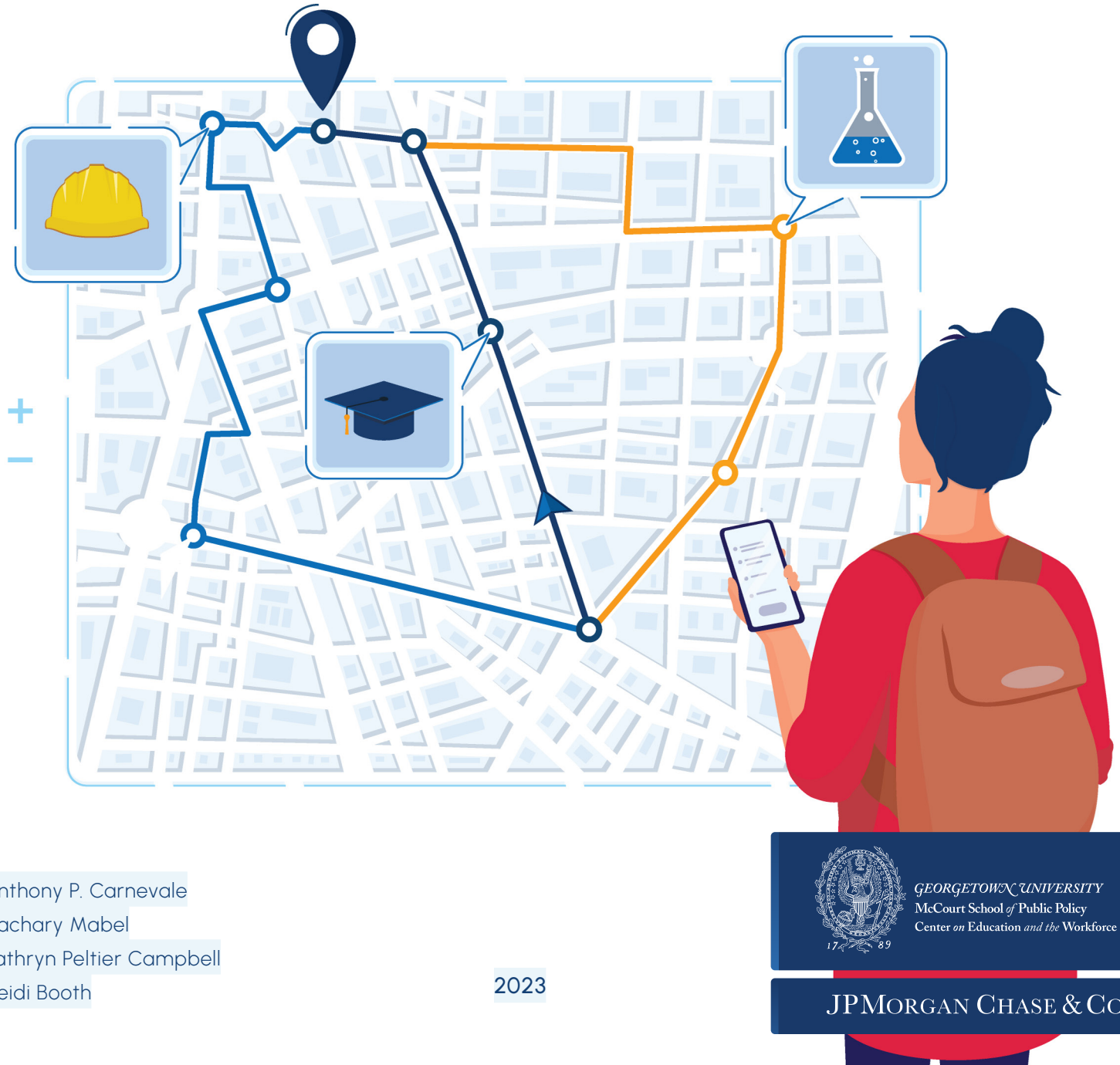
WHAT WORKS

TEN EDUCATION, TRAINING, AND WORK-BASED PATHWAY CHANGES THAT LEAD TO GOOD JOBS

Findings by Race, Gender, and Class from the Georgetown University Pathways-to-Career Policy Simulation Model



Anthony P. Carnevale
Zachary Mabel
Kathryn Peltier Campbell
Heidi Booth

2023

GEORGETOWN UNIVERSITY
McCourt School of Public Policy
Center on Education and the Workforce

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Our preference is to cite figures and tables as follows: Source: Anthony P. Carnevale, Zachary Mabel, Kathryn Peltier Campbell, and Heidi Booth. *What Works: Ten Education, Training, and Work-Based Pathway Changes That Lead to Good Jobs.* Washington, DC: Georgetown University Center on Education and the Workforce, 2023. cew.georgetown.edu/pathway-changes.

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ACKNOWLEDGMENTS

We would like to express our gratitude to **JPMorgan Chase** for the generous support that made this report possible.

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

- Nicole Smith and Jeff Strohl for quantitative feedback;
- Lawand Yaseen for data analysis;
- Artem Gulish for quantitative feedback;
- Catherine Morris for editorial and qualitative feedback;
- Katherine Hazelrigg, Fan Zhang, Johnna Guillerman, and Abiola Fagbayi for communications efforts, including design development and public relations; and
- Coral Castro and Jessica Fuentes-Diaz 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 and editorial advisors, whose efforts were vital to its successful completion. Finally, we thank Lumina Foundation, the Bill & Melinda Gates Foundation, the Joyce Foundation, and the Annie E. Casey Foundation for supporting prior work that informed this research.

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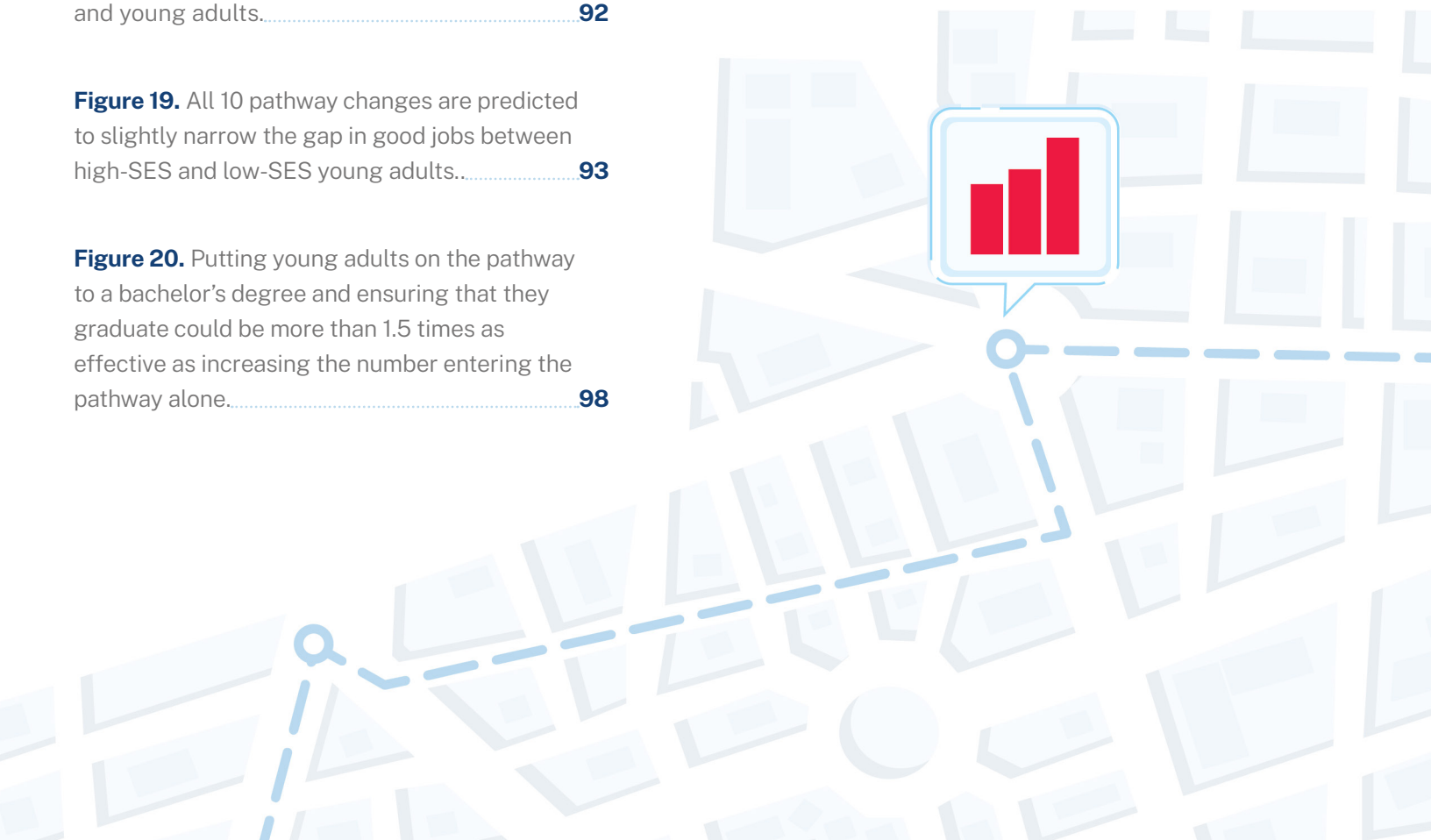
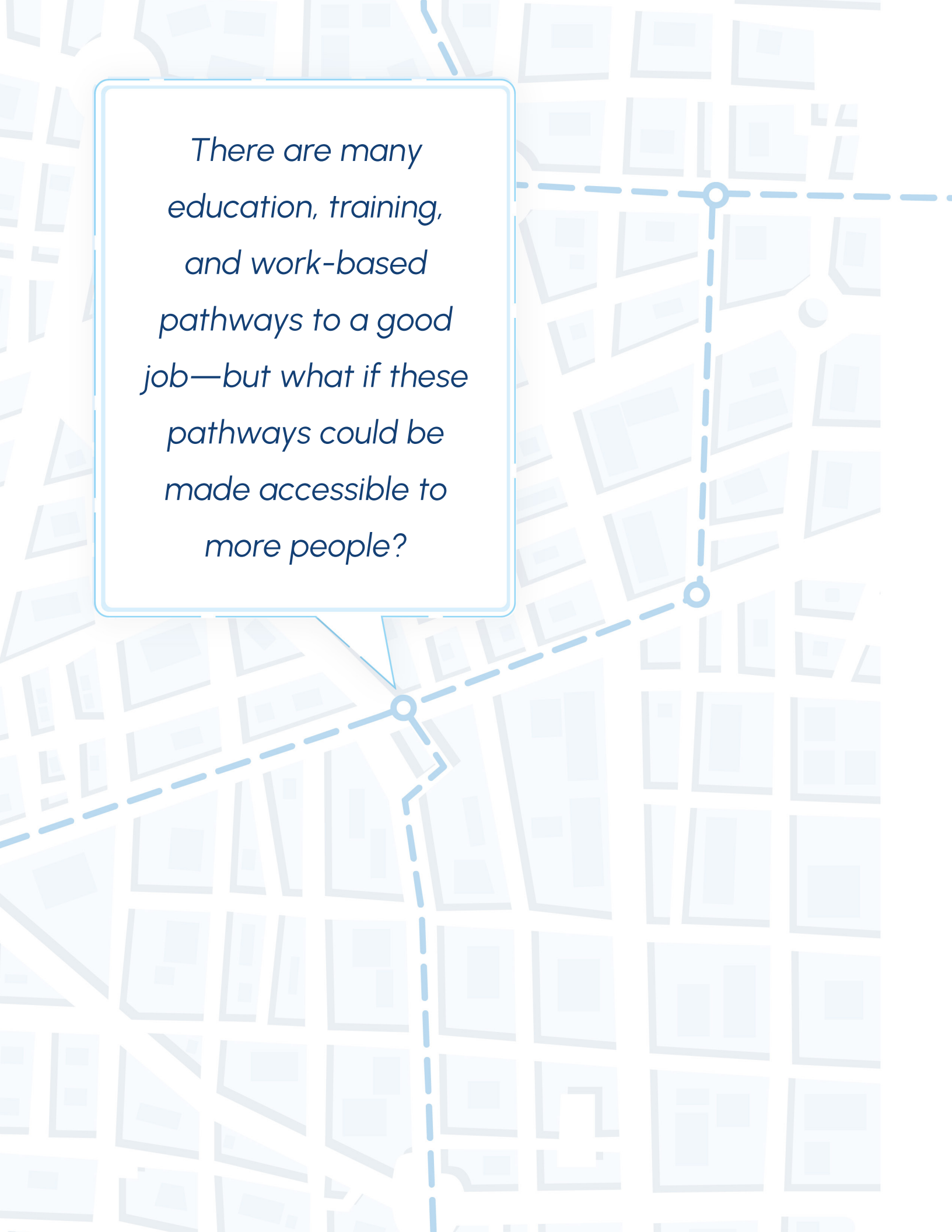



There are many education, training, and work-based pathways to a good job—but what if these pathways could be made accessible to more people?

INTRODUCTION

In a fair world, the journey from childhood to the early stages of a career would be defined more by young people's unique talents and interests than by differences in the opportunities available to them. In reality, as young people progress with their education and their early careers, they find themselves pushed forward or held back at critical junctures without full regard for their individual capabilities. Their paths are too often defined less by their talents and more by characteristics such as their race/ethnicity, gender, and socioeconomic or class status.[1] By default, too many young people encounter barriers based on these characteristics, narrowing the scope of their educational and career options. These barriers reduce their chances of achieving economic security and lead to enormous lost potential across society.

This reality raises a number of questions. There are many education, training, and work-based pathways to a good job — but what if these pathways could be made accessible to more people? What if points of lost momentum could be transformed into points of forward progress? We know that certain opportunities can improve young people's economic outcomes and chances of upward

1 In this report, we use "class" and "socioeconomic status (SES)" interchangeably.

mobility — but which ones hold the most promise? What would the societal impact be if these opportunities were brought to scale?

To shed light on these questions, the Georgetown University Center on Education and the Workforce (CEW) built the **Pathways-to-Career policy simulation model**.[2] The model uses longitudinal data to identify promising actions for increasing the likelihood of working in a good job — one we define as providing minimum annual earnings of about $38,000 per year, with a median of $57,000 at age 30. Our Pathways-to-Career model establishes an actionable, solution-oriented framework for improving the economic lives of young adults by simulating the potential impacts of different pathway changes at critical junctures along the route from adolescence to early adulthood. The model relies on data from the US Bureau of Labor Statistics' National Longitudinal Survey of Youth 1997 (NLSY97) — an ongoing study that tracks a nationally representative sample of individuals born in the early 1980s from ages 12–16 to adulthood. This data set allows us to estimate the expected labor-market effects of different pathway changes for young people overall and separately by race/ethnicity, gender, and class. It also allows us to layer these pathway changes and examine the gains associated with comprehensive policy efforts to expand access to good jobs.

We focus on having a good job at age 30 in this report because our previous research has shown that this is a pivotal age in the career progression of today's young adults as they move from youth dependency to good jobs and adult economic independence.[3] While young adults in the past were largely able to find good jobs in their 20s, more than half of young adults in the labor force today need until age 30 or longer to settle into a good job.[4] The economy has changed to require more education, training, and work experience in order to access a good job. Accordingly, the pathways to opportunity have changed, too.[5]

Today, young adults seek out good jobs with different levels of educational attainment. Thus, the pathway changes we explore in this report have implications for young adults who plan to enter the workforce with one of three broad levels of educational attainment — a high school diploma or less, middle skills (a certificate or associate's degree), or a bachelor's degree[6] — as well as for youth who have not yet finished high school. Many of the youth and young adults who stand to benefit from the pathway changes we explore start out on pathways that are unlikely to lead to good jobs (**Figure 1**).

2 See Appendix A for further details about the Pathways-to-Career policy simulation model.

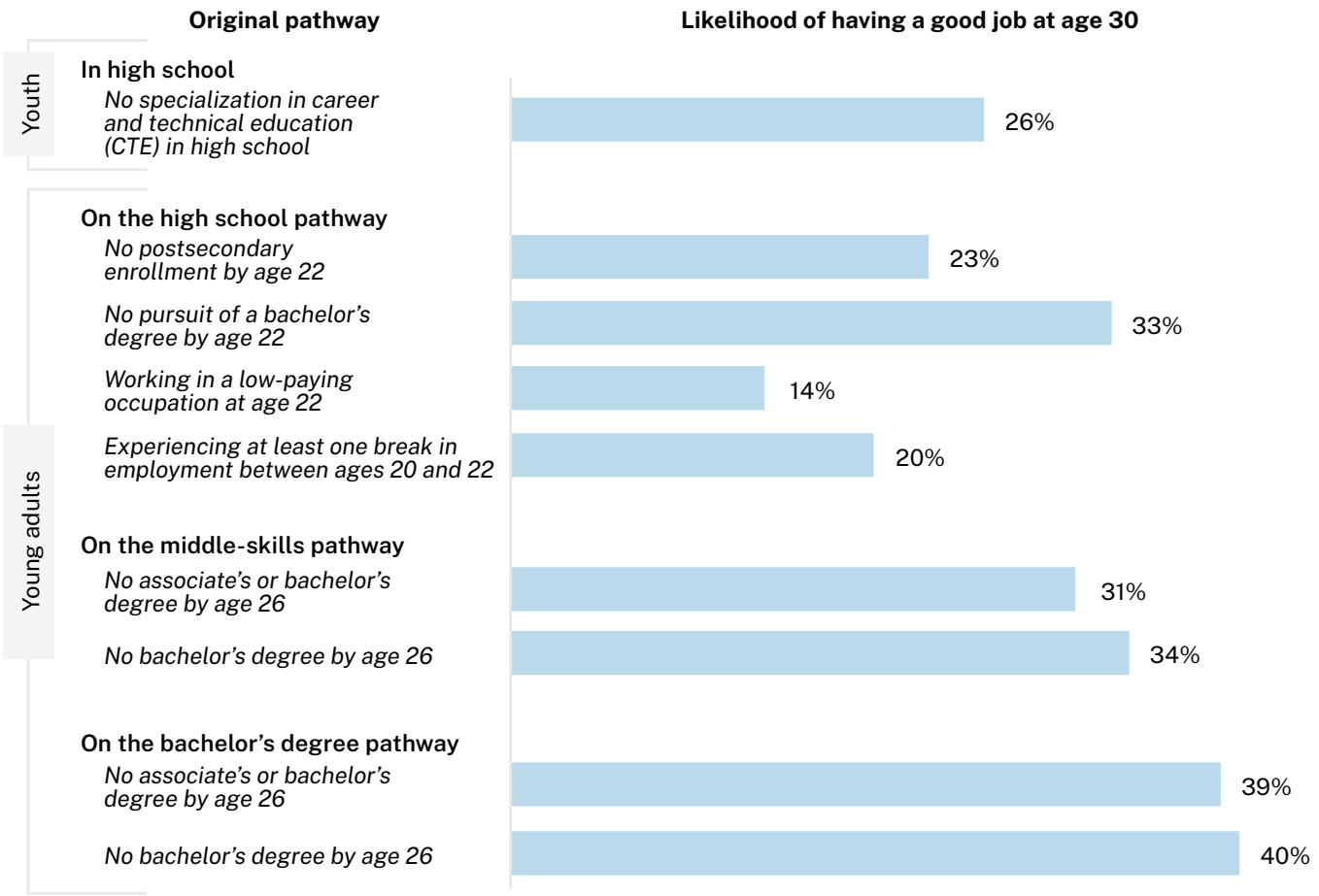
3 Carnevale et al., *How Limits to Educational Affordability, Work-Based Learning, and Career Counseling Impede Progress toward Good Jobs*, 2022; Carnevale et al., *Failure to Launch*, 2013; Carnevale et al., *If Not Now, When?*, 2021; Carnevale et al.,*Youth Policy*, 2021.

4 Carnevale et al., *How Limits to Educational Affordability, Work-Based Learning, and Career Counseling Impede Progress toward Good Jobs*, 2022.

5 Carnevale et al., *How Limits to Educational Affordability, Work-Based Learning, and Career Counseling Impede Progress toward Good Jobs*, 2022; Carnevale et al., *Failure to Launch,* 2013.

6 Our model allows individuals to enroll in certificate, associate's degree, and bachelor's degree programs after age 22 even when we do not explicitly change young people's starting pathways.

FIGURE 1. Among youth and young adults who stand to benefit most from a change in pathway, no more than 40 percent are likely to have a good job at age 30.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Data are for 30-year-olds in the population. Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. Low-paying occupations include jobs in the arts, community services, education, food and personal services, and healthcare support.

Using the Pathways-to-Career model, we examined **38 pathway changes** involving hypothetical adjustments to individuals' education, sectoral training, and work-based experiences at different life stages, from adolescence to their mid-20s.[7] We then narrowed down these 38 pathway changes to the 10 that could most improve the likelihood of having a good job at age 30.[8] In this report, we outline

7 We selected these 38 pathway changes based on both theoretical and empirical evidence of the relationships between human capital investments and earnings. Although the 38 pathway changes do not include all possible pathway changes across the education, training, and work experience domains, they capture the primary intervention points in these three arenas.

8 These 10 pathway changes are associated with the greatest *increase* in the likelihood of having a good job relative to a baseline circumstance, rather than the greatest overall likelihood of having a good job. We focus on the change in likelihood of having a good job instead of the overall likelihood because identifying opportunities for intervention at malleable junctures is most relevant from a policy perspective.

how the expected impacts of each of these 10 pathway changes differ by race/ethnicity, gender, and class, as well as how these 10 pathway changes could influence opportunity gaps in good jobs at age 30. Finally, we consider the enhanced impact of strategically combining pathway changes for maximum effect.

We find that there are multiple pathway changes through education, training, and work that could increase the number of young adults in good jobs at age 30 (**Figure 2**). These occur at multiple points on the journey from high school to early adulthood. They include the following:

1 **Specializing in career and technical education (CTE) in high school:** There are 6.6 million youth in the current high school cohort who are not expected to enter a bachelor's degree program by age 22 and who do not currently specialize in CTE in high school. If these youth received more high school CTE instruction, 186,000 more young adults in this cohort[9] could have good jobs at age 30.

2 **Entering a certificate or associate's degree program by age 22:** There are 4.7 million high school graduates in the current college-age cohort who are not expected to pursue a certificate, associate's degree, or bachelor's degree by age 22. If these individuals pursued a certificate or associate's degree by age 22, 261,000 more young adults in this cohort could have a good job at age 30.

3 **Entering a bachelor's degree program by age 22:** There are 4.8 million high school graduates in the current college-age cohort who are academically prepared to enter a bachelor's degree program but are not expected to pursue this goal by age 22.[10] Moving these individuals onto the bachelor's degree pathway by age 22 could result in 765,000 more young adults in this cohort with good jobs at age 30.

9 We define the cohort for this pathway change as the high school-age population (ages 14 to 18). We define the cohort for the continuous employment pathway change as the population of young adults ages 20 to 22. For all other pathway changes, we define the cohort as the population of young adults ages 18 to 22.

10 We define academic preparedness as having test scores on the Armed Services Vocational Aptitude Battery or a high school GPA above the 25th percentile of students who pursue a bachelor's degree by age 22. This correlates to having a high school GPA or test scores in the upper half of the high school class. While there are multiple definitions of academic preparedness for bachelor's degree programs, we chose this definition because it aligns with the admission criteria of broad-access four-year institutions, which typically accept at least three-quarters of students who apply.

4 **Working in a blue-collar occupation at age 22:** In the current college-age cohort, there are 2.7 million young adults with no more than a high school diploma who are expected to work in low-paying occupations at age 22.[11] If these individuals instead had jobs in blue-collar occupations, 45,000 additional young adults in this cohort could have a good job at age 30.

5 **Experiencing continuous employment from ages 20 to 22:** In the current cohort of young workers ages 20 to 22, there are 4.3 million young adults with no more than a high school diploma who are expected to experience employment gaps in early adulthood that can stymie their career advancement. Without these gaps, 148,000 more young adults in this cohort could have good jobs at age 30.

6 **Working in a STEM or other high-paying occupation at age 22:** If the 2.7 million young adults in the current college-age cohort who are expected to start out in low-paying jobs after high school instead worked in science, technology, engineering, and mathematics (STEM) or other high-paying occupations[12] at age 22, 310,000 more young adults in this cohort could have good jobs at age 30.

7 **Earning an associate's degree by age 26 after enrolling in a certificate or associate's degree program:** There are 2.6 million young adults in the current college-age cohort who enroll in a certificate or associate's degree program by age 22, but who are not expected to earn a college degree by age 26. Ensuring that these individuals complete an associate's degree could result in 201,000 more young adults in this cohort with good jobs at age 30.

8 **Earning a bachelor's degree by age 26 after enrolling in a certificate or associate's degree program:** There are 3.4 million young adults in the current college-age cohort who enroll in a certificate or associate's degree program by age 22, but who are not expected to subsequently transfer to a four-year institution and complete a bachelor's degree by age 26. If these individuals did complete a bachelor's degree, 479,000 more individuals in this cohort could have a good job at age 30.

11 Low-paying occupations at age 22 include jobs in the arts, community services, education, food and personal services, and healthcare support.

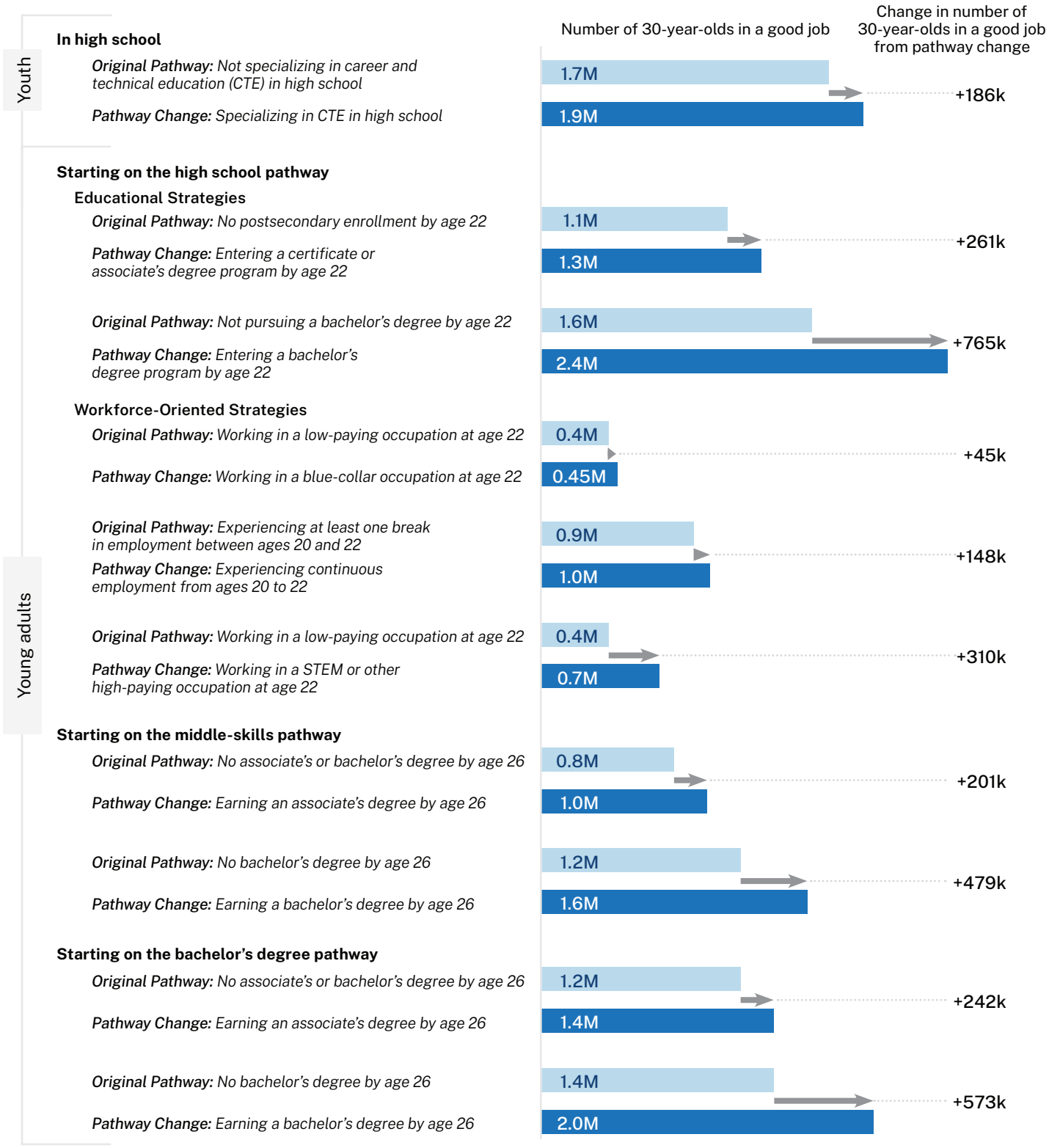
12 Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

9 **Earning an associate's degree by age 26 after enrolling in a bachelor's degree program:** There are 3 million young adults in the current college-age cohort who enroll in a bachelor's degree program by age 22, but who are not expected to earn a college degree by age 26. If these individuals were to transfer their credits to a two-year institution and complete an associate's degree, 242,000 more young adults in this cohort could have good jobs at age 30.

10 **Earning a bachelor's degree by age 26 after enrolling in a bachelor's degree program:** There are 3.6 million young adults in the current college-age cohort who start down the bachelor's degree pathway, but who aren't expected to earn a bachelor's degree by age 26. Ensuring that these individuals complete a bachelor's degree could put 573,000 more young adults in this cohort in a good job at age 30.

As **Figure 2** illustrates, many of the most promising pathway changes involve increasing educational attainment, especially progressing toward attainment of a bachelor's degree. But several meaningful opportunities to improve young people's likelihood of attaining a good job at age 30 exist for young adults pursuing all levels of educational attainment. Some of these opportunities replace or combine classroom learning with on-the-job learning, capitalizing on the growth that occurs when workers gain access to jobs in high-demand fields that equip them with both general and specific skills, knowledge, and competencies.

FIGURE 2. Ten education, training, and on-the-job-learning pathway changes could substantially increase the number of young adults in a good job at age 30.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.
Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. "M" indicates millions; "k" indicates thousands. For details about who is eligible for each scenario, see Appendix A. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare. Low-paying occupations include jobs in the arts, community services, education, food and personal services, and healthcare support. Numbers may not sum due to rounding.

The Pathways-to-Career model offers compelling evidence that investments in policy and practice can make a substantial difference in the lives of young adults.

The Pathways-to-Career model allows us to identify opportunities for investments in policy and practice to make an impact for individuals and for society at large. Using the model, we can look broadly across the country's education and workforce preparation systems and zero in on places where a change in pathway could substantially increase the number of young adults in a good job at age 30. We can also determine which young adults would be most likely to benefit from a change or sequenced combination of pathway changes.

On the whole, the Pathways-to-Career model predicts that the likelihood an individual will end up in a good job at age 30 depends strongly on factors relating to human capital, such as education, sectoral training, and work experience.[13] Thus, the 10 pathway changes we describe in this report all involve education, sectoral training, or work experience that increases an individual's likelihood of having a good job at age 30.

Because most good jobs currently require a bachelor's degree,[14] the pathway changes that expand enrollment in bachelor's degree programs and that quickly reengage young adults who leave a four-year degree program before graduating are the most powerful levers for increasing the number of young adults in good jobs. For example, 40 percent of young adults who start on a bachelor's degree program by age 22 (representing 3.6 million individuals) do not complete a bachelor's degree by age 26. Moving these individuals from a pathway on which they don't complete a bachelor's degree to one on which they do by age 26 increases the likelihood of having a good job at age 30 by 16 percentage points, to 56 percent. Likewise, among academically prepared young adults who do not plan to pursue a bachelor's degree, enrolling in a bachelor's degree program by age 22 has a similar impact. At the same time, workforce-oriented pathway changes — such as working in a high-paying occupation at age 22 instead of a low-paying one or achieving continuous employment from ages 20 to 22 — can also substantially improve outcomes for young adults, even without any increase in their educational attainment.

13 We estimate that human capital measures explain about half of the variation in the likelihood of having a good job at age 30 across individuals. Other studies also find that workers' human capital explains 40 to 50 percent of the variance in earnings across individuals. See, for example, Card et al., "Firms and Labor Market Inequality," 2018; and Song et al., "Firming Up Inequality," 2019.

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

Education, sectoral training, and on-the-job learning each play a substantial role in shaping young adults' likelihood of having a good job at age 30.

The Pathways-to-Career model provides insights relevant to the current debate about the true value of postsecondary education and training in the labor market. Polling data have underscored the growing tension in the public consciousness about the need for a college education. One 2022 survey showed that about half of Americans think that college is "a questionable investment."[15] Another survey released in the same year indicated that 75 percent of Americans agree that "it is easier to be successful with a degree than without."[16] Our research shows that there is some merit to both beliefs.

Some young adults are perfectly able to find a good job with no more than a high school diploma. However, as our model shows, the likelihood that these young people will have a good job at age 30 becomes stronger when they are able to maintain stable and continuous employment from ages 20 to 22 and when they are connected to jobs in high-paying occupations by age 22. At the same time, expanding access to postsecondary education and increasing degree attainment result in the biggest increases by far in the likelihood of having a good job at age 30. On the whole, education, sectoral training, and work experience are all important and complementary ingredients to career success.

Because there are many avenues to a good job and each is rife with barriers at critical junctures, improvements in all three arenas — education, sectoral training, and work experience — can help prepare more young people on all three educational pathways for good jobs later in life.[17] Our model suggests that one of the largest increases in the likelihood of having a good job would result from ensuring that academically prepared high school graduates who would otherwise not enter a bachelor's degree program do so by age 22. If taken to scale, this pathway change could put 765,000 more young adults in the current cohort in good jobs at age 30,[18] representing a 47 percent increase in the number of good jobs for this group of young adults. Even more — 1.2 million in the current cohort — could be put on the path to a good job if all these young adults completed their degrees after entering the bachelor's degree pathway.

But while increasing postsecondary enrollment and degree attainment would likely provide some of the most dramatic returns, it is not the only means of improving access to a good job. For example,

15 Schleifer et al., *America's Hidden Common Ground on Public Higher Education*, 2022.

16 Fishman et al., *Varying Degrees*, 2022.

17 We assign individuals to an educational pathway according to their highest level of education pursued by age 22.

18 This result assumes that 91 percent of young adults graduate high school by age 22. In 2018–19, the on-time high school graduation rate among public high school students was 86 percent (US Department of Education, *Digest of Education Statistics*, Table 219.46, 2021). We assume a slightly higher rate to account for graduates from private high schools and students who take longer than four years to graduate.

for 22-year-olds with no more than a high school diploma, working in a STEM or other high-paying occupation increases the likelihood of having a good job at age 30 by 11 percentage points, from 14 percent to 25 percent. This pathway change improves the likelihood of having a good job almost as much as entering the bachelor's degree pathway or completing a bachelor's degree.

Focusing policy efforts across all three arenas thus has the potential to produce the largest overall gains in good jobs, leading to improvement in economic well-being for millions of young adults. Interventions in these arenas would include investments in support services that improve young people's chances of completing their college degrees — such as enhanced career navigation services, high-touch mentoring, and access to strong transfer programs or bachelor's degrees offered by community colleges — as well as policies that make postsecondary education significantly more affordable. They would also include investments in sectoral training programs and high-quality career and technical education programs for those who opt not to pursue a two- or four-year degree even after the pathways to those degrees have become more accessible.

Importantly, a policy and practice strategy spanning all three arenas would acknowledge the reality that a functional society relies on workers with a variety of skills in a range of trades and professions, many of which can be acquired without attainment of a bachelor's degree.

In Part 1 of this report, we examine the expected effectiveness of the 10 pathway changes likely to have the biggest impact on young people's likelihood of having a good job at age 30. We consider how these pathway changes relate to potential reforms of policy and practice. We also explore the potential society-wide impacts of the pathway changes in terms of the total number of additional young adults who might attain a good job if the pathway changes were implemented at scale.[19] We find that, if taken to scale, these pathway changes could have a substantial impact on the number of young adults in good jobs.

19 Our estimates of the potential societal impact do not account for systemic capacity constraints that may limit the ability to fully realize the potential gains from implementing each pathway change at scale.

Combining pathway changes would amplify the gains in access to good jobs.

Although workers who progress quickly from high school to a college diploma might have the greatest likelihood of holding a good job at age 30, many people's lives follow a less linear path. Young people might choose to gain some work experience before enrolling in postsecondary education and training, or they might experiment with a few different career paths before settling on one that suits them. Each person's journey involves more than one juncture at which the pathway they take will affect their later access to good jobs. This means that for each individual, there are multiple points at which policy and practice interventions could help tip the balance, setting them on a trajectory to have a good job at age 30.

In addition to comparing the potential effects across pathway changes, the Pathways-to-Career model allows us to investigate how a multipronged strategy could amplify the gains in access to good jobs. To illustrate this, we describe the expected impacts associated with three different combinations of pathway changes: (1) expanding access to bachelor's degree programs and increasing bachelor's degree completion; (2) expanding access to middle-skills programs and also increasing completion of either an associate's or a bachelor's degree; and (3) moving young adults on the high school pathway from a low-paying occupation to a STEM or other high-paying occupation while also ensuring continuous employment from ages 20 to 22.

