

The Overlooked Value of Certificates and Associate's Degrees

What Students Need to Know Before They Go to College



GEORGETOWN UNIVERSITY



Center
on Education
and the Workforce

McCourt School of Public Policy

Anthony P. Carnevale
Tanya I. Garcia
Neil Ridley
Michael C. Quinn

2020

Reprint Permission

The Georgetown University Center on Education and the Workforce carries a Creative Commons license, which permits noncommercial reuse of any of our content when proper attribution is provided.

You are free to copy, display, and distribute our work, or include our content in derivative works, under the following conditions:



Attribution: You must clearly attribute the work to the Georgetown University Center on Education and the Workforce and provide a print or digital copy of the work to cewgeorgetown@georgetown.edu.

Our preference is to cite figures and tables as follows:

Source: Georgetown University Center on Education and the Workforce, *The Overlooked Value of Certificates and Associate's Degrees: What Students Need to Know Before They Go to College*, 2020.



Noncommercial use: You may not use this work for commercial purposes. Written permission must be obtained from the owners of the copy/literary rights and from Georgetown University for any publication or commercial use of reproductions.



Approval: If you are using one or more of our available data representations (figures, charts, tables, etc.), please visit our website at cew.georgetown.edu/publications/reprint-permission for more information.

For the full legal code of this Creative Commons license, please visit creativecommons.org.

Email cewgeorgetown@georgetown.edu with any questions.

The Overlooked Value of Certificates and Associate's Degrees

**What Students Need to Know
Before They Go to College**

**Anthony P. Carnevale
Tanya I. Garcia
Neil Ridley
Michael C. Quinn**

2020

Acknowledgments

We are grateful to the individuals and organizations whose generous support has made this report possible: Lumina Foundation (Jamie Merisotis, Wendy Sedlak, Holly Zanville, and Susan D. Johnson); the Bill & Melinda Gates Foundation (Patrick Methvin and Jamey Rorison); the Joyce Foundation (Sameer Gadkaree); and the Annie E. Casey Foundation (Bob Giloth and Allison Gerber). We are honored to be their partners in our shared mission of promoting postsecondary access, completion, and career success for all Americans.

The staff of the Georgetown University Center on Education and the Workforce was instrumental in the production of this report from conception to publication. In particular, we would like to thank

- Jeff Strohl for research direction;
- Andrea Porter for strategic guidance;
- Rebekah Ackerman, Jessica Clarke, Justin Goss, Mantong Guo, Cary Lou, Eric W. Price, and Megan Siu for data analysis;
- Megan L. Fasules and Sarah Barrese for quantitative feedback;
- Kathryn Peltier Campbell and Nicole Smith for editorial and qualitative feedback;
- Hilary Strahota, Emma Wenzinger, Frank Zhang, Nuo Tian, and Caitlin Panarella for broad communications efforts, including design development and public relations; and
- Andrew Debraggio and Coral Castro for assistance with logistics and operations.

Many others contributed their thoughts and feedback throughout the production of this report. We especially are grateful to our talented designers, editorial advisors, and printers, whose efforts were vital to its successful completion.

In addition, we would like to thank the staff of the 10 agencies who shared their postsecondary and workforce data for this analysis: Colorado Department of Higher Education, Connecticut State Colleges and Universities, Indiana Commission on Higher Education, Kentucky Council on Postsecondary Education, Minnesota Office of Higher Education, Ohio Department of Higher Education, Oregon Higher Education Coordinating Commission, Texas Higher Education Coordinating Board, State Council of Higher Education for Virginia, and Washington Student Achievement Council and State Board for Community and Technical Colleges. We would like to recognize Katie Zaback, Maggie Yang, and Chris Ammons (Colorado); Jan Kiehne (Connecticut); Sean Tierney and Gina Deom (Indiana); Lee Nimocks and David Mahan (Kentucky); Meredith Fergus (Minnesota); Stephanie Davidson, Brett Visger, and Jill Dannemiller (Ohio); Patrick Crane and Amy Cox (Oregon); David Gardner and Julie Eklund (Texas); Tod Massa and Wendy Kang (Virginia); and Jim Schmidt, David Prince, and Darby Kaikkonen (Washington) for reviewing Part 3 and Appendix B of the report and providing excellent feedback.

The views expressed in this publication are those of the authors and do not necessarily represent those of Lumina Foundation, the Bill & Melinda Gates Foundation, the Joyce Foundation, the Annie E. Casey Foundation, or their officers or employees. All errors and omissions are the responsibility of the authors.

Contents

- Introduction: The Short-Term and Long-Term Economic Value of Specific and General Skills. 1**
 - Key findings 5

- Part 1: The Prevalence of Certificates and Associate’s Degrees 7**
 - Certificate and associate’s degree programs rival bachelor’s degree programs in enrollment and awards conferred. 8
 - The popularity of certificates and associate’s degrees varies by region and by state. 10
 - Nearly one-third of workers have taken the middle-skills pathway to jobs. 12

- Part 2: The Students Enrolling In and Completing Certificate and Associate’s Degree Programs 15**
 - Overall, students who enroll in certificate and associate’s degree programs are more likely than those in bachelor’s degree programs to be Black, Latino, low-income, and older. 16
 - Among students who earn certificates and associate’s degrees, Blacks are overrepresented in certificate attainment, and Latinos are overrepresented in both certificate and associate’s degree attainment. 18
 - States with sizable Black and Latino populations have different credential attainment patterns than the nation at large. 20

- Part 3: The Labor-Market Outcomes of Certificates and Associate’s Degrees 23**
 - What you make depends on what you take, particularly for workers with certificates and associate’s degrees. 24
 - The middle-skills pathway provides access to STEM, healthcare, and management jobs. 26
 - Connecting programs to earnings at the community, regional, and state levels is the key to unlocking the value of postsecondary credentials. 28

- Conclusion 31**
 - Policy recommendations 33

- References 36**

- Appendix A: Methodology and Data Sources 38**

- Appendix B: State Data Profiles. 42**

Figures and Tables

FIGURE 1. Half of students taking undergraduate coursework are enrolled in either certificate or associate’s degree programs.	8
FIGURE 2. Colleges award about the same number of certificates and associate’s degrees combined as bachelor’s degrees.....	9
FIGURE 3. The Southeast awards the most certificates and associate’s degrees, and New England confers the fewest.....	10
FIGURE 4. Louisiana, Arizona, Kentucky, and Arkansas award the highest number of certificates per 10,000 state residents (among 18-to-40-year-olds).	11
FIGURE 5. Arizona, Iowa, Florida, and Wyoming award the highest number of associate’s degrees per 10,000 state residents (among 18-to-40-year-olds).	12
FIGURE 6. One-sixth of workers have a certificate or an associate’s degree as their highest educational attainment.	13
FIGURE 7. The most commonly awarded certificates are in health, consumer and public services, and blue-collar fields, while the most commonly awarded associate’s degrees are in the liberal arts and health fields.	14
FIGURE 8. More than half of Latino and Black undergraduate students are enrolled in certificate or associate’s degree programs.....	16
FIGURE 9. Among undergraduate students, low-income independent students are the most likely to enroll in certificate or associate’s degree programs.	17
FIGURE 10. Among undergraduate students, older students are overwhelmingly enrolled in certificate and associate’s degree programs.	18
FIGURE 11. Blacks and Latinos are overrepresented in certificate and associate’s degree attainment and underrepresented in bachelor’s degree attainment relative to their population share.	19
FIGURE 12. Workers with associate’s degrees in engineering have median earnings between \$50,001 and \$60,000 per year, compared to between \$20,001 and \$30,000 per year for those who studied education or fine arts.	25
FIGURE 13. Workers with certificates in engineering technologies or drafting have median earnings between \$75,001 and \$150,000—higher than those with certificates in other fields.	26
FIGURE 14. Workers who took the middle-skills pathway are more concentrated in healthcare, STEM, and management than high school-educated workers.	27
TABLE 1. In all 16 states with sizable Black populations, Blacks are overrepresented in certificate attainment relative to their population share.	21
TABLE 2. In 12 of the 15 states with sizable Latino populations, Latinos are overrepresented in certificate attainment relative to their population share.....	22
TABLE 3. Workers with associate’s degrees in engineering technologies and health professions out-earn those with associate’s degrees in other fields in nearly every state.....	29
TABLE 4. A wide variety of top-earning certificate programs are in blue-collar fields of study.....	30

The Short-Term and Long-Term Economic Value of Specific and General Skills

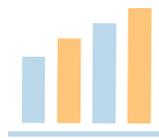
Education beyond high school is now the preferred currency for workers seeking economic opportunity in the US labor market. Since the 1980s, the bachelor's degree has been the gold standard for stable employment and lifetime earnings and the most promising route to the middle class.¹ But it's not the only route.

¹ Carnevale et al., *Educational Adequacy in the Twenty-First Century*, 2018.

The new rules of the college and career game confirm that education level matters, and that more education is generally better when it comes to earnings potential.² What is less well known is that program of study and major matter even more to potential earnings than education level. As a result, less education can often be worth more. In fact, some certificate holders can earn more than those with an associate's or bachelor's degree, and some associate's degree holders can earn more than those with a bachelor's degree. In other words, certificates and associate's degrees—credentials on the middle-skills pathway—can be viable routes to economic opportunity.

The middle-skills pathway—between a high school diploma and a bachelor's degree—is often overlooked.

Yet the middle-skills pathway—between a high school diploma and a bachelor's degree—is often overlooked. Workers who have taken this pathway to jobs are doing so with certificates, associate's degrees, noncredit education,³ certifications, licenses, and a host of emerging microcredentials such as badges or coding and technology boot camps. But, while pockets of opportunity exist, not enough is known about the risks and rewards of the particular education and training programs available.⁴



The middle-skills pathway is growing rapidly but remains largely uncharted territory.

We know the most about two of the options on the middle-skills pathway: certificates and associate's degrees. Today the combined number of certificates and associate's degrees awarded by colleges is roughly equivalent to the number of bachelor's degrees, around 2 million per year, with certificates and associate's degrees each accounting for about 1 million. The students earning the vast majority of these credentials attend public two-year colleges.

While certifications, licenses, microcredentials, and noncredit education are also important options on the middle-skills pathway, we know much less about the workforce outcomes of these options because no data source consistently captures this information.⁵ Due to limitations in the data, we focus in this report on certificates and associate's degrees.



Middle-skills programs are distinctive in their diversity, and so are the students who enroll in them.

Students enrolling in and earning certificates and associate's degrees are much more diverse than those pursuing bachelor's degrees. In our analysis, we find that certificate and associate's degree programs enroll a high proportion of Black and Latino⁶ students, as well as low-income students and older adults. These students may be drawn to the affordability and convenience of certificates and associate's degree programs, which are commonly offered at local and regional campuses and often

2 Carnevale and Cheah, *Five Rules of the College and Career Game*, 2018.

3 Noncredit education programs include recreational courses, those that provide basic academic skills and English language training, and workforce development programs.

4 In the modern economy, there are three pathways to good jobs: high school, middle skills, and the bachelor's degree. Overall, the high school pathway provides 20 percent of all good jobs, the middle-skills pathway 24 percent, and the bachelor's degree pathway 56 percent. While there is no universally accepted or official earnings level that defines self-sustaining earnings, in defining a good job, we have chosen \$35,000 (\$17 per hour for a full-time job) as a floor for workers under the age of 45 and \$45,000 (\$22 per hour for a full-time job) for workers age 45 and over. Carnevale et al., *Three Educational Pathways to Good Jobs*, 2018.

5 The federal government is beginning to collect data on individuals with certificates, certifications, and licenses in addition to other postsecondary credentials. National Center for Education Statistics, "Interagency Working Group on Expanded Measures of Enrollment and Attainment," <https://nces.ed.gov/surveys/gemena/>.

6 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. We use single terms for different racial and ethnic groups—White, Black, and Latino—to alleviate ambiguity and enhance clarity. In charts and tables, we use White, Black/African American, and Hispanic/Latino.

allow for the flexible schedules they may need to balance their studies with work and family obligations.⁷

Students' reasons for seeking credentials on the middle-skills pathway are likewise diverse. That said, getting a job that pays well is among the top reasons students name for pursuing postsecondary education at all levels.⁸ The connection between programs and jobs is especially important for certificates, associate's degrees, and bite-sized middle-skills programs because these programs often claim to convey skills that apply directly to the tasks and activities required in jobs.



To succeed in the modern economy, students need a mix of specific and general education and skills.

Career-specific education in shorter-term programs can lead to jobs that pay well. This kind of education has strong short-term value because it prepares people for immediate employment, and at the median, it can rival or even outperform education associated with longer-term credentials. Depending on field of study, a worker with an associate's degree can earn more than a worker with a bachelor's degree, and those with shorter-term credentials like certificates and certifications can out-earn those with associate's degrees.⁹ Sometimes even completing a cluster of college courses short of a credential can provide earnings gains for students by cultivating skills that are in demand in a local economy.¹⁰

At the same time, career-specific programs can be a risky investment, as they convey knowledge and

skills that are most useful in specific occupations and industries. Students who earn a certificate in automotive repair only to find that there are no auto mechanic jobs are out of luck when it comes to working in their intended field. Even more consequentially, they may not have other career options, since the specific skills they learned have minimal connections to other lines of work. In addition, there is evidence that the earning power of more specific credentials peaks early in careers and these jobs are more likely to be subject to changing technology.¹¹ Career ladders in many technology-based middle-skills occupations require constant learning on or off the job for workers to keep up or catch up with technology change.¹²

In contrast to career-specific credentials, general associate's degrees or bachelor's degrees confer marketable general skills regardless of a student's field of study or major. In a typical bachelor's degree program, half or more of a student's credits may be in general education courses and electives outside the student's specific major. General education programs develop students' general knowledge and skills, such as reading and writing, and general cognitive abilities, such as critical thinking, that are useful in a broad range of occupations. Research shows that general education contributes to career adaptability and resiliency as workers progress in their careers.¹³ At the same time, less is known

Ultimately, the most valuable education over the long term is the one that provides the most marketable combination of specific and general skills.

7 Overall, today's students are an extremely diverse group. At least one-third (33%) qualify as low-income and are Pell Grant recipients. Almost half (49%) are financially independent from their parents, and almost one-fourth (24%) are parents themselves. Over half attend two-year colleges (57%). Between 1996 and 2010, Latinos led in terms of rapid growth in college enrollment (240% increase), followed by Blacks (72% increase) and Whites (11% increase). Higher Learning Advocates, *Policy Toolkit*, 2019.

8 Nine out of 10 students who enroll in college say their goal is to improve the job opportunities available to them. Fishman, "College Decisions Survey," 2015.

9 Carnevale and Cheah, *Five Rules of the College and Career Game*, 2018.

10 Booth et al., *What Gets to Count?*, 2015.

11 Hanushek et al., "General Education, Vocational Education, and Labor-Market Outcomes Over the Life-Cycle," 2017; Gould, "Rising Wage Inequality, Comparative Advantage, and the Growing Importance of General Skills in the United States," 2002.

12 Pew Research Center, *The State of American Jobs*, 2016.

13 Hanushek et al., "General Education, Vocational Education, and Labor-Market Outcomes Over the Life-Cycle," 2017.

about the immediate effects of general education on earnings.

Ultimately, the most valuable education over the long term is the one that provides the most marketable combination of specific and general skills. The evidence suggests that workers who attain a typical American two- or four-year degree with its combination of specific and general education have an overall, if not universal, competitive edge in the economy.¹⁴ We know much less, however, about how to create precise curricular recipes for the ideal combinations of these skills.¹⁵



Students in certificate and associate's degree programs should be aware of certain rules of the road.

The defining characteristic of most certificate and associate's degree programs, with the exception of the associate of arts degree, is the strong connection they forge between curricula with occupation-specific skills and identifiable jobs. As this report shows, three out of five associate's degrees (57%) and nearly all certificates (94%) are awarded in career-oriented fields—that is, programs where employment is the goal. As a result, understanding the labor-market value of the various kinds of certificates and associate's degrees is crucial.

Understanding the labor-market value of the various kinds of certificates and associate's degrees is crucial.

While we don't yet have detailed maps of the relationships between particular certificates and associate's degrees and their learning and earning outcomes, we do know some basic rules of the road. For example, associate of arts degrees are designed for transfer to the bachelor's degree. However, if transfer and bachelor's degree completion do not occur, the value of the associate of arts degree is reduced dramatically.¹⁶ And it turns out that only a fraction of students who enroll at two-year colleges and intend to earn a bachelor's degree actually transfer and graduate with such a credential.¹⁷ This reality, coupled with enrollment trends, has led some to suggest that both racial and ethnic minority and low-income students may be too highly concentrated in the more general curriculum typical of the associate of arts degree, which can exacerbate systemic inequities.¹⁸

The associate of science degree is more closely tied to applied and technical subject matter associated with particular occupations while still offering opportunities for transfer. As a result, this degree often optimizes both immediate earnings and the possibility of further learning at the bachelor's degree level. The associate of applied science degree is even more tightly tied to occupations than the associate of science, but it has less transferability to the bachelor's degree.¹⁹ Certificates may represent more affordable and faster routes to job skills, but like the other bite-sized postsecondary options, they are the least transferable to additional levels of education.

14 Hanushek et al., "General Education, Vocational Education, and Labor-Market Outcomes Over the Life-Cycle," 2017; Gould, "Rising Wage Inequality, Comparative Advantage, and the Growing Importance of General Skills in the United States," 2002; Krueger and Kumar, "Skill-Specific Rather than General Education," 2004.

15 Further exploration of the balance between specific and general at each credential level is necessary. Broadly speaking, we consider career-specific programs to include apprenticeships, certificates, applied associate's degrees, upper-division bachelor's degree curricula, and graduate and professional programs. Traditional associate's degrees and lower-division bachelor's degree curricula would fall under general education programs.

