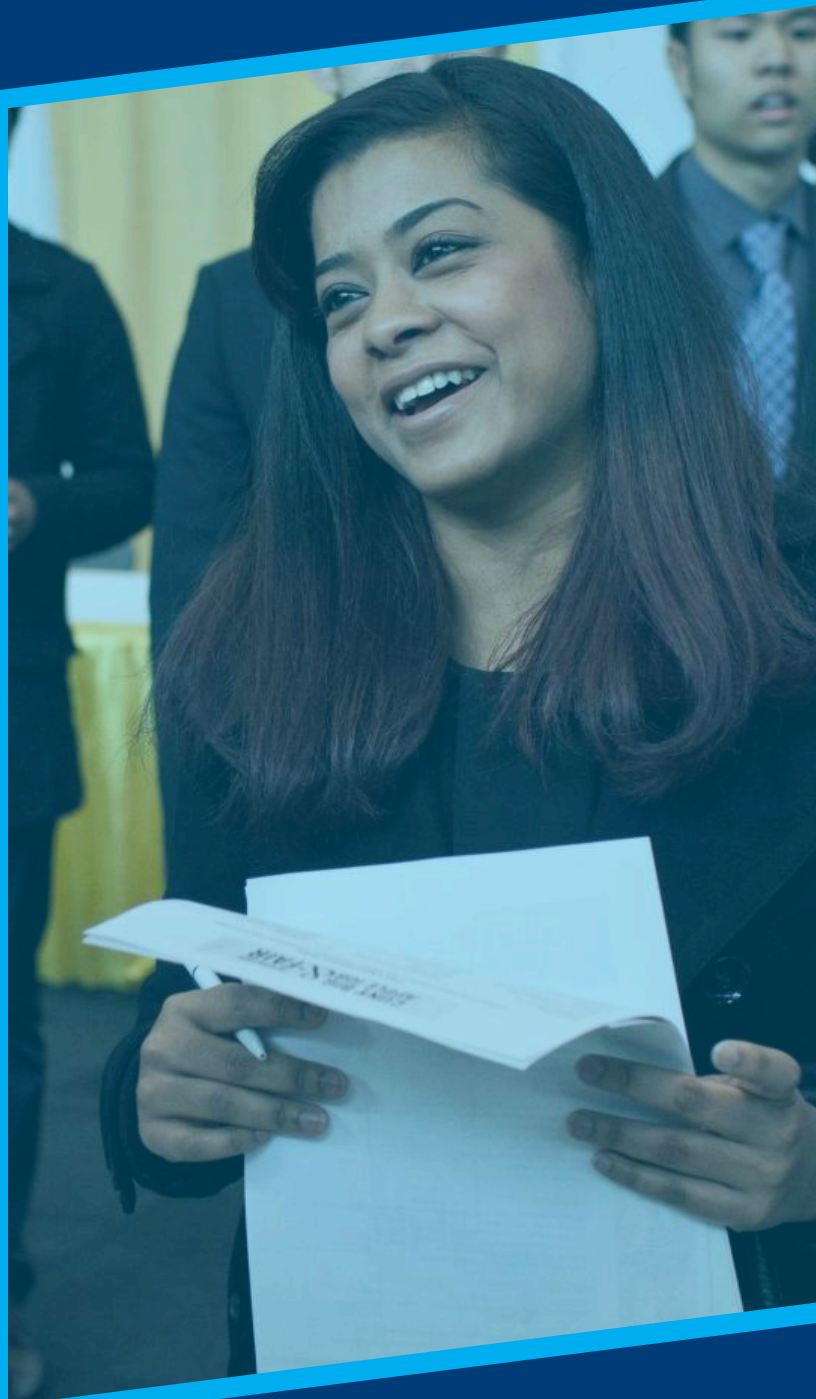


PATHWAYS TO HIGH-QUALITY JOBS FOR YOUNG ADULTS



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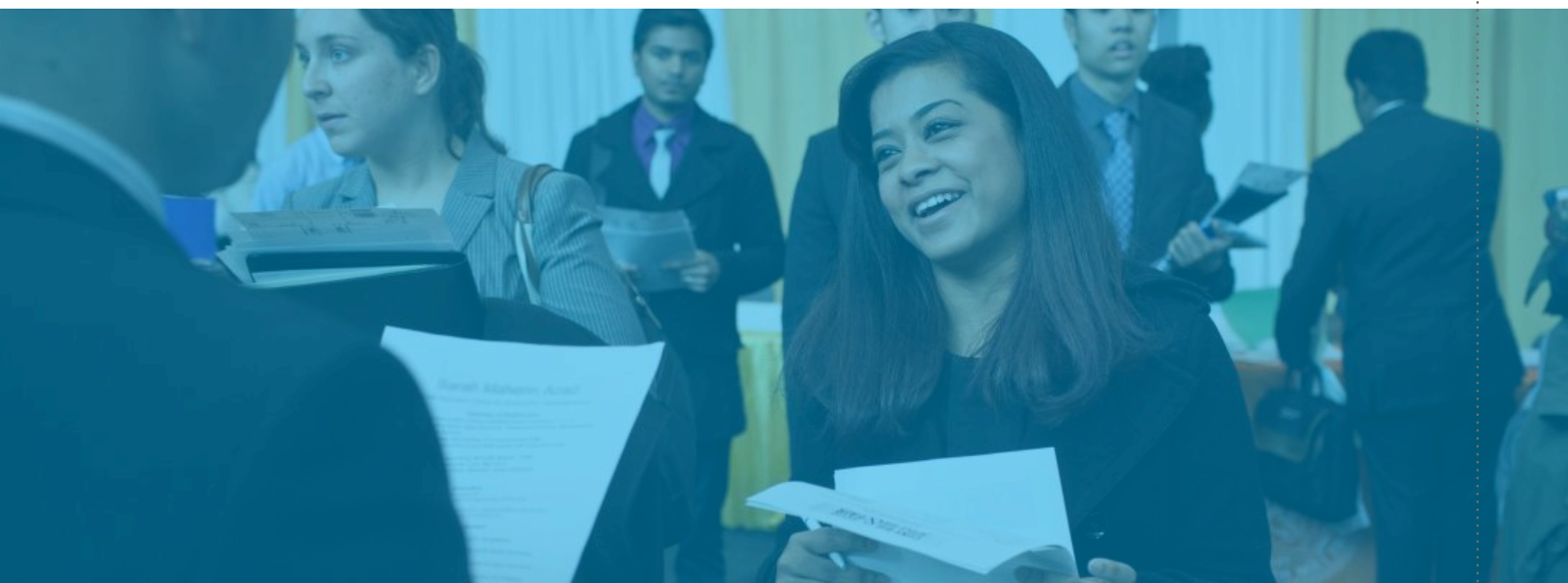
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**METROPOLITAN POLICY PROGRAM AT BROOKINGS
CHILD TRENDS**

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EXECUTIVE SUMMARY

Helping young people prepare to engage in work and life as productive adults is a central challenge for any society. Yet, many young people in the United States find that the path from education to employment and economic security in adulthood is poorly marked or inaccessible. As a result, those from low-income and less-educated families have lower rates of high school graduation, college enrollment, and college completion. Moreover, once they enter the labor market, they have lower employment rates and wages.

Using an advanced methodology and longitudinal data, this report examines two main questions:

- the quality of jobs (as measured by wages, benefits, hours, and job satisfaction) held by 29-year-olds who experienced disadvantage in adolescence
- the particular adolescent and young adulthood employment, education, and training experiences of people from disadvantaged backgrounds that are associated with higher-quality jobs at age 29

Among those who were disadvantaged as adolescents, the vast majority (79 percent) are employed at age 29. Among those workers, 38 percent have high-quality jobs as measured by our job quality index. Their counterparts—29-year-olds from non-disadvantaged backgrounds—fare better: 90 percent are employed, and 48 percent of those have high-quality jobs.

We identify a number of factors that shape job quality among 29-year-olds from disadvantaged backgrounds:

Work-based learning incorporating positive relationships with adults. Participating in a cooperative education, internship, apprenticeship, or mentorship program in high school is related to higher subsequent job quality. The relationships built between participants and adults set these programs apart from other career-related high school activities, like job shadowing, career majors, and tech prep, which we find are not related to job quality. While we do not have many details about the quality or intensity of these work-based learning experiences in high school, it is notable that they affect job quality at least a decade later.

Earlier experiences in the labor market.

Having a job as a teenager (ages 16-18) predicts higher job quality in adulthood, as do higher wages at age 23. Given that the analysis controls for education, work experience, and other characteristics, the wage finding suggests that regardless of a young person's education or work history, early good jobs (as measured by wages) lead to later good jobs. Periods of unemployment in one's 20s are associated with lower job quality.

Educational credentials and training. Those with high school diplomas and post-secondary degrees have higher job quality at age 29, as do those who participated in a training program between the ages of 24 and 27. Completing a post-secondary degree (two-year, four-year, or graduate) is the strongest predictor of a high-quality job among all factors considered in this report.

This report also analyzes a number of demographic and personal characteristics and their relationship to later job quality. Job quality is systematically lower for women than for men, even after controlling for education, experience, and cognitive ability. Net of these factors, blacks are not significantly more or less likely to have a high-quality job compared to whites, while Hispanics are more likely. Those who have previously been incarcerated also have lower job quality.

Based on these findings, this report provides four recommendations to improve the employment prospects of young people growing up in disadvantaged households:

Expand work-based learning within high school career and technical education.

Well-designed work-based learning (WBL) experiences such as internships, apprenticeships, and mentoring enable adults to provide students with developmentally appropriate and incremental guidance that helps them develop the skills that employers

seek in new hires. WBL provides students a chance to learn essential employability skills such as problem-solving, communication, and teamwork in ways that are difficult to achieve in the classroom alone. Research and practice provide an established body of knowledge that districts, principals, and teachers can draw upon to create or strengthen such programs. One key lesson is the need for sufficient resources and staffing. Cultivating employer relationships and handling the logistics of internships and workplace visits takes legwork and cannot simply be an add-on to the existing duties of teachers and other staff.

Increase completion rates of post-secondary degrees, with an explicit focus on quality and equity.

The road to completion must run through quality teaching and curricula, since completion goals otherwise can be gamed by diluting curricula or screening out less-prepared students. There is no easy or quick answer to help less-prepared students persist in their education and successfully complete a degree, but broadly speaking, many proposals converge on a set of shared elements:

- greater alignment with high school curricula and learning goals
- more student supports and services such as tutoring and proactive advising
- assistance with financial emergencies
- restructuring course offerings so that required course sequences are clearly laid-out and accessible
- reforming developmental education so that more students successfully move into credit-bearing courses
- providing additional resources for open- and broad-access schools

Improve on-ramps to employment for teens and young adults, particularly for those without post-secondary credentials. These on-ramps to employment can take many forms, including the work-based learning programs referred to above for high school students.

Nonprofits and community-based groups can offer them as well, and such organizations may be especially appropriate for older youth who are past high-school age and unsure about college. Programs for young adults not in high school or college typically offer work readiness and technical skills development, often in combination with academics, mentoring, supportive services, and paid internships or stipends. Well-designed programs align training with local employer needs and look for employment opportunities with potential for advancement.

Promote further research and action on the role of positive relationships in employment and training programs for youth and young adults. Assess the feasibility and value of embedding supportive relationships between young people and caring adults as core principles in education and workforce programs. While it is well-known that positive relationships are important to human development, it is not always apparent that fostering and supporting relationships are essential elements in program design and implementation.

Most of the factors studied in this analysis have somewhat small effects on job quality a decade later, but our findings align with other research on education, training, and employment. A constellation of factors affects whether a person obtains a good job, and these likely include many outside of formal education or workforce development institutions: neighborhood and family characteristics, economic trends, and employer hiring practices, to name a few.

Helping young people become productive adults means not only ensuring that they have a full range of opportunities as they develop and grow, but also that they have the skills and readiness to tackle the problems and jobs of the future. We have sufficient knowledge from evaluations, research, and practice to make major improvements in how we prepare young people from disadvantaged backgrounds to fully participate in and contribute to economic prosperity. What we need is the political and civic will to pursue and implement investments and reforms like the ones listed above.



INTRODUCTION

The path to employment and economic security in adulthood is straightforward in theory, if not in practice. The basic outline is clear: graduate from high school, enroll in a college or training program that is affordable and a good fit, earn a degree or credential, ideally gain some relevant work experience along the way, and then start a career.

However, it is also clear that this pathway is better marked and more accessible for some young people than others. Young people from lower-income and less-educated families have lower rates of high school graduation, college enrollment, and college completion. Moreover, once they enter the labor market, young adults from disadvantaged backgrounds have lower employment rates and work in lower-earning jobs.¹

How can we change this pattern? We address this question by using the National Longitudinal Survey of Youth 1997 (NLSY97) to examine whether particular education, training, employment, and life experiences, from adolescence through early adulthood, help or

hinder teens from disadvantaged backgrounds in their ability to obtain a high-quality job by age 29. Many evaluations have examined programs and policies designed to enhance labor market success; however, very few include long-term follow-ups. This analysis can therefore be seen as a complement to experimental evaluations.

By using a longitudinal survey that follows people over time, we can identify factors shaping labor market outcomes in a way not possible with cross-sectional or point-in-time data. Following young people from their teens to their late 20s allows us to assess a range of experiences over a formative period and provides a window into the longer-term effects of teenage employment and educational experiences.

Two definitions are key to this analysis: job quality and adolescent disadvantage. To assess job quality at age 29, we created an index encompassing earnings, benefits, hours of work, and job satisfaction. We defined adolescents as coming from a disadvantaged background if any of the following criteria were met during the first

round of the NLSY97 survey, when they were between ages 12 and 18: Family income was equal to or less than 200 percent of the federal poverty line; neither parent had more than a high school education; their mother was aged 19 or younger when her first child was born; or their family received public assistance.

