

Workforce Entry Including Career and Technical Education

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Abstract

Our chapter reviews the basic patterns of employment and school enrollment for new labor market entrants in the period leading up to the Great Recession and in the decade thereafter. We find a persistent shift into four-year colleges that began during the Great Recession. At the same time, we see fewer students neither working nor enrolled in school. We see little in the way of programmatic or participation changes in occupational training programs during our period; in particular, rates of training provided via federal workforce development programs remain low among workforce entrants. The research literature has advanced, but without large effects on policy or practice.

Keywords

Workforce entry, CTE, job training, community college, sectoral training.

Introduction

When examining how American workers have fared over the past decade, an important group to consider is young adults in the years immediately following their high school education, particularly young adults not destined to complete a 4-year college degree. In this chapter, we describe this group's participation in the workforce and in postsecondary education, with a focus on Career and Technical Education (CTE). First, we describe trends in employment and education from 2005 to 2018. We find that during this period, enrollment in education increased, while the fraction of young adults not engaged in either work or education declined. The increase in education is concentrated in the four-year public sector. Next, we describe the major federal workforce development programs and trends in their participation rates. We note that these programs account for a very small proportion of individuals receiving CTE. Evaluations of these programs and related CTE programs give mixed results, with the strongest results coming from relatively narrowly focused programs that provide training for in-demand sectors, such as healthcare. Finally, we provide additional context about how employment and education have changed in recent months as the COVID-19 pandemic and associated recession have taken hold, and provide some big picture thoughts about the economy going forward.

Employment and Education Trends

In this section, we describe broad trends in the education and employment of young adults. We concentrate on the period from 2005 to 2018 to capture patterns associated with the economy's decline during, as well as recovery from, the Great Recession. Given our interest in the decisions young adults make regarding starting higher education and/or entering the labor force after finishing (or dropping out of) high school, we focus first on 20- and 21-year-olds. They are old

enough to have likely completed secondary schooling, yet young enough to likely still be in college if they have chosen to pursue higher education. Figure 1 shows trends in the work and education status of young adults from 2005 to 2018. Our data source is the nationally representative Current Population Survey (CPS) October Educational Supplement (Flood et al., 2020). Each line represents a mutually exclusive category classifying 20- and 21-year-olds by their work and current enrollment status.¹ We classify individuals as working full-time (part-time) if they report that they are usually full-time (part-time), regardless of their work status in the past week. They are classified as “not working” if they are unemployed or not in the labor force.

Figure 1: Work and Education Status of 20-21 Year-Olds

The first thing to note is young adults’ substitution away from working full-time toward being enrolled in school without working around the time of the Great Recession. This follows the typical pattern of college enrollment increasing during a bad labor market (e.g. Long, 2004; Barr and Turner 2013). In the years following the end of the recession, the fraction of young adults engaged exclusively in schooling has remained high, hovering between 27 and 31 percent from 2009 to 2018, even though the proportion working full-time and not in school also increased from 20 percent in 2013 to almost 24 percent in 2018. This corresponds to a large decrease in “opportunity youth” (i.e., young adults not engaged in either school or work) from a high of 19 percent in 2009 to just over 13 percent in 2018, with the primary decline occurring from 2013 to 2018.

Next, we focus on young adults who are attending school. Figure 2 tracks fractions of the 20-21-year-old population enrolled in various higher education sectors. We combine two data sources to produce the proportions in this figure. Biannual data on the number of students in each

sector comes from the Digest of Education Statistics (U.S. Department of Education, 2020). Estimates of the population of 20- and 21-year-olds in each year come from Census Bureau (2018) and similar publications in other years. The “For-profits + 2-year nonprofit private” category is the summation of students in 2-year for-profit colleges, 4-year for-profit colleges, and 2-year nonprofit private colleges, which we combined due to the small shares in each sector.

Figure 2: Education Status, 20-21 Year-Olds

The main trend to note is the number of students in four-year public universities, which increased from 19.3 percent of 20- and 21-year-olds in 2005 to 25.4 percent in 2017. It appears this increase has mostly come from the category of young adults who were not in school, which decreased from 58 percent in 2005 to 53 percent in 2017. However, there was also a small decline in the fraction of young adults in 2-year public colleges, from 12.3 percent in 2005 to 11.2 percent in 2017.