16 Belfield and Bailey, *The Labor Market Returns to Sub-Baccalaureate College*, 2017.

17 Jenkins and Fink, *What We Know about Transfer*, 2015.

18 Backes et al., *Is It Worth It?*, 2014.

19 Carnevale et al., *The Economic Value of College Majors*, 2015.

Key findings

As viable, affordable, and relatively fast routes to economic opportunity for many students, certificates and associate's degrees are too important to ignore. This report is an effort to increase understanding about the value of these middle-skills credentials. We begin with national data on the prevalence of certificates and associate's degrees, the students enrolling in and completing these programs, and their labor-market outcomes. In addition to national data, we had access to state administrative data that we used to closely examine the labor-market outcomes of these programs in 10 states.²⁰

More students are enrolled in certificate and associate's degree programs than in bachelor's degree programs. About 50 percent of students taking undergraduate coursework are enrolled in certificate and associate's degree programs, and 47 percent are enrolled in bachelor's degree programs. About 3 percent of students are taking coursework but are not enrolled in a certificate or degree program.

Colleges confer certificates and associate's degrees at a level that is on par with bachelor's degrees.

Growth in certificates and associate's degrees outpaced growth in bachelor's degrees during and after the Great Recession. However, in recent years, public and private colleges collectively conferred roughly the same number of these credentials as bachelor's degrees (1,948,500 certificates and associate's degrees in 2016, compared to 1,920,800 bachelor's degrees in the same year).

Certificate and associate's degree programs disproportionately enroll racial and ethnic minorities. Among certificate, associate's degree, and bachelor's degree seekers enrolled in college, Latino students are more concentrated in certificate and associate's degree programs (62%) than in

bachelor's degree programs (38%). The same applies for Blacks (56% and 44%, respectively). The reverse is true for Whites, who are more concentrated in bachelor's degree programs (53%) than in certificate or associate's degree programs (47%).

In states where Blacks and Latinos respectively make up a sizable proportion of the state population, they are overrepresented in certificate attainment relative to their population shares.

In all of these states, Whites are overrepresented in bachelor's degree attainment. For example, in Mississippi, Blacks are 37 percent of the population but earn 50 percent of certificates awarded. In California, Latinos are 36 percent of the population but earn 44 percent of certificates awarded.

The link between certificate and associate's degree programs and careers is strong. About 94 percent of certificate programs and 57 percent of associate's degree programs are career oriented.

As viable, affordable, and relatively fast routes to economic opportunity for many students, certificates and associate's degrees are too important to ignore.

Certificates can pay, but it all depends on the field of study. Certificates in engineering technologies lead to high earnings in nearly every state analyzed for this report. Workers with certificates in blue-collar fields, information technology, and legal studies have the highest earnings among certificate holders in more than half of the states. Some certificate fields of study can even lead to earnings that rival those of bachelor's degrees in other fields.

²⁰ We analyzed aggregate data on certificate and associate's degree programs from 10 states: Colorado, Connecticut, Indiana, Kentucky, Minnesota, Ohio, Oregon, Texas, Virginia, and Washington. Appendix B contains program-level earnings data for the 10 states.

Not all associate's degrees are the same. Field of study also matters for workers with associate's degrees. Engineering technologies and health are among the top-earning associate's degrees in every state. Workers with associate's degrees in liberal arts and general studies typically earn less than those in career-oriented fields, such as business and health. In addition, liberal arts and general studies associate's degrees—which are often geared toward transfer to the bachelor's degree—do not place among the top five fields for earnings in any of the 10 states analyzed. This suggests that the real value of a transfer-oriented degree comes with attainment of a bachelor's degree.

Roughly one-third of workers take the middle-skills pathway to jobs. About 8 percent of workers have a certificate as their highest level of educational attainment, and 9 percent have an associate's degree. An additional 15 percent of workers have some college but no credential.

Increased transparency about labor-market value has moved to the center of the public policy agenda. While it is essential for all students to know the

Without an improved understanding of the educational and economic value of the full range of credentials on the middle-skills pathway, policymakers and higher education leaders risk formulating public policy that excludes a large segment of students.

potential value of their postsecondary programs, it matters even more for those on the middle-skills pathway because earnings vary widely depending on the match between the program's curriculum and available jobs.²¹ To make fully informed decisions, students must have access to clear information about their prospects for finishing a program and the likely economic return on their investment of time, effort, and money—both before they enroll and before they commit to a program of study or major.

For students who earn certificates and associate's degrees, and particularly for many students from underrepresented groups, these programs too frequently become their highest level of educational attainment. If these enrollment, completion, and workforce outcome trends continue, our nation will not be able to close equity gaps by race, ethnicity, or income. Instead, the higher education system will keep perpetuating the same separate and unequal outcomes of the past. And without an improved understanding of the educational and economic value of the full range of credentials on the middle-skills pathway, policymakers and higher education leaders risk formulating public policy that excludes a large segment of students.

21 Belfield and Bailey, *The Labor Market Returns to Sub-Baccalaureate College*, 2017. The authors also find that the labor-market returns of certificates and associate's degrees are closely related to the field of study.

The Prevalence of Certificates and Associate's Degrees

With the increased demand for workers with education beyond high school, postsecondary education is playing a growing role in career preparation.²² Most certificate and associate's degree programs are designed to prepare students for careers. The majority of students enrolled in these programs attend public community and technical colleges,²³ which often offer a full slate of occupationally-focused programs and have close ties to employers and industries in their communities.

22 Carnevale et al., *Technology, Jobs, and Education: Projections through 2027*, forthcoming.

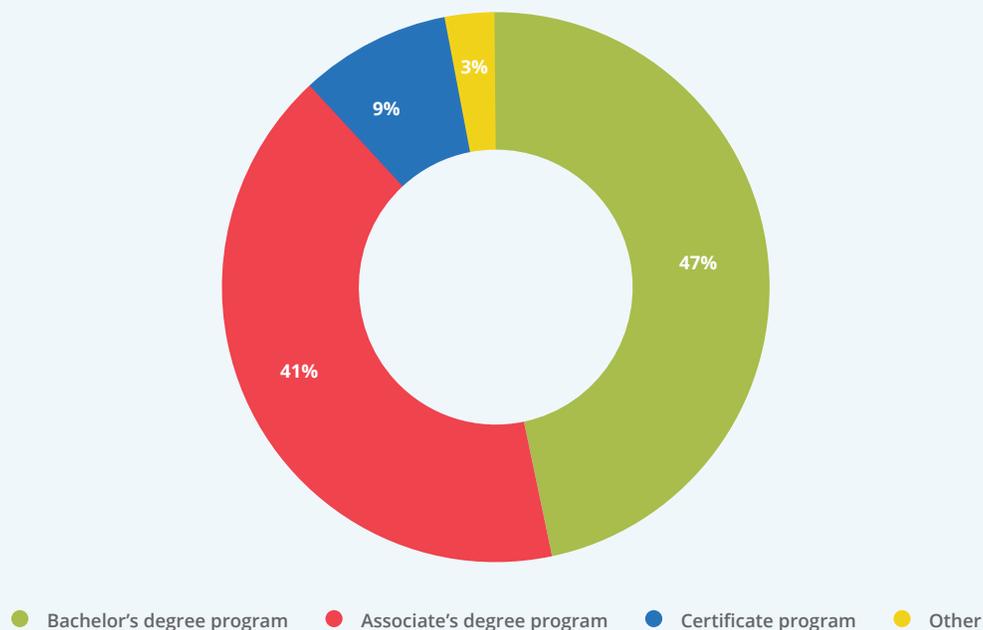
23 Of the undergraduate students in certificate and associate's degree programs, nearly three-quarters (74%) attend public community and technical colleges, while 9 percent attend private colleges offering programs with a duration of two years or less. An additional 17 percent go to public and private four-year colleges and universities. Georgetown University Center on Education and the Workforce analysis of data from the National Postsecondary Student Aid Study (NPSAS), 2016.

Certificate and associate's degree programs rival bachelor's degree programs in enrollment and awards conferred.

Enrollments in certificate and associate's degree programs surpass enrollment in baccalaureate-level education in the United States. Half of students (50%) taking undergraduate coursework are enrolled in certificate and associate's degree programs, and almost half (47%) are enrolled in bachelor's degree programs (Figure 1). Associate's degree programs are much larger than certificate programs in terms of student enrollment; among students enrolled in these programs, 82 percent are in associate's degree programs, and 18 percent are in certificate programs.²⁴

Postsecondary institutions are awarding certificates and associate's degrees at roughly the same pace as bachelor's degrees. In 2009, at a time of expanding postsecondary enrollment, colleges began awarding more certificates and associate's degrees than bachelor's degrees (Figure 2). More recently, the numbers have converged, such that colleges award approximately the same number of certificates and associate's degrees as bachelor's degrees. Both the enrollment and completion trends demonstrate the prevalence of certificate and associate's degree programs.

FIGURE 1. Half of students taking undergraduate coursework are enrolled in either certificate or associate's degree programs.

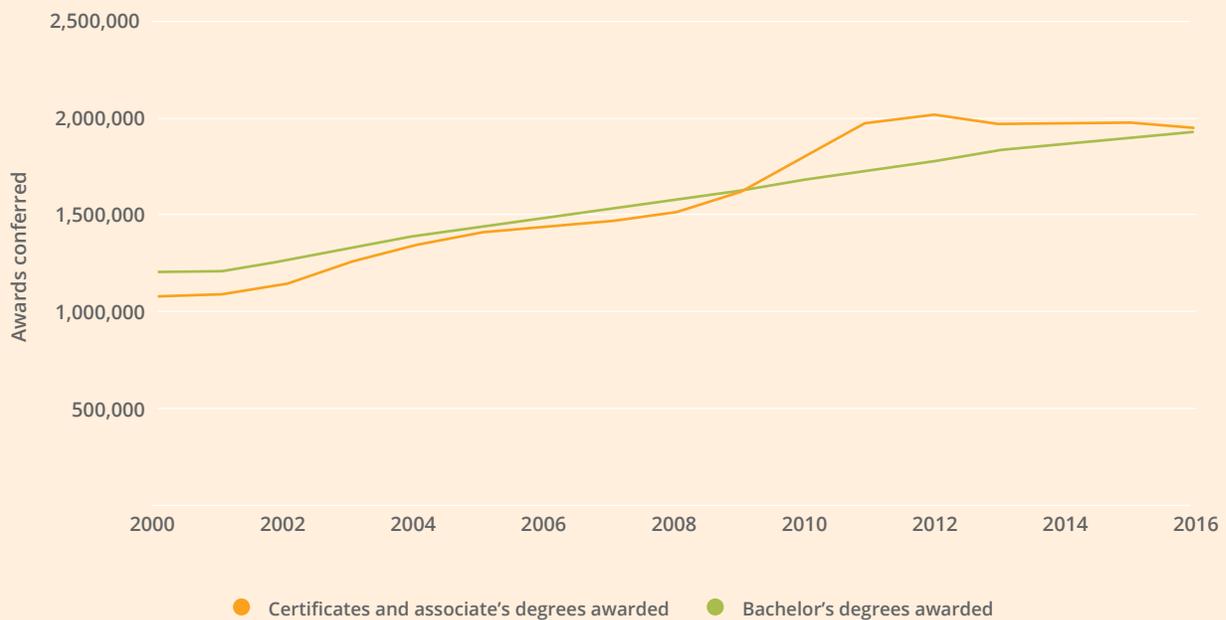


Source: Georgetown University Center on Education and the Workforce analysis of data from the National Postsecondary Student Aid Study (NPSAS), 2016.

Note: NPSAS allows differentiation among certificate, associate's degree, and bachelor's degree enrollment. "Other" refers to students who are enrolled in coursework but not in bachelor's, associate's, or certificate programs.

24 NPSAS is one of the more reliable sources for undergraduate enrollment data for a variety of postsecondary credentials, including certificates and associate's degrees. However, the NPSAS student universe excludes many students enrolled in short-term and noncredit programs that do not lead to a formal credential. Because of this, NPSAS statistics underrepresent the number of students enrolled in programs on the middle-skills pathway. Nationally, 42 percent of students who attend community and technical colleges are enrolled in noncredit coursework. American Association of Community Colleges, *2019 Fact Sheet*, 2019.

FIGURE 2. Colleges award about the same number of certificates and associate's degrees combined as bachelor's degrees.



Source: Georgetown University Center on Education and the Workforce analysis of data from Table 318.40 of the Digest of Education Statistics, 2017.

Note: Numbers may include duplicate counts; it is possible for students to earn multiple credentials, even in the same year.

The overall trend in certificate and associate's degree completions masks the ascendant role of public colleges in awarding these credentials. Since 2011, public colleges have been responsible for all of the growth in the number of certificates and associate's degrees awarded. The number of middle-skills credentials issued by private colleges has in fact dropped since 2011, in the wake of the Great Recession, but the number awarded by public colleges has continued to grow.²⁵

The overall trend in certificate and associate's degree completions masks the ascendant role of public colleges in awarding these credentials.

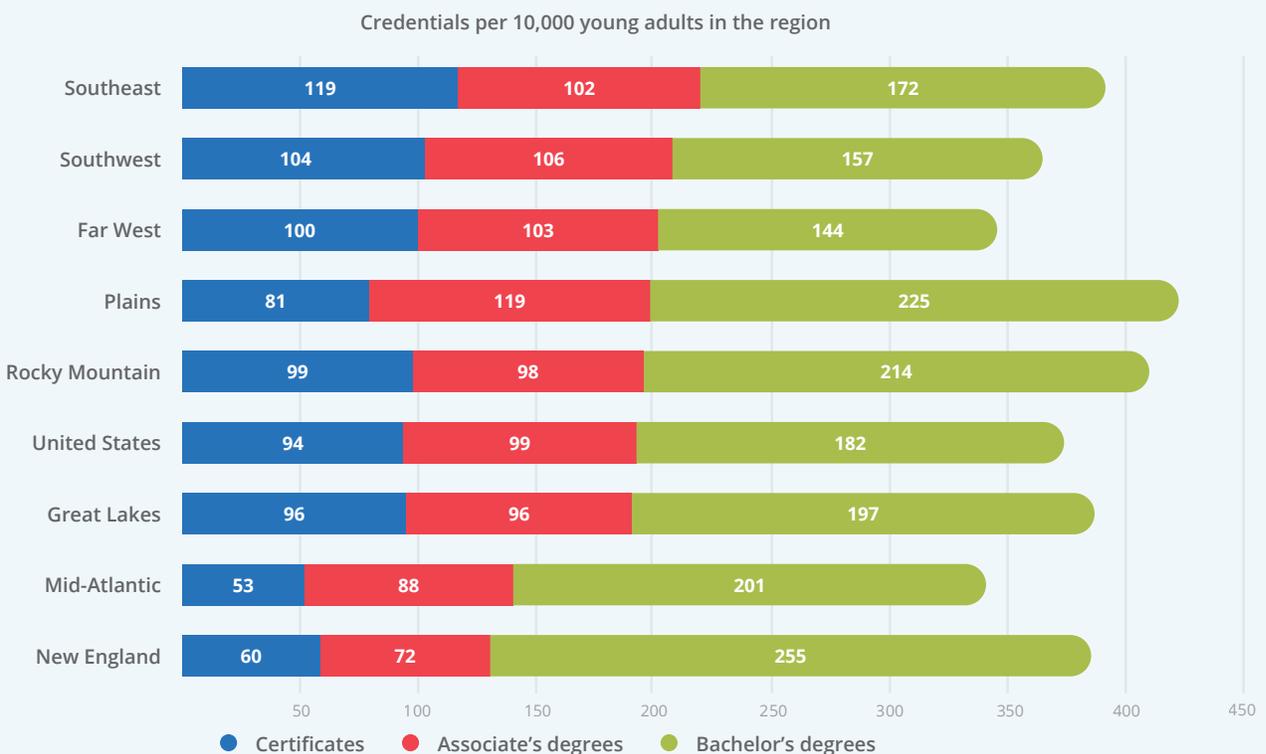
²⁵ Georgetown University Center on Education and the Workforce analysis of data from Table 318.40 of the Digest of Education Statistics, 2017.

The popularity of certificates and associate's degrees varies by region and by state.

Certificates and associate's degrees are more prominent in the South and West than in the Northeast and Mid-Atlantic regions. Differences in state economies, industry mix, and cost of living all play a role in the production of certificates, associate's degrees, and bachelor's degrees in each region of the country.²⁶ Colleges in the Southeast, the Southwest, and the Far West issue more

certificates and associate's degrees each year than bachelor's degrees.²⁷ In the Great Lakes, Rocky Mountain, and Plains regions, the balance of awards conferred is closer to even between the number of certificates and associate's degrees on the one hand and the number of bachelor's degrees on the other.

FIGURE 3. The Southeast awards the most certificates and associate's degrees, and New England confers the fewest.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Integrated Postsecondary Education Data System (IPEDS), 2013–14 to 2015–16 (pooled), and the US Census Bureau American Community Survey (ACS), 2014–16 (pooled).

Note: Title IV participating institutions only. Our analysis excludes US service schools and credentials earned by foreign nationals. Our ACS sample is restricted to 18-to-40-year-olds.

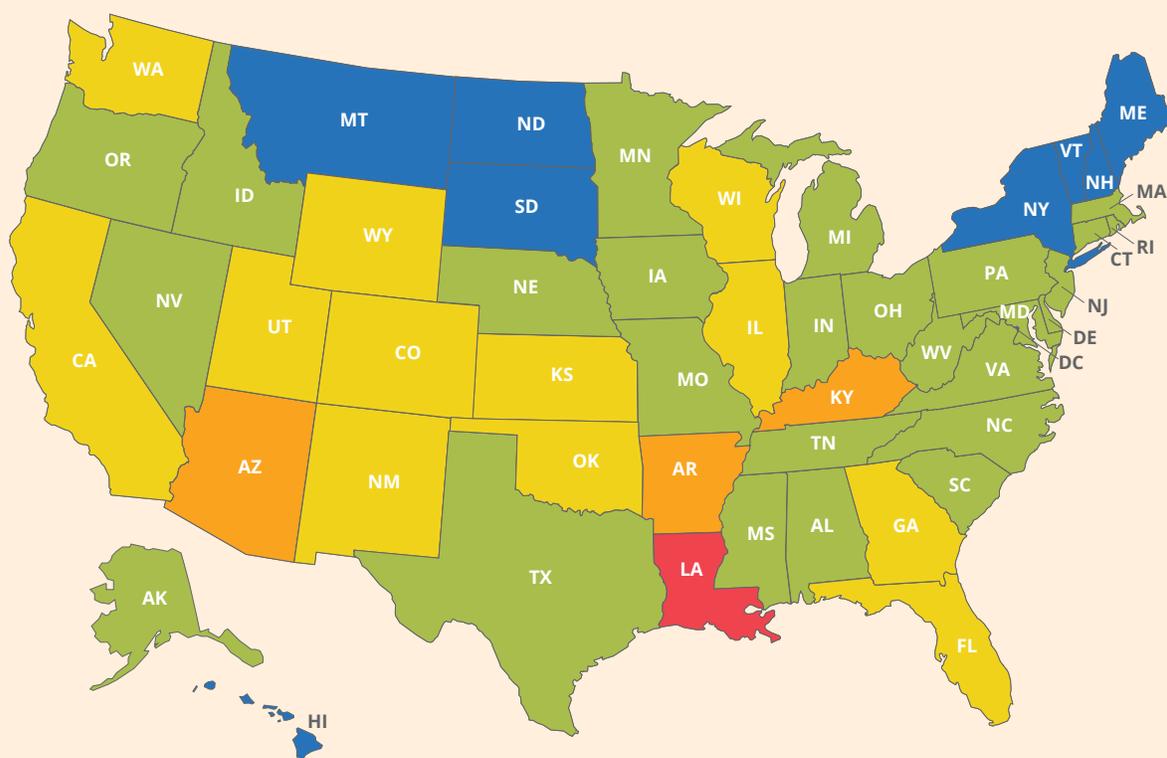
26 Others have also pointed to the influence of institutional culture and state policies in affecting whether state residents acquire certificates, associate's degrees, or bachelor's degrees. Bosworth, *Certificates Count*, 2010.

