Can Workforce Development Help Us Reach Full Employment?

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ABSTRACT

In this paper, I review the potential of workforce development programs to help the US get closer to "full employment." First, I provide some background on workforce development in the US, and also on the aggregate employment/labor force issues that workforce programs may or may not address. Then I review the empirical evidence on job training and other forms of workforce development, in terms of impacts on *employment* (as opposed to earnings). I briefly consider how the US experience in this regard compares and contrasts with that of other countries in the EU or OECD, and what we might learn from them. I conclude that more and better workforce development could help somewhat to achieve lower unemployment and higher labor force participation in the US, though we also need a range of other policies to achieve these goals.

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The hope that job training – or its broader version known as workforce development – can help the US achieve full employment was memorably articulated by prominent economists about sixty years ago (if not earlier).[1]

On the heels of an "automation scare" in the US during the late 1950s and early 1960s – where Americans briefly grew fearful that we would all be replaced by computers in the workforce – the Council of Economic Advisers (CEA) under President Lyndon B. Johnson recognized that displacement might create "structural unemployment" which needed to be addressed by policies other than aggregate demand management, like job training (Bailey and Danziger, 2014).

In addition, the CEA under Johnson also acknowledged that disadvantaged workers have high unemployment rates for a variety of reasons – weak skills, discrimination, and the like – and that policies to address such unemployment could contribute to full employment as well (on top of their other positive attributes). Indeed, this was one of the many motivations for LBJ's War on Poverty, which included a number of job training programs (Holzer, 2014).

We have learned a great deal about workforce development in the 60 years since these views were first promulgated, and the US has had a wide range of experience with different kinds of worker education and training – many (though not all) of which have been rigorously evaluated. Both conceptually and empirically, are worker displacement and disadvantage still considered barriers to lower *unemployment*? Or has this particular concern shifted, amid growing evidence of other problems – like declining *labor force participation* among less-educated workers (especially men) and growing earnings stagnation/inequality?

And how good is the track record of our various workforce development efforts in the US, in terms of raising employment (and earnings more broadly) cost-effectively? Do these programs merit greater investment and scaling in their current form? Are there particular models of training that we can scale now or soon that would help us achieve our full employment goals?

Below I consider these issues. First, I provide some background on workforce development in the US, and also on the aggregate employment/labor force concerns that workforce programs may or may not address. Then I review the empirical evidence on job training and other forms of workforce development, in terms of impacts on employment and earnings. I will briefly consider how the US experience in this regard compares and contrasts with that of other countries in the EU or OECD, and what we might learn from them. Then I conclude with my thoughts on what we can realistically expect (or not expect) from workforce development in this regard, and what others kinds of policies might be needed in our pursuit of better aggregate employment outcomes for American workers.

[1] The term "workforce development" usually refers not just to education and training efforts for workers but also to the kinds of job search assistance, career counseling or support services that a worker might obtain at one of the US Department of Labor's One-Stop offices (now called American Job Centers, or AJCs).

1. *Workforce Development and Full Employment in the US: Some Background*

A. Workforce Development

We have no formal or exact definition of "workforce development" activities in the US. The term covers a range of postsecondary education and training efforts designed to prepare students and workers directly for the labor market, as well as job search assistance, career guidance and other supports to help them find and keep jobs (and obtain more skill-building, if needed) once they enter. Most workforce analysts tend to focus on sub-BA education and training programs, and we typically exclude liberal arts programs when doing so.[2]

Table 1 lists the many different versions of workforce development services that one finds in the US, along with the service providers. Funding sources for these services (besides just the students/workers themselves or their employers) appear as well.

The categories of workforce development in the US include:[3]

- Various programs in higher education – which can be for academic credit or not for credit, and shorter-term or longer-term in length;[4]
- Other kinds of pre-employment training and workforce services (including career guidance and job search assistance) that are funded through the Workforce Innovation and Opportunity Act (WIOA) and other federal sources;[5]
- Career and technical education, beginning in high school and connected to higher education certificate or degree programs (through a range of state-level "career pathways"); and
- Work-based learning (including apprenticeships and internships) and other forms of incumbent worker training.