Educational and workforce interventions frequently aim to address multiple barriers to academic and labor-market success in tandem. For example, holistic interventions that provide supports like advising, career services, and tutoring alongside financial supports, such as free textbooks and transportation benefits, and referral assistance to community-based resources have proven especially effective in scaffolding student success. (The City University of New York's Accelerated Study in Associate Programs, or CUNY ASAP, is a well-known example with proven results, as is the Stay the Course program in Fort Worth, Texas.[20]) Layering different kinds of supports helps maximize a program's impact by building toward an all-one-system approach that connects high school, college, and careers.[21]

20 Weiss et al., "Supporting Community College Students from Start to Degree Completion," 2019.

21 Carnevale et al., *If Not Now, When?*, 2021.

Our model shows that layering pathway changes could likewise substantially increase the likelihood that participants have a good job, thus raising the total number of 30-year-olds who have good jobs beyond what would be expected from a stand-alone pathway change (**Figure 3**). Specifically, we find that:

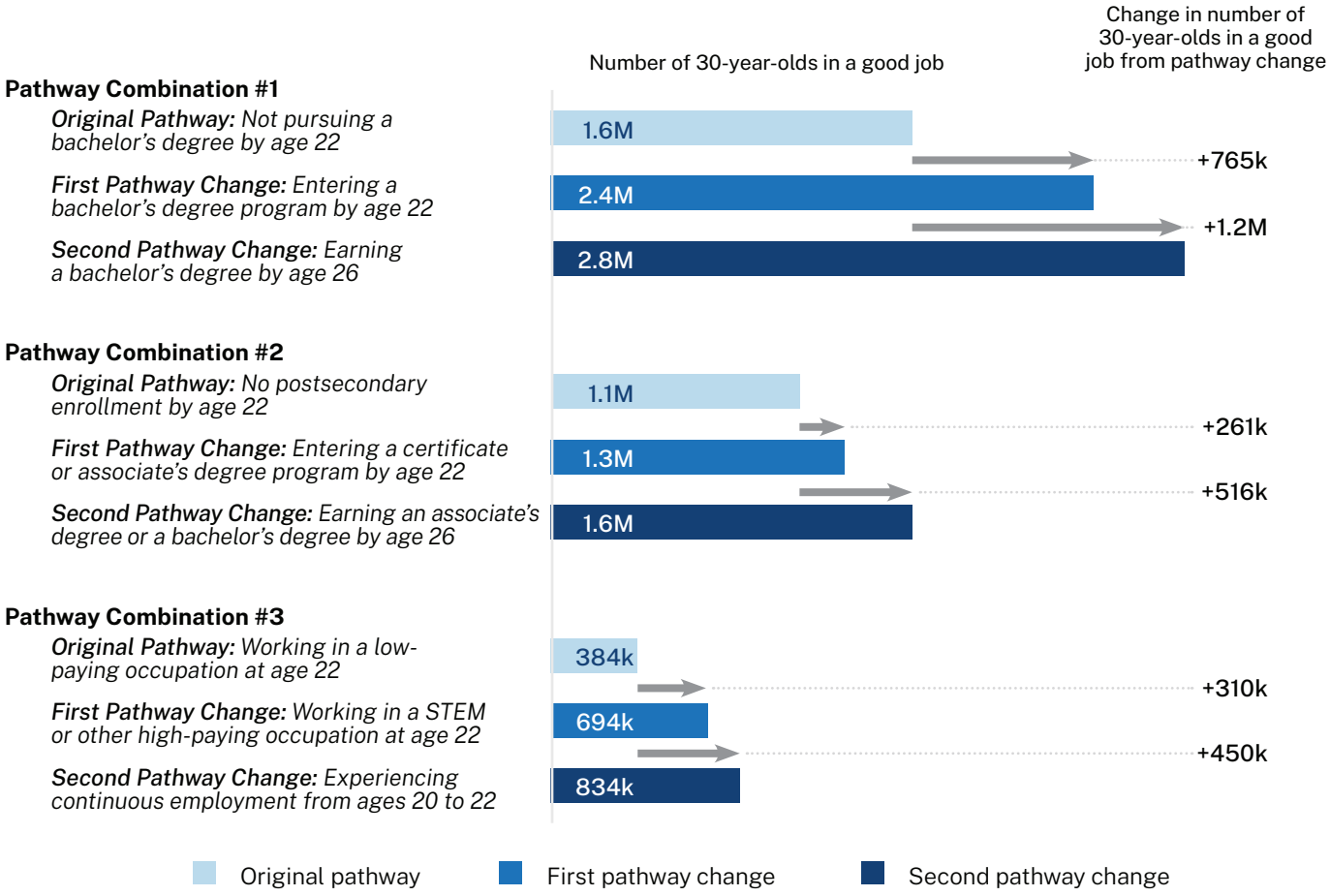
- **Entering a bachelor's degree program by age 22 and ensuring completion of a bachelor's degree by age 26** could put 1.2 million more young adults in the current cohort in good jobs at age 30, whereas increasing enrollment in bachelor's degree programs alone could put 765,000 more young adults in this cohort in good jobs. Putting more individuals on the bachelor's degree pathway and ensuring graduation among all who enter — both new and existing entrants — could help 1.8 million additional young adults in this cohort secure good jobs in early adulthood.
- **Entering a certificate or associate's degree program by age 22 and ensuring completion of a bachelor's degree or an associate's degree by age 26** could put 516,000 additional young adults in the current cohort in good jobs at age 30, whereas increasing enrollment in certificate and associate's degree programs alone could put 261,000 more young adults in this cohort in good jobs.
- **Experiencing continuous employment from ages 20 to 22 and working in a STEM or other high-paying occupation at age 22** could put 450,000 more young adults in the current cohort in good jobs at age 30, whereas helping individuals secure work in STEM or other high-paying occupations alone could result in 310,000 more individuals in this cohort having good jobs at age 30.

Our findings on the impact of individual and layered pathway changes show that there is substantial opportunity to improve the lives of young adults by implementing effective interventions at scale. However, our findings also give us a sense of the scope of investment required to even marginally increase the number of young people in good jobs at age 30. Bringing any single pathway change to scale so it reaches all eligible participants would be a massive undertaking. Furthermore, the maximum impact of each pathway change on its own is arguably small — putting no more than one out of five participating individuals in a good job when they would otherwise be in a low-wage job or no job at all.[22]

The most effective strategies for increasing the number of young adults in good jobs will therefore leverage a coordinated, comprehensive, all-one-system approach. Such an approach would combine the moderate impacts of each individual pathway change to produce large societal benefits.

22 Although our focus in this report is on good jobs, defining effectiveness solely in terms of increasing the likelihood of having a good job potentially understates the total impact of each pathway change on individuals and society. Other potential benefits could include reduced reliance on federal and state safety net programs, better health outcomes, increased levels of civic engagement, and lower levels of criminal activity (see, for example, Carnevale et al., "The Cost of Economic and Racial Injustice in Postsecondary Education," 2021; Oreopoulos and Salvanes, "Priceless," 2011; and van der Noordt et al., "Health Effects of Employment," 2014).

FIGURE 3. Layered pathway changes can be almost twice as effective as any single pathway change on its own.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. "M" indicates millions; "k" indicates thousands. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare. Numbers may not sum due to rounding.

The effectiveness of each pathway change at improving access to good jobs differs by race/ethnicity, gender, and socioeconomic status.

Our model shows that the 10 pathway changes would not have uniform effects on young people. Instead, different pathway changes have different impacts for different racial/ethnic, gender, and socioeconomic groups. The number of individuals eligible for each pathway change also differs across the groups. Taken together, these differences in effectiveness and eligibility mean that most of the pathway changes, if wielded without regard for existing disparities in the potential of each pathway change to lead to good jobs across different groups, could widen existing gaps in good jobs by race and gender while barely reducing class-based gaps. Thus, without affirmative action in the form of targeted recruitment strategies, pathway changes intended to create opportunity for more young adults could instead reinforce tracking by race, gender, and class.

One of the most effective individual pathway changes — **entering a bachelor's degree program by age 22** — illustrates how the results would differ across different groups without affirmative action.

Differences by race/ethnicity:

- For **Black/African American** young adults, this pathway change is associated with a 10-percentage-point increase in the likelihood of having a good job. Five hundred thousand Black/African American individuals in the current cohort are eligible for this pathway change. Moving these individuals onto the bachelor's degree pathway by age 22 could result in 49,000 more Black/African American young adults in this cohort with good jobs at age 30.
- For **Hispanic/Latino** young adults, this pathway change is associated with a 20-percentage-point increase in the likelihood of having a good job, twice the magnitude of the effectiveness for Black/African American individuals. Furthermore, 1.1 million Hispanic/Latino individuals in the current cohort are eligible for this pathway change. Moving these individuals onto the bachelor's degree pathway by age 22 could result in 212,000 more Hispanic/Latino young adults in this cohort with good jobs at age 30.
- For **white** young adults, this pathway change is associated with a 16-percentage-point increase in the likelihood of having a good job, and 2.9 million white individuals in the current cohort are eligible to enter a bachelor's degree program by age 22. This pathway change could result in 455,000 more white young adults in this cohort with good jobs at age 30.
- If all eligible young adults experienced this pathway change, these differences in effectiveness and eligibility could increase the gap between white and Black/African American young adults' likelihood of having a good job at age 30 from 20.8 percentage points to 23.3 percentage points, while slightly decreasing the white–Hispanic/Latino gap from 7.4 to 7.0 percentage points.

Differences by gender:

- For **women**, entering a bachelor's degree program by age 22 is associated with a 14-percentage-point increase in the likelihood of having a good job, and 2.4 million young women in the current cohort are eligible to enroll in a bachelor's degree program by age 22. This pathway change could result in 330,000 more women in this cohort with good jobs at age 30.
- For **men**, this pathway change is associated with an 18-percentage-point increase in the likelihood of having a good job, and 2.5 million young men in the current cohort are eligible to enroll in a bachelor's degree program by age 22. This pathway change could result in 435,000 more men in this cohort with good jobs at age 30.
- If all eligible young adults experienced this pathway change, these differences in effectiveness and eligibility could lead to the male-female gap in the likelihood of having a good job at age 30 increasing from 14.4 percentage points to 15.2 percentage points.

Differences by socioeconomic status (SES):

- For young adults from low socioeconomic status (**low-SES**) backgrounds,[23] entering a bachelor's degree program by age 22 is associated with a 14-percentage-point increase in the likelihood of having a good job, and 2.7 million low-SES individuals in the current cohort are eligible for this pathway change. Moving these young adults onto the bachelor's degree pathway by age 22 could result in 392,000 more low-SES individuals in this cohort with good jobs at age 30.
- For young adults from high socioeconomic status (**high-SES**) backgrounds, this pathway change is associated with a 17-percentage-point increase in the likelihood of having a good job, but there are fewer academically qualified high-SES individuals (2.1 million in the current cohort) than low-SES individuals who do not enroll in a bachelor's degree program by age 22. Thus, moving these young adults onto the bachelor's degree pathway by age 22 could result in 373,000 more high-SES individuals in this cohort with good jobs at age 30.
- If all eligible young adults experienced this pathway change, these differences in effectiveness and eligibility could leave the gap in likelihood of having a good job at age 30 between high-SES and low-SES young adults virtually unchanged, decreasing from 21 percentage points to 20.8 percentage points.

These differences in effectiveness and eligibility across different groups of young adults reflect, in part, the different challenges that individuals encounter from youth through adulthood. For example, although both Hispanic/Latino young adults and Black/African American young adults

23 To examine how the 10 pathway changes are expected to influence low-SES versus high-SES individuals, we constructed a continuous composite index of socioeconomic status for each person using mother's level of educational attainment, father's level of educational attainment, household income per capita, and household net worth per capita in 1997. High-SES individuals are defined as having a composite index value above the median of the distribution across individuals in the analytic sample, and low-SES individuals are defined as have a composite index value below the median.

are underrepresented in postsecondary education, Hispanic/Latino individuals who do not enter a bachelor's degree program by age 22 are more likely than their Black/African American peers to have the academic qualifications to do so. This explains why more than twice as many Hispanic/Latino youth as Black/African American youth are eligible to enter a bachelor's degree program. Hispanic/Latino and white students also have higher completion rates at four-year colleges than their Black/African American peers, which helps to explain why entering a bachelor's degree program is a more effective pathway change for white and Hispanic/Latino young adults than for Black/African American young adults.[24] These differences among college-age young adults reflect racial/ethnic gaps in K–12 educational quality and family economic advantage that have cumulative effects along the journey from youth to young adulthood.[25]

We also find that nearly every pathway change is more effective for men than for women at increasing the likelihood of having a good job at age 30. The two exceptions are (1) earning a bachelor's degree by age 26 after starting a bachelor's degree program at age 22 and (2) earning an associate's degree by age 26 after starting a bachelor's degree program at age 22. These pathway changes increase the likelihood of having a good job at age 30 by the same amount for both women and men, but they do not equalize the likelihood of having a good job between women and men. That's because women who enter bachelor's degree programs and don't earn a college degree by age 26 have a lower likelihood of having a good job compared to men (30 percent versus 46 percent, respectively). If these women completed their associate's degrees or bachelor's degrees by age 26, their likelihood of having a good job at age 30 would rise to 38 percent and 46 percent, respectively, compared to 54 percent and 62 percent for men. Thus, women who experience this pathway change and earn associate's or bachelor's degrees by age 26 remain far less likely than men who experience this pathway change to have a good job at age 30, in part because they end up in occupations with lower pay and in part because they earn less than men on average even within the same occupations.

One pathway change in particular stands out as significantly more effective for men than for women in increasing the likelihood of having a good job. For men with no more than a high school diploma working in low-paying occupations such as food services and healthcare support, switching to a blue-collar occupation at age 22 could increase the likelihood of working in a good job at age 30 by 7 percentage points (from 21 percent to 28 percent).[26] But for women with the same level of educational attainment, this pathway change could reduce the likelihood of having a good job by 4 percentage points (from 8 percent to 4 percent). This discrepancy is probably due to the fact

24 US Department of Education, *Digest of Education Statistics* Table 326.10, 2017.

25 Recent research finds that differences in cumulative family economic advantages explain much of the Black/African American-white gap in academic achievement and educational attainment, with differences in school quality explaining most of the rest of the gap. Michelmore and Rich, "Contextual Origins of Black-White Educational Disparities in the 21st Century," 2022.

26 Opportunities to work in a blue-collar occupation will expand substantially over the next several years because of the passage of the federal Infrastructure Investment and Jobs Act (Public Law 117-58) and because of the policy shift at the federal level toward funding short-term training and apprenticeship programs. Carnevale and Smith, "Training Programs Are Welcome, but Let's Not Overlook the Benefits of a Bachelor's Degree," 2022.

that men are much more likely than women to work in skilled blue-collar jobs that offer the best opportunities for earnings growth and career advancement.[27] It also reflects the fact that among workers with no more than a high school diploma in low-paying, entry-level occupations, women experience more wage growth than men between ages 22 and 26.[28] Thus, by their mid-20s, women on the high school pathway who start their careers in blue-collar occupations tend to earn less than women who start off in low-paying occupations, whereas the opposite is true for men.

Finally, whereas entering a bachelor's degree program at age 22 is associated with a slightly larger increase in the likelihood of having a good job at age 30 for high-SES individuals than low-SES individuals, the pathway changes that involve increasing college degree attainment are much more effective for young adults from low-SES backgrounds than those from high-SES backgrounds. This likely reflects the fact that young adults from high-SES backgrounds generally have access to social capital that protects them from the negative economic consequences of not earning a college degree.[29] As a result, young adults from low-SES backgrounds have more to gain from earning bachelor's degrees than their high-SES peers. In fact, young adults from low-SES backgrounds who complete a bachelor's degree by age 26 are almost as likely as their similarly educated peers from high-SES backgrounds to have a good job at age 30.[30] Among young adults with a bachelor's degree at age 26, those from low-SES backgrounds are only 2 percentage points less likely to have a good job at age 30 than those from high-SES backgrounds, compared to a 12-percentage-point gap among those without bachelor's degrees.[31]

We discuss the differences in pathway change effectiveness for different groups of people in greater detail in this report. We also discuss how many young people could be affected by each pathway change, and we examine the number of young adults in each demographic group who could move into a good job if the pathway changes were brought to scale (**Figure 4**).

27 Escobari et al., *Moving Up, 2021;* Hoyt and Swerzenski, "Who's Getting the Skilled Blue Collar Jobs?," 2018; Pearlman, "Gender Differences in the Impact of Job Mobility on Earnings," 2018.

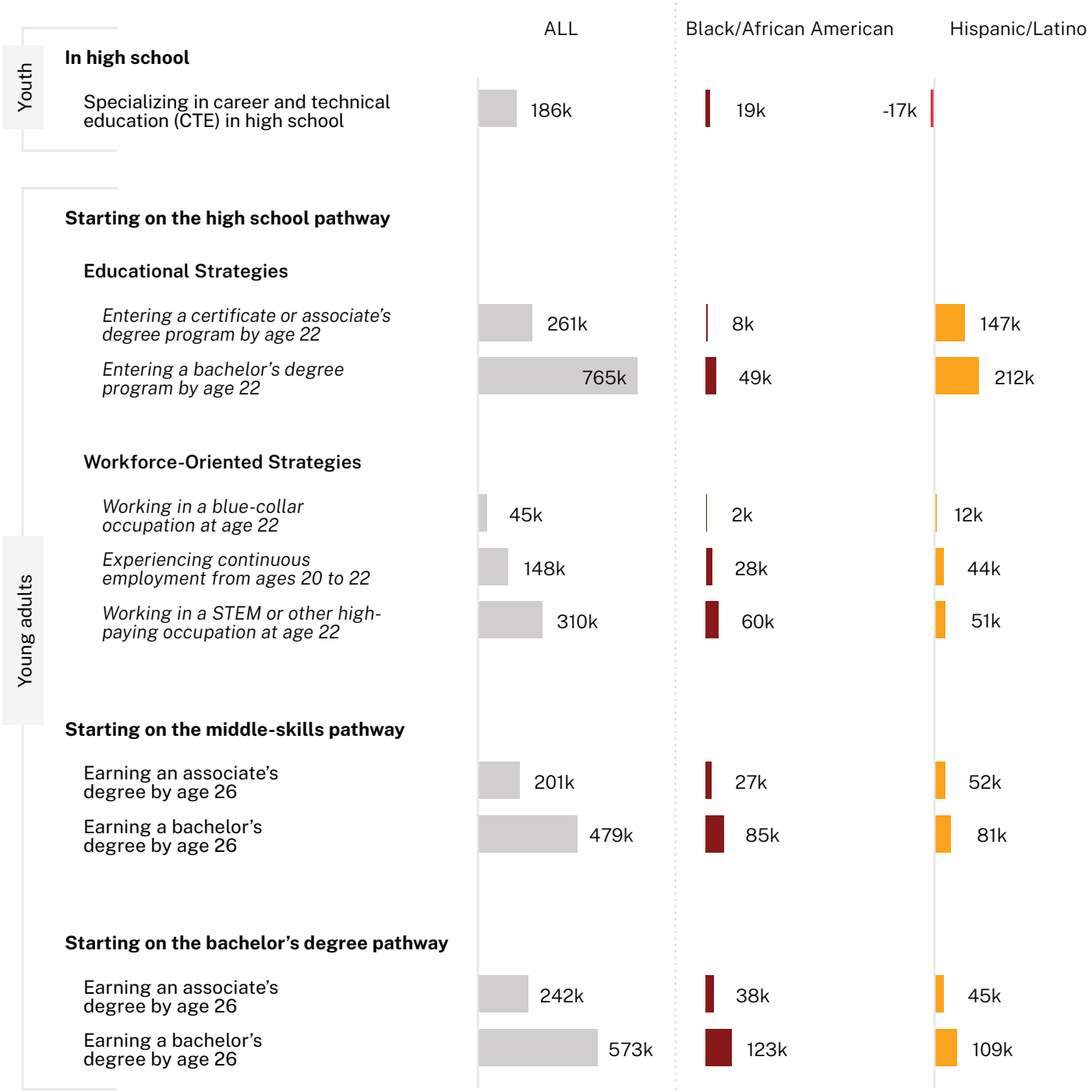
28 Among workers in low-paying occupations with no more than a high school diploma at age 22, the average hourly wage (in 2020 dollars) in the study sample is $9.87 for women versus $12.28 for men. By age 26, the average hourly wage for this group of women is $11.85 versus $12.86 for men. In contrast, among workers in blue-collar occupations with no more than a high school diploma at age 22, the average hourly wage at age 26 is $9.62 for women versus $16.97 for men. Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

29 Abbott and Reilly, *The Role of Social Capital in Supporting Economic Mobility*, 2019; Chetty et al., "Social Capital I," 2022; McDonald, "Network Effects across the Earnings Distribution," 2015.

30 Nevertheless, among young adults working in a good job at age 30, individuals from high-SES backgrounds earn more than individuals from low-SES backgrounds on average ($72,810 versus $64,193, respectively). Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

31 Sixty-six percent of young adults from low-SES backgrounds with a bachelor's degree by age 26 and 68 percent of young adults from high-SES backgrounds with a bachelor's degree by age 26 have a good job at age 30. In contrast, 25 percent of young adults from low-SES backgrounds without a bachelor's degree by age 26 have a good job at age 30 versus 37 percent of young adults from high-SES backgrounds without a bachelor's degree by age 26. Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

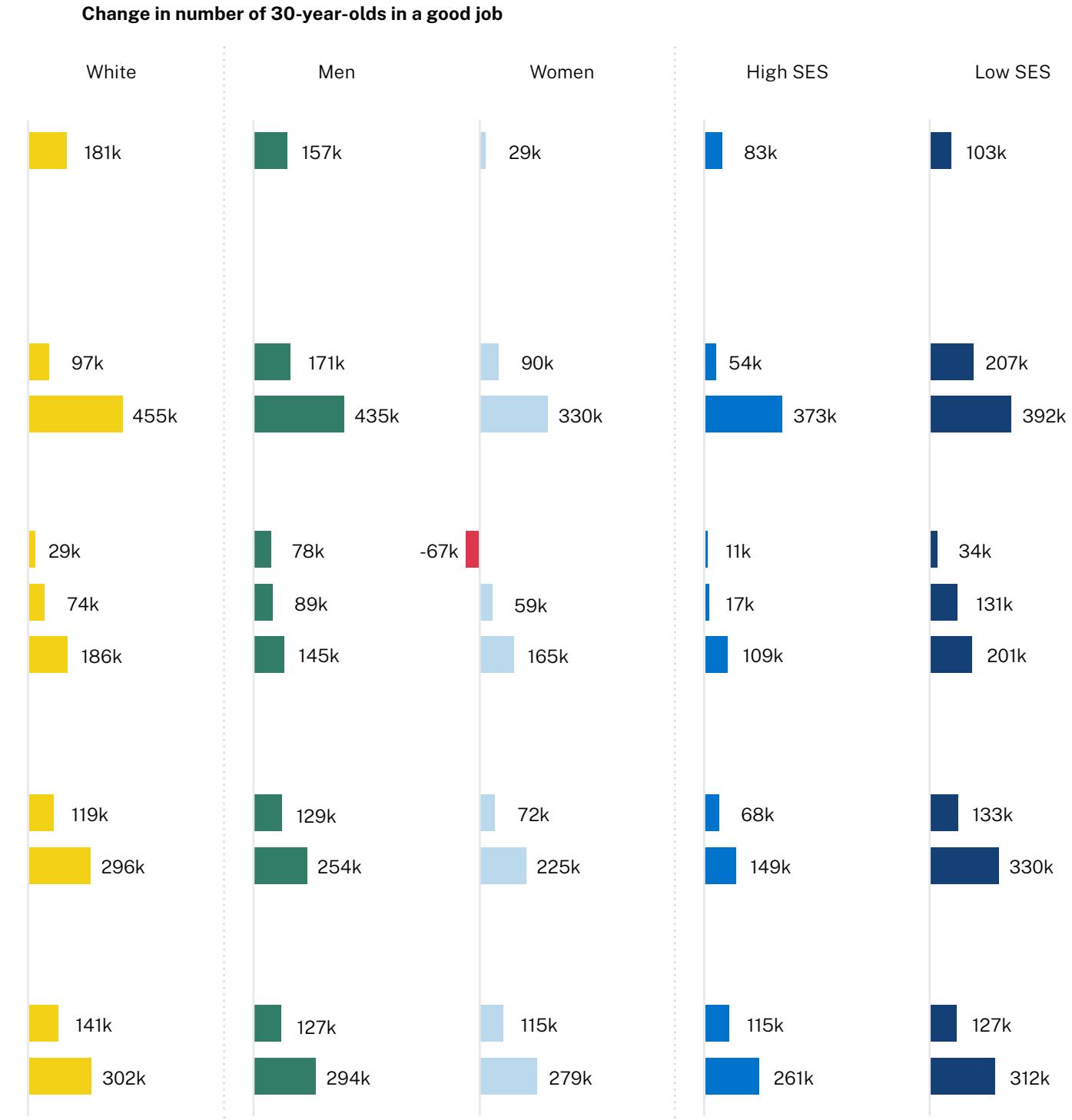
FIGURE 4. The pathway change with the greatest potential to increase the number of 30-year-olds in a good jo bachelor's degree program by age 22) would have the biggest positive impact for white young adults, men, and



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal S

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. "k" indicates tho transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled hea the analytic sample; low-SES individuals are defined as having a composite index value below the median. The numbers across demographic groups m adults, while the group-specific numbers are estimated from models that include only young adults in the group of interest.

ob (moving academically qualified young adults to a
d young adults from low-SES households.



Survey of Youth 1997 (NLSY97), 1997–2015.

ousands. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, lthcare. High-SES individuals are defined as having a socioeconomic composite index value above the median of the distribution across individuals in ay not sum to the total due to sample differences across models: the total numbers are estimated from models that include the full sample of young

Our findings on the potential impact of these 10 pathway changes provide an actionable blueprint for expanding economic opportunity among current and future generations of young adults, but they come with a warning. In the absence of affirmative action in the form of targeted interventions, taking the pathway changes to scale could slightly reduce the class-based gap in the likelihood of having a good job at age 30, but would in most cases increase the racial/ethnic- and gender-based gaps in good jobs. The class-based gap would shrink in part because there are simply more young people from low-SES than high-SES backgrounds who stand to benefit from each pathway change. High-SES young adults are more likely than low-SES young adults to already be on pathways that are more likely to lead to good jobs. Thus, the societal impact of bringing each pathway change to scale is greater for low-SES than high-SES individuals. Meanwhile, more men than women and more white young adults than Black/African or Hispanic/Latino young adults tend to be eligible for each pathway change. By the same token, the societal impact of bringing each pathway change to scale is generally greater for men than for women and for white young adults than for Black/African American or Hispanic/Latino young adults.

The fact that the class-based gap is more likely to narrow under the 10 pathway changes than the racial/ethnic- and gender-based gaps also suggests that class-based disparities in the labor market can be more readily addressed through education, training, and workforce-based interventions than racial/ethnic and gender disparities. Even so, our estimates suggest that narrowing the class-based gap in good jobs by more than a few percentage points would require a multipronged, coordinated strategy. The same is true for closing gaps that exist across race/ethnicity and gender.

Our results indicate that policy interventions related to human capital can make a positive difference, but they often do not provide adequate protection from the constraining forces of systemic racism, sexism, and classism in the United States. Nor do they fully rectify the imbalances created by barriers to good jobs in other policy domains, such as healthcare, housing, and criminal justice. Thus, in order to address the manifold barriers to securing a good job that many young people encounter, interventions focused on education, training, and workforce policy will need to take an all-one-system approach and complement interventions in other arenas.

There is much that can be done to build stronger pathways to good jobs in young adulthood through education, sectoral training, and workforce experience. But doing so will require a more unified, all-one-system approach with holistic supports that replaces the patchwork approach to education, training, and workforce development that currently exists across state governments, educational institutions, and businesses. Affirmative action in the form of targeted recruitment is also needed to ensure that policy efforts end the tracking of individuals into good jobs by race, gender, and class. Are we as a country serious enough about improving opportunity for all young adults to take on the challenge?

What Is a Good Job?

Job quality has multiple dimensions. These include wages and access to employer benefits like health insurance subsidies and retirement account contributions. They also include opportunities for advancement and personal satisfaction. In this report, consistent with previous CEW reports, we define a good job on the basis of pay alone because of limitations in the available data on other components of job quality across many nationally representative survey data sets.[32] We consider the entry point to a good job to be the minimum earnings required for economic self-sufficiency. Many good jobs pay well above the minimum earnings threshold and provide room for growth toward a higher salary.

At the national level, we define a good job as one that pays a minimum of approximately $38,000 in 2020 dollars for workers younger than age 45 and a minimum of approximately $49,000 for workers ages 45 and older.[33] These good jobs pay a median of approximately $57,000 for 30-year-old workers nationwide. Among the 30-year-old workers who have a good job, one-quarter earn less than $46,000 annually, while one-quarter earn more than $76,000.[34]

32 Katz et al., *Measuring Job Quality*, 2022.

33 In prior work, we defined a good job as one that pays at least $35,000 in nominal dollars for workers younger than age 45. When we first established this threshold in 2016, $35,000 was the minimum earnings necessary to enter the middle class, as defined by the lower bound of the fourth decile of the earnings distribution among full-time, full-year workers ages 25 to 45. In this report, we inflation-adjusted the threshold to $37,753 in 2020 dollars to account for the fact that salaries must rise for a good job to remain good as the cost of living increases. The inflation-adjusted threshold equates to earning $18 per hour for full-time work and is similar to the living wage in 2019 and 2020 as defined by the Massachusetts Institute of Technology's Living Wage Calculator. Nadeau, "New Living Wage Data," 2020; Moser, "A Calculation of the Living Wage," 2022.

34 Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 2006–14. The analytic sample is restricted to 2,957 individuals with earnings from their primary job at age 30 above the good job earnings threshold, representing one-third of the full NLSY97 sample initially surveyed.

Depending on the local cost of living, the minimum earnings necessary to achieve economic independence may be higher or lower than the national good jobs threshold. To account for geographic differences in cost of living, we adjusted the good jobs threshold within each census region by metro area status.[35] The minimum earnings associated with a good job vary by approximately $8,000, from $32,000 in non-metro areas in the South to $40,000 in metro areas in the Northeast and the West (Table 1). We took these differences into account in the data analyses for this report.

While our good jobs definition does not include employer benefits, the vast majority (77 percent) of workers in good jobs at age 30 have access to health insurance coverage at work, compared to a minority of workers (35 percent) who are not in good jobs. Workers with good jobs are also much more likely to have access to an employer-sponsored retirement plan.[36]

TABLE 1. Adjusted good jobs threshold earnings and median earnings vary by census region and metro area status.

Census Region	Metro Areas		Non-Metro Areas	
	Threshold	Median	Threshold	Median
Midwest	$37,000	$56,000	$33,000	$51,000
Northeast	$40,000	$60,000	$36,000	$54,000
South	$38,000	$57,000	$32,000	$48,000
West	$40,000	$60,000	$36,000	$54,000

Source: Georgetown University Center on Education and the Workforce estimates based on data from the US Bureau of Labor Statistics, Consumer Price Index Retroactive Series (R-CPI-U-RS), 1980–2020, and the US Bureau of Economic Analysis, Regional Price Parities, 2021.

35 Specifically, we created two cost of living–adjusted thresholds for each census region: one that accounts for the average cost of living in the metropolitan areas in each region and another that accounts for the average cost of living in the non-metropolitan areas in each region.

36 Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 2010–13. While the NLSY data show that workers with good jobs are nearly three times as likely to have access to an employer-sponsored retirement plan as workers without good jobs, we do not report the exact estimates because they appear to significantly understate retirement plan coverage. Based on data from the US Bureau of Labor Statistics, "National Compensation Survey," 2021, more than 70 percent of civilian workers have access to a retirement plan at work. The group of workers most likely to lack access to a retirement plan are those in the bottom quartile of the earnings distribution.

PART 1.

THE 10 MOST EFFECTIVE PATHWAY CHANGES TO PUT MORE YOUNG ADULTS IN GOOD JOBS

The pathway from youth to career is full of critical junctures. Too often, these junctures become missed opportunities: points at which engagement in the right program or advice from the right person could have improved someone's economic future. At these key points, the right intervention could be transformative, increasing the likelihood that a young adult will have a good job.

Each juncture also offers a meaningful opportunity to increase the number of young adults in good jobs. At each juncture, the potential societal impact of any pathway change depends on a combination of how much that pathway change improves the likelihood of being in a good job and how many young adults are eligible for that pathway change. For example, the potential societal effect of offering opportunities to work in a STEM or other high-paying occupation at a young age is limited by the number of young adults who would benefit from such a change in their circumstances.

At each juncture, the potential societal impact of any pathway change depends on a combination of how much that pathway change improves the likelihood of being in a good job and how many young adults are eligible for that pathway change.

In this section of the report, we describe the pathway changes most likely to improve young people's likelihood of having a good job at age 30, the policy and practice interventions that align with these pathway changes, and the potential societal impact the pathway changes could have if taken to scale.

The 10 pathway changes that most improve the likelihood of having a good job in early adulthood would reach young adults aspiring to all levels of educational attainment.

The Pathways-to-Career policy simulation model quantifies the extent to which changing a person's education, training, and work experiences from adolescence through emerging adulthood could alter their likelihood of having a good job at age 30. These pathway changes occur at multiple intervention points on the route from youth to career. Among the top 10 pathway changes estimated to have the biggest impact, the model revealed five pathway changes affecting young adults entering the workforce with no more than a high school diploma, two affecting young adults pursuing an associate's degree, two affecting young adults pursuing a bachelor's degree, and one applicable to the high school years, before young people commit to any level of educational attainment.

Each pathway change represents an opportunity to improve employment and earnings outcomes for a different group of eligible students. With appropriate changes in policy and practice to realize those improvements, these pathway changes could lead to substantial increases in the number of good jobs among young adults.

Youth in High School

The model revealed one pathway change during the high school years that stood out from the rest for its potential to improve outcomes for youth who are expected to graduate from high school and do not plan to pursue a bachelor's degree by age 22:

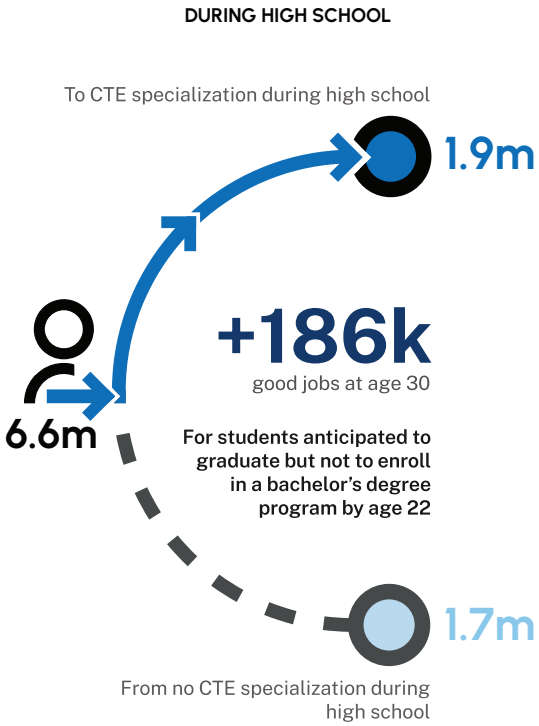
- specializing in career and technical education (CTE) in high school.[37]

A specialization in CTE during high school is associated with a 3-percentage-point increase (from 26 percent to 29 percent) in the likelihood of having a good job at age 30 among youth who are expected to graduate from high school and not pursue a bachelor's degree by age 22. If the 6.6 million individuals in the current cohort who are not expected to specialize in CTE during high school received more career-focused instruction, 186,000 more young adults in this cohort could have good jobs at age 30.[38,39]

37 The NLSY97 defines students who completed three Carnegie credits (equivalent to three classes that meet daily for one period for an entire school year) in a Specific Labor Market Preparation (SLMP) vocational area as Vocational Concentrators and students who completed four Carnegie credits in an SLMP vocational area, and at least two of those credits in advanced coursework or co-op/work experience coursework, as Vocational Specialists. In this report, we define both Vocational Concentrators and Vocational Specialists as having specialized in CTE in high school.

38 In each pathway change, the potential number of additional young adults in a good job may not equal the product of the number of eligible young adults and the change in likelihood of having a good job. Discrepancies are due to rounding.

39 We define the cohort for this pathway change as the high school-age population (ages 14 to 18). We define the cohort for the continuous employment pathway change as the population of young adults ages 20 to 22. For all other pathway changes, we define the cohort as the population of young adults ages 18 to 22.



Career and technical education (CTE) programs are meant to prepare high school students for the workforce, providing them with information and skills relevant to specific occupational clusters or fields of study. CTE includes many different educational approaches, but most research on the effectiveness of CTE focuses on programs through which students specialize or participate in a concentrated program of study, such as Career Academies and the growing network of STEM-focused Pathways in Technology Early College High Schools (P-TECH schools) across the United States and abroad.[40]

While the evidence on CTE is somewhat limited, high-quality CTE programs have been shown to have positive effects on high school graduation, college enrollment, earnings, and poverty avoidance.[41] However, just as the definition of CTE varies from program to program, so does CTE program quality. Because information about program quality is not easily accessible,[42] students or their parents may be left in the dark about which CTE programs are likely to boost their employment and earnings prospects in the future. Additionally, multiple studies have found that CTE programs tend to have small, statistically insignificant effects for female students on both education and labor-market

40 Kemple and Willner, *Career Academies*, 2008; Rosen et al., *Bridging the School-to-Work Divide*, 2020.

41 Dougherty, "The Effect of Career and Technical Education on Human Capital Accumulation," 2018; Results for America and MDRC, *What Works in Career and Technical Education,* 2019; Kemple and Willner, *Career Academies,* 2008; Association for Career and Technical Education, "Positive Outcomes for High School CTE Concentrators," 2022.

