THREE EDUCATIONAL PATHWAYS TO GOOD JOBS

HIGH SCHOOL, MIDDLE SKILLS, AND BACHELOR'S DEGREE

Anthony P. Carnevale, Jeff Strohl, Neil Ridley, and Artem Gulish

GEORGETOWN UNIVERSITY
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Table of Contents

Table of Figures

Introduction

In the post-World War II period, workers with a high school diploma or less were able to attain jobs with middle-class wages in American industry. Good jobs[1] were available in manufacturing and other blue-collar industries that employed large numbers of high school-educated workers. But as automation, globalization, and related phenomena have led to major structural changes in the American economy, economic opportunity has shifted toward more educated workers with higher skill levels. Whereas two out of three entry-level jobs in the industrial economy demanded a high school diploma or less, now two out of three jobs demand at least some education or training beyond high school.[2]

Today, there are three pathways to good jobs, each defined by education and skills: the **high school pathway**, the **middle-skills pathway**, and the **bachelor's degree (BA) pathway** (Figure 1).

1 See Goodjobsdata.org for our earlier reports on good jobs. In those reports, we define a good job as one paying a minimum of $35,000 for workers between the ages of 25 and 44 and at least $45,000 for workers between the ages of 45 and 64. This results in 2016 median earnings of $56,000 for workers without a bachelor's degree, up from $55,000 in 2015; median earnings of $75,000 for workers with a bachelor's degree or higher; and overall median earnings of $65,000 for all good jobs.

2 Carnevale and Rose, *The Undereducated American*, 2011.

The Three Pathways

- The **high school pathway** includes workers with a high school diploma or less.
- The **middle-skills pathway** includes workers with more than a high school diploma but less than a bachelor's degree. This includes people with associate's degrees, postsecondary certificates, licenses, certifications, and some college but no degree.
- The **BA pathway** includes workers with bachelor's degrees, master's degrees, professional degrees, and doctoral degrees.

Figure 1. The high school pathway still accounts for 20 percent of good jobs, the middle-skills pathway accounts for 24 percent, and the BA pathway accounts for 56 percent.

Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau and Bureau of Labor Statistics, *Current Population Survey*, 1992–2017.

High School Pathway

The high school pathway has persisted despite declines in manufacturing.

Although manufacturing declines primarily affected workers with a high school diploma or less, there are still about 13 million good jobs for workers with no more than a high school diploma. These 13 million jobs account for 20 percent of all good jobs. Of all high school jobs, nearly one out of three jobs (32%) is a good job. The high school pathway includes many workers who started in lower-paying jobs and worked their way up to managers, supervisors, and other senior positions across a variety of fields, such as construction, manufacturing, retail, food services, and office support, among others. It also includes truck drivers, carpenters, drillers, oil and gas equipment operators, construction equipment operators, and other industrial machinery operators.[3]

The decline in opportunity for those with no more than a high school diploma should not be misconstrued as a lack of opportunity. Among young workers (25–34), who because of their age best reflect the generational shift in economic opportunity, 27 percent (2.9 million) of those with no more than a high school diploma currently have a good job. This is down only slightly from 29 percent in 1991.

That said, prospects for those on the high school pathway are mixed. On the one hand, this pathway has held on through the massive dislocation of manufacturing, which hit workers with a high school diploma or less quite heavily. But on the other hand, the share of employment for workers on this pathway has steadily declined. Furthermore, the good job opportunities it provides are primarily for men.

3 The majority of figures provided in this report are based on the Georgetown University Center on Education and the Workforce's analysis of data from the US Census Bureau and Bureau of Labor Statistics, *Current Population Survey (CPS)*, 1992–2017. The analysis years are 1991–2016 because *CPS* provides respondents' earnings for the prior year.

Middle-Skills Pathway

While middle-skills jobs in manufacturing generally have been on the decline, a new set of good middle-skills jobs has appeared in recent years.

The middle-skills pathway, which includes skilled-services and blue-collar employment, now accounts for about a quarter (24%) of good jobs. Nearly half of middle-skills jobs are good jobs. The middle-skills pathway is in the midst of major transformation from traditional blue-collar jobs to more skilled technical jobs across skilled-services and blue-collar industries. It includes those in traditional middle-skills jobs, such as firefighters, law-enforcement officers, electricians, mechanics, installers, repairers, technicians of industrial equipment, and highway maintenance workers; it also includes those in skilled and technical jobs, such as healthcare technologists and technicians, computer control programmers and operators, surveying and mapping technicians, and information and record clerks.

Blue-Collar and Skilled-Services Industries

Blue-collar industries include manufacturing, transportation and utilities, wholesale and retail trade, natural resources, and construction.

Skilled-services industries include government services, education services, consulting and business services, financial services, healthcare services, leisure and hospitality services, and personal services.

All of the growth of net new good jobs in the non-BA economy has been in middle-skills jobs.[4] Within this pathway, the bulk of good jobs are held by workers with some college but no degree; but good jobs are growing the fastest among workers with associate's degrees (AAs). In addition, education and training that support the middle-skills pathway have been particularly innovative and responsive to changes in labor market demand. A growing array of approaches has evolved to prepare students for middle-skills jobs, including apprenticeships, on-the-job training, college career and technical education, customized training, non-credit education, certificates, certifications, and associate's degrees.

Bachelor's Degree Pathway

The bachelor's degree has become the premier pathway to economic opportunity.

The BA now accounts for 56 percent of all good jobs[5] due to greater demand for workers with at least a four-year college education. Nearly three out of four BA jobs (74%) are good jobs. This pathway comprises a majority of professional and technical jobs, including those held by doctors, lawyers, engineers, accountants, computer programmers, journalists, architects, and managers, among many others.