Central to the analysis is measuring not just whether someone is employed, but the quality of that employment. In an era of wage stagnation and job insecurity, having a job does not always equal economic security. Three out of 10 working families earned less than 200 percent of the poverty line in 2016.² Between 1979 and 2016, real hourly wages among the bottom half of the wage distribution stagnated, and among the bottom 20 percent, hourly wages fell slightly, remaining just below \$10 per hour (in 2016 dollars). Meanwhile, wages in the top 20 percent grew by 27 percent over the same time period.³ While low-wage jobs can be a stepping stone to higher paying jobs, too often, they are dead ends.⁴ And the increasingly common business practice of contracting out “non-core competencies” like accounting, janitorial work, and security is associated with lower wages for the contracted workers and the loss of internal career ladders.⁵

Factors other than earnings also contribute to job quality. Fringe benefits, such as health insurance, retirement plans, and paid days off from work, facilitate a healthy stable life. Non-monetary benefits are also important, although these can be more difficult to conceptualize and measure: job security, opportunities for advancement, self-direction over what to do in a job and how to do it, workplaces that are safe and free from discrimination and harassment, and control over pace and scheduling. Inevitably, there is a subjective element as well, since people have different preferences and reference points, but this individuality can be approached by including the measure of job satisfaction expressed by each employed respondent.⁶

Job quality is thus a complicated concept, and most research in the United States has focused on discrete elements of job quality—e.g., earnings, benefits, autonomy and self-direction, or overall job satisfaction—rather than on job quality as an integrated concept.⁷ The task of studying job quality is complicated by the fact that there is no standardized definition of a good job, nor a dataset that includes all the relevant measures. However, based on the data available in the NLSY97, our job quality index estimates many of the above factors, and is a novel and hopefully useful contribution to the field.

This report continues as follows. As context for our analysis, we first provide a brief overview of some of the most important factors affecting young people’s success in the labor market. Then we describe our methodology, present our findings, and discuss the implications.

Ultimately, our goal is not only to identify beneficial education, training, and employment experiences, but also to identify reforms that make it possible for more young people from disadvantaged backgrounds to gain the necessary skills and preparation to obtain good jobs in adulthood and contribute to a healthy economy.

YOUNG PEOPLE IN THE LABOR MARKET: EDUCATION AND SOFT SKILLS ARE KEY TO SUCCESS

The job market can be a challenging arena, and broader trends show that stratification is well under way by age 29, as also observed in our analysis. Post-secondary credentials have become a gatekeeper in many occupations and fields. In 1973, only 28 percent of workers had an education beyond high school; in 2010 that figure was 59 percent. By 2020, according to the Georgetown Center on Education and the Workforce, 65 percent of all jobs will require postsecondary education and training beyond high school.⁸

Data from 2017 illustrate the power of educational attainment in labor market sorting. In 2017, 70 percent of 29-year-olds with no more than a high school diploma were employed, much lower than the share of 29-year-olds with bachelor's degrees (88 percent). Moreover, the Great Recession (December 2007 to June 2009) disproportionately hurt those with lower levels of education. As shown in Figure 1, among those with a bachelor's degree, employment rates fell up to five percentage points but have recovered to pre-recession levels. For those with lower levels of educational attainment, the drop in employment was considerably larger, and all remain below 2008 employment levels.

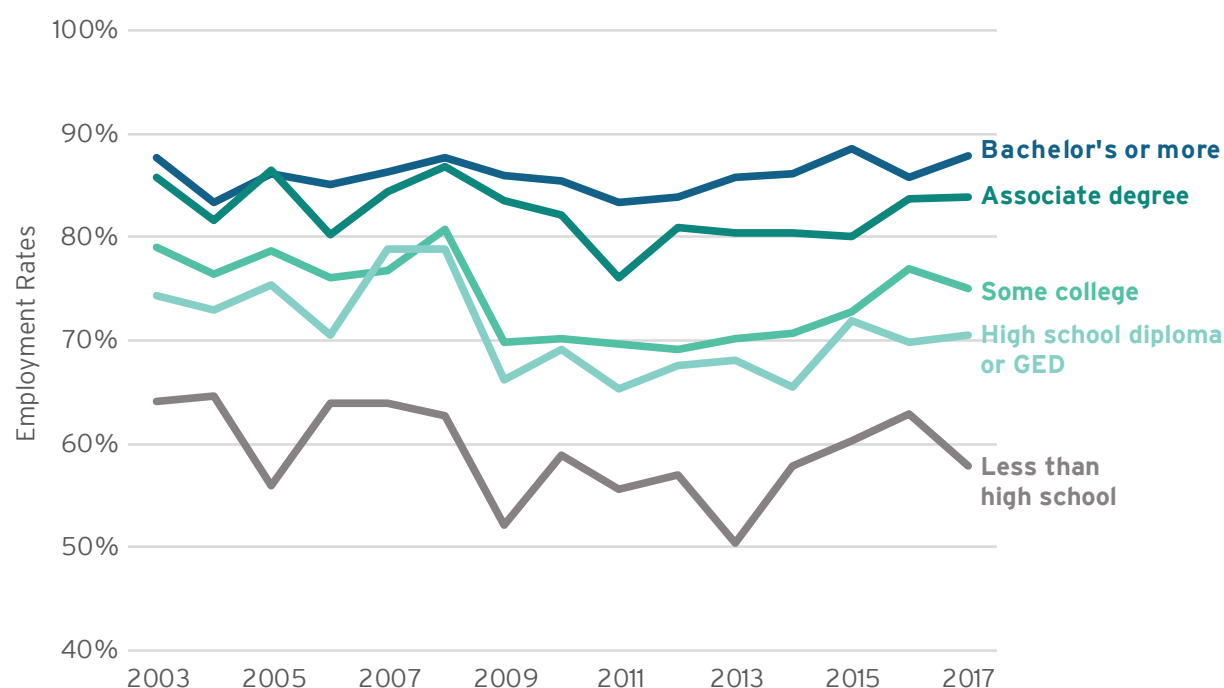
Additionally, evidence continues to grow that educational attainment is not the only important factor in determining labor market success.⁹ Other skills and capabilities critical to long-term

labor market success are variously referred to as non-cognitive, work readiness, professional, 21st century, social, or soft skills. As perhaps suggested by the profusion of labels, there is also a profusion of definitions, without consensus on a single definition. One synthesis of the literature uses the term soft skills and identifies the following as important for labor market success: higher-order thinking skills, communication, positive self-concept, self-control, and social skills.¹⁰ Other descriptions include the ability to read and react to others and to put oneself in another's shoes; responsibility, self-management, and communication skills; and showing up to work on time and having a strong work ethic.¹¹

Education and training programs can help young people gain these skills. Economists Tim Kautz, James Heckman, and their colleagues found particular promise in programs that

FIGURE 1

Employment rates among 29-year-olds vary by education level United States, 2003-2017



Source: Brookings analysis of ASEC supplement of the Current Population Survey, 2003-2017

combine education and work-related experience. Citing outcomes of intensive workplace-based initiatives like career academies and Year Up, they concluded, “Workplace-based programs that teach non-cognitive skills appear to be effective remedial interventions for adolescents,” motivating acquisition of work-related skills and providing valuable guidance.¹²

Other research on positive youth development (PYD) affirms these findings. PYD is a pro-social approach to developing the skills and competences of young people through building on their strengths, fostering positive relationships, and providing opportunities.¹³ Building soft skills is often a goal of this approach and research has shown positive relationships with adults are a key mechanism by which programs promote the development of soft skills in young people.¹⁴

A complicating factor, however, is that discussions of “soft skills” among young people easily blend into socio-cultural terrain.¹⁵ Workplace norms about how to interact with peers and supervisors

may run counter to the behavior some young people find adaptive in tough neighborhoods and schools, such as how to respond to authority or directions.¹⁶ In most workplaces, particularly white-collar ones, these norms reflect the dominant culture, which in the United States is white and shaped by expectations about how to succeed in the middle class. The onus is typically on people of color to learn to “code-switch” in order to fit into and succeed in the workplace environment.¹⁷ As one report notes, learning soft skills requires not just taking in information about expected behavior, but also internalizing these behaviors as part of a repertoire of social skills.¹⁸ For a young person to make the effort to learn and apply soft skills, he or she has to believe that the sometimes alien work environment is a place where he or she belongs, is welcome, and can succeed. But given the evidence of racial discrimination in the labor market and public discussion that workplaces are not sufficiently diverse, young people of color may not in fact be welcome, and it may be that workplaces need to change and adapt as well.¹⁹



METHODS

For a more detailed discussion of methods, including a full list of variables, please see the [technical appendix](#).

We used the National Longitudinal Survey of Youth 1997 (NLSY97) to explore how particular employment, education, and training experiences affect the quality of jobs obtained by young people from disadvantaged backgrounds by the end of their 20s. The NLSY97 is an ongoing nationally representative panel study of youth born between 1980 and 1984, conducted by the Bureau of Labor Statistics. The NLSY97 follows youth as they transition from school to work and adulthood, gathering detailed information about respondent employment, education, and training experiences along the way. The first survey round took place in 1997 when the sample of youth were between ages 12 and 18. Respondents were then surveyed in 17 subsequent rounds, with the most recent round occurring when respondents were ages 30 to 36. The survey has a high retention rate: a total of 8,984 youth were surveyed in Round 1, of whom approximately 80 percent (7,103) were also surveyed in Round 17.

We chose to focus on employment specifically at age 29 given that recent cohorts of young adults have delayed the traditional markers of adulthood (e.g., career development and advancement, marriage, and child bearing) until their late 20s and early 30s.²⁰ Furthermore, by examining employment at this age, we allow ample time for adolescents and young adults to enroll in post-secondary education, even if they don't complete it, and move through short-term, more casual employment typical of young people before moving into jobs that enable economic self-sufficiency and offer longer-term prospects.

There are various ways to assess whether a person is economically self-sufficient. They may have earnings from multiple jobs and may also rely on the income and/or earnings of family or household members. However, our goal was to assess whether one job, on its own, provides sufficient earnings and met other measures of job quality. Our goal was not to assess whether total earnings and income in a family or household were sufficient. Thus, we assessed respondents' "main jobs," as defined by the NLSY97. The main job refers to the respondent's current

employment, and if the respondent holds more than one job, it is the one at which he or she works the most hours. If the number of hours for each simultaneously held job are the same, the respondent's main job is the one at which the respondent started working at the earliest date. Main jobs include a job in which a person works for a person or organization, is self-employed, or is in the military.

DEFINING A GOOD JOB

There is no single established definition of a good job, although a useful framework is to consider both monetary benefits, such as wages and benefits like health insurance, and non-monetary benefits, such as autonomy, workplace safety, and hours worked.

To measure job quality, we developed an index that accounts for both monetary and non-monetary job benefits. Each variable in the index was measured on a three-point scale (0=low quality, 1=medium quality, and 2=high quality). We applied this index to the self-reported “main” job of each respondent in the sample.²¹ The value for each indicator was then added together, resulting in a final job quality score from 0 to 8, with 8 signifying the highest quality job.

The “good job” index is based on four indicator variables:

Wages: Wages are one of the most common measures of job quality, since they directly affect workers' ability to support themselves and their families.²²

We assessed respondents' wages relative to the 2015 federal poverty line (FPL). Wages below 200 percent FPL were coded as 0, wages 201 to 399 percent of FPL were coded as 1, and wages 400 percent or more of FPL were coded as 2.²³

Fringe benefits: Benefits like health care, retirement, and paid time off are important for the same reason as adequate wages—to meet

basic needs.²⁴ This is particularly true for jobs in the United States where employers are the primary providers of these benefits, rather than the government.²⁵ Those without employer-provided benefits may struggle to afford basic health care services or plan for future retirement, and they may lose earnings or risk job loss if they take time off to care for themselves or their children. To measure fringe benefits, we examined whether the respondent's main job offered paid leave (sick time or vacation), a retirement plan, and medical insurance. Respondents were given a 0 if none of the benefits were made available, a 1 if one or two of the benefits were made available, and a 2 if all three types of benefits were made available.²⁶

Hours worked: This measure of job quality is the most challenging, since people have different preferences for how much to work. However, working 40 hours per week is the standard benchmark, and research has found increasing polarization as more Americans work either much more or much less than full-time.²⁷ Working long hours can harm workers' physical and mental well-being, and working excessive hours at low-paying jobs to earn enough to pay for basic expenses can be exhausting both physically and mentally.²⁸ Meanwhile, some people work part-time by choice, and others do so because they can't find full-time employment. While we could not determine people's preferences regarding their hours, our goal was to identify employment that would allow people to support themselves and their families. Part-time employment (both involuntary and voluntary) is concentrated in lower-wage industries and occupations, suggesting that fewer hours would be associated with economic hardship.²⁹

To account for the negative aspects of too much or too little work, we coded working 1 to 20 hours per week and 61 or more hours per week as 0. A moderate work schedule was coded as 1 and represents individuals working just under full time (21 to 30 hours per week) or just over full time (31 to 60 hours per week). An optimal work schedule