42 Stevens, "What Works in Career and Technical Education (CTE)?," 2019.

outcomes such as high school graduation, college enrollment, and earnings, despite positive effects on these outcomes for male students.[43] These differences in effectiveness have been linked to several factors, including program designs that can be more appealing to male students than to their female counterparts,[44] the tendency for female participants to work fewer hours and for lower pay than their male counterparts, and the greater likelihood for female participants to exit the labor force for periods to attend college or care for children.[45]

Young Adults Starting on the High School Pathway

Today, some form of postsecondary education is increasingly vital to securing a good job by age 30. However, 4.7 million young adults ages 18 to 22 are not expected to pursue a certificate, associate's degree, or bachelor's degree by age 22 after graduating from high school. This is a significant proportion — just over one in five (or 21 percent) — of this age cohort. Our model shows that this group can substantially increase their chances of having a good job at age 30 by pursuing some postsecondary education. At the same time, there are several options that improve their likelihood of having a good job without increasing their postsecondary attainment.

Our model identified five pathway changes that are particularly effective at increasing the number of good jobs held by young adults who would otherwise be unlikely to enroll in college by age 22. Two of these pathway changes involve increased educational attainment, and three involve workforce-oriented strategies.

The two pathway changes involving **educational strategies** are:

- enrolling in a certificate or associate's degree program by age 22; and
- among academically prepared high school graduates, enrolling in a bachelor's degree program by age 22.[46]

43 Brunner et al., "The Effects of Career and Technical Education," 2021; Hemelt et al., "Building Bridges to Life after High School," 2019; Kemple and Willner, *Career Academies*, 2008.

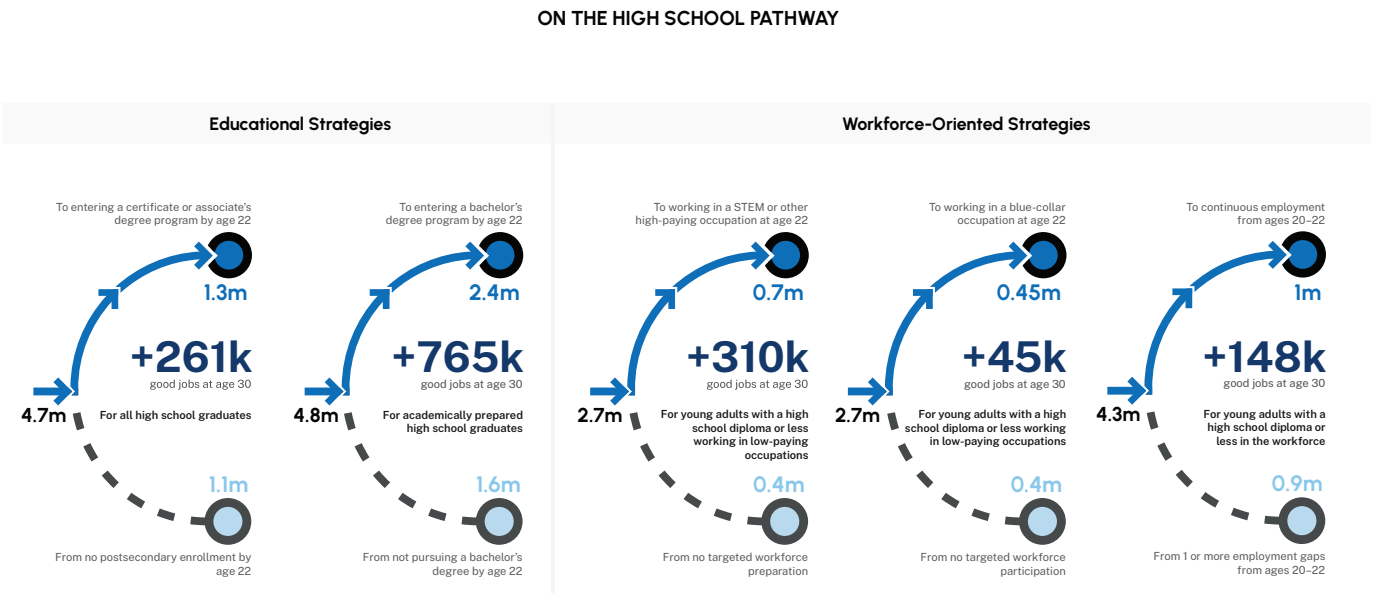
44 Hemelt et al., "Building Bridges to Life after High School," 2019.

45 Kemple and Willner, *Career Academies*, 2008.

46 We consider academically qualified individuals on the high school pathway and individuals who enter the middle-skills pathway by age 22 as eligible for this pathway change. However, most young adults who are academically qualified to enter the bachelor's degree pathway by age 22 but do not enter are on the high school pathway (58 percent versus 42 percent on the middle-skills pathway). Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

The three pathway changes involving **workforce-oriented strategies** include:

- working in science, technology, engineering, and mathematics (STEM) or other high-paying occupations;[47]
- working in blue-collar occupations;[48] and
- securing continuous employment from ages 20 to 22.



Increasing educational attainment would have a substantial positive impact on good job prospects among high school graduates. We estimate that for young high school graduates who do not pursue a certificate, associate's degree, or bachelor's degree, pursuing an associate's degree or a certificate by age 22 is associated with a 6-percentage-point increase (from 23 percent to 29 percent) in the likelihood of having a good job at age 30. Thus, if the 4.7 million eligible high school graduates entered middle-skills programs by age 22, an additional 261,000 individuals in the current cohort could have a good job at age 30.

Boosting the number who enter middle-skills programs would require improvements in college affordability and career counseling. Indeed, for individuals who consider but do not attend college, affordability is a key barrier. A 2022 Gallup and Lumina Foundation survey found that more than half of adults who were not enrolled in college reported cost as a primary deterrent to enrollment.[49] Non-

47 Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

48 Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving.

49 Gallup and Lumina Foundation, *The State of Higher Education 2022 Report*, 2022.

college-goers have also reported being more likely than their college-going peers to factor grant and scholarship aid, as well as the need to work, into their college-going decisions.[50] Beyond affordability, however, students have also reported that guidance and encouragement from parents, teachers, and counselors play important roles in their decisions about whether to enroll in college.[51]

Some strategies that can steer students toward the bachelor's degree pathway — such as high-touch mentoring[52] and financial aid — are similarly useful for boosting community college enrollment and overall college-going.[53] However, other types of interventions may be additionally helpful for students who are unsure if college is right for them. Free college or "promise" programs that not only make college more affordable, but also use clear messaging, make an "early commitment" of financial aid, provide intensive outreach to eligible students, and reduce the administrative burden on students and families, have had substantial positive impacts on community college enrollment.[54] Additionally, interventions that expose high school students to college-level coursework and create strong relationships between high schools and colleges, such as dual enrollment and the Early College High School (ECHS) model, have been shown to increase postsecondary enrollment and attainment, and especially two-year enrollment. Some researchers have found that ECHS participation is especially effective in boosting college enrollment and degree attainment for underrepresented groups — namely, low-income students, female students, and racial/ethnic minority students — but this finding is not consistent across studies.[55]

For some students, college enrollment may also be contingent on their ability to balance their postsecondary education with other responsibilities, such as parenthood. Interventions such as expanding access to child care or providing other comprehensive student supports can increase the likelihood that student parents can balance school and family responsibilities and increase access to and enrollment in two-year colleges.[56]

50 Hahn and Price, *Promise Lost*, 2008.

51 Hahn and Price, *Promise Lost*, 2008; Page and Scott-Clayton, "Improving College Access in the United States," 2016.

52 High-touch mentoring involves one-on-one or small group interactions between students and a trusted professional that occur regularly and over a sustained period of time, and that allow students and mentors to engage in real-time, two-way discussion.

53 Carrell and Sacerdote, "Why Do College-Going Interventions Work?," 2017; Bettinger et al., "The Role of Application Assistance and Information in College Decisions," 2012.

54 Carruthers and Fox, "Aid for All," 2016; Gurantz, "What Does Free Community College Buy?," 2020; Pluhta and Penny, "The Effect of a Community College Promise Scholarship on Access and Success," 2013.

55 Edmunds et al., "Smoothing the Transition to Postsecondary Education," 2017; US Department of Education What Works Clearinghouse, "Dual Enrollment Programs," 2017; Song and Zeiser, *Early College, Continued Success*, 2019.

56 Bettinger et al., "Student Supports," 2013.

Entering a bachelor's degree program by age 22

There are 4.8 million high school graduates who are academically prepared to enter a bachelor's degree program but who are not expected to pursue this goal by age 22.[57] We estimate that entering a bachelor's degree program is associated with a 16-percentage-point increase (from 33 percent to 49 percent) in the likelihood of working in a good job at age 30 for these young adults. As a result, moving these 4.8 million high school graduates onto the bachelor's degree pathway by age 22 could result in 765,000 more young adults in the current cohort with good jobs at age 30.

The Pathways-to-Career model suggests that this pathway change offers the greatest single source of potential for increasing the number of young workers in good jobs. But making good on that potential would require a multipronged strategy. Recruiting more academically prepared young adults to bachelor's degree programs would involve substantial improvements in college affordability as well as improved transparency and certainty about the costs to attend,[58] better college and career counseling, and better outreach to potential students and their families.[59]

Cost is a primary factor that diverts many individuals from the bachelor's degree route.[60] This is especially true as four-year degrees become increasingly expensive,[61] nearly tripling in cost between the late 1960s and the late 2010s.[62] The signals students receive from school, their families, and their peers also play a substantial role in their perception of college. Evidence suggests that students are more likely to apply to and enroll in a four-year college when they attend high schools where teachers have high expectations for students, there is a strong college-going culture, and students are guided through the college application process.[63] Family and peer preferences are also likely to inform students' college choice decisions.[64] Given that almost half of parents nationwide don't want their child to immediately attend a four-year college after high school,[65] a reliance on family preferences combined with limited guidance from school staff and other trusted adults may steer some academically prepared students away from the bachelor's degree pathway.

57 Academic preparedness is defined as having test scores or a high school GPA above the 25th percentile of students who pursue a bachelor's degree by age 22.

58 Burland et al., "The Power of Certainty," 2022.

59 Page and Scott-Clayton, "Improving College Access in the United States," 2016; Dynarski et al., "Addressing Non-Financial Barriers to College Access and Success," 2022.

60 Princeton Review, *College Hopes & Worries Survey 2022*, 2022.

61 National College Attainment Network, "College Affordability," n.d.

62 Carnevale et al., *How Limits to Educational Affordability, Work-Based Learning, and Career Counseling Impede Progress Toward Good Jobs,* 2022.

63 Roderick et al., "Potholes on the Way to College," 2011.

64 Owen et al., "Student Preferences for College and Career Information," 2020.

65 Barshay, "Poll: Nearly Half of Parents Don't Want Their Kids to Go Straight to a Four-Year College," 2021.

Despite these serious concerns, interventions in both college and high school have succeeded in steering higher proportions of academically prepared students toward the bachelor's degree pathway. Financial aid interventions that substantially reduce college costs have been shown to increase enrollment at four-year schools, both by increasing overall college-going and by steering students who would have otherwise attended two-year colleges toward institutions that better matched their qualifications.[66] Interventions that use affirmative action in the form of targeted outreach and demystify financial aid can similarly increase college attendance and steer students toward four-year and more-selective schools, even without substantively increasing the amount of financial aid students receive.[67] At the high school level, intensive college advising has been shown to be effective in steering academically prepared students from two-year to four-year colleges that have higher graduation rates and post-schooling earnings.[68] Additionally, college counseling during the summer prior to college entry can address informational and financial barriers and increase the likelihood that low-income students who have been accepted to four-year colleges actually enroll.[69]

Working in a STEM or other high-paying occupation at age 22

Sector-focused training programs are one way that individuals can transition from lower-paying jobs to higher-paying jobs without having to leave the workforce.

Among young adults with no more than a high school diploma, 2.7 million in the current cohort are expected to work in low-paying occupations at age 22 — specifically, jobs in the arts (which include the arts, design, entertainment sports, and media), community services, education, food and personal services, and healthcare support. One potential way of improving opportunity for these young adults would be to connect them to jobs in STEM or other high-paying occupations — including jobs in business, finance, management, law, social science, and skilled healthcare — which tend to offer higher starting wages and more opportunities for advancement. We estimate that working in a STEM or other high-paying occupation rather than a low-wage occupation at age 22 is associated with an 11-percentage-point increase (from 14 percent to 25 percent) in the likelihood of working in a good job at age 30. Thus, if all eligible young adults in the current cohort worked in STEM or other high-paying occupations at age 22, 310,000 more workers in this cohort could have good jobs at age 30.

Sector-focused training programs are one way that individuals can transition from lower-paying

66 Angrist et al., "Marginal Effects of Merit Aid for Low-Income Students," 2022; Castleman and Long, "Looking Beyond Enrollment," 2016; Dynarski, "Hope for Whom?," 2000.

67 Dynarski et al., "Closing the Gap," 2021.

68 Avery, "Evaluation of the College Possible Program," 2013; Castleman and Goodman, "Intensive College Counseling and the Enrollment and Persistence of Low-Income Students," 2018; Carrell and Sacerdote, "Why Do College-Going Interventions Work?," 2017.

69 Castleman et al., "Stemming the Tide of Summer Melt," 2012; Castleman and Page, "Summer Nudging," 2015.

jobs to higher-paying jobs without having to leave the workforce. These programs typically provide low-wage workers with the skills and training necessary to transition into higher-wage jobs in high-demand sectors, such as healthcare and information technology.[70] Effective programs have been shown to substantially increase participants' attainment of credentials and certifications;[71] they have also been shown to result in larger earnings gains than other training and employment services programs.[72] The most effective sectoral employment training programs support the development of soft skills, offer wraparound services, and have strong connections to employers.[73] WorkAdvance, Project QUEST, and Year Up are all examples of successful sectoral employment programs that offer pathways to STEM and other high-paying occupations and show lasting positive impacts on worker earnings.[74]

However, not all sector-focused training programs are equally effective, and individuals participating in them may have different experiences and outcomes. Widely ranging practices and quality as well as differences in the populations served call into question the potential earnings gains workers can expect and whether these gains will persist for the duration of their careers.[75] While private, nonprofit sectoral training programs have been found to result in larger earnings impacts than training programs at community colleges, these private programs are often more expensive and extremely selective in terms of whom they enroll, as they aim to provide employers with "high-quality" recruits.[76] Sectoral employment strategies that are more accessible or target more disadvantaged workers could produce different outcomes.

Working in a blue-collar occupation at age 22

Working in a blue-collar occupation at age 22 could also increase the likelihood of working in a good job at age 30 for the 2.7 million young adults expected to start out in low-paying jobs, although likely to a lesser extent than moving to a STEM or other high-paying occupation. Moving from a low-paying occupation to a blue-collar occupation also generally has a less positive impact for women than for men. We estimate that moving to a blue-collar occupation by age 22 could result in a 2-percentage-point increase (from 14 percent to 16 percent) in the likelihood of working in a good job at age 30 for young adults in the workforce with no more than a high school diploma. If all 2.7 million eligible young adults in the current cohort moved from low-wage occupations to blue-collar occupations, 45,000 additional young adults in this cohort could have a good job at age 30.

70 Katz et al., "Why Do Sectoral Employment Programs Work?," 2022.

71 Lee and Garau, "Sectoral Employment Programs as a Path to Quality Jobs," 2022.

72 Katz et al., "Why Do Sectoral Employment Programs Work?," 2022.

73 Lee and Garau, "Sectoral Employment Programs as a Path to Quality Jobs," 2022.

74 Katz et al., "Why Do Sectoral Employment Programs Work?," 2022.

75 Strawn, "Career Pathways," 2022.

76 Juras and Buron, "Summary and Insights from the Ten PACE and HPOG 1.0 Job Training Evaluations," 2021.

It is important to remember that not everyone wants to go to college, and not everyone wants to work in the fields typically targeted by sectoral employment programs. While the prospects of holding a good job may be better for those with a postsecondary degree or those in STEM or other high-paying occupations, blue-collar jobs also present opportunities for workers in low-wage occupations to increase their earnings potential over the longer term. Moreover, society has a strong need for people with the skills necessary for jobs in these occupations. In light of this need, employment programs in the blue-collar sector can and should offer one route to upward job mobility.

Because apprentices can earn money while working toward industry-recognized credentials and accumulating academic credits, this path may be attractive to those who aren't able or don't want to sacrifice current wages in order to gain new skills and get a good job.

Blue-collar sectoral employment programs — such as apprenticeships in construction — are similar in concept to STEM and other high-paying sector employment programs, but they are usually concentrated in skilled-trades industries.[77] Apprenticeships and other blue-collar employment programs typically combine classroom learning and on-the-job training to equip workers with high-demand technical skills. Because apprentices can earn money while working toward industry-recognized credentials and accumulating academic credits, this path may be attractive to those who aren't able or don't want to sacrifice current wages in order to gain new skills and get a good job.

While research on the impact of US apprenticeship programs is somewhat limited, the evidence that does exist is promising. Both apprenticeships and job training programs have been found to have positive impacts on short-term employment and earnings.[78] Although there is some evidence that earnings gains from apprenticeship programs can diminish over time,[79] more recent evidence suggests that apprentices can see sustained positive impacts on both employment and earnings.[80] Registered apprenticeships — which are validated by the US Department of Labor and offer certain employment protections and earnings guarantees — have also been shown to be highly cost-effective.[81]

Experiencing continuous employment from ages 20 to 22

For young workers on the high school pathway, employment gaps in early adulthood can be setbacks on the pathway to good jobs. We find that eliminating gaps in work from ages 20 to 22 for these

77 Fuller and Sigelman, "Room to Grow," 2017.

78 Hollenbeck, "State Use of Workforce System Net Impact Estimates and Rates of Return," 2008; Jacoby and Haskins, "Kentucky FAME," 2020.

79 Reed et al., *An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States,* 2012.

80 Hollenbeck and Huang, "Net Impact and Benefit-Cost Estimates of the Workforce Development System in Washington State," 2016.

81 Reed et al., *An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States,* 2012.

young adults is associated with a 4-percentage-point increase (from 20 percent to 24 percent) in the likelihood of having a good job at age 30. In the current cohort, 4.3 million young adults with no more than a high school diploma are expected to experience employment gaps during this pivotal period, and are therefore disconnected from work and school. Without these employment gaps, 148,000 more young people in this cohort could find themselves in a good job at age 30.

As more good jobs today require a postsecondary credential than in the past,[82] finding a good job is a particular challenge for youth without any postsecondary education: 25 percent of youth with no more than a high school education have a good job at age 30, compared to 39 percent with a certificate or an associate's degree and 68 percent with a bachelor's degree.[83] About one quarter of disconnected youth — those who are neither employed nor enrolled in education — do not have a high school diploma, further restricting their employment opportunities.[84]

Beyond educational disadvantages, disconnected youth frequently face other life challenges that interventions need to take into account. Youth experiencing homelessness, expectant or parenting youth, those who have had involvement with the justice system, and LGBTQ youth are much more likely to become disconnected.[85] Disconnected youth are also about three times as likely as their connected peers to have a disability.[86] Additionally, Black/African American and Hispanic/Latino youth are disconnected at much higher rates than white or Asian American youth.[87] Strategies to re-engage this population will need to acknowledge the roles of interpersonal and systemic racism, prejudice against individuals with disabilities, and bias in the disengagement of these youth from education and labor systems.

Best practices for re-engaging youth who are disconnected from school and work may vary depending on their specific circumstances. However, a holistic approach can be used across an array of programs to provide better supports.[88] Neglect, stigma, discrimination, and violence may make disconnected youth less likely to seek support or trust providers. Intensive outreach and a trauma-informed approach can help establish positive, supportive relationships and increase the likelihood of successfully engaging youth by meeting them where they are.[89] Additionally, because many of these youth face material barriers to school and work — such as a lack of stable housing,

82 Carnevale et al., *How Limits to Educational Affordability, Work-Based Learning, and Career Counseling Impede Progress toward Good Jobs*, 2022.

83 Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

84 Ross and Bateman, "Millions of Young Adults Have Entered the Workforce with No More than a High School Diploma," 2018.

85 Youth.gov, "Opportunity Youth: Prevalence," n.d.; Rennie-Hill et al., *Bringing Students Back to the Center*, 2014.

86 Youth.gov, "Opportunity Youth: Prevalence," n.d.

87 Ross and Svajlenka, *Employment and Disconnection among Teens and Young Adults,* 2016.

88 Treskon, "What Works for Disconnected Young People," 2016.

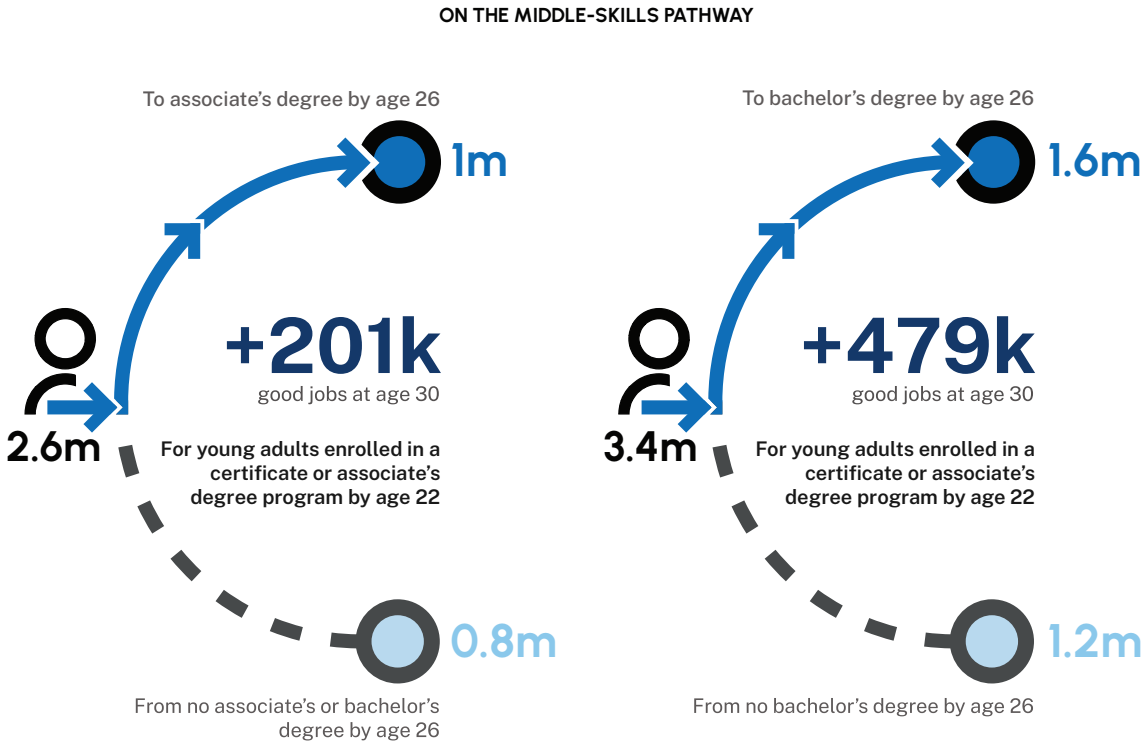
89 Warland et al., *Providing True Opportunity for Opportunity Youth*, 2015.

disability accommodations, or financial resources — comprehensive support services in addition to work or training opportunities are often a critical component of successful re-engagement strategies.[90] Interventions that take a proactive approach to identifying youth who show early signs of disengagement have also seen success in building individuals' self-efficacy and re-engaging them.[91]

Young Adults Pursuing a Middle-Skills Credential

For young adults pursuing a middle-skills credential — those who enroll in an associate's degree or a certificate program by age 22 — two key pathway changes could substantially increase their likelihood of having a good job at age 30:

- earning an associate's degree by age 26 rather than stopping out without a credential; and
- earning a bachelor's degree by age 26.



90 Loprest et al., "Disconnected Young Adults," 2019.

91 Main and Whatman, "Building Social and Emotional Efficacy to (Re)engage Young Adolescents," 2016; Treskon, "What Works for Disconnected Young People," 2016.

Earning an associate's degree by age 26

Among the 3.5 million young adults who enroll in an associate's degree or certificate program by age 22, only 26 percent complete an associate's or bachelor's degree by age 26. That leaves 2.6 million young adults in the current cohort who start pursuing a middle-skills credential by age 22 but aren't expected to have a college degree by age 26. We estimate that completing an associate's degree by age 26 is associated with an 8-percentage-point increase (from 31 percent to 39 percent) in the likelihood of having a good job at age 30 for these young adults. Thus, ensuring that these 2.6 million young adults complete an associate's degree could result in a boost of 201,000 young adults in this cohort with a good job at age 30.

What supports do young adults pursuing a middle-skills credential need to ensure that they complete an associate's degree within this timeframe? Students who begin their postsecondary education at a community college tend to have greater levels of financial need,[92] face more academic hurdles,[93] and have less time to devote to their education than those who begin at a four-year institution, often due to more caretaking responsibilities and busier work schedules.[94] In addition, surveys suggest that, among students at two-year colleges, 39 percent are food insecure and 52 percent are housing insecure, compared to 29 percent and 43 percent, respectively, at four-year colleges.[95] These precarious living situations are harmful on their own, and students' lack of financial stability is often responsible for derailing their educational pursuits.[96] All these factors can slow their academic progress.

Wraparound services and holistic strategies that acknowledge the multidimensional nature of students' success are especially critical for preventing stop-out and supporting the ability of community college students to complete a credential.

Wraparound services and holistic strategies that acknowledge the multidimensional nature of students' success are especially critical for preventing stop-out and supporting the ability of community college students to complete a credential. These interventions provide a combination of academic, financial, and student support services and have demonstrated positive results while

92 Center for Community College Student Engagement, *Making Ends Meet*, 2017.

93 Bailey et al., "Referral, Enrollment, and Completion in Developmental Education Sequences in Community Colleges," 2010; Center for the Analysis of Postsecondary Readiness, "Developmental Education FAQs," n.d.; Scott-Clayton, *Evidence-Based Reforms in College Remediation Are Gaining Steam,* 2018.

94 Porter and Umbach, *What Challenges to Success Do Community College Students Face?*, 2019; Rothwell, "College Student Caregivers More Likely to Stop Classes," 2021; US Department of Education National Center for Education Statistics, "College Student Employment," 2020.

95 Hope Center for College, Community, and Justice, "#RealCollege 2021," 2021.

96 Ortagus et al., "Investigating Why Academically Successful Community College Students Leave College without a Degree," 2021.

still being cost effective. The City University of New York's Accelerated Study in Associate Programs (CUNY ASAP), for example, increased associate's degree graduation rates over a six-year period by 10 percentage points.[97]

Earning a bachelor's degree by age 26

Among young adults who enroll in an associate's degree or certificate program by age 22, fewer than 5 percent subsequently transfer to a four-year institution *and* complete a bachelor's degree by age 26. But those who do earn a bachelor's degree are much more likely to have a good job at age 30 than those who earn an associate's degree or no degree at all. We estimate that for this group of students, completing a bachelor's degree by age 26 is associated with a 14-percentage-point increase (from 34 percent to 48 percent) in the likelihood of having a good job at age 30. As a result, if the 3.4 million young adults who enrolled in associate's degree or certificate programs but aren't expected to earn a bachelor's degree proceeded to earn their bachelor's degrees by age 26, 479,000 more individuals in the current cohort could have a good job at age 30.

Creating more accessible and efficient transfer pathways is a necessary component of increasing bachelor's degree attainment among youth who access postsecondary education via middle-skills programs.

The interventions needed to increase the number of young people who earn a bachelor's degree by age 26 are different for young people who start in a middle-skills program than for those who start in a bachelor's degree program. Most notably, young people enrolled in associate's degree and certificate programs typically need to transfer to have access to a bachelor's degree program. At present, however, only one-third of community college students enrolled in associate's degree programs successfully transfer to a four-year institution,[98] and less than 15 percent of students who enroll in associate's degree programs complete a bachelor's degree within six years[99] — despite the fact that the majority of students entering community colleges intend to earn a bachelor's degree.[100] Therefore, creating more accessible and efficient transfer pathways is a necessary component of increasing bachelor's degree attainment among youth who access postsecondary education via middle-skills programs.

Two- and four-year institutions that are leading the way in improving transfer pathways tend to establish collaborative partnerships in which both institutions (1) view transfer as a priority, (2) offer students individualized advising specific to the transfer process, and (3) provide clarity and

97 Weiss et al., "Supporting Community College Students from Start to Degree Completion," 2019.

98 Jenkins and Fink, *Tracking Transfer*, 2016.

99 Deane et al., *Tackling Transfer*, 2017.

100 Jenkins and Fink, *Tracking Transfer*, 2016.

transparency to students — for example, by creating major-specific course pathways and transfer program maps — about the steps students must complete to gain admission to the four-year institution in their major of choice, enter with junior-level standing, and be prepared to succeed in upper-level coursework.[101] Guaranteed and dual admissions policies — through which students gain admission to both a two- and a four-year institution at the same time — are also relatively new, but are promising strategies for improving transfer outcomes.[102]

Community college baccalaureate programs (CCBs) offer an alternative option for students who begin their postsecondary education at a community college and want to pursue a bachelor's degree without transferring to a new institution. They can be especially important to making bachelor's degree programs accessible to nontraditional students — that is, students who are older or from historically underrepresented groups.[103] Currently, 25 states authorize community colleges to award bachelor's degrees.[104] CCB programs are not yet widespread, as states frequently place restrictions on the number of participating institutions within a state, as well as the number or type of programs institutions can offer. However, both the number of states allowing CCBs and the number of CCB programs being offered within states are growing. Evidence on the effectiveness of CCBs is limited to date, but it suggests that community colleges offering these programs tend to increase their associate degree production without increasing overall bachelor's degree production.[105] Instead of attracting students to bachelor's degrees, CCBs appear to divert some students away from for-profit four-year institutions. Nevertheless, this may ultimately benefit students because for-profit institutions often cost significantly more to attend than community colleges, and students who attend for-profit institutions tend to fare worse in the labor market after college than students who attend similar programs at public and private non-profit institutions.[106]

Young Adults Starting on the Bachelor's Degree Pathway

Among young adults who have enrolled in a bachelor's degree program by age 22, two key pathway changes could substantially increase the likelihood of having a good job at age 30:

- earning a bachelor's degree by age 26 rather than later in life or never completing a degree; and
- earning an associate's degree by age 26 rather than stopping out without a credential.

101 Fink and Jenkins, "Takes Two to Tango," 2017.

102 Marcus, "A New Way to Help College Students Transfer," 2022.

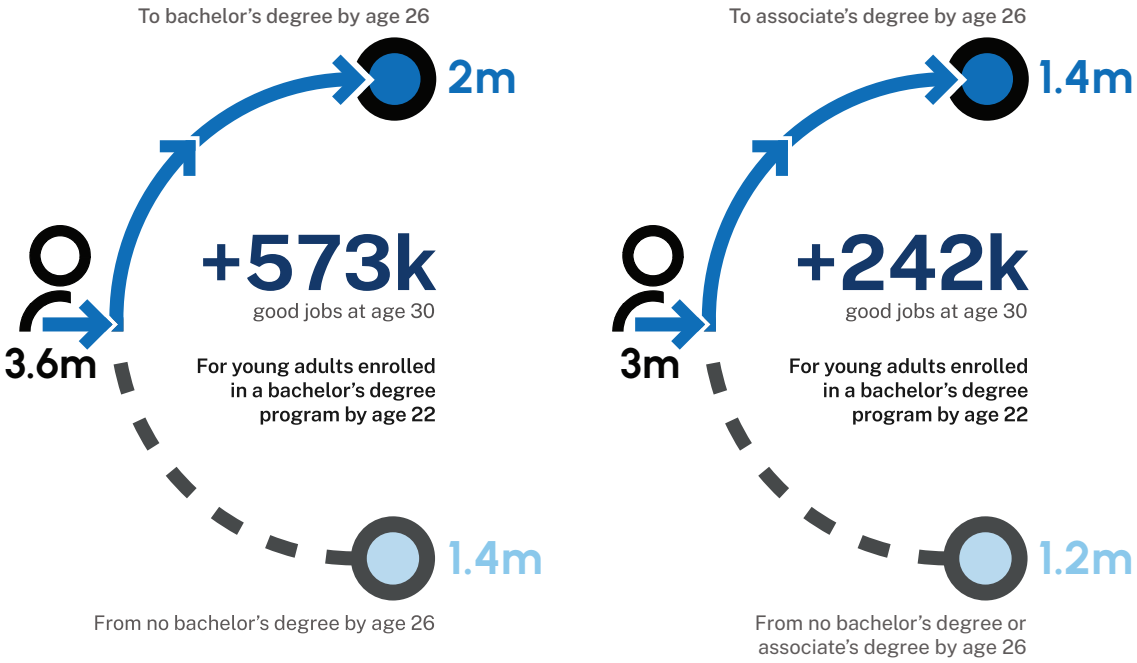
103 Wetzstein et al., "Evaluating the Student Experience at Community College Baccalaureate Programs," 2022.

104 Love et al., "Mapping the Community College Baccalaureate," 2021.

105 Kramer et al., "Competing for Bachelor's Degrees," 2021; Ortagus et al., "The Impact of Community College Baccalaureate Adoption on Associate Degree Production," 2020.

106 Cellini and Chaudhary, "The Labor Market Returns to a For-Profit College Education," 2014; Deming et al., "The Value of Postsecondary Credentials in the Labor Market," 2016; Lang and Weinstein, "Evaluating Student Outcomes at For-Profit Colleges," 2012.

ON THE BACHELOR'S DEGREE PATHWAY



Earning a bachelor's degree by age 26

While 43 percent of young adults enroll in a four-year degree program by age 22, only 26 percent complete a four-year degree by age 26. That leaves 3.6 million young people in the current cohort who start down the bachelor's degree pathway, but who haven't earned a bachelor's degree by their mid-20s. We estimate that completing a bachelor's degree by age 26 is associated with a 16-percentage-point increase (from 40 percent to 56 percent) in the likelihood of having a good job for these young adults. Ensuring that those 3.6 million young people complete a bachelor's degree within this timeframe could therefore boost the number of young workers with a good job at age 30 by 573,000 in this cohort.

What interventions have the potential to increase the number of young adults starting out on the bachelor's degree pathway who complete the degree? While there are a variety of reasons students may choose to leave college before completing a degree, financial concerns are one of the primary factors cited by students who have stopped out.[107] Financial interventions, such as providing grant aid, are associated with higher rates of student persistence and degree completion.[108] In addition to financial assistance, interventions that deliver bachelor's degree-seeking students with proactive

107 Weissman, "Report," 2021.

108 Goldrick-Rab et al., "Reducing Income Inequality in Educational Attainment," 2016; Nguyen et al., "The Effects of Grant Aid on Student Persistence and Degree Attainment," 2019.

coaching from professionally trained staff have been shown to increase academic performance, persistence, and degree completion.[109] Because students often face multiple barriers to degree completion that interact and compound, comprehensive strategies like the Dell Scholars program that provide students with financial support alongside continuous monitoring and individual coaching have been shown to be particularly successful in improving bachelor's degree completion and early-career earnings.[110]

Successful retention and completion strategies are likely to look different for different types of students. For example, prior research has shown that interventions aimed at building positive early college experiences,[111] supporting academic and social engagement, and increasing access to academic advising[112] may be particularly helpful for first-generation college students and students from groups that have experienced historical disadvantages in higher education.[113] Strategies that allow students to more easily balance school and family life — such as offering flexible scheduling and access to campus-based child care — may be more effective at increasing bachelor's degree attainment for students with children.[114]

Earning an associate's degree by age 26

Those who start on the four-year pathway don't always end up with a four-year degree. Among young adults who started on the bachelor's degree pathway by age 22, 61 percent have a bachelor's degree by age 26, compared to 6 percent who have an associate's degree and 33 percent who don't have a postsecondary degree. For the latter 33 percent (3 million people in the current cohort), earning an associate's degree instead of leaving school without one would boost their likelihood of having a good job at age 30. We estimate that completing an associate's degree by age 26 is associated with an 8-percentage-point increase (from 39 percent to 47 percent) in the likelihood of having a good job at age 30 for these young adults. Thus, ensuring that these 3 million young adults complete an associate's degree by age 26 could result in 242,000 more young workers in this cohort with good jobs at age 30.

The interventions to increase the number of young adults who complete an associate's degree after starting on the bachelor's degree pathway would be similar to those designed to increase completion

109 Bettinger and Baker, "The Effects of Student Coaching," 2014; Oreopoulos and Petronijevic, "Student Coaching," 2018.

110 Andrews et al., "Recruiting and Supporting Low-Income, High-Achieving Students at Flagship Universities," 2020; Clotfelter et al., "Multifaceted Aid for Low-Income Students and College Outcomes," 2018; Page et al., "More than Dollars for Scholars," 2019.

111 Murphy et al., "A Customized Belonging Intervention," 2020.

112 Swecker et al., "Academic Advising and First-Generation College Students," 2013.

113 Thayer, "Retention of Students from First Generation and Low Income Backgrounds," 2000; Engle, "Postsecondary Access and Success for First-Generation College Students," 2007; Engle and Tinto, *Moving Beyond Access*, 2008.

