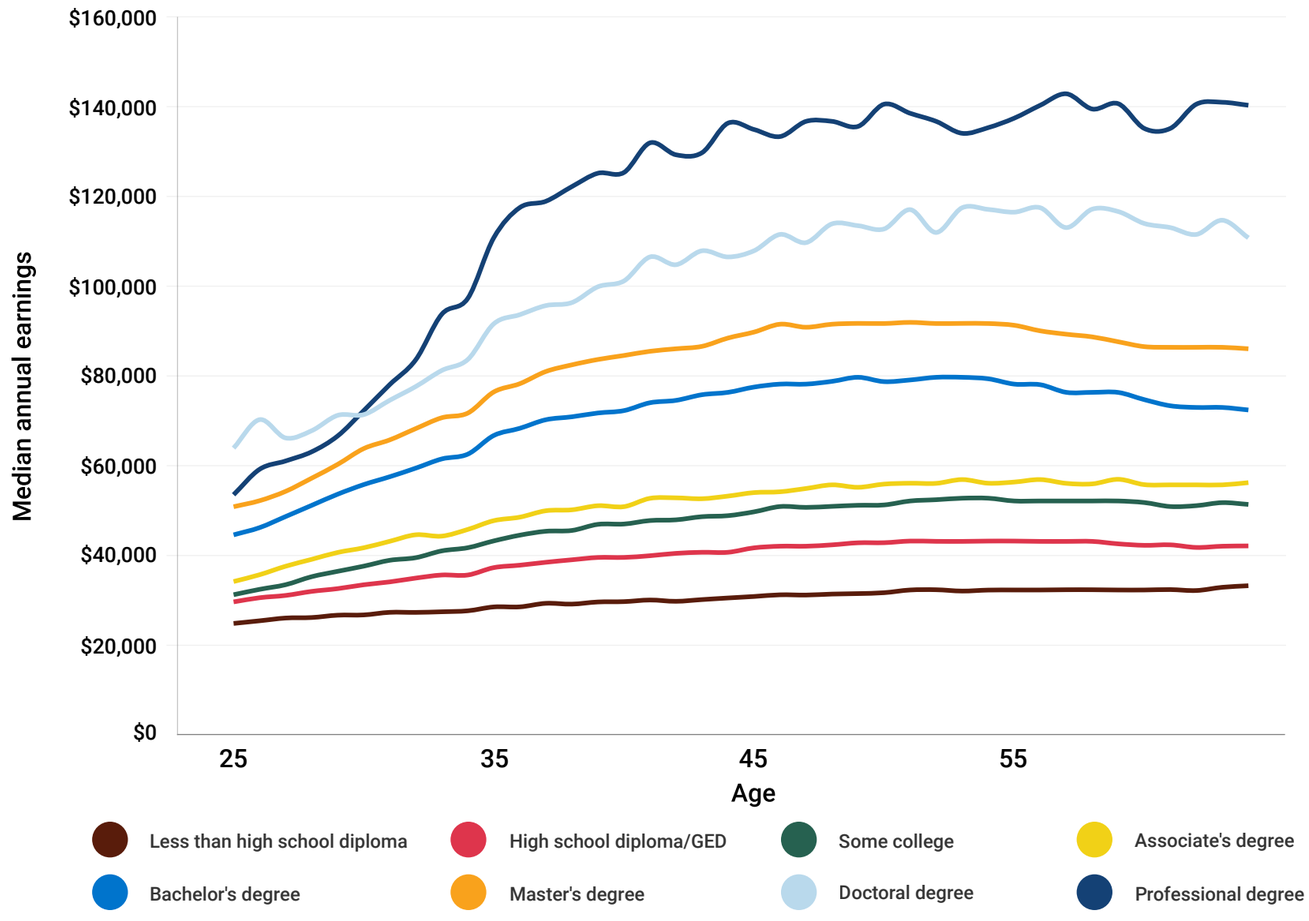
Note: The figure is based on data for 25- to 64-year-olds working full-time, full-year.

Gaps in Earnings Widen with Age

Differences in earnings by education level start small and grow over the course of a career. While professional, doctoral, master's, and bachelor's degree holders see significant growth in earnings, especially in their 30s, workers with lower levels of education see relatively modest growth in earnings.

By age 30, earnings for adults with professional degrees begin to surpass those of workers at all other education levels. By age 40, professional degree holders typically experience the greatest growth in earnings compared to workers with less education, with a 131 percent increase over their earnings at age 25 (Figure 4). On the lower end of educational attainment, the earnings of those with less than a high school diploma grew only 20 percent between the ages of 25 and 40.

Figure 4. After age 30, professional degree holders have the highest median earnings by education level.



Source: Georgetown University Center on Education and the Workforce analysis of the US Census Bureau, American Community Survey (ACS), 2009–2019.

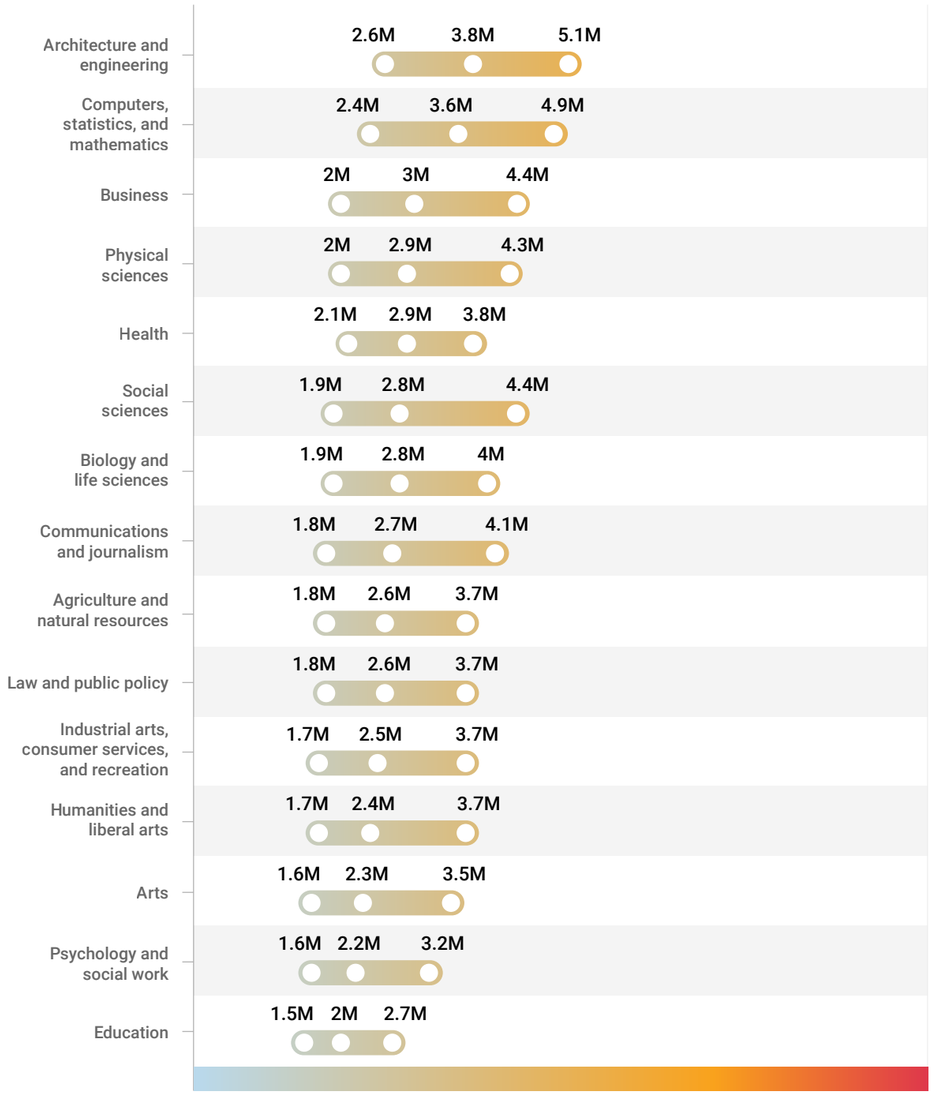
Note: The figure is based on data for 25- to 64-year-olds working full-time, full-year.