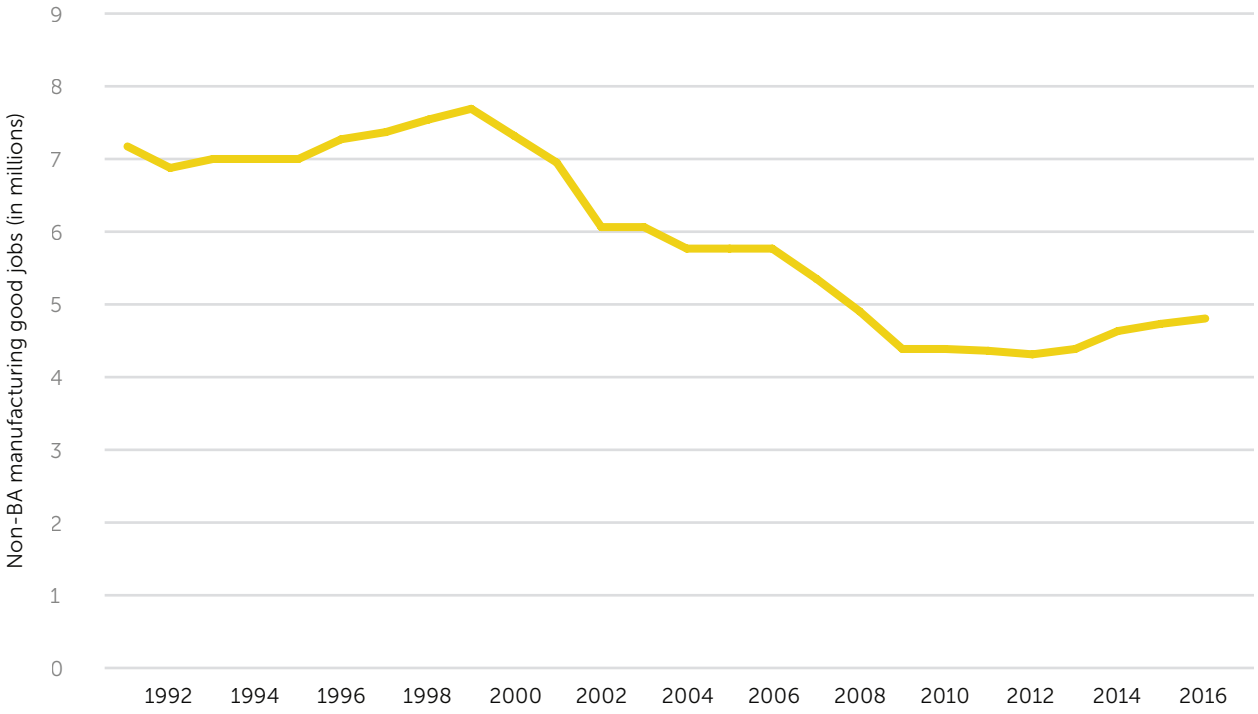
4 Carnevale et al., *Good Jobs That Pay without a BA*, 2017.

5 This has increased from the 55 percent figure reported for 2015 in our earlier reports.

THE DECLINE OF THE MANUFACTURING ECONOMY AND THE RISE OF THE COLLEGE ECONOMY

Since the 1980s, good jobs in industrial America have been under attack by four interrelated economic trends: globalization, automation, upskilling, and the shift in good jobs away from manufacturing toward skilled-services industries such as information technology and healthcare. Together, these four forces have coalesced to make postsecondary education and training the dominant pathway to good jobs that pay a median of $65,000.[6]

Figure 2. Good manufacturing jobs for workers with less than a bachelor's degree steeply declined beginning in 1999 when the use of industrial robots was surging and China was about to join the World Trade Organization.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau and Bureau of Labor Statistics, *Current Population Survey*, 1992–2017.

6 The median earnings in this report differ from our earlier reports on good jobs due to the inclusion of workers with a BA and higher; previous reports only included workers without BAs.

Globalization. A complex phenomenon with far-reaching consequences, globalization is significantly responsible for the loss of good jobs in American manufacturing. Industrial employment plummeted after 1999, when China was on the verge of entering the World Trade Organization (WTO),[7] which had a very large impact on workers without a BA (Figure 2).

Automation. Automation is also a major culprit in the decline of manufacturing.[8] If not for automation and trade, an estimated 5.7 million additional US manufacturing jobs would have been created between 1999 and 2017.[9] Yet even as the number of manufacturing jobs has fallen, productivity has increased as a result of automation. Manufacturing output is now 7 percent higher in the United States than it was in 1999, even though the number of manufacturing firms declined by 75,000 and manufacturing employment declined by 27 percent.[10]

The use of industrial robots began increasing at around the same time that China entered the WTO, and has roughly doubled since 1999.[11] In addition, since the early 1980s, computer-based technology[12] has reduced labor costs and increased labor output while allowing for higher levels of quality control, variety, and customization. Powerful and flexible new technologies have created an entirely new competitive framework supercharged by global competition.

New computer-based technologies not only have reduced the number of manufacturing workers needed, but also have changed the nature of their work.

New computer-based technologies not only have reduced the number of manufacturing workers needed, but also have changed the nature of their work. Because these technologies are more powerful and flexible, they require workers with higher levels of skill. As the pace of

7 China entered the WTO in 2001.

8 See Autor et al., "The China Syndrome: Local Labor Market Effects of Import Competition in the United States," 2013, and Charles et al., "The Transformation of Manufacturing and the Decline in U.S. Employment," 2018, for thorough analyses of automation as a response to globalization and how import competition affected US employment.

9 Georgetown University Center on Education and the Workforce calculation based on Charles et al., "The Transformation of Manufacturing and the Decline in U.S. Employment," 2018. Manufacturing output is 7 percent higher than in 2000, when manufacturing employment was roughly 17 million. This estimate assumes that without robots and globalization, the labor share of output would be the same as it was in 2000. A 7 percent increase would imply employment around 18.2 million, compared to the approximate 12.5 million employed in manufacturing in January 2017.

10 Charles et al., "The Transformation of Manufacturing and the Decline in U.S. Employment," 2018.

11 "Compete," presentation on April 18, 2016, at the University of Texas VERTEX conference by William Bates of the Council on Competitiveness.