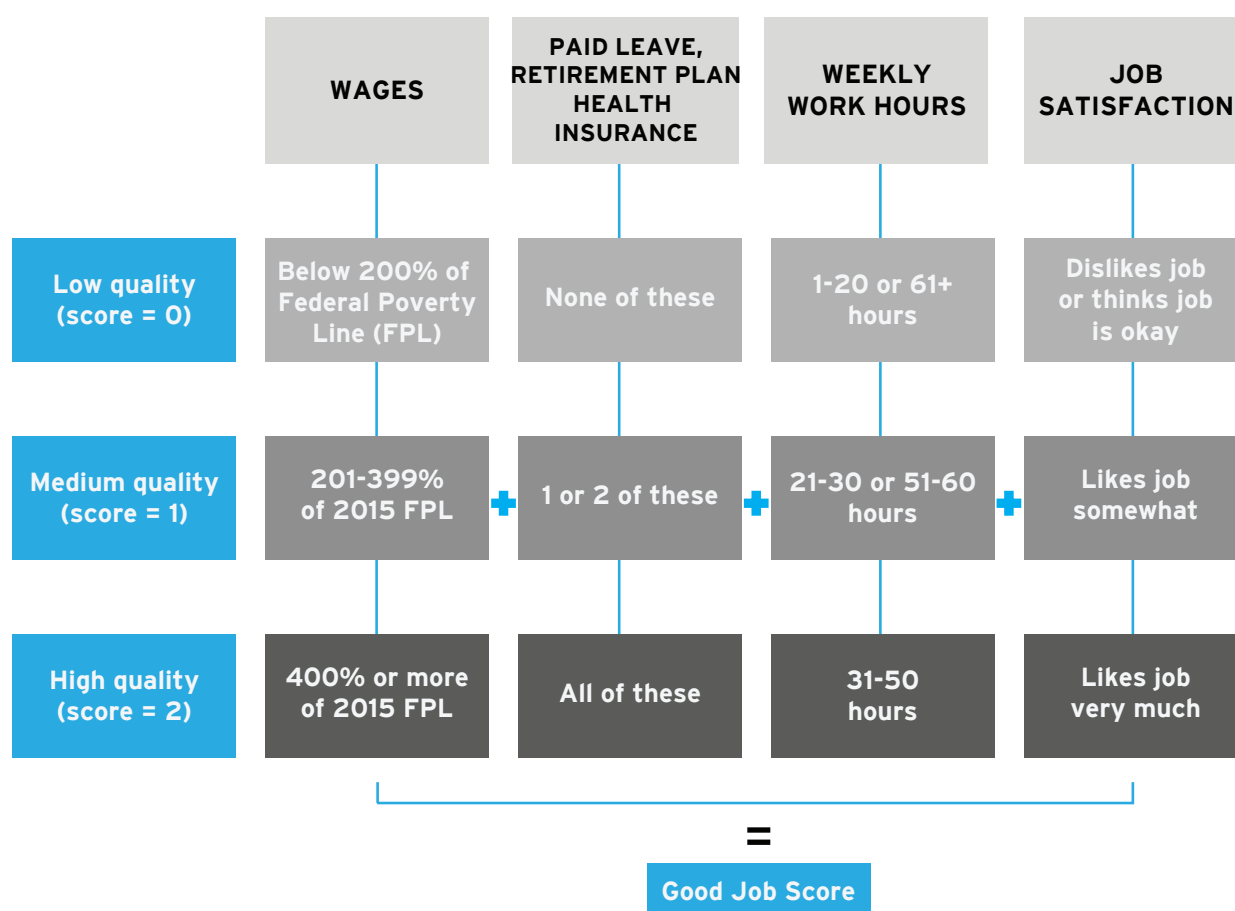
was coded as a 2 and includes those who worked 31 to 50 hours per week.³⁰

Job satisfaction: Job satisfaction is associated with a variety of employment characteristics such as risk of job loss, autonomy, training opportunities, and control over hours.³¹ The inclusion of the job satisfaction indicator in the job quality index allows us to account for these otherwise hard-to-measure non-monetary job rewards.

The NLSY97 asked respondents to report their level of job satisfaction on a 5-point scale, ranging from 1 (*Like it very much*) to 5 (*Dislike it very much*). In our analysis, respondents were considered to have low satisfaction if they indicated they “disliked” their job (somewhat or very much) or thought it was “okay,” and were coded as 0. Responses were coded as 1 if respondents indicated that they like their job “fairly well” and responses were coded as 2 if respondents indicated that they liked their job “very much.”

FIGURE 2

How we measure job quality



Source: The Brookings Institution and Child Trends

DEFINING OUR ANALYTIC SAMPLE³²

Because our analysis examines experiences in adolescence and young adulthood related to subsequent job quality, we first restricted the sample to those who were employed when they were about age 29. More specifically, we started with employment status data collected when respondents were age 29. For those with missing employment status data or not employed at age 29, we use their data and job information collected at age 30. If the information is missing or they were not employed at age 29 or 30, we then use their employment information at age 31, if available. Although we use data for some respondents at ages 30 or 31, we refer to the sample as aged 29 both for simplicity and because that is the age we prioritized in the analysis. About 82 percent (n=6,216) of NLSY97 respondents with data on employment status during this age of interest (n=7,600) met this criterion.³³

To narrow our sample to those who also experienced disadvantage in adolescence, we identified measures in the NLSY97 associated with economic hardship. Rather than use a single measure as the definitive indicator of disadvantage, we created a composite measure based on family income, parent education, parental teen childbearing, and family receipt of public assistance. We identified respondents who met any of these separate criteria of the composite measure as of Round 1 (1997), or Round 2 (1998) if Round 1 data were missing, when respondents were between the ages of 12 and 18, with the majority aged 14 to 17. Respondents who met any one of the criteria were defined as coming from a disadvantaged background (n=5,014; 66 percent of the NLSY97 sample with employment status data).^{34, 35} The four criteria and our rationale for using each measure are described as follows:

- **Low-income families**, defined as families whose income was equal to or less than 200 percent of the federal poverty line. Children

from such backgrounds often have lower levels of educational attainment and earnings in adulthood.³⁶

- **Neither parent has a post-secondary degree.** There is a close relationship between parental and child educational attainment. Young people are much less likely to complete a post-secondary degree if their parents did not and are therefore less likely to obtain higher-quality or better-paying jobs associated with higher levels of education.³⁷
- **Mother was aged 19 years old or younger when her first child was born.** Children of teen parents are less likely to finish high school and more likely to live in poverty.³⁸
- **Receipt of public assistance, including Aid to Families with Dependent Children, SNAP/food stamps, and Women, Infants, and Children nutritional assistance.** Such assistance, by design, is for low-income people who have difficulty meeting basic needs, and therefore recipients are disadvantaged by definition.

Restricting the sample to those who were employed around age 29 and also from disadvantaged backgrounds resulted in a final analytic sample of 3,928 (50 percent of the full NLSY97 sample of respondents who have data on adolescent disadvantage and employment status around age 29).

By definition, everyone in the analytic sample experienced disadvantage in adolescence. The majority (54 percent) experienced only one of the above disadvantages. Thirty-four percent experienced two disadvantages, 12 percent experienced three, and less than 1 percent experienced all four indicators of disadvantage.³⁹ The most common indicators of disadvantage were parental education (75 percent of the analytic sample) and family income (59 percent), followed by having a mother who had her first child before age 19 (37 percent) and receipt of public assistance (3 percent).⁴⁰

Compared to the NLSY97 universe, our sample of disadvantaged teens who were employed at age 29 has higher shares of blacks and Hispanics, lower rates of educational attainment, and is slightly more likely to be male. Specifically, 42 percent of the analytic sample are people

of color, compared to 33 percent in the NLSY universe, 54 percent are male, compared to 51 percent, and 24 percent have two- or four-year college degrees, compared to 35 percent among all NLSY respondents.

TABLE 1

Compared to all NLSY97 respondents, our sample includes smaller shares of white people and those with post-secondary degrees

Descriptive statistics of our sample and all NLSY97 respondents

	Analytic Sample (N=3,928)	NLSY97 (N=8,984)
Gender		
Male	54%	51%
Female	46%	49%
Race/ethnicity		
White, non-Hispanic	58%	67%
Black, non-Hispanic	20%	15%
Hispanic	18%	13%
Other, non-Hispanic	4%	5%
Highest degree earned by age 27		
Drop out or GED	24%	20%
High school diploma	52%	45%
Post-secondary degree	24%	35%
Number of disadvantages		
Zero	-	41%
One	54%	31%
Two	34%	20%
Three	12%	8%
Four	<1%	<1%

Note 1: Percentages may not add up to 100 percent due to rounding.

Note 2: Percentages in this table are weighted.

Note 3: Please refer to Technical Appendix Tables A1 and Tables A3 for additional NLSY97 and analytic sample descriptive statistics.

Source: Child Trends analysis of NLSY97 data

ANALYSIS

We conducted path analyses to explore how different employment, education, and training experiences of young people who were from disadvantaged backgrounds in adolescence are related to job quality in their late 20s. We took a life-course perspective, which recognizes that people go through different stages in their lives, and that what happens in one stage can affect later stages. The age span we are studying (adolescence through age 29, 30, or 31) encompasses the transition to adulthood, and to be sensitive to the effects of age-specific experiences, we created three different age “windows” which we call adolescence (16-19), emerging adulthood (20-23), and early adulthood (24-27). These windows are not written in stone, but they map roughly to experiences common to people of similar ages. Almost all adolescents are in high school between the ages of 16 to 19, and the emerging adulthood phase is when people are most likely to enroll in post-secondary education or training (even if many do not complete it) and gain work experience. In early adulthood, people may still be in school, but are increasingly expected to live independently and support themselves.

Since this study focuses on diverse experiences across a 15-year period, we included a wide array of variables, rather than a small number associated with a specific hypothesis. We first began with a model that included only demographic control variables. From there, we went through a model-building process, in

which we tested the significance of associations between employment, education, and training experiences in the three age windows. In addition, a number of behaviors and experiences likely to undermine labor force success were included, such as incarceration and having a child during one’s teen years.

Although this approach enabled us to test the additive influence of diverse life experiences, including too many variables in a model can reduce the models’ stability and ultimately the ability to detect the statistically significant effects. To address this issue, variables with p-values above .25 (non-statistically significant variables) were not continued through to the following model. This conservative cutoff was chosen because variables with p-values above this threshold are unlikely to become significant (defined as having a p-value of .05 or less, a standard benchmark of statistical significance) when model parameters are changed, while variables with p-values trending toward significance may become significant when model parameters are changed. Thus, while our goal was to eliminate variables in order to create a better functioning model, we did not want to be too restrictive in determining which variables to carry over since a variable may not have a p-value of .05 or less, but still have an effect.

For the full list of demographic controls and independent variables, and a more detailed discussion of our analytic approach, please refer to the technical appendix.



STRENGTHS AND LIMITATIONS OF THE ANALYSIS

As with any research, this analysis has both strengths and limitations.

One key strength is the data source for the analysis. The low attrition rate and longevity of the NLSY97 allows us to follow individuals over an extended period of time and measure the effects of various experiences in a way that is not possible with cross-sectional data. Moreover, the survey includes a rich set of variables related to education, employment, and overall life circumstances.

Using the NLSY97 does, however, present some limitations. Although the NLSY97 is a nationally representative survey, the sample sizes are too small to allow for state, regional, or local analyses. Simply living in a place with fewer good jobs may make a person less likely to have one, even if that person has the right mix of experience and education; we are unable to control for this geographic variation. Similarly, we are unable to account for regional variation in earnings—a “good” salary in one part of the country might hold less purchasing power in another part of the country.

Small sample sizes also disallow analysis of individual types of career and technical education programs (CTE) because of the small number of respondents who participated in each one. To account for this limitation, we group the programs into relationship-based and not relationship-based program types. While this grouping allows us to compare the two types of CTE to each other, it limits our ability to determine if specific CTE programs are related to job quality. For example, we cannot say whether individual relationship-based CTE programs or individual non-relationship-based CTE programs are more strongly or less strongly related to job quality.

Aside from small sample sizes, the NLSY97 also has missing data, a common issue with longitudinal datasets. Due to missing data on employment status around age 29, the disadvantage indicators, or both, 1,106 individuals (12 percent of the full NLSY97 sample) could not be assessed for inclusion in our sample and are therefore excluded.⁴¹

Turning to our analytic strategy, our targeted measures of disadvantage and job quality allow for a more sensitive analysis of job quality among young adults who experienced disadvantage in adolescence. In defining both job quality and adolescent disadvantage, we included multiple factors that are typically examined individually, resulting in a more expansive and well-rounded analysis.

However, our measure of disadvantage may exclude some individuals who should be included and include some that should be excluded. For example, we measure disadvantage when respondents were aged 12 to 18, meaning that we do not capture conditions from earlier in childhood that may be relevant. Additionally, we use 200 percent of the federal poverty line as one indicator of disadvantage, a widely used but imperfect measure because it may not accurately capture household spending and consumption patterns and does not vary by geography.⁴²

As for defining job quality, in an era of widespread concern about contingent work, wage inequality, unpredictable hours, and job insecurity, we take a broad view. However, there is no single data set that allows for a comprehensive analysis of job quality, nor indeed is there a standard definition of a good job, so some imperfection is inevitable. In particular, there is no established weighting of these elements of job quality. While some will argue that earnings are paramount, others may value fringe benefits or work hours. Accordingly, we weighted the four elements equally.

One component of job quality that is more inexact than we would have liked relates to hours. We cannot account for people's preferences regarding full-time or part-time work, and rely on the standard benchmark of 40 hours per week. Additionally, there is some correlation between our measures of hours and wages, since annual earnings from wages over the course of year is related to the number of hours worked.

And while the job satisfaction measure from the NLSY97 is a useful summary measure that allows people to assess a myriad of non-monetary job characteristics, it may also be somewhat correlated with wages and fringe benefits.⁴³ We would ideally be able to more explicitly measure other non-monetary job characteristics such as safety, harassment, and scheduling predictability, but are limited by our data. Even though our job quality measure does not capture all the various elements of job quality, because it includes both monetary and non-monetary attributes, it is a more sensitive measure than is often used. Further developing this job quality measure and creating measures for future surveys is a rich area for future work.