114 Cruse et al., *Evaluating the Role of Campus Child Care in Student Parent Success*, 2021.

of a bachelor's degree, but with a few key differences. For example, for students who are on the bachelor's degree pathway but choose not to or are unable to complete a bachelor's degree, policies that acknowledge the credits students have completed can have a big impact on their likelihood of attending a two-year institution.

Some policies are designed for students who begin at a two-year institution and intend to transfer to a four-year institution. The vast majority of transfer-intending students do not earn an associate's degree or certificate while enrolled at two-year institutions,[115] and 20 to 30 percent of students who do not complete an associate's degree have already earned at least 75 percent of the credits necessary to earn a degree.[116] "Reverse transfer," or degree reclamation, policies are one strategy that allows students to retroactively receive a community college credential by combining the credits they earn after transferring with those they earned at a previous institution. As of 2022, 25 states had statewide reverse-transfer policies in place.[117] States where reverse-transfer policies are most successful have established data-sharing agreements or clear guidelines around transcript data across institutions, are proactive in identifying and reaching currently enrolled students who are eligible, and target residents with some college and no degree.[118] The only causal evidence on the effects of reverse-transfer policies shows a small positive effect on the likelihood of being employed, but no effect on earnings up to five years after earning an associate's degree.[119] However, this may be because virtually all of the associate's degrees conferred in the study setting were awarded in liberal arts programs, which, unlike degrees in high-demand and technical fields like nursing and information technology, have minimal labor-market returns in the first few years after degree receipt.[120] For reverse-transfer policies to pay off, they must be designed to confer associate degrees in fields with positive labor-market returns.

For students who begin at a four-year college or university but do not go on to complete a bachelor's degree, there are fewer opportunities to earn a sub-baccalaureate degree. Colorado is one example of a statewide system that automatically grants associate's degrees to stop-outs of four-year colleges and universities when they have completed a minimum level of coursework.[121] Additionally, nationwide initiatives such as Degrees When Due, as well as efforts at both the state and institution levels, also aim to actively re-engage these students.[122]

115 Shapiro et al., *Transfer and Mobility*, 2018.

116 Civitas Learning, *Community Insights*, 2018; Mabel and Britton, "Leaving Late," 2018.

117 Winnery and Peisach, "Transfer and Articulation," 2022.

118 Anderson, "Reverse Transfer," 2015.

119 Odle and Russell, "Giving Credit Where Credit Is Due," 2022.

120 Bahr et al., "Labor Market Returns to Community College Awards," 2015; Jepsen et al., "The Labor-Market Returns to Community College Degrees, Diplomas, and Certificates," 2014.

121 Tamez-Robledo, "Many University Students Don't Graduate," 2021.

122 Davis et al., *Lighting the Path*, 2022; Tennessee State Government, "Tennessee Reconnect One-Pager," n.d.; Weissman, "Bringing Students Back," 2022.

The three pathway changes that most improve the likelihood of having a good job all involve expanding access to the bachelor's degree pathway and increasing the completion of bachelor's degrees.

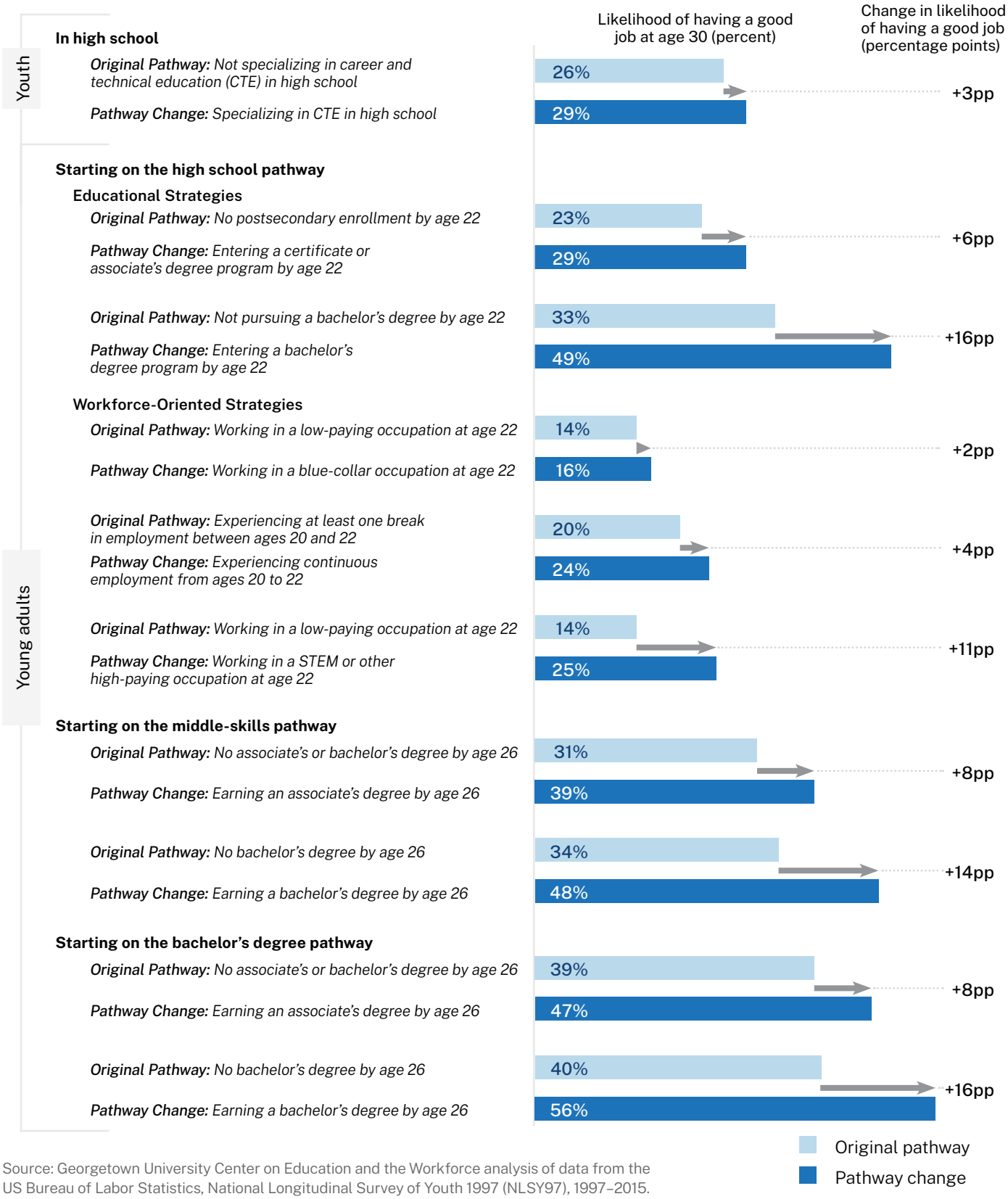
The 10 most effective pathway changes vary widely in their potential to improve young people's likelihood of having a good job at age 30. We estimate that among the top 10, the most effective pathway change (earning a bachelor's degree by age 26 after starting a bachelor's degree program) would increase the likelihood of having a good job at age 30 by 16 percentage points, while the least effective pathway change (moving young adults with a high school diploma or less from a low-paying occupation to a blue-collar occupation by age 22) would increase the likelihood of having a good job at age 30 by 2 percentage points **(Figure 5)**.

At first pass, it might seem as though even the most effective of these pathway changes is not a compelling strategy for improving access to good jobs in early adulthood. However, it is important to recognize that the barriers to working in a good job manifest across each life stage, accumulate over time, and arise from multiple sources. These sources include inadequate schooling and training experiences; socioeconomically disadvantaged neighborhoods; housing, food, and healthcare insecurities; law enforcement that emphasizes incarceration over restitution and rehabilitation; and bias and discrimination in the labor market. No single policy strategy can eradicate all of these barriers, and in some cases, standalone interventions at earlier life stages will have smaller effects than those at later life stages because they cannot fully eliminate barriers that might arise in the future.[123] As we discuss in Part 5, larger gains would require a holistic strategy that stitches together different interventions from birth through emerging adulthood to address the many forces holding young adults back from achieving their full potential.

Despite the challenges, these top 10 pathway changes highlight opportunities to improve the likelihood of having a good job for young people preparing to enter the workforce with a high school diploma or less as well as those pursuing a middle-skills credential or a bachelor's degree. The top three pathway changes all involve increasing the number of young adults with a bachelor's degree or the number pursuing a bachelor's degree. Three of the top 10 involve increasing the number of young adults with an associate's degree or moving young adults into a middle-skills program by age

123 Furthermore, even the most effective pathway change would not fully close the gaps in the likelihood of having a good job between youth who experience different intermediate outcomes. For example, 40 percent of youth on the bachelor's degree pathway who do not complete a bachelor's degree by age 26 work in a good job at age 30, compared to 68 percent of youth who do complete a bachelor's degree by age 26—a 28-percentage-point difference. Yet we estimate that increasing bachelor's degree completion is associated with only a 16-percentage-point increase in the likelihood of having a good job for this group of young adults. This is because the observed difference captures both the causal effect of earning a bachelor's degree and the effects of other factors that simultaneously influence the likelihood of completing a degree and of having a good job (such as social capital, family support, psychological factors like grit and resilience, etc.). Our results account for many of these other channels that are associated with bachelor's degree completion and having a good job. In Appendix A, we show that our results are similar in magnitude to findings in previous causal research, strongly suggesting that our pathway change results are reasonable.

FIGURE 5. Five of the top 10 pathway changes would alter the trajectories of young adults with no more than a high school diploma.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.
Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. "M" indicates millions; "k" indicates thousands. For details about who is eligible for each scenario, see Appendix A in the full report. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare. Low-paying occupations include jobs in the arts, community services, education, food and personal services, and healthcare support. Numbers may not sum due to rounding.

22. The remaining four pathway changes suggest opportunities to improve outcomes for young adults without postsecondary education or training.

The prominence of the bachelor's degree among the pathway changes with the greatest potential speaks to the strong relationship between having a bachelor's degree and having a good job. Sixty-eight percent of young adults with a bachelor's degree by age 26 work in a good job at age 30, compared to 25 percent with no more than a high school diploma. Associate's degrees also offer a premium, on average, relative to a high school diploma. Forty-six percent of associate degree-holders by age 26 work in a good job at age 30.[124] Nonetheless, there is a good deal of variation at each education level, and workers with higher degrees don't always make more money than those without formal credentials, as our previous research has demonstrated. In fact, 31 percent of workers with no more than a high school diploma earn more than the median for workers with an associate's degree, 28 percent of workers with associate's degrees earn more than the median for workers with bachelor's degrees, and 36 percent of workers with bachelor's degrees earn more than the median for workers with master's degrees.[125] Every educational pathway opens doors to good jobs, but the bachelor's degree pathway is still the surest bet.

124 Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

125 Carnevale et al., *The College Payoff*, 2021.

The potential societal impact of each pathway change hinges on the number of young adults eligible to participate in it.

On a societal level, each pathway change's potential for increasing access to good jobs depends on the number of people eligible for intervention at that juncture. Among the top 10 pathway changes, specializing in career and technical education in high school is the one for which the most individuals in the current cohort are eligible (6.6 million), largely because the number of students in high school far exceeds the number on any single post-high school pathway (**Figure 6**). Meanwhile, earning an associate's degree by age 26 after starting an associate's degree program is the pathway change with the fewest potential eligible individuals. This reflects the fact that (1) pursing a middle-skills credential is less popular than either pursuing a bachelor's degree or entering the workforce with a high school diploma or less, and (2) the likelihood of associate's degree completion among students pursuing a middle-skills credential is low. Sixteen percent of youth enter a middle-skills program by age 22 (compared to 43 percent who enter the bachelor's degree pathway and 41 percent who do not pursue postsecondary education by age 22), and fewer than one-quarter of youth pursuing a middle-skills credential earn an associate's degree by age 26.[126]

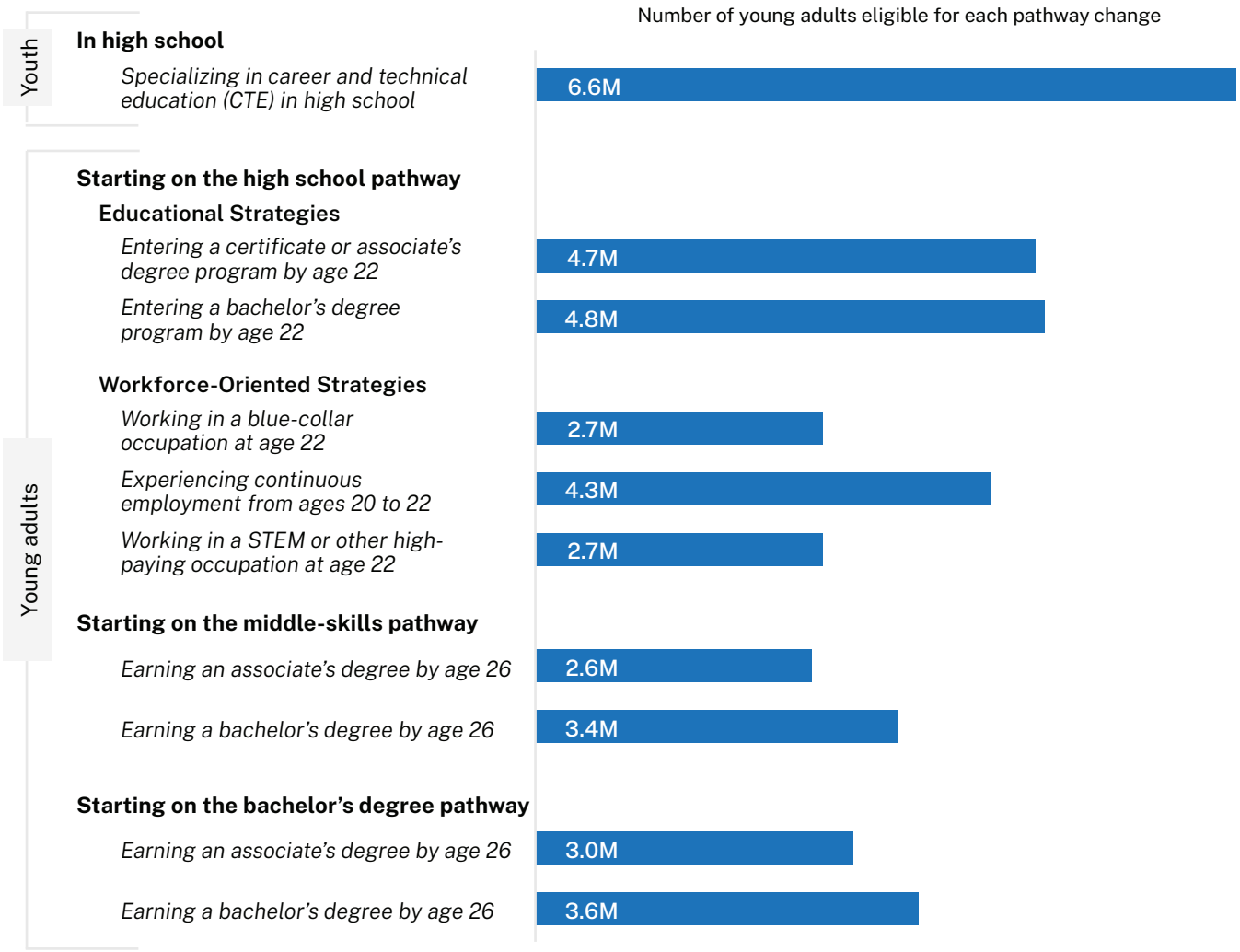
The overall societal impact of any pathway change depends on a combination of how effective the pathway change is and how many people are eligible to participate at that intervention point.

Thus, the overall societal impact of any pathway change depends on a combination of how effective the pathway change is and how many people are eligible to participate at that intervention point. When combining effectiveness and eligibility, putting more young adults on the bachelor's degree pathway by age 22 has the greatest potential on a societal level for increasing the number of young adults in good jobs at age 30 (**Figure 7**).

As these numbers indicate, pathway changes that may be equally effective in moving young adults to good jobs may have different potential impacts on a societal level, simply because there are different numbers of individuals eligible to participate at different intervention points. For example, our results suggest that moving more students who enrolled in a bachelor's degree program to completing a bachelor's degree by age 26 and moving more academically prepared students onto the bachelor's degree pathway by age 22 are equally effective in increasing the likelihood of having a good job at age 30, but the latter pathway change could result in almost 200,000 more thirty-year-olds in the current cohort with a good job compared to the other pathway change. This is because there are

126 Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

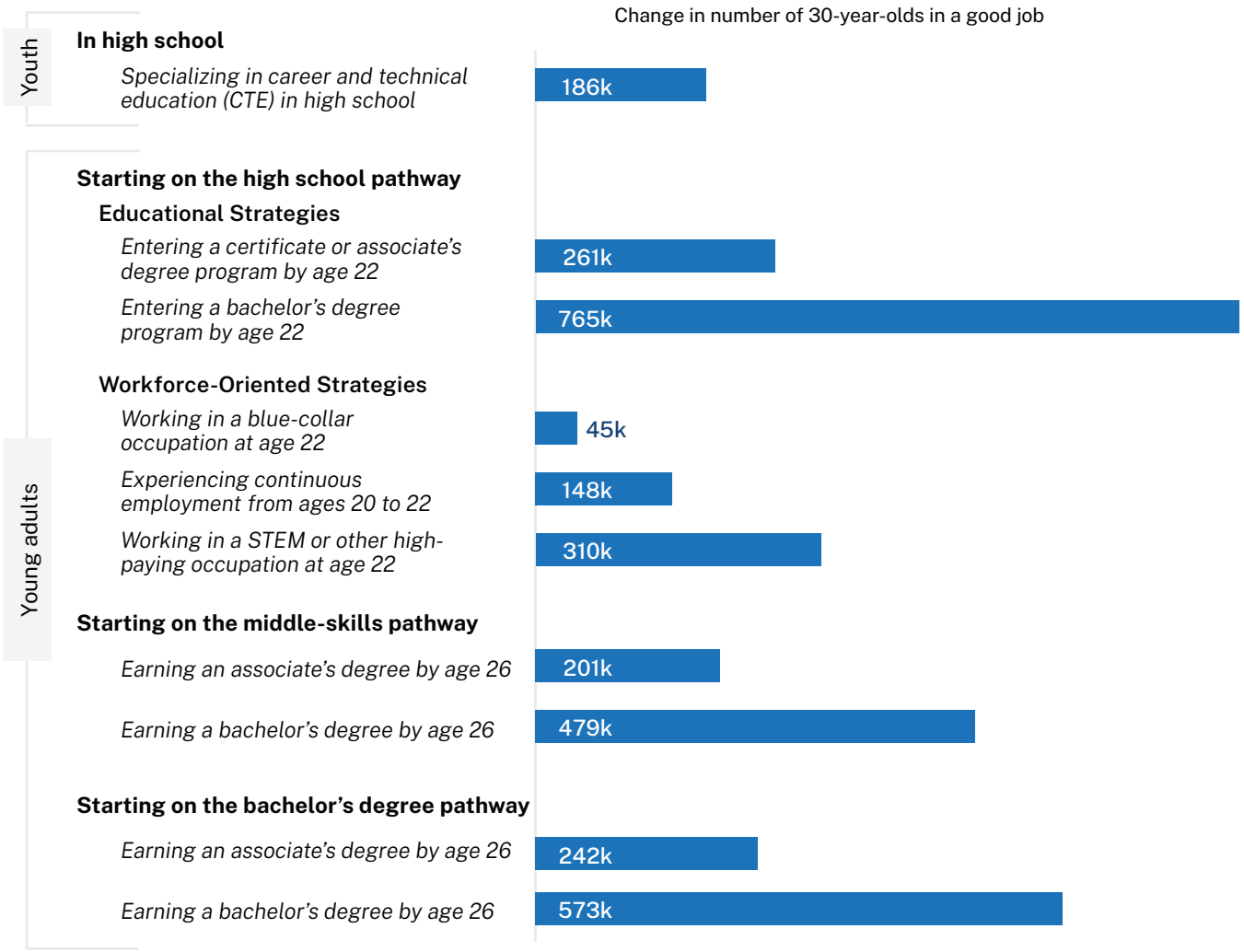
FIGURE 6. More individuals are eligible to specialize in career and technical education (CTE) in high school than any other pathway change.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. "M" indicates millions. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

FIGURE 7. Putting young adults on the bachelor's degree pathway offers the greatest potential for increasing the number of young adults in good jobs.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. "k" indicates thousands. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

more young adults who are prepared for, but do not attend, four-year colleges and universities than young adults already on the bachelor's degree pathway who do not graduate. Likewise, increasing the number of young adults with a CTE specialization in high school and increasing the number who experience continuous employment from ages 20 to 22 have similar effectiveness in increasing the likelihood of having a good job. Nonetheless, CTE specialization has the potential for greater societal impact because more young people are eligible for intervention during high school.

Each of these 10 pathway changes could be an integral component of an all-one-system approach that connects K–12 education, postsecondary education and training, and careers. Such an approach would create on-ramps and off-ramps that meet individuals where they are, enabling young adults to reap the benefits of multiple pathway changes. In Part 5 of this report, we illustrate the potential of a multipronged, coordinated system of holistic supports on the journey from youth to career success by showing how combinations of pathway changes can amplify the number of young adults in good jobs. First, though, we look at how the effects of the 10 pathway changes and their potential to improve young people's economic outcomes vary by race/ethnicity, gender, and socioeconomic status.

PART 2.

RACIAL AND ETHNIC GAPS IN ACCESS TO GOOD JOBS

Race and ethnicity play meaningful roles in shaping young people's experiences and opportunities on the journey to adulthood in the United States. The Pathways-to-Career model takes these differences into account when estimating how education, training, and work experiences influence the likelihood of working in a good job in early adulthood.

Certain changes in pathway could have a larger — or smaller — effect on people of different racial/ethnic backgrounds. For instance, a pathway change that could considerably increase the likelihood of having a good job for Black/African American individuals might not be as meaningful for white or Hispanic/Latino individuals, or vice versa. To give one example: we estimate that entering a bachelor's degree program by age 22 is twice as effective at increasing the likelihood of having a good job at age 30 for Hispanic/Latino young adults as for Black/African American young adults. Meanwhile, earning a bachelor's degree by age 26 after starting in a bachelor's degree program by age 22 is nearly 50 percent more effective for Black/African American young adults than for Hispanic/Latino young adults.

Likewise, the number of individuals eligible for each pathway change varies by racial and ethnic group. Because the white young adult population is larger than either the Black/African American or Hispanic/Latino population, more white young adults than young adults from any other group are eligible for each pathway change described in this report. For example, compared to Black/African American young adults, there are more than five times as many white young adults and more than twice as many Hispanic/Latino young adults eligible to enter a bachelor's degree program by age 22.

These differences in effectiveness and eligibility across pathway changes suggest that any one-size-fits-all effort to increase access to good jobs could actually increase the racial and ethnic gaps in the likelihood of having a good job. In addition, none of the 10 pathway changes on their own would narrow the gaps in good jobs considerably, even if young adults from historically marginalized groups were prioritized for intervention. Narrowing racial/ethnic gaps in good jobs significantly would

instead require a comprehensive strategy for addressing the many external barriers to economic independence along the pathway from youth to early adulthood. In this section, we discuss the likely effects of the 10 different pathway changes on racial/ethnic gaps in good jobs for Black/African American, Hispanic/Latino, and white young adults.[127]

The 10 pathway changes are likely to have different impacts for different racial/ethnic groups.

The top 10 pathway changes are expected to have different effects for different racial/ethnic groups (**Figure 8**). This means that the pathway change with the greatest potential to increase the likelihood of having a good job for one racial/ethnic group may be different than the pathway change with the greatest potential for another racial/ethnic group. For Black/African American young adults, the model suggests that the most effective pathway change is ensuring that those who enter a bachelor's degree program by age 22 complete their bachelor's degrees by age 26. For Hispanic/Latino young adults, in contrast, the most effective pathway change is increasing the number of young adults in bachelor's degree programs by age 22, regardless of whether or not they complete their degrees by age 26. These two pathway changes are also the two most effective pathway changes for white young adults.

The model additionally shows that not all pathway changes offer strong opportunities for increasing the likelihood of working in a good job for all racial/ethnic groups. The magnitude and even the direction of impact associated with some pathway changes vary by racial/ethnic group. In one case, a pathway change that is associated with improved likelihood of working in a good job in early adulthood for Black/African American and white individuals — that is, receiving specialized instruction in career and technical education (CTE) during high school — is predicted to reduce the likelihood of working in a good job for Hispanic/Latino individuals. This may be due to differences in program focus or program quality, or it may reflect differences in how the longstanding stigma associated with CTE affects different racial/ethnic groups.

127 We are able to simulate results only for Black/African American, Hispanic/Latino, and white individuals because the NLSY97 data set includes few individuals of other racial/ethnic subgroups.

Black/African American young adults

At present, 44 percent of Black/African American young adults enrolled in bachelor's degree programs by age 22 earn a bachelor's degree by age 26.[128] Earning a bachelor's degree increases the likelihood that Black/African American young adults who are already on the bachelor's degree pathway will have a good job at age 30 by 20 percentage points, from 30 percent to 50 percent. This level of effectiveness is among the highest we estimate across all pathway changes. In comparison, ensuring that more Black/African American adults enrolled in associate's degree or certificate programs subsequently complete a bachelor's degree by age 26 is about three-quarters as effective, and increasing the number of Black/African American young adults who enter bachelor's degree programs by age 22 is about half as effective.

Completing a bachelor's degree by age 26 is associated with a much higher increase in the likelihood of working in a good job at age 30 for Black/African American individuals than for white or Hispanic/Latino individuals. This is because Black/African American young adults with some college but no degree are far less likely than white and Hispanic/Latino young adults with equivalent levels of education to have a good job.[129] Among individuals who enrolled in a bachelor's degree program by age 22 but did not complete a bachelor's degree by age 26, 30 percent of Black/African American individuals work in a good job at age 30, compared to 43 percent of Hispanic/Latino individuals and 42 percent white individuals. In contrast, racial/ethnic differences in the likelihood of having a good job are much smaller among bachelor's degree completers: 66 percent of Black/African American individuals who earned a bachelor's degree by age 26 have a good job at age 30, compared to 63 percent and 68 percent of Hispanic/Latino and white individuals, respectively. Earning a bachelor's degree is especially consequential to the economic prospects of Black/African American young adults because it protects against many forms of discrimination and systemic racism that limit access to good jobs for Black/African American young adults with some college but no degree.[130]

In contrast to promising pathway changes like increasing bachelor's degree completion rates, some of the top 10 pathway changes show relatively weak potential to improve the likelihood of having a good job for Black/African American youth. For example, for Black/African American young adults, working in a blue-collar occupation at age 22 instead of an occupation associated with lower median earnings does not change the likelihood of working in a good job at age 30. Likewise, pursuing a middle-skills

128 In comparison, 66 percent of white young adults and 45 percent of Hispanic/Latino young adults enrolled in bachelor's degree programs by age 22 complete their bachelor's degrees by age 26.

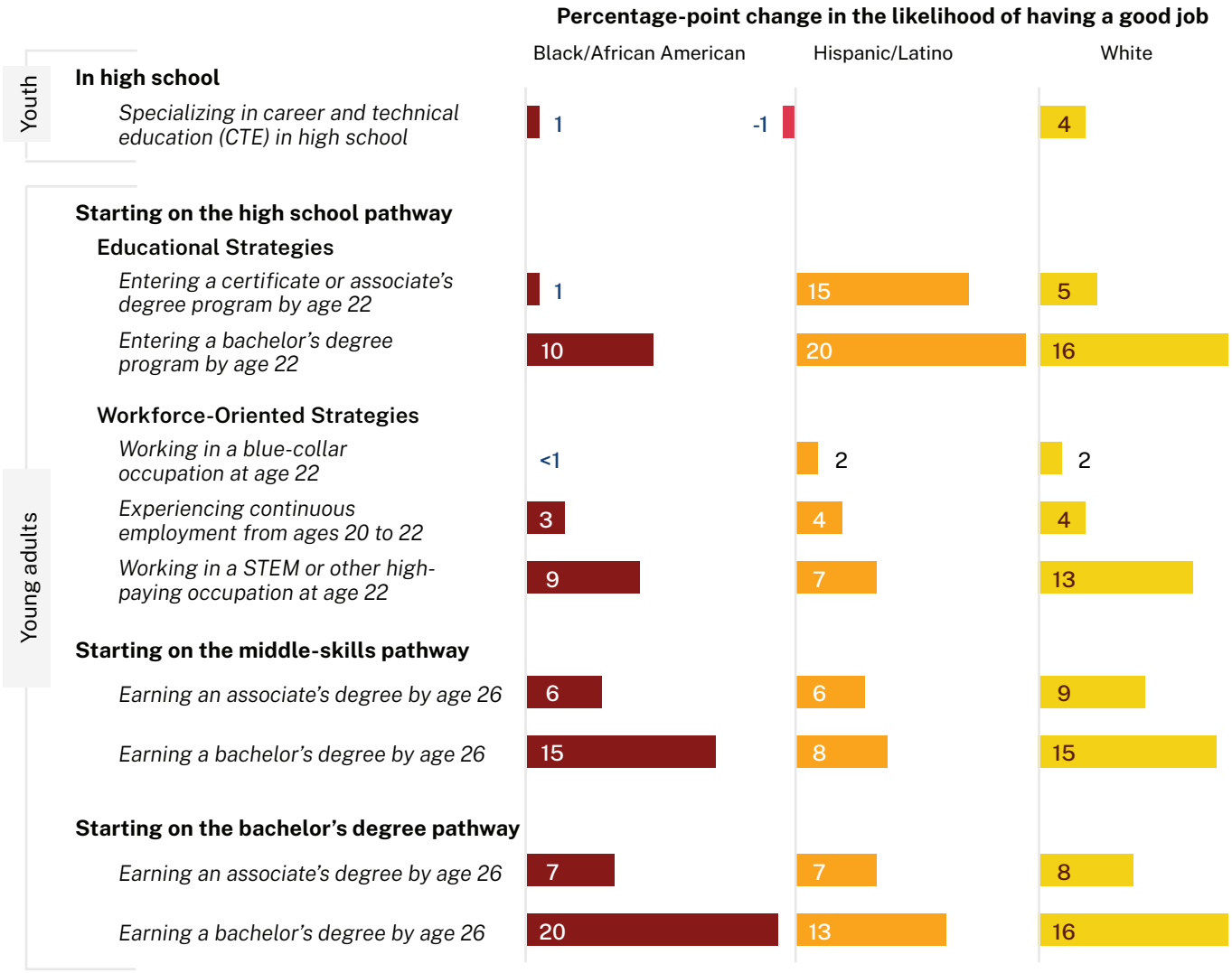
129 The comparatively low likelihood of working in a good job at age 30 for Black/African American young adults with some college but no degree also explains why the effectiveness of entering a middle-skills or bachelor's degree program by age 22 is lower for Black/African American young adults than for white and Hispanic/Latino young adults.

130 Carnevale et al., *The Unequal Race for Good Jobs*, 2019; Neumark, "Experimental Research on Labor Market Discrimination," 2018; Small and Pager, "Sociological Perspectives on Racial Discrimination," 2020.

credential by age 22 or specializing in CTE in high school increases the likelihood of working in a good job only minimally (by 1 percentage point in both cases).

These results likely reflect the fact that educational disparities and labor-market discrimination limit opportunities for early-career advancement among Black/African American young adults in

FIGURE 8. Earning a bachelor's degree by age 26 for Black/African American young adults and entering a bachelor's degree program by age 22 for Hispanic/Latino young adults are the most effective pathway changes overall.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

blue-collar occupations, just as they do in occupations that commonly have lower pay. For example, compared to their white peers, Black/African American workers in manufacturing are 14 percentage points less likely to experience upward job mobility.[131] Racial/ethnic disparities in the quality of high school CTE courses and differential patterns of CTE course-taking by race/ethnicity (with Black/African American students more likely to enroll in CTE courses in human services than in STEM, for example) may also explain why the returns to CTE programs are more muted for students from historically marginalized groups.[132]

Hispanic/Latino young adults

For Hispanic/Latino young adults, enrolling in a bachelor's degree program by age 22 is the most effective pathway change, increasing their likelihood of having a good job at age 30 by 20 percentage points (from 29 percent to 49 percent). Enrolling in a certificate or associate's degree program by age 22 is the second most effective pathway change, resulting in a 15-percentage-point boost (from 24 percent to 39 percent) in the likelihood of having a good job at age 30.

Pursuing a bachelor's degree or middle-skills credential may be especially effective because academically prepared Hispanic/Latino students are less likely to apply to college than similarly prepared students of all other races.[133] In addition, Hispanic/Latino students are more likely to consider non-academic factors like proximity to home and social fit when making postsecondary decisions, which can result in their attending institutions at which their chances of completion are lower and their career opportunities after leaving college are more limited.[134]

Notably, one pathway change among the 10 most effective overall could reduce the likelihood of working in a good job for Hispanic/Latino young adults. Participation in CTE may have a negative impact on Hispanic/Latino students' likelihood of having a good job at age 30 because Hispanic/Latino students, like Black/African American students, have more limited access to high-quality CTE programs than white students or are more likely to be tracked into or to choose CTE programs in lower-paying fields.[135] In addition, the decades-old stigma attached to vocational technical education — as the dumping ground for students who are supposedly not college material — has been more difficult for students from historically marginalized groups, including Hispanic/Latino students, to shed than young adults from more advantaged backgrounds.[136]

131 Escobari et al., *Moving Up*, 2021.

132 Butrymowicz et al., "How Career and Technical Education Shuts Out Black and Latino Students from High-Paying Professions," 2020.

133 Black et al., "Apply Yourself," 2020.

134 Desmond and Turley, "The Role of Familism in Explaining the Hispanic-White College Application Gap," 2009; Perna, "Differences in the Decision to Attend College," 2000.

135 Butrymowicz et al., "How Career and Technical Education Shuts Out Black and Latino Students from High-Paying Professions," 2020.

136 Advance CTE, "Making Good on the Promise," 2018.

White young adults

For white young adults, enrolling in a bachelor's degree program by age 22 and earning a bachelor's degree by age 26 (for those already pursuing a bachelor's degree) are similarly effective ways of increasing the likelihood of being in a good job. Both pathway changes are associated with around a 16-percentage-point increase in the likelihood of having a good job at age 30. These findings reinforce three well-established facts: (1) the bachelor's degree has become the primary stepping stone to securing a good job in today's economy,[137] (2) more than one-third of white young adults on the bachelor's degree pathway do not complete a bachelor's degree by their mid-20s, and (3) nearly one-quarter of white young adults are academically prepared for bachelor's degree programs but instead pursue a middle-skills credential or forgo postsecondary education altogether by age 22, both of which reduce the likelihood of working in a good job at age 30.

Our analysis shows that working in a blue-collar occupation at age 22 instead of an occupation with lower median earnings is the least effective pathway change for improving good jobs outcomes for white young adults.[138] This pathway change is associated with a 2-percentage-point increase, from 15 percent to 17 percent, in white young adults' likelihood of having a good job at age 30. The fact that this result is positive (although small in magnitude) indicates that for white young adults, working in a blue-collar occupation at age 22 offers slightly more opportunity for upward mobility on average than working in lower-wage occupations.[139]

Notably, white 30-year-olds are likely to benefit substantially more from having specialized in CTE in high school than their Black/African American or Hispanic/Latino peers. As discussed above, this likely reflects the fact that racial/ethnic disparities in access and referral to high-quality CTE instruction mean that white students are more likely to reap the labor-market returns to career-focused education than their Black/African American and Hispanic/Latino peers.

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

138 At the same time, this pathway change is more effective for white young adults than for Black/African American and Hispanic/Latino young adults.

139 For example, more than half of job transitions within the construction industry result in larger-than-expected wage gains, compared to only 36 percent of job transitions within the hospitality sector. Escobari et al., *Moving Up*, 2021.

More white youth and young adults are eligible for intervention at each critical juncture.

The size of the eligible population affects how large an impact any pathway change could potentially have at the population level. Across all 10 pathway changes, more white young adults are eligible than Black/African American or Hispanic/Latino young adults, mostly because the white population of young adults is the largest of the three groups (**Figure 9**). Among all three groups, however, there are more individuals eligible to specialize in CTE during high school than any other pathway change, despite our results indicating that this pathway change is only minimally effective at increasing the likelihood of working in a good job at age 30 overall — and even potentially damaging for Hispanic/Latino young adults.

Black/African American young adults

The pathway changes for which the largest numbers of Black/African American youth are eligible are among those that are least effective at increasing the likelihood of working in a good job. Nearly 40 percent of all Black/African American youth (1.2 million individuals) who do not plan to enter the bachelor's degree pathway also do not specialize in CTE in high school. A substantial number could also benefit from experiencing stable and continuous employment from ages 20 to 22 and from increased access to middle-skills programs by age 22, with approximately 900,000 individuals in the current cohort eligible for both of these pathway changes.