12 See Carnevale and Rose, *The Economy Goes to College*, 2015, for a detailed analysis of the impact of technology on the US economy.

technological change has increased and the intensity of global competition has grown, the ability to innovate has become a core asset for the post-industrial workforce.

Upskilling. The new competitive environment generated by the synergy of automation and globalization has led employers to demand a higher level of skills from workers, leading in turn to the upskilling of the workforce across most industries. These skills gaps may reflect the differences between the knowledge new workers have and the needs of employers seeking to fill entry-level jobs;[13] or they may reflect technological advances that require more experienced workers to expand their content knowledge and general skills to cope with change on the job.

New technology, combined with new competitive requirements, has increased both the depth and scope of competencies required on the job, accelerating the demand for an upskilled workforce. The majority of American workers now need deeper knowledge in their fields and also a broader set of general problem-solving and critical-thinking skills to perform new tasks. This is the case for workers who are required to produce more variety and customization in shorter manufacturing production runs. It is also true for workers who serve individual clients in skilled-services industries, such as healthcare and financial services.

The new competitive environment generated by the synergy of automation and globalization has led employers to demand a higher level of skills from workers.

Because new technology has automated repetitive tasks, workers have been left to focus on non-repetitive tasks, utilizing their new technical capabilities to meet broader goals that are less specialized and involve overlapping areas of responsibility, such as quality or innovation. These new realities of work require new sets of soft skills, including teamwork and leadership, to facilitate collaboration. In other words, the competencies required of workers have become both deeper and broader. Similarly, computer-based technologies have created new organizational formats at every institutional level, from teams at the worksite to complex networks of individual contractors, institutional partners, and customers.

While 20 percent of workers with good jobs still attain those jobs with no more than a high school diploma and on-the-job training, increasingly the competencies necessary to succeed in the modern labor market require at least some formal postsecondary education

13 See Carnevale and Rose, *The Undereducated American,* 2011, and Carnevale and Rose, *The Economy Goes to College,* 2015.

and training. Automation and globalization moved the United States from an industrial economy, in which two-thirds of the entry-level jobs required a high school diploma or less, to a postindustrial economy, in which two in three jobs require at least some education or training beyond high school.[14] Technology and globalization have led to the automation of existing blue-collar jobs and inhibited the creation of new blue-collar jobs for high school-educated workers.[15] The same forces that increased industrial productivity fueled wealth creation, which in turn fueled increased consumption and subsequent growth in good jobs in the skilled-services sector.[16]

Skilled services saved the middle-skills pathway.

The shift to skilled services. The economic transformation supported by the integration of technology and new work processes has resulted in a significant decline in the blue-collar economy. Blue-collar jobs now make up 21 percent of employment (7 percentage points less than in 1991) and 18 percent of good jobs. The workforce has shifted toward skilled services, with new jobs in areas such as healthcare, finance, information technology, education, and white-collar business services. This shift has provided economic opportunity across all education levels, but increasing numbers of good jobs in skilled-services industries have gone to workers on the middle-skills and the BA pathways.

14 Carnevale and Rose, *The Undereducated American*, 2011.

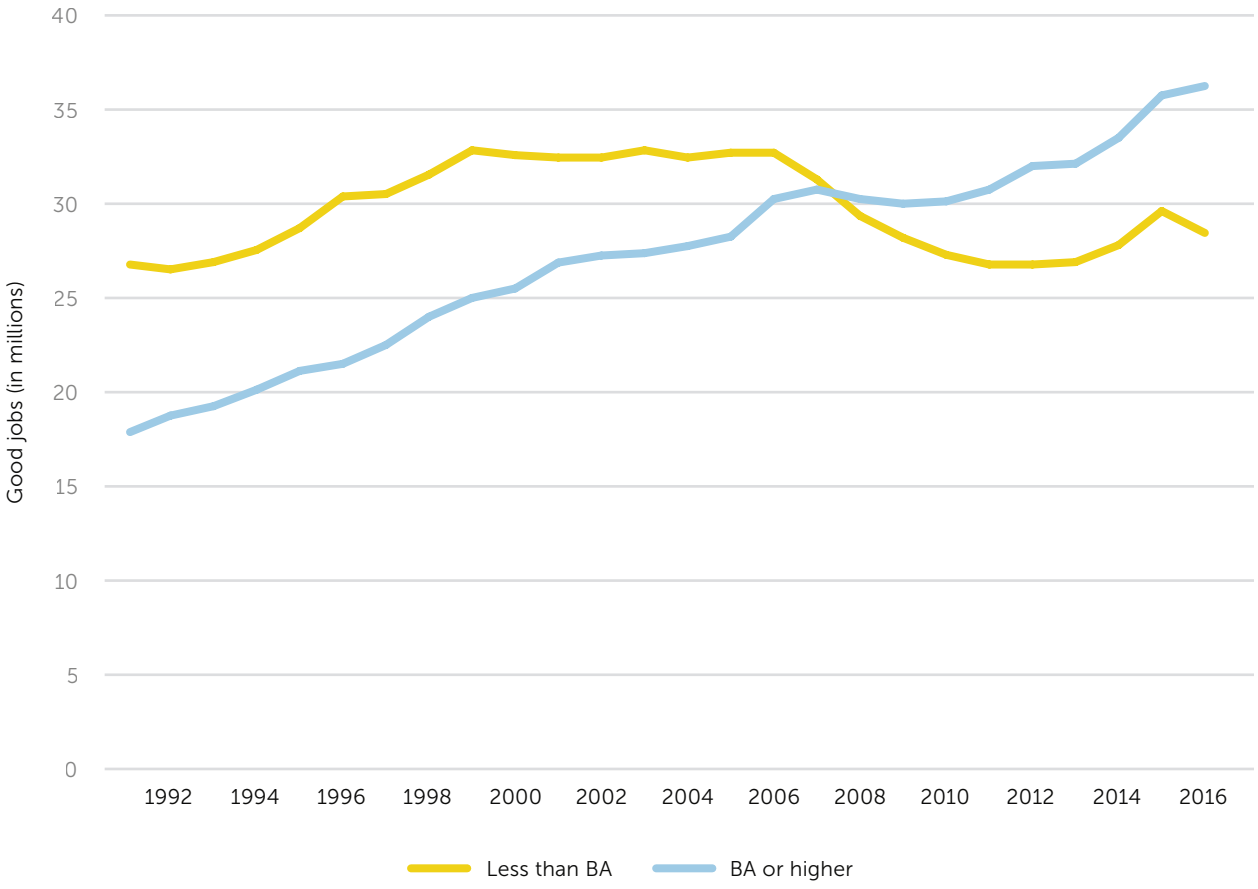
15 See Carnevale et al., *Help Wanted,* 2010, and Carnevale and Rose, *The Undereducated American*, 2011, as well as Goldin and Katz, *The Race Between Education and Technology*, 2008, for analysis demonstrating how enhanced productivity and resulting higher wages for college graduates explain the decline in the number of workers with no more than a high school education.