The providers of such services include a range of accredited higher education institutions (public or private, for profit or not-for-profit), public agencies (like local AJCs),[6] secondary schools (public or private), community-based organizations, industry-related organizations and

[2] While Deming and Noray (2018) show that labor market returns to the liberal arts degrees often exceed those of STEM over time, this is less true among sub-BA credentials; indeed, Holzer and Baum (2017) show that there are few economic rewards to terminal associate degrees in liberal arts.

[3] I do not include direct job creation, including subsidized jobs, in my definition of workforce development here – since they are little used in the US. But they play a greater role in the European Union (EU) and other countries, as I note below.

[4] Certificates range in length of time to completion from very short term – often a few months or less – to multiple years. There has been relatively greater interest recently in "micro credentials," such as "badges," which are very short-term (National Skills Coalition, 2023). Longer-term certificates are much more likely to be for academic credit, which is needed in order for programs to be eligible for Pell grants and federal loans. Unfortunately, data on not-for-credit credentials are much less available to researchers.

[5] The US General Accounting Office (2019) lists 43 federal employment and training programs, though most are very small. At that point in time, total federal spending on these programs was $18B per year.

[6] The US has approximately 3000 AJCs; some are collocated with community colleges, though most are not.

employers (public or private). Funding comes from a range of public sources – federal, state or local – and also from employers and the students/trainees themselves (consistent with human capital theory).[7] The implementation and regulation of public programs and funding at all levels of government is handled by Departments of Education, Labor, Commerce, Health and Human Services and others – and also different divisions within these departments.

A few characteristics of workforce development in the US immediately stand out. First, there is no single "workforce development system"; instead, what we have is a complicated set of services, providers and funders/regulators across different levels of government and private institutions with only minimal coordination across them; accordingly, we have many programs operating within "silos" that are very specialized and often cut off from one another, and not very well-coordinated.[8]

Second, it is important to note that the public funding for workforce development is very asymmetric across these services and institutions. Specifically, federal and state/local funding for higher education institutions – even the programs of these institutions that we call "workforce development" – are dramatically higher than those for other forms of workforce development. For instance, federal funding through the Higher Education Act for Pell grants and federal loans costs hundreds of billions of dollars each year, as do state subsidies for their public higher education institutions.[9] In contrast, federal funding of workforce services through the Workforce Innovation and Opportunity Act (WIOA) and other sources of funding amount to approximately $20B today, or less than .1% of GDP.[10]

Such a "system" of workforce training and services clearly has a number of strengths and weaknesses – and a body of rigorous research and evaluation evidence developed over the past several decades has contributed to our understanding of both.

The strengths of the workforce development in the US can be summarized as follows:

- Both workers and employers can choose from a very wide range of workforce development services, institutions and programs providing them (as in Table 1);

[7] Mincer (1974) first noted the incentives of both firms and workers to invest in on-the-job training. Workers pay more for such training (in the form of foregone wages) as the training becomes more general, since that increases the likelihood that the worker will leave and other employers will benefit from it.

[8] For instance, higher education institutions often have representatives on local and state workforce boards; and higher education students can get services or funding in AJCs. CTE pathways lead from high schools to higher education programs; and some work-based learning is coordinated with local community colleges, so trainees can sometimes earn a credential. But, in practice, this coordination is very limited.

[9] The federal government spends about $30B per year on Pell grants and tens of billions more on federal loans, work-study and other forms of financial aid. In addition, states subsidize higher education institutions, including community colleges, with tens of billions of dollars in funding (Holzer, 2021).

[10] Federal funding for CTE through the Perkins Act is also very small – just over $1B per year – and constitutes just a small fraction of total state and local spending on CTE.

- Many of the workforce credentials that workers earn in the higher education system have clear labor market value for them (relative to cost), and at least some of the other publicly provided training appear to have value as well;
- The best sectoral training programs that have been developed in the past few decades generate large and lasting labor market returns for trainees; and
- Apprenticeships also seem to generate strong returns for workers and employers, while some other forms of publicly-provided career and technical education and incumbent worker training appear valuable to the students and workers receiving them.