Another strength of our analytic strategy is our use of three separate age windows in the analysis: adolescence (16-19), emerging adulthood (20-23), and early adulthood (24-27). This approach allows us to sensitively identify and measure various experiences at different times in a young person's development. As noted above, however, we included a wide array of variables to assess a diverse range of experiences, given that we were not testing a specific hypothesis. Coupled with our use of three age windows, this left us with a large, rather unwieldy number of variables. We addressed this problem with a model-building approach in which we only carried over significant variables (with a conservative definition of non-significance of 0.25) into the next phase of the model. We consider this approach to be a good match with the exploratory nature of our examination of influences within different time periods.

We recognize that our approach has limitations. We may have inadvertently dropped variables of interest in our model-building process. And although we assessed effects in each of the three age windows, we did not assess whether experiences in one window built upon or fed into those in another window; e.g., whether someone

who participated in a relationship-based career and technical education program in high school was more likely to participate in a training program in their 20s, or whether someone who worked as a teen was more likely to earn a post-secondary credential.

More broadly, the usual caveat associated with non-experimental studies applies—we cannot rule out that selection bias may have affected our findings, although we did mitigate this concern by using a rich set of control variables, including gender, race/ethnicity, and cognitive test scores. Nevertheless, predicted effects are not the same as causal estimates, for which a randomized control trial (RCT) would be necessary.

Despite these limitations, we feel that our ability to examine the attribution of various life experiences across a 15-year window to the employment outcomes of a nationally representative sample of adolescents who experienced disadvantage is a contribution to the field. Unlike RCTs, which generally examine the effect of a single intervention over a relatively short follow-up window, our model allows us to explore how different interventions and experiences within our age windows echo through later experiences and life course stages. As such, our analysis is a complement to the results from individual RCTs.





FINDINGS ⁴⁴

In our analysis, we identify both descriptive and multivariate findings.

- **Findings 1 and 2 are descriptive**, meaning that they describe or summarize the data, without controlling for confounding variables. In this report, they describe the share of the sample that is employed, as well as the quality of the jobs of those who are employed.
- **Findings 3 through 10 are the result of a multivariate path analysis**, in which we examine the relationship between job quality at age 29 and education, training, and employment experiences in an individual's teens and early- to mid- 20s.

1. EMPLOYMENT RATES ARE HIGH AMONG ALL 29-YEAR-OLDS, BUT ARE HIGHER AMONG THOSE WHO DID NOT EXPERIENCE DISADVANTAGE AS AN ADOLESCENT

Seventy-nine percent of 29-year-olds who experienced adolescent disadvantage are employed, compared to 90 percent of those who did not experience adolescent disadvantage, a difference of 11 percentage points.

These employment rates vary by demographic characteristics in both groups. Looking more closely at 29-year-olds from disadvantaged backgrounds, males are more frequently employed (84 percent) than females (75 percent). Employment rates are also higher for those with

more education, with an employment rate of 91 percent among post-secondary degree holders, 82 percent among those with a high school diploma, and only 66 percent among those either with GEDs or without high school diplomas.

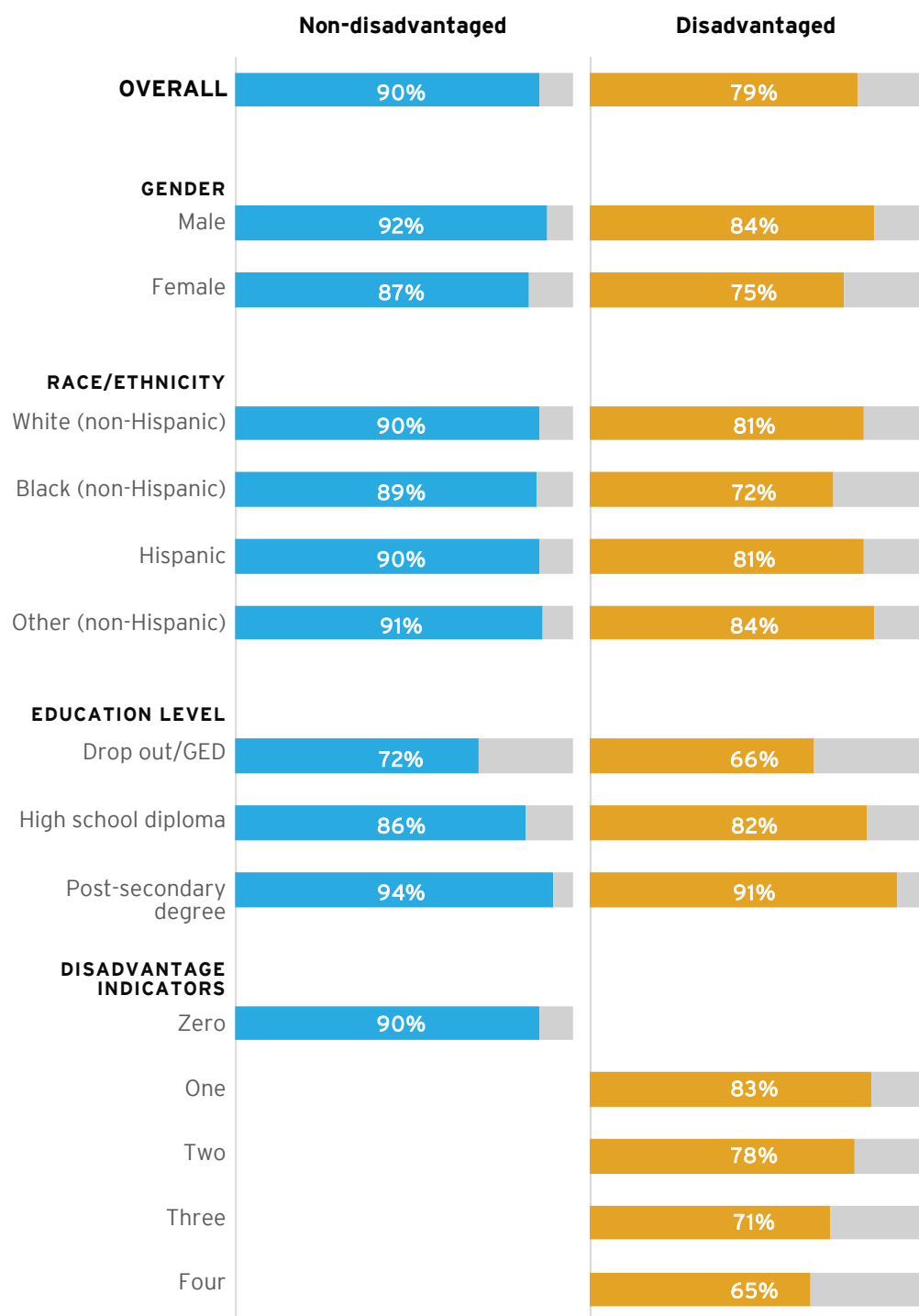
Blacks have lower employment rates (72 percent) than whites and Hispanics (both 81 percent) and employment rates are lowest among those who experienced all four indicators of adolescent disadvantage (65 percent).

NLSY97 respondents who were not identified as experiencing disadvantage in adolescence have higher employment rates in every demographic category than those in the disadvantaged group. For example, employment rates by race/ethnicity for the non-disadvantaged group are higher than the disadvantaged group, and also less varied,

FIGURE 3

Lower shares of those who experienced disadvantage are employed compared to those who did not experience disadvantage

Employment rates among 29-year-olds, by demographic characteristics and experience of adolescent disadvantage



Source: Child Trends analysis of NLSY97 data

-ranging between 89 and 91 percent. The non-disadvantaged group is also more often employed at each education level relative to those from disadvantaged backgrounds. It does appear however, that rewards to education may be greater for the disadvantaged group, as the gap in the employment rate between non-disadvantaged and disadvantaged narrows from six percent among those who do not have a high school diploma or have a GED to three percent among those with a post-secondary degree.

2. AT AGE 29, 38 PERCENT OF THOSE FROM DISADVANTAGED BACKGROUNDS HAVE HIGH-QUALITY JOBS, COMPARED TO 48 PERCENT OF THOSE FROM NON-DISADVANTAGED BACKGROUNDS

We defined high-quality jobs as those with scores of 6 to 8 on the job quality index and found that the share of 29-year-olds from disadvantaged backgrounds with such jobs (38 percent) is 10 percentage points lower than the share of those from non-disadvantaged backgrounds (48 percent).

Among both groups, relatively small shares score at either extreme of the index, with scores of 0 or 8, although more of the non-disadvantaged group has a score of 8 (7 percent) than the

disadvantaged group (4 percent). The mean score for the disadvantaged group (4.72) is almost half a point lower than the mean score for those who did not experience any of the four indicators of disadvantage in adolescence (5.17). Fifteen percent of the disadvantaged group have the lowest-quality jobs, with scores of 0 to 2, compared to nine percent of the non-disadvantaged group. Similarly, a higher share of the disadvantaged group (48 percent) have medium quality jobs with scores of scores of 3 to 5, compared to the non-disadvantaged group (43 percent).

Examining the components of job quality individually, wages and job satisfaction were most likely to contribute to low scores. Table A7 in the technical appendix details the share of our sample who scores a 0, 1, or 2 across each job quality indicator.

More than a quarter (27 percent) of those employed and from disadvantaged backgrounds scored 0 on the wages measure, meaning they earn less than 200 percent of the poverty line, and 30 percent scored 0 on job satisfaction, reporting that they either dislike their job very much, dislike it somewhat, or think it is ok. By contrast, only 15 percent scored a 0 on benefits, meaning that the job did not offer paid leave, a retirement plan, or medical insurance, and 11 percent had a score of 0 on hours, meaning they

TABLE 2

29-year-olds from disadvantaged backgrounds are more likely to have lower-quality jobs than 29-year-olds from non-disadvantaged backgrounds

Job quality scores among employed 29-year-olds, by experience of adolescent disadvantage

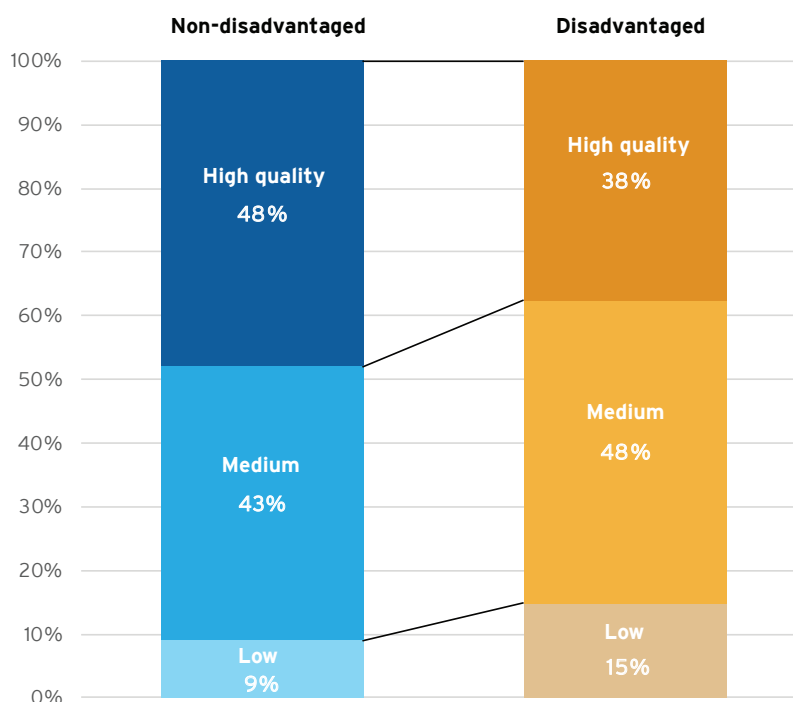
	Job Quality Index								
	Low quality			Medium quality			High quality		
Job quality score	0	1	2	3	4	5	6	7	8
Non-disadvantaged	1%	3%	5%	8%	14%	21%	23%	17%	7%
Disadvantaged	2%	4%	8%	9%	17%	21%	20%	13%	4%

Note: Percentages may not add to 100 due to rounding.
Source: Child Trends analysis of NLSY97 data

FIGURE 4

29-year-olds from disadvantaged backgrounds are less likely to have high-quality jobs

Shares of employed 29-year-olds with low-, medium-, and high-quality jobs, by experience of adolescent disadvantage



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

Source: Child Trends analysis of NLSY97 data

either worked less than 20 hours or more than 61 hours per week.

The measure of hours was the most likely to contribute to a high score. Seventy-six percent had a score of 2, meaning they worked between 31 to 50 hours per week: neither too many nor too few hours, as we conceived it. Job satisfaction was the next most likely to have a high score: 38 percent reported liking their job very much. Thirty-seven percent scored 2 on benefits, meaning their job offered all of the benefits we measured. The wages measure was the least likely to contribute to a high score: only 28 percent reported earnings above 400 percent of the poverty line.