16 Another factor contributing to these trends was that imports of manufactured goods substantially reduced the prices of those goods and their share of consumer budgets. For instance, wardrobe budgets are at 1986 levels, and the price of furnishing a home is the same as it was in 1980. *The Economist*, "Trade, at What Price?" 2016.

SHIFTING ECONOMIC OPPORTUNITY

The underlying structural economic changes described above have culminated in a major shift in how American workers get good jobs. The year 2008 marked the official beginning of the college economy,[17] as workers with a BA or higher for the first time held more good jobs than workers without a BA (Figure 3). Yet, the momentum had been building long before then. Starting in the 1980s, manufacturing employment began to decline and the demand for workers with BAs began rising over the demand for those with only a high school education.

Figure 3. The year 2008 marked the beginning of the college economy: more good jobs are now going to workers with BAs than to workers without them.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau and Bureau of Labor Statistics, *Current Population Survey*, 1992–2017.

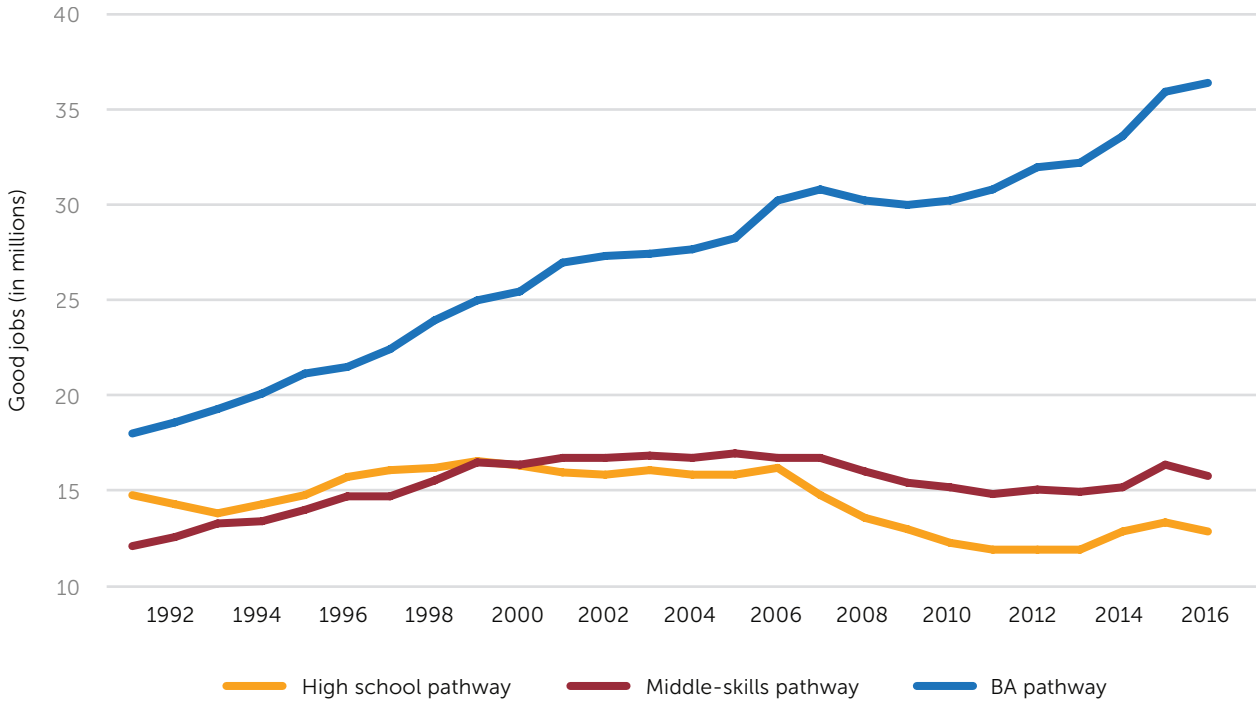
17 The year 2008 represented a major shock to the US economic system with the beginning of the Great Recession. For more on how recession and recovery cycles have accelerated the upskilling trend and on how the Great Recession and the recovery that followed it affected the labor market demand for workers, see Carnevale et al., *America's Divided Recovery*, 2016.

Young workers moved to the middle-skills and BA pathways as the high school pathway shrank.

The behavior of workers entering employment is one marker of change in the economy; over the past two decades, young people recognized where the economy was headed and went to college in large numbers. In 1991, 48 percent of young workers (ages 25–34) had a high school diploma or less, compared to 25 percent who had a BA or a graduate degree. By 2016, 30 percent of young workers had a high school diploma or less, while 40 percent had a BA or higher. These new BA workers made a good decision. In 1991, 34 percent of young workers with a good job had no more than a high school diploma; by 2016, that figure had declined to 19 percent. Meanwhile, the share of young workers with a good job who had a BA increased from 38 percent to 57 percent.