27 See Appendix A for a list of states in each region.

In the Mid-Atlantic and New England regions, bachelor's degrees are dominant. In the Mid-Atlantic region, colleges confer 201 bachelor's degrees compared to 141 certificates and associate's degrees (combined) per 10,000 young adults. The gap is largest in New England, where colleges award 255 bachelor's degrees and 132 certificates and associate's degrees per 10,000 young adults (Figure 3).

The production of certificates and associate's degrees also plays out differently state by state. Seven states take the lead in conferring the most certificates and associate's degrees per 10,000 young adult residents. Louisiana confers the highest number of certificates, followed by Arizona, Kentucky, and Arkansas (Figure 4). Arizona awards the highest number of associate's degrees, followed by Iowa, Florida, and Wyoming (Figure 5). These production patterns reflect differences in employer demand as well as state policies that encourage a wider range of short-term credentials.

FIGURE 4. Louisiana, Arizona, Kentucky, and Arkansas award the highest number of certificates per 10,000 state residents (among 18-to-40-year-olds).

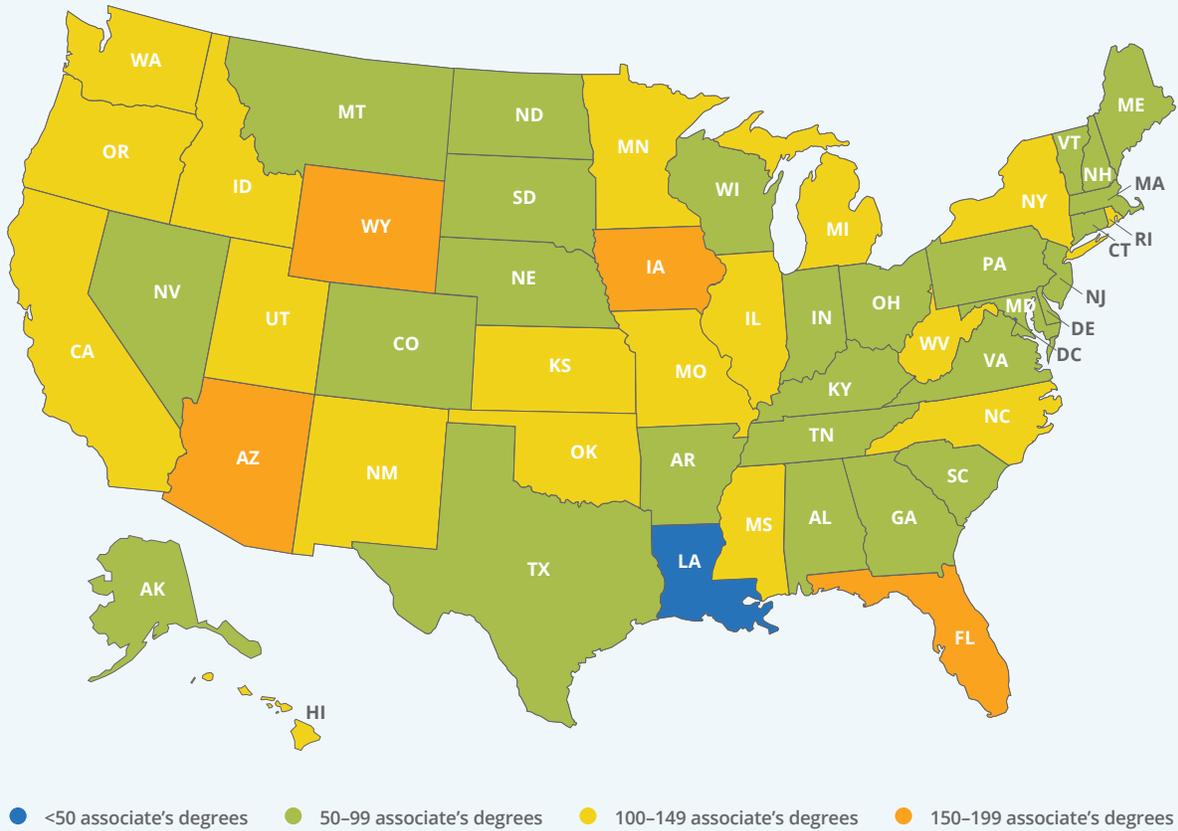


● <50 certificates ● 50-99 certificates ● 100-149 certificates ● 150-199 certificates ● ≥200 certificates

Source: Georgetown University Center on Education and the Workforce analysis of data from the Integrated Postsecondary Education Data System (IPEDS), 2013-14 to 2015-16 (pooled), and US Census Bureau American Community Survey (ACS), 2014-16 (pooled).

Note: Title IV participating institutions only. Our analysis excludes US service schools and credentials earned by foreign nationals.

FIGURE 5. Arizona, Iowa, Florida, and Wyoming award the highest number of associate’s degrees per 10,000 state residents (among 18-to-40-year-olds).



Source: Georgetown University Center on Education and the Workforce analysis of data from the Integrated Postsecondary Education Data System (IPEDS), 2013-14 to 2015-16 (pooled), and US Census Bureau American Community Survey (ACS), 2014-16 (pooled).
 Note: Title IV participating institutions only. Our analysis excludes US service schools and credentials earned by foreign nationals.

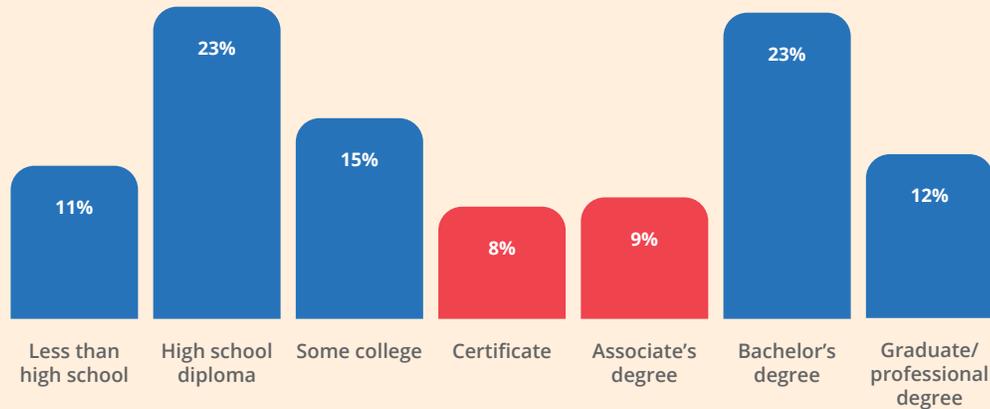
Nearly one-third of workers have taken the middle-skills pathway to jobs.

Before the 1980s, the high school diploma was a ticket to most jobs.²⁸ Today, 35 percent of American workers have a bachelor’s degree or higher and 34 percent have a high school education or less. The remaining workers lie somewhere in the middle.

About 17 percent of them have either a certificate or an associate’s degree as their highest level of educational attainment; combined with workers with some college (15%), they make up almost one-third of the workforce (Figure 6).

28 Carnevale et al., *Three Educational Pathways to Good Jobs*, 2018.

FIGURE 6. One-sixth of workers have a certificate or an associate's degree as their highest educational attainment.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Adult Training and Education Survey (ATES), 2016.

Note: The data set includes prime-age workers (ages 25 to 64). Percentages may not sum to 100 due to rounding.

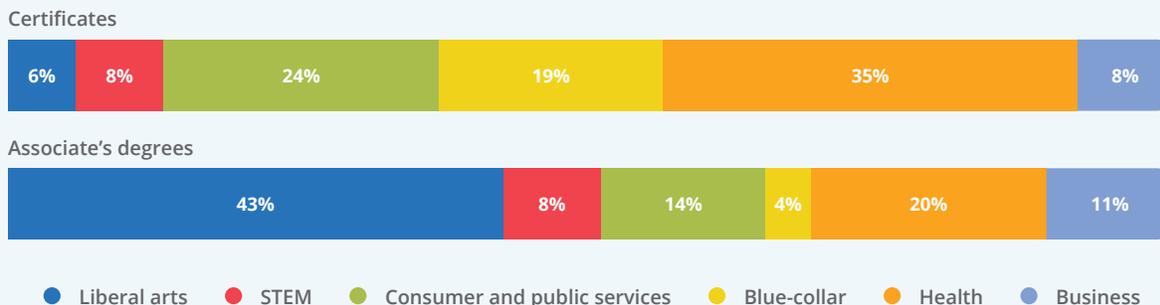
The unique feature of middle-skills credentials is their explicit connection to careers. Associate's degrees include a mix of general education and career preparation,²⁹ while certificates are almost exclusively career oriented. Fifty-seven percent of the associate's degrees that colleges award are in career-oriented fields like consumer and public services; health; business; blue-collar fields; and science, technology, engineering, and mathematics (STEM); 43 percent are in liberal arts fields (Figure 7).

In contrast, about 94 percent of certificates are awarded in career-oriented fields, with about 35 percent in health fields and 19 percent in blue-collar fields such as precision production and construction.

The unique feature of middle-skills credentials is their explicit connection to careers.

²⁹ The three most common types of associate's degrees are associate of arts (AA), associate of science (AS), and associate of applied science (AAS). Some of these—especially the AA—are geared toward transfer to the bachelor's degree, while others are occupationally focused and not designed for transfer. Carnevale et al., *The Economic Value of College Majors*, 2015.

FIGURE 7. The most commonly awarded certificates are in health, consumer and public services, and blue-collar fields, while the most commonly awarded associate's degrees are in the liberal arts and health fields.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Integrated Postsecondary Education Data System (IPEDS), 2013–14 to 2015–16 (pooled).

Note: See Appendix A for a crosswalk between Classification of Instructional Programs codes and broad fields of study.

Peeling back the layers on the “some college” category

The “some college” category is relatively complex and includes a mix of postsecondary education and training options.* About one-third of students with some college enrolled for a single semester. Of the students who enrolled for more than one semester, about one-third have less than one year of college education, while the vast majority participated for one year or more. Seven out of 10 students who enrolled for more than one term but did not earn a credential attended two-year institutions or a combination of two-year and four-year institutions.**

Until recently, not much has been known about this category. As interest in certificates has risen among researchers and policymakers, many studies (including our own) have used federal data sets that include “some college” to approximate the number of certificate holders in the workforce and the overall population. Still, while data-collection efforts to fill the gaps are underway, not enough is known about workers in this category to be able to distinguish between those who have truly dropped out of college without a credential and those who have obtained alternative credentials (such as an industry certification or license).*** The growing role of the middle-skills pathway to jobs requires a true unbundling of this category so that college leaders and employers can devise appropriate interventions so that students obtain the education and training necessary for successful careers.

* For brevity, we shorten the phrase “some college, no degree” to “some college” throughout this report.

** Shapiro et al., *Some College, No Degree*, 2014. The National Student Clearinghouse Research Center recently released an updated version of this report. See Shapiro et al., *Some College, No Degree*, 2019.

*** National Center for Education Statistics, “Interagency Working Group on Expanded Measures of Enrollment and Attainment,” <https://nces.ed.gov/surveys/gemena/>.

The Students Enrolling In and Completing Certificate and Associate's Degree Programs

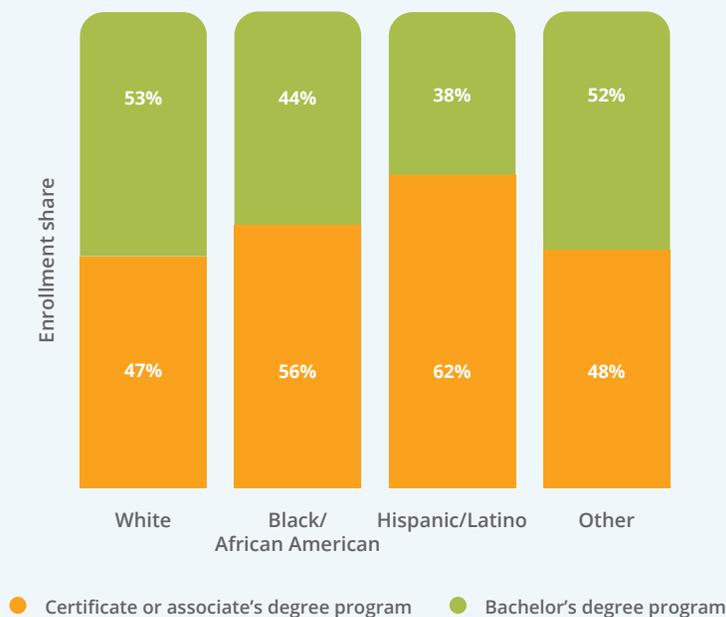
Today's students look like America, and many of them are enrolling in community and technical colleges around the country. Students in certificate and associate's degree programs are more diverse by race and ethnicity, socioeconomic status, and age than those in bachelor's degree programs. Some of them are on the middle-skills pathway to get a job right away, while others are taking a more affordable route to the bachelor's degree and beyond. Regardless of their motivation, it is important to understand who these students are, how they can be better served, and what supports would help them reach their full potential in college and advance in their careers.

Overall, students who enroll in certificate and associate's degree programs are more likely than those in bachelor's degree programs to be Black, Latino, low-income, and older.

Across the nation, both Blacks and Latinos have higher concentrations in certificate and associate's degree programs than Whites. Among postsecondary students pursuing undergraduate education, about 56 percent of Black students and 62 percent of Latino students are enrolled in certificate and associate's degree programs, compared to 47 percent of White students (Figure 8). As other research has shown, Whites are much more likely than Blacks and Latinos to be enrolled in bachelor's degree programs.³⁰

When looking at certificate and associate's degree program enrollment by income, we find different enrollment patterns for dependent versus independent students. The poorest independent students are the most likely to enroll in these programs, and the most affluent dependent students are the least likely to enroll in such programs. Among independent students, about 6 in 10 enroll in certificate and associate's degree programs, regardless of whether they are poor or affluent (Figure 9). Regardless of dependent status, low-income students are more likely than their higher-income peers to enroll in certificate

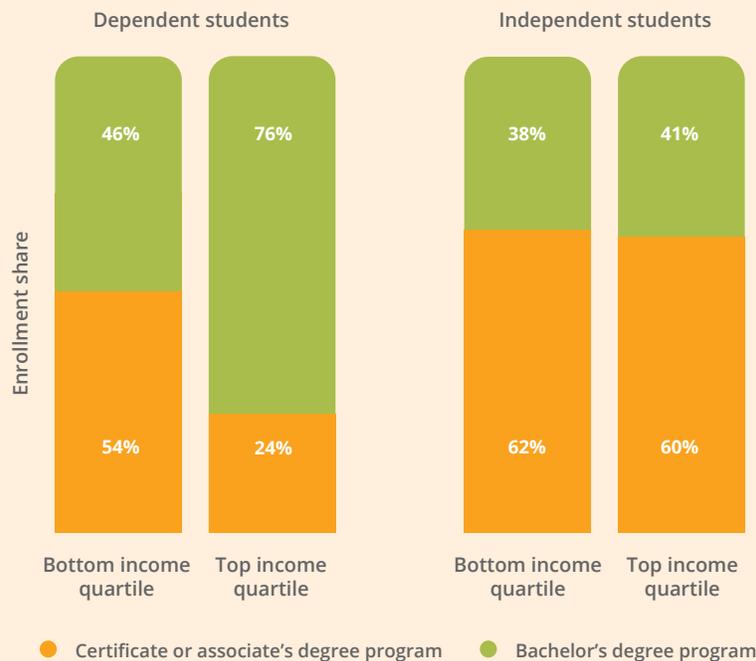
FIGURE 8. More than half of Latino and Black undergraduate students are enrolled in certificate or associate's degree programs.



Source: Georgetown University Center on Education and the Workforce analysis of data from the National Postsecondary Student Aid Study (NPSAS), 2016.

30 Carnevale et al., *Rocky Mountain Divide*, 2018; Carnevale and Fasules, *Latino Education and Economic Progress*, 2017; Carnevale et al., *Our Separate and Unequal Public Colleges*, 2018.

FIGURE 9. Among undergraduate students, low-income independent students are the most likely to enroll in certificate or associate’s degree programs.



Source: Georgetown University Center on Education and the Workforce analysis of data from the National Postsecondary Student Aid Study (NPSAS), 2016.