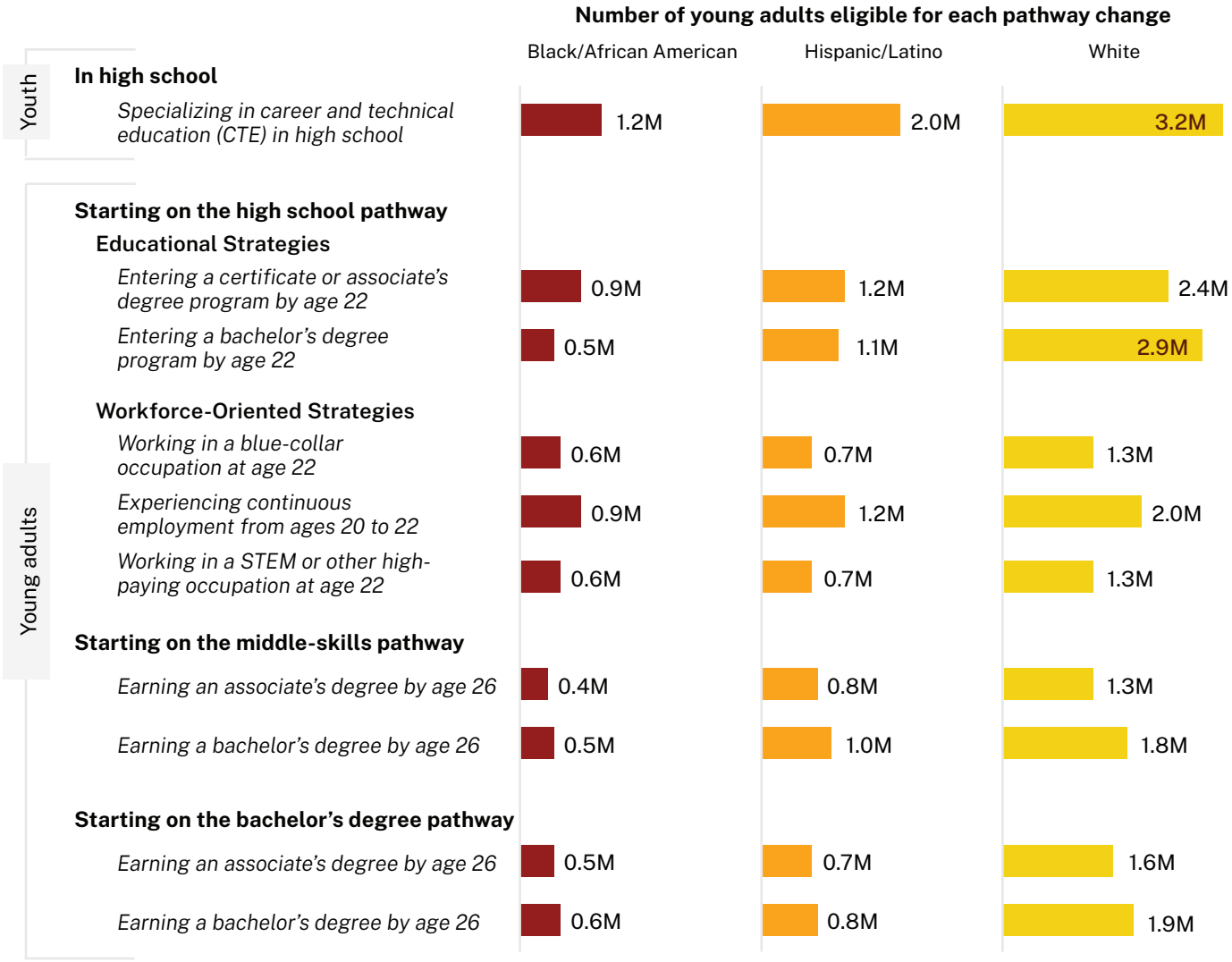
Cumulative disadvantages and injustices throughout the education-to-career pipeline help explain why young Black/African American youth are more likely to be eligible for lower-impact than higher-impact pathway changes. A sizeable proportion of Black/African American young adults enter the workforce immediately after high school and are especially vulnerable to the volatile labor market for youth with no more than a high school education, cycling between periods of unemployment and low-paying work.[140] In contrast, relatively few Black/African American young adults are eligible for participation in the most effective pathway changes (enrolling in a bachelor's degree program and earning a bachelor's degree by age 26 among those already on that pathway).

Hispanic/Latino young adults

In the current cohort, the largest group of Hispanic/Latino youth or young adults eligible for intervention across all 10 pathway changes is the 2 million youth eligible to specialize in CTE during high school — the very intervention point that, according to the model's predictions, is likely to reduce the likelihood of working in a good job slightly for Hispanic/Latino young adults. There are also 1.2

140 Ross and Svajlenka, *Employment and Disconnection among Teens and Young Adults*, 2016.

FIGURE 9. More Black/African American, Hispanic/Latino, and white young adults are eligible to participate in high school career and technical education (CTE) than any of the other top 10 pathway changes.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: "M" indicates millions. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

million Hispanic/Latino young adults who are eligible to enter a certificate or associate's degree program by age 22, 1.2 million with no more than a high school diploma who are eligible to attain stable and continuous employment from ages 20 to 22, and 1.1 million who are eligible to enter a bachelor's degree program by age 22.

The number of Hispanic/Latino youth in these areas reflects the fact that, like Black/African American youth, they are underrepresented in postsecondary education and therefore more likely to be eligible for pathway changes involving individuals without college experience by age 22. However, compared to Black/African American youth, a larger proportion of Hispanic/Latino youth who do not enter a bachelor's degree program have the academic qualifications to do so.[141] This explains why more than twice as many Hispanic/Latino youth as Black/African American youth are eligible to enter a bachelor's degree program.

White young adults

There are more than 3.5 times as many white youth as Black/African American youth living in the United States today, and more than twice as many white youth as Hispanic/Latino youth. As a result, there are more than one million white individuals eligible for each pathway change we examined. As with Black/African American and Hispanic/Latino youth, the pathway change for which the largest group of white individuals are eligible (3.2 million, representing 28 percent of all white youth) is specializing in CTE during high school, followed by enrolling in a bachelor's degree program by age 22 (2.9 million white youth, representing 24 percent of all white youth).

That similar numbers of white youth are eligible for a highly influential pathway change (entering a bachelor's degree program) and a minimally influential pathway change (specializing in CTE during high school) reveals two facts. First, 28 percent of white youth graduate from high school without a CTE specialization and do not enter a bachelor's degree program by age 22. This proportion is notably lower than among Black/African American youth and Hispanic/Latino youth (39 percent for both groups). However, there is still tremendous opportunity for high-quality CTE programming to reach millions more high school students of every racial/ethnic group. Second, even though most students attending four-year colleges and universities identify as white, fewer than two-thirds of white youth who are academically prepared to enter a bachelor's degree program do so by age 22. And because almost 70 percent of white youth have the academic qualifications to attend a four-year institution, similar numbers of white youth could be put on the pathway to a bachelor's degree as could be provided with more intensive CTE instruction in high school.

141 That is, more Hispanic/Latino youth than Black/African American youth do not pursue a bachelor's degree by age 22 but have test scores or a high school GPA above the 25th percentile of students who attend four-year programs.

Applying the 10 pathway changes without attention to differences in effectiveness and eligibility could increase racial/ethnic gaps in the likelihood of having a good job.

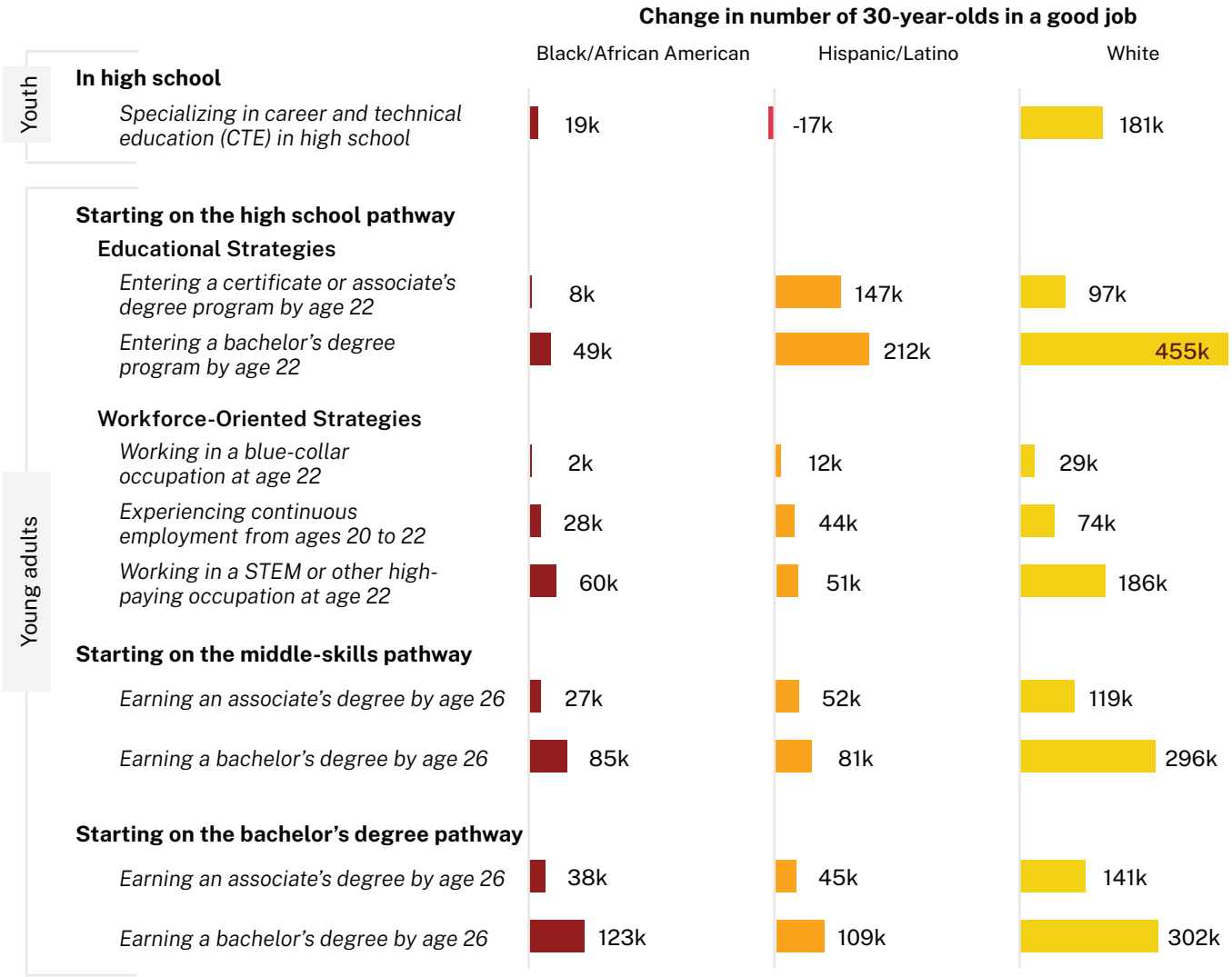
The most efficient way of increasing the total number of young adults likely to be in a good job at age 30 would involve prioritizing pathway changes for which the combination of effectiveness and eligibility are largest. Because of differences in predicted effectiveness and in the size of the eligible population across racial/ethnic groups, however, such an approach could increase the number of white young adults in good jobs far more than the number of Black/African American or Hispanic/Latino young adults in almost every case (**Figure 10**).

Thus, by directing the largest share of good job gains toward the white population, a strategy that maximizes the potential for increasing the total number of individuals working in good jobs is also likely to increase racial/ethnic gaps in the likelihood of having a good job at age 30 (**Figure 11**). In fact, the model predicts that if all eligible young adults participated in each pathway change, the white–Black/African American gap and the white–Hispanic/Latino gap in the percent of 30-year-olds with a good job would increase across five of the 10 pathway changes.

Efforts to reach as many eligible individuals as possible would begin to close the white–Black/African American gap in the case of only three pathway changes: increasing the number of young adults who earn a bachelor's degree by age 26, increasing the number who work in a STEM or other high-paying occupation at age 22, and ensuring stable and continuous employment for young adults ages 20 to 22. Even in these instances, the gap would barely be affected. Without the use of affirmative action in the form of targeted recruitment, the most effective of these — increasing the number of young adults who earn a bachelor's degree by age 26 — only has the potential to narrow the white–Black/African American gap in the likelihood of having a good job at age 30 by 1.1 percentage points (or 5 percent). In other words, systemic reform will only make substantial strides toward closing racial/ethnic gaps in good jobs if it includes affirmative action.

Likewise, applying all 10 pathway changes for everyone eligible could begin to close the white–Hispanic/Latino gap in only three cases: increasing the number of young adults who enroll in a bachelor's degree program by age 22, increasing the number who enter a certificate or associate's degree program by age 22, and ensuring stable and continuous employment for young adults ages 20 to 22. The most effective of these — increasing the number who enroll in an associate's degree or certificate program by age 22 — has the potential to narrow the white–Hispanic/Latino gap by 2.5 percentage points, or 34 percent.

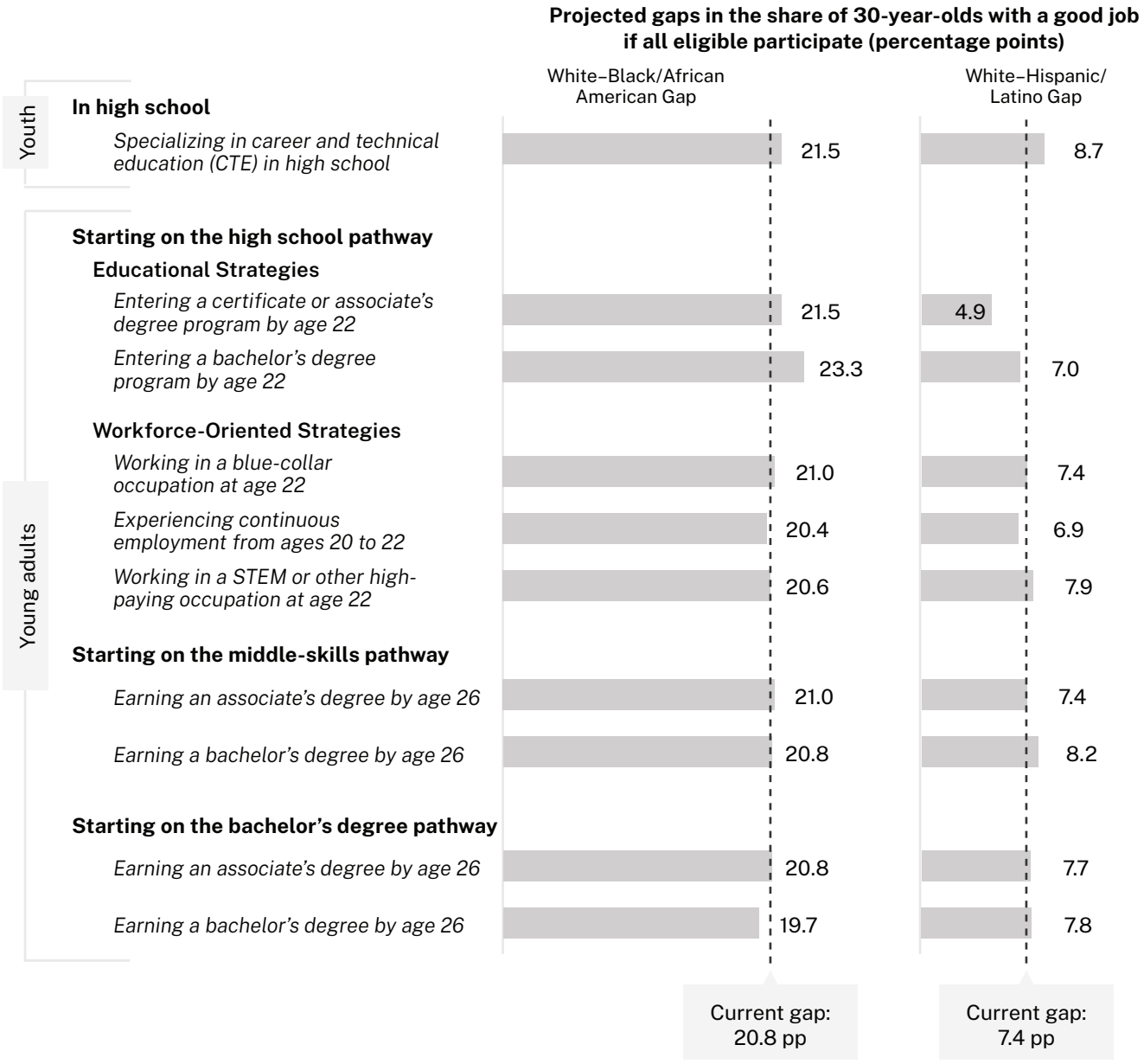
FIGURE 10. Nine of the 10 most powerful pathway changes are predicted to put more white young adults in good jobs than Black/African American or Hispanic/Latino young adults.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. "k" indicates thousands. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

FIGURE 11. In the absence of affirmative action in the form of targeted recruitment for the 10 pathway changes, racial/ethnic gaps in good jobs could widen.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living; "pp" indicates percentage points. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

Importantly, only interventions designed to ensure continuous employment for young adults ages 20 to 22 are predicted to narrow both white–Black/African American and white–Hispanic/Latino gaps in the likelihood of working in a good job. Thus, in addition to offering few opportunities to narrow race-based gaps, efforts designed to maximize the total number of workers in good jobs can also present tradeoffs, potentially narrowing one racial/ethnic gap while simultaneously widening another.

These predictions illustrate the magnitude of the challenge associated with reducing or closing the racial/ethnic gaps in the likelihood of having a good job as a young adult. Several forces make it difficult to narrow these persistent gaps.

One key barrier is that there are more white young adults than Black/African American or Hispanic/Latino young adults eligible for each pathway change that could improve the likelihood of having a good job. This is especially true of pathway changes that are most likely to improve the chances of having a good job in early adulthood.

A second challenge is that no single pathway change is highly effective on its own at addressing racial/ethnic disparities. The number of young adults eligible for each pathway change represents fewer than half, and in many cases fewer than 20 percent, of all young adults across each racial/ethnic group. Thus, any potential that these pathway changes could offer for narrowing racial/ethnic gaps in the likelihood of working in a good job is limited from the outset.

A third, and especially daunting, barrier is the limited potential for any human capital-focused pathway change on its own to improve young people's economic outcomes. In our model, education, training, and on-the-job learning in adolescence through emerging adulthood explain less than half of the variation between individuals in the likelihood of having a good job at age 30. This means that many other factors beyond the reach of the education, training, and employment systems also influence the chances of career success. Those factors include early life circumstances such as the enduring effects of poverty and family structure in childhood,[142] as well as racial discrimination in the labor market that penalizes Black/African American and Hispanic/Latino individuals relative to white individuals working in the same occupation and with the same level of education.[143]

More comprehensive strategies that combine multiple pathway changes show promise for achieving larger impacts and could narrow gaps more, particularly if they prioritize young adults from historically disadvantaged groups for intervention (see Part 5 of this report). Even so, the most comprehensive possible set of interventions designed to alter the education, training, and

142 Magnuson and Votruba-Drzal, "Enduring Influences of Childhood Poverty," 2009; Lopoo and DeLeire, "Family Structure and the Economic Wellbeing of Children in Youth and Adulthood," 2014; Kearney and Levine, "The Economics of Nonmarital Childbearing and the Marriage Premium for Children," 2017.

143 Carnevale at al., *Mission Not Accomplished*, 2021; Wilson and Darity, *Understanding Black-White Disparities in Labor Market Outcomes*, 2022.

employment experiences of young adults could not fully eliminate the racial/ethnic gaps in the likelihood of having a good job.

Closing racial/ethnic gaps in good jobs would require layering pathway changes that reach beyond the acquisition of knowledge and skills to address racialized barriers to economic opportunity in society. A strategy that includes the following elements holds promise for improving racial justice in access to good jobs:

- expanding the authority and funding of the US Equal Employment Opportunity Commission and state offices to enforce antidiscrimination laws;
- removing racially identifying information from job application materials used in hiring committee reviews;
- training employers to adopt anti-bias hiring practices;
- eliminating consideration of criminal history in job hiring when convictions occurred long ago or are unrelated to job responsibilities;
- promoting more workers from historically marginalized racial and ethnic groups into management and leadership roles;
- investing in better transportation options between communities where people of color live and locations where good jobs are available; and
- racially and economically integrating neighborhoods so that people from all backgrounds live and work in communities of opportunity.[144]

In the absence of a holistic policy agenda that addresses the multiple facets of racism and inequality from early childhood through the transition to adulthood, racial/ethnic gaps will remain.

144 Chetty et al., "Social Capital I," 2022; Solomon et al., *Systematic Inequality and Economic Opportunity*, 2019; Stacy and Cohen, *Ban the Box and Racial Discrimination*, 2017; and Wilson, "The Costs of Racial and Ethnic Labor Market Discrimination," 2022.

PART 3.

THE GENDER GAP IN GOOD JOBS

Despite decades of progress in narrowing the gender pay gap, women continue to earn less than men, even when working similar hours, in the same occupations, and with the same educational credentials.[145] In this section, we discuss the likely effects of the 10 different pathway changes for men versus women and each pathway change's anticipated impact on the gender gap in good jobs.

We find that men and women face different challenges on the pathway to good jobs. While men's access to good jobs is broadly limited by their lower educational attainment, women's access is limited because they are paid less than men, even when they acquire the same level of education.

The Pathways-to-Career model suggests that because of these differences, the top 10 pathway changes in general are slightly more effective for men than women, reflecting deep-seated gender discrimination in the labor market. In fact, none of the pathway changes is expected to increase women's likelihood of working in a good job at age 30 more than men's. In some cases, the difference in effectiveness by gender is stark. For example, we estimate that completing an associate's degree by age 26 among individuals who pursue a middle-skills credential by age 22 is twice as effective at improving access to good jobs for men as it is for women.

Across eight of the 10 pathway changes, more men than women are eligible for intervention at each critical juncture. The two exceptions are the pathway changes that shift young adults at age 22 from low-wage occupations (jobs in the arts, community services, education, food and personal services, and healthcare support) to STEM/other high-paying occupations or to blue-collar occupations. Since more women than men who enter the workforce immediately after high school work in these low-wage occupations, a larger number of women are eligible for the occupation-focused pathway changes.

Because most of the pathway changes are predicted to be more effective for men and more men are also eligible for most of the pathway changes, the gender gap in good jobs will likely

145 Jones, "5 Facts about the State of the Gender Pay Gap," 2021.

increase in most instances if policy efforts are designed to increase the total number of young adults working in a good job in early adulthood without regard to gender. As with closing racial/ethnic gaps in good jobs, narrowing the gender gap would require using affirmative action to prioritize women for program participation, transforming social norms, and continuing to dismantle sexism and other societal barriers that disadvantage women in the workforce.

Eight of the 10 pathway changes are expected to be more effective for men than women.

In 1980, a woman earned less than 60 cents, on average, for every dollar that a man earned.[146] This gap has narrowed considerably over the past 40 years, but it has not closed completely. In 2020, women continued to earn 82 cents for every dollar earned by men.[147]

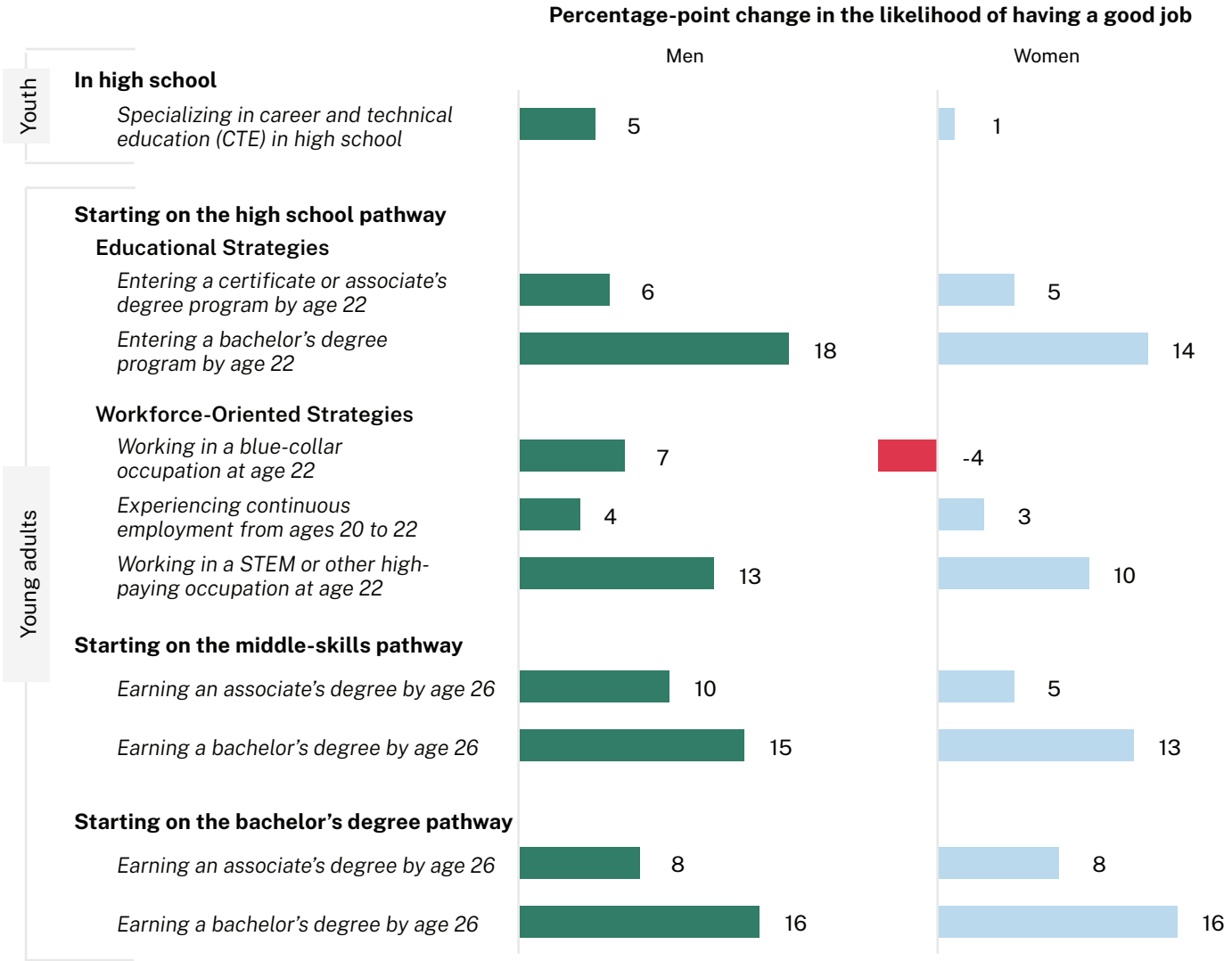
The relative effectiveness of the top 10 pathway changes — whereby the likelihood of having a good job is predicted to increase more for men than for women across most pathway changes — reflects the concerning reality that women still suffer from sexism, social norms that restrict their access to good jobs, and limited policy support in areas related to those norms, such as family care (**Figure 12**). The clearest example of differences in effectiveness between men and women occurs in the pathway change that increases employment in blue-collar occupations at age 22. This pathway change is predicted to meaningfully improve the likelihood of working in a good job at age 30 for men, but to reduce the likelihood of working in a good job at age 30 for women.

Two pathway changes provide exceptions to the general rule that interventions are likely to be more effective for men than for women. We estimate that, for young adults enrolled in bachelor's degree programs by age 22, earning an associate's degree (instead of no degree at all) or a bachelor's degree (instead of an associate's degree or no degree at all) by age 26 would increase the likelihood of working in a good job at age 30 by the same amount for men and women.

146 Shambaugh and Nunn, "How Women are Still Left Behind in the Labor Market," 2018.

147 Jones, "5 Facts about the State of the Gender Pay Gap," 2021; Shambaugh and Nunn, "How Women are Still Left Behind in the Labor Market," 2018.

FIGURE 12. Entering a bachelor's degree program by age 22 and earning a bachelor's degree by age 26 are the most effective pathway changes, respectively, for men and women.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

Men

For young men, entering the bachelor's degree pathway by age 22 is the most effective pathway change. We predict that this pathway change is associated with an 18-percentage-point increase, from 42 percent to 60 percent, in the likelihood of having a good job at age 30 for men. Completing a bachelor's degree after starting a bachelor's degree program and completing a bachelor's degree after starting an associate's degree or certificate program are the second and third most effective pathway changes for men, respectively, with projected increases in the likelihood of having a good job of 16 and 15 percentage points.

Enrolling in and completing a four-year degree program stands out from all other pathway changes for two related reasons. As described above, most good jobs in today's economy require that workers have a four-year college degree. But despite this bachelor's degree premium, men are increasingly forgoing college after high school and are less likely to graduate when they do. In 2019, 39 percent of recent male high school graduates attended a four-year college or university, compared to 49 percent of recent female high school graduates.[148] Furthermore, among bachelor's degree enrollees, women are 6 percentage points more likely than men to graduate within six years.[149] If these trends continue, women earning bachelor's degrees will soon outnumber men two to one.[150] Our results show that many young men not currently on the bachelor's degree pathway stand to benefit economically from attending and succeeding in bachelor's degree programs.

Consistent with the overall findings, maintaining stable and continuous employment from ages 20 to 22 and specializing in CTE in high school are the two least effective pathway changes for men. These pathway changes are associated with a 4- to 5-percentage-point increase in the likelihood of having a good job for men. In contrast, the overall findings mask the fact that securing employment in a blue-collar occupation is likely to be much more effective for young men than for young women working in low-paying occupations at age 22. We predict that switching from a low-paying occupation to a blue-collar occupation at age 22 is associated with a 7-percentage-point *increase* in the likelihood of having a good job at age 30 for men (from 21 percent to 28 percent), compared to a 4-percentage-point *decrease* for women (from 8 percent to 4 percent).

The outsize benefit to men of shifting to blue-collar work reflects the long history of male dominance in skilled blue-collar work. The highest-paying blue-collar jobs in today's economy and those that offer the best opportunities for earnings growth and career advancement — like skilled craft and trade jobs including carpentry, mechanic jobs, and plumbing — are overwhelmingly held by men.[151] Many blue-

148 US Department of Education, *Digest of Education Statistics* Table 302.10, 2020.

149 Reeves and Smith, "The Male College Crisis Is Not Just in Enrollment, but Completion," 2021.

150 Belkin, "A Generation of American Men Give Up on College," 2021.

151 Escobari et al., *Moving Up,* 2021; Hoyt and Swerzenski, "Who's Getting the Skilled Blue Collar Jobs?," 2018; Pearlman, "Gender Differences in the Impact of Job Mobility on Earnings," 2018.

collar workers, especially those with no more than a high school diploma, will not immediately secure work in a good job.[152] For men, however, blue-collar occupations offer more entry points to higher-skilled and better-paying jobs in the future than other occupations that do not require a college degree.

Women

The top three most effective pathway changes for women are the same as for men: enrolling in a bachelor's degree program, completing a bachelor's degree after starting a bachelor's degree program, and completing a bachelor's degree after starting an associate's degree or certificate program. We predict that the most effective pathway change of all — earning a bachelor's degree by age 26 among women who enter the bachelor's degree pathway by age 22 — is associated with a 16-percentage-point increase, from 33 percent to 49 percent, in the likelihood of having a good job at age 30 for women.

The bachelor's degree provides some protection against gender dynamics that severely limit access to good jobs for women with lower levels of education. Indeed, the returns to a bachelor's degree are higher on average for women than for men, even though men tend to earn more than women at every education level.[153] Women with a bachelor's degree are 9 percentage points less likely to have a good job at age 30 than men with a bachelor's degree (with 64 percent versus 73 percent holding a good job, respectively). But among workers without a bachelor's degree, the gap is more than twice as large (20 percentage points), with 19 percent of women without a bachelor's degree versus 39 percent of men without a bachelor's degree holding a good job. Thus, the gender pay gap is smaller among workers with a bachelor's degree than among workers without it, but the gap persists even at higher levels of education.

Notably, while men tend to benefit from the shift to blue-collar work at age 22, women do not. Switching from work in a low-paying occupation to a blue-collar occupation at age 22 is associated with a 4-percentage-point decrease in the likelihood of having a good job for women, from 8 percent to 4 percent. As discussed further below, this pathway change, if brought to scale, has the potential to prevent almost 70,000 women per cohort from reaching good jobs in early adulthood.

The negative impact on women of switching to a blue-collar occupation at age 22 can be explained by two related dynamics.

1. **Women who work in blue-collar occupations at age 22 have relatively poor early-career earnings prospects, even if they leave those occupations.** Women in blue-collar occupations are underrepresented in positions that tend to pay higher earnings and are much less likely

152 Escobari et al., *Moving Up,* 2021.

153 Leukhina and Smaldone, "Why Do Women Outnumber Men in College Enrollment?," 2022.

than men to experience upward job mobility.[154] Among workers with no more than a high school diploma who worked in a blue-collar occupation at age 22 and continue in those occupations at age 26, the average hourly wage is $12.04 at age 26 for women, compared to $16.75 at age 26 for men. Perhaps as a result of barriers to advancement, only 31 percent of all women in blue-collar occupations at age 22 are still working in those occupations at age 26, compared to 71 percent of men. Occupational change doesn't necessarily improve these women's standing, however: among 26-year-old women with no more than a high school diploma who left a blue-collar job after age 22, the average hourly wage is very low, at $8.88.[155]

2. **Women who work in low-paying occupations at age 22 experience more upward mobility compared to their peers in blue-collar occupations.** At age 22, women with no more than a high school diploma are paid slightly less, on average, in low-paying, entry-level occupations ($9.87) than in blue-collar occupations ($10.08). By age 26, however, women who worked in low-paying occupations at age 22 earn considerably more on average ($11.85) than women who worked in blue-collar occupations at age 22 ($9.86). These wage gains reflect increases in educational attainment, returns to in-field experience, and returns to occupational switching experienced by women who started out in a low-paying occupation between their early 20s and mid-20s.[156,157]

These dynamics help explain why young women's prospects of working in a good job at age 30 are often better if they work in a job that typically pays lower wages at age 22 than if they switch to blue-collar work.

154 Escobari et al., *Moving Up*, 2021; Haumesser and Mahoney, *Factory Flaw*, 2021.

155 Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

156 Twenty-eight percent of women with no more than a high school diploma who are employed in low-paying occupations at age 22 complete a postsecondary certificate or college degree by age 26. These women earn $13.57 per hour on average at age 26. Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

157 Women with no more than a high school diploma who work in low-paying occupations at age 22 experience considerable wage growth, regardless of whether they switch to another occupation. The average hourly wage among women who remain in occupations that pay low entry-level wages is $12.18 at age 26, compared to $11.42 among women who switch occupations. However, women who do not complete a postsecondary certificate or college degree by age 26 experience larger wage growth from switching occupations ($11.63 per hour from switching versus $10.83 per hour from staying), whereas women who complete a postsecondary certificate or college degree by age 26 tend to earn more from staying in the same field of work ($15.33 per hour from staying versus $10.82 per hour from switching). Thus, women who work in low-paying, entry-level jobs experience wage growth between their early-20s and mid-20s through multiple pathways. Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

More men than women are eligible for intervention at eight of the top 10 critical junctures.

Even as the 10 pathway changes are more effective in general for men than for women, more men than women are also eligible for most of the pathway changes we examined (**Figure 13**). This is because, as described above, young men are less likely than young women to pursue postsecondary education after high school and are less likely to complete a degree when they enroll. A larger subset of young men is therefore eligible for the pathway changes that place individuals on a different educational pathway after high school, the pathway changes that increase degree attainment by age 26, and most pathway changes that target young adults who enter the workforce immediately after high school.

There are only two pathway changes in which more young women are eligible than young men: the shifts from working in an occupation with low median earnings at age 22 to working in STEM/other high-paying or blue-collar occupations. Among young adults who do not pursue postsecondary education by age 22, women are much more likely than men to work in occupations that tend to pay lower starting wages. Thirty-nine percent of women who do not pursue postsecondary education by age 22 work in jobs in the arts, community services, education, food and personal services, or healthcare support, compared to 21 percent of men. However, as explained above, moving from these occupations to blue-collar occupations is predicted to harm rather than help women's prospects of having a good job at age 30.