Earnings Vary Substantially by Undergraduate Major

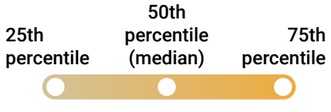
The courses that students take in college help determine their lifetime earnings. While bachelor's degree holders typically earn more than those with less education, their earnings vary substantially depending on their undergraduate major.

For instance, undergraduate majors in architecture and engineering lead to the highest-paying careers at the median ($3.8 million); followed by majors in computers, statistics, and mathematics ($3.6 million); and majors in business ($3 million) (Figure 5). Undergraduate majors in education; psychology and social work; arts; humanities and liberal arts; and industrial arts, consumer services, and recreation are typically on the low end of earnings at the median. For workers with a bachelor's degree, education is the lowest-earning field of study ($2 million), followed by psychology and social work ($2.2 million), and the arts ($2.3 million).

Figure 5. Architecture and engineering majors lead to the highest median lifetime earnings for bachelor's degree holders.



Nevertheless, there is significant earnings overlap among fields of study. A typically high-earning undergraduate major does not guarantee high earnings for everyone with that major, so students with majors that typically lead to lower earnings can still earn more than workers with other majors. For example, bachelor's degree holders who study communications and journalism earn $4.1 million at the 75th percentile, more than the median for bachelor's degree holders in the highest-earning field, architecture and engineering. In other words, at least a quarter of workers who majored in communications and journalism outearn half the workers who majored in architecture and engineering.



Source: Georgetown University Center on Education and the Workforce analysis of the US Census Bureau, American Community Survey (ACS), 2009–2019.

Note: The figure is based on data for 25- to 64-year-olds working full-time, full-year.

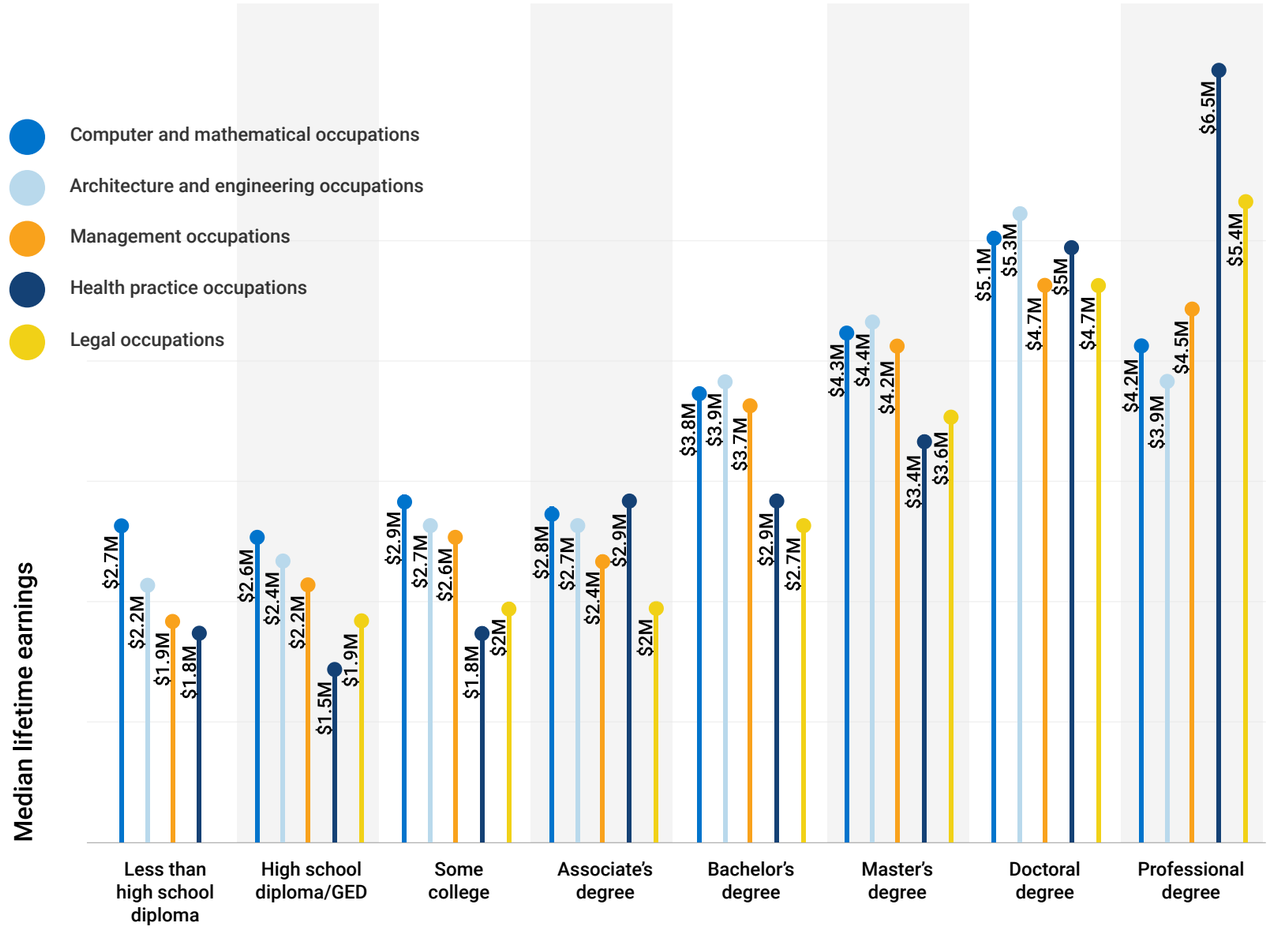
Some STEM and Health Occupations Pay Better

Lifetime earnings vary even more by the occupation that workers enter after they finish school. Computer and mathematical, architecture and engineering, and health practice are the highest-earning occupations across education levels.