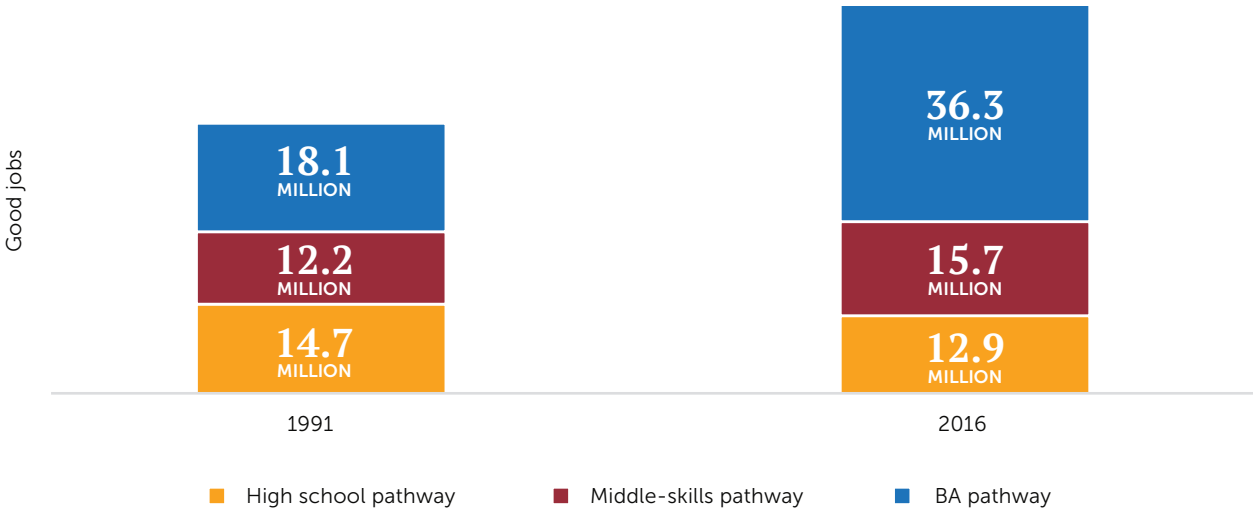
But upskilling is not just a BA phenomenon. While the middle-skills economy is often overshadowed by the shift toward the BA, middle-skills jobs play a key role in providing economic opportunity. Good jobs for those with middle skills surpassed the number of good jobs for workers with a high school education in 2000 (Figure 4). As a result of this transformation, postsecondary education began to provide two distinct paths in the college economy.

Figure 4. By 2000, the middle-skills pathway surpassed the high school pathway in providing good jobs.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau and Bureau of Labor Statistics, *Current Population Survey*, 1992–2017.

Figure 5. The number of good jobs for workers on the BA pathway doubled between 1991 and 2016.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau and Bureau of Labor Statistics, *Current Population Survey*, 1992–2017.

In 1991, workers with a high school diploma or less held one-third of all good jobs, 14.7 million, and workers with BA or higher held 18.1 million good jobs (40%). By 2016, 36.3 million good jobs (56%) went to workers with BAs and graduate degrees, while those with a high school diploma or less held only 12.9 million good jobs, or 20 percent of the total (Figure 5).

Overall, the share of good jobs has shifted dramatically to workers who have at least a BA: these workers have gained more than 18 million good jobs over the last 25 years. The BA pathway now also has the largest concentration of good jobs; nearly three out of four BA jobs (74%) are good jobs, compared to almost half (46%) of middle-skills jobs and one out of three (32%) high school jobs. While the middle-skills pathway did not grow quite as quickly as the BA pathway, it also added 3.5 million new good jobs during the same period. The high school pathway, on the other hand, declined by 1.8 million good jobs.

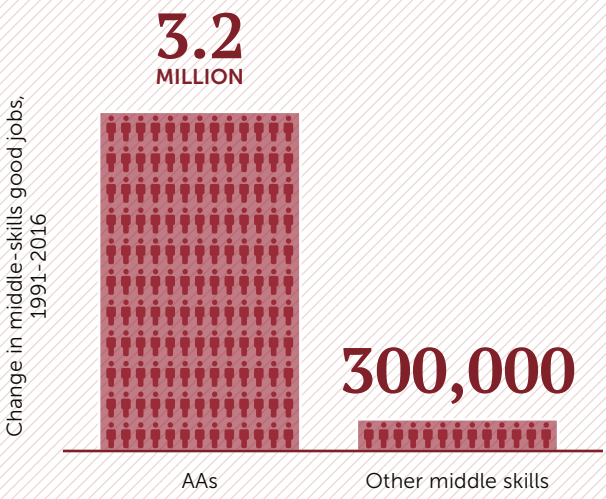
The high school pathway remains a viable alternative for some young workers.

Considering how disruptive economic restructuring has been to the high school economy, it is notable that the high school pathway still has nearly 13 million good jobs. As older and more experienced workers continue to retire, the high school pathway to good jobs will likely remain available to a limited number of younger workers. Experience helps workers on the high school pathway to attain good jobs, but good jobs on this pathway are not restricted to just older and more experienced workers.

Associate's degrees showed the strongest growth among middle-skills jobs.

Within the middle-skills pathway, the associate's degree (AA) labor market has shown remarkable strength.[i] Good jobs for workers with AAs grew by 83 percent between 1991 and 2016, a growth rate close behind that of good jobs for workers with BAs and graduate degrees (101%). The growth of good jobs among AA holders has dwarfed the growth of other good jobs on the middle-skills pathway, with 3.2 million good jobs added for workers with AAs, 10 times more than the growth in other middle-skills good jobs (Figure I). As good jobs on the high school pathway have declined, the AA has offered high school graduates the most efficient option for upskilling.[ii]

Figure I. Workers with AAs have been responsible for the bulk of growth in good middle-skills jobs.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau and Bureau of Labor Statistics, *Current Population Survey*, 1992–2017.

i For the purposes of presenting aggregated analysis of the three pathways, we have limited this report's analysis on AAs to this box. For more detailed analysis of trends in AA good jobs, see Carnevale et al., *Good Jobs That Pay without a BA*, 2017.

ii While the number of good jobs for workers with AAs has grown substantially over the past 25 years, the number of workers with AAs has also grown substantially as workers have recognized that the AA offers high school graduates the most efficient option for upskilling. As a result, the competition for good jobs among AA workers has increased, with the share of good jobs relative to overall employment declining from 54 percent to 49 percent for AA workers.