Among those from disadvantaged backgrounds, job quality varies by race, gender, and education

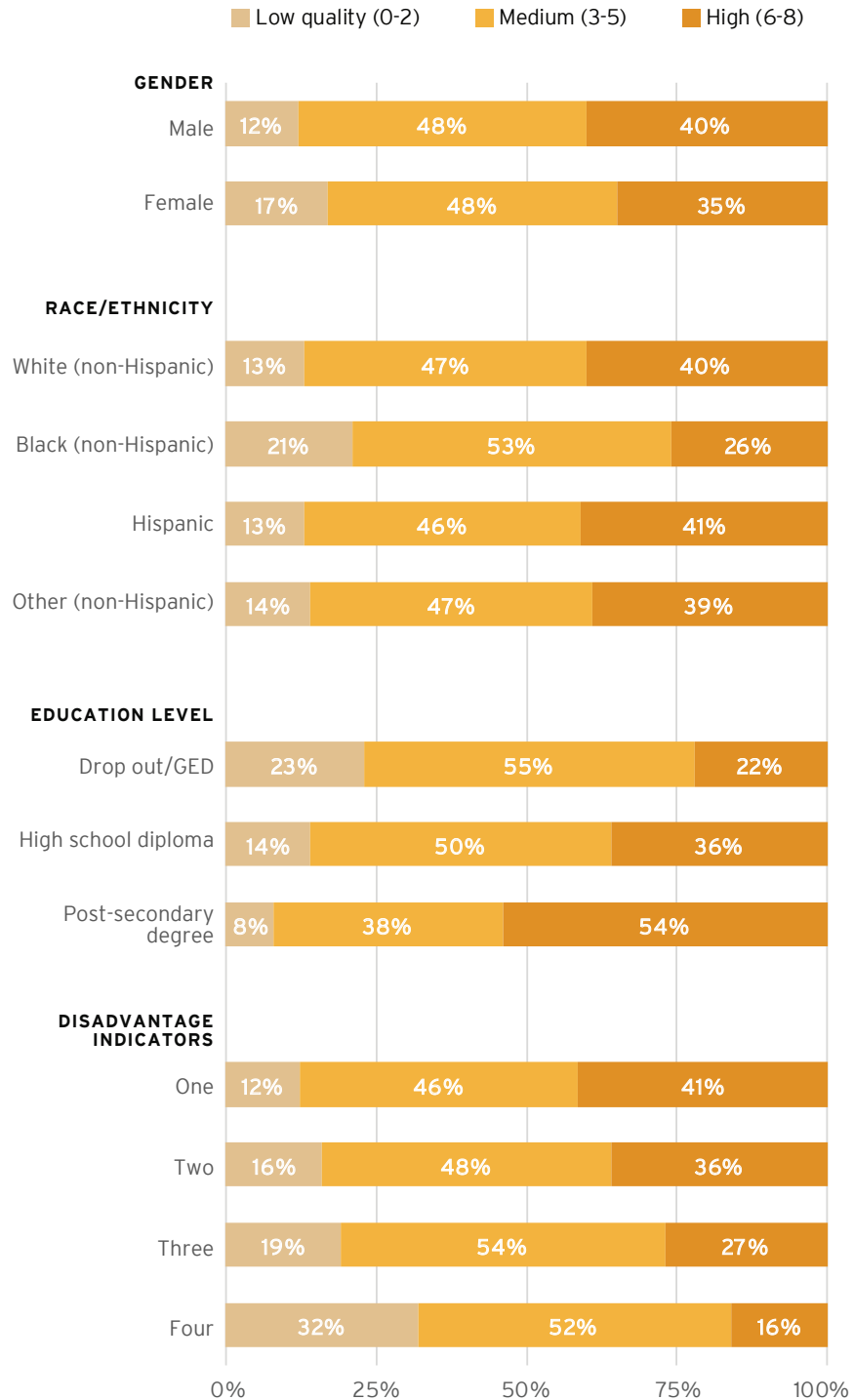
level. Looking at differences by race in the disadvantaged group, a higher share of blacks (21 percent, or one in five) have lower-quality jobs—those with scores of 0 to 2—than either whites or Hispanics (13 percent). Males are more likely to have a higher-quality job than females. Individuals with higher educational attainment have higher-quality jobs: more than half of those with a post-secondary degree had a higher quality job, compared to about one third of those with a high school diploma and one-fifth of those with a GED or less than a high school diploma.

Job quality also varies by the number of disadvantages experienced during adolescence. Among those meeting all four of our disadvantaged indicators, 16 percent have a higher-quality job, compared to 41 percent of those with only one disadvantage.

FIGURE 5

Job quality among those from disadvantaged backgrounds varies by race, gender, and education level

Job quality among employed 29-year-olds from disadvantaged backgrounds, by demographic characteristics



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

Source: Child Trends analysis of NLSY97 data

SIDEBAR 1. A NOTE ON INTERPRETING THE FINDINGS

Findings 3 through 10 report the average effects of a given variable (e.g. educational attainment, training programs, unemployment, and so on) on job quality when controlling for the effects of all other variables in the model, such as cognitive test scores, gender, and race/ethnicity. We do this to isolate the effects of the specific variable in question (say, educational attainment) apart from all of the factors that

could shape job quality. Thus, we can say that educational attainment positively affects job quality, regardless of race/ethnicity, gender, previous unemployment, participation in a training program, and so on.

Please see the appendix, “A Guide to Interpreting Multivariate Analysis Findings” for more details.

3. PARTICIPATION IN RELATIONSHIP-BASED CAREER AND TECHNICAL EDUCATION IS RELATED TO HIGHER JOB QUALITY

Relationship-focused CTE program participants have job quality scores at age 29 that are, on average, 0.18 points higher than those who did not participate in such a program. Although this difference appears small, it holds net of numerous other factors, including cognitive test scores and later work experience, and reflects an effect that persists even 10 years after high school—a striking finding given that the effects of training programs are often found to fade over time.

While “relationship-focused CTE” is not a commonly-used term, we created the variable *a priori* to describe a subset of CTE programs identified in the NLSY97: cooperative education (coops), internship/apprenticeship, and mentoring. These programs are similar to each other in several ways that differ from the other forms of CTE included in the NLSY97 (please see the textbox for specific definitions). They all take

place, in whole or in part, at the workplace, and either explicitly or implicitly involve a relationship with an adult or supervisor. Given the structure of internships/apprenticeships and coops, schools strive to place students in a workplace with a designated and engaged supervisor; indeed, these two programs are much more likely than other forms of CTE to include an evaluation of the student’s performance by the employer. Meanwhile, the whole premise of mentoring is to build supportive relationships with caring adults. These three programs also build in more extensive workplace experiences, lasting on average 10 to 14 weeks, than the other career and technical education offerings included in the NLSY97, providing more time for relationships to develop.⁴⁵

The other CTE programs included in the NLSY97 include career majors, tech prep, job shadowing, and school-based enterprise. We grouped these programs together *a priori* in another summary variable and did not find them to be a significant predictor of job quality around age 29.

TABLE 3

Education, training, and employment experiences predict later job quality

Standardized and unstandardized estimates of significant predictors of job quality score at age 29

	Standardized coefficient estimate (β)	Unstandardized coefficient estimate (B)
Adolescence (16-19)		
Participated in relationship-focused career and technical education program	0.043 **	0.178 **
Worked during high school (restricted to ages 16-18)	0.036 *	0.368 *
Emerging adulthood (20-23)		
Number of weeks unemployed	-0.077 **	-0.056 **
Wages at age 23 (\$7.25/hour or less is reference group)		
\$7.26-\$14.99/hour	0.093 **	0.362 **
\$15+ /hour	0.112 **	0.665 **
Early adulthood (24-27)		
Participated in a training program	0.091 **	0.366 **
Number of weeks unemployed	-0.096 **	-0.064 **
Highest degree earned by age 27 (No degree/GED is reference group)		
<i>High school diploma</i>	0.065 **	0.244 **
<i>Post-secondary degree</i>	0.204 **	0.891 **
Married or cohabiting at age 27	0.066 **	0.247 **
Other variables		
Female	-0.124 **	-0.466 **
Age at time of first interview	0.097 **	0.118 **
Race/ethnicity (white/other, non-Hispanic is reference group)		
<i>Hispanic</i>	0.048 **	0.234 **
<i>Black, non-Hispanic</i>	-0.026	-0.125
Ever incarcerated	-0.087 **	-0.556 **
ASVAB	0.095 **	0.076 **

* Significant at the 95% level ** Significant at the 99% level

Note 1: The Armed Services Vocational Aptitude Battery (ASVAB) is a measure of cognitive ability.

Note 2: Please refer to Technical Appendix Table A9 for list of non-significant predictors.

Source: Child Trends analysis of NLSY97 data

SIDEBAR 2. CAREER AND TECHNICAL EDUCATION PROGRAMS

RELATIONSHIP-BASED CAREER AND TECHNICAL EDUCATION PROGRAMS

- **Cooperative education (coops):** Students alternate their academic and vocational studies with a job in a related field.
- **Internship/apprenticeship:** Students work for an employer for a short time to learn about a particular industry or occupation.
- **Mentoring:** Students are paired with an employee who assesses his or her performance over a period of time, during which the employee helps the student master certain skills and knowledge.

These programs involve a relationship with a supportive adult, either a mentor or a workplace supervisor. Internships/apprenticeship and coop programs strive to place students in workplaces with designated and engaged supervisors, ideally one who provides direct and significant input upon the student's work. Indeed, such programs are more likely than the other forms of CTE measured in the NLSY97 to include an evaluation of the student's performance by the employer. And by definition, the goal of mentoring is to build supportive relationships with caring adults. Additionally, these three programs have somewhat higher dosages (measured as number of weeks at the worksite multiplied by hours per week) than the other forms of CTE, creating more of an opportunity to build a relationship.

We recognize, however, that in all of these cases building a supportive relationship with an adult may be more aspirational than real, and much depends upon implementation.

OTHER CAREER AND TECHNICAL EDUCATION PROGRAMS

- **Career majors:** A coherent sequence of courses based upon an occupational goal.
- **Job shadowing:** A student follows an employee for one or more days to learn about an occupation or industry.
- **School-sponsored enterprise:** The production of goods or services by students for sale or use by others.
- **Tech prep:** A planned program of study with a defined career focus that links secondary and post-secondary education.

Career majors and tech prep refer to an academic course of study, without an indication they foster workplace supervisory or mentoring relationships. While job-shadowing involves meeting and interacting with an employee, the experience is usually of short duration and is designed more for career exposure than substantive work over time, although astute students would certainly take the opportunity to network. In school-based enterprises, students run a business within the school with support from a teacher or other adult. While the adults provide guidance, the emphasis is more on students working together and solving problems.

While these programs could involve supportive relationships with adults (as any educational program could), we judged them less likely to than the other three given their program design.

Note: Terms and definitions used within career and technical education (CTE) have shifted somewhat since the NLSY97's creation. NLSY97's questions were informed by the 1994 School to Work Opportunities Act of 1994 (StW), which sunsetted in the early 2000's. Via subsequent federal Perkins legislation, the concepts behind tech prep and career majors have evolved into programs of study and career pathways within career clusters. And while workplace mentoring was highlighted as a specific form of work-based learning under StW, mentoring may also be understood as embedded within specific CTE programs rather than as a stand-alone element.

Definitions are from "National Longitudinal Survey of Youth 1997: School-Based Learning Programs," available at <https://www.nlsinfo.org/content/cohorts/nlsy97/topical-guide/education/school-based-learning-programs> (n.d.)

Other sources: Corinne Alfeld and others, "Work-Based Learning Opportunities for High School Students" (Louisville, Ky: National Research Center for Career and Technical Education, 2013); and David Neumark and Donna Rothstein, "School-to-Career Programs and Transitions to Employment and Higher Education," *Economics of Education Review* 25 (2006): 374-393.

Other research using the NLSY97 has also found coops, internships/apprenticeships, and mentorships have positive effects, although past research examined post-secondary education and employment more generically, without a focus on job quality. For example, a study of high school students identified as unlikely to attend college found that, among men, cooperative education, school enterprise, and internships boosted employment while mentorship increased college-going.⁴⁶ Another study looked at the effects on all participants (not only those unlikely to attend college) and found that internships/apprenticeships and cooperative education increased employment after high school.⁴⁷ However, the above two studies were only able to follow respondents through the fifth survey round, or shortly after high school, so the current analysis bolsters the findings with evidence of longer-term effects.

Our finding also aligns with the evaluation of career academies, high schools that combine college-prep academics with technical curricula

around a career theme and offer work-based learning opportunities such as internships. Career academy students, particularly young men, showed sustained earnings gains eight years after graduation.⁴⁸

Of course, we cannot say for certain that the "relationship" aspect of the three CTE programs is driving the effects. As with any of the findings, selection effects may play a role, although we did control for cognitive test scores. The fact that students in the three relationship-based CTE programs spent more time at the workplace may also play a role, assuming there is a dosage effect. Or perhaps there is something else about program design.

However, relationships with adults are a common factor across the three programs, and given other research emphasizing the importance of relationships to the success of young people, it is plausible that the increase in job quality is at least partly attributable to relationships.⁴⁹

4. EDUCATION AND TRAINING ARE ALSO KEY PREDICTORS OF JOB QUALITY

A. Participation in a training program between the ages of 24 and 27 is associated with higher job quality

We find that those who participated in a training program between the ages of 24 and 27 have job quality scores at age 29 that are 0.37 points higher than those who did not participate in a training program. Participation in a training program during earlier age windows (16-19 and 20-23) did not significantly affect later job quality.

Because the NLSY97 “training program” variable is quite broad, we are not able to specify whether particular types of training have different effects. (Please see the technical appendix section V. Variables for more details on the variable and types of training.) We do note, however, that the age window of our finding (training between the ages of 24-27) is later than the typical cut-off of age 24 for employment programs targeting out-of-school youth. It may be that training undertaken in the age window of 24 to 27 affects later job quality because such training is more directly relevant to participants’ occupations and careers at age 29. Indeed, it may be offered by the person’s employer. It also may be the case that the young adults who participate in trainings between 24 and 27 have different characteristics than the young people in programs targeting out-of-school or disconnected youth, although we do try to account for this with a large number of control variables.

While not all job training programs are effective, research and practice indicate that a few key characteristics are critical to increasing employment and wages: offering training and job placement that align with regional labor market needs and in-demand skills (inclusive of post-secondary certificate and degree programs) and providing guidance, counseling, and other appropriate supportive services to participants.⁵⁰ More specifically, a number of sector-based job

training programs have found positive results in recent years, including one targeting young adults, Year Up (although it targets people in their early 20s, younger than the age window in our finding). Sector-based programs identify and address the workforce needs of particular industries within a regional labor market and require strong relationships with employers.⁵¹

B. High school diplomas and post-secondary degrees also predict higher job quality

Not surprisingly, given the strength of the evidence on the importance of education to labor market success, we find educational attainment at age 27 is positively related to job quality at age 29.