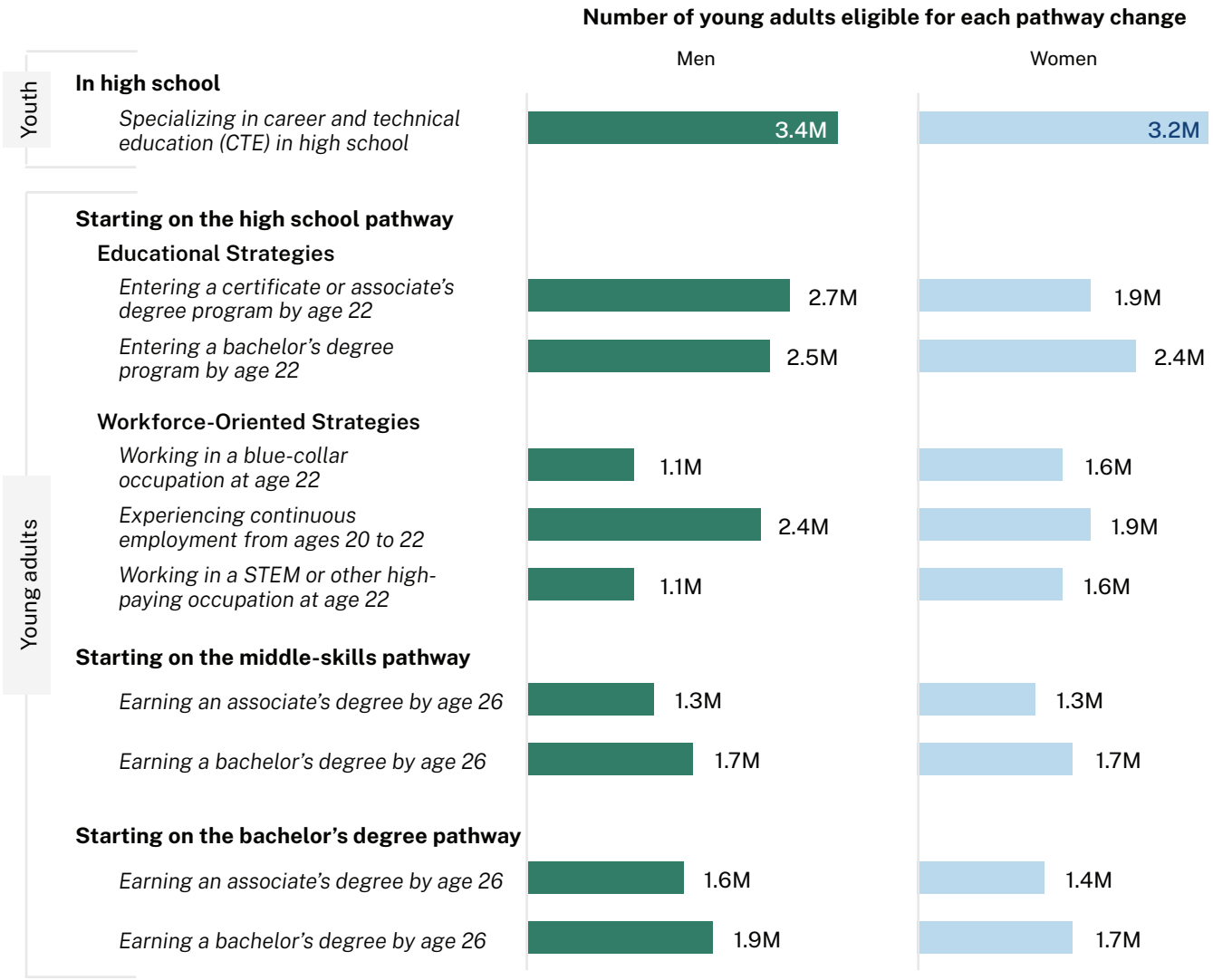
Men

Three of the pathway changes for which the largest numbers of young men are eligible are among the least effective at increasing the likelihood of working in a good job. More than 30 percent of all young men ages 14 to 18 (3.4 million individuals in the current cohort) who are not on the path to enrolling in a bachelor's degree program by age 22 do not specialize in CTE in high school. Likewise, more than two million young men on the high school pathway are not expected to pursue a postsecondary certificate or associate's degree by age 22,[158] and more than two million are also expected to experience gaps in employment from ages 20 to 22.

At the same time, 2.5 million young men are eligible to participate in the most effective pathway change for men: entering the bachelor's degree pathway by age 22. Thus, while the bachelor's degree

158 Entering a certificate or associate's degree program is also the pathway change in which the number of eligible men most exceeds the number of eligible women. Because women outnumber men on college campuses, 2.7 million young men are eligible for this change in pathway, compared with 1.9 million young women. Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

FIGURE 13. More men than women are eligible for most pathway changes involving increased educational attainment.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. "M" indicates millions. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

pathway is one of the most promising routes to increasing the likelihood of having a good job across all groups we examined, it stands out as an especially promising pathway change for young men because of the combination of high effectiveness and high eligibility.

Women

As is the case for men, some of the pathway changes for which the largest number of women are eligible offer greater access to good jobs than others. For instance, more than three million young women in the current cohort are also eligible to specialize in CTE in high school, and more than two million are eligible to enter the bachelor's degree pathway by age 22. The latter indicates that even though women are more likely to attend four-year colleges than men, nearly one-quarter of young women ages 18 to 22 do not enroll in bachelor's degree programs despite having the academic qualifications to gain admission. Across all other pathway changes, the number of eligible women in the current cohort ranges from 1.3 million to 1.9 million.

Fifteen percent of all young women (1.6 million individuals) are eligible for the two pathway changes that shift young adults at age 22 from working in an occupation with low median earnings to STEM/other high-paying or blue-collar occupations. The number of women eligible for these pathway changes exceeds the number of men by 500,000. However, as mentioned above, shifting from a low-paying occupation to a blue-collar occupation could harm women's prospects of having a good job at age 30.

Only one pathway change is expected to narrow the gender gap in good jobs unless women are prioritized for intervention over men.

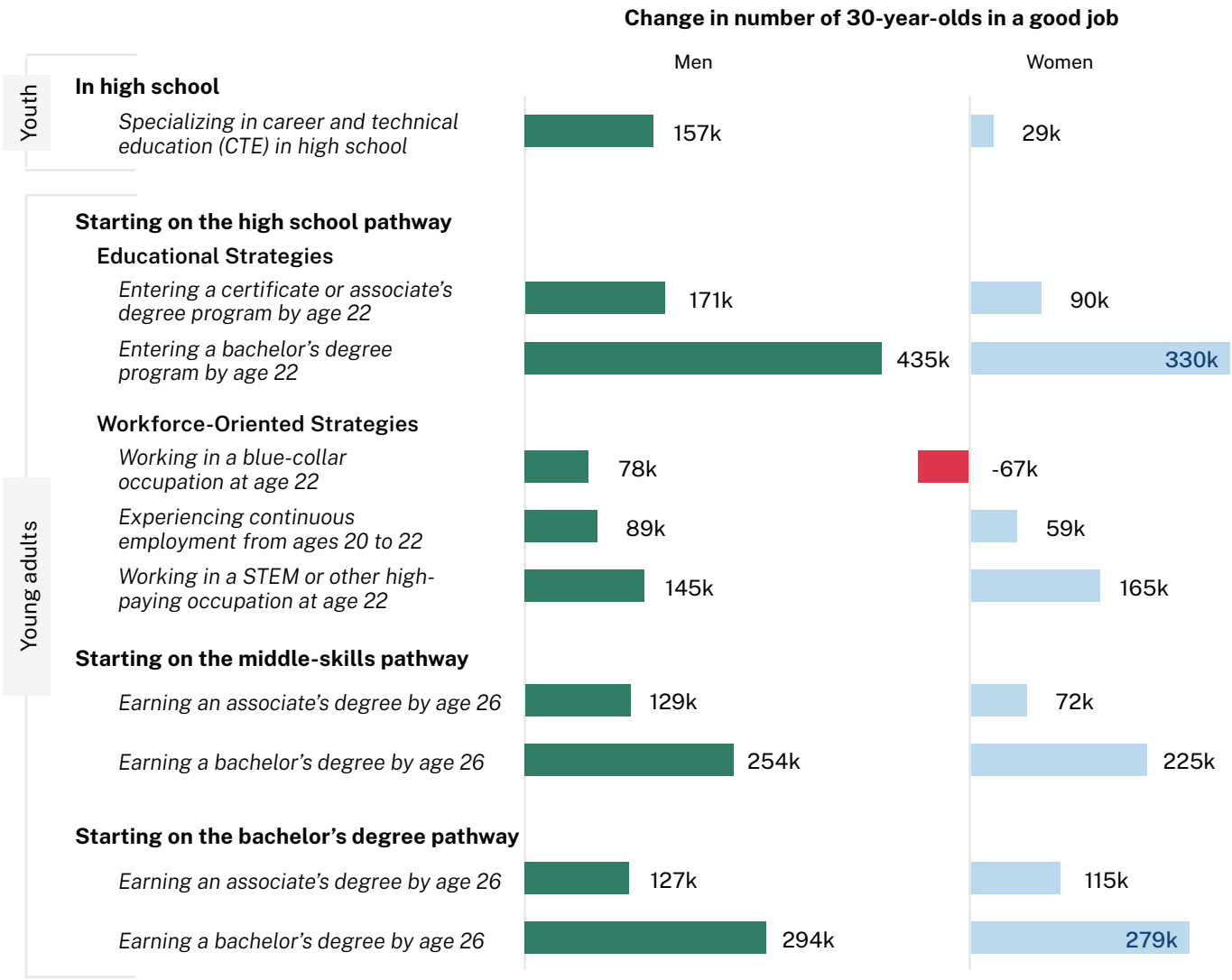
Since the top 10 pathway changes tend to advantage men over women in terms of both effectiveness and eligibility, efforts to increase the number of young adults in good jobs without attention to these gender disparities would likely increase the number of young men in good jobs more than the number of women across nine of the 10 pathway changes (**Figure 14**). The only pathway change in which the number of additional women in good jobs is expected to exceed the number of additional men is the shift to a STEM or other high-paying occupation at age 22.

The gender gap in good jobs at age 30 is already large and favors men over women: 52 percent of young men are in a good job at age 30, compared with 37 percent of young women. However, seven of the 10 pathway changes are expected to widen the gender gap if brought to scale because most of the pathway changes have the potential to increase the number of young men in good jobs more than the number of women (**Figure 15**). We estimate that the shift to blue-collar work at age 22 would widen the gender gap the most, from 14.4 percentage points to 15.7 percentage points, or nearly 9 percent, stemming from the fact that more women are eligible for this pathway change than men, yet only men are likely to benefit on average from working in a blue-collar occupation at age 22 instead of a job with lower median earnings.

Two other pathway changes — earning a bachelor's degree or an associate's degree by age 26 among individuals already on the bachelor's degree pathway — are not expected to change the gender gap in good jobs at all unless women are prioritized for intervention over men. In fact, shifting into a STEM or other high-paying occupation at age 22 is the only pathway change expected to narrow the gender gap in the absence of a targeted recruitment strategy. However, even this pathway change is only expected to narrow the gender gap by 0.2 percentage points, or 1.4 percent. In other words, without affirmative action in recruitment, in most cases the gender gap in good jobs would grow.

Just as our findings in the previous section illustrate that reducing racial/ethnic gaps in good jobs will be difficult, these results highlight similar challenges related to addressing gender disparities. Men are more than 14 percentage points more likely than women to work in a good job at age 30, despite the facts that women outnumber men in college and the college-focused pathway changes are among the most effective of all the pathway changes we examined. Equalizing access to good jobs between men and women would therefore require interventions that go far beyond removing barriers to knowledge and skill acquisition.

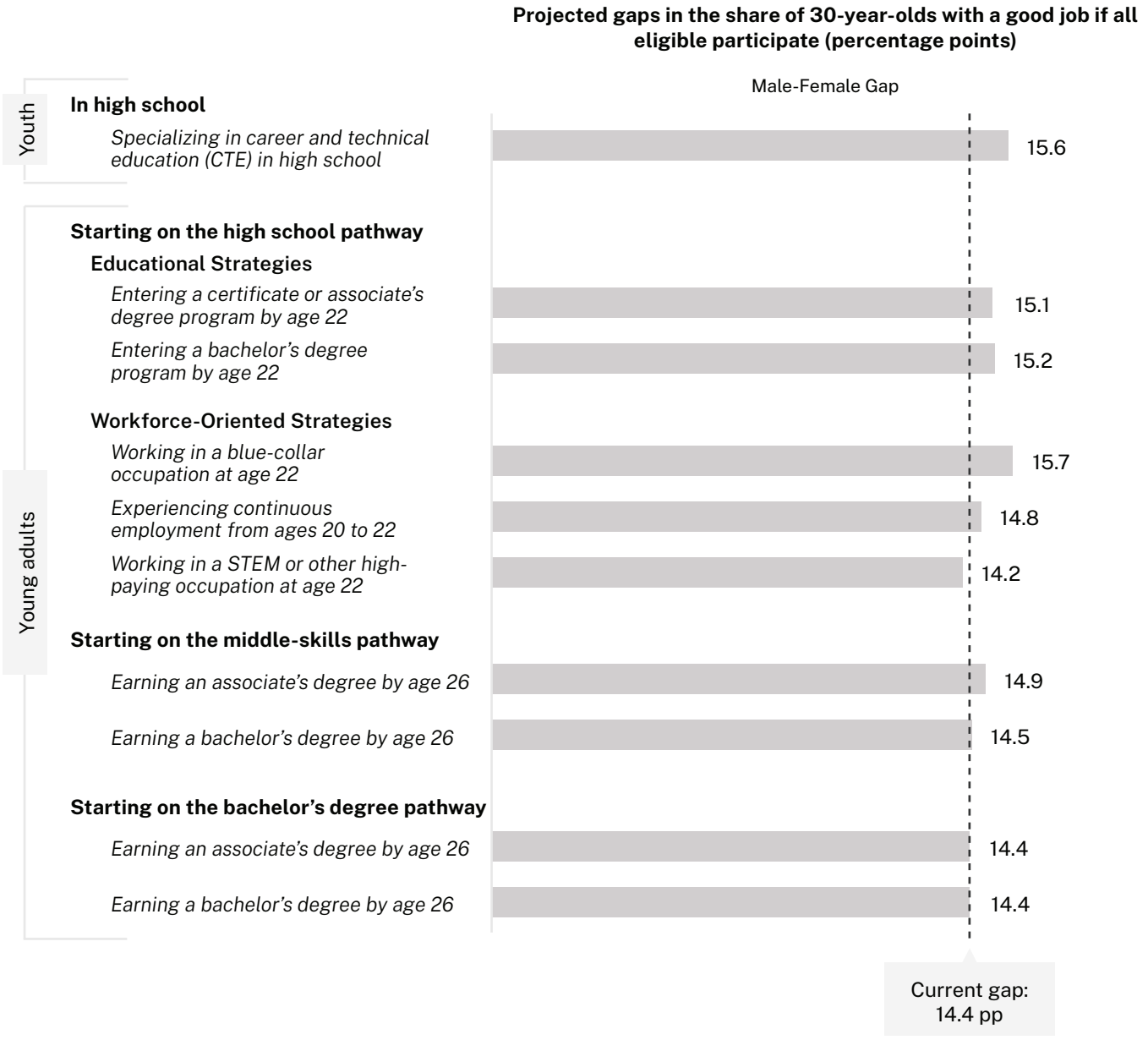
FIGURE 14. Nine of the top 10 pathway changes have the potential to put more men in good jobs than women, and one could reduce the number of women in good jobs.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. "k" indicates thousands. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

FIGURE 15. The gender gap in good jobs is expected to widen across most pathway changes when brought to scale unless women are prioritized for intervention.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living; "pp" indicates percentage points. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

In fact, closing the gender gap in good jobs would require a comprehensive set of interventions from childhood through young adulthood that include effectively combatting gender discrimination in the workplace. Federal and local governments can take meaningful action, but employers must also advance gender justice to close the gender gap in good jobs. Elements of a successful strategy that extend beyond expanding access to human capital investment opportunities are likely to include

- stronger enforcement of equal pay protections;
- increased transparency about employer compensation;
- banning the use of prior salary history in hiring processes;
- promoting more women into management and leadership roles;
- offering flexible schedules to accommodate the lives of working parents and caregivers; and
- creating a stronger safety net with supports — such as universal child care and comprehensive paid family and medical leave — that enable women to remain at work when family and child care responsibilities arise.[159]

A holistic policy strategy must also tackle the obstacles young women face in childhood and adolescence that dissuade them from pursuing careers in lucrative, male-dominated fields like computer science, economics, and engineering.[160] In the absence of a comprehensive strategy that fundamentally changes the rules of work, efforts to expand access to education, training, and job opportunities are more likely to widen than narrow workplace inequality between men and women.

159 Frye, "10 Essential Actions to Promote Equal Pay," 2021; Goldin, *Career and Family*, 2021; Miller and Vagins, *The Simple Truth about the Gender Pay Gap*, 2018.

160 Hill et al., *Why So Few?*, 2010; Wang and Degol, "Gender Gap in Science, Technology, Engineering, and Mathematics (STEM)," 2017.

PART 4.

THE CLASS-BASED GAP IN GOOD JOBS

Access to good jobs in the United States varies widely by socioeconomic status (SES), even more than by gender and race/ethnicity. Currently, 55 percent of young adults from high-SES backgrounds work in a good job at age 30, compared to 34 percent of young adults from low-SES backgrounds.[161] This reflects the fact that higher levels of educational attainment increase the likelihood of having a good job considerably, and gaps in educational attainment are much bigger by SES than by race/ethnicity or gender. In this section, we explore how the 10 pathway changes are expected to influence the trajectories of young adults from high-SES versus low-SES backgrounds, and how they might alter the class divide in access to good jobs.

Across six of the 10 pathway changes, we expect larger effects for low-SES than high-SES individuals. This is especially true with respect to the college degree attainment pathway changes we examined. For example, we estimate that completing a bachelor's degree by age 26 among individuals who pursue a middle-skills credential by age 22 is more than twice as effective at improving access to good jobs for young adults from low-SES backgrounds as for young adults from high-SES backgrounds.

More young adults from low-SES backgrounds are also eligible for intervention across eight of the 10 pathway changes. Because low-SES individuals are much less likely than their high-SES peers to enroll in college by age 22, the pathway changes where eligibility most favors young adults from low-SES backgrounds focus on individuals who enter the workforce immediately after high school. The only pathway changes in which more high-SES individuals are eligible than low-SES individuals are the two that increase bachelor's and associate's degree attainment among individuals already pursuing a bachelor's degree by age 22.

161 To examine how the 10 pathway changes are expected to influence low-SES versus high-SES individuals, we constructed a continuous composite index of socioeconomic status for each person using mother's level of educational attainment, father's level of educational attainment, household income per capita, and household net worth per capita in 1997. High-SES individuals are defined as having a composite index value above the median of the distribution across individuals in the analytic sample, and low-SES individuals are defined as have a composite index value below the median.

While few of the pathway changes are expected to close racial/ethnic and gender gaps in good jobs without affirmative action in the form of targeted intervention strategies, all 10 pathway changes would be likely to narrow the class-based gap in good jobs, even without targeted intervention. This reflects the fact that youth and young adults from low-SES backgrounds tend to benefit from the combination of higher effectiveness and higher eligibility across most pathway changes compared to youth and young adults from high-SES backgrounds. Nevertheless, narrowing the class-based gap in good jobs by more than one or two percentage points would require the same type of strategy that is needed to narrow the gaps by race/ethnicity and gender: a series of multipronged interventions, building from childhood through young adulthood, that can dismantle the many barriers to economic prosperity that youth and young adults from low-SES backgrounds experience.

The pathway changes that increase college degree attainment are much more effective for young adults from low-SES than high-SES backgrounds.

Two key factors that influence the likelihood of having a good job at age 30 and the likelihood of experiencing economic mobility are educational attainment and social capital.[162,163] Social capital in particular can play an especially important role for young adults navigating the labor market without a college degree, reducing the barriers to economic opportunity often linked to having no more than a high school diploma or some college but no degree.

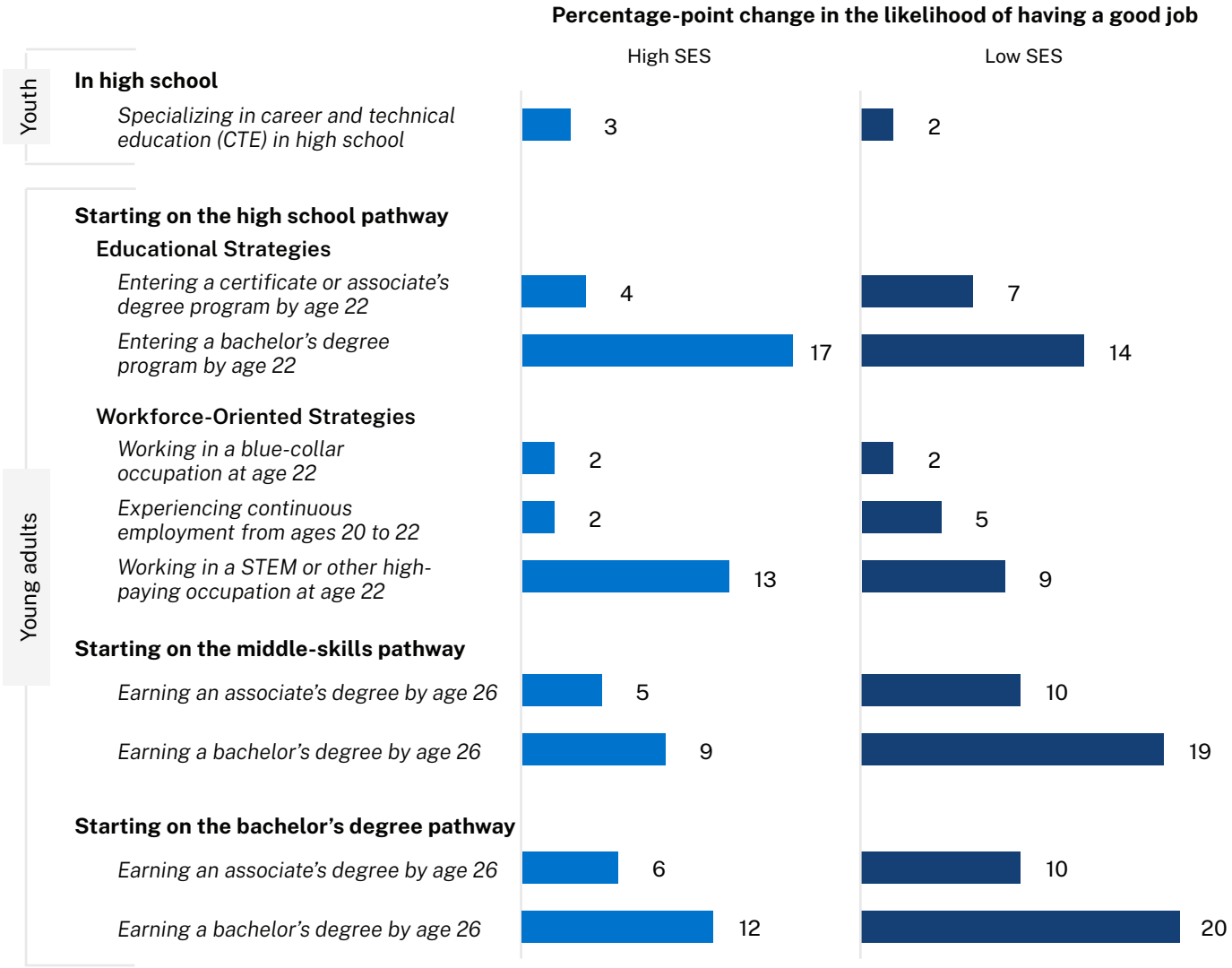
Youth and young adults from high-SES backgrounds are more likely than individuals from low-SES backgrounds to have higher levels of educational attainment and more social capital.[164] Young adults from high-SES backgrounds may be able to use this social capital to circumvent barriers to opportunity, including the barriers that typically face workers with lower levels of educational attainment. As a result, postsecondary attainment may play a bigger role in access to opportunity for those from low-SES backgrounds than for their high-SES peers. Indeed, the likelihood of having a good job increases with college degree attainment much more for low-SES than high-SES individuals (**Figure 16**). We estimate that the effects of completing a bachelor's degree or an associate's degree by age 26 for individuals who pursue a middle-skills credential or bachelor's degree by age 22 are between 1.7 and 2.1 times larger for low-SES young adults than high-SES young adults. Most other pathway changes are also expected to be more effective for young adults from low-SES backgrounds, but to a lesser extent than the college degree attainment pathway changes.

162 We define social capital as the combination of networks and relationships that provide access to opportunities and resources.

163 Abbott and Reilly, *The Role of Social Capital in Supporting Economic Mobility*, 2019; Chetty et al., "Social Capital I," 2022; Greenstone et al., *Thirteen Economic Facts about Social Mobility and the Role of Education*, 2013.

164 McDonald, "Network Effects Across the Earnings Distribution," 2015.

FIGURE 16. For low-SES young adults, earning a bachelor's degree by age 26 is more effective than all 10 pathway changes for high-SES individuals.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

Low-SES young adults

The most effective pathway change for young adults from low-SES backgrounds is increasing bachelor's degree completion by age 26 among individuals who enroll in a bachelor's degree program by age 22. Only 41 percent of low-SES young adults enrolled in a bachelor's degree program by age 22 complete a bachelor's degree by age 26, compared to 69 percent of high-SES young adults. We estimate that completing a bachelor's degree by age 26 increases the likelihood of having a good job at age 30 by 20 percentage points, from 33 percent to 53 percent, for low-SES backgrounds already pursuing a bachelor's degree. The predicted effect of completing a bachelor's degree is similar for low-SES individuals who start out on the middle-skills pathway, with a projected 19-percentage-point increase (from 32 percent to 51 percent) in the likelihood of having a good job at age 30. These two pathway changes far outstrip the predicted effects of all other pathway changes for youth from low-SES backgrounds.

As is the case for women, completing a bachelor's degree is especially effective for low-SES young adults because low-SES individuals without a bachelor's degree have very few avenues to a good job in early adulthood. Only 25 percent of low-SES young adults without a bachelor's degree by age 26 have a good job at age 30, compared to 37 percent of high-SES young adults without a bachelor's degree. In contrast, 66 percent of low-SES young adults and 68 percent of high-SES young adults with a bachelor's degree by age 26 have a good job at age 30. Thus, for low-SES young adults, completing a bachelor's degree opens the doors to good jobs almost as wide as for high-SES young adults.

None of the pathway changes are predicted to reduce the likelihood of having a good job at age 30 for low-SES young adults. However, the two pathway changes likely to be least effective for low-SES young adults — specializing in CTE in high school and shifting from a low-paying occupation to a blue-collar occupation at age 22 — are expected to increase the likelihood of having a good job by only 2 percentage points. Moving from typically low-paying occupations to STEM or other high-paying occupations at age 22 is also expected to be less effective for low-SES than for high-SES young adults, on account of the fact that low-SES individuals are less likely than high-SES individuals to persist in STEM or other high-paying occupations between age 22 and age 26 (41 percent versus 60 percent). Once again, this difference in persistence may, in part, reflect low-SES individuals' limited access to high-status job contacts and other connections with high-SES peers that are tied to career advancement opportunities.[165] In other words, moving into STEM or other high-paying occupations is likely to increase the likelihood of working in a good job at age 30 for low-SES young adults, but to a lesser extent than for high-SES young adults, perhaps because social capital, discrimination,

165 Chetty et al., "Social Capital I," 2022; Lin, "Social Networks and Status Attainment," 1999; Marsden and Hurlbert, "Social Resources and Mobility Outcomes," 1988; McDonald, "What's in the 'Old Boys' Network?," 2011.

and other factors moderate how job experience shapes the desire to remain in a field and the opportunities for career advancement among those who persist.

High-SES young adults

The two most effective pathway changes for young adults from high-SES backgrounds are entering the bachelor's degree pathway by age 22 and switching from a job that typically pays low wages to a STEM or other high-paying occupation at age 22. Enrolling in a bachelor's degree program is associated with a 17-percentage-point increase (from 37 percent to 54 percent) in the likelihood of having a good job at age 30 for academically prepared high-SES young adults. Likewise, the model predicts that transitioning into a STEM or other high-paying occupation at age 22 is associated with a 13-percentage-point increase (from 19 percent to 32 percent) in the likelihood of having a good job for high-SES young adults who enter the workforce with no more than a high school diploma.

Interestingly, for high-SES individuals, enrolling in a bachelor's degree program increases the likelihood of having a good job in early adulthood more than completing a bachelor's degree for individuals already on the bachelor's degree pathway. This is for two reasons. First, because the steps to enrolling in college today are numerous and complicated, those who currently pursue a bachelor's degree are more likely to have the resources to successfully navigate the admissions process. Those same resources may also equip high-SES students with support outside of college to secure a good job. As a result, almost half (46 percent) of high-SES young adults who enter the bachelor's degree pathway but do not earn a bachelor's degree by age 26 have a good job at age 30, as compared to one-third of high-SES young adults who do not enroll in a bachelor's degree program by age 22. Second, the graduation rate for high-SES young adults who enroll in four-year colleges and universities is high, at 69 percent, and so the likelihood is high that academically prepared young adults from high-SES backgrounds who do not currently pursue bachelor's degrees would graduate if they enrolled.

The two least-effective pathway changes for high-SES young adults — experiencing stable and continuous employment from ages 20 to 22 and shifting from a low-paying occupation to a blue-collar occupation at age 22 — increase their likelihood of working in a good job by 2 percentage points. The predicted effectiveness of many other pathway changes is lower for high-SES than for low-SES individuals. Among low-SES individuals, earning an associate's degree by age 26 is associated with a 10-percentage-point increase in the likelihood of having a good job at age 30, compared to a 5- or 6-percentage-point increase among high-SES individuals. As discussed above, many of the pathway changes are likely less effective for young adults from high-SES backgrounds because the advantages they experience outside of work and school make education, training, and workforce preparation less consequential to their likelihood of having a good job in early adulthood.

More low-SES than high-SES young adults are eligible for eight of the top 10 pathway changes.

Low-SES and high-SES young adults often take very different pathways after high school. Among high-SES young adults, 24 percent do not pursue any type of college certificate or degree, 15 percent pursue a middle-skills credential, and 61 percent pursue a bachelor's degree by age 22. The pattern is the opposite for low-SES young adults: 60 percent do not enroll in a postsecondary credential program, 16 percent pursue a middle-skills credential, and 24 percent pursue a bachelor's degree by age 22. More young adults from low-SES backgrounds are eligible for most of the pathway changes we examined due to these stark differences in trajectory after high school (**Figure 17**).

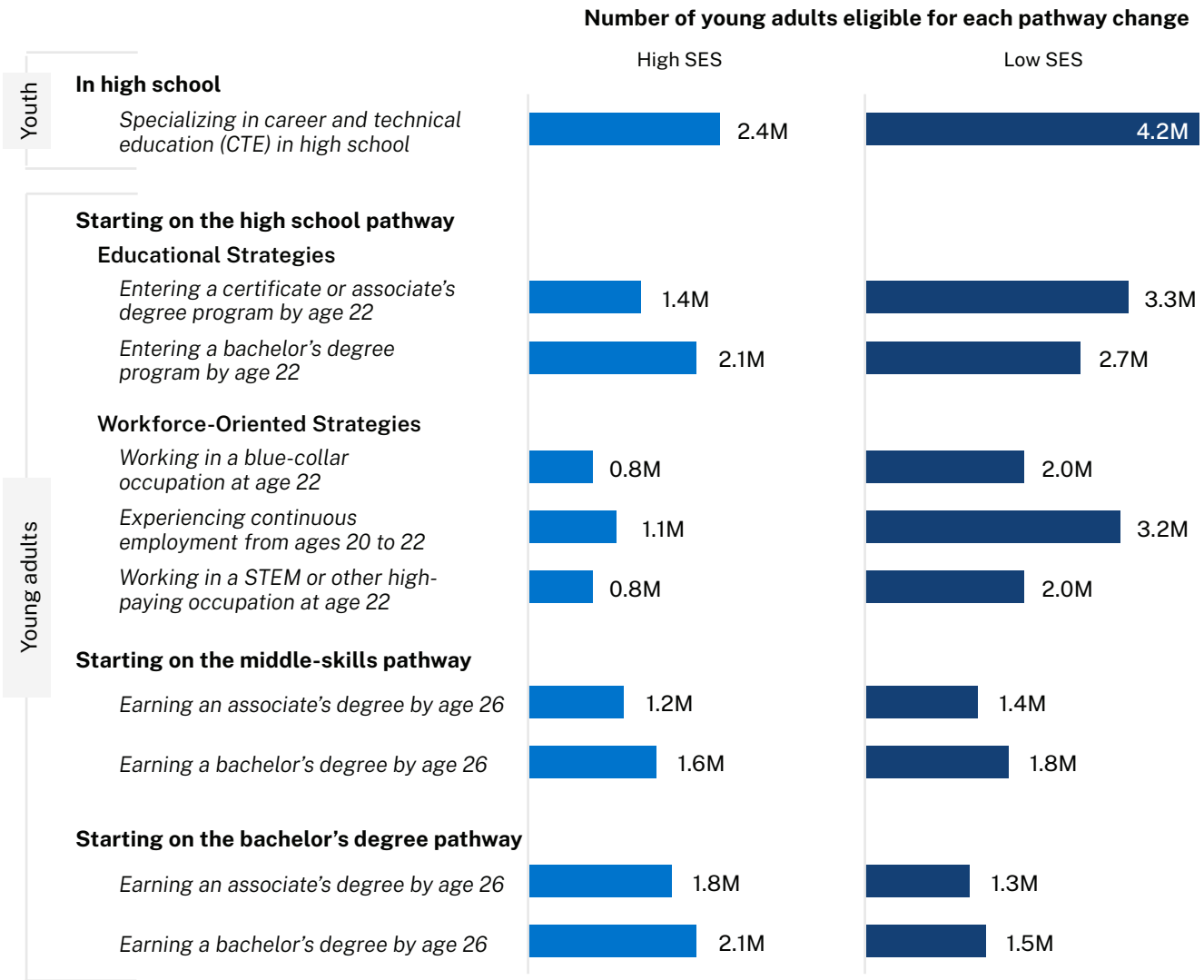
Low-SES young adults

Young adults from low-SES backgrounds are much more likely to be eligible for three of the pathway changes than all others. Those pathway changes — entering a middle-skills program by age 22, maintaining stable and continuous employment from ages 20 to 22, and specializing in CTE in high school — focus on young adults who either enter the workforce immediately after high school or, in the case of specializing in CTE in high school, are not expected to enroll in a bachelor's degree program by age 22. In the current cohort, more than 3 million low-SES young adults are eligible for each of those pathway changes because most individuals from low-SES backgrounds do not currently pursue a middle-skills credential or a bachelor's degree after high school.

Class-based differences in eligibility are also largest across these three pathway changes. The pathway change with the largest difference in eligibility between low-SES and high-SES young adults is maintaining stable and continuous employment from ages 20 to 22. We estimate that almost half (49 percent) of all low-SES young adults ages 20 to 22 could benefit from stable and continuous employment, versus only 17 percent of high-SES young adults. As a result, more than two million more young adults from low-SES than from high-SES backgrounds are eligible for this pathway change in the current cohort. This difference reflects both the fact that more low-SES youth enter the workforce immediately after high school than high-SES youth, and the fact that among individuals who head straight to work, low-SES young adults are more likely than high-SES young adults to experience gaps in employment.

We also estimate that fewer than half of academically prepared young adults from low-SES backgrounds currently enter a bachelor's degree program by age 22. Thus, the pool of low-SES individuals eligible to enroll in a bachelor's degree program is large, at 2.7 million in the current cohort, and represents one-quarter of all low-SES young adults ages 18 to 22. Pursuing a bachelor's

FIGURE 17. In the current cohort, eligibility among low-SES youth and young adults exceeds eligibility among high-SES youth and young adults by 1.8 million or more across three pathway changes.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: "M" indicates millions. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

degree is therefore an especially promising pathway change for increasing low-SES young adults' access to good jobs because so many individuals stand to benefit from this highly effective change in trajectory.

High-SES young adults

Among the pathway changes, the one for which young people from high-SES backgrounds are most likely to be eligible is specializing in CTE in high school. This pathway change could affect a large number of high-SES individuals (2.4 million in the current cohort) for two reasons. First, high school CTE specialization is rare. Second, almost 40 percent of high school graduates from high-SES backgrounds do not enter a bachelor's degree program by age 22.[166] Following CTE specialization, the second largest group of high-SES young adults (2.1 million in the current cohort) consists of those who are academically prepared to enter a bachelor's degree program by age 22, but do not currently enroll in such a program. Another 2.1 million who do enroll in a bachelor's degree program could benefit from completing a bachelor's degree by age 26. Even though completion is relatively high among high-SES students who enroll in a bachelor's degree program (69 percent), the number of individuals eligible for this pathway change is among the largest for high-SES young adults because most high-SES individuals already enter a bachelor's degree program after high school. The overrepresentation of students from high-SES backgrounds on four-year campuses also explains why more high-SES than low-SES young adults are eligible for the two pathway changes that respectively increase associate's and bachelor's degree attainment among individuals enrolled in bachelor's degree programs.

The fewest high-SES young adults are eligible for the pathway changes that focus on young adults who transition into the workforce after high school. For example, in the current cohort, we estimate that only 1.4 million high-SES young adults are eligible to enter a middle-skills program by age 22, compared to 3.3 million low-SES young adults. Likewise, only 800,000 high-SES young adults are eligible for the pathway changes that shift young adults with no more than a high school education out of low-paying occupations, compared to 2 million low-SES young adults. These numbers reflect the fact that fewer than one-quarter of high-SES young adults do not pursue a college certificate or degree by age 22.

166 Eligibility for the CTE high school specialization pathway change applies to youth who are expected to graduate from high school but not expected to enroll in a bachelor's degree program by age 22.

All 10 pathway changes are expected to narrow the class-based gap in good jobs, but only by a small amount.

Because most of the pathway changes are expected to be more effective for low-SES than high-SES young adults and more low-SES young adults also tend to be eligible for each pathway change, all 10 pathway changes are predicted to put more low-SES young adults in good jobs than high-SES young adults (**Figure 18**). Increasing enrollment in bachelor's degree programs by age 22 offers the greatest potential for increasing the number of individuals in good jobs for both low-SES and high-SES young adults (392,000 and 373,000 in the current cohort, respectively). Likewise, for both low-SES and high-SES young adults, shifting from employment in a typically low-paying occupation to a blue-collar occupation at age 22 offers the least potential (moving 34,000 and 11,000 in the current cohort to a good job, respectively).