Unfortunately, these data sources do not allow us to disaggregate students attending 2-year institutions into those who are on an academic track versus a CTE track. Thus, we provide information from the National Postsecondary Student Aid Study (NPSAS), a nationally representative survey from the U.S. Department of Education (hereinafter “ED”) that tracks students’ degree programs and majors. We use the ED’s Classification of Instructional Program (CIP) codes to categorize majors as either academic or occupational. Among students in programs working toward a certificate, 90-95% are in occupational majors from 2004 to 2016. In 2004, 73% of students in an associate degree program were in occupational majors, but the proportion had declined to 67% by 2016. The percent of occupational majors among students in bachelor’s programs has remained around 64% from 2004 to 2016.²

During this period of changing enrollment in higher education, there were also changes in the cost of and the return to college degrees. Using data from the Integrated Postsecondary

Education Data System, we calculated that the average total annual tuition and fees (the so-called “posted price”) at public 4-year colleges have steadily increased from approximately \$6,300 in 2005 to \$9,200 in 2018 (in constant 2018 dollars, adjusted using the personal consumption index).³ However, the growth of financial aid outpaced the growth in tuition and fee costs. At public four-year institutions, average total financial grant aid (including federal, state, local, and institutional grant aid but excluding loans) covered 59 percent of tuition and fee costs in 2005 (just over \$3,700 in 2018 dollars) but 71 percent of tuition and fees in 2018 (around \$6,600). Meanwhile, at private nonprofit four-year institutions, average tuition and fees rose from approximately \$26,000 in 2005 to almost \$36,000 in 2018 (in constant 2018 dollars). Average grant aid at private nonprofit four-year universities grew from covering 43 percent of tuition and fees (\$11,200 in 2018 dollars) in 2005 to 54 percent (\$19,500) in 2018. At public two-year institutions, tuition grew from just over \$3,100 in 2005 to almost \$4,200 in 2018. Total grant aid was almost \$1,900 in 2005 (covering 61 percent of tuition and fees on average) then sharply increased from 2007 to 2011, peaking at covering 98 percent of tuition and fees on average in 2011 (\$3,400). Aid growth then slowed over the following years, so that by 2018 it was almost \$3,600, still covering 86 percent of tuition and fees on average.

Figure 3: Median Weekly Earnings, 24-25 Year-Olds

To get a sense of the returns to various levels of education, we plot the median weekly earnings for 24-25 year-olds in Figure 3. We choose this age range to focus on workers who are primarily finished with their schooling, but still early in their working careers. We adjust for inflation using the personal consumption index and present earnings in constant 2018 dollars. The figure shows that there has been relatively little change in weekly earnings for any education group over this period. Most groups had a decline from 2005 to 2012 or so, and then increased

again to end up very close to their 2005-level earnings in 2019. It appears that there has been more movement in the “More than BA” category, but this may be due to the small sample sizes of this group leading to noisier estimates. Next, we note that earners with at least a bachelor’s degree maintain a consistent large advantage over workers with an associate degree or less. While the difference between the earnings of a worker with a high school diploma and one with an associate degree never exceeds \$100/week, the difference between the earnings of a worker with an associate degree and one with a bachelor’s degree stays between \$150-\$200/week. We obtain similar patterns using mean weekly earnings rather than median weekly earnings.

Workforce Development: Trends in Programs and Participation

This section describes the major public programs that invest in the skills of non-college youth. Table 1 lists the current major employment and training programs along with recent funding levels.⁴ We focus primarily on the Workforce Investment Act of 1998 (WIA), the Workforce Innovation and Opportunity Act of 2014 (WIOA), and the Job Corps. WIOA replaced WIA as the major federal employment and training program around 2015, while the Job Corps, a residential program for poor youth that provides education, training, and supportive services, dates back to the Great Society era. Among programs outside the U.S. Department of Labor (hereinafter “DOL”), the Pell Grant program looms large. Although Pell grants primarily support students pursuing academic degrees, they also support many students pursuing occupational training at community colleges.⁵

Table 1: Funding for Major Employment and Training Programs (FY 2019)

The federal government provided funds for WIA, which the states and local workforce investment boards operated within broad federal guidelines and subject to a federal performance

management system that focused on outcome levels (rather than on program impacts) and embodied substantial financial incentives. WIA had separate funding streams for adults, dislocated workers (i.e. recent job losers), and youth. It provided its services via a one-stop delivery system that co-located many workforce and social services.