But workforce development in the US also has a number of weaknesses:

- Not all credentials earned and forms of training have much net labor market value;
- Federal public funding for workforce programs outside of higher education is much too low to have any positive aggregate impact;
- Our community colleges are also underfunded and generate weak outcomes;
- Career and technical education (CTE) and work-based learning in the public schools are limited in quality and enrollments, due to long traditions of "tracking" and low market value;
- Employers provide little incumbent worker training to non-professional and non-managerial workers, undertake quite few apprenticeships, and are skeptical of the public workforce system more broadly; and
- The components of workforce development in the US (in Table 1) are fragmented and often fail to constitute coherent regional workforce systems.

For instance, most categories of credentials earned in the public community colleges, on average, have net market value. Associate degrees in non-liberal arts fields (like business or the health services) generate larger returns than terminal degrees in the liberal arts. In traditional log(wage) regression equations, certificates generate average earnings premia of nearly 10 percent relative to high school graduates, while other approaches generate somewhat smaller ones (Bailey and Belfield, 2017; Baum et al., 2020). The variance across fields of study in these estimated returns is very large; on average, returns are larger in for credit than not-for-credit programs and larger in longer-term than shorter-term programs.[11]

But the earnings gains for credentials earned in expensive for-profit institutions generate very low, if any, returns (Cellini and Turner, 2019). And, besides the returns to credentials earned, both public and private two-year programs are hampered by low completion rates and notably high default rates on loans (Baum et al., op cit.). It is widely believed that these weak outcomes

[11] To minimize the problem of unobservable skills, many authors (Belfield and Bailey, 2017) compare community college completers and non-completers to estimate returns to credentials. But this comparison sometimes means that certificate completers are compared to associate degree non-completers (Scott-Clayton, 2017); and any labor market return to credits earned among the non-completers are differenced away. Both issues create downward biases in estimates of returns to certificates.

in the public colleges, at least to some extent, reflect the very limited public funding that they receive (e.g., The Century Foundation, 2019).

Estimated returns to training funded by WIOA (and its predecessors like the Workforce Investment Act, or WIA) are varied. In some nonexperimental studies (Heinrich et al., 2013; Andersson et al., 2022), the estimated returns for disadvantaged adults are reasonably positive though less so for dislocated workers; but in the most recent RCT estimates (Fortson et al., 2017), training impacts are not positive and significant – perhaps reflecting limitations of the study.[12] On the other hand, even in this study, the estimated returns to core and intensive services obtained in AJCs are positive.

But very few workers are trained with WIOA funds, (which are provided to workers through vouchers called Individual Training Accounts), and very few dollars go to such training: only about 200,000 workers per year receive training with $.5B of funding).[13] Accordingly, WIOA seems stuck in a low- impact, low-funding equilibrium – where the funding is too small to generate major impacts and the impacts are too small to merit more funding. Federal funding for the AJCs is quite small as well.[14]

We have little evidence on the efficacy of a range of other federal workforce programs in the US (and identified in the latest GAO report on training, 2019). A small group of American workers who are directly displaced by imports receive Trade Adjustment Assistance (TAA), where they receive income support beyond Unemployment Insurance and have dedicated funds for training. While long considered to be an ineffective program, the most recent evidence by Hyman (2018) shows positive impacts on earnings among TAA recipients.

We do not really have rigorous evidence on the returns to apprenticeship or incumbent worker training, either for workers or employers, though the evidence we have strongly suggests positive impacts. But American employers provide little training to incumbent workers who are not professional or managerial – perhaps because employers too often feel that their non-college education workers lack the skills or likely future tenure with the firm to merit such investments.[15] Employer engagement with the public educational or workforce systems is low by most accounts.

[12] Fortson et al. show that the differences in the amount of training – and especially completed training – is quite small between the treatment and control groups in their study, rendering their intent-to-treat estimates quite unreliable as measures of the returns to WIA-provided training.

[13] Deming et al. (2023) note the small expenditures on training in WIOA and the fact that nearly half of training is spent on those who then enter low-wage jobs, which they define as jobs paying less than $25,000 per year. Of course, for very low earners before the training, such jobs can be consistent with strong returns to training.

[14] About $700M of WIOA funding per year is spent on AJCs, which can also receive state funding.

[15] On-the-job training is inversely related to job turnover, with causation likely running in both direction (Jovanovic, 1979). Very weak basic skills and a perceived lack of work-readiness among workers will clearly disincentivize employers from investing in training.