Note: Percentages may not sum to 100 due to rounding.

programs at two-year public or for-profit colleges, and they are less likely to earn a postsecondary credential.³¹

The vast majority of certificate and associate’s degree programs are offered at public and for-profit two-year colleges (83%). Of the students enrolling in public two-year colleges, 39 percent are over the age of 25.³² Looking more closely at enrollment in these programs by age, a dramatic pattern emerges: 64 percent of students ages 25 to 35 pursuing undergraduate education are enrolled in certificate and associate’s degree programs, and among those who are 36 or older, 66 percent are enrolled in these

programs (Figure 10). Regardless of age, the vast majority of these students are in associate’s degree programs rather than certificate programs, with 18-to-24-year-olds the most likely to be enrolled in associate’s degree programs over certificate programs (86%), compared to 25-to-35-year-olds (79%) and those ages 36 and older (76%).³³

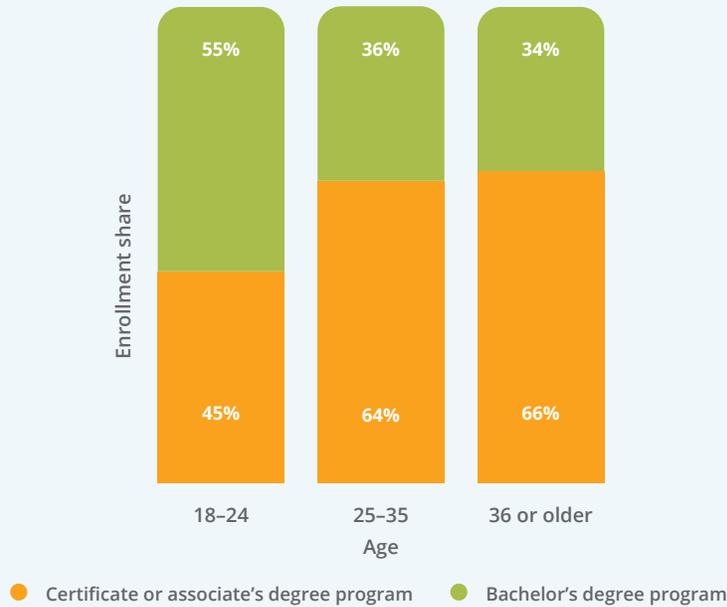
The poorest independent students are the most likely to enroll in certificate and associate’s degree programs.

31 Carnevale and Smith, *Balancing Work and Learning*, 2018.

32 Georgetown University Center on Education and the Workforce analysis of data from the National Postsecondary Student Aid Study (NPSAS), 2016.

33 Georgetown University Center on Education and the Workforce analysis of data from the National Postsecondary Student Aid Study (NPSAS), 2016.

FIGURE 10. Among undergraduate students, older students are overwhelmingly enrolled in certificate and associate's degree programs.



Source: Georgetown University Center on Education and the Workforce analysis of data from the National Postsecondary Student Aid Study (NPSAS), 2016.

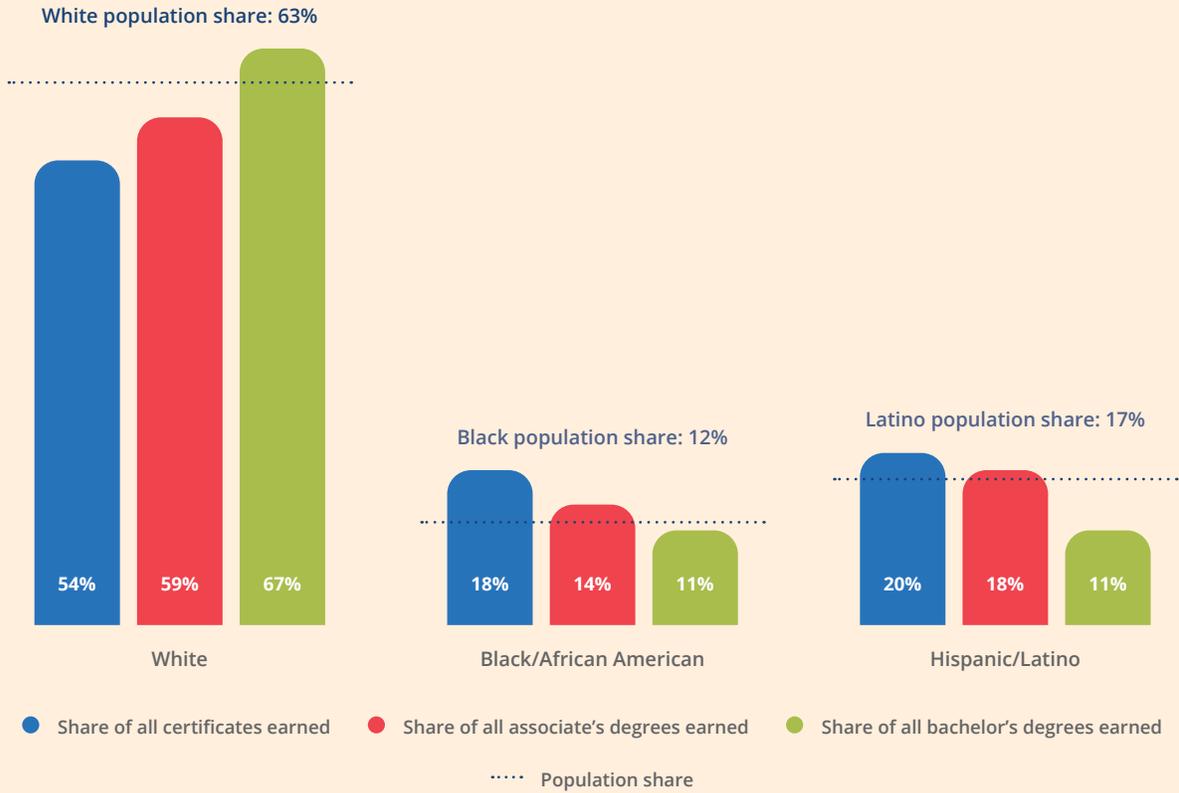
Among students who earn certificates and associate's degrees, Blacks are overrepresented in certificate attainment, and Latinos are overrepresented in both certificate and associate's degree attainment.

Nationally, the gaps in enrollment among racial and ethnic groups translate into big differences in credential attainment. Both Blacks and Latinos earn a higher percentage of certificates and associate's degrees than their respective shares of the population. Blacks and Latinos earn the same

share of bachelor's degrees (11%), but Latinos earn a higher percentage of certificates and associate's degrees than Blacks. While Whites have larger shares of certificates, associate's degrees, and bachelor's degrees compared to Blacks and Latinos, they are the only group that is overrepresented in bachelor's degree attainment (67%) relative to their population share (Whites represent 63% of the population, Blacks represent 12%, and Latinos represent 17%) (Figure 11).

Nationally, the gaps in enrollment among racial and ethnic groups translate into big differences in credential attainment.

FIGURE 11. Blacks and Latinos are overrepresented in certificate and associate's degree attainment and underrepresented in bachelor's degree attainment relative to their population share.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Integrated Postsecondary Education Data System (IPEDS), 2013–14 to 2015–16 (pooled), and US Census Bureau American Community Survey (ACS), 2014–16 (pooled).

Note: Shares of each credential type do not add up to 100 percent because not all racial and ethnic groups are featured.

States with sizable Black and Latino populations have different credential attainment patterns than the nation at large.

Both Blacks and Latinos earn certificates and associate's degrees at higher proportions than their population shares. This is the case nationally (see Figure 11) and—for the most part—at the state level. But their overrepresentation is even greater in the 27 states with significant Black or Latino populations.³⁴ In most of these states, Blacks (Table 1) and Latinos (Table 2) are more overrepresented in certificate attainment than in associate's degree attainment relative to their population share. For example, Blacks and Latinos in New York make up 14 percent and 18 percent of the population, respectively, but they earn a larger share of certificates relative to their population share (25% and 19%, respectively). With very few exceptions,³⁵ Whites in these states are overrepresented in bachelor's degree attainment.

While it is good news that Blacks and Latinos are earning postsecondary credentials, the bad news is that, on average, lifetime earnings of workers with certificates fall far below those of workers with bachelor's degrees.

While it is good news that Blacks and Latinos are earning postsecondary credentials, the bad news is that, on average, lifetime earnings of workers with certificates fall far below those of workers with bachelor's degrees.³⁶ Among the 80 percent of community college students who intend to earn a bachelor's degree, about 25 percent transfer to a four-year college, and among these, only 17 percent actually earn a bachelor's degree.³⁷ In addition, many of today's students are changing jobs up to four times by the time they turn 32.³⁸ While more research is needed to determine whether workers with certificates and associate's degrees are changing their jobs more frequently than those with a bachelor's degree or higher, the fact remains that not enough students who enter these middle-skills pathways emerge with a credential in hand. In addition, further study is necessary to explore whether those who enter the workforce with certificates and associate's degrees eventually return to college to earn a bachelor's degree, which would allow them to increase their earnings.

34 We examined the top 10 states with the highest percentage of Black or Latino residents. Florida, Illinois, New Jersey, and New York are the four states with sizable populations for both groups. Black representation ranges from 13 percent in New Jersey to 37 percent in Mississippi. Latino representation ranges from 11 percent each in Idaho and Oregon to 46 percent in New Mexico. Blacks make up 42 percent of the District of Columbia (DC) population, while Latinos make up 11 percent. However, we exclude DC from this analysis because, as of 2016, only 6 percent of DC enrollments were DC residents, compared to the national rate of 82 percent. Georgetown University Center on Education and the Workforce analysis of data from the Integrated Postsecondary Education Data System (IPEDS), 2016–17.

35 Whites in Florida earned bachelor's degrees at a rate equal to their population share (54%). Whites in Oregon represent 78 percent of the state's population but earned 77 percent of the bachelor's degrees.

36 Carnevale and Cheah, *Five Rules of the College and Career Game*, 2018.

37 Jenkins and Fink, *What We Know about Transfer*, 2015.

38 Higher Learning Advocates, *Policy Toolkit*, 2019.

TABLE 1. In all 16 states with sizable Black populations, Blacks are overrepresented in certificate attainment relative to their population share.

State	Race/ethnicity	Share of population	Share of all certificates conferred	Share of all associate's degrees conferred	Share of all bachelor's degrees or higher conferred
Mississippi	Black/African American	37%	50%	35%	31%
	White	58%	46%	62%	64%
Georgia	Black/African American	31%	44%	38%	26%
	White	55%	48%	51%	59%
Louisiana	Black/African American	31%	39%	33%	22%
	White	61%	53%	58%	68%
Maryland	Black/African American	30%	45%	24%	22%
	White	52%	42%	59%	59%
Alabama	Black/African American	27%	38%	26%	23%
	White	67%	57%	67%	69%
South Carolina	Black/African American	27%	37%	27%	19%
	White	65%	57%	65%	73%
Delaware	Black/African American	21%	37%	17%	19%
	White	64%	46%	69%	70%
North Carolina	Black/African American	21%	28%	20%	19%
	White	65%	61%	68%	69%
Virginia	Black/African American	19%	28%	23%	17%
	White	63%	56%	58%	66%
Tennessee	Black/African American	17%	23%	17%	16%
	White	75%	70%	76%	76%
Arkansas	Black/African American	16%	23%	17%	12%
	White	74%	68%	73%	79%
Florida	Black/African American	16%	22%	19%	16%
	White	54%	44%	49%	54%
Illinois	Black/African American	14%	20%	13%	12%
	White	63%	57%	64%	67%
Michigan	Black/African American	14%	23%	14%	9%
	White	77%	68%	77%	79%
New York	Black/African American	14%	25%	18%	11%
	White	56%	44%	53%	62%
New Jersey	Black/African American	13%	29%	15%	11%
	White	56%	38%	56%	60%

Source: Georgetown University Center on Education and the Workforce analysis of data from the Integrated Postsecondary Education Data System (IPEDS), 2013–14 to 2015–16 (pooled), and US Census Bureau American Community Survey (ACS), 2014–16 (pooled).

Note: Shares do not add up to 100 percent because not all racial and ethnic groups are featured. Our analysis excludes foreign nationals and students of unknown race.

TABLE 2. In 12 of the 15 states with sizable Latino populations, Latinos are overrepresented in certificate attainment relative to their population share.

State	Race/ethnicity	Share of population	Share of all certificates conferred	Share of all associate's degrees conferred	Share of all bachelor's degrees or higher conferred
New Mexico	Hispanic/Latino	46%	46%	47%	43%
	White	40%	35%	37%	44%
California	Hispanic/Latino	36%	44%	41%	25%
	White	40%	31%	34%	42%
Texas	Hispanic/Latino	36%	46%	40%	26%
	White	45%	32%	39%	52%
Arizona	Hispanic/Latino	29%	32%	23%	15%
	White	57%	51%	55%	61%
Florida	Hispanic/Latino	26%	29%	26%	23%
	White	54%	44%	49%	54%
Nevada	Hispanic/Latino	26%	28%	23%	16%
	White	53%	44%	54%	59%
Colorado	Hispanic/Latino	19%	23%	17%	11%
	White	71%	64%	67%	74%
New Jersey	Hispanic/Latino	19%	28%	21%	15%
	White	56%	38%	56%	60%
New York	Hispanic/Latino	18%	19%	20%	13%
	White	56%	44%	53%	62%
Illinois	Hispanic/Latino	16%	16%	16%	10%
	White	63%	57%	64%	67%
Connecticut	Hispanic/Latino	15%	22%	18%	9%
	White	69%	54%	62%	74%
Rhode Island	Hispanic/Latino	13%	19%	11%	8%
	White	75%	64%	76%	78%
Utah	Hispanic/Latino	13%	12%	8%	6%
	White	80%	81%	84%	84%
Idaho	Hispanic/Latino	11%	15%	9%	6%
	White	84%	80%	85%	87%
Oregon	Hispanic/Latino	11%	12%	11%	8%
	White	78%	76%	77%	77%

Source: Georgetown University Center on Education and the Workforce analysis of data from the Integrated Postsecondary Education Data System (IPEDS), 2013–14 to 2015–16 (pooled), and US Census Bureau American Community Survey (ACS), 2014–16 (pooled).

Note: Shares do not add up to 100 percent because not all racial and ethnic groups are featured. Our analysis excludes foreign nationals and students of unknown race.

The Labor-Market Outcomes of Certificates and Associate's Degrees

The new rules of the college and career game show that in general, more education yields more pay, since workers with any level of postsecondary education earn more at the median than high school graduates.³⁹ What is also true is that while education level matters, the program of study and major matter even more when it comes to lifetime earnings. Last, but not least, sometimes less education can be worth more in the long term—but again, it all depends on the program. The interplay among these rules explains why some certificate holders can earn more than those with an associate's or bachelor's degree, why some associate's degree holders can earn more than those with a bachelor's degree, and why some bachelor's degree holders can earn more than those with graduate and professional degrees.

³⁹ Carnevale and Cheah, *Five Rules of the College and Career Game*, 2018.

What you make depends on what you take, particularly for workers with certificates and associate's degrees.

For certificate holders as well as associate's degree holders, the choice of field of study is an important decision that influences future earnings. While this is true for all postsecondary programs, it matters even more for certificate and many associate's degree programs because they are tightly linked with specific occupations.

In some cases, depending on the field of study, workers with certificates and associate's degrees earn more than those with bachelor's degrees.

Associate's degrees. Not all associate's degrees result in the same wage outcomes. Workers with associate's degrees in engineering have median earnings that are about twice as high (between \$50,001 and \$60,000) as those with associate's degrees in education and the arts (between \$20,001 and \$30,000).⁴⁰ Workers with associate's degrees in liberal arts and general studies, which typically are transfer-oriented degrees, have lower median earnings (between \$30,001 and \$40,000) than those in the health and business fields and blue-collar fields, such as construction (between \$40,001 and \$50,000) (Figure 12). The potential value of earning an associate's degree in liberal arts typically comes from successful transfer and graduation with the bachelor's degree.⁴¹

Certificates. The returns on certificate programs also vary widely based on field of study. Workers with certificates in engineering technologies have median earnings between \$75,001 and \$150,000, easily outpacing those with certificates in cosmetology and education, who earn between \$10,001 and \$20,000 (Figure 13). Earning a certificate in a blue-collar field (such as mechanic and repair technologies, manufacturing, and construction trades) can lead to a job with median earnings between \$40,001 and \$50,000. Landing a job related to the chosen field of study is particularly important for certificate holders. Workers who report being employed in a job related to their certificate program have higher median earnings (between \$40,001 and \$50,000) than those who are not working in a related job (between \$20,001 and \$30,000).⁴²

In some cases, depending on the field of study, workers with certificates and associate's degrees earn more than those with bachelor's degrees. Associate's degree holders who studied engineering have median earnings between \$50,001 and \$60,000 per year, compared to workers with a bachelor's degree in education, who have median earnings between \$30,001 and \$40,000 per year.⁴³ Workers with certificates in construction trades and other blue-collar fields have median earnings that are as high as those of bachelor's degree recipients in liberal arts and humanities (between \$40,001 and \$50,000).

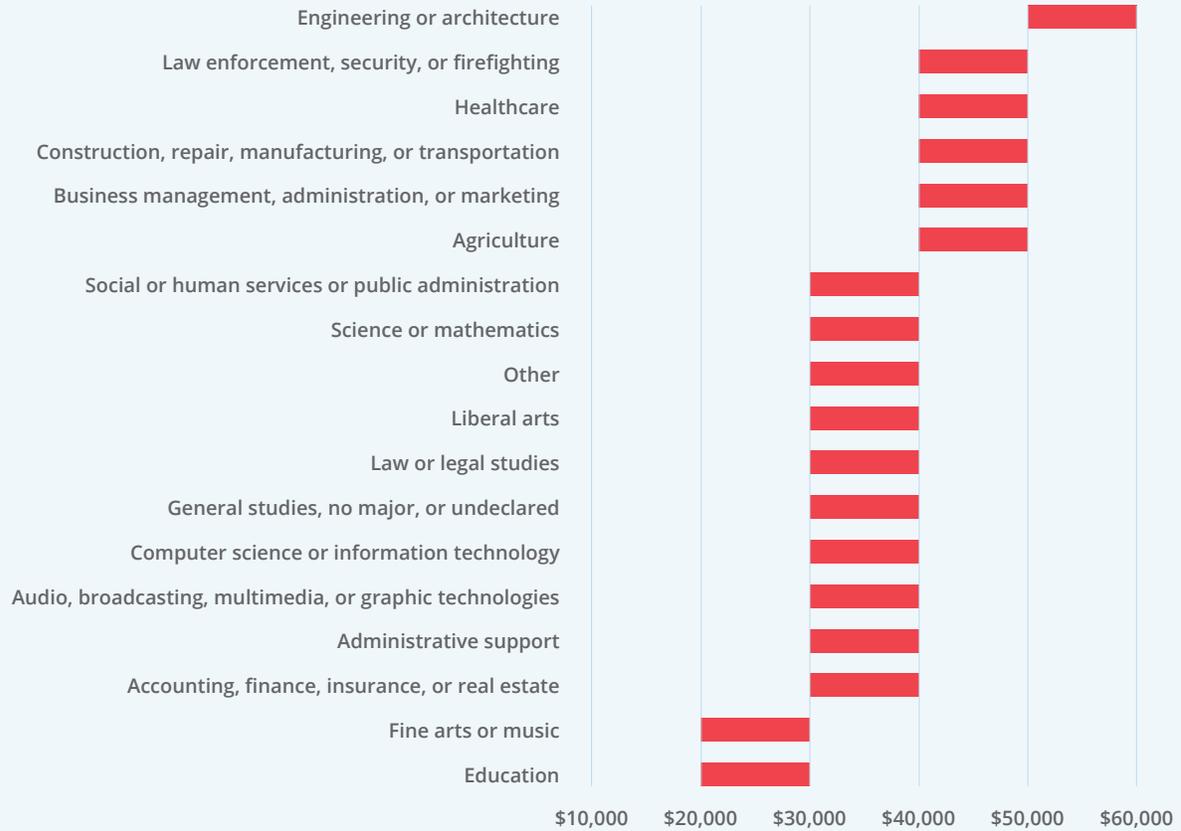
40 For our analysis using Adult Training and Education Survey (ATES) data, we calculated median earnings based on the wage bands for each field of study. In this analysis, we included only workers whose highest credential was a certificate or an associate's degree, and who had reported their median earnings over the previous 12-month period. In contrast to ATES data, the state administrative data includes workers with multiple credentials and presents earnings either one or two years after credential attainment.