WIA established three levels of service that customers were nominally required to access sequentially: core, intensive, and training. Core services included outreach, job search and placement assistance, and labor market information, and were available to all job seekers. Intensive services included comprehensive assessments, development of individual employment plans and counseling, and career planning. Training included both occupational training and training in basic skills. Adherence to the service ordering, never perfect, faded with time and ended along with WIA.

WIOA largely maintains the structure of WIA while making several smaller organizational and budgetary changes. The one change worth noting here concerns WIOA's promotion of "career pathways" and "sectoral" training programs.⁶ Both program styles represent sensible programmatic responses to experiences with earlier generations of employment and training programs. According to the DOL (2012, p. 1), "Career pathways programs offer a clear sequence of education coursework and/or training credentials aligned with employer-validated work readiness standards and competencies." Sectoral programs, as their name suggests, provide training aimed at particular industrial sectors, usually with strong input from employers or industry associations.

Job Corps is a largely residential education and vocational training program serving at-risk young people ages 16 through 24.⁷ Job Corps tries to integrate the teaching of academic, vocational, and employability skills, and social competencies through a combination of

classroom, practical, and work-based learning experiences. Following training, it provides career development services. Schochet et al. (2006, p. 1) estimate that Job Corps accounts for over 60 percent of DOL expenditures on youth employment and training services.

Figure 4 shows trends in these programs' enrollment from (approximately) 2005 to 2018. Reporting periods for Job Corps run from each July to the following June, and WIA/WIOA reporting periods are from April to the following March. "Year" in Figure 4 refers to the beginning of the reporting period (e.g. 2005 refers to 7/05-6/06 for Job Corps and 4/05-3/06 for WIA/WIOA). We construct each line by dividing the number of participants in each program by an estimate of the population of 18-21-year-olds in the United States, drawn from the American Community Survey (Ruggles et al., 2020).

Figure 4 shows that Job Corps and WIA/WIOA serve only a very small proportion of the youth population compared to community colleges and four-year colleges. Moreover, the proportion that receives occupational training is even smaller. In recent years, less than half the of WIA/WIOA participants ages 18-21 received training, while in the Job Corps, between 45 percent and 65 percent of enrollees receive training.

Figure 4: Workforce Development Program Status, 18-21 Year-Olds

Research on Career and Technical Education

This section briefly considers research developments related to labor market entry and CTE. On the DOL side, the last two decades feature two major experimental evaluations, one of the Job Corps and one of WIA, and a sequence of smaller experimental evaluations of subsidized "sectoral" and "career pathways" training programs. The academic side offers an improved non-

experimental literature that builds on administrative data unavailable to earlier researchers to draw compelling conclusions about CTE delivered (mainly) via two-year colleges.

The National Job Corps Study (NJCS) ran from 1993 to 2004. The experiment randomly assigned a nationally representative sample of 81,000 youth, with roughly 75,000 allowed access to the Job Corps as usual and the remainder excluded from the program for three years. Schochet et al. (2006) documents the initial findings, and Schochet (2020) provides long-term impact estimates. We view the NJCS as a glass half-full. Unlike most programs for youth, the program generates substantively meaningful earnings gains relative to the control condition. However, the control group catches up with the treatment group after about five years, with the result that the program as a whole fails to pass a standard cost-benefit test (though it does pass one for those 20-24 years old at program application). In sum, the NJCS provides some hope for the future and a reason to prefer spending on Job Corps to spending on other, less effective youth programs.

The WIA Gold Standard Evaluation randomly assigned WIA enrollees at 20 representative sites to one of three treatment arms defined by the WIA services they could receive: full WIA, core and intensive services only, and core services only. The evaluation commenced in 2008. Our discussion relies on the Fortson et al. (2016) 30-month impact report. The highly decentralized institutional environment around employment and training programs in the U.S. means that many enrollees in the core-and-intensive and the core-only treatment arms received training, typically from the same providers that WIA uses, but not paid for by WIA. At the same time, and as expected, many of those assigned to the full WIA arm did not receive any training. The net result: rates of training receipt in the three arms of 50 percent, 41 percent, and 34 percent, respectively. As such, we obtain from the experiment not an estimate of the effect of training versus no training, or the effect of WIA versus no WIA, but rather estimates of the effect

of the *marginal* additional training received by the full WIA group relative to the other two groups, and by the core-and-intensive group relative to the core-only group.