Also, employer take-up of apprenticeships is low. There are some 600,000 registered apprentices in the US, and perhaps a similar number that are not registered. Relative to the size of the US workforce (over 160 million), these numbers are low. Some claim that the registration process is cumbersome and deters employers (Lerman, 2019), while others claim that employers overstate the costs of setting up an apprenticeship – and much of that is payment for productive work time. And, of course, the US does not have a well-developed apprenticeship system linked to our public education system, as do Germany and other EU countries (Lerman, 2017).

Similarly, there are some clearly successful models of career and technical education (CTE) in American high schools - like Career Academies, P-Tech and technical high schools.[16] Many pathways have been developed at the state level that connect secondary school with community college programs (Hoffman and Schwartz, 2013), and both enrollments and academic quality have risen over time. But a history of tracking poorer and/or minority students into CTE rather than college preparation, and a reputation for low academic quality in the past, continue to limit CTE's appeal to many students with college aspirations (Stern, 2017).

One very bright spot in the workforce development literature involves *sectoral training* – a training model in which intermediaries bring together representatives of high-demand, high-wage industries and training providers to generate skilled workers (Conway and Giloth, 2014). With its "dual customer" focus on both workers and employers, and by providing skilled workers to the industries that need them, sectoral training involves closer relationships between the supply and demand sides of the labor market.

And, while all examples of sector training are not necessarily effective, the best models – such as Project Quest, Year Up, Per Scholas, the Wisconsin Regional Training Partnership, Jewish Vocational Services and others – have generated large and lasting impacts on worker earnings in rigorous evaluations (Maguire et al., 2010; Katz et al., 2020). Indeed, despite concerns that earnings impacts in industry-specific skill training programs might fade over time, the best programs show little sign of such fadeout.

On the other hand, these very successful programs have remained fairly small, even while being replicated in multiple sites; and attempts to scale them have been challenging (Holzer, 2015). Also, these programs tend to screen out many candidates whose basic skills and work readiness are limited – to maximize completion rates and maintain employer confidence – thereby limiting their ability to serve many low-income individuals.[17] The costs of the best stand-alone programs often average or exceed $10,000 per trainee, which impedes scaling. Most are

[16] See Kemple (2008) on Career Academies, Dougherty (2018) on returns to technical high schools and other forms of CTE, and Rosen et al. (2020) on early benefits of P-Tech, as a program that covers academic and technical learning for specific careers in grades 9-14. Cowan et al. (2019) provide suggestive evidence that CTE programs can substitute a bit for enrollment in four-year degree programs.

[17] Per Scholas and Year Up both limit program entry to applicants with strong work-readiness; and Per Scholas, which provides IT training, insists on fairly strong numeracy and science literacy.

engaged in efforts to reduce costs and reach more students, perhaps through more use of online instruction and virtual tutoring.

Community colleges wrestle with how to implement such programs and maintain ties to regional employers while serving all students in their open enrollment systems. Many are developing "stackable credentials" pathways, where even noncredit certificates can be "stacked" or used towards the attainment of for-credit certificates or degrees.[18] Also, a range of "career pathway" programs have been developed for youth or adults with low basic skills and work-readiness, to prepare them for public or private training programs, though our knowledge about their cost-effectiveness at scale remains limited.[19]

In addition, scaling inevitably raises a set of "general equilibrium" questions about regional economies and the relevant demand for skilled labor in these key sectors.[20] Also, when a range of sector-specific shocks (like those associated with automation or globalization) occur, whether the training impacts remain in place is an open question.

Thus, figuring how to finance and scale the approaches developed in sectoral programs while maintaining their quality in a dynamic labor market remains a top challenge for workforce development.[21] Some success stories exist, and experimentation and evaluation of a range of approaches are top priorities.

B. What is Full Employment? Unemployment, Nonparticipation and Education in the US

To assess the potential of workforce development programs to help bring the US to "full employment," we need to have a clear definition of that concept and how it might have changed over time. Various trends over time in both unemployment and labor force participation by demographic group – especially by gender and education – are strongly relevant to this concept.

[18] But Bailey and Belfield (2017) show that stacking in practice remains fairly limited and generate questionable labor market returns.