In 2016, older workers (ages 55–64) held 21 percent of all good jobs on the high school pathway,[18] while younger workers (ages 25–34) held 23 percent. However, the high school pathway will continue to offer fewer good job opportunities for young workers than the middle-skills and BA pathways: 27 percent of jobs for young workers on the high school pathway are good jobs, compared to 35 percent for young workers on the middle-skills pathway and 62 percent for young workers on the BA pathway. And workers with a high school diploma or less are often the last hired during economic expansions and the first fired during economic downturns.

18 The share of jobs that are good for older high school workers has increased from 24 percent in 1991 to 30 percent in 2016. This is likely due to changes in supply, with the move of young workers to college resulting in lower availability of experienced workers on the high school path.

The continued opportunity to attain a good job on the high school pathway has largely been a function of young people leaving this pathway for better opportunities available on the middle-skills and BA pathways. In fact, the number of workers who left the high school pathway is larger than the number of good jobs that disappeared on that pathway: in 2016, there were nearly 6 million fewer young workers on the high school pathway than in 1991, compared to 2 million fewer good jobs. This dynamic has kept opportunity for young workers on the high school pathway stable—27 percent of jobs for young workers with a high school diploma or less were good in 2016, compared to 29 percent in 1991. Due to this dynamic, the high school pathway to good jobs is likely to remain stable, absent any new major cyclical or structural economic disruptions.[19]

While good jobs for those with a high school diploma or less still exist, many young workers have gravitated toward the middle-skills pathway. In 1991, 26 percent of young workers entered employment via the middle-skills pathway, and that share has increased to 29 percent in 2016. This suggests that the middle-skills economy is vibrant. But as the shift occurred, the share of young workers with a middle-skills education who were able to attain good jobs declined from 44 percent to 35 percent, indicating that the middle-skills pathway also carries some risks. The considerable innovation occurring on this pathway contributed to these trends. People once prepared for middle-skills jobs through community college education, apprenticeships, or on-the-job training; today, their options have expanded to include education at for-profit colleges, certificates, certifications, badges, coding and technology boot camps, course clusters, and career and technical education (CTE) programs that start in high school and extend into community colleges. Those on the middle-skills pathway must assume some of the associated risk as these new forms of occupational and professional development succeed and fail. In this environment, the fields students choose and the specific skills they acquire make a big difference in the value of their middle-skills education and training.

The high school pathway will continue to offer fewer good job opportunities for young workers than the middle-skills and BA pathways.

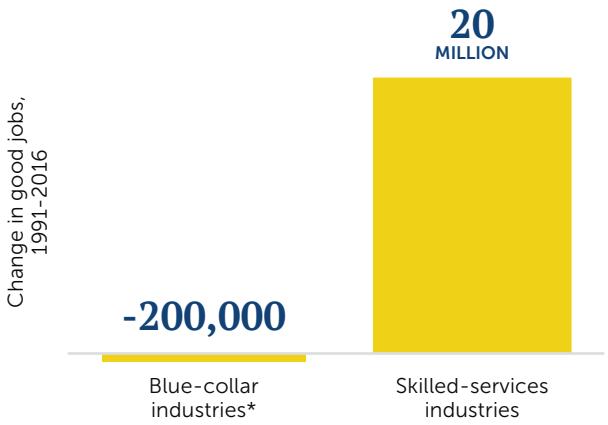
19 Of course, it is reasonable to imagine that a revitalized approach to career and technical education (CTE) or the expansion of apprenticeships could increase the number of workers on the high school pathway, but history suggests that the impact of efforts like these would be either small or short term. For example, large government investments in infrastructure upgrades and repairs might result in a short-term boost to the number of good jobs available for high school workers.

Good jobs have shifted to skilled-services industries.

The nature of good jobs shifted as the US economy was restructuring from a manufacturing to a skilled-services economy. Between 1991 and 2016, employment declined in the industrial sector, particularly in manufacturing, which meant that there were fewer jobs for workers with a high school diploma or less. At the other end of the spectrum, the shift to skilled services and the growth of jobs in the knowledge-based economy resulted in good jobs going primarily to workers with a BA or higher (Figure 6).

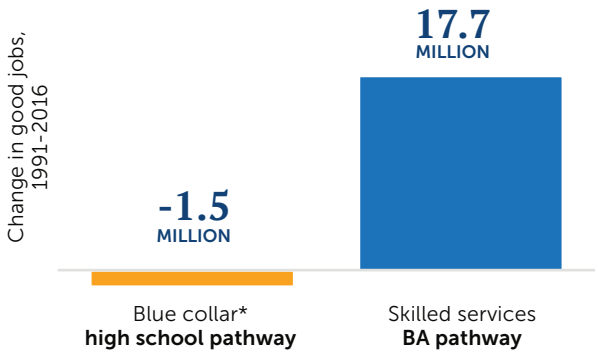
The upskilling phenomenon is nothing short of a generational shift. Between 1991 and 2016, good jobs in skilled services for workers with at least a BA more than doubled, while good blue-collar jobs for workers with a high school diploma or less shrank (Figure 7). The gap between these two extremes points to the extent of this generational change and the transformation of the economy from a high school to a college economy. All of the net losses in good jobs between 1991 and 2016 were suffered by workers with a high school diploma or less.

Figure 6. More than 20 million new good jobs were created in skilled services between 1991 and 2016, while the net number of good blue-collar jobs shrank slightly.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau and Bureau of Labor Statistics, *Current Population Survey*, 1992–2017.