Average earnings after the “lock-in” period (i.e., the months immediately following random assignment when participants focus on their training rather than on job search) for the full WIA and core-and-intensive groups do not differ very much; both well exceed average earnings in the core-only group. We interpret this as indicating that the marginal training received by the full WIA group relative to the core-and-intensive group does not have economic value while the marginal training received by the core-and-intensive group relative to the core-only group does have substantial economic value (noting, of course, that the intensive services they receive may have some value as well). What differs between the training at one margin and the training at the other? Mostly what differs is who pays for training, and thus how much effort the trainee has to put in to receive it, rather than the content or provider of the training. Thus, it does not make much sense to read the report as saying that “WIA training does not work”. Instead, it makes sense to say that, at the margin, WIA pays for training that it should not.⁸

Schaberg (2020) summarizes seven experimental evaluations of sectoral training programs. All the programs provide occupational skills training to prepare their participants for (relatively) high-paying jobs in particular sectors, often healthcare or IT. The programs typically screen applicants relatively heavily prior to enrollment with the aim of serving only participants likely to complete their training and find related employment. The programs also often provide additional services (e.g. job search assistance or soft skills training) beyond the occupational training. Some operate within a career pathways framework that aims to embed workers in a sequence of training programs, better credentials, and better jobs.

The evaluations typically produce small or non-existent employment impacts in the medium-run, probably due to all the screening prior to random assignment. Earnings impacts vary among programs in the medium run, though they trend positive. Most evaluations took place too recently to provide long-term impact estimates. Despite the screening and the clear link between the training and good jobs, many enrollees do not complete the training and some among those who do end up with jobs in other sectors. The strongest of the programs likely pass a cost-benefit test, though the question of how much of the training would have occurred without the government subsidy complicates the calculations. Much of the social gain may come in the form of equity (i.e. trainees from under-represented groups get the “good” jobs) rather than increased total output. The applicant screening, the requirement for strong employer involvement, and the (in many programs) narrow occupational focus suggest a limited potential for scaling up these programs to the point where they account for a major chunk of the government’s workforce development effort. At the same time, there remains room for expansion at current levels.

A final non-experimental literature builds on the pioneering study of Jacobson, LaLonde and Sullivan (2005). Recent examples include Jepsen, Troske, and Coomes (2014), Grosz (2020), and Leung and Pei (2020). The papers in this literature typically use state administrative data on earnings and other labor market outcomes drawn from unemployment insurance records combined with administrative data on enrollment, course of study, and degree and certificate completion from public two-year (and sometimes four-year) colleges. The administrative data allow both large samples and relatively more credible empirical strategies. The big picture conclusion from this literature: completing a recognized credential closely tied to an in-demand occupation at a public two-year college has a high earnings payoff. This broad finding has

focused attention on programs designed to help students finish what they start at two-year colleges and to better match students with programs; see e.g. Miller et al. (2020).

The damn pandemic

Our paper thus far has focused on the time preceding the current economic recession caused by the COVID-19 pandemic (and the policy responses thereto). We chose not to integrate the effects of the pandemic recession with our other analyses because its medium- and long-term impacts remain uncertain. However, the labor market (and the economy more broadly) will continue to change in important ways due to the pandemic. Here, we offer some big picture thoughts about the current recession as it relates to workforce entry and early career skill investments.

First, this recession has had an atypical effect on post-secondary enrollment. Overall enrollment (including undergraduate and graduate) declined 3 percent from the 2019-20 academic year to the 2020-21 academic year, with the largest declines (9.4 percent) in community colleges (National Student Clearinghouse, 2020). The switch, in most cases, to less-appealing online instruction surely represents one major factor in this decline, along with household economic disruptions, particularly for students coming from households where the primary earners worked in occupations and industries hit hard by COVID and its associated recession.

Second, and more broadly, the COVID recession does not reflect any underlying economic imbalance, such as an oil price shock or a housing bubble. In principle, everything could return to its pre-COVID state once the pandemic ends. Of course, workers and firms have paid many fixed costs—e.g. learning to organize workers at home and run meetings and courses online—that will change marginal costs, and thus behavior, post-COVID. Overall, we think that

this recession will imply less need for reskilling than past recessions, though of course the broad pressures toward reskilling (and upskilling) resulting from automation, globalization, and labor market regulations that raise the relative price of low-skill workers will persist.⁹

Other aspects of the COVID recession more closely resemble past recessions.