41 In *The Labor Market Returns to Sub-Baccalaureate College* (2017), Belfield and Bailey conclude that academic associate's degrees by themselves have relatively low returns and are not likely to have more value than earning college credits. A similar conclusion is offered in Backes et al., *Is It Worth It?*, 2014.

42 Georgetown University Center on Education and the Workforce analysis of data from the Adult Training and Education Survey (ATES), 2016.

43 Georgetown University Center on Education and the Workforce analysis of data from the Adult Training and Education Survey (ATES), 2016.

FIGURE 12. Workers with associate’s degrees in engineering have median earnings between \$50,001 and \$60,000 per year, compared to between \$20,001 and \$30,000 per year for those who studied education or fine arts.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Adult Training and Education Survey (ATES), 2016.

Note: ATES asks respondents to specify their earnings during the 12 months prior to the interview within prescribed wage bands by field of study. We calculated median wage bands based on earnings for prime-age workers (ages 25 to 64) with positive earnings. Fields with fewer than 30 records were not included.

FIGURE 13. Workers with certificates in engineering technologies or drafting have median earnings between \$75,001 and \$150,000—higher than those with certificates in other fields.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Adult Training and Education Survey (ATES), 2016.

Note: ATES asks respondents to specify their earnings during the 12 months prior to the interview within prescribed wage bands by field of study. We calculated median wage bands based on earnings for prime-age workers (ages 25 to 64) with positive earnings. Fields with fewer than 30 records were not included.

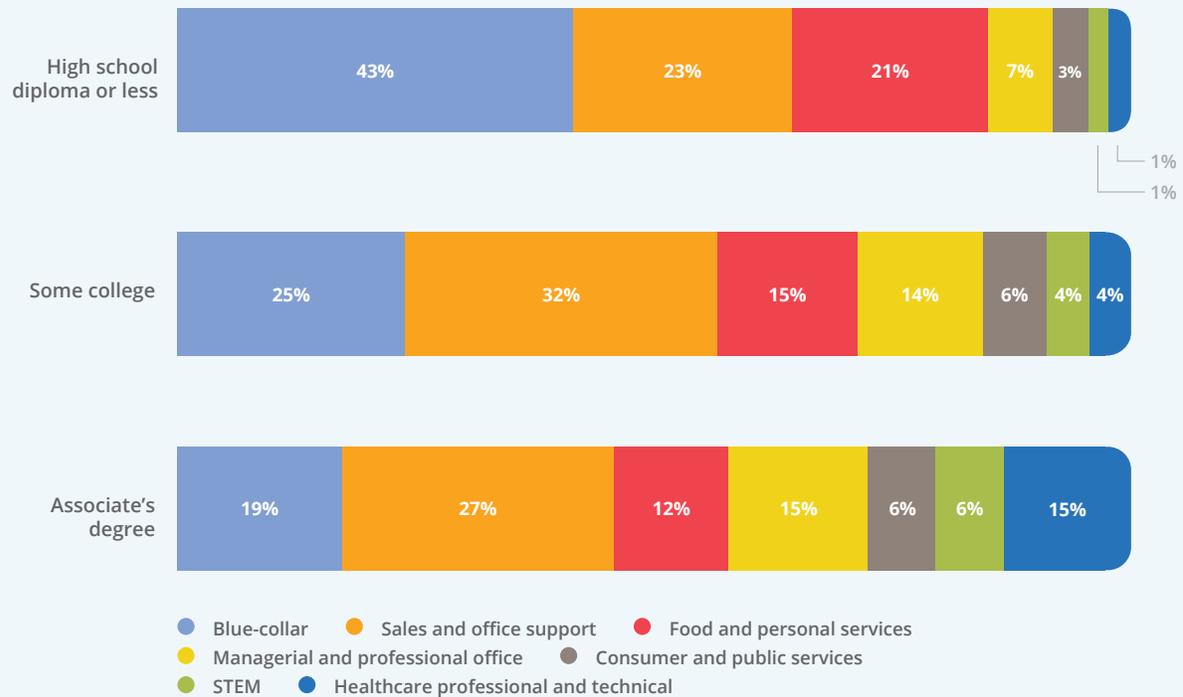
The middle-skills pathway provides access to STEM, healthcare, and management jobs.

Workers with some college and those with associate's degrees have access to different job opportunities than those with no more than a high school education. For example, 15 percent of workers with associate's degrees have jobs in healthcare professional and technical occupations, such as nursing and healthcare technician jobs, compared to just 1 percent of those with no more than a high school diploma. Workers with associate's degrees also are more concentrated (6%) in STEM occupations, such as engineering technician and

computer support specialist jobs, than are those with a high school diploma or less (1%). Workers with some college and those with associate's degrees are more likely to fill management and office jobs (14% and 15%, respectively) than those with a high school diploma or less (7%) (Figure 14).

Workers with a high school diploma or less are more likely to enter blue-collar occupations, such as construction and production jobs, and are heavily concentrated (43%) in these occupations, compared

FIGURE 14. Workers who took the middle-skills pathway are more concentrated in healthcare, STEM, and management than high school-educated workers.



Source: Georgetown Center on Education and the Workforce analysis of data from the US Census Bureau American Community Survey (ACS), 2016.

Note: Data include prime-age workers (ages 25 to 64) with positive earnings. Percentages may not sum to 100 due to rounding.

to those with some college (25%) or associate's degrees (19%). Those with a high school diploma or less also are more concentrated (21%) in food and personal services than workers with some college (15%) or associate's degrees (12%).

The jobs that have the greatest labor-market payoff for workers with middle-skills credentials are in STEM and managerial and professional office occupations. About two-thirds of STEM workers with some college (67%) and with associate's degrees

(68%) make more than the highest-earning high school graduates in any occupation. Management and professional office jobs provide a similar advantage, as many workers with some college (57%) and associate's degrees (57%) make more than the highest-paid workers with no more than a high school education. In addition, healthcare professional and technical jobs, such as nurses and healthcare technicians, pay off for more than half (54%) of associate's degree holders.⁴⁴

44 We compared the share of workers by occupation and education level earning more than the highest-earning high school-educated workers—those placing at or above the 75th percentile for workers with no more than a high school education.

Connecting programs to earnings at the community, regional, and state levels is the key to unlocking the value of postsecondary credentials.

Much can be learned about the economic value of certificate and associate's degree programs at the national level, including what people earn depending on their education level and the general types of programs they complete. But national data do not provide the whole picture. To understand the true economic value of middle-skills credentials, stakeholders at the community, regional, and state levels need to explore the data in far more detail. State higher education and workforce leaders have pioneered new data-collection methods to determine the labor-market value of certificate and associate's degree programs and whether they lead to jobs that pay well. These leaders understand the importance of connecting postsecondary education and training to employers' workforce needs, not just for better policymaking, but also to help students navigate between college and careers.⁴⁵ This section relies on administrative data obtained from 10 states⁴⁶ with the capacity to link student records with wage records and generate earnings outcomes. These data provide fresh insight and demonstrate the importance of assessing the economic value of associate's degrees and certificates.⁴⁷

Associate's degrees. Across all states that provided data,⁴⁸ health professions associate's degree programs rank in the top five broad fields of study with the highest earnings. Health also is the single top-earning associate's degree field in four of the 10 states that provided data. The most common health associate's degree program is for registered nurses, and an associate's degree in this field of study can be a good investment: in Connecticut, for example, nursing graduates have median earnings of \$54,800 one year after finishing the program. Other common health associate's degree programs across states are for dental hygienists and physical therapy technicians.

Along with health, associate's degree programs in engineering technologies rank in the top-earning fields of study in every state (Table 3). One of the most common engineering technologies associate's degree fields is electrical, electronic, and communications engineering technology. In Ohio, workers with associate's degrees in electrical engineering technologies have median earnings of \$40,000 one year following program completion.

Certificates. Among certificate programs, engineering technologies is the only broad field of study that places in the top five in eight of the 10 states, and it ranks as the single top-earning field for certificate holders in three of the states that provided data. This broad field of study includes programs such as electrical, electronic, and communications engineering technologies; hydraulics and fluid power technologies; instrumentation technology; and industrial technologies. A particularly high-paying program is the hydraulics and fluid power technician certificate program in Indiana; graduates in this field earn a median of \$59,200 in wages one year following the program.

Workers with certificates in blue-collar fields have the highest earnings among certificate holders in more than half of the states (Table 4). These fields include precision production, construction trades, and mechanic and repair technologies. For example, graduates with certificates in tool and die technology in Washington earn a median wage of \$56,600 one year after completing the program. Other certificate fields that are high earning in half of the states are legal professions, which features paralegal training, and computer and information sciences.

45 Carnevale et al., *Career Pathways*, 2017.

46 The 10 states are Colorado, Connecticut, Indiana, Kentucky, Minnesota, Ohio, Oregon, Texas, Virginia, and Washington.

47 Appendix B contains earnings data for the 10 states.

48 The state data have been used to analyze top-ranking fields in each state, but not to directly compare earnings for similar programs across state lines.

TABLE 3. Workers with associate’s degrees in engineering technologies and health professions out-earn those with associate’s degrees in other fields in nearly every state.

Associate’s degree holders		
Broad field of study	Detailed field of study (examples)	Annual earnings (examples)
Engineering technologies	Biomedical technician	\$49,500 (Washington)
	Electrical, electronic, and communications engineering technology	\$40,000 (Ohio)
	Industrial production technologies	\$56,500 (Minnesota)
	Manufacturing technician	\$46,000 (Oregon)
Health professions	Dental hygienist	\$51,900 (Virginia)
	Emergency medical technician	\$49,300 (Colorado)
	Radiographer	\$45,700 (Texas)
	Registered nurse	\$54,800 (Connecticut)

Source: Georgetown University Center on Education and the Workforce analysis of administrative data from 10 states.
 Note: See Appendix B for an explanation of the differences in earnings calculations across states.

In some states, a worker with a certificate or an associate’s degree in the right field can make as much as a bachelor’s degree holder. In Texas, for example, workers with associate’s degrees in chemical technology have median earnings of \$75,500, compared to about \$50,600 in median earnings for workers with bachelor’s degrees in the state. In Ohio, certificate holders in industrial technology make \$65,000 in median earnings, well above the \$45,700 in median earnings for workers with bachelor’s degrees there.

Even for those who have low initial earnings after program completion, a certificate or associate’s degree can be a means of getting a job and building work experience, though these workers will generally need to acquire additional credentials and skills for family-sustaining earnings. Certificates can also lead to jobs that provide more freedom and flexibility and less work stress than the jobs available to high school graduates. Similarly, completing an associate’s degree may open the door to jobs that offer greater stability.⁵⁰

While certificates and associate’s degrees can offer economic value, not all programs are equal. In certain fields of study, workers need more than a certificate or an associate’s degree to gain access to jobs that pay well.⁴⁹ However, students who complete certificates and associate’s degrees also gain a range of benefits beyond earnings potential.

Among certificate programs, engineering technologies is the only broad field of study that places in the top five for earnings in eight of the 10 states.

49 Aspen Institute, *From College to Jobs*, 2015.

50 Rosenbaum et al., *Removing Our BA Blinders*, 2011; Carnevale et al., *Certificates*, 2012.

TABLE 4. A wide variety of top-earning certificate programs are in blue-collar fields of study.

Certificate holders		
Broad field of study	Detailed field of study (examples)	Annual earnings (examples)
Construction	Electrician	\$38,000 (Virginia)
	Lineworker	\$35,700 (Colorado)
Mechanic and repair	Industrial mechanic	\$41,400 (Kentucky)
	Industrial equipment maintenance	\$61,200 (Minnesota)
Precision production	Ironworking	\$54,000 (Indiana)
	Tool and die technician	\$56,600 (Washington)

Source: Georgetown University Center on Education and the Workforce analysis of administrative data from 10 states.

Note: See Appendix B for an explanation of the differences in earnings calculations across states.

Conclusion

In yesterday's industrial economy, the path to the middle class was less complicated: most workers could either find a job right after high school or get a bachelor's degree first.⁵¹ All they really needed to decide was whether or not to go to college. But in today's knowledge- and service-based economy, three educational pathways to the middle class have emerged: high school, middle skills, and the bachelor's degree.⁵² None of these pathways guarantees middle-class earnings, but each offers different odds of success. Because good jobs for workers with a high school diploma have decreased, the middle-skills and bachelor's degree pathways are now more likely to lead to jobs that pay well.

51 Carnevale and Rose, *The Economy Goes to College*, 2015.

52 Carnevale et al., *Three Educational Pathways to Good Jobs*, 2018.

As certificate and associate's degree programs have become popular routes to employment, what is still missing is a deep understanding of the labor-market value of these credentials akin to what is known about bachelor's degrees. Greater transparency at the program level is what students, employers, and policymakers need to fully understand the relationship between the more than 2,200 programs of study currently offered across the postsecondary landscape and the 840 occupations that characterize our modern economy.⁵³

Recent progress on this front suggests that the transparency train has left the station, and stakeholders should be preparing for big changes on the horizon. Since 2018, the US Census Bureau's Longitudinal Employer Household Dynamics

Going forward, the focus of educators and policymakers should be on strengthening all pathways to and through college.

program has released labor-market data connected to postsecondary student records, making program-level earnings data available for graduates across state lines.⁵⁴ The proposed bipartisan College Transparency Act stipulates the provision of earnings data at the program level for all students. And the College Scorecard recently added program-level earnings data for every institution, but only for federal student loan recipients.⁵⁵

But greater transparency will only go so far. In addition to knowing the labor-market value of their programs, students need better assurances that

their investments of time and money will actually result in their desired credentials. Many students, including those from underrepresented groups, are not making it to the finish line. Analysis of the new federal Outcome Measures survey shows that only 42 percent of students who enter two-year institutions have earned a certificate or degree eight years later.⁵⁶ To make matters worse, more than 80 percent of community college students intend to transfer to get a bachelor's degree—but of these, only 25 percent do transfer, and just 17 percent of those who do transfer have earned a bachelor's degree six years later.⁵⁷ These low completion rates suggest that today's colleges need to adapt to the new economy: they must engage, graduate, and prepare for the workforce a larger proportion of Americans than ever before.⁵⁸

Going forward, the focus of educators and policymakers should be on strengthening all pathways to and through college—including certificates, associate's degrees, and bachelor's degrees—and shoring up the connections among and between them. Not all students need to earn a bachelor's degree to get a good job. But all students should have the opportunity and institutional support to do so if that is what they need to progress in their careers. These college pathways can be routes to the middle class, and students need to know how to navigate them. The lack of policy focus on middle-skills credentials, combined with outdated data-collection practices, keeps us from thoroughly examining how to make the higher education system work for students in these programs. Policymakers and higher education leaders need to catch up with the demands of our modern economy and make it easier for all students to acquire education beyond high school.

53 Carnevale et al., *Career Pathways*, 2017.

54 US Census Bureau, "Post-Secondary Employment Outcomes," https://lehd.ces.census.gov/data/pseo_beta.html. A handful of states and systems have signed on to participate, and the program is set to expand in 2019 and beyond. The American Institutes for Research "College Measures" initiative and the Western Interstate Commission for Higher Education "Multistate Longitudinal Data Exchange" represent previous efforts at the state level; <https://www.air.org/center/college-measures> and <https://www.wiche.edu/longitudinalDataExchange/faq>.

55 The College Scorecard was first introduced in 2015 with earnings data by college, but not by program.

56 This completion rate excludes students who transfer out of the institution that they entered. Itzkowitz, *New Data Further Cements Completion Crisis in Higher Education*, 2018.

57 Jenkins and Fink, *What We Know about Transfer*, 2015.

58 Carnevale et al., *Our Separate and Unequal Public Colleges*, 2018.

Policy recommendations

This report describes the risks and rewards of certificate and associate's degree programs, the diverse student populations they attract, and the emerging efforts to measure their economic value. Its findings illustrate why students need better information when making decisions about their education and how to reach their desired destinations. States are leading the way in innovating new data-collection methods to determine the labor-market value of certificate and associate's degree programs. Further progress will depend on federal policy action, especially through the anticipated reauthorization of the Higher Education Act.



Increase transparency about postcollege outcomes, including employment and earnings.

Getting a job or launching a career is a primary motivation for postsecondary students.⁵⁹ Too often, however, students are left to their own devices in making the connections between college and careers. Information on the careers and earnings associated with fields of study is not widely available, and where it is, it might not be adequate for informed decision making. As a result, students typically are not able to readily determine how to finance their education, what to study, their chances of graduating, or the types of credentials that have value in the workplace. These decisions have real economic consequences, and students deserve to be fully informed about their options.