For workers with a high school diploma, computer and mathematical occupations lead to the highest median lifetime earnings ($2.6 million), followed by architecture and engineering ($2.4 million), and then management ($2.2 million) (Figure 6). Associate's degree holders earn the most in health practice occupations ($2.9 million), followed by computer and mathematical ($2.8 million) and architecture and engineering occupations ($2.7 million). Bachelor's and master's degree holders obtain the highest median lifetime earnings when working in architecture and engineering occupations ($3.9 million with a bachelor's degree and $4.4 million with a master's degree), followed by computer and mathematical ($3.8 million with a bachelor's degree and $4.3 million with a master's degree) and management ($3.7 million with a bachelor's degree and $4.2 million with a master's degree). Occupations including food preparation and serving, personal care and service, and building and grounds cleaning are among the lowest-paying for workers with a master's degree or less.

For doctoral degree holders, the highest-paying occupations are architecture and engineering ($5.3 million lifetime earnings), computer and mathematical ($5.1 million), and health practice ($5 million). Health practice is the highest-paying occupation for professional degree holders ($6.5 million lifetime earnings) followed by legal ($5.4 million) and management ($4.5 million). Lower-paying occupations for these degree levels include office and administrative support, community and social service, and education.

Figure 6. Computer and mathematical, health practice, and architecture and engineering are the top-paying occupations across education levels.

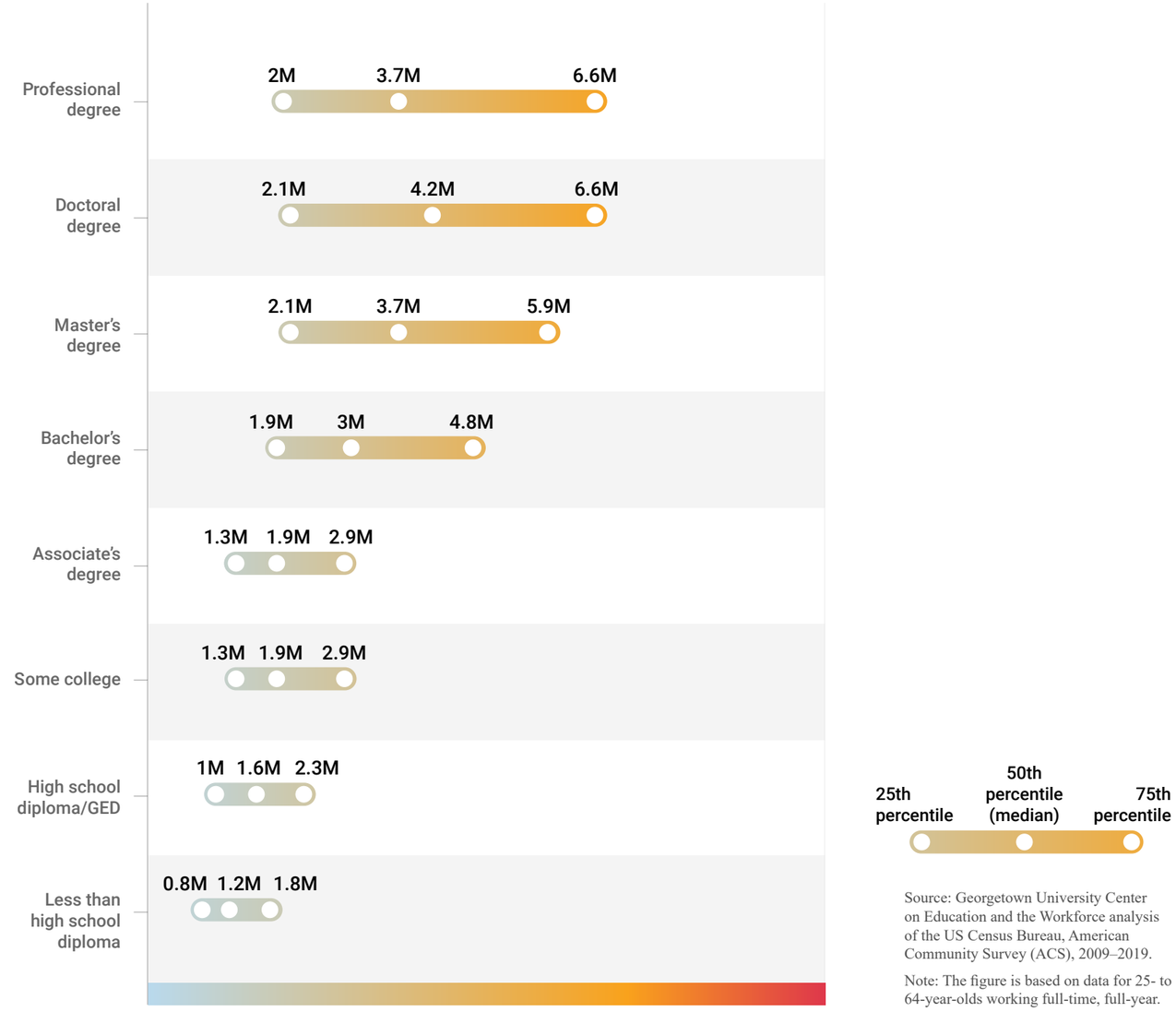


Source: Georgetown University Center on Education and the Workforce analysis of the US Census Bureau, American Community Survey (ACS), 2009–2019.

Note: The figure is based on data for 25- to 64-year-olds working full-time, full-year. Earnings are not included for those in legal occupations with less than a high school diploma because of insufficient data.

While some occupations lead to higher median earnings than other occupations, there is still significant overlap in earnings among occupations. There is also earnings overlap among workers across education levels within the same occupations. For example, earnings data from sales occupations illustrate that at the 75th percentile, sales workers with bachelor's degrees can earn $4.8 million over their lifetime—more than the median for sales workers with master's degrees, which is $3.7 million (Figure 7). In other words, at least one quarter of sales workers with bachelor's degrees earn more than half of sales workers with master's degrees. Having more education provides an earnings advantage within an occupation, but workers with lower levels of education can have lifetime earnings above their more highly educated counterparts in the same occupation.

Figure 7. Among workers in the same occupations, such as sales, those with more education tend to earn more, but there is still significant overlap in earnings across education levels.



Source: Georgetown University Center on Education and the Workforce analysis of the US Census Bureau, American Community Survey (ACS), 2009–2019.

Note: The figure is based on data for 25- to 64-year-olds working full-time, full-year.