Unemployment has rapidly increased and has disproportionately affected young workers. The unemployment rate for 16-24-year-old workers increased from 8.4 percent to 24.2 percent from spring 2019 to spring 2020, while unemployment for those aged 25 and older saw a corresponding increase from 2.8 percent to 11.3 percent. One of the drivers of larger unemployment impacts on young workers is their propensity to work in the sectors that experienced the largest declines, such as leisure and hospitality. Unemployment rate increases were also large for workers without a college degree (Aaronson and Alba, 2020) and for Black and Hispanic workers (Gould and Kassa, 2020).

In the wake of the Great Recession, the American Recovery and Reinvestment Act (ARRA) included large increases in funding for WIA (arguably more than it could usefully digest in a short time). The COVID recession has yet to inspire increased spending on WIOA training (or other employment and training activities) and, given the decline in enrollment in post-secondary education due to its move online described above, it is not clear how much demand there would be for the training prior to the end of the pandemic. Barnow (2020) provides further thoughts on training-related responses to the pandemic and its associated recession.

Concluding remarks

The years between the Great Recession and the pandemic recession brought with them some modest positive trends for youth entering post-high-school adulthood. We note in particular the

sizeable drop in the number of youth ages 20-21 not engaged in school, training or work. Accompanying this shift, we documented an increase in enrollment at 4-year public universities. Mean and median earnings conditional on education also increased over these years, while the federal workforce system remained but a tiny piece of the human capital investment puzzle for this age group. The COVID recession has more than undone most of this progress. Because the pandemic has largely pushed postsecondary instruction in less desirable online directions, this recession lacks even the usual “silver lining” of increased enrollment in education and training during a time of low opportunity costs in the labor market.

Endnotes

¹ The Bureau of Labor Statistics defines full-time workers as those who work 35 or more hours per week. See <https://www.bls.gov/bls/glossary.htm#F> accessed November 28, 2020.

² NPSAS data are available every four years from 2004 to 2016. In calculating percentages of occupational majors, we omit the undecided.

³ We choose to use the personal consumption expenditures (PCE) rather than the consumer price index (CPI) because of concerns that the CPI overstates inflation and leads to substantial bias over time. See Sacerdote (2017) for more detail.

⁴ Barnow and Smith (2016) provide further details on program design, funding, and history.

⁵ Our estimate of Pell grant support extrapolates from 2015 data. Some Pell grant recipients appear as both WIOA enrollees and community college students.

⁶ Section 3 of the statute defines career pathways. See also Training and Employment Notice 39-11 (TEIN 39-11) issued by the Employment and Training Administration at USDOL.

⁷ Job Corps material retrieved from

<https://www.dol.gov/agencies/eta/jobcorps#:~:text=Job%20Corps%20is%20the%20largest,assists%20the m%20with%20obtaining%20employment.> on November 30, 2020.

⁸ The experimental findings largely parallel those in the non-experimental analyses by Heinrich, et al. (2013) and Andersson et al. (2013), including large differences between enrollees served as displaced workers and as adults. Also relevant: the individual training account experiment in Santillano et al. (2020).

⁹ For more on the slow but unrelenting progress of our robot overlords, see MIT Task Force on the Future of Work (2019).