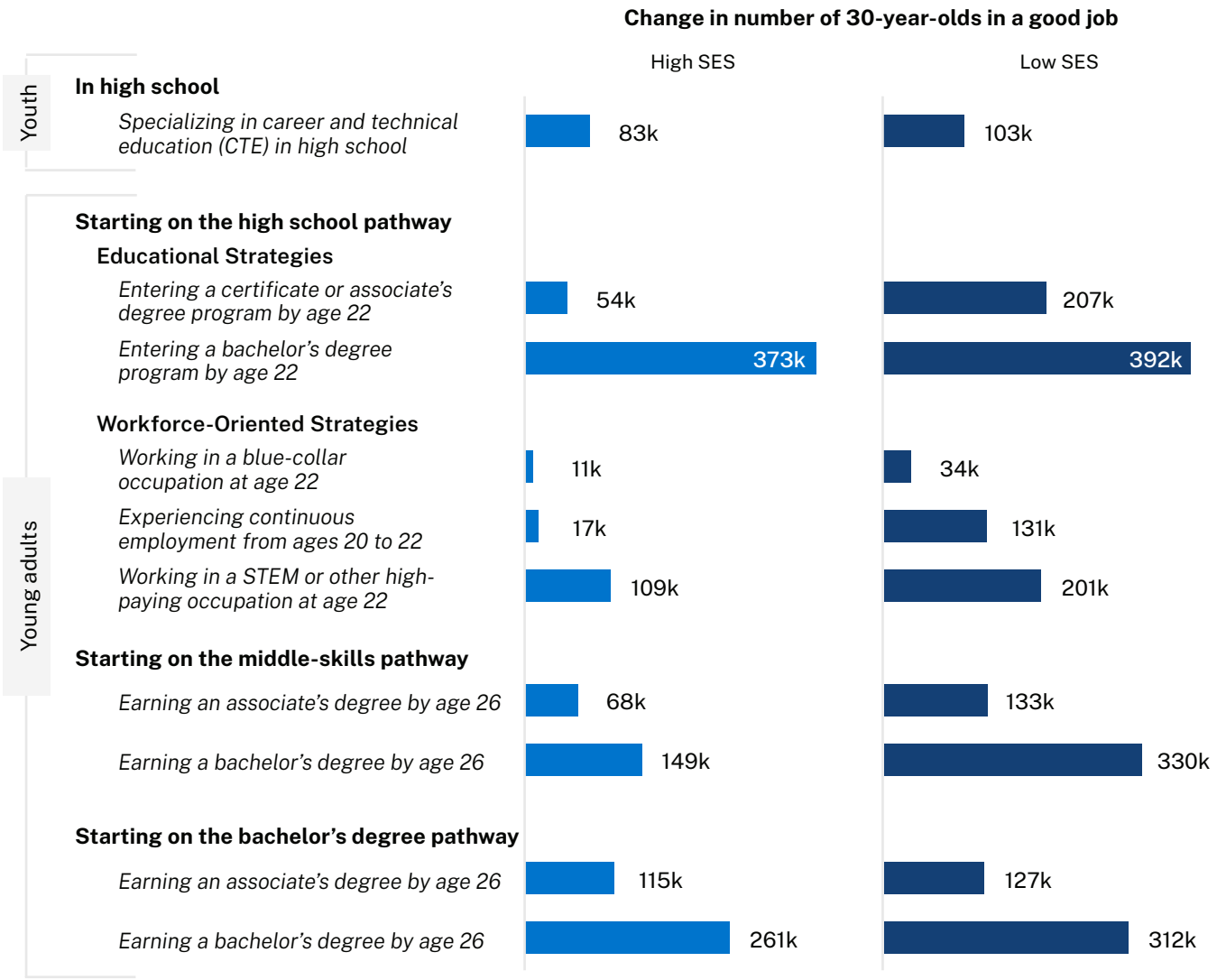
The class-based gap in good jobs is even larger than the Black/African American-white, Hispanic/Latino-white, and male-female gaps. However, unlike racial/ethnic and gender gaps in good jobs, the class-based gap in good jobs is expected to narrow slightly across all 10 pathway changes because more low-SES young adults are predicted to be placed in good jobs than high-SES young adults (**Figure 19**). This is true even if the goal is to increase the maximum number of individuals working in a good job at age 30, rather than explicitly to address class-based gaps in labor-market outcomes.

Nevertheless, the class-based gap in good jobs is expected to narrow only slightly without the use of a class-based affirmative action strategy prioritizing low-SES individuals over high-SES individuals for intervention. We estimate that the pathway change with the greatest potential for reducing the gap in good jobs — maintaining stable and continuous employment from ages 20 to 22 — would narrow the gap by only 2 percentage points, or 9.5 percent, in the absence of class-based affirmative action that prioritizes young adults from low-income families for intervention. Seven of the 10 pathway changes are expected to shrink the gap by less than one percentage point if low-SES individuals are not prioritized for intervention over high-SES individuals.

These results paint a mixed portrait of the possibilities for narrowing gaps in labor-market outcomes by social class. On one hand, narrowing the class-based gap in good jobs may well be easier than narrowing racial/ethnic and gender gaps, given that the class-based gap is expected to narrow across all 10 pathway changes even if low-SES and high-SES individuals receive equal priority for intervention. Indeed, the pathway changes we examined are likely more effective at addressing the class-based gap in good jobs than gaps by race/ethnicity and gender because class-based discrimination in the labor market is less pervasive in the United States than gender and racial/ethnic discrimination.[167]

167 Lippens et al., "The State of Hiring Discrimination," 2021; Thomas, "The Labor Market Value of Taste," 2018.

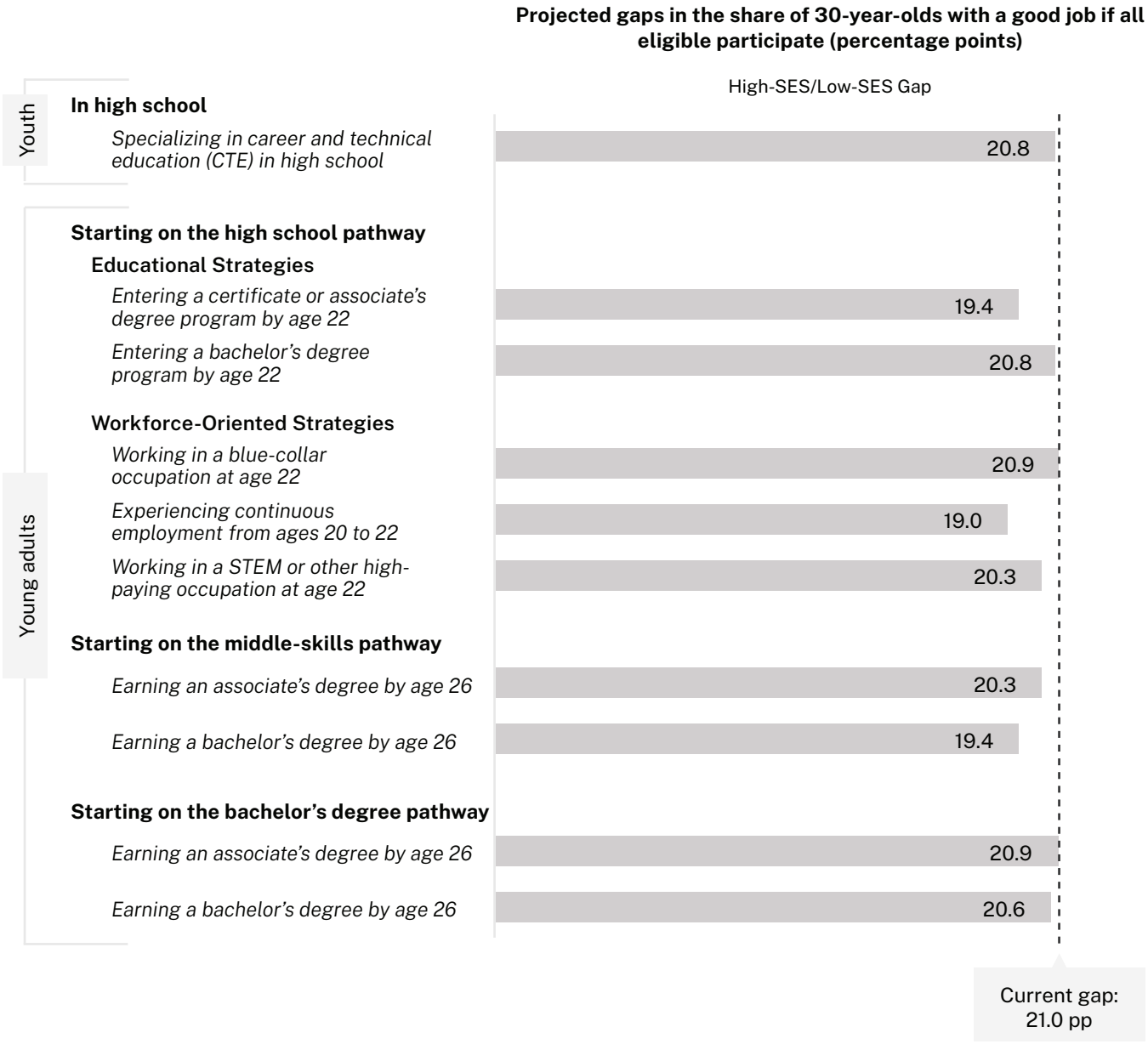
FIGURE 18. All 10 pathway changes are predicted to put more low-SES youth and young adults in good jobs than high-SES youth and young adults.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. "k" indicates thousands. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

FIGURE 19. All 10 pathway changes are predicted to slightly narrow the gap in good jobs between high-SES and low-SES young adults.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living; "pp" indicates percentage points. Blue-collar occupations include jobs in farming, fishing, and forestry; construction, extraction, maintenance, and repair; and production, transportation, and material moving. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare.

On the other hand, narrowing the class-based gap in good jobs would require considerable planning, investment, and coordination. As previously discussed with respect to achieving racial/ethnic and gender justice in access to good jobs, no single pathway change offers a silver bullet to placing low-SES and high-SES young adults on equal footing in the labor market. Thus, multiple interventions that complement and build upon one another all along the journey to adulthood would be needed to close the class-based gap in good jobs by more than a couple percentage points.

The importance of social capital to labor-market success poses another formidable challenge to narrowing the class-based gap in good jobs. Indeed, recent evidence shows that one particular type of social capital — the share of low-SES individuals' social connections who are from high-SES backgrounds — is a stronger predictor of differences in upward income mobility across US communities than factors like average test scores in elementary school and the share of residents with a college degree.[168] Yet because (1) social capital is often built through informal networks in one's local community, (2) residential segregation by race and income is widespread and deeply rooted,[169] and (3) even in integrated settings, individuals often gravitate toward others from backgrounds similar to their own,[170] access to the types of connections that can open doors to economic prosperity is highly unequal.[171] Furthermore, over the past several decades, communities in the United States have been growing more segregated by income and race, not less.[172]

The class divide in good jobs is therefore likely to persist to a meaningful extent unless a policy strategy includes interventions that can integrate our neighborhoods and other social spaces where many job connections are made and dismantle the barriers to connecting across racial and class lines in settings that have been diversified. Such a strategy might entail

- building mentorship programs that connect young adults with professionals outside of their existing social networks;
- investing in housing development to increase the supply of homes that meet the budgets and housing needs of today's young adults;[173]

168 Chetty et al., "Social Capital I," 2022.

169 Fry and Taylor, *The Rise of Residential Segregation by Income,* 2012; Menendian et al., *Twenty-First Century Racial Residential Segregation in the United States*, 2021.

170 Chetty et al., "Social Capital II," 2022.

171 Lin, "Social Networks and Status Attainment," 1999; Marsden and Hurlbert, "Social Resources and Mobility Outcomes," 1988; McDonald, "What's in the 'Old Boys' Network?," 2011.

172 Fry and Taylor, *The Rise of Residential Segregation by Income,* 2012; Menendian et al., *Twenty-First Century Racial Residential Segregation in the United States*, 2021.

173 Loh and Farrar, "Modernizing Family," 2020.

- changing restrictive zoning laws, especially in predominantly white and higher-income suburban communities, to allow for more mixed-income and multi-family housing units;[174]
- reviving K–12 school desegregation efforts within and across district lines;[175]
- expanding neighborhood mobility programs, through which vouchers and other social supports provide low-income families with the means to move into high-opportunity neighborhoods;[176] and
- designing physical and social spaces to combat "friending bias" and support cross-class relationship-building — for example, by creating economically integrated peer groups within schools and building public spaces that encourage interaction across SES groups.[177]

Efforts like these may help reduce both class and racial segregation, thus improving routes to economic opportunity for young adults from less-privileged backgrounds.

174 Bratt and Vladeck, "Addressing Restrictive Zoning for Affordable Housing," 2014.

175 Billings et al., "School Segregation, Educational Attainment, and Crime," 2014; Gamoran and An, "Effects of School Segregation and School Resources in a Changing Policy Context," 2016.

176 Galvez, "Neighborhood Mobility Programs as a Remedy to the Legacy of Racial and Economic Segregation," n.d.

177 Chetty et al., "Social Capital II," 2022.

PART 5.

CONCLUSION: COMBINING PATHWAY CHANGES TO AMPLIFY IMPACT

No single intervention can, on its own, address the many barriers to economic opportunity that arise on the journey from youth to career. Every fork in the road leads to a pathway with additional forks down the line, and each fork represents a chance for policy and practice interventions to improve young people's outcomes. The most successful interventions connect these multiple opportunities to improve the lives of young adults, providing support as they navigate the complexities and uncertainties of life.

In this section, we conclude the report by discussing three combinations of pathway changes and their effectiveness in increasing the likelihood of having a good job at age 30. This analysis is not meant to capture every possible combination of pathway changes in the education, training, and workforce domains, nor does it account for potential interventions in other domains, such as healthcare and criminal justice. Nevertheless, the linked pathway changes we examine demonstrate the promise of a coordinated, comprehensive, all-one-system strategy for increasing the number of young adults in good jobs.

Our analysis also shows that even a comprehensive strategy has its limits. While the combinations of pathway changes we examine show the potential to help more individuals find work in good jobs, they are also likely to widen the gender and racial/ethnic gaps in good jobs if applied without accounting for the relative advantages and disadvantages of different groups of young adults, just like the standalone pathway changes. This is largely because the same number of young adults are eligible for both combined and standalone pathway changes — and, as shown previously, eligibility tends to favor men over women and white young adults over Black/African American and Hispanic/Latino young adults. The class-based gap in good jobs is an exception, however. Because more young adults from low-SES than high-SES backgrounds are eligible for most pathway changes, the gap is expected to shrink more from combined than standalone pathway changes, even without affirmatively targeted interventions.

A linked policy effort therefore is not sufficient to narrow gaps in economic opportunity by race/ethnicity or gender, although it may narrow gaps by class. The only way to substantially narrow racial/ethnic and gender gaps is to simultaneously (1) expand the set of interventions to also address barriers to economic opportunity that occur beyond the education, training, and workforce domains (for example, barriers that result from healthcare insecurity and incarceration); (2) directly address bias and discrimination in the labor market; and (3) implement affirmative action by prioritizing women and young adults from underrepresented racial/ethnic groups for intervention.

Expanding access to bachelor's degree programs while increasing bachelor's degree completion could be 1.5 times as effective as expanding access alone.

Millions of young people are prepared to enroll in a bachelor's degree program after high school but opt not to. Putting more of these young people on the pathway to a bachelor's degree would greatly improve their chances of working in a good job at age 30, from 33 percent to 49 percent. But placing young people on a four-year degree pathway is not a panacea in and of itself; our model suggests that just over half of these young adults would still not have a good job at age 30. This is because many young adults — 39 of every 100 on the bachelor's degree pathway — will not complete a bachelor's degree by age 26. Ensuring that members of this group complete their degrees would further improve the economic outlook for these individuals. A combined pathway change that both expands access to the bachelor's degree pathway by age 22 and increases bachelor's degree completion by age 26 is therefore predicted to substantially improve access to good jobs, boosting the likelihood of having a good job by 25 percentage points (from 33 percent to 58 percent) (**Figure 20**).

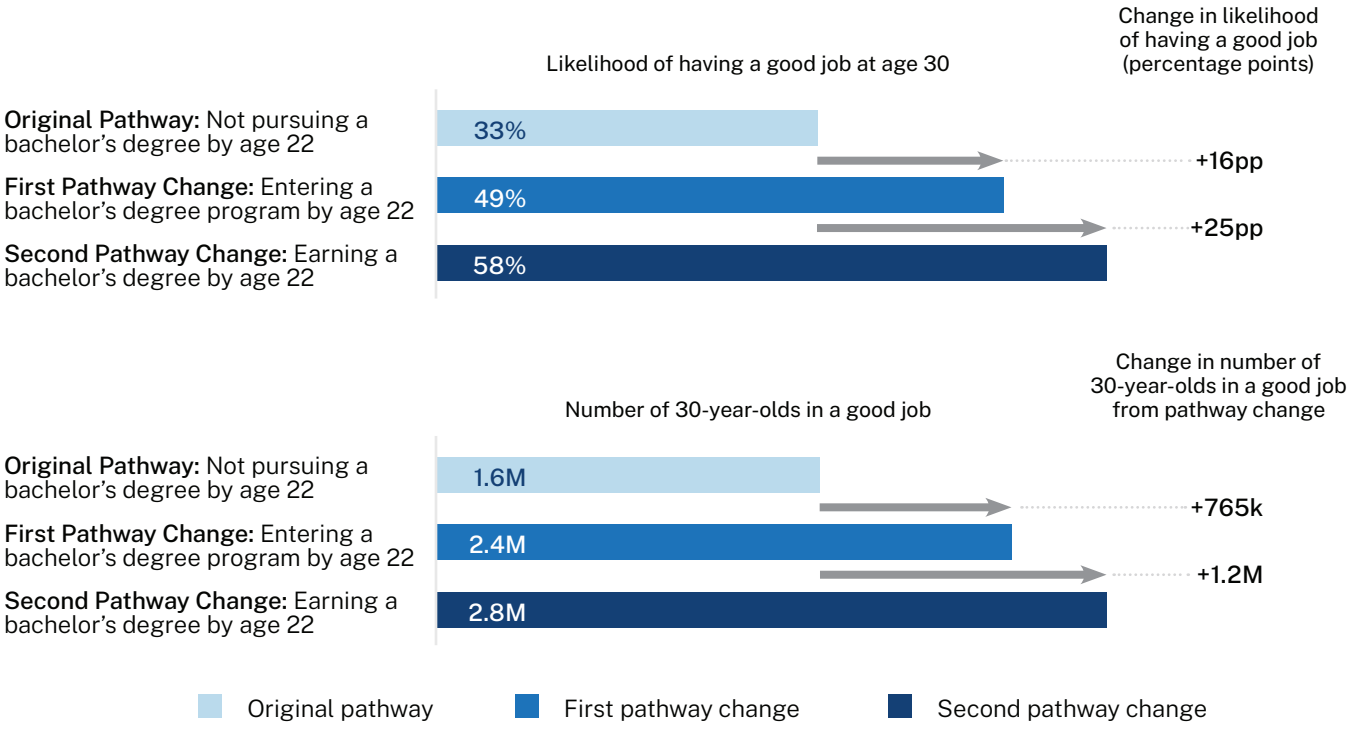
On a societal level, the number of individuals eligible for the standalone or combined pathway change is the same (4.8 million in the current cohort). The combined pathway change, in which academically prepared young people both start out on the bachelor's pathway and complete a degree, is predicted to be more than 1.5 times as effective as the standalone pathway change. Accordingly, the potential number of additional 30-year-olds in good jobs increases from 765,000 individuals in this cohort (under the standalone pathway change of putting more young adults on the bachelor's degree pathway) to 1.2 million (when new entrants on the pathway also earn a bachelor's degree).[178]

The societal impact could be even larger if bachelor's degree completion also increased for young adults who already pursue a bachelor's degree. For example, in addition to the 4.8 million individuals eligible to enter the bachelor's degree pathway by age 22 who are not currently expected to do so,

178 The potential number of additional young adults in a good job may not equal the product of the number of eligible young adults and the change in likelihood of having a good job. Discrepancies are due to rounding.

another 3.6 million already enter the pathway but are not expected to earn a bachelor's degree by age 26. A pathway change that puts more individuals on the pathway and ensures graduation among all who enter — both new and existing entrants — has the potential to help 1.8 million additional young adults in the current cohort secure good jobs in early adulthood.[179]

FIGURE 20. Putting young adults on the pathway to a bachelor's degree and ensuring that they graduate could be more than 1.5 times as effective as increasing the number entering the pathway alone.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. "k" indicates thousands; "M" indicates millions; "pp" indicates percentage points. Numbers may not sum due to rounding.

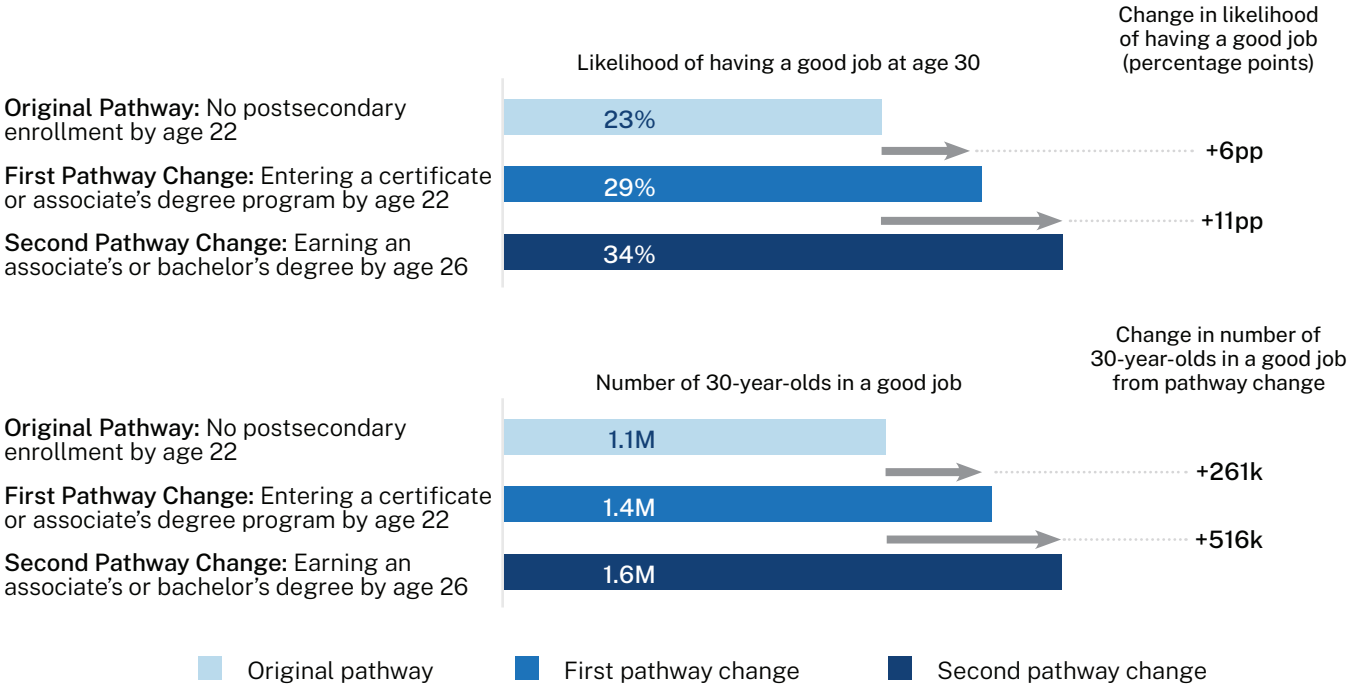
179 We estimate that 573,000 additional young adults who enter the bachelor's degree pathway by age 22 but do not complete a bachelor's degree by age 26 could have a good job at age 30 if they were to complete a bachelor's degree. Adding this number to the projected number of potential people in good jobs (1.2 million) when entrance to the bachelor's degree pathway is expanded and new entrants graduate yields the total potential for 1.8 million additional young adults in good jobs at age 30.

Expanding access to middle-skills programs and increasing associate's or bachelor's degree completion for new entrants on the pathway could be almost twice as effective as expanding access alone.

On its own, expanding access to middle-skills programs is the seventh most effective pathway change, increasing the likelihood of having a good job at age 30 by 6 percentage points (from 23 percent to 29 percent). A major reason why this pathway change is not more effective on its own is the low rate of degree completion; three-quarters of young adults who enroll in a middle-skills program by age 22 do not earn an associate's or bachelor's degree by age 26. The likelihood of having a good job at age 30, however, is considerably better when young adults who pursue a middle-skills credential actually earn a college credential. Thirty-one percent of young adults who enter a middle-skills program but do not complete a degree by age 26 have a good job at age 30, compared to 44 percent of individuals who enter such programs and earn an associate's or bachelor's degree. Thus, a combined pathway change that puts young adults in middle-skills programs and ensures that they graduate with a degree could be almost twice as effective as expanding access to middle-skills programs alone (**Figure 21**).

The number of individuals (4.7 million in the current cohort) eligible for the standalone pathway change of entering a middle-skills program is the same as the number eligible for the combined pathway change of entering a middle-skills program and completing a degree. But because the combined pathway change is nearly twice as effective as the standalone pathway change, the combined pathway change has the potential to put 516,000 additional young adults in the current cohort in good jobs at age 30 — nearly twice as many as expanding entry to middle-skills programs alone.

FIGURE 21. Expanding access to middle-skills programs and ensuring completion of a college degree could be almost twice as effective at placing young adults in good jobs as expanding access alone.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. "k" indicates thousands; "M" indicates millions; "pp" indicates percentage points. Numbers may not sum due to rounding.

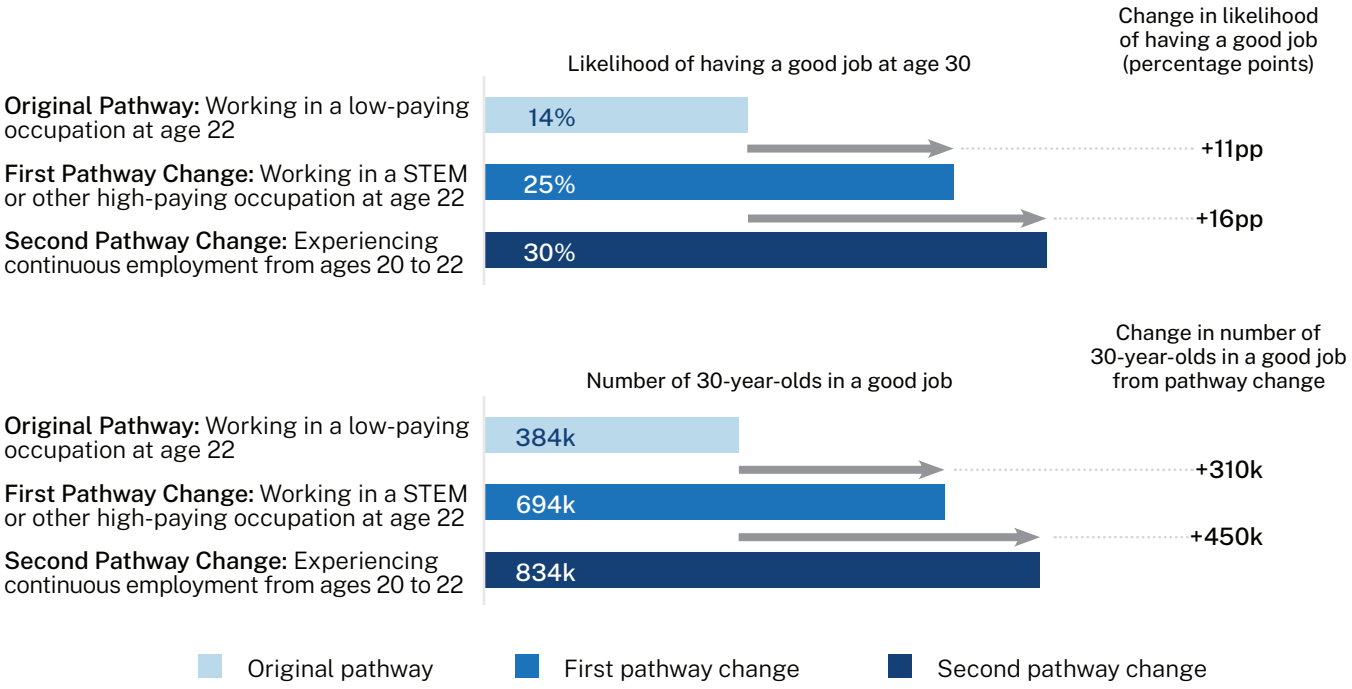
For young adults who do not enroll in college by age 22, achieving stable and continuous employment from ages 20 to 22 and switching to a STEM or other high-paying occupation at age 22 could result in 140,000 more good jobs at age 30 than securing work in STEM or other high-paying occupations alone.

Switching to a STEM or other high-paying occupation at age 22 is the fourth most effective pathway change on its own. Still, many of the young adults eligible for this pathway change experience employment gaps at the start of their careers, which can have scarring effects over many years.[180] Young adults on the high school pathway who move into a STEM or other high-paying occupation could therefore see further benefit by experiencing stable and continuous employment at the outset of their careers. We estimate that the effect of switching into a STEM or other high-paying occupation at age 22 on the likelihood of having a good job at age 30 increases from an 11-percentage-point gain to a 16-percentage-point gain when young adults are also continuously employed from ages 20 to 22 (Figure 22). This represents a 45 percent increase in effectiveness over switching to a STEM or other high-paying occupation without addressing previous gaps in employment.

Approximately 2.7 million young adults in the current cohort are eligible for both the single pathway change and the combined pathway change. As a result of the improvement in effectiveness, the combined pathway change has the potential to help 450,000 individuals in this cohort who would otherwise be in low-paying jobs or unemployed at age 30 find work in a good job at age 30, as compared to 310,000 additional individuals in this cohort under the standalone pathway change.

180 Ross et al., *Pathways to High-Quality Jobs for Young Adults*, 2018.

FIGURE 22. Maintaining continuous employment and working in a STEM or other high-paying occupation could be almost 1.5 times as effective as working in a STEM or other high-paying occupation alone.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. "k" indicates thousands; "pp" indicates percentage points. Other high-paying occupations include jobs in business, finance, management, law, social science, and skilled healthcare. Numbers may not sum due to rounding.

Absent affirmative action policies, even a comprehensive approach focused on education, training, and work combines substantial promise with serious limitations.

The estimates associated with our combined pathway changes show that changing a young person's pathway at multiple junctures can amplify the impact of any single intervention on the likelihood of having a good job. When taken to scale and applied broadly, sequenced interventions could increase the number of 30-year-olds in good jobs by the hundreds of thousands. Combined pathway changes that additionally reach into domains beyond education, training, and the workforce are likely to have an even bigger impact.

These findings also illustrate the depths of existing opportunity gaps, however, and how hard it will be to close the gaps in access to good jobs. Even the most promising combined pathway change described here still falls short of ensuring good jobs for all eligible young adults. In addition, without an affirmative action strategy targeting the most disadvantaged populations for policy intervention, racial/ethnic and gender gaps in who has a good job are likely to grow. Moreover, our findings throughout this report suggest the limitations of focusing on improvements solely within the domains of education, training, and work. Factors outside the scope of these domains play too big a role in economic outcomes to be ignored in public policy and practice.

Thus, while our findings suggest several individual and combined pathway changes that are likely to broaden access to good jobs for young adults, they also suggest ample room for improvement both within and beyond the education, training, and workforce domains. To more fully improve access to good jobs and to narrow the racial/ethnic, gender, and class gaps in good jobs, we need to take a multifaceted, multidomain approach. In addition to the changes in policy and practice described in this report, we need to pursue the following:

1. Expand the set of interventions to address systemic barriers to economic opportunity that occur beyond the education, training, and workforce domains.
2. Directly address bias and discrimination in the labor market.
3. Prioritize women and young adults from low-SES and underrepresented racial/ethnic groups for intervention.

Expand the set of interventions to address systemic barriers to economic opportunity that occur beyond the education, training, and workforce domains.

Meaningfully expanding access to good jobs will require substantial changes in policy and practice across multiple sectors beyond education, training, and the workforce. Early childhood poverty, for example, can adversely impact health, with negative consequences for economic productivity later in life.[181] A lack of affordable and reliable supports in domains like childcare and public transportation can also prevent qualified workers from being able to work in good jobs. Likewise, factors like insufficient healthcare and an overreliance on incarceration can sideline individuals from society for long periods of time and restrict access to good jobs long after individuals return to the labor force. The ability to compete for good jobs is also affected by factors such as neighborhood resources and residential segregation, which disproportionately disadvantage Black/African American and Hispanic/Latino families.[182]

Making high-quality childcare, healthcare, housing, and transportation more affordable and accessible would expand access to good jobs and address some of the gaps by gender, race/ethnicity, and class. Replacing the school-to-prison pipeline with better pathways to employment would also help eliminate barriers to good jobs. Yet these large-scale changes are easier said than done. Dismantling segregation and concentrated poverty and meaningfully improving neighborhood resources will require large-scale investments in low-income communities and communities of color alongside a willingness to address wealth inequalities that allow societal stratification to persist across generations.

Directly address bias and discrimination in the labor market.

Even if systemic barriers to economic opportunity disappeared, interpersonal discrimination and bias in the labor market would still prevent many young adults from having good jobs.[183] One strategy that businesses can use to mitigate the impact of these dynamics is for employers to implement practices that "anonymize" the job application process, which entails removing any identifying information from applicants' materials that could disclose an applicant's gender or race/ethnicity to those making hiring decisions.[184] Promoting more women and workers from historically marginalized racial and ethnic groups into management and leadership roles is another strategy available to businesses. Not only is more diversity at the management, executive, and board levels necessary to improve diverse

181 Magnuson and Votruba-Drzal, "Enduring Influences of Childhood Poverty," 2009.

182 Chetty and Hendren, "The Impacts of Neighborhoods on Intergenerational Mobility II," 2018; Menendian et al., *Twenty-First Century Racial Residential Segregation in the United States*, 2021.

183 Carnevale et al., *How Racial and Gender Bias Impede Progress Toward Good Jobs*, 2022.

184 Johnson and Kirk, "Dual-Anonymization Yields Promising Results for Reducing Gender Bias," 2020; Rinne, "Anonymous Job Applications and Hiring Discrimination," 2018.

representation in leadership roles, but it can help create better conditions to foster diversity through hiring and promotional decisions at all levels of seniority.[185]

In addition to business leaders, state and federal policymakers have an important role to play. For example, "ban the box" or "fair-chance" legislation has been passed in a majority of states to prevent employers from discriminating against those with convictions that occurred long ago or are unrelated to candidates' job responsibilities by making it illegal for employers to ask about candidates' criminal history at early stages of the hiring process.[186] These laws are intended to help mitigate the downstream labor-market impacts of racial/ethnic disparities in criminal justice involvement and sentencing. Evidence suggests, however, that they must be carefully written and combined with other antidiscrimination measures to have positive effects on employment for Black/African American and Hispanic/Latino men,[187] as many employers continue to violate these laws or react to them by discriminating broadly against groups with a higher likelihood of criminal justice involvement.[188]

Strong enforcement of antidiscrimination legislation is also necessary to hold employers accountable and to protect workers against discrimination that bars them from good jobs. Unfortunately, the organization responsible for enforcing antidiscrimination laws — the US Equal Employment Opportunity Commission (EEOC) — is chronically underfunded and understaffed. In 2018, nearly one-third of EEOC cases were deemed "low-priority," meaning they were likely to be closed without any investigation.[189] Expanding the authority and funding of the EEOC and its regional offices, alongside state agencies with the same mandate, is necessary to adequately enforce antidiscrimination laws in the workplace.

Prioritize women and young adults from low-SES and underrepresented racial/ethnic groups for intervention.

One way to expand access to good jobs is to prioritize women and young adults from low-SES and underrepresented racial/ethnic backgrounds for interventions that would provide the skills and credentials required for these jobs. Affirmative action based on race, gender, or class is one strategy to accomplish this, making it more likely that young adults from historically marginalized backgrounds can obtain the education and skills necessary to secure employment in a good job.

However, improving access to good jobs should not depend solely on preparing individuals for work

185 Cook and Glass, "Diversity Begets Diversity?," 2015; Giuliano et al., "Manager Race and the Race of New Hires," 2009; Giuliano et al., "Racial Bias in the Manager-Employee Relationship," 2011.

186 AccuSourceHR, "What Are Ban the Box Laws?," n.d.

187 Stacy and Cohen, *Ban the Box and Racial Discrimination*, 2017.

188 Barthel, "Employers Are Still Avoiding Former Inmates," 2019; Semuels, "When Banning One Kind of Discrimination Results in Another," 2016.

189 Jameel, "More and More Workplace Discrimination Cases Are Being Closed Before They're Even Investigated," 2019.

in specific industries and occupations. The day-to-day functioning of our society relies heavily on jobs that are disproportionately held by women and individuals from low-SES and underrepresented racial/ethnic backgrounds, such as in the education, healthcare support, and agriculture sectors, yet these jobs typically pay far less than their societal value. Shifting large numbers of workers away from low-paying sectors in the service of narrowing good job gaps would lead to sector-wide worker shortages with harmful ripple effects throughout our economy.[190] To avoid this and close good job gaps by race, gender, and class, public policy must step in to raise the wages of workers in low-wage occupations that are critical to the functioning of society.