Earnings Disparities Persist by Gender and Race and Ethnicity

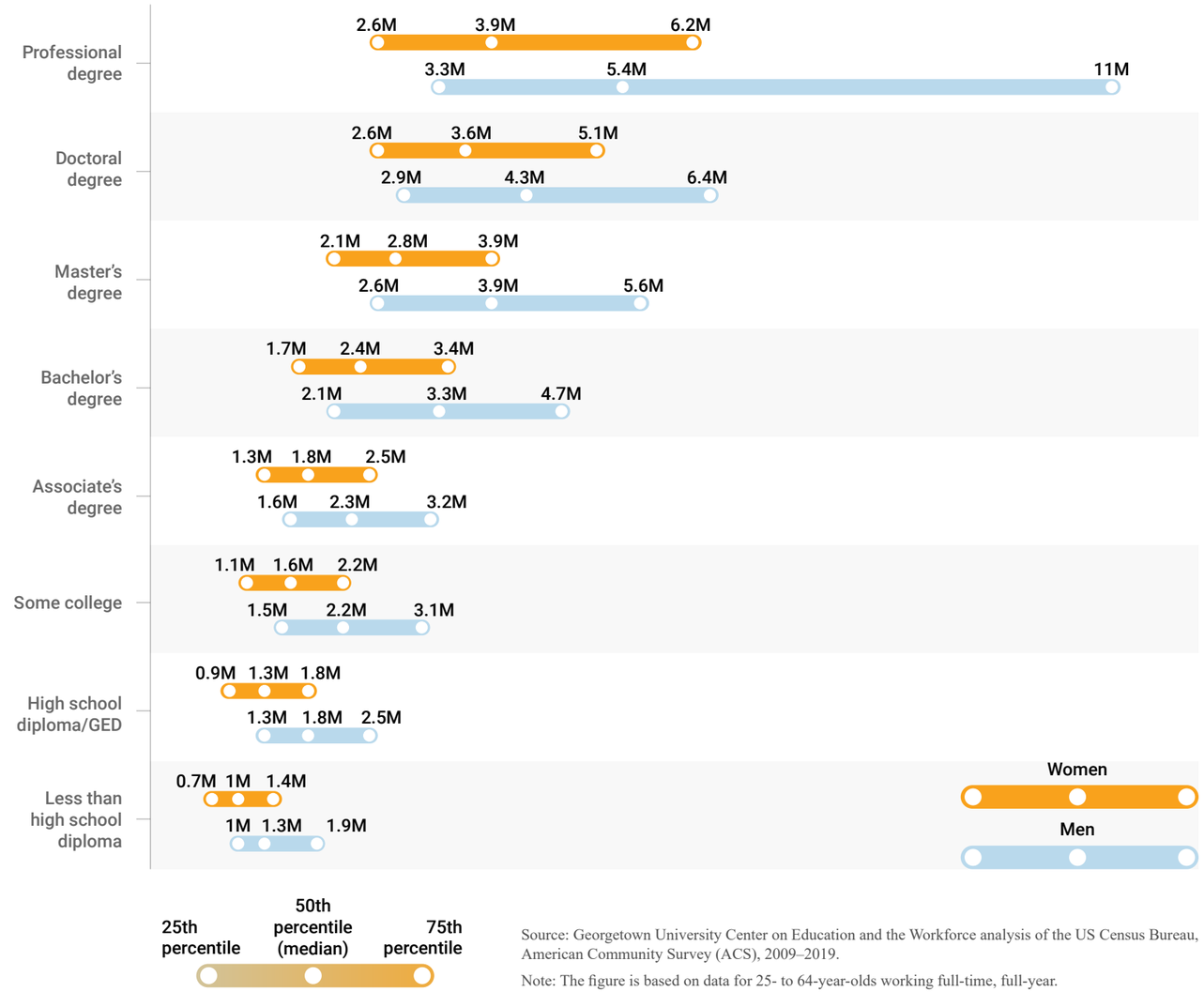
While much of the variation in lifetime earnings is connected to education level, field of study, and occupation, there are also differences in earnings by gender and race and ethnicity. Across all education levels, men earn more than women at the median during their lifetimes. Depending on the education level, Asian and White workers earn more than workers who are Black, Latino, Native Hawaiian/Pacific Islander, or Native American/Alaskan Native.

Women outnumber men at all levels of postsecondary education, but they are concentrated in lower-paying fields of study, such as education and counseling. Even within the same major occupational groups, however, women typically earn less than their male counterparts.[4] Women have lower median lifetime earnings than men at every level of education. For example, women earn $1.3 million compared to $1.8 million for men among those with a high school diploma, $1.8 million compared to $2.3 million for men among those with an associate's degree, $2.4 million compared to $3.3 million for men among those with a bachelor's degree, and $2.8 million compared to $3.9 million for men among those with a master's degree (Figure 8).

Gaps in earnings demonstrate how much further out in the earnings distribution women must go to attain earnings equal to men's median earnings. At the 75th percentile, women with bachelor's degrees have lifetime earnings of $3.4 million, more than the median for men with bachelor's degrees, which is $3.3 million. Likewise, at the 75th percentile, women with professional degrees earn $6.2 million over their lifetimes, well above the median earnings for men with the same level of education, which is $5.4 million.

4. Carnevale et al., *Women Can't Win*, 2018.

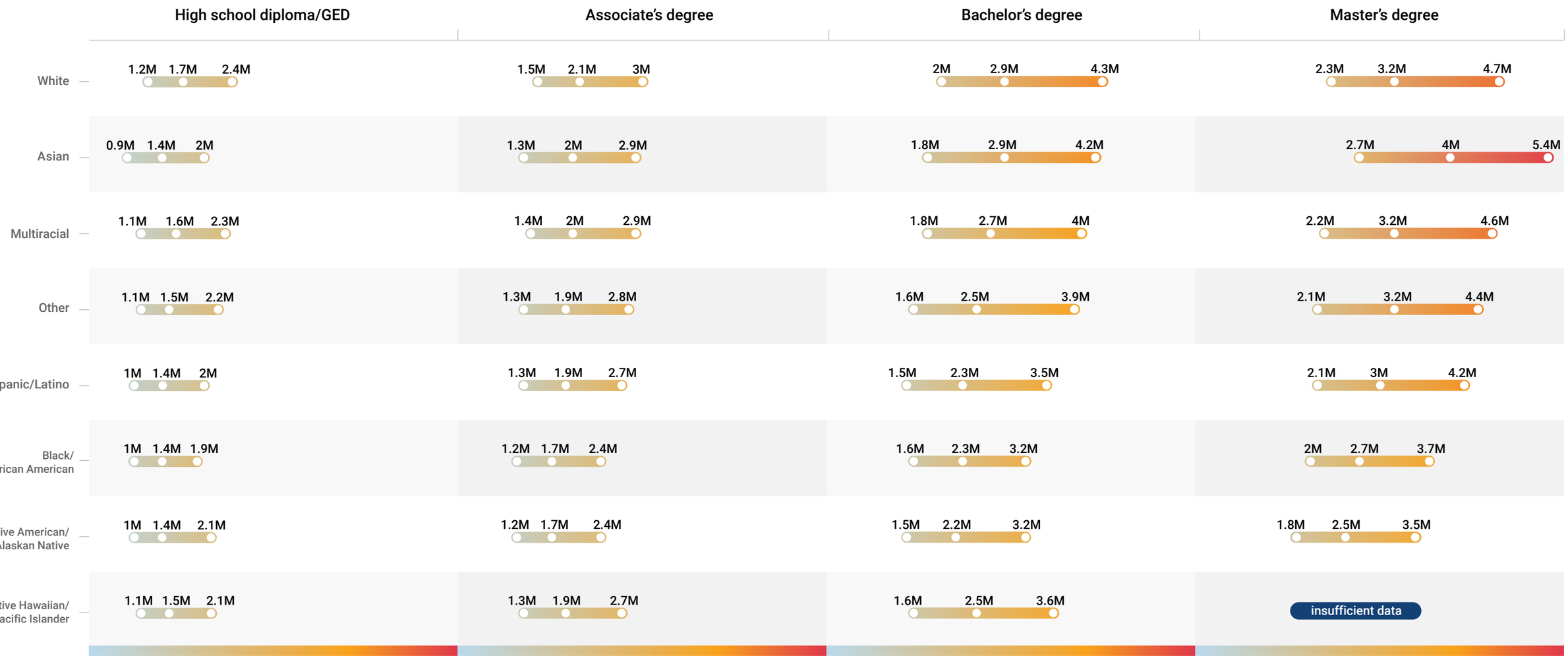
Figure 8. Men have higher median lifetime earnings than women at every corresponding level of education, but women's and men's earnings still overlap significantly.