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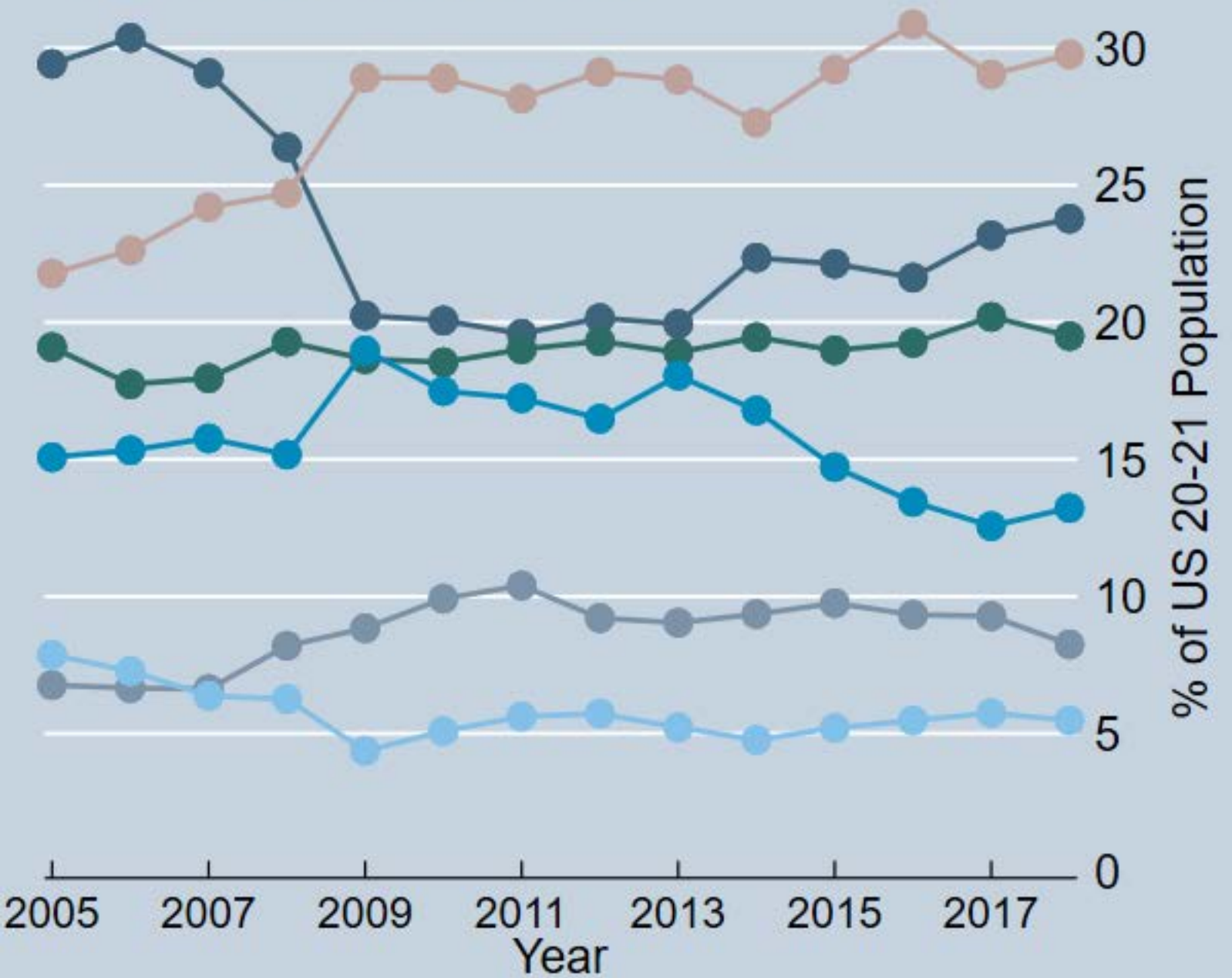
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Table 1
Funding for Major Employment and Training Programs (FY 2019)

U.S. Department of Labor

Program	Agency	Funding
Job Corps	DOL /ETA	\$1,719 M
WIOA Dislocated Workers	DOL /ETA	\$1,176 M
WIOA Youth Activities	DOL / ETA	\$903 M
WIOA Adult Program	DOL / ETA	\$846 M
Wagner-Peyser Funded Employment Service	DOL / ETA	\$683 M
Senior Community Service Employment Program	DOL / ETA	\$400 M
Trade Adjustment Assistance (TAA)	DOL / ETA	\$401 M
Disabled Veterans Outreach Program (DVOP) and Local Veterans' Employment Representative Program (LVER)	DOL / VETS	\$180 M
H-1B Job Training Grants	DOL / ETA	\$146 M
Other Federal Programs		
Pell Grants	Ed / OCTAE	\$6,861 M (rough estimate)
Temporary Assistance for Needy Families (TANF) Grants	HHS / ACF	\$2,881 M (FY 2018)
Adult Education Grants to States	Ed / OCTAE	\$642M
SNAP Employment and Training	USDA/FNS	\$502M