Interventions within the education, training, and workforce domains that align with the 10 pathway changes outlined in this report will be necessary to equip more young adults with the knowledge and skills required to compete for a good job, and interventions that combine these pathway changes are most likely to be successful in improving access to good jobs. Ultimately, though, meaningfully expanding access to good jobs will require interventions that also eliminate barriers in other policy contexts, combat bias and discrimination in the labor market, direct investments toward individuals from historically disadvantaged groups, and expand the total number of good jobs by raising wages in many low-wage occupations. Expanding access to economic opportunity more broadly will thus require a coordinated and comprehensive strategy, with substantial investment in sectors that historically have been underfunded. This is no small task, but it is the path that must be taken to achieve broad-based gains and economic justice on a societal level.

190 Natanson, "'Never Seen It This Bad'," 2022.

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APPENDIX A.
DATA SOURCES AND METHODOLOGY

The Pathways-to-Career (PtoC) model is a policy simulation tool designed to identify actionable opportunities for increasing the likelihood of working in a good job at age 30. We built the model around potential intervention points — from adolescence through early adulthood — at which young people are likely to gain or lose momentum on the pathway to a good job. The model is powered by a series of linear regressions that estimate how educational, training, and employment experiences at these intervention points relate to the likelihood of working in a good job in the future. We use the regression results to estimate how different pathway changes — i.e., alterations to the educational, training, or employment experiences of young adults in adolescence through their mid-20s — are expected to increase employment in good jobs at age 30, and how those increases would likely vary by race/ethnicity, gender, and class. This appendix describes the model's data and analytic sample, components, and process for creating the pathway changes. It also describes the reliability of our results and important limitations of the model.

1. Data and Sample

The PtoC model relies on publicly available data from the National Longitudinal Survey of Youth 1997 (NLSY97) sponsored by the US Bureau of Labor Statistics. The NLSY97 is an ongoing, nationally representative sample of 8,984 individuals born from 1980 to 1984 who were initially surveyed at ages 12 to 16 in 1997. Survey participants were interviewed annually from 1997 through 2011 and have been interviewed biannually since then, with 19 interview cycles occurring to date. The survey has a high retention rate: 77 percent of individuals surveyed in 1997 also participated in the most recent follow-up survey in 2019.

The NLSY97 contains detailed information on participants' family and household circumstances in adolescence, high school and postsecondary educational experiences, training activities, work history, and job earnings. The data set also includes contextual information about participants at the time of each interview, including their marital and parenthood status, mental and physical health, and history of incarceration. We used all of this information to construct the regression models that power the PtoC model.

The primary outcome in the PtoC model is an indicator of whether or not each participant is working in a good job at age 30, which we define as earning more than $37,753 (in 2020 inflation-and local-

cost-of-living-adjusted dollars) in the primary job.[1,2,3] We restricted the analytic sample to either individuals who were not employed at age 30 or individuals for whom we had earnings data or were able to estimate earnings from the primary job at age 30.[4] The resulting analytic sample comprises 8,141 individuals and includes more than 90 percent of the full NLSY97 sample initially surveyed. Table A1 reports selected summary statistics for the analytic sample and the full NLSY97 sample. The average participant characteristics are very similar across the two samples. Results from the PtoC model are therefore likely to be nationally representative of youth ages 12 to 16 in the United States in the late 1990s, who are now in their late 30s or early 40s.

TABLE A1. Summary statistics of the NLSY97 sample

	(1)	(2)
	Full sample	Analytic sample
Male	51.3%	50.9%
Race/Ethnicity		
Asian/Asian American	2.4%	2.3%
Black/African American	15.4%	16.0%
Hispanic/Latino	12.9%	13.1%
White	66.6%	65.9%
Other	1.5%	1.5%
Two or more	1.2%	1.2%

1 In prior work, we defined a good job as one that pays at least $35,000 in nominal dollars for workers younger than age 45. Carnevale et al., *Three Educational Pathways to Good Jobs*, 2018. When we first established this threshold in 2016, $35,000 was the minimum earnings necessary to enter the middle class, as defined by the lower bound of the fourth decile of the earnings distribution among full-time, full-year workers ages 25 to 45. In this report, we inflation-adjusted the threshold to $37,753 in 2020 dollars to account for the fact that salaries must rise for a good job to remain good as the cost of living increases. The inflation-adjusted threshold equates to earning $18 per hour for full-time work and is similar to the living wage in 2019 and 2020 as defined by the MIT Living Wage Calculator. Nadeau, "New Living Wage Data," 2020; Moser, "A Calculation of the Living Wage," 2022.

2 We used the US Bureau of Labor Statistics' Consumer Price Index Retroactive Series (R-CPI-U-RS) for inflation adjustment and the US Bureau of Economic Analysis's Regional Price Parities by State and Metro Area indexes for local cost-of-living adjustment.

3 In each survey round, the NLSY97 captures respondents' total job earnings over the previous year and the hourly wage rate and average hours worked for each job since the last interview. For respondents who worked a single job at age 30, we used reported job earnings to determine whether the job met the good job earnings threshold. For respondents who worked more than one job at age 30, we constructed an annualized earnings measure for each job where annualized earnings = (average weekly hours worked x hourly wage rate x 52).

4 If total job earnings, average weekly hours worked, or hourly wage rate information for employed individuals was missing at age 30, we used analogous information at age 29 to construct the primary job earnings measure. If information at age 29 was also missing, we used information at age 28 when available. We repeated this iterative process to impute annual earnings from each job at age 30 for all individuals working at age 30 with non-missing earnings data in at least one year from ages 26 to 29. We imputed primary job earnings at age 30 for 21 percent of the analytic sample (N = 1,730). Nearly all imputed cases (83.5 percent, N = 1,444) are taken from respondents' reported information at age 28 or 29.

	(1)	(2)
	Full sample	Analytic sample
Parent's Highest Education Level		
Less than a high school diploma	12.1%	12.3%
High school diploma or GED	30.9%	31.2%
Some college or college degree	52.3%	51.9%
Unknown	4.7%	4.7%
Household Income		
Household income in 1997 (2020 dollars)	$85,438	$84,474
Household income unknown	32.9%	32.2%
Highest Degree Earned at Age 26		
Less than high school diploma	10.5%	8.3%
High school diploma or GED	37.0%	36.2%
Certificate	18.0%	19.1%
Associate's degree	6.3%	6.5%
Bachelor's degree	24.1%	25.5%
Unknown	4.1%	4.4%
Number of Observations		
Unweighted	8,984	8,141
Weighted	19,378,453	17,374,106

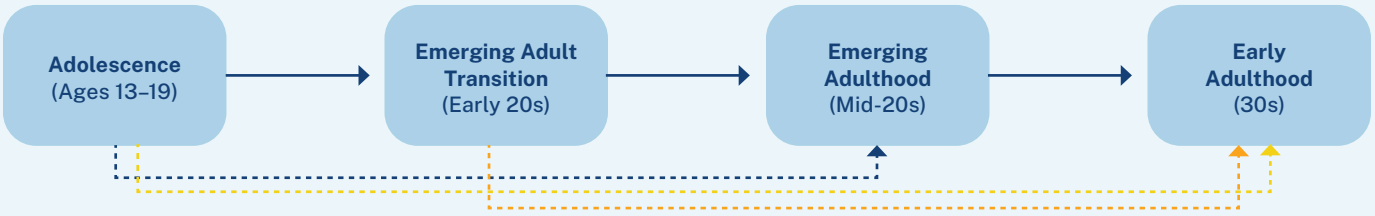
Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: The statistics reported in this table are survey-weighted averages.

2. Model Description

The PtoC model is a life-cycle model in which circumstances in earlier life stages predict circumstances in later life stages. The model assumes that experiences in life have accumulating effects, and as a result, outcomes at a given life stage are chiefly determined by circumstances and experiences in earlier stages.[5] We model the likelihood of working in a good job at age 30 as the result of a dynamic process involving a robust set of outcomes and experiences during three earlier life stages: adolescence (ages 13 to 19), the transition to emerging adulthood (early 20s), and emerging adulthood (mid-20s). The model predicts outcomes in emerging adulthood as a function of experiences in adolescence and in the transition to emerging adulthood, and it likewise predicts outcomes during the transition to emerging adulthood as a function of experiences in adolescence. Figure A1 illustrates the sequential design of the PtoC model framework.

FIGURE A1. Pathways-to-Career model framework



We relied on economic theories of skill formation to determine the primary predictors in each stage of the model. In particular, we grounded the model in both theory-driven and empirical evidence that investments in human capital (formal education, career training, and work experience) strongly influence the structure of wages and earnings and the opportunities for employment in good jobs.[6] In addition, the model captures other circumstances at each life stage that can influence future job prospects, including mental and physical health, incarceration status, and family background.[7] Table A2 lists the full set of variables at each life stage.

5 Elder et al., "The Emergence and Development of Life Course Theory," 2003; Heckman, "Skill Formation and the Economics of Investing in Disadvantaged Children," 2006; Mayer, "New Directions in Life Course Research," 2009.

6 Ashworth et al., "Changes across Cohorts in Wage Returns to Schooling and Early Work Experiences," 2021; Becker, *Human Capital*, 2009; Katz et al., "Why Do Sectoral Employment Programs Work?," 2022; Zimmerman, "The Returns to College Admission for Academically Marginal Students," 2014.

7 Belley and Lochner, "The Changing Role of Family Income and Ability in Determining Educational Achievement," 2007; Biasi et al., *Career Effects of Mental Health*, 2021; Doleac and Hansen, "The Unintended Consequences of 'Ban the Box'," 2020.

TABLE A2. Variables included in the Pathways-to-Career model by life stage

Life Stage: Adolescence (Ages 13–19)[8]
Age as of December 31, 1996
Sex
Race/ethnicity
Socioeconomic status composite index[9]
Household structure
Census region of residence
Armed Services Vocational Aptitude Battery (ASVAB) math and verbal score percentile
Indicator of participation in relationship-based high school career prep program/activities
Indicator of participation in non-relationship-based high school career prep program/activities
Number of hours participated in career prep program/activities
Took college entrance examination (SAT or ACT)
College entrance examination score (SAT or SAT-concorded ACT score)
Number of academic credits earned in high school
Indicator of taking advanced coursework in high school
Percent of high school credits earned in advanced courses
Indicator of concentrating or specializing in vocational education coursework in high school
Number of jobs worked from ages 14 to 19
Number of weeks worked from ages 14 to 19
Life Stage: Transition to Emerging Adulthood (Ages 20–22)
Census region of residence
Marital status
Parenthood status
Incarceration status
Substance abuse status
Mental health index score
Indicator of participation in career training program/activities
Number of months enrolled in career training program/activities

8 In each life stage, we predict investments in human capital as a function of prior education, training, and work experiences and contemporaneous life circumstances (i.e., marital, parenthood, incarceration, substance abuse, and health status). Because we estimate outcomes during the transition to emerging adulthood (early 20s) in the first sequence of the model, we include life circumstances in that period but exclude those same measures in adolescence. We allow life circumstances in the transition to emerging adulthood to be influenced by the full set of variables listed in adolescence; however, including life circumstances in both adolescence and the transition to emerging adulthood in the first sequence of the model would introduce multicollinearity issues that could cause the model to produce unreliable predictions.

9 We constructed this measure using mother's level of educational attainment, father's level of educational attainment, household income per capita, and household net worth per capita in 1997. The index has a Cronbach's alpha coefficient of 0.775, which indicates that the index exhibits a strong degree of internal consistency.

Indicator of career training certification or licensure attainment
Number of jobs worked
Job tenure of current/most recent job
Hourly wage rate of current/most recent job
Average number of hours worked per week at current/most recent job
Current/most recent occupation
Indicator of having experienced any gap between jobs
Number of weeks between jobs
Enrolled in postsecondary certificate or associate's degree program after high school
Enrolled in bachelor's degree program after high school
Life Stage: Emerging Adulthood (Ages 23–26)
Census region of residence
Marital status
Parenthood status
Incarceration status
Substance abuse status
Mental health index score
Indicator of participation in career training program/activities
Number of months enrolled in career training program/activities
Indicator of career training certification or licensure attainment
Number of jobs worked
Job tenure of current/most recent job
Hourly wage rate of current/most recent job
Average number of hours worked per week at current/most recent job
Current/most recent occupation
Indicator of having experienced any gap between jobs
Number of weeks between jobs
Highest level of education completed
Life Stage: Early Adulthood (Age 30)
Census region of residence
Marital status
Parenthood status
Incarceration status
Substance abuse status
Health limitations productivity score
Indicator of any employment
Indicator of employment in a good job
Annualized primary job earnings

The PtoC model comprises a series of linear regressions estimated sequentially by life stage. When estimating all regressions, we used survey weights that account for the sampling design of the NLSY97 survey. We estimated the regressions using the full sample and separately by sex, race/ethnicity (Black/African American, Hispanic/Latino, and white), and socioeconomic status (above and below the median of the distribution) to allow the results to vary by subgroup.[10] Prior to model estimation, we imputed five possible values for all missing predictors, with the exception of the employment and earnings outcomes in early adulthood (for which we imputed values using data in prior years, as described above).[11] This process ensured that we retained a consistent and generalizable sample for estimating each outcome in the model.

In the first set of regressions, the variables in adolescence predict each outcome listed in the transition to emerging adulthood. Next, the variables in adolescence and the transition to emerging adulthood predict each outcome during emerging adulthood. Finally, the variables in adolescence, the transition to emerging adulthood, and emerging adulthood predict the outcomes in early adulthood.[12] The sequential construction allows for experiences in adolescence and in the transition to early adulthood to have cascading effects on later life outcomes through both direct and indirect channels.

10 We are only able to simulate results separately for Black/African American, Hispanic/Latino, and white individuals because the NLSY97 data set includes few individuals of other racial/ethnic subgroups.

11 We used multivariate normal imputation for this process instead of multivariate imputation by chained equations because the latter did not converge in many cases due to the large number of variables requiring imputation. For imputed categorical variables, we probabilistically constructed binary values from the continuous imputed values to ensure that: (a) the imputed values only assumed values of zero or one, and (b) only one categorical variable in any given set of dummy variables assumed a value of one.

12 Across most outcomes, we used the full or complete subgroup samples to estimate the regressions. In a few cases, we restricted the estimation samples to ensure that the predictions from the model align with the outcome values observed in the data. Specifically, we restricted the estimation sample for predicting the number of months enrolled in career training and whether an individual received a training certificate or license to individuals who participated in a career training program or activities at each life stage. Likewise, we restricted the estimation sample to individuals who experienced a gap between jobs when predicting the duration of the gap. Because educational attainment is highly correlated with postsecondary decision-making, we separately estimated individuals' highest level of education completed at age 26 according to the following subsets: young adults who did not enroll in postsecondary education, young adults who first attended a two-year institution, and young adults who first attended a four-year institution. Finally, we restricted the estimation sample to employed individuals when predicting primary job earnings and the probability of working in a good job at age 30, since those outcomes take on a zero value by default for non-workers.

3. Pathway Change Estimation

To create the pathway changes, we first constructed a data set comprised of 1,737,681 observations, which represents a 9 percent random sample of the youth population ages 12 to 16 in the United States in the late 1990s.[13] In Table A3, we present summary statistics overall and by race/ethnicity, socioeconomic status, and sex for the education, career training, and employment measures in this data set.

We used the data set to estimate how changing individuals' educational, training, and/or work experiences during adolescence, the transition to emerging adulthood, and/or emerging adulthood is expected to influence the likelihood of working in a good job at age 30. Creating each pathway change involves a five-step process:

- In step one, we estimated the series of regressions described above to establish the relationship between life experiences in earlier stages and the likelihood of having a good job at age 30.
- In step two, we applied these estimates to the data in the pathway change data set to determine the baseline number of individuals estimated to work in a good job at age 30.
- In step three, we adjusted one or more of the education, career training, or employment measures during adolescence, the transition to emerging adulthood, and/or emerging adulthood in the data set. For binary variables, we did this by shifting the proportion of individuals who experienced the outcome of interest. For example, to estimate the relationship between expanding the number of academically prepared high school graduates who pursue a bachelor's degree and the likelihood of having a good job at age 30, we randomly switched a subset of eligible individuals who did not pursue postsecondary education to enrollment in a bachelor's degree program by age 22. For continuous variables, we increased or decreased the observed values of all eligible individuals by one-half of the standard deviation of the original predictor distribution. For example, to estimate the relationship between reducing the duration of the employment gap experienced by young adults from ages 20 to 22 and the likelihood of having a good job at age 30, we decreased the duration amount for each individual who experienced an employment gap by 12 weeks, given that the original standard deviation of the distribution among individuals who experienced an employment gap was 24 weeks. Table A4 reports the measures we adjusted for each of the 10 pathway changes we describe in the main report.

13 We constructed this data set using a three-step process. First, we expanded each observation in the analytic sample by its sample probability weight. Next, for observations with missing predictor values, we randomly chose one of the five imputed values to keep. Finally, we randomly selected 10 percent of the observations in the expanded analytic data set to keep. To ensure that the random sample remained representative of the full sample with respect to race/ethnicity, sex, and socioeconomic status, we constructed race/ethnicity-by-sex-by-SES-quartile groupings and blocked on those variables in the randomization process.

- In step four, we re-applied the regression estimates to the observations in the adjusted data set to obtain the number of individuals expected to work in a good job following the alterations made to the educational, training, or employment experiences during adolescence, the transition to emerging adulthood, or emerging adulthood.[14]
- In step five, we calculated the percentage-point change in the likelihood of having a good job at age 30 as follows: $(\frac{count\ in\ good\ job_{altered} - count\ in\ good\ job_{baseline}}{count\ in\ good\ job_{baseline}}) * 100$. For each pathway change, we repeated steps three through five 50 times. The effectiveness result we report is the average value across the 50 pathway change runs.[15]

Lastly, we followed a two-step process to estimate the number of individuals eligible to participate at each intervention point. In step one, we calculated the proportion of individuals in the NLSY97 analytic sample that met the eligibility criteria for each pathway change. We reviewed common design features of actual interventions in the field and explored patterns in the data to establish these criteria. For example, to determine eligibility for the pathway change that expands the number of high school graduates enrolling in a bachelor's degree program, we relied on the data to identify academically prepared young adults who did not enroll in a bachelor's degree program by age 22.[16] Likewise, because some of the most effective sectoral employment programs serve non-college-educated workers in low-wage occupations,[17] we defined young adults who did not pursue postsecondary education by age 22 and most recently worked in the lowest-paying occupations in the data (jobs in the arts, community services, education, food and personal services, and healthcare support) as eligible for the switch to blue-collar and STEM or other high-paying occupation pathway changes.[18] In Table A4, we also report the eligibility criteria we defined for each of the 10 pathway changes we describe in the main report.

In step two of the process to estimate eligibility, we multiplied the fraction of individuals eligible in the NLSY97 analytic sample by US population counts corresponding to each intervention point using 2019 data from the US Census Bureau's American Community Survey (ACS). Tables A5 and A6 respectively report the fraction of individuals eligible in the analytic sample and the corresponding population counts for each of the 10 pathway changes we describe in the main report.

14 The process in step four amounts to calculating predicted values for all predictors in life stages that succeed the intervention point in which the pathway change occurs. For binary predictors, we compare each individual's predicted probability to a randomly generated number from the uniform distribution between zero and one. We assign individuals a predictor value of one when the predicted probability exceeds the value of the random number.

15 We conducted multiple runs to account for the fact that the results vary across runs due to (a) random assignment to the treatment condition (for binary variables), and (b) the values of downstream binary predictors sometimes changing because the predicted probabilities are compared to different randomly generated numbers across runs.

16 Specifically, we calculated the 25th percentile of the distribution of test scores and high school GPA among students who pursued a bachelor's degree by age 22 and then defined as eligible high school graduates with test scores or a high school GPA above that threshold who did not pursue a bachelor's degree by age 22. While there are multiple definitions of academic preparedness for bachelor's degree programs, we chose this definition because it aligns with the admissions criteria of most broad-access four-year institutions, which typically accept at least three-quarters of students who apply.

17 Katz et al., "Why Do Sectoral Employment Programs Work?," 2022.

18 The average hourly wage at age 22 among these "low-wage" occupations was $12.15 in 2020 dollars, compared to $14.46 across all other occupations. We define "other high-paying occupations" as jobs in business or finance, management, law, social science, and skilled healthcare.

TABLE A3. Education, training, and employment characteristics of young adults in the pathway change data set, overall and by race/ethnicity, socioeconomic status, and sex

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Race/Ethnicity			Socioeconomic Status		Sex	
	Full Sample	Black/African American	Hispanic/ Latino	White	Low	High	Male	Female
A. Life Stage: Adolescence (Ages 13–19)								
Participated in non-relationship-based career prep program/ activities	40.5%	37.2%	47.8%	39.8%	43.8%	37.1%	42.4%	38.5%
Participated in relationship-based career prep program/activities	26.1%	24.3%	22.7%	27.6%	25.1%	27.1%	25.9%	26.4%
Number of hours participated in career prep	89	76	87	93	80	98	90	88
Took advanced high school coursework	41.9%	32.1%	34.0%	45.2%	29.3%	54.4%	36.9%	47.0%
Percent of high school credits earned in advanced courses	5.3%	3.7%	3.5%	6.0%	2.9%	7.8%	4.6%	6.1%
Vocational education high school concentrator	31.3%	27.5%	28.3%	33.7%	32.1%	30.6%	35.9%	26.6%
Number of jobs worked	4.0	3.4	3.5	4.3	4.0	4.1	4.0	4.0
Number of weeks worked	122	88	105	135	114	130	123	121
B. Life Stage: Transition to Emerging Adulthood (Ages 20–22)								
Enrolled in a middle-skills program after high school	16.1%	15.7%	19.7%	15.5%	16.9%	15.3%	15.2%	16.9%
Enrolled in a bachelor's degree program after high school	42.7%	32.5%	29.2%	46.7%	23.4%	62.0%	38.4%	47.2%
Participated in career training program/activities	36.1%	38.3%	35.2%	36.0%	37.2%	35.1%	36.7%	35.6%
Months enrolled in career training	2.6	2.7	2.7	2.6	2.7	2.5	2.9	2.3
Earned training certificate or license	21.2%	20.5%	21.7%	21.6%	22.0%	20.4%	21.7%	20.7%
Number of jobs worked	3.1	2.9	2.9	3.3	3.0	3.3	3.1	3.2
Tenure of current/most recent job (in weeks)	69	54	70	73	68	70	73	65
Average hours/week at current/ most recent job	33	30	32	34	33	33	35	31

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Race/Ethnicity			Socioeconomic Status		Sex	
	Full Sample	Black/African American	Hispanic/ Latino	White	Low	High	Male	Female
Hourly wage rate at current/most recent job (2020 dollars)	$13.66	$14.44	$13.32	$13.61	$12.34	$14.97	$15.34	$11.91
Occupation of current/most recent job: STEM/Other High-Paying	8.5%	5.0%	6.1%	9.5%	5.2%	11.8%	8.2%	8.8%
Occupation of current/most recent job: Food/Personal Services	23.3%	24.6%	20.6%	23.9%	22.3%	24.3%	20.3%	26.4%
Occupation of current/most recent job: Sales/Office Support	31.2%	31.7%	35.5%	30.0%	30.8%	31.7%	22.7%	40.1%
Occupation of current/most recent job: Blue Collar	24.5%	23.0%	26.7%	25.2%	29.7%	19.3%	40.8%	7.5%
Experienced gap between jobs	76.5%	85.4%	78.6%	73.5%	78.1%	74.8%	75.4%	77.6%
Number of weeks between jobs	45	62	49	39	49	40	43	46
C. Life Stage: Emerging Adulthood (Ages 23–26)								
Participated in career training program/activities	27.9%	27.6%	25.3%	28.1%	24.4%	31.4%	27.9%	27.8%
Months enrolled in career training	1.5	1.5	1.3	1.5	1.3	1.6	1.5	1.5
Earned training certificate or license	18.5%	18.1%	17.8%	18.4%	17.1%	19.8%	18.9%	18.0%
Number of jobs worked	3.1	3.0	2.9	3.2	3.0	3.3	3.1	3.1
Tenure of current/most recent job (in weeks)	110	90	118	114	104	117	116	105
Average hours/week at current/ most recent job	35	32	35	36	33	37	37	32
Hourly wage rate at current/most recent job (2020 dollars)	$16.87	$14.64	$15.43	$17.45	$14.82	$18.91	$18.45	$15.23
Occupation of current/most recent job: STEM/Other High-Paying	17.6%	11.4%	12.2%	19.5%	11.4%	23.7%	16.1%	19.1%
Occupation of current/most recent job: Food/Personal Services	18.0%	22.7%	18.2%	17.1%	20.1%	15.9%	15.8%	20.3%
Occupation of current/most recent job: Sales/Office Support	26.0%	25.8%	31.4%	24.9%	25.9%	26.0%	19.6%	32.6%
Occupation of current/most recent job: Blue Collar	23.4%	22.1%	25.0%	23.9%	28.8%	18.0%	39.5%	6.7%
Experienced gap between jobs	70.3%	78.5%	68.9%	68.1%	72.9%	67.7%	67.8%	72.8%

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Race/Ethnicity			Socioeconomic Status		Sex	
	Full Sample	Black/African American	Hispanic/ Latino	White	Low	High	Male	Female
Number of weeks between jobs	47.5	67.5	46.7	42.4	58.8	36.2	43.3	51.9
Highest level of education attained: High school diploma/GED	38.2%	45.0%	41.9%	36.6%	45.8%	30.7%	41.1%	35.3%
Highest level of education attained: Postsecondary certificate	19.5%	22.5%	23.3%	18.3%	22.6%	16.4%	20.9%	18.0%
Highest level of education attained: Associate's degree	6.6%	5.3%	6.3%	6.8%	6.1%	7.1%	5.9%	7.3%
Highest level of education attained: Bachelor's degree	26.7%	14.7%	13.5%	31.1%	10.6%	42.8%	22.4%	31.2%
D. Life Stage: Early Adulthood (Age 30)								
Employed in any job	82.4%	75.4%	81.5%	84.2%	77.1%	87.7%	85.2%	79.5%
Employed in good job	39.8%	24.1%	35.3%	43.9%	28.5%	51.0%	46.2%	33.1%
Employed in good job among those employed in any job	48.3%	31.9%	43.4%	52.2%	37.0%	58.2%	54.3%	41.6%
Number of observations	1,737,681	277,953	226,838	1,145,381	868,909	868,772	884,997	852,684

Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Low and high socioeconomic status are defined as below and above the median of the SES composite index, respectively. Good jobs are those paying approximately $38,000 or more in 2020 dollars, adjusted for geographic differences in cost of living. The statistics reported in this table are survey-weighted averages.

TABLE A4. Eligibility criteria and adjustments made to education, training, and employment measures for each pathway change

	(1)	(2)
Policy Simulation	Eligibility Criteria	Adjustment(s)
In High School		
High school CTE specialization	• High school graduate • Did not specialize in CTE during high school • Did not enroll in bachelor's degree program by age 22	Switch to high school CTE specialization
Starting on the High School Pathway		
Enter middle-skills pathway by age 22	• High school graduate • Did not enroll in certificate, associate's degree, or bachelor's degree program by age 22	Switch to enrolled in a certificate or associate's degree program by age 22
Enter bachelor's degree pathway by age 22	• High school graduate • Did not enroll in bachelor's degree program by age 22 • ASVAB score percentile or high school GPA > 25th percentile of young adults enrolled in bachelor's degree program by age 22	Switch to enrolled in a bachelor's degree program by age 22
Blue-collar sector employment strategy by age 22	• High school diploma or less • Did not enroll in certificate, associate's degree, or bachelor's degree program by age 22 • Current/most recent occupation at age 22 was in the arts, community services, education, food and personal services, or healthcare support	Switch current/most recent occupation at age 22 to blue collar AND increase hourly wage rate to blue-collar occupational average
Eliminate employment gap from ages 20 to 22	• High school diploma or less • Did not enroll in certificate, associate's degree, or bachelor's degree program by age 22 • Experienced gap between jobs of one week or longer from ages 20 to 22	Decrease duration of employment gap from ages 20 to 22 to zero
STEM/professional sector employment strategy by age 22	• High school diploma or less • Did not enroll in certificate, associate's degree, or bachelor's degree program by age 22 • Current/most recent occupation at age 22 was in the arts, community services, education, food and personal services, or healthcare support	Switch current/most recent occupation at age 22 to STEM or professional AND increase hourly wage rate to STEM or professional occupational average

	(1)	(2)
Policy Simulation	Eligibility Criteria	Adjustment(s)
Starting on the Middle-Skills Pathway		
Earn associate's degree by age 26	Enrolled in associate's degree program by age 22 Did not earn associate's or bachelor's degree by age 26	Increase educational attainment at age 26 to associate's degree
Earn bachelor's degree by age 26	Enrolled in certificate or associate's degree program by age 22 Did not earn bachelor's degree by age 26	Increase educational attainment at age 26 to bachelor's degree
Starting on the Bachelor's Degree Pathway		
Earn associate's degree by age 26	Enrolled in bachelor's degree program by age 22 Did not earn associate's or bachelor's degree by age 26	Increase educational attainment at age 26 to associate's degree
Earn bachelor's degree by age 26	Enrolled in bachelor's degree program by age 22 Did not earn bachelor's degree by age 26	Increase educational attainment at age 26 to bachelor's degree

TABLE A5. Estimated proportion of NLSY97 analytic sample eligible for each pathway change

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Race/Ethnicity			Sex		Socioeconomic Status	
Policy Simulation	Full Sample	Black/African American	Hispanic/ Latino	White	Male	Female	Low	High
In High School								
High school CTE specialization	31.0%	38.6%	39.2%	27.7%	31.0%	31.0%	39.7%	22.4%
Starting on the High School Pathway								
Enter middle-skills pathway by age 22	21.3%	26.8%	23.9%	19.9%	24.3%	18.1%	30.3%	12.3%
Enter bachelor's degree pathway by age 22	22.1%	14.6%	21.9%	24.4%	22.0%	22.1%	24.9%	19.3%
Blue-collar sector employment strategy by age 22	12.5%	18.4%	13.2%	11.1%	9.7%	15.3%	17.9%	7.1%
Eliminate employment gap from ages 20 to 22	32.5%	46.1%	41.7%	28.1%	35.1%	29.7%	48.5%	16.6%
STEM/professional sector employment strategy by age 22	12.5%	18.4%	13.2%	11.1%	9.7%	15.3%	17.9%	7.1%
Starting on the Middle-Skills Pathway								
Earn associate's degree by age 26	11.8%	12.8%	15.8%	10.9%	11.3%	12.3%	12.5%	11.1%
Earn bachelor's degree by age 26	15.5%	15.3%	19.1%	14.9%	14.7%	16.3%	16.1%	14.8%
Starting on the Bachelor's Degree Pathway								
Earn associate's degree by age 26	13.8%	15.7%	13.1%	13.4%	14.3%	13.3%	11.4%	16.2%
Earn bachelor's degree by age 26	16.4%	18.3%	15.9%	16.0%	16.5%	16.4%	13.6%	19.3%

Source: Georgetown University Center on Education and the Workforce analysis of data from the US Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 (NLSY97), 1997–2015.

Note: Low and high socioeconomic status are defined as below and above the median of the SES composite index, respectively. The statistics reported in this table are survey-weighted averages.

TABLE A6. 2019 American Community Survey population counts corresponding to each intervention point

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Race/Ethnicity			Sex		Socioeconomic Status	
Policy Simulation	Full Sample	Black/ African American	Hispanic/ Latino	White	Male	Female	Low	High
In High School								
High school CTE specialization	21,244,168	3,220,766	5,165,975	11,559,440	10,829,420	10,414,748	10,622,084	10,622,084
Starting on the High School Pathway								
Enter middle-skills pathway by age 22	21,958,732	3,414,827	5,059,336	12,030,779	11,262,172	10,696,560	10,979,366	10,979,366
Enter bachelor's degree pathway by age 22	21,958,732	3,414,827	5,059,336	12,030,779	11,262,172	10,696,560	10,979,366	10,979,366
Blue-collar sector employment strategy by age 22	21,958,732	3,414,827	5,059,336	12,030,779	11,262,172	10,696,560	10,979,366	10,979,366
Eliminate employment gap from ages 20 to 22	13,105,671	2,000,082	2,981,813	7,253,473	6,760,260	6,345,411	6,552,836	6,552,836
STEM/professional sector employment strategy by age 22	21,958,732	3,414,827	5,059,336	12,030,779	11,262,172	10,696,560	10,979,366	10,979,366
Starting on the Middle-Skills Pathway								
Earn associate's degree by age 26	21,958,732	3,414,827	5,059,336	12,030,779	11,262,172	10,696,560	10,979,366	10,979,366
Earn bachelor's degree by age 26	21,958,732	3,414,827	5,059,336	12,030,779	11,262,172	10,696,560	10,979,366	10,979,366
Starting on the Bachelor's Degree Pathway								
Earn associate's degree by age 26	21,958,732	3,414,827	5,059,336	12,030,779	11,262,172	10,696,560	10,979,366	10,979,366
Earn bachelor's degree by age 26	21,958,732	3,414,827	5,059,336	12,030,779	11,262,172	10,696,560	10,979,366	10,979,366

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

Note: We define the cohort for the high school CTE specialization pathway change as the high school-age population (ages 14 to 18). We define the cohort for the employment gap elimination pathway change as the population of young adults ages 20 to 22. For all other pathway changes, we define the cohort as the population of young adults ages 18 to 22. Low and high socioeconomic status are defined as below and above the median of the SES composite index, respectively. The statistics reported in this table are survey-weighted population counts.

4. Reliability of Pathway Change Results

An important question is whether the results from the pathway changes are consistent with the findings of previous studies. The best way to answer this question is to compare our results to causal estimates from other studies. While we are primarily focused on the attainment of a good job, other studies that examine the effects of interventions on labor-market outcomes typically focus on average earnings gains. For example, several studies that use admission cutoffs to estimate the effect of enrolling in a four-year college find that four-year college attendance increases earnings around age 30 by 20 to 26 percent.[19] Our model predicts that increasing four-year college attendance by age 22 increases earnings at age 30 by 25.8 percent. Likewise, Mountjoy estimates that individuals who do not pursue postsecondary education would experience an 18 percent earnings increase, on average, around age 30 if they enrolled in a two-year college program.[20] We estimate that moving students from a high school diploma or less to a middle-skills program by age 22 increases average earnings by 17 percent at age 30. We also simulate a 24 percent increase in average earnings at age 30 for individuals who switch from a low-wage occupation to a STEM or other high-paying occupation at age 22. This result aligns with the estimated earnings return over a similar timeframe from high-quality sectoral employment programs, including Per Scholas, Project QUEST, and Year Up.[21] Thus, our model-generated estimates are consistent in magnitude with the findings of previous causal studies, strongly suggesting that our pathway change results are reasonable.

19 Hoekstra "The Effect of Attending the Flagship State University on Earnings," 2009; Kozakowski, "Essays on Higher Education and Inequality," 2020; Smith et al., "The Economic Impact of Access to Public Four-Year Colleges," 2020; Zimmerman, "The Returns to College Admission for Academically Marginal Students," 2014.

20 Mountjoy, "Community Colleges and Upward Mobility," 2021.

21 Fein et al., "Still Bridging the Opportunity Divide for Low-Income Youth," 2021; Katz et al., "Why Do Sectoral Employment Programs Work?," 2022; Roder and Elliott, *Eleven Year Gains*, 2021.

5. Model Limitations

Although our results are consistent with previous causal studies, the PtoC model does not establish causality.[22] Rather, it is intended to help (1) identify the key intervention points and malleable human capital-building experiences that influence early career pathways, and (2) set reasonable expectations regarding the potential impacts of different educational, training, and employment-focused policy interventions. In other words, the PtoC model is intended to inform policy considerations but not to draw causal conclusions about the effects of specific interventions.

The PtoC model has three other notable limitations. The first is that the current model ignores intervention points prior to adolescence. We plan to incorporate intervention points at earlier life stages in future work. The second limitation derives from constraints in using the NLSY97 data. Although the NLSY97 data have several strengths — most notably, the longitudinal panel design, high retention rate, detailed participant information, and information about participant outcomes in early adulthood — the experiences of participants during earlier life stages may not reflect the experiences of youth today. As a result, the PtoC model may generate results that do not fully reflect the expected results for youth at present or in the future. For example, most young adults in the NLSY97 sample attended high school when students were typically tracked onto either an academic pathway or a vocational education pathway. It is more common today for students who participate in career and technical education (CTE) programs to receive this instruction alongside rigorous academic coursework.[23] The increase in the likelihood of having a good job at age 30 associated with specializing in CTE in high school that we estimate may therefore understate the current role of CTE programs in increasing the number of workers in a good job in early adulthood. Lastly, the PtoC model is limited because, while it allows for examining the potential downstream effects of intermediate outcome changes, it does not allow for estimating direct effects of specific policy interventions. No intervention alters the outcomes of every individual who is served, and the PtoC model does not account for the difference between the number of individuals served by an intervention and the number affected.

22 This is for several reasons: (1) the model does not include all factors that influence employment outcomes in early adulthood, (2) some of the factors included in the model are measured imprecisely, and (3) all of the underlying regressions are estimated linearly, which leaves open the possibility of model misspecification.

23 Malkus, *The Evolution of Career and Technical Education*, 2019.

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McCourt School of Public Policy
Center on Education and the Workforce

What Works: Ten Education, Training, and Work-Based Pathway Changes That Lead to Good Jobs can be accessed online at cew.georgetown.edu/pathway-changes.

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