Source: Georgetown University Center on Education and the Workforce analysis of the US Census Bureau, American Community Survey (ACS), 2009–2019.

Note: The figure is based on data for 25- to 64-year-olds working full-time, full-year.

Figure 9. Depending on the education level, Asian or White workers have the highest median lifetime earnings, but there is still significant overlap among racial and ethnic groups.



Source: Georgetown University Center on Education and the Workforce analysis of the US Census Bureau, American Community Survey (ACS), 2009–2019.

Note: The figure is based on data for 25- to 64-year-olds working full-time, full-year. Earnings for Native Hawaiian/Pacific Islander workers are not included at the master's degree level because of insufficient data.

Lifetime earnings also vary by race and ethnicity.[5] Asian workers have higher median lifetime earnings than other racial and ethnic groups at the master's degree level ($4 million) (Figure 9). White workers have the highest median lifetime earnings among workers with no more than a high school diploma ($1.7 million), among associate's degree holders ($2.1 million), and among bachelor's degree holders ($2.9 million).

While Asian workers with a master's degree have higher median earnings than other racial and ethnic groups at the same education level, Asian workers with less education have relatively low median earnings. At the high school level, for example, Asian workers earn a median of $1.4 million over their lifetimes, 18 percent less than White workers, the highest-earning group.

5. In this report, we use the term Black to refer to people who identify as Black or African American and the term Latino to refer to people who identify as Hispanic or Latino, including people who identify racially as Black and ethnically as Latino. In charts, tables, and related references to data, we use the terms White, Black/African American, and Hispanic/Latino.

Black workers with a high school diploma, associate's degree, or bachelor's degree earn medians of $1.4 million, $1.7 million, and $2.3 million, respectively—18 percent, 19 percent, and 21 percent less than the median for White workers, the highest-earning group at these education levels. The earnings gap jumps at the master's degree level, with Black workers earning $2.7 million, which is 33 percent less at the median than for Asian workers, the highest-earning group among master's degree holders.

For Latino workers, median earnings are $1.4 million at the high school level, 18 percent less than the median for White workers; $1.9 million at the associate's degree level, which is 10 percent less; and $2.3 million at the bachelor's degree level, which is 21 percent less. Latino workers earn $3 million at the master's degree level, which is 25 percent less than the median for Asian workers, the highest-earning group at that level.

Native American/Alaskan Native and Native Hawaiian/Pacific Islander workers trail many other groups in median lifetime earnings across education levels. At the master's degree level, Native American/Alaskan Native workers earn $2.5 million, 38 percent less than Asian workers, the group with the highest median lifetime earnings at that level. Likewise, at the bachelor's degree level, Native American/Alaskan Native workers earn $2.2 million, which is 24 percent less than the median for White workers, the highest-earning group. At the associate's degree level, Native American/Alaskan Native workers earn $1.7 million, 19 percent less than the median for White workers, the highest-earning group. Among those with a high school diploma, Native American/Alaskan Native workers earn $1.4 million, which is 18 percent less over their careers than the median for White workers, the highest-earning group in this category. Native Hawaiian/Pacific Islander workers with a high school diploma have median earnings of $1.5 million, those with an associate's degree have median earnings of $1.9 million, and those with a bachelor's degree have median earnings of $2.5 million. They earn 12 percent, 10 percent, and 14 percent less, respectively, than the median for White workers, the highest-earning group at these education levels.