Having a high school diploma by age 27 is associated with a job quality score 0.24 points higher than those who do not have a high school diploma or have a GED. This finding is consistent with previous research that finds little pay off to each additional year of school until the year a high school diploma is earned.⁵² Those who graduate from high school earn more, have higher employment rates, and face lower incarceration rates than those who do not earn a high school diploma.⁵³ For example, previous research has estimated a lifetime earnings difference of \$260,000 for those who earn a diploma compared to those who do not.⁵⁴

Similarly, when compared to not having a diploma or having a GED, earning a post-secondary degree (two-year, four-year, or graduate degree) is also associated with higher job quality at age 29. On average, post-secondary degree holders have a job quality score nearly one point higher (0.90) than those who do not have a high school diploma or have a GED.

Reams of research find degree holders earn higher wages compared to those with lower levels of education. Estimates of this premium have varied over time, but a recent assessment finds returns of 22 percent to associate degrees, 32

percent to bachelor's degrees, and 46 percent to graduate degrees compared to high school graduates.⁵⁵

There are also non-monetary benefits to post-secondary degrees. Associate, bachelor's, and graduate degree holders are more likely to receive health care, retirement, and vacation benefits. They are also more likely to experience favorable work conditions and report higher job satisfaction.⁵⁶

5. TEEN EMPLOYMENT PREDICTS HIGHER JOB QUALITY

Those who ever worked between ages 16 and 18, whether in the summer or school year, have job quality scores at age 29 that are 0.37 points higher than those who never worked during this period. This finding adds to a body of research that has, overall, presented a mixed picture on the impacts of teen employment.

One strand of research suggests that a moderate level of teen employment during the school year (less than 15 or 20 hours per week) has beneficial effects on future employment, earnings, and net worth. In this view, teens gain valuable skills, experience, and work habits through employment that serve them well in the future.⁵⁷

Most of this research is based on cohorts of young people who were in high school in the late 1970s and early 1980s (using data from the National Longitudinal Survey of Youth 1979), and it may be that economic changes since then have altered the value of teen employment. Indeed, more recent research using the National Longitudinal Survey of Youth 1997 (a subsample of which we use in this analysis) found that the benefits of employment among those in high school around the turn of the millennium were smaller than among those who were teens about 20 years previously.⁵⁸



Others, however, contend that teen employment is not a determining factor in later labor market success, citing selection effects and the pre-existing characteristics of teens who work versus teens who don't—factors we cannot account for without an experimental research design.⁵⁹

A more recent wave of research on summer youth employment programs (SYEPs), which place young people in short-term subsidized employment, found the programs to be more successful in reducing crime than in boosting subsequent employment. Studies of SYEPs in Chicago, New York City, and Boston all reported declines in arrests among participants after summer's end, and some also reported positive academic improvements, but they found little impact on employment.⁶⁰

Mindful of the above research findings, we strove in our analysis to differentiate between types and intensity of teen employment. Focusing on the high school years of 16 to 18, we measured 1) whether the respondent ever worked during the summer or school year, 2) whether the respondent had a freelance job (defined as a “non-employer-based job” in which the respondent earned less than \$200 per week), 3) total weeks worked during the summer, 4) total weeks worked during the school year, and 5) the intensity of work during the school year.⁶¹

As described in the methods section and the technical appendix, we first examined the influence of education, training, and employment experiences in adolescence (ages 16-19), net of the influence of demographic control variables. Following this, we added in variables assessing the influence of education, training, and employment experiences in emerging adulthood (ages 20-23) and then early adulthood (ages 24-27).

Thus, our finding about the effects of ever working as a teen persisted after we examined the influences of later experiences between the ages of 20 to 23 and 24 to 27. Another teen employment measure, summer employment, was

initially a significant predictor of job quality at age 29, but only in the first phase of the model assessing the effects of adolescent experiences. Once we ran subsequent phases of the model accounting for experiences between ages 20 and 23, summer employment lost significance. This suggests that employment, training, and educational experiences in later years are more powerful predictors of later job quality than summer employment as a teen, or that summer employment affects later job quality by enhancing the likelihood of subsequent employment, training or education.

In the end, we can say that our findings signal the value of teen employment, but we are unable to say much about whether the intensity or timing of employment has different effects.

As noted above, research does not conclusively prove that teen employment provides a subsequent labor market boost, highlighting the often unappreciated complexity of the topic. Teens have differing levels of preparedness and interest in employment, and not all teen workforce development programs and employment experiences are equal. It may be that we need more sensitive measures and sharper research questions to resolve the issue.

6. EXPERIENCING PERIODS OF UNEMPLOYMENT IN ONE'S 20s IS ASSOCIATED WITH REDUCED JOB QUALITY

Unemployment between ages 20 to 23 and 24 to 27 is negatively associated with job quality, with each additional week of unemployment associated with a reduction in job quality at age 29. For example, someone who was never unemployed between the ages of 20 and 23 would have a job quality score 0.11 points higher than someone in that same age window who had been unemployed for four weeks, and 0.29 points higher than someone who had been unemployed for 26 weeks. Looking at the age window of 24 to 27, someone who was never unemployed in that

period would have a job quality score 0.13 points higher than someone who had been unemployed for four weeks in that age range, and 0.33 points higher than someone who had been unemployed for 26 weeks.

This finding may reflect how periods of unemployment affect subsequent wages. Previous research has specifically found unemployment early in one's career to leave a scar on later earnings.⁶² There is some disagreement about the magnitude of unemployment's impact, but there is agreement that youth unemployment (ages 16-23), particularly as the period of unemployment becomes longer, causes reductions in wages that are still evident by one's 30s, with some research indicating its impacts are still evident in one's early 40s.⁶³

Several mechanisms likely contribute to these outcomes. The first is the loss of human capital due to unemployment.⁶⁴ Skills previously learned on-the-job begin to depreciate when unemployed. Second, evidence suggests employers discriminate against the long-term unemployed in the labor market.⁶⁵ Third, the long-term unemployed may suffer from "job-search fatigue" and be willing to accept lower-quality jobs.⁶⁶ The literature indicates two methods of addressing wage impacts of unemployment—either reduce instances and duration of spells of unemployment or provide training and education opportunities to those who experience unemployment to speed the catch-up process.⁶⁷

7. DEMOGRAPHIC FACTORS AND PERSONAL CHARACTERISTICS ALSO PREDICT JOB QUALITY

A. Being Hispanic is associated with higher job quality

Being Hispanic is associated with an increase of 0.23 points on the good job index, compared to being white. Although research often finds that, on average, Hispanics have worse employment outcomes than whites, this finding indicates the

opposite is true once controls for education, training, employment, and cognitive test scores are included.⁶⁸ Others have found that, when controlling for these factors, Hispanics have similar employment rates and wage outcomes as whites.⁶⁹ Thus, although we can't tell from our data, it may be that the boost we see to job quality among Hispanics comes from one of our non-wage job quality indicators (fringe benefits, work hours, or job satisfaction).

Also worth noting is the similar job quality scores of blacks and whites. Although the average job quality score of blacks (4.2) is more than half a point lower than the average score for whites (4.9), when controlling for education, training, and work experiences, in addition to a number of demographic characteristics, this difference is erased.

B. Being a female is associated with lower job quality

Employed females have job quality scores nearly half a point lower (0.47) than employed males at age 29. This finding likely reflects a variety of factors for which we were unable to control in the model.

First, although parenthood before age 19 was included in our model and was not significant, we did not control for having children after age 19. This lower average job quality score for females may reflect the wage penalty women (but not men) experience after having a child.⁷⁰ Evidence also indicates some women move away from full-time employment after having children, and we included part time work (30 or fewer hours) as a marker of poorer job quality in our index.⁷¹

Second, women have been found to pursue education in lower paying fields, lower paying majors, and, ultimately, lower paying occupations than men.⁷² This may also explain some of the difference in job quality we see between men and women.

Third, discrimination against women in the labor market is well-documented. Women, on average, make less than men, even after controlling for a variety of education and employment factors.⁷³ There is also evidence that the other potential explanations for the job quality differences between men and women we see in our data—career and wage penalties faced by working mothers and differences in the fields of study between men and women—may, in themselves, be the result of discrimination.⁷⁴

C. Being older in Round 1 of the NLSY97 is associated with higher job quality

For each additional year older respondents were in Round 1 of the NLSY, job quality at age 29 is 0.12 points higher. For example, the job quality of a respondent who was 17 in Round 1 is 0.48 points higher than someone who was 13 in Round 1.⁷⁵

This is likely a reflection of the Great Recession (December 2007 to June 2009), which hit young workers particularly hard.⁷⁶ When the recession began, the youngest in the NLSY97 sample were 22 while the oldest were 28. The older young adults had a chance to establish themselves in the labor market, developing a work history and relevant skills, making them less vulnerable (though certainly not immune) to unemployment and layoffs due to the economic downturn.

D. Better scores on cognitive tests are associated with higher job quality

The Armed Services Vocational Aptitude Battery (ASVAB) was administered to survey respondents during Round 1 of the NLSY97. The test measures knowledge and skills in a variety of areas—including mathematical knowledge, arithmetic reasoning, word knowledge, and paragraph comprehension—and is strongly correlated with cognitive ability.^{77, 78}

Respondents who performed better on the ASVAB have higher job quality scores at age 29 compared to those who performed poorly. For example, on average, the difference in job quality score between someone scoring in the 75th percentile on the ASVAB and someone scoring in the 25th percentile is about 0.28 points on the job quality index.

There is strong evidence that those with higher cognitive ability obtain better quality jobs than those with lower cognitive ability, primarily through effects on wages.⁷⁹ Greater cognitive ability is related both to higher entry-level wages and a faster pace of later pay increases.⁸⁰



8. PREVIOUS INCARCERATION IS ASSOCIATED WITH LOWER JOB QUALITY

Holding all else equal, those who have been incarcerated have a job quality score 0.56 points lower at age 29 than those who have never been incarcerated. These findings echo other research finding that incarceration not only reduces the likelihood of subsequent employment, but also lowers wages once employment is found.⁸¹ These low-wage jobs are often described as being part of the secondary labor market where there are few fringe benefits, high turnover rates, and low levels of autonomy.⁸² Beyond low employer demand for and willingness to hire formerly incarcerated workers, any job skills previously acquired depreciate while incarcerated and professional networks have likely become stale, providing some additional explanation for these outcomes.⁸³

9. HIGHER EARNINGS AT AGE 23 IS ASSOCIATED WITH HIGHER JOB QUALITY

Those earning just above the federal minimum wage (between \$7.26-14.99 per hour) at age 23 have job scores 0.36 points higher than those earning federal minimum wage (\$7.25) or less. The difference in job quality score between those earning \$15 or more and those earning the federal minimum wage or less is even larger. On average, those earning \$15 or more have job quality scores 0.67 points higher.

Given that we controlled for education, work experience, cognitive test scores, and other characteristics, the finding does not simply reflect

that people with more education and experience can expect better jobs. It reflects that, no matter a young person's education, work history, or cognitive skills, early good jobs (as measured by wages) lead to later good jobs.

Research on welfare programs produced similar results. In a multi-city evaluation of strategies to help welfare recipients find employment, one site (Portland) counseled recipients to wait for a good job (at least 25 percent above the minimum wage) rather than take the first job offered, and this site produced employment and earnings gains far outpacing the other sites.⁸⁴

10. BEING MARRIED OR COHABITING IS ASSOCIATED WITH HIGHER JOB QUALITY

Those who are married or cohabiting at age 27 have a job quality score 0.25 points higher than those who are not married or cohabiting, controlling for all other variables in the model.

There is strong evidence married men receive a wage premium over their unmarried counterparts.⁸⁵ A smaller body of research has found married women without children also earn more than their unmarried counterparts.⁸⁶ Some of the previous research asserts marriage is the cause of higher wages, either by allowing one partner in the marriage to focus on employment while the other takes over the majority of household duties, or by making workers more reliable.⁸⁷ Other research refutes the hypothesis that marriage is the cause of higher wages, arguing instead that the qualities that make a person more likely to earn high wages, also make them more likely to get married.⁸⁸



DISCUSSION

The above findings identify a range of experiences in the lives of young people that affect their employment and job quality at age 29. While most of the factors identified in this research have relatively small effects on job quality a decade later, all told, the variables in the analysis explain about 20 percent of the variance in job quality.

A wide array of economic and social factors affects young people's economic prospects. For example, racial discrimination, both blatant and subtle, often undermines the advancement of persons of color. In fact, many policies that are not officially race-based nevertheless discriminate against persons of color, as in the criminal justice and child welfare systems. In addition, structural barriers can undermine women's

ability to obtain a high-quality job. For example, child care is expensive and often available only for delimited hours, and this reality can make it difficult for many mothers to obtain and retain employment. Geography matters as well: the nature of regional economies affects how many and what types of jobs are available, and at a smaller unit of analysis, people growing up in segregated or high-poverty neighborhoods face additional barriers, including poor performing schools. Employer practices play a role as well. Employers may have under-developed human resources and recruitment strategies, including limited partnerships with education and training organizations that can play key roles in referring qualified candidates.⁸⁹ They may also discriminate in their hiring, whether consciously or unconsciously.⁹⁰

Thus, the social and economic context can make it very difficult for many youth to succeed, even those who play by the rules. Moreover, the share of jobs that provide high-quality employment needs to increase. Many economic and social forces serve to reduce the availability of jobs with good wages, fringe benefits, reasonable hours, and employee satisfaction. Efforts to expand the availability of good jobs will require a thoughtful and intentional focus on this across the labor market.