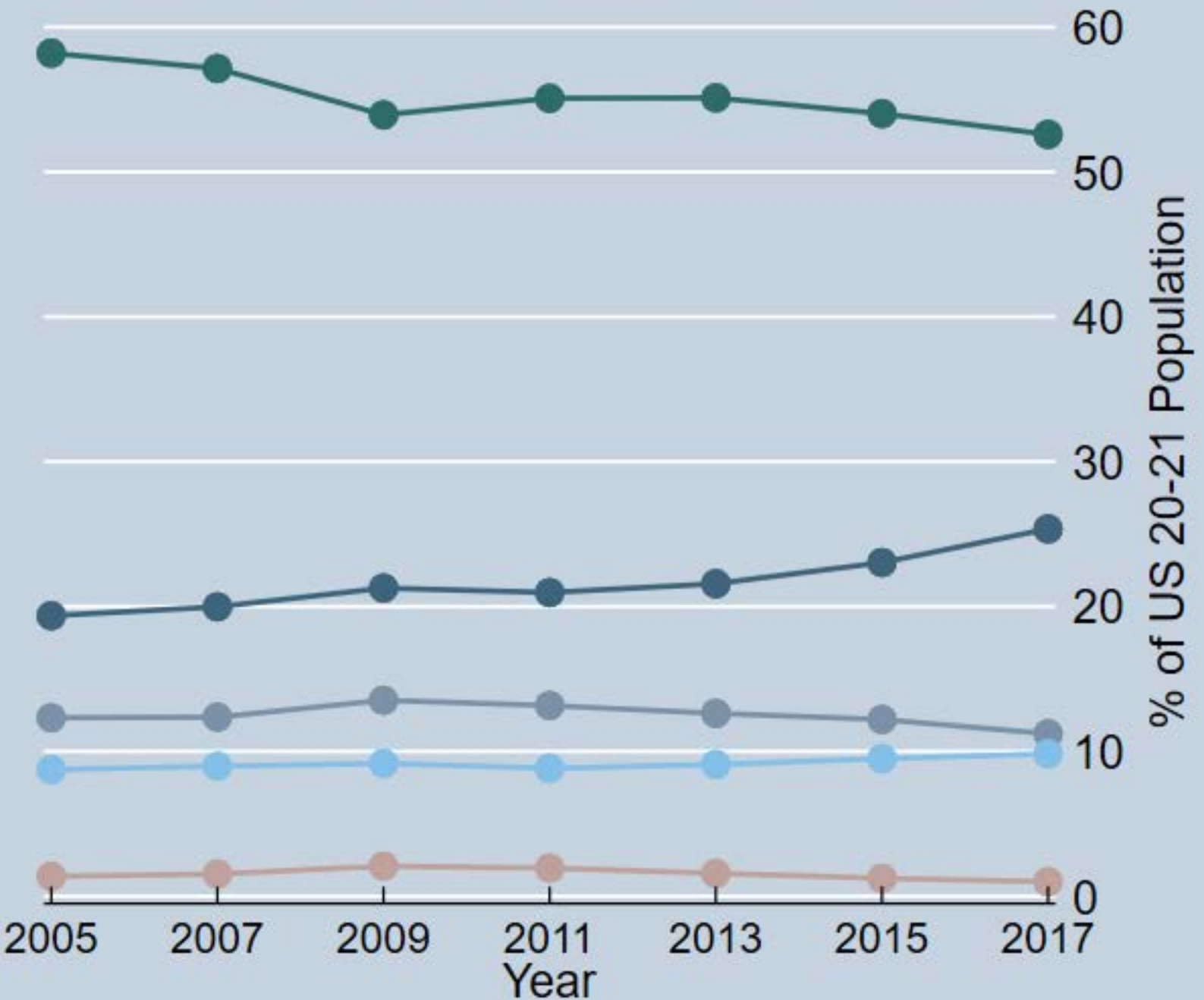
Work and Education Status of 20-21 Year-Olds



- Working FT, not in school
- Working PT, not in school
- Working FT, in school
- Working PT, in school
- Not working, in school
- Not working, not in school