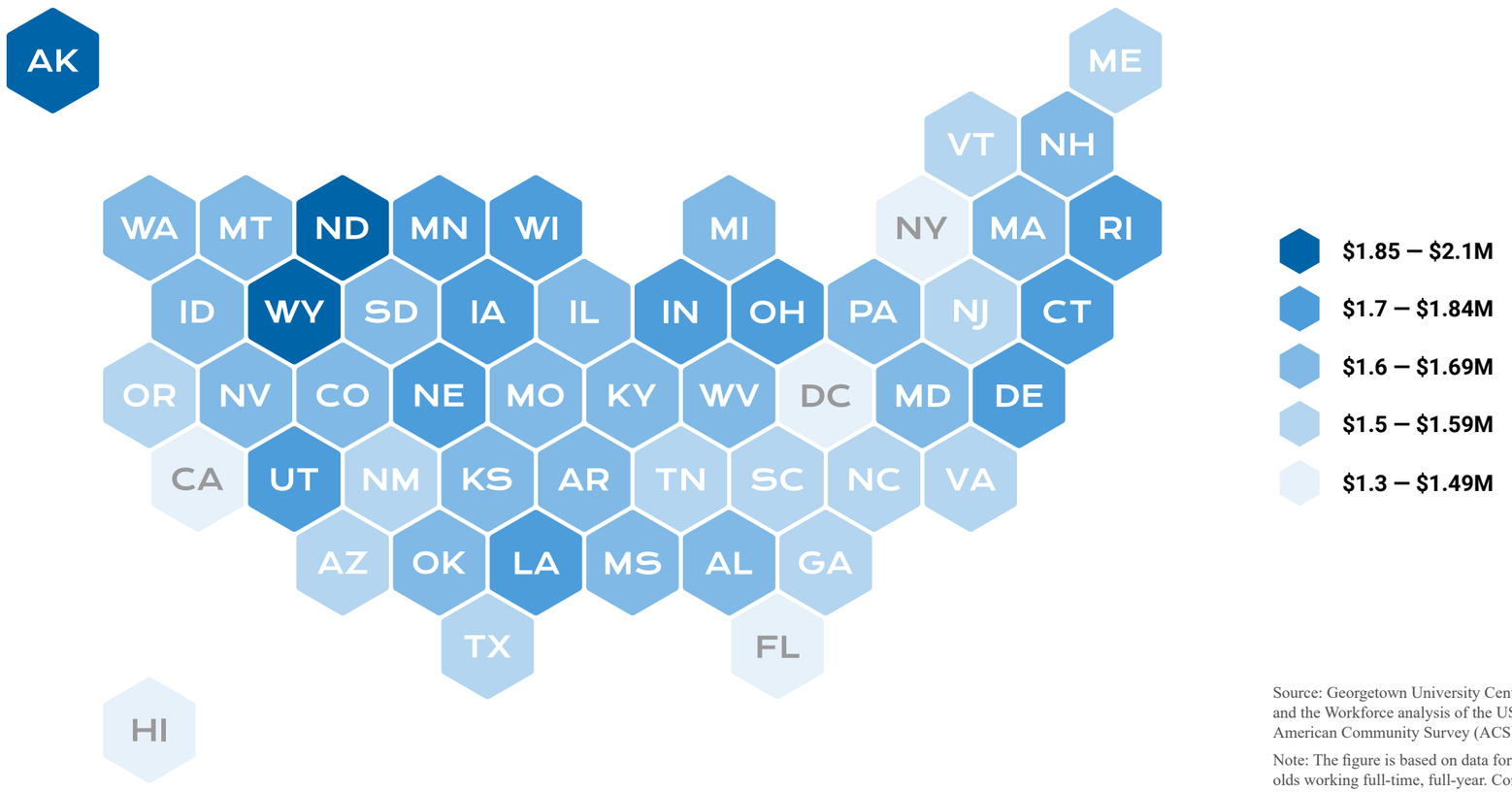
While there are consistent disparities in median lifetime earnings among racial and ethnic groups, there is also significant overlap. For example, among bachelor's degree holders, workers from all racial and ethnic groups have lifetime earnings at the 75th percentile that exceed the median earnings for White workers, the highest-earning group at that level. However, these gaps in earnings indicate how far workers in each of these groups must go in the earnings distribution to attain earnings equal to the medians for White or Asian workers.

Earnings Vary Across States

Lifetime earnings vary by state, even when adjusted for the cost of living. In part, these differences in earnings are the result of different concentrations of occupations and industries among states. States have different percentages of workers at each degree level as well as different distributions of good jobs for workers across education levels.[6]

High school diploma holders have the highest median lifetime earnings in Wyoming ($2 million), Alaska ($2 million), and North Dakota ($1.9 million) (Figure 10). These states are followed by Connecticut, Iowa, Indiana, Ohio, Wisconsin, Utah, and Louisiana, all of which have median lifetime earnings for high school diploma holders above $1.7 million. By contrast, the lowest median lifetime earnings for these workers are in Hawaii ($1.3 million), with Florida, the District of Columbia, New York, and California following close behind ($1.4 million).

Figure 10. Wyoming, Alaska, and North Dakota have the highest median lifetime earnings for workers with no more than a high school diploma/GED.



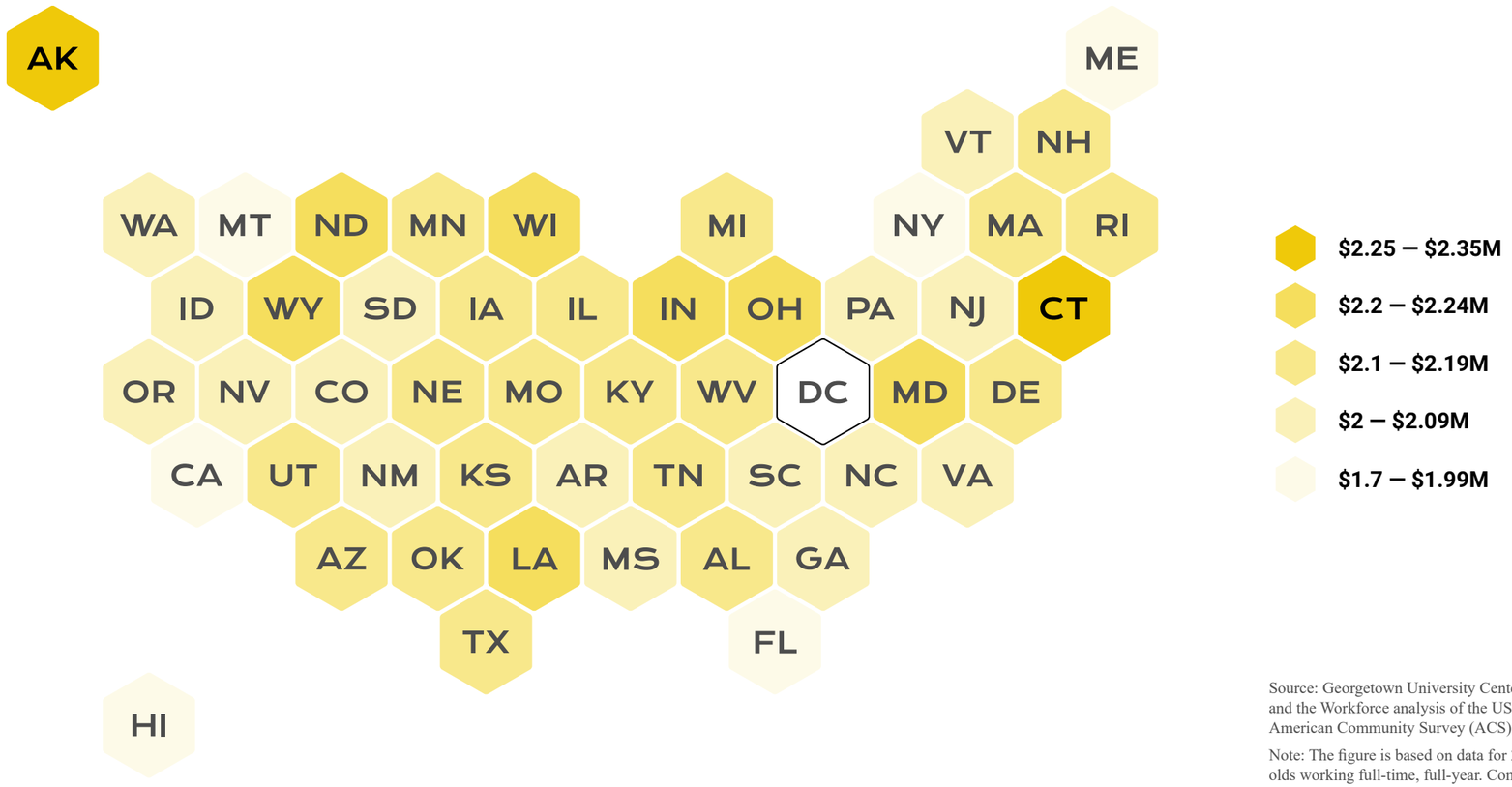
Source: Georgetown University Center on Education and the Workforce analysis of the US Census Bureau, American Community Survey (ACS), 2009–2019.