For decades, the only information available to students was through third-party college ratings systems largely based on institutional reputation and inputs. But institution-focused and input-focused metrics are no longer enough. To grasp the value of postsecondary programs, students need to understand postcollege outcomes, including

employment and earnings. These outcomes need to be measured at the program level because the choice of field of study or major plays a much stronger role than choice of institution in determining economic value for students.⁶⁰ Higher education has increasingly become a market of programs as much as, or even more than, a market of individual institutions.

A bipartisan consensus on providing earnings data at the program level has swelled in recent years. Regardless of how improvements to federal consumer information tools come about, these tools need to reflect outcomes for all students—not just those receiving federal grant or loan assistance—and they need to provide data that are disaggregated by race and ethnicity, socioeconomic status, and sex, among other student characteristics.



Strengthen accountability for career-oriented programs.

Increased transparency about program-level outcomes is urgently needed, but information alone will not be enough to make institutions accountable to consumers or taxpayers. At the very least, the federal government needs to establish strong gainful employment standards for career-oriented postsecondary programs that are closely connected to jobs in certain career fields or that promise employment upon graduation. In developing these standards, policymakers should have a set of questions in mind: How much does the program cost? Does it

The federal government needs to establish strong gainful employment standards for career-oriented postsecondary programs that are closely connected to jobs.

59 Nine out of 10 students who enroll in college say their goal is to improve the job opportunities available to them. Fishman, "College Decisions Survey," 2015.

60 Carnevale and Cheah, *Five Rules of the College and Career Game*, 2018.

lead students to jobs? Are those jobs related to the field of study? And how much do workers with the credential earn?⁶¹

The same standards need to be applied to any program that is primarily career oriented.⁶² For example, since 2016, the US Department of Education has been running an experimental program called Educational Quality through Innovation Partnerships, which allows boot camps and online education providers to collaborate with traditional institutions. These nontraditional providers can add value to the postsecondary marketplace, but they should be expected to meet strict gainful employment standards, as well as increased transparency standards, before they are eligible to provide federal financial aid to their students. This is also true for short-term certificate programs that are geared toward job preparation. In order for their students to qualify for federal Pell Grants, these programs should be required to meet accountability benchmarks and provide robust information about their labor-market outcomes.

In order for their students to qualify for federal Pell Grants, short-term certificate programs should be required to meet accountability benchmarks and provide robust information about their labor-market outcomes.



Expand federal postsecondary data-collection efforts to reflect the full range of student experiences.

The way in which the federal government evaluates its investments in the nation's higher education system must change. Examples abound of efforts to improve upon existing federal data collections. Complete College America has coordinated with participating states to capture enrollment, progression, and completion data for students who had previously been excluded from federal data collections: those who receive the federal Pell Grant, study part-time, transfer between colleges, enroll later in life, and represent racial and ethnic minority groups.⁶³ The Student Achievement Measure (SAM) project attempts to account for limitations in federal data sets by collecting information on students seeking certificates, associate's degrees, and bachelor's degrees.⁶⁴ However, SAM is voluntary in nature and allows participating public and private institutions to decide whether to report outcomes for Pell Grant recipients, veterans, and racial and ethnic minorities. More recently, the federal government itself has attempted to improve data collection with its Outcome Measures survey, which accounts for Pell Grant recipients as well as transfer and part-time students, but excludes outcomes by race, ethnicity, and sex.⁶⁵

These efforts may lead to a more comprehensive accounting of college students from the federal government, but without an added focus on labor-market outcomes, they will paint an incomplete picture of the impact of college. Ultimately, data-collection efforts must incorporate the labor-market value of all postsecondary credentials as the next wave of consumer information for students and policymakers.

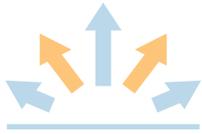
61 Carnevale, "One Step Forward, Two Steps Back," 2016.

62 Carnevale, "Testimony of Anthony P. Carnevale before the Committee on Health, Education, Labor, and Pensions, United States Senate," 2018.

63 Complete College America, "Metrics Technical Guide," <https://completercollege.org/wp-content/uploads/2017/08/2017MetricsTechnicalGuide.pdf>.

64 Student Achievement Measure, "Resources," <https://www.studentachievementmeasure.org/resources>.

65 US Department of Education, Integrated Postsecondary Education Data System, "Outcome Measures."



Build student pathways from certificate programs to associate's and bachelor's degree programs.

While certificates provide labor-market value in their own right, they are too often the apex of the educational journey for students who could earn higher wages with an associate's, bachelor's, or graduate degree. For a variety of reasons, many certificate holders never continue their postsecondary journeys: only 27 percent go on to earn an associate's degree or a bachelor's degree within six years of completing their certificate program.⁶⁶ For students who need higher levels of educational attainment to progress in their careers, certificates should be the starting point, not the end point.

Stronger pathways to higher levels of attainment will be critical if we are to ensure equity in educational and career outcomes. As this analysis shows, Blacks are much more likely to earn certificates and associate's degrees than bachelor's degrees; the same is true for Latinos. These patterns are heightened in the states where Blacks and Latinos make up sizable proportions of their state populations, where the certificate is the prevailing credential they earn. Improved academic and career guidance and stronger student supports are urgently needed to reverse these trends.⁶⁷

Finally, educators must equip students with the specific and general education they will need in the workforce, regardless of whether both are embedded in certificate, associate's degree, or bachelor's degree programs, or whether workers acquire them at different points along their career pathways.

Stronger pathways to higher levels of attainment will be critical if we are to ensure equity in educational and career outcomes.

By combining short-term economic opportunity with workforce adaptability, educational pathways designed to convey an optimal mix of specific and general education can help bridge transition points between education and careers. In the long run, our nation will be better off if it builds the scaffolding necessary for smooth transitions among different credentials and from college to the labor market. This scaffolding is what we will need to close equity gaps, improve talent development within the states, and ensure America's economic vitality.

66 National Student Clearinghouse, *Certificate & Associate Degree Pathways*, 2017.

67 Holzer, "Making HEA Work," 2019.

References

- American Association of Community Colleges. *2019 Fact Sheet*. Washington, DC: American Association of Community Colleges, 2019. https://www.aacc.nche.edu/wp-content/uploads/2019/05/AACC2019FactSheet_rev.pdf.
- American Institutes for Research. "College Measures." <https://www.air.org/center/college-measures>.
- Aspen Institute. *From College to Jobs: Making Sense of Labor Market Returns to Higher Education*. Washington, DC: Aspen Institute, 2015.
- Backes, Benjamin, Harry J. Holzer, and Erin Dunlop Velez. *Is It Worth It? Postsecondary Education and Labor Market Outcomes for the Disadvantaged*. Washington, DC: American Institutes for Research, 2014.
- Baum, Sandy, Charles Kurose, and Michael McPherson. "An Overview of American Higher Education." *Postsecondary Education in the United States* 23, no. 1 (Spring 2013): 17–39.
- Belfield, Clive, and Thomas Bailey. *The Labor Market Returns to Sub-Baccalaureate College: A Review*. New York: Community College Research Center, 2017.
- Booth, Kathy, Ryan Fuller, and Alice van Ommeren. *What Gets to Count? Constructing a Skills-BUILDER Success Metric*. Sacramento, CA: California Community Colleges Chancellor's Office, 2015.
- Bosworth, Brian. *Certificates Count: An Analysis of Sub-baccalaureate Certificates*. Washington, DC: Complete College America, 2010.
- Carnevale, Anthony P. "One Step Forward, Two Steps Back." *Inside Higher Ed*, August 26, 2016.
- Carnevale, Anthony P. "Testimony of Anthony P. Carnevale before the Committee on Health, Education, Labor, and Pensions, United States Senate: Reauthorizing the Higher Education Act: Accountability and Risk to Taxpayers," January 30, 2018. <https://cew.georgetown.edu/wp-content/uploads/hill-testimony.pdf>.
- Carnevale, Anthony P. "Trumping toward College Transparency." LinkedIn blog post, July 11, 2017. <https://www.linkedin.com/pulse/trumping-towards-college-transparency-anthony-carnevale>.
- Carnevale, Anthony P., and Ban Cheah. *Five Rules of the College and Career Game*. Washington, DC: Georgetown University Center on Education and the Workforce, 2018.
- Carnevale, Anthony P., Ban Cheah, and Andrew R. Hanson. *The Economic Value of College Majors*. Washington, DC: Georgetown University Center on Education and the Workforce, 2015.
- Carnevale, Anthony P., and Megan L. Fasules. *Latino Education and Economic Progress: Running Faster but Still Behind*. Washington, DC: Georgetown University Center on Education and the Workforce, 2017.
- Carnevale, Anthony P., Tanya I. Garcia, and Megan L. Fasules. *Rocky Mountain Divide: Lifting Latinos and Closing Equity Gaps in Colorado*. Washington, DC: Georgetown University Center on Education and the Workforce, 2018.
- Carnevale, Anthony P., Tanya I. Garcia, and Artem Gulish. *Career Pathways: Five Ways to Connect College and Careers*. Washington, DC: Georgetown University Center on Education and the Workforce, 2017.
- Carnevale, Anthony P., Artem Gulish, and Jeff Strohl. *Educational Adequacy in the Twenty-First Century*. Washington, DC: The Century Foundation, 2018.
- Carnevale, Anthony P., and Stephen J. Rose. *The Economy Goes to College: The Hidden Promise of Higher Education in the Post-Industrial Service Economy*. Washington, DC: Georgetown University Center on Education and the Workforce, 2015.
- Carnevale, Anthony P., Stephen J. Rose, and Andrew R. Hanson. *Certificates: Gateway to Gainful Employment and College Degrees*. Washington, DC: Georgetown University Center on Education and the Workforce, 2012.
- Carnevale, Anthony P., and Nicole Smith. *Balancing Work and Learning: Implications for Low-Income Students*. Washington, DC: Georgetown University Center on Education and the Workforce, 2018.
- Carnevale, Anthony P., Nicole Smith, Michael C. Quinn, and Gayle Cinquegrani. *Technology, Jobs, and Education: Projections through 2027*. Washington, DC: Georgetown University Center on Education and the Workforce, forthcoming.
- Carnevale, Anthony P., Nicole Smith, and Jeff Strohl. *Recovery: Job Growth and Education Requirements through 2020*. Washington, DC: Georgetown University Center on Education and the Workforce, 2013.
- Carnevale, Anthony P., Jeff Strohl, and Neil Ridley. *Good Jobs That Pay without a BA: A State-by-State Analysis*. Washington, DC: Georgetown University Center on Education and the Workforce, 2017.
- Carnevale, Anthony P., Jeff Strohl, Neil Ridley, and Artem Gulish. *Three Educational Pathways to Good Jobs: High School, Middle Skills, and Bachelor's Degree*. Washington, DC: Georgetown University Center on Education and the Workforce, 2018.
- Carnevale, Anthony P., Martin Van Der Werf, Michael C. Quinn, Jeff Strohl, and Dmitri Repnikov. *Our Separate and Unequal Public Colleges: How Public Colleges Reinforce White Racial Privilege and Marginalize Black and Latino Students*. Washington, DC: Georgetown University Center on Education and the Workforce, 2018.
- Complete College America. "Metrics Technical Guide." <https://completecollege.org/wp-content/uploads/2017/08/2017MetricsTechnicalGuide.pdf>.

- Fishman, Rachel. "College Decisions Survey: Deciding to Go to College" (blog post). *New America*, May 28, 2015.
- Foote, Andrew. "You're Going to Miss Me When I'm Gone: How Mobility Affects Earnings Measurement in States." Paper presented at State Higher Education Executive Officers Higher Education Policy Conference, Boston, MA, 2019. Citing data from a forthcoming report by Andrew Foote and Kevin Stange, "Migration from Sub-National Administrative Data: Problems and Solutions with an Application to Higher Education." Washington, DC: National Bureau of Economic Research, forthcoming.
- Gould, Eric D. "Rising Wage Inequality, Comparative Advantage, and the Growing Importance of General Skills in the United States." *Journal of Labor Economics* 20, no. 1 (January 2002): 105–147.
- Hanushek, Eric A., Guido Schwerdt, Ludger Woessmann, and Lei Zhang. "General Education, Vocational Education, and Labor-Market Outcomes Over the Life-Cycle." *Journal of Human Resources* 52, no. 1 (Winter 2017): 48–87.
- Higher Learning Advocates. *Policy Toolkit: Today's Students: Reforms to Make Higher Learning More Affordable and Valuable for Parents, Adults, Workers, and All of Today's Students*. Washington, DC: Higher Learning Advocates, 2019.
- Holzer, Harry J. "Making HEA Work: Reauthorizing the Higher Education Act to Improve Employment for the Disadvantaged." Washington, DC: The Brookings Institution, 2019.
- Iitzkowitz, Michael. *New Data Further Cements Completion Crisis in Higher Education*. Washington, DC: Third Way, 2018.
- Jenkins, Davis, and John Fink. *What We Know about Transfer*. New York: Community College Research Center, Teachers College, Columbia University, 2015.
- Krogstad, Jens Manuel. "US Hispanic Population Growth Has Levelled Off." Washington, DC: Pew Research Center, 2017.
- Krueger, Dirk, and Krishna B. Kumar. "Skill-Specific Rather Than General Education: A Reason for US-Europe Growth Differences?" *Journal of Economic Growth* 9, no. 2 (June 2004): 167–207.
- National Student Clearinghouse. *Certificate & Associate Degree Pathways*. Herndon, VA: National Student Clearinghouse, 2017. <https://nscresearchcenter.org/snapshotreport-certificateassociatedegreepathways29/>.
- Pew Research Center. *The State of American Jobs: How the Shifting Economic Landscape Is Reshaping Work and Society and Affecting the Way People Think about the Skills and Training They Need to Get Ahead*. Washington, DC: Pew Research Center, 2016.
- Rosenbaum, James, Jennifer Stephan, and Janet Rosenbaum. *Removing Our BA Blinders: Reconceiving Community College Procedures to Improve Student Success*. Stanford, CA: Stanford University Project on the Changing Ecology of Higher Education, 2011.
- Ruggles, Steven, Sarah Flood, Ronald Goeken, Josiah Grover, Erin Meyer, Jose Pacas, and Matthew Sobek. *IPUMS USA: Version 8.0* (data set). Minneapolis, MN: IPUMS, 2018. <http://doi.org/10.18128/D010.V8.0>.
- Shapiro, Doug, Afet Dundar, Xin Yuan, Autumn T. Harrell, Justin C. Wild, and Mary B. Ziskin. *Some College, No Degree: A National View of Students with Some College Enrollment, but No Completion* (Signature Report No. 7). Herndon, VA: National Student Clearinghouse Research Center, 2014.
- Shapiro, Doug, Mikyung Ryu, Faye Huie, and Liu Qing. *Some College, No Degree: A 2019 Snapshot for the Nation and 50 States* (Signature Report No. 17). Herndon, VA: National Student Clearinghouse Research Center, 2019.
- Student Achievement Measure. "Resources." <https://www.studentachievementmeasure.org/resources>.
- US Census Bureau. American Community Survey (ACS): 2010–16: one-year person level microdata files. <http://www2.census.gov/>.
- US Census Bureau. "Post-Secondary Employment Outcomes." https://lehd.ces.census.gov/data/pseo_beta.html.
- US Census Bureau and Bureau of Labor Statistics. Current Population Survey March Supplement (Annual Economic and Social Supplement) microdata files. Washington, DC: US Census Bureau and Bureau of Labor Statistics, 2016. <http://www.nber.org/data/current-population-survey-data.html>.
- US Department of Education. Institute of Education Sciences, National Center for Education Statistics. Adult Training and Education Survey (ATES) of the National Household Education Surveys Program. Washington, DC: 2016.
- US Department of Education. Institute of Education Sciences, National Center for Education Statistics. Digest of Education Statistics, Table 318.40. Degrees/Certificates Conferred by Postsecondary Institutions, by Control of Institution and Level of Degree/Certificate: 1970–71 through 2015–16. Washington, DC: 2017.
- US Department of Education. Institute of Education Sciences, National Center for Education Statistics. Education Longitudinal Study of 2002 (ELS: 2002), Third Follow-up Public Use Data File. Washington, DC: 2014.
- US Department of Education. Institute of Education Sciences, National Center for Education Statistics. Integrated Postsecondary Education Data System (IPEDS). Washington, DC: 2016. <https://nces.ed.gov/ipeds/datacenter/>.
- US Department of Education. Institute of Education Sciences, National Center for Education Statistics. Integrated Postsecondary Education Data System (IPEDS). "Outcome Measures." <https://surveys.nces.ed.gov/IPEDS/VisFaqView.aspx?mode=reg&id=14&show=all>.
- US Department of Education. Institute of Education Sciences, National Center for Education Statistics. "Interagency Working Group on Expanded Measures of Enrollment and Attainment." <https://nces.ed.gov/surveys/gemena/>.
- US Department of Education. Institute of Education Sciences, National Center for Education Statistics. National Postsecondary Student Aid Study. Washington, DC: 2016.
- Western Interstate Commission for Higher Education. "Multistate Longitudinal Data Exchange FAQs." <https://www.wiche.edu/longitudinalDataExchange/faq>.

Methodology and Data Sources

Adult Training and Education Survey (ATES)

We used ATES data on wage outcomes for certificate and associate's degree programs because the data set includes field of study for these credentials. ATES is a nationally representative survey that provides information on non-degree credentials (such as certifications, licenses, and certificates) and work experience programs (such as apprenticeships and internships).

American Community Survey (ACS)

We extracted publicly available data gathered by ACS to provide demographic context (on age and race) to our analysis of degree completion, as well as to gather wage information by educational attainment level and occupation. We calculated the wage differences by occupation group according to the share of workers by occupation and education level that earned wages above the 75th percentile for workers with a high school education. All wage analysis considered prime-age workers (ages 25 to 64) who had earnings in the previous year.

Integrated Postsecondary Education Data System (IPEDS)

We used the IPEDS Completions Survey for a number of analyses in this report, including degree and certificate production by state and region and completion by race and ethnicity.

Fields of study in IPEDS are classified according to the National Center for Education Statistics Classification of Instructional Programs (CIP). We used CIP codes to organize programs of study into six main groups (Table A1).