Figure 7. Good jobs in skilled services for workers on the BA pathway grew by 17.7 million. Meanwhile, good blue-collar jobs for workers on the high school pathway declined by 1.5 million.



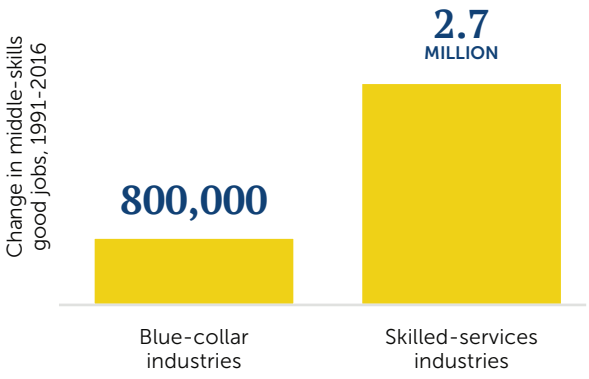
Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau and Bureau of Labor Statistics, *Current Population Survey*, 1992–2017.

* Note: Blue-collar industries include manufacturing, transportation and utilities, wholesale and retail trade, natural resources, and construction; skilled-services industries comprise government services, education services, consulting and business services, financial services, healthcare services, leisure and hospitality services, and personal services.

The shift to skilled services saved and transformed the middle-skills pathway (Figure 8). A total of 3.5 million net new good jobs were created for workers with middle skills from 1991 to 2016. Skilled-services industries added 2.7 million middle-skills good jobs, and blue-collar industries added another 800,000 middle-skills good jobs.

The largest growth within skilled services was on the BA pathway (Figure 9). The number of good jobs for workers with a BA or higher in skilled-services industries more than doubled between 1991 and 2016, from 17.2 million to 34.9 million. This segment of the economy has experienced the strongest upskilling trend, highlighting the growing value of postsecondary education in the modern economy.

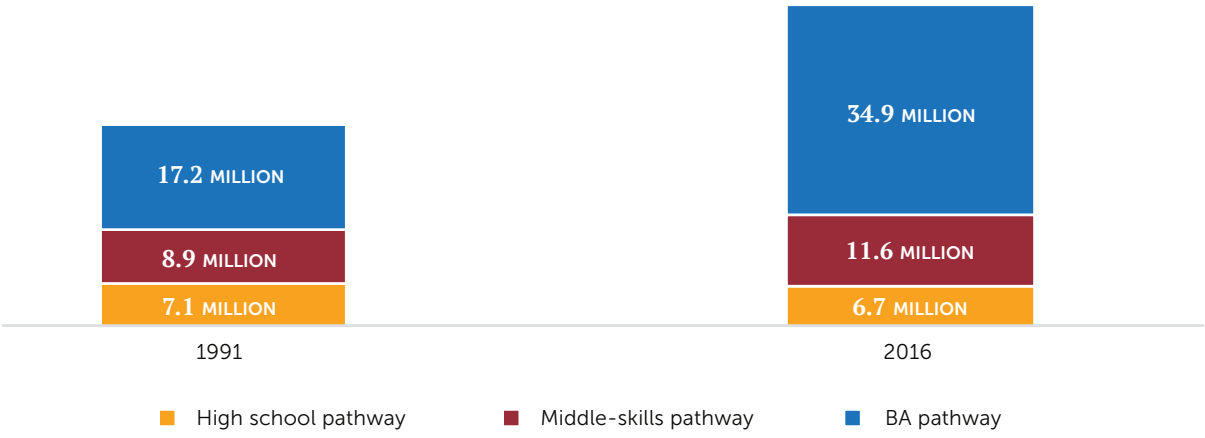
Figure 8. Skilled-services industries accounted for 77 percent of job growth for workers with middle skills.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau and Bureau of Labor Statistics, *Current Population Survey*, 1992–2017.

Note: Blue-collar industries include manufacturing, transportation and utilities, wholesale and retail trade, natural resources, and construction; skilled-services industries comprise government services, education services, consulting and business services, financial services, healthcare services, leisure and hospitality services, and personal services.

Figure 9. The number of good jobs in skilled services for workers on the BA pathway doubled between 1991 and 2016.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau and Bureau of Labor Statistics, *Current Population Survey*, 1992–2017.

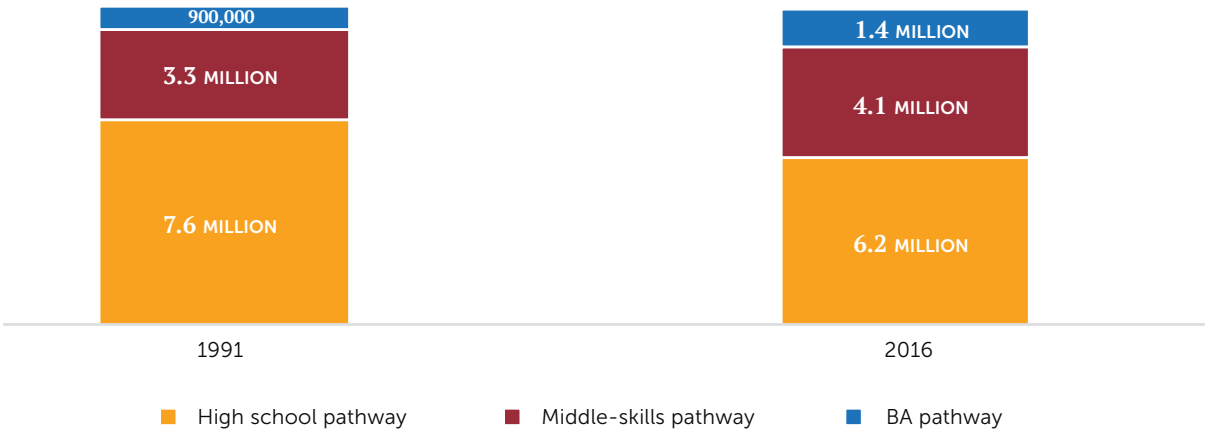
Note: Skilled-services industries include government services, education services, consulting and business services, financial services, healthcare services, leisure and hospitality services, and personal services.