We recognize that a broad constellation of factors affects the prospects of young people from disadvantaged backgrounds, which are in turn best addressed by a broad coalition of actors and policy responses. However, given that our analysis focused on education, training, and employment experiences, we limit our policy and program recommendations accordingly, and welcome the prospect that they would be considered in conjunction with other interventions and policies.





DIRECTIONS FOR PROGRAMS AND POLICIES

Taking action to support the increased life chances of young people from disadvantaged backgrounds requires policy and program changes, but another key factor often goes unspoken and unexamined: our collective attitude toward young people, specifically those reflected in the data presented here, who are largely low-income, black, or Hispanic. How are we willing to support them and what can they expect from public and civic institutions and services?

The concepts of positive youth development and racial equity provide useful lenses in formulating and implementing recommendations, since a core interest of both frameworks is to improve the way systems and programs treat people, particularly young people and people of color.

Positive youth development is a pro-social approach to developing the skills and competencies of young people by building on their strengths, fostering positive relationships, and providing opportunities.⁹¹ It is an approach and set of practices, not a specific curriculum or program, and can be woven into any

setting where a young person spends time.⁹² As articulated by Karen Pittman, one of its fundamental tenets is program quality.⁹³ Indeed, while discussing the related concept of youth readiness, she and colleagues Stephanie Malia Krauss and Caitlin Johnson note that a common trap in youth-serving programs or systems is mistaking access for quality. A young person may have access to a school, system, or program, but that is no guarantee that the funding is sufficient, stable, or wisely used, nor is it a guarantee that staff are sufficiently trained and supported.⁹⁴

Efforts incorporating a racial lens focus on ensuring that everyone, regardless of race or ethnicity, has equal opportunities to thrive, and that race is not consistently linked with either advantage or disadvantage.⁹⁵ For instance, career and technical education (CTE, previously known as vocational education), which we highlight below as a worthy strategy, has been criticized as a second-class track primarily for low-income and minority youth who are not deemed college-worthy. Many CTE initiatives are addressing this criticism head-on, offering college-prep classes

and preparing students for post-secondary education. Nonetheless, it is possible that the work-based learning programs we recommend, if they are low-quality, could perpetuate race-based tracking within a school or school district. Officials should take pains to mitigate this risk.

1. STRENGTHEN THE WORK-BASED LEARNING ELEMENTS OF HIGH SCHOOL CAREER AND TECHNICAL EDUCATION

Internships, apprenticeships, and coops are all examples of work-based learning (WBL), and in this case, mentoring is a work-based learning experience as well. (In other contexts, mentoring may not take place at the worksite or have a particular career focus.) The finding that these programs predict later job quality highlights the value of WBL.

Well-designed WBL enables teachers, supervisors, mentors, and other adults to provide students with developmentally appropriate and incremental guidance that helps them develop the skills that employers seek in new hires. WBL provides students a chance to learn essential employability skills such as problem-solving, communication, and teamwork in ways that are difficult to achieve in the classroom alone. Students learn *through* work, rather than in preparation *for* work.⁹⁶ Moreover, WBL can focus on establishing positive relationships and link students to employers and contacts they would likely never reach on their own, especially if they and their families have limited social and professional networks.⁹⁷

Work-based learning is not new, but it is unfamiliar to many employers, and schools may find it challenging to implement given the crowded marketplace of school-based initiatives.⁹⁸ However, there is an established body of knowledge based on research and practice that districts, principals, and teachers can draw upon to create or strengthen such programs.⁹⁹

One key lesson is that developing WBL opportunities requires resources and sufficient staffing. Cultivating employer relationships and handling the logistics of internships and workplace visits takes legwork and cannot simply be an add-on to the existing duties of teachers and other staff. Options to address this include the use of intermediary organizations to connect schools and teachers to employer and internships, the adoption of specific WBL program models coupled with training and technical assistance, and the creation of work-based learning coordinator positions within districts or schools.¹⁰⁰

At the federal level, the recently enacted Strengthening Career and Technical Education for the 21st Century Act, (which re-authorized the Carl D. Perkins Career and Technical Act of 2006), emphasizes work-based learning, which it defines as “sustained interactions with industry or community professionals in real workplace settings, to the extent practicable, or simulated environments at an educational institution that foster in-depth, firsthand engagement with the tasks required of a given career field, that are aligned to curriculum and instruction.”¹⁰¹ The law’s implementation in future years may provide more impetus and resources for state and local WBL programs.

2. INCREASE COMPLETION RATES OF POST-SECONDARY DEGREES, WITH AN EXPLICIT FOCUS ON QUALITY AND EQUITY

Our findings that post-secondary degrees are strongly associated with job quality at age 29 contributes to the large body of evidence on the value of post-secondary credentials in the labor market. Three primary recommendations flow from this finding.

A. Since a person cannot complete what he or she does not start, continuing to promote access to post-secondary education is critical, especially for those from lower-income backgrounds. For years, a robust number of efforts to increase

college enrollment have taken place at the federal, state, local, and institutional levels, and, indeed, enrollment has risen. The share of recent high school graduates enrolling in college dramatically increased over the past decades—from 50 percent in 1980 and 60 percent in 1990 to nearly 70 percent in 2016. However, enrollment varies dramatically by socioeconomic status (SES). More than 90 percent of those from the highest SES group enroll in college within a few years of high school graduation, compared to 56 percent of those from the lowest SES group.¹⁰² Clearly, there is more work to be done on a range of issues, including affordability, financial aid, and college readiness.¹⁰³

B. Efforts to promote access must be accompanied by equally vigorous efforts to promote completion. As notably stated by James Rosenbaum and co-authors, students often face “coin-toss odds of success” once they enroll in college.¹⁰⁴ Leaving school without a credential is the most common outcome for community college students, as well as for students with low test scores who enter four-year schools.¹⁰⁵ In these cases, students forfeit time and earnings, often acquire debt, and have no guarantee of an earnings payoff.¹⁰⁶

The “completion agenda,” as it is often known, has gained traction in recent years, and a number of organizations, initiatives, and reports focus on policy and program reforms to ensure that students who enroll in college go on to complete college.¹⁰⁷ Many promising institutional-level programs promote completion, especially among students from disadvantaged backgrounds. Some include dual enrollment or early college programs, in which high school students take college courses. CUNY’s ASAP program requires community college students to attend full-time and provides a range of academic, financial, and personal supports. Additionally, “guided pathways” reforms have been implemented at multiple community colleges, designed to offer clearer sequences of courses in particular fields of study coupled with stronger advising.¹⁰⁸ Lastly, the evidence base for integrated student supports is growing, suggesting that education and training programs that address non-academic as well as academic student needs are more successful than those that focus solely on academic or technical training.¹⁰⁹

At the policy level, many states are prioritizing post-secondary completion with the use of performance-based funding in higher education, which ties state funding for public institutions to their performance on metrics such as student persistence and graduation.



C. However, we must take care that a completion focus does not create perverse incentives and unintended consequences. In a post-secondary landscape that is highly stratified by race and class, with a clear mismatch between resources and need, completion goals need to address equity and quality as well.

Gaming the system is always a possibility with metrics-based accountability. For example, schools concerned about meeting a specific graduation target could screen out less-prepared students they deem less likely to graduate or water down academic standards to make it easier to graduate.¹¹⁰ The path to completion must go through a quality curriculum and related supports, and that relates to resources, which in turn relates to a school's selectivity and prestige within the hierarchy of higher education. By definition, selective colleges can choose academically prepared students they judge likely to succeed. Such schools spend two to five times more on instruction per student than broad- and open-access schools, and there is a clear and positive relationship between spending per student and graduation rates.¹¹¹ Although students' academic preparedness affects graduation rates, so do the characteristics and resources of colleges and universities, with a number of studies linking collegiate resources to graduation, separate and apart from student readiness.¹¹²

Lower-income students, blacks, and Hispanics are concentrated in lower-funded, open-access, two- and four-year colleges, while white and affluent students are concentrated in well-funded four-year colleges and universities that are more competitive in terms of acceptance.¹¹³ Whites make up 75 percent of the freshman class at the most competitive colleges, although they account for only 60 percent of 18-year-old high school students. Blacks and Hispanics, accounting for 14 and 16 percent of 18-year-old high school students, respectively make up only five and seven percent of the freshman class at

the same colleges.¹¹⁴ Many high-achieving low-income students do not even apply to selective colleges, and students from the highest socioeconomic quartile account for more than two-thirds of the enrollment at the most selective colleges.¹¹⁵

There are no simple or quick answers, but initiatives to date on improving retention and completion suggest that solutions involve additional resources, better use of existing resources, and changes large and small in how schools organize and offer courses and support services.¹¹⁶ For instance, CUNY's ASAP program, mentioned above, nearly doubled the graduation rate of at-risk students, but cost about 60 percent more per student. On the other hand, by increasing graduation rates, it reduced spending per degree.¹¹⁷ It may be that we need an additional budgetary metric: not only spending per student but also efficiency per degree or certificate completed.

In broad strokes, many proposals to improve post-secondary completion, particularly among low-income students and students of color, converge on the following principles:

- greater alignment with high school curricula and learning goals
- more student supports and services such as tutoring and proactive advising
- assistance with financial emergencies
- restructuring course offerings so that required course sequences are more clearly laid out and accessible
- reforming developmental education so that more students successfully move into credit-bearing courses
- providing additional resources for open- and broad-access schools

Within this array of options, there are ample opportunities for governments at the federal, state, and local levels, as well as individual institutions, to act.

If education is going to function as an engine of social mobility, rather than a protector of the status quo, educational systems need to strive for and balance goals of access, quality, equity, and completion. The re-authorization of the Higher Education Act (HEA) could have large ramifications on this front, as it governs a broad array of federal student aid programs and a host of other issues, but it remains a legislative wild card. While multiple changes are under active consideration by the House and Senate, it is not clear what shape the final reforms will take or the timing.¹¹⁸

3. STRENGTHEN ON-RAMPS TO EMPLOYMENT, ESPECIALLY FOR TEENS AND YOUNG ADULTS WITHOUT A POST-SECONDARY CREDENTIAL

Our results show that early employment matters to later job quality: Teen employment is associated with higher-quality jobs in adulthood, and 20-something unemployment is associated with lower-quality jobs in adulthood. However, teen employment is down considerably. The share of teens who were employed in a given year fell from about 45 percent in 2000 to about 30 percent in 2017.¹¹⁹

And while it is likely that some of the decline is voluntary and reflects a desire to focus on education, volunteering, or other activities, high unemployment rates among young people (14 percent among 16-19 year-olds and 7.4 percent among 20-24 year-olds) relative to the unemployment rate among adults ages 25 to 54 (3.7 percent) show that some young people would like a job but simply can't find one. Unemployment is particularly acute among African-Americans (24 percent among 16-19 year-olds and 11.5 percent among 20-24 year-olds) and those with lower levels of education.¹²⁰ Twenty to 24-year-olds with only a high school diploma routinely have unemployment rates about two to three times higher than those with a bachelor's degree.¹²¹

The United States offers young people much less structure and support than other industrialized nations in transitioning from school into full-time employment. The "ill-defined interface between school and the world of work" in this country results in a great deal of instability in the labor market among young people.¹²² Viewed positively, young people are "searching": learning about their skills, interests and aptitudes by trying different jobs, which can lead to increasingly better job matches. Viewed negatively, they are "floundering": missing out on opportunities to build firm-specific skills, a stable work history, and references while experiencing unnecessary periods of joblessness.¹²³

One particularly trenchant observation about the school-to-work transition noted, "In friendlier economic times, we could largely rely on tossing young people into the economy as a way of socializing them and welcoming them into adulthood and responsibility. That option has now ended."¹²⁴

High schools and colleges can build these on-ramps, through stronger career exploration and advising, internships, apprenticeships, and coops. Nonprofits and community-based groups can offer them, and they may be especially appropriate for older youth who are past high-school age and unsure about college. These programs offer work readiness and technical skills development, often in combination with academics, mentoring, supportive services, and paid internships or stipends.

Notably, however, not all employment experiences or programs are equal, or equally affect all participants. Evaluations of summer youth employment programs, which have not found strong employment benefits, are instructive in this regard. In their evaluation of New York City's summer jobs program, researchers commented, "It is notable that even for this young group with typically little prior job experience, and even during the Great Recession period that we examine separately, an employment program did

not provide a path to greater future earnings.”¹²⁵ On the other hand, a Chicago study did find a subset of summer jobs participants more likely to show increased employment rates: those who are younger, more engaged in school, Hispanic, and female, and less likely to have an arrest record, i.e. not the most disconnected and disadvantaged youth.¹²⁶

4. PROMOTE FURTHER RESEARCH AND ACTION ON THE ROLE OF POSITIVE RELATIONSHIPS IN EMPLOYMENT AND TRAINING PROGRAMS FOR YOUTH AND YOUNG ADULTS

As noted above, we theorize that relationships between students and mentors/supervisors played a role in the predicted increase in job quality associated with the three CTE programs we grouped together as “relationship-based.” With additional research and practice, this hypothesis could be assessed more carefully.

Would it be feasible to embed positive, supportive relationships between young people and caring adults as core principles in education and workforce programs, and would it improve outcomes? There are many corollary questions, including how to construct and measure relationships, whether the length of the relationship matters, and so on.