Note: The figure is based on data for 25- to 64-year-olds working full-time, full-year. Computed lifetime earnings were adjusted to account for regional price differences.

6. Carnevale et al., *Good Jobs That Pay Without a BA*, 2017.

Earnings for associate's degree holders are highest in many of the same states. Alaska tops the list again, with median lifetime earnings of $2.3 million, followed by Connecticut, Wyoming, Ohio, North Dakota, Wisconsin, Indiana, and Louisiana, with median lifetime earnings above $2.2 million (Figure 11). For these workers, however, Maryland and Delaware are a better bet than Iowa and Utah, which also made the top 10 list of lifetime earnings for high school graduates. Earnings for associate's degree workers are also low in many of the same states where earnings are low for workers with no more than a high school diploma.

Figure 11. Alaska has the highest median lifetime earnings for associate's degree holders.



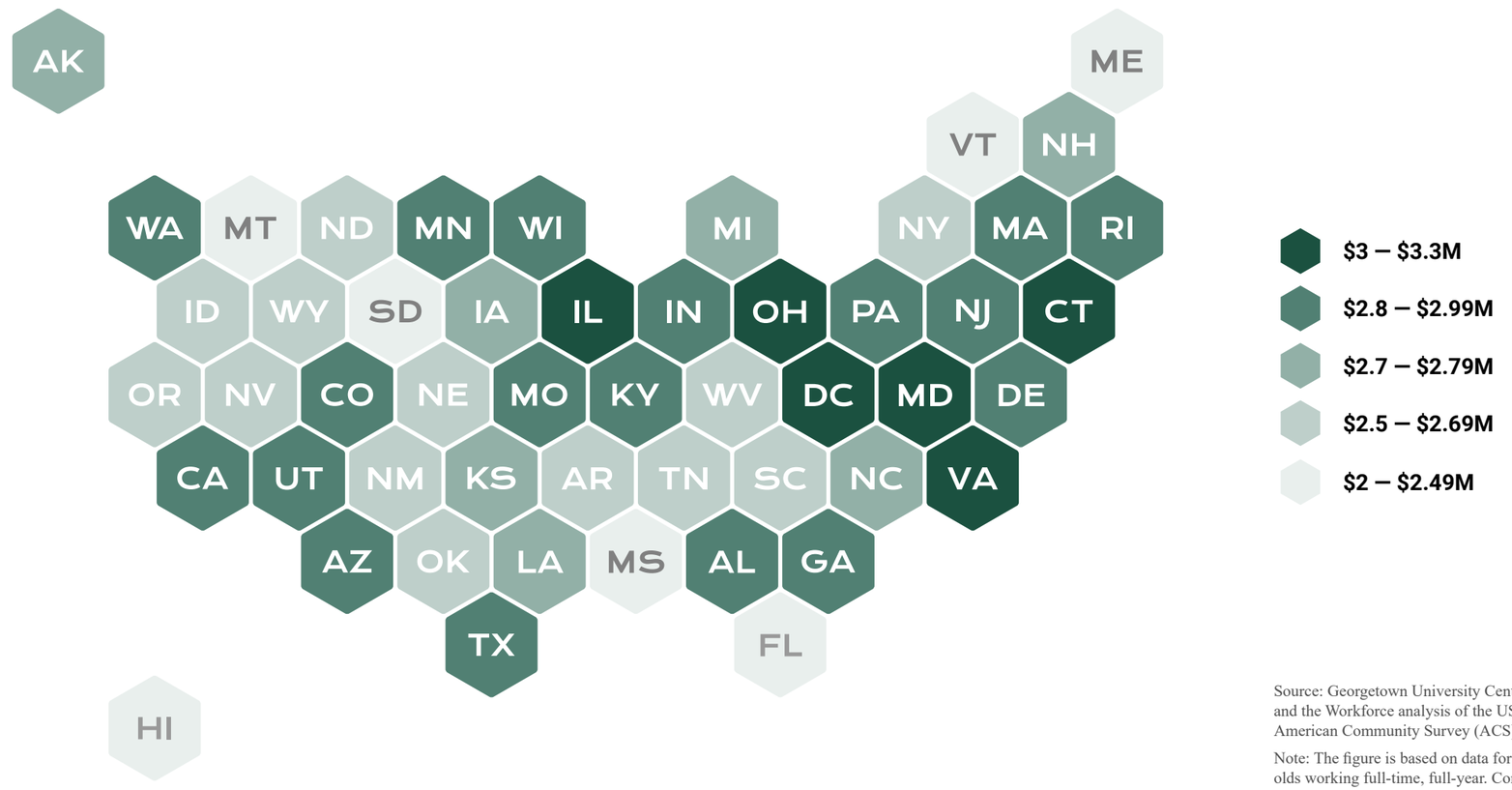
Source: Georgetown University Center on Education and the Workforce analysis of the US Census Bureau, American Community Survey (ACS), 2009–2019.

Note: The figure is based on data for 25- to 64-year-olds working full-time, full-year. Computed lifetime earnings were adjusted to account for regional price differences.

Insufficient data for District of Columbia.

Figure 12. Earnings for bachelor's degree holders are highest in the District of Columbia, with Connecticut, Virginia, Maryland, Illinois, and Ohio not far behind.

Connecticut ranks second in median lifetime earnings for associate's and bachelor's degree holders, in addition to having the fourth-highest earnings for high school diploma holders. Otherwise, however, an entirely different group of states makes the top 10 list for highest bachelor's degree earnings. The District of Columbia has the highest lifetime earnings for bachelor's degree holders, at $3.3 million; followed by Connecticut at $3.2 million; Virginia and Maryland at $3.1 million; Illinois, Ohio, Michigan, and Massachusetts at $3 million; and Minnesota and Alabama at $2.9 million (Figure 12). States with low lifetime earnings for workers with bachelor's degrees include Hawaii ($2 million), Montana and Vermont ($2.3 million), and Florida and Maine ($2.4 million).