Source: CPS October Education Supplement

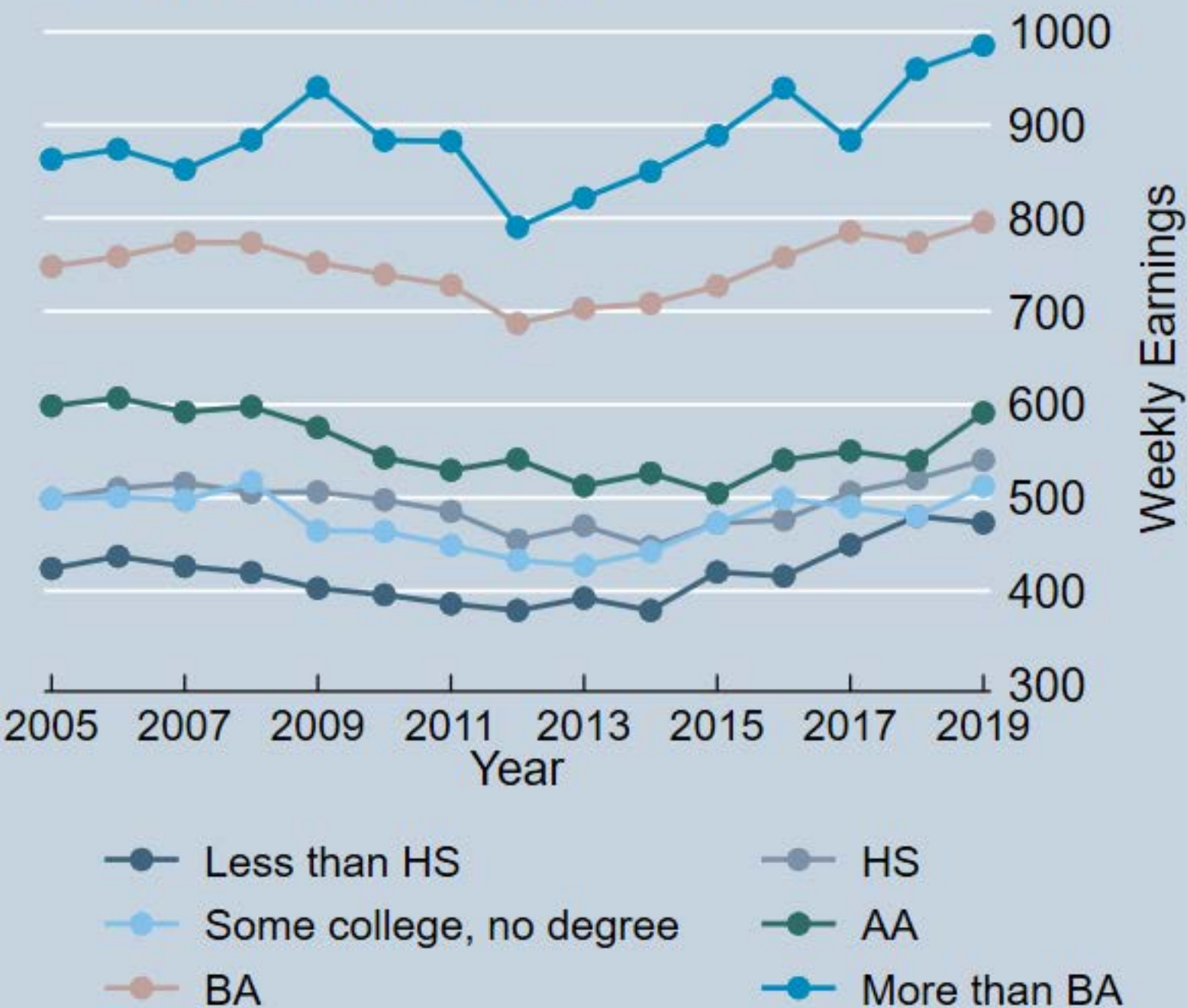
Education Status, 20-21 Year-Olds



- 4-year public
- 4-year nonprofit private
- For-profits + 2-year nonprofit private
- 2-year public
- Not in school

Sources: Digest of Education Statistics (US Dept of Education) and Census Bureau

Median Weekly Earnings, 24-25 Year-Olds



Source: CPS outgoing rotation group. Weekly earnings defined by IPUMS as the higher of (1) the respondent's answer to the question, "How much do you usually earn per week at this job before deductions?" and (2) for workers paid by the hour, the reported number of hours the respondent usually worked at the job multiplied by their hourly wage rate.

Workforce Development Program Status, 18-21 Year-Olds



- Job Corp
- WIA (adult)
- WIA (youth)
- Job Corp (w/training)
- WIA (adult w/training)
- WIA (youth w/training)

Source: Job Corp and WIA/WIOA Data Books, ACS. Job Corp data was reported from July to June each year; WIA/WIOA was reported from April to March each year. Year on x-axis refers to the year in which the data reporting starts. In year 2016-2017, WIA/WIOA was only reported from July to March (8 months) so we multiplied counts by 1.5 to approximate a full year.