TABLE A1. Classification of Instructional Programs Code to Field of Study Crosswalk

Field of study	Two-digit CIP code	CIP title
Blue-collar	01	Agriculture, agriculture operations, and related sciences
	03	Natural resources and conservation
	46	Construction trades
	47	Mechanic and repair technologies/technicians
	48	Precision production
	49	Transportation and materials moving
Business	52	Business, management, marketing, and related support services
Consumer and public services	09	Communication, journalism, and related programs
	10	Communications technologies/technicians and support services
	12	Personal and culinary services
	13	Education
	19	Family and consumer sciences/human sciences
	22	Legal professions and studies
	25	Library science
	29	Military technologies and applied sciences
	31	Parks, recreation, leisure, and fitness studies
	43	Homeland security, law enforcement, firefighting and related protective services
	44	Public administration and social service professions
	50	Visual and performing arts
	Health	51
Liberal arts	05	Area, ethnic, cultural, gender, and group studies
	16	Foreign languages, literatures, and linguistics
	23	English language and literature/letters
	24	Liberal arts and sciences, general studies, and humanities
	30	Multi/interdisciplinary studies
	38	Philosophy and religious studies
	39	Theology and religious vocations
	42	Psychology
	45	Social sciences
	54	History

TABLE A1. (Continued)

Field of study	Two-digit CIP code	CIP title
STEM	04	Architecture and related services
	11	Computer and information sciences and support services
	14	Engineering
	15	Engineering technologies and engineering-related fields
	26	Biological and biomedical sciences
	27	Mathematics and statistics
	40	Physical sciences
	41	Science technologies/technicians

Source: Georgetown University Center on Education and the Workforce classifications based on National Center for Education Statistics Classification of Instructional Program codes.

IPEDS uses the US Bureau of Economic Analysis typology to assign states to geographic regions. For clarity, we renamed the Mideast region as Mid-Atlantic (Table A2).

TABLE A2. Classification of States by Region

Region	States
Far West	Alaska, California, Hawaii, Nevada, Oregon, Washington
Great Lakes	Illinois, Indiana, Michigan, Ohio, Wisconsin
Mid-Atlantic	Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania
New England	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
Plains	Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota
Rocky Mountain	Colorado, Idaho, Montana, Utah, Wyoming
Southeast	Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia
Southwest	Arizona, New Mexico, Oklahoma, Texas

Source: US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2016.

National Postsecondary Student Aid Study (NPSAS)

For this report, NPSAS was our primary source for undergraduate program enrollment statistics by student demographic characteristics.

State Administrative Data

We asked each state to report program-level information at both the two-digit and six-digit Classification of Instructional Programs (CIP) code level. For each of these programs we requested the credential type, the number of program completions for the reference year, and the median and mean wages both one year and three years after completion. We received data from Colorado, Connecticut, Indiana, Kentucky, Minnesota, Ohio, Oregon, Texas, Virginia, and Washington.

When a state provided multiple years of data, we used the year with the most program coverage. Years that had both one-year and three-year postcompletion wages, and years that had the most programs at the six-digit CIP level with more than 30 records with wages were preferred. We adjusted median wages for inflation to 2016 dollars using the Consumer Price Index (CPI-U-RS).

State Data Profiles

To supplement national household surveys and data sets that provide a broad picture of certificates and associate's degrees, we worked with 10 states with the capacity to link student postsecondary records with wage records. We obtained program-level earnings outcomes for a wide range of these programs. These outcomes vary considerably due to differences in state economies, industry mix, and cost of living.¹

¹ In addition, research from the US Census Bureau draws attention to a downward bias when earnings data are restricted to graduates who study and end up working in the same state; Foote, "You're Going to Miss Me When I'm Gone," 2019.

In this report, we typically show median earnings one year after completion. However, a few states are exceptions to this rule. Minnesota provided median earnings two years after completion. In addition, Minnesota only reported wages for individuals who worked full-time and had wage records for at least three fiscal quarters in a year. Virginia reported wages for individuals with at least three quarters of wage records.

The data tables below detail the variety of certificates and associate’s degrees offered in the states, as well as earnings by broad and detailed field of study. We classified fields of study using the National Center for Education Statistics Classification of Instructional Programs (see Appendix A for the crosswalk).

Not every state provided detail on the type and duration of programs. In some cases, states used broader categories, such as “certificate” or “associate’s degree;” in others, they used more specific categories, such as “associate of applied science” and “less than one-year certificate.” Some states offer diplomas for programs that are similar to certificates in addition to offering certificates. In Kentucky, for example, diploma programs are of longer duration than similar certificate programs.² Where applicable, we treated diplomas and certificates together. We did not normalize these categories across states.

Abbreviations

AAS: associate of applied science

ADN: associate degree of nursing

AS: associate of science

ASN: associate of science in nursing

² Bosworth, *Certificates Count*, 2010.

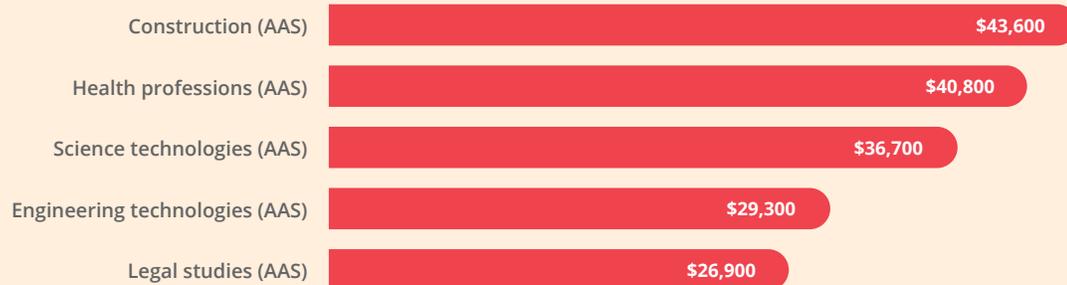
Colorado

FIGURE B1. Top 5 certificates by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Colorado Department of Higher Education, 2012.

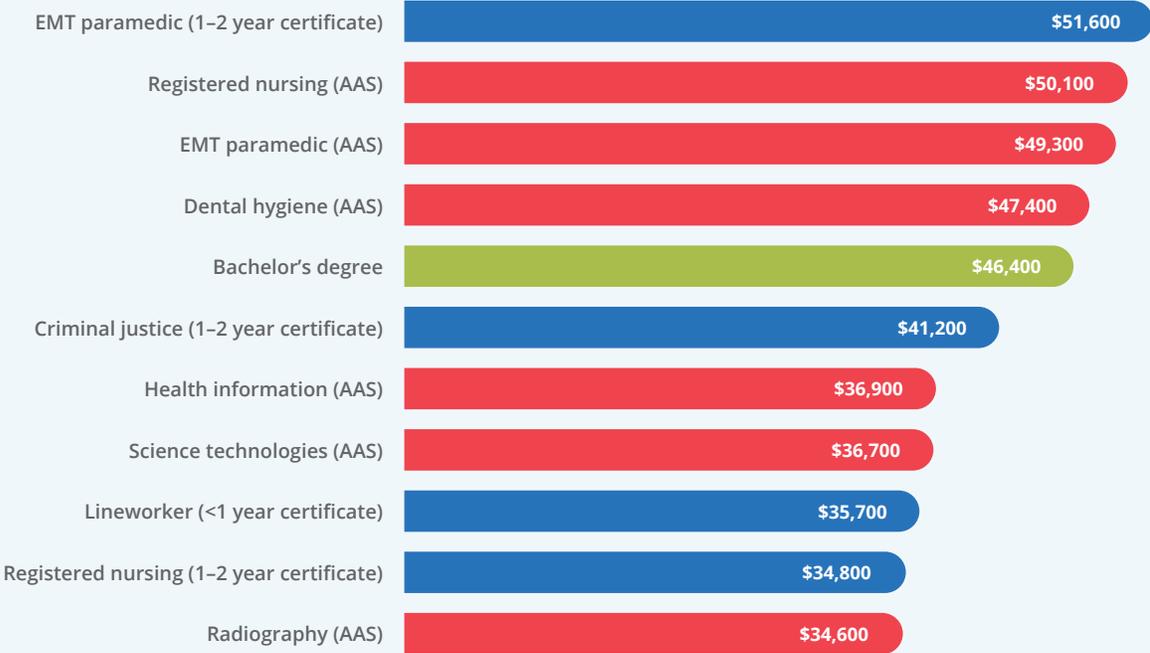
FIGURE B2. Top 5 associate's degrees by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Colorado Department of Higher Education, 2012.

Colorado

FIGURE B3. Top 10 middle-skills programs by detailed field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Colorado Department of Higher Education, 2012, and US Census Bureau American Community Survey (ACS), 2012.

Note: Median wages for bachelor's degree holders are for prime-age positive earners from ACS. All other wages are median earnings from state data.

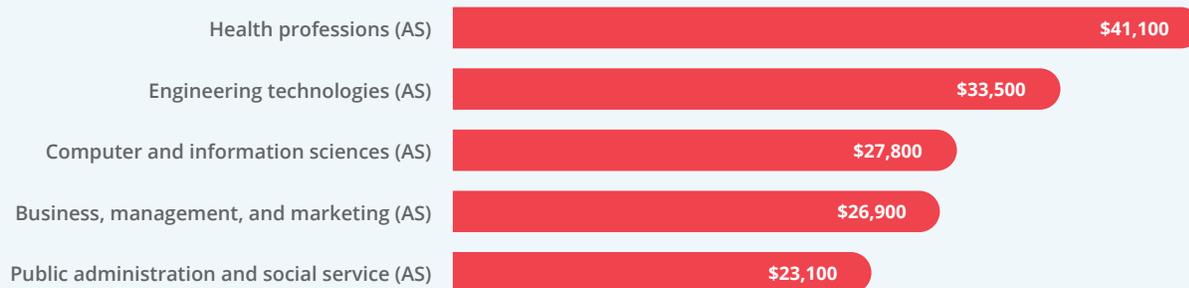
Connecticut

FIGURE B4. Top 5 certificates by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Connecticut State Colleges and Universities, 2016.

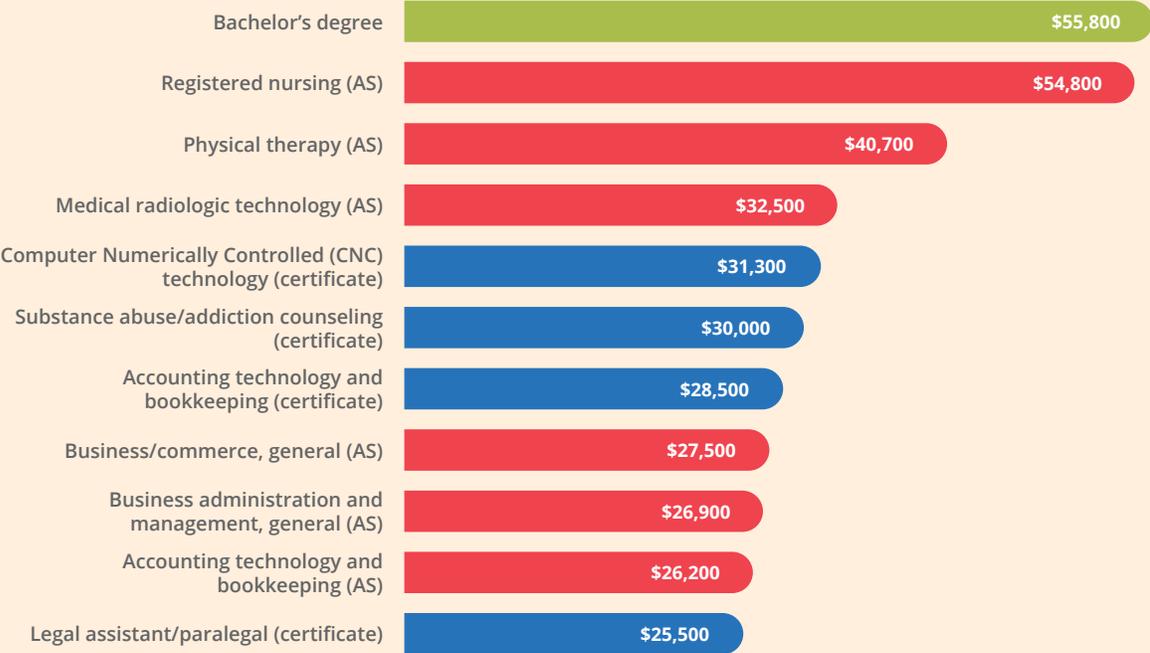
FIGURE B5. Top 5 associate's degrees by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Connecticut State Colleges and Universities, 2016.

Connecticut

FIGURE B6. Top 10 middle-skills programs by detailed field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Connecticut State Colleges and Universities, 2016, and US Census Bureau American Community Survey (ACS), 2013.

Note: Median wages for bachelor's degree holders are for prime-age positive earners from ACS. All other wages are median earnings from state data.

Indiana

FIGURE B7. Top 5 certificates by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Indiana Commission on Higher Education, 2014.

FIGURE B8. Top 5 associate's degrees by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Indiana Commission on Higher Education, 2014.

Indiana

FIGURE B9. Top 10 middle-skills programs by detailed field of study, ranked by median earnings.

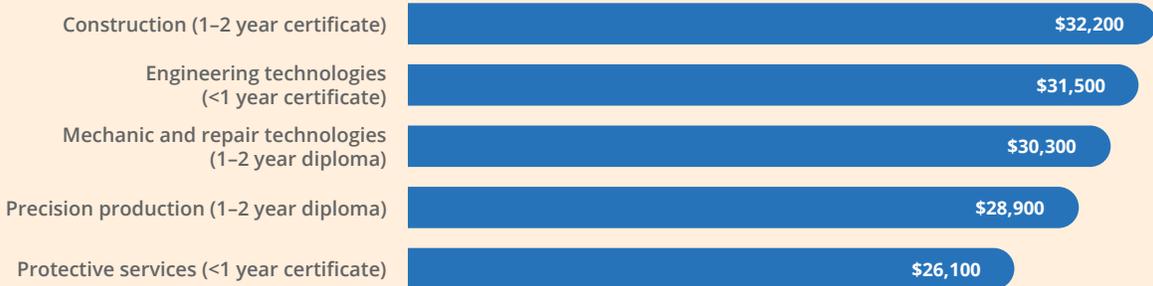


Source: Georgetown University Center on Education and the Workforce analysis of data from the Indiana Commission on Higher Education, 2014, and US Census Bureau American Community Survey (ACS), 2014.

Note: Median wages for bachelor's degree holders are for prime-age positive earners from ACS. All other wages are median earnings from state data.

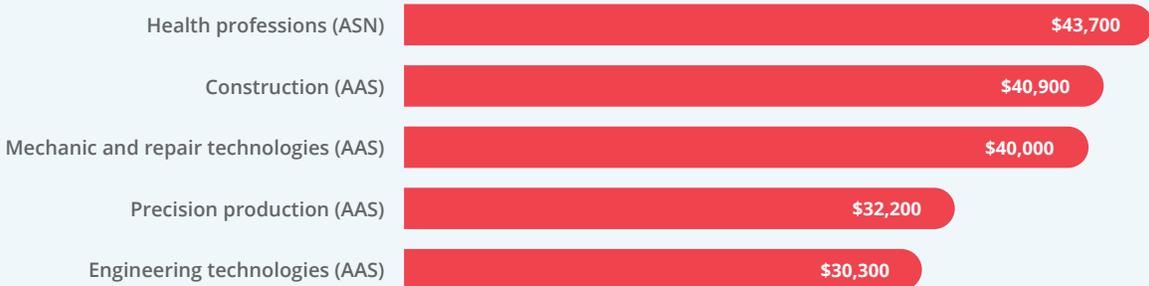
Kentucky

FIGURE B10. Top 5 certificates by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Kentucky Council on Postsecondary Education, 2012.

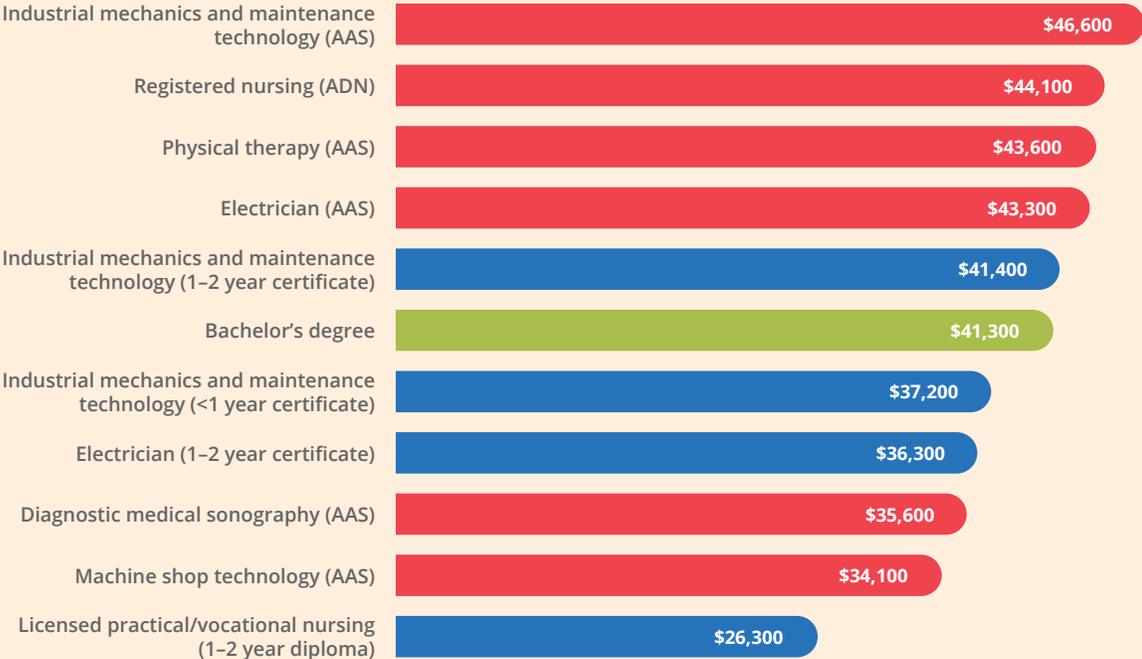
FIGURE B11. Top 5 associate's degrees by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Kentucky Council on Postsecondary Education, 2012.

Kentucky

FIGURE B12. Top 10 middle-skills programs by detailed field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Kentucky Council on Postsecondary Education, 2012, and US Census Bureau American Community Survey (ACS), 2012.

Note: Median wages for bachelor's degree holders are for prime-age positive earners from ACS. All other wages are median earnings from state data.