But there is a clear knowledge base on the importance of relationships overall. Research has consistently described that positive relationships with parents, teachers, peers, and other adults help young people successfully move through adolescence to a productive adulthood. Moreover, studies regularly find that supportive relationships grounded in safety, trust, and respect are the key ingredient in programs for youth.¹²⁷ Regarding workforce programs for youth and young adults, research particularly emphasizes the importance of an integrated set of support services, including relationships with caring adults and a progression of

experiences that prepare young people for adult responsibilities.¹²⁸

And yet we know that many young people—an estimated 20 percent overall, and higher among disadvantaged youth—do not have a caring adult in their lives.^{129, 130} While it is not new or controversial to say that relationships are important to human development, neither is it always apparent that fostering and supporting relationships are essential elements in how education, training, and workforce programs are designed and implemented.

Positive youth development, already mentioned above, may offer a useful conceptual and practical framework for incorporating a stronger relationship focus within existing programs, given that positive relationships are one of PYD’s core tenets. The Generation Work initiative, a pilot project currently underway to integrate PYD into workforce development programs serving young adults, may provide guidance on this front.¹³¹





CONCLUSION

Helping young people prepare to engage in work and life as productive adults is a central, and ongoing, challenge for any society. But there is sufficient knowledge from evaluations, research, and practice to reform the systems and organizations that educate and serve

young people, especially the disadvantaged. Of course, reforming systems is a means to an end, not an end in itself. The ultimate goal is to ensure that young people of today gain the skills and readiness they need to succeed in and shape the future.

A GUIDE TO INTERPRETING MULTIVARIATE ANALYSIS FINDINGS

The outcome of interest in our analysis is job quality at age 29, so that is our **dependent variable**. Our independent variables include demographics, educational attainment, training, employment, and other factors that we hypothesize would affect job quality at age 29.

We use a statistical technique called path analysis, which is an extension of multiple regression analysis, to test the relationship between the dependent and independent variables. Because the resulting findings are not intuitively understandable, below we provide interpretation guidance.

There are two ways to interpret our findings.

- **In relation to the job quality index:** How do education, training, employment and other experiences relate to the job quality score?
- **In relation to each other:** Of the education, training, employment, and other experiences we measure, which are most strongly related to job quality?

It is important to note that when interpreting the findings, the relationship between each independent variable and the dependent variable accounts for the relationship between the dependent variable and all other variables in the model. For example, the finding indicating being female is associated with lower job quality at age 29 is notable because it already accounts for the association between job quality and factors such as respondents' education, prior work experience, and cognitive ability.

HOW DO DIFFERENT VARIABLES PREDICT THE JOB QUALITY SCORE?

To understand how variables such as gender, race/ethnicity, or education level are related to the job quality score, we look to the *unstandardized coefficient*. For example, in the paper we report that $B = -0.47$ for being female. That means that if a person is female, we can expect her to have a job quality score that is 0.47 points lower than a male whose other characteristics and experiences as measured in the model are otherwise identical.

However, the unstandardized coefficients for different measures—gender, race/ethnicity, educational attainment, age at Round 1 of the survey, and so on—cannot be compared to each other, because they are based on different units of measurement. For example, the female variable has two possible values, female and male. Age, however, has seven possible values, since respondents were anywhere between ages 12 to 18 years old at the start of the survey. The size of the coefficients is affected by these differences, making it impossible to understand their relative strength compared to each other.

To compare variables to each other, you need the standardized coefficient, described below.

WHICH VARIABLES ARE MOST STRONGLY RELATED TO JOB QUALITY?

Standardized coefficients, represented by the symbol (β), translate the strength of the independent variables' predictive power on to a uniform scale of -1 to 1 and represent how many standard deviations a dependent variable

will change per standard deviation increase in the predictor variable. The standardized coefficients closest to 0 are those with the weakest relationship to the dependent variable (in this case, job quality at age 29) while those furthest from 0 have the strongest relationship to the dependent variable. Using the standardized coefficients, we can compare how strongly or weakly our measures of education, training, and so on are related to job quality at age 29. However, they do not tell us how much the job quality score increases or decreases as the independent variable changes.

Below we list the independent variables ranked from strongest to weakest predictive power. Note that predictive power can be positive or negative. The negative variables (those that reduce job quality) are in orange.

Independent variables ranked from strongest to weakest predictive power:

1. Highest level of education at age 27 is a post-secondary degree, as compared to having a GED or dropping out (.204)
2. Being female, as compared to being male (-.124)
3. Earning more than \$15 an hour at age 23, as compared to earning \$7.25 or less per hour (.112)
4. Age at Round 1 (.097)
5. Number of weeks spent unemployed between ages 24 and 27 (-.096)
6. Cognitive test scores (ASVAB score) (.095)
7. Earning between \$7.26 and \$14.99 per hour at age 23, as compared to earning \$7.25 or less per hour (.093)
8. Participating in a training program between ages 24 to 27 (.091)

9. Ever being incarcerated (-.087)
10. Number of weeks spent unemployed between ages 20 and 23 (-.077)
11. Being married or cohabiting at age 27 (.066)
12. Highest level of education at age 27 is a high school diploma, as compared to having a GED or dropping out (.065)
13. Being Hispanic, as compared to non-Hispanic white/other (.048)
14. Participating in a relationship-based CTE program (.043)
15. Teen work experience between ages 16 and 18 (.036)

Because of the standardized coefficients, we know having a post-secondary degree by age 27 is more strongly related to job quality score than any other variable in our final model, while working as a teen has the weakest relationship. The relationship between both of these variables and later job quality is predictable and meaningful, but one has a stronger relationship than the other.

Lastly, there is the question of effect size. How strongly are the independent variables related to job quality at age 29? A standard benchmark is that standardized coefficient values of .1 = small, .3 = medium, and .5 = large.¹ By that standard, all of our effect sizes are small. The factors included in our model explain approximately 20 percent of the variance in the good job index, which is reasonable within the social science fields. Nevertheless, the proportion of variance explained by the model (R-square) indicates that many factors not included in our model affect job quality at age 29. This finding, however, is unsurprising given that other factors, such as job quality at age 28, likely have strong predictive power.

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21. As noted above, a respondent's main job is their current or most recent job. If a respondent holds more than one job at the same time, the main job is the one at which the respondent works the most hours. If the number of hours for each simultaneously held job are the same, the respondent's main job is the one at which they started working at the earliest date. All main jobs are assessed according to our job quality index, regardless of whether the main job is self-employment, the military, or a traditional employer.

22. See, for example: Kalleberg, *Good Jobs, Bad Jobs*; Christopher Jencks, Lauri Perman, and Lee Rainwater, "What is a Good Job? A New Measure of Labor-Market Success," *American Journal of Sociology* 93 (6) (1998): 1322-1357.

23. Hourly wages are not reported for military jobs. Those whose main job was a military job were coded as being above 400 percent of FPL if they had a bachelor's degree or higher as it was assumed these respondents were officers. If the respondent had less than a bachelor's degree at this time, it was assumed that he/she was enlisted and had incomes between 200-399 percent the FPL.

24. Kalleberg, *Good Jobs, Bad Jobs*.

25. Arne L. Kalleberg, Barbara F. Reskin, and Ken Hudson, "Bad Jobs in America: Standard and Nonstandard Employment Relations and Job Quality in the United States," *American Sociological Review* 65 (2) (2000): 256-278.

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28. Sadie H. Conway and others, "The Identification of a Threshold of Long Work Hours for Predicting Elevated Risks of Adverse Health Outcomes," *American Journal of Epidemiology* 186 (2) (2016): 173-183; Marianna Virtanen and others, "Long Working Hours and Symptoms of Anxiety and Depression: A 5-year Follow-up of the Whitehall II Study," *Psychological Medicine* 41 (12) (2011): 2485-2494.

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30. The NLSY97 does not report hours worked per week in military jobs. Those whose main job was a military job, were coded as working full time (between 31-50 hours per week).

31. Jencks, Perman, and Rainwater, "What is a Good Job?"; Joanne Miller, "Individual and Occupational Determinants of Job Satisfaction," *Work and Occupations* 7 (3) (1980): 337-366.

32. When defining our sample, we report unweighted sample sizes and percentages, unless otherwise specified.

33. Employment status was based on a variable summarizing the total number of jobs a respondent had during each reporting period. Respondents who were missing data on this variable at each age outcomes were assessed (29, 30, and 31) were counted as missing and were thus excluded from the analysis sample (n=1,384).

34. Respondents were coded as experiencing disadvantage if they met any of the four disadvantaged indicators, regardless of the amount of missing data on other indicators. Respondents who were not identified as disadvantaged on available data and were missing data on at least two of the four indicators were dropped from the sample (n=229): 165 were missing data for two indicators, 62 were missing three, and two were missing all four.

- 35.** The NLSY97 oversamples for blacks and Hispanics; this oversample equates to nearly 25 percent of the respondents included in the NLSY97. Both blacks and Hispanics are more likely to be economically disadvantaged, which explains why such a large portion of the NLSY97 sample meets our disadvantage criteria. For more information regarding NLSY97 oversampling, please refer to: National Longitudinal Surveys, Bureau of Labor Statistics, "The NLSY97 Sample: An Introduction," available at <https://www.nlsinfo.org/content/cohorts/nlsy97/intro-to-the-sample/nlsy97-sample-introduction-0> (n.d.)
- 36.** Greg J. Duncan and others, "The Importance of Early Childhood Poverty," *Social Indicators Research* 108 (1) (2012): 87-98; Ellwood and Kane, "Who is Getting a College Education?"; Karagiannaki, "The Effect of Parental Wealth."
- 37.** Ellwood and Kane, "Who is Getting a College Education?"
- 38.** Douglas P. Jutte and others, "The Ripples of Adolescent Motherhood: Social, Educational, and Medical Outcomes for Children of Teen and Prior Teen Mothers," *Academic Pediatrics* 10 (5) (2010): 293-301.
- 39.** Percentages reported here are weighted.
- 40.** Percentages reported here are weighted.
- 41.** In the case of our job quality index we are able to use a model-based imputation procedure, Full Information Maximum Likelihood (FIML), to provide estimates for the job quality indices in the presence of missing data. This allowed us to include the data of all respondents who met our eligibility requirements and ensured our sample would not be biased due to missing data. For additional information regarding the group that was excluded due to missing data on the employment status or disadvantage indicators, please refer to the Appendix Table A2.
- 42.** Rebecca M. Blank and Mark H. Greenburg, "Improving the Measurement of Poverty" (Washington: Brookings, 2008).
- 43.** See Chapter 3, Money Isn't Everything: Do Sub-BA Credentials Lead to Nonmonetary Job Rewards? In Rosenbaum and others, *Bridging the Gaps* for more information about the strength of the correlations between non-monetary job rewards and job satisfaction.
- 44.** When discussing the findings of our analysis, we report weighted sample sizes and percentages, unless otherwise noted.
- 45.** See Table 6 in Neumark and Rothstein, "School-to-Career Programs and Transitions to Employment and Higher Education."
- 46.** David Neumark and Donna Rothstein, "Do School-to-Work Programs Help the 'Forgotten Half'?" Working Paper 11636 (National Bureau of Economic Statistics, 2005).
- 47.** Neumark and Rothstein, "School-to-Career Programs and Transitions to Employment and Higher Education."
- 48.** James Kemple, "Career Academies: Long-Term Impacts on Work, Education, and Transition to Adulthood" (New York: MDRC, 2008).
- 49.** See, for example: Matthew Lynch and others, "Arches Transformative Mentoring Program: An Implementation and Impact Evaluation in New York City" (Washington: Urban Institute, 2018); Shannon M. Varga and Jonathan F. Zaff, "Defining Webs of Support: A New Framework to Advance Understanding of Relationships and Youth Development" (Washington: America's Promise Alliance, 2017); Erin White and others, "Our Work: A Framework for Accelerating Progress for Children and Youth in America" (Washington: America's Promise Alliance, 2017).
- 50.** Demetra Smith Nightingale and Lauren Eyster, "Results and Returns from Public Investments in Employment and Training." In Federal Reserve System, John J. Heldrich Center for Workforce Development, and the Ray Marshall Center for the Study of Human Resources, eds., *Investing in America's Workforce: Improving Outcomes for Workers and Employers* (2018); Sheila Maguire, "Optimizing Talent: The Promise and the Perils of Adapting Sectoral Strategies for Young Workers," (JobsFirstNYC and the Aspen Institute, 2016); Noelle St. Clair, "Investing in America's Workforce: Report on Workforce Development Needs and Opportunities" (Federal Reserve System, 2017).
- 51.** Sheila Maguire and others, "Tuning In to Local Labor Markets: Findings from the Sectoral Employment Impact Study" (Philadelphia: Public/Private Ventures, 2010); Richard Hendra and others, "Encouraging Evidence on a Sector-Focused Advancement Strategy: A Preview Summary of Two-Year Impacts from the Work Advance Demonstration" (New York: MDRC, 2016); Mark Elliott and Anne Roder, "Escalating Gains: Project QUEST'S Sectoral Strategy Pays Off" (New York: Economic Mobility Corporation, 2017); P. Lindsay Chase-Landsdale and others, "What Are the Effects of Pairing Head Start Services for Children with Career Pathway Training for Parents?" issue brief (Washington: Aspen Institute, 2017; David Fein and Jill Hamadyk, "Bridging the Opportunity Divide for Low-Income Youth: Implementation and Early Impacts of the Year Up Program" (Washington: Office of Planning,

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54. Rouse, "Consequences for the Labor Market."

55. Rosenbaum and others, *Bridging the Gaps*, p. 32.

56. Rosenbaum and others, *Bridging the Gaps*, p. 52.

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106. Rosenbaum and others, *Bridging the Gaps*, p. 3 and 26.

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indicators with data, were coded as missing. A total of 5,839 (67.4 percent of the full sample) were identified as at-risk at baseline.

134. Baseline includes data from Round 1 (1997-98) or Round 2 (1998-99) depending on availability of data.

135. A square root transformation is often used to bring in right tails of skewed distributions. It replaces each observation with the square root of the original observation.

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