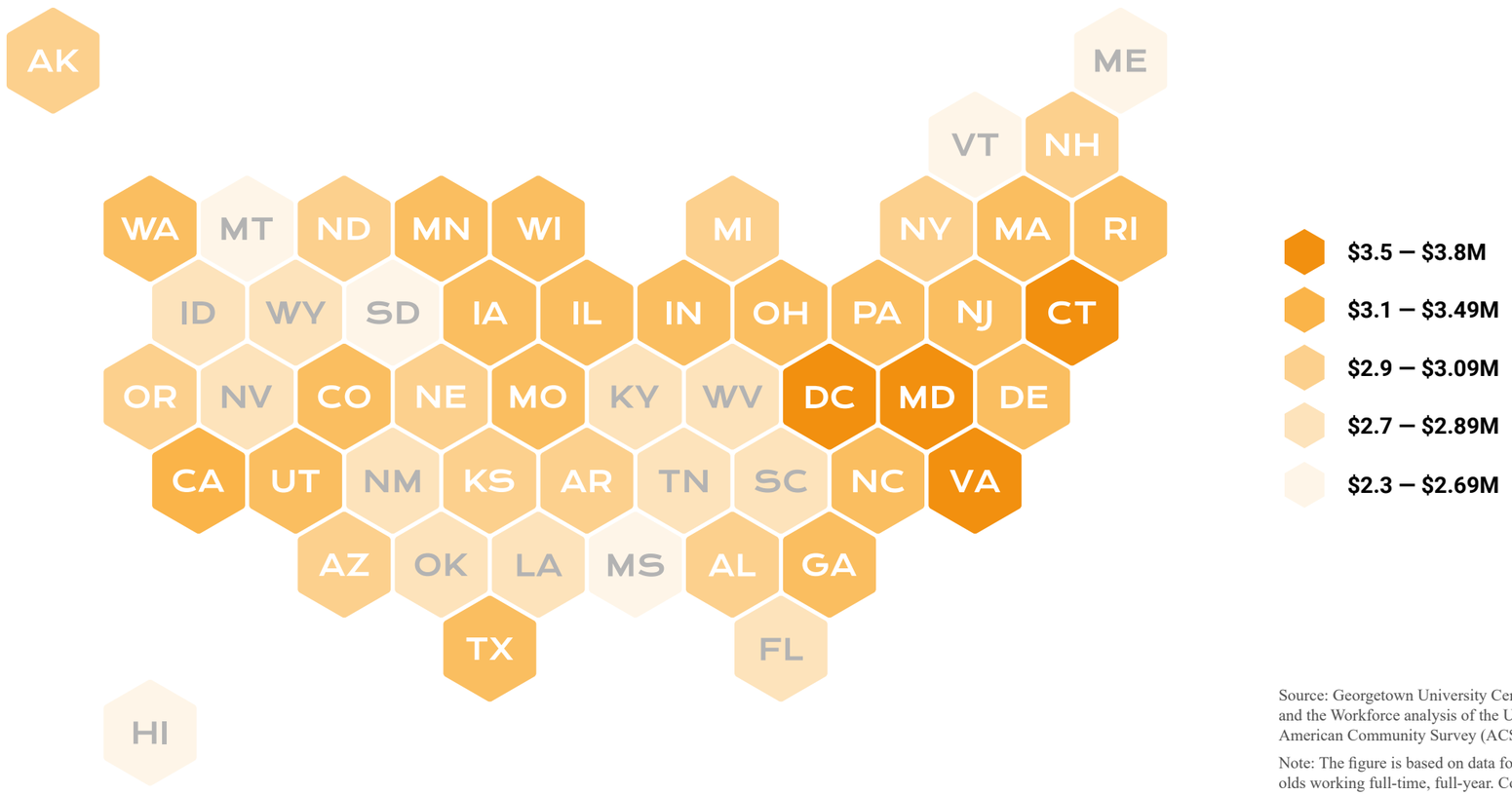
Source: Georgetown University Center on Education and the Workforce analysis of the US Census Bureau, American Community Survey (ACS), 2009–2019.

Note: The figure is based on data for 25- to 64-year-olds working full-time, full-year. Computed lifetime earnings were adjusted to account for regional price differences.

Virginia and the District of Columbia top the list of states with the highest lifetime earnings for master's degree holders, with median earnings of $3.8 million (Figure 13). Maryland, Connecticut, Illinois, Michigan, Ohio, and Massachusetts, which are top states for bachelor's degree holders, also make the top 10 list for lifetime earnings for master's degree holders. Earnings for master's degree holders are also high in New Jersey and California, where they are near or above $3.4 million.

For master's degree holders, Hawaii ($2.4 million) and Vermont, Maine, Montana, and South Dakota ($2.6 million) are the states with the lowest lifetime earnings.

Figure 13. Virginia, the District of Columbia, Maryland, and Connecticut are the highest-earning states for master's degree holders.



Source: Georgetown University Center on Education and the Workforce analysis of the US Census Bureau, American Community Survey (ACS), 2009–2019.

Note: The figure is based on data for 25- to 64-year-olds working full-time, full-year. Computed lifetime earnings were adjusted to account for regional price differences.

Conclusion

Postsecondary education pays off in the labor market. With each additional level of education, workers typically earn more throughout their lifetimes. However, not all workers with higher levels of education earn more than all workers with less education. Other factors—from field of study and occupation to gender, race and ethnicity, and location—drive differences in earnings. The more reliable route to a high-paying career now requires mixing postsecondary education with the right combination of those factors, plus skills and experience. In other words, postsecondary education has become more valuable in the workforce, but its value is also part of a complex equation.

The simple advice to high school students to "go to college" no longer suffices. The number of postsecondary programs, colleges and universities, and occupations has grown significantly in the past few decades, creating countless potential combinations of pathways through education and careers. Students would benefit from professional guidance that helps them make sense of the myriad academic and career options available to them and alerts them to the differences in lifetime earnings associated with their choices of academic major and occupation.[7]

One promising response to the growing complexity would be an expansion and improvement of the career counseling system. Ideally, career counselors would help students navigate the relationship between education and labor market outcomes. However, counselors are in short supply in most public schools, and colleges often separate academic and career counseling, which means that students' academic programs may not be aligned with their career plans or with employment opportunities. Students should begin interacting with career counselors by middle school and continue interacting with them as they maneuver through the secondary and postsecondary education systems toward their careers. A comprehensive career counseling system would empower students by giving them the information and support they need to make informed decisions about their education and occupation that ultimately influence their lifelong earnings and well-being.

7. This information is available from the U.S. Department of Education's College Scorecard website at https://collegescorecard.ed.gov. See also Carnevale et al., *A First Try at ROI*, 2019.

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Appendix:
Data Source and Methodology

We used data from the American Community Survey to construct lifetime earnings. Using 2019 dollars, we pooled data from 2009 through 2019, limited to persons ages 25-64 working full-time, full-year for whom there are earnings data. We then constructed a synthetic age-earnings profile for each category of interest by education level—gender, race, undergraduate major, occupation, industry, and state. We computed lifetime earnings as the sum of earnings over the synthetic work life (that is, we did not apply a discount rate to account for the time value of money). In computing lifetime earnings, we imposed a minimum sample size of 1,200 observations to represent an average of 30 observations for each working year. To facilitate comparisons across states, we adjusted lifetime earnings by using the regional price index published by the Bureau of Economic Analysis.

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The College Payoff: More Education Doesn't Always Mean More Earnings
can be accessed online at cew.georgetown.edu/collegepayoff2021.

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