Minnesota

FIGURE B13. Top 5 certificates by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Minnesota Office of Higher Education, 2012.

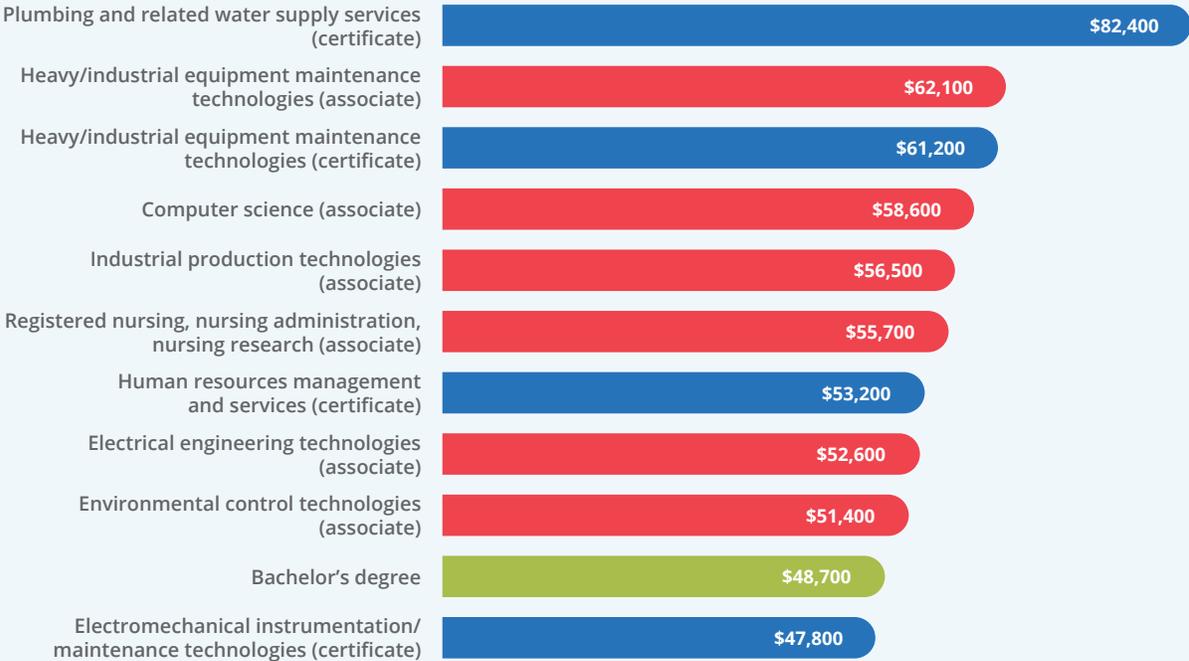
FIGURE B14. Top 5 associate's degrees by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Minnesota Office of Higher Education, 2012.

Minnesota

FIGURE B15. Top 10 middle-skills programs by detailed field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Minnesota Office of Higher Education, 2012, and US Census Bureau American Community Survey (ACS), 2012.

Note: Median wages for bachelor's degree holders are for prime-age positive earners from ACS. All other wages are median earnings from state data.

FIGURE B16. Top 5 certificates by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Ohio Department of Higher Education, 2013.

FIGURE B17. Top 5 associate's degrees by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Ohio Department of Higher Education, 2013.

FIGURE B18. Top 10 middle-skills programs by detailed field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Ohio Department of Higher Education, 2013, and US Census Bureau American Community Survey (ACS), 2013.

Note: Median wages for bachelor's degree holders are for prime-age positive earners from ACS. All other wages are median earnings from state data.

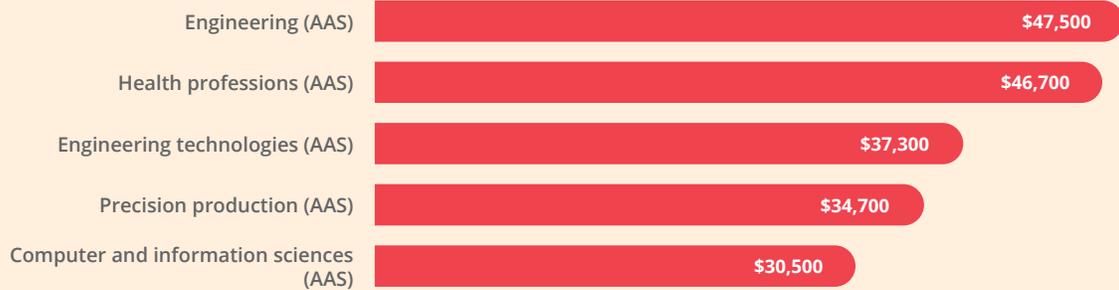
Oregon

FIGURE B19. Top 5 certificates by broad field of study, ranked by median earnings.



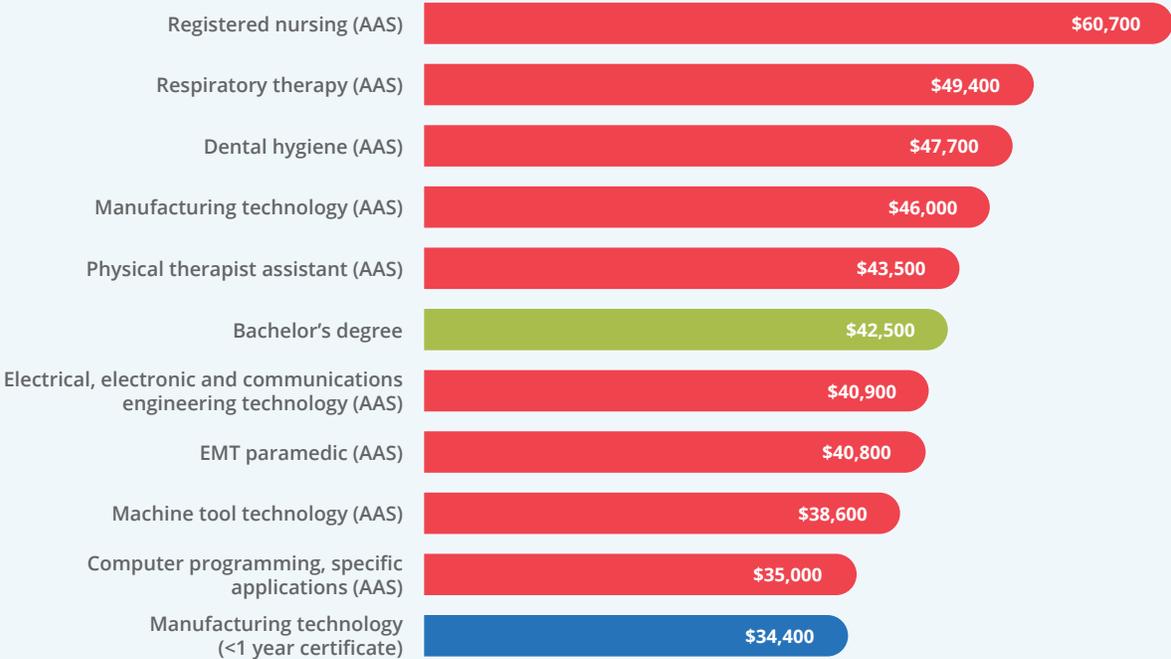
Source: Georgetown University Center on Education and the Workforce analysis of data from the Oregon Higher Education Coordinating Commission, 2014.

FIGURE B20. Top 5 associate's degrees by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Oregon Higher Education Coordinating Commission, 2014.

FIGURE B21. Top 10 middle-skills programs by detailed field of study, ranked by median earnings.

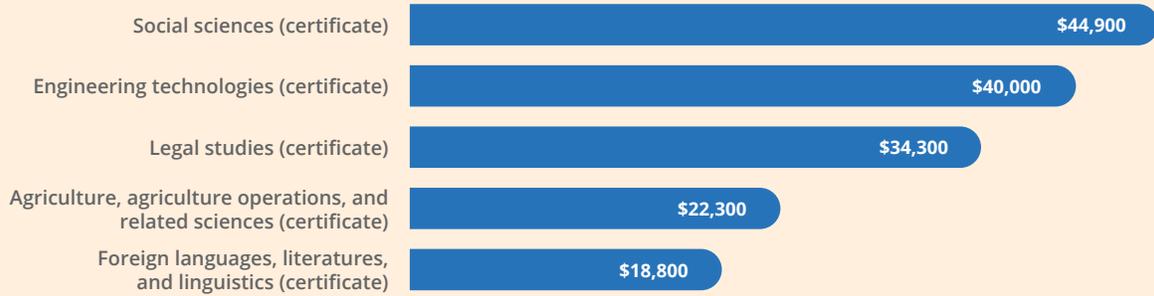


Source: Georgetown University Center on Education and the Workforce analysis of data from the Oregon Higher Education Coordinating Commission, 2014, and US Census Bureau American Community Survey (ACS), 2014.

Note: Median wages for bachelor's degree holders are for prime-age positive earners from ACS. All other wages are median earnings from state data.

Texas

FIGURE B22. Top 5 certificates by broad field of study, ranked by median earnings.



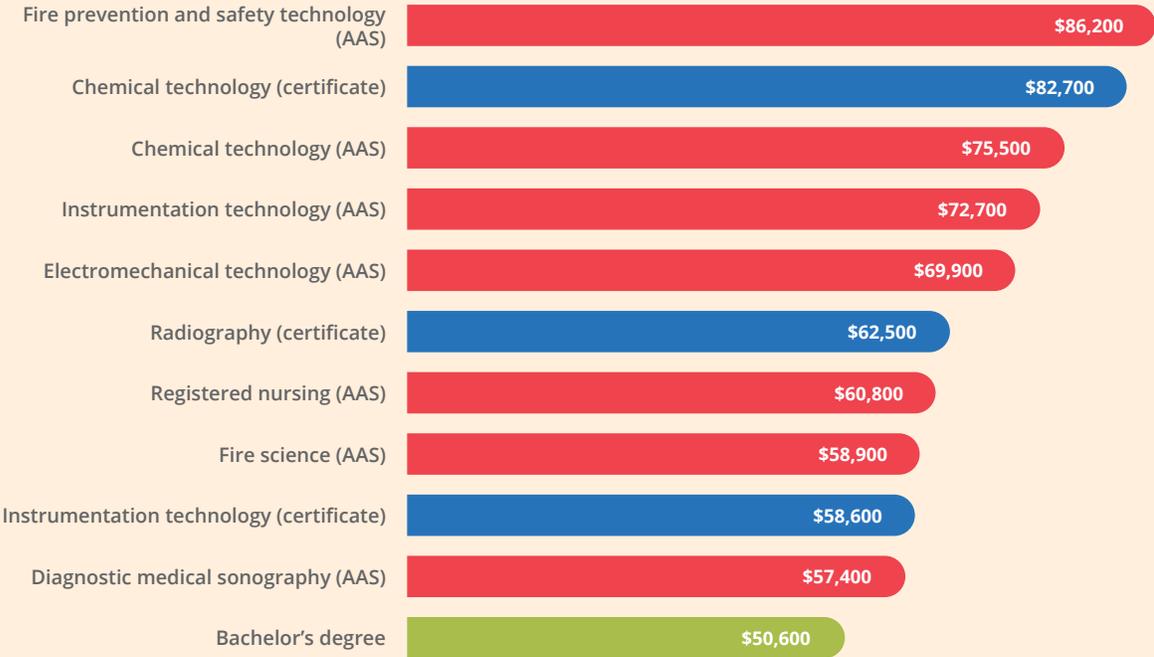
Source: Georgetown University Center on Education and the Workforce analysis of data from the Texas Higher Education Coordinating Board, 2014.

FIGURE B23. Top 5 associate's degrees by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Texas Higher Education Coordinating Board, 2014.

FIGURE B24. Top 10 middle-skills programs by detailed field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Texas Higher Education Coordinating Board, 2014, and US Census Bureau American Community Survey (ACS), 2014.

Note: Median wages for bachelor's degree holders are for prime-age positive earners from ACS. All other wages are median earnings from state data.

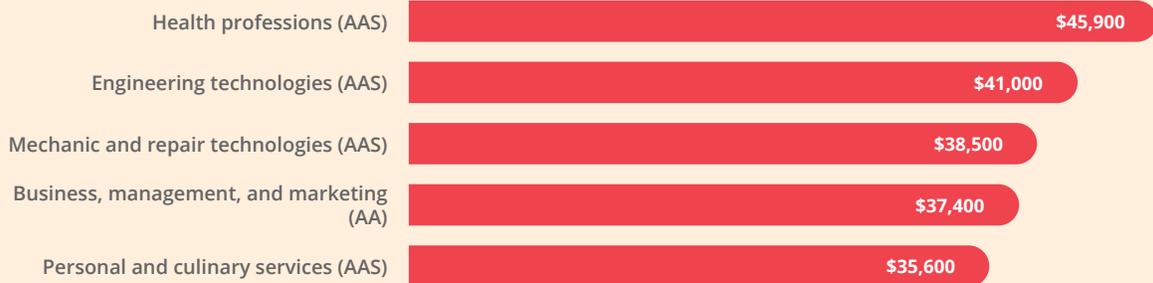
Virginia

FIGURE B25. Top 5 certificates by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the State Council of Higher Education for Virginia, 2007 to 2011 (pooled).

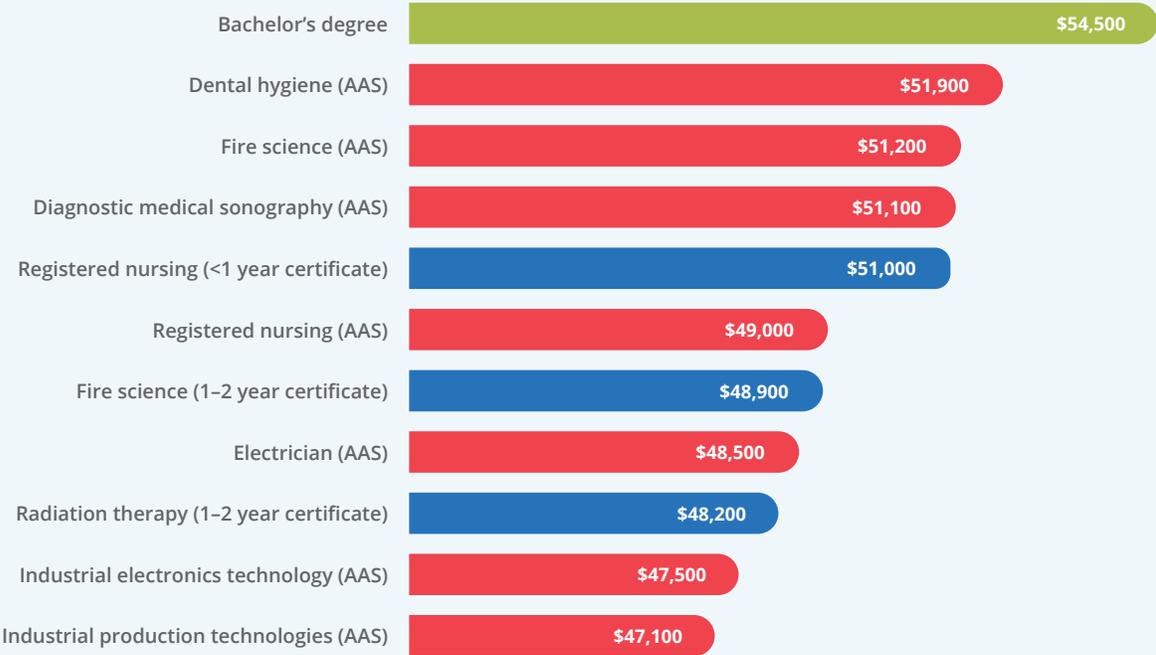
FIGURE B26. Top 5 associate's degrees by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the State Council of Higher Education for Virginia, 2007 to 2011 (pooled).

Virginia

FIGURE B27. Top 10 middle-skills programs by detailed field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the State Council of Higher Education for Virginia, 2007 to 2011 (pooled), and US Census Bureau American Community Survey (ACS), 2010.

Note: Median wages for bachelor's degree holders are for prime-age positive earners from ACS. All other wages are median earnings from state data.

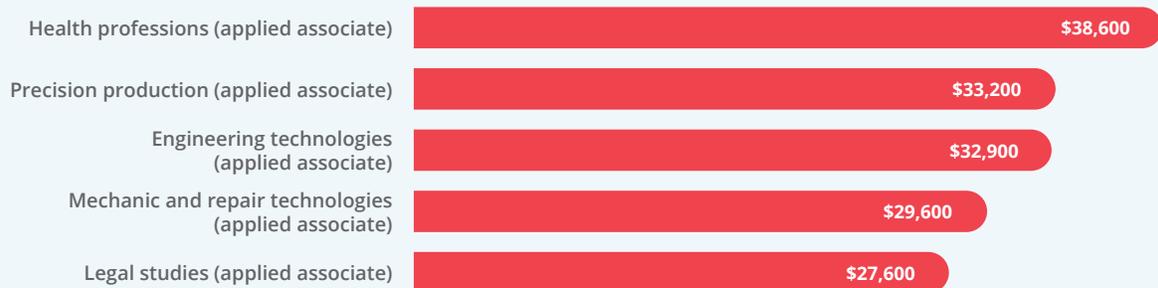
Washington

FIGURE B28. Top 5 certificates by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Washington Student Achievement Council, 2013.

FIGURE B29. Top 5 associate's degrees by broad field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Washington Student Achievement Council, 2013.

Washington

FIGURE B30. Top 10 middle-skills programs by detailed field of study, ranked by median earnings.



Source: Georgetown University Center on Education and the Workforce analysis of data from the Washington Student Achievement Council, 2013, and US Census Bureau American Community Survey (ACS), 2013.

Note: Median wages for bachelor's degree holders are for prime-age positive earners from ACS. All other wages are median earnings from state data.

To view the full report, visit cew.georgetown.edu/SubBA.

 facebook.com/GeorgetownCEW

 [@GeorgetownCEW](https://twitter.com/GeorgetownCEW)

 linkedin.com/company/GeorgetownCEW

Georgetown University
Center on Education and the Workforce

3300 Whitehaven St. NW, Suite 3200
Washington, DC 20007
cew.georgetown.edu

GEORGETOWN UNIVERSITY



Center
on Education
and the Workforce

McCourt School of Public Policy