In blue-collar industries, good jobs have transitioned to the middle-skills pathway.

Blue-collar industries have also experienced upskilling. Even as blue-collar industries shed 1.5 million jobs for high school-educated workers, these industries added 800,000 jobs for middle-skills workers and 500,000 jobs for workers with a BA or higher (Figure 10).

The high school economy, providing about 20 percent of all good jobs, has been buttressed by skilled-services industries. Because good blue-collar jobs for high school workers declined by 1.5 million, skilled-services industries now account for a greater share (52%) of good high school jobs.

Figure 10. Blue-collar industries also experienced upskilling—500,000 good jobs were added for workers on the BA pathway, and 800,000 good jobs were added for workers on the middle-skills pathway.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau and Bureau of Labor Statistics, *Current Population Survey*, 1992–2017.

Note: Blue-collar industries include manufacturing, transportation and utilities, wholesale and retail trade, natural resources, and construction.

CONCLUSION

The complex effects of deindustrialization and upskilling have shifted the US economy from an industrial economy to a skills-based economy, fundamentally changing the structure of good job opportunities for workers. These forces have created three pathways to good jobs for which previously there had been one primary route. The emergence of the three educational pathways to economic opportunity—high school, middle-skills, and BA—reflects a profound transformation in how workers access the middle class. In 1950, 72 percent of the middle class had not completed even high school, and only 2 percent had a BA or higher.[20] As post-World War II industrialization shifted the minimum workforce requirement toward a high school diploma, high school-educated workers came to dominate the middle class. By 1980, 40 percent of the middle class consisted of people who had no more than a high school diploma. This was the pinnacle of the high school economy.[21]

Then, the American industrial economy began to sputter in the face of modern global competition, as technology and new work processes raised the demand for workers with education beyond high school. In 1980, college-educated workers (those with more than one year of postsecondary education or training) were 38 percent of the middle class, but by 2000 they had reached 49 percent of the middle class,[22] far surpassing the share of high school-educated workers. Since that point, most gains in access to the middle class have gone to workers with BAs and graduate degrees, or at least middle-skills education.

There are now three pathways to good jobs for which previously there had been one primary route.

Good jobs for workers with a high school diploma or less still exist, but they have declined precipitously. The fall of the high school economy is really the story of manufacturing decline. Taking this into account, the fact that good jobs for high school workers have persisted to the extent that they have is a testament to the resilience of this pathway. The high school economy will likely remain a stable pathway to good jobs in the near term even as older workers with no more than a high school diploma continue to retire. It is difficult to predict where the high school economy is headed in the long term, especially given the headwinds of automation and upskilling, but it clearly still is a significant part of the workforce and still provides many good jobs.

20 Georgetown University Center on Education and the Workforce analysis of US Census Bureau, *Decennial Census* data, 1950.

21 Georgetown University Center on Education and the Workforce analysis of US Census Bureau, *Decennial Census* data, 1980.

22 The middle class is defined here as the middle 40 percent of the earnings distribution. Georgetown University Center on Education and the Workforce analysis of US Census Bureau, *Decennial Census* data, 1980, 2000.

Middle-skills jobs that require more than high school but less than a BA have increased. The growth of good middle-skills jobs in skilled-services industries has proved a wellspring of opportunity, while the shift toward middle-skills jobs has revitalized blue-collar industries. In fact, the growth in good jobs for workers with AAs is outpaced only by the growth in good jobs for workers with BAs and graduate degrees. The growth of skilled-services jobs that do not require a four-year college degree has allowed the sub-baccalaureate labor market to keep providing more good jobs, while the growth of middle-skills jobs has transformed blue-collar industries even as they face declines in manufacturing employment.

In the end, all of the net good job losses between 1991 and 2016 were among workers with no more than a high school diploma, particularly those who worked in manufacturing. Yet the focus on manufacturing and declining economic opportunity in the era of college for all disguises the fact that there is a robust non-BA economy in the United States, driven primarily by the rise of skilled-services industries.

The blue-collar economy has modernized and transformed itself into something more like a middle-skills sector.

The fact that blue-collar employment has not grown is a hard burden for workers invested in blue-collar jobs, especially workers with no more than a high school diploma. It is impressive that blue-collar employment has held fairly steady while absorbing all of the downward economic pressure of the decline in manufacturing. In a sense, the blue-collar economy has modernized and transformed itself into something more like a middle-skills sector.

Workers in blue-collar jobs have upskilled right along with workers in skilled services. The adoption of new technologies has driven the need for more technicians and fewer mechanics, and as a result, the remaining good jobs in blue-collar industries are increasingly filled by workers with middle skills, rather than workers with a high school diploma or less. There has also been a slight increase in good blue-collar jobs for workers with a BA or higher.

Upskilling is clearer in skilled-services industries. Almost all of the net good job growth is going to workers with BAs and graduate degrees. This shift alone accounted for 17.7 million net new good jobs, doubling the number of good jobs in skilled services for workers with a BA or higher.

Yet not everyone needs a BA to get a good job. Evidence is mounting that programs that are well aligned with the labor market can lead those who complete sub-baccalaureate degrees and awards to attain good jobs.[23] Therefore, policymakers should promote transparency and accountability by ensuring that students and their families are provided information about the value they will get for their investment, particularly the employment and earnings outcomes of different education and training programs. Policymakers and education providers should also seek to increase graduation rates, especially at two-year colleges. There are significant differences between earnings for college dropouts and earnings for workers with AAs. Finally, education and training providers at all levels should strengthen their efforts to align their curricula with job requirements to ensure that students who complete their programs are able to secure good jobs.

23 Schneider, "The Value of Sub-Baccalaureate Credentials," 2015.

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Three Educational Pathways to Good Jobs: High School, Middle Skills, and Bachelor's Degree can be accessed online at cew.georgetown.edu/3Pathways

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