[19] In the Pathways for Advancing in Careers and Education (PACE) evaluations of the Department of Health and Human Services, a number of career pathways programs appear successful – such as Integrated Basic Education and Skills Training (I-BEST) program in the state of Washington, though few have been replicated or scaled. The Accelerated Opportunity program has achieved some scale in several states with some successful impacts and mixed cost-effectiveness (Kuehn, 2017).

[20] The "general equilibrium" questions include whether or not the trainees get net new jobs afterwards as opposed to displacing less-trained workers in existing jobs; and whether there will be sufficiently elastic labor demand to fully absorb newly trained workers in specific fields without reducing employment and earnings for incumbent workers in the field.

[21] See Lowe (2021) and Schwartz and Lipson (2023) for case studies on innovative and apparently successful approaches to community college engagement with regional employers as skill demand evolves on the part of the latter.

The literature by economists on the trends in unemployment and labor force participation in the US is too vast to summarize here. I will simply list a few of the more salient facts and research findings that are relevant here.

In earlier decades, many economists argued that "full employment" is reached when the aggregate unemployment rate returns to the non-accelerating inflation rate of unemployment (NAIRU) at any point in time. Of course, calculating a NAIRU at any moment is challenging and almost always controversial; and the NAIRU clearly fluctuates over time with demographic changes – like the average age and education levels of the workforce – and also by changes in "frictional" or "structural" factors affecting labor market searches among the unemployed. Most labor economists believe that the NAIRU has declined from 6 or more percent in the 1970s to something above 4 percent today (Aaronson et al., 2021), due to demographic changes (i.e., rising age and education levels) and perhaps some improvements in the efficiency with which the unemployed search and employers hire.[22]

But it is likely that another less-positive factor has contributed to lower unemployment rates: the drops in labor force participation among men and especially less-educated men. Figures 1 and 2 depict the changes in participation over time for prime-age men and women. For females, participation rose strongly over much of the late 20th century, but has mostly flattened since 2000; in contrast, participation among men has mostly declined. Furthermore, these trends differ substantially by education group, especially among men.

Figures 3a and 3b depict changes in participation between 1979 and 2019 among prime-age men and women, contrasting changes between those with high school or less education v. those with college or more. Very clearly, participation has dropped strongly for less-educated men over time while those for less-educated women have varied – they rose until 2000 and have declined somewhat since then. In contrast, modest decreases in labor force participation are observed among college-educated men and modest increases among educated women.

Indeed, the magnitudes of the labor force participation declines among less-educated workers easily swamp the improvements in unemployment rates and the NAIRU that we have observed over time. And the drops in participation among the least-educated men likely decreases observed unemployment rates and estimates of the NAIRU, since many of these men likely had relatively higher unemployment rates when they participated in the labor force. This is especially true for African-American men, whose decline over time in employment and labor force participation is disturbingly large (Bayer and Charles, 2017; Holzer, 2021).

Why have so many less-educated workers and especially men dropped out of the workforce? Summaries of these trends can be found in Autor and Wasserman (2013), Eberstadt (2016), Krueger (2017), Binder and Bound (2019) and Abraham and Kearney (2020). No doubt,

[22] The rising efficiency of online job search has been noted by Katz and Krueger (1999) and Kuhn (2018). Recent macro studies that avoid the use of a NAIRU in measuring labor market tightness – using the ratio of vacancies to unemployment instead - include Domash and Summers (2022) and Blanchard and Bernanke (2023).

declining demand for their labor - due to skill-biased technical change (SBTC) and globalization - have played some role in reducing their employment and labor force activity, at least partly by reducing their real (or relative) wages and moving workers down their labor supply functions; but Binder and Bound argue that estimated labor supply elasticities are not large enough for wage trends to account for all of these declines.

Alternatively, these labor demand shifts imply less demand and employment at their chosen reservation wages (or at prevailing wage levels for any reason). The geographic-specific nature of demand shocks, especially in manufacturing (Bartik, 201X; Autor et al., 201X; Yagan, 2020), along with limited worker mobility across these areas, plays some role in employment (Austin et al., 2019); and the limited responsiveness of educational attainment to increases in skill demands associated with SBTC can help sustain lower wages for the less-educated and high inequality as well (Goldin and Katz, 2008).

Besides these labor market determinants, other contributors to the decline in working among men likely include worsening health and opioid dependence, rising disabilities, declining marriage rates, and (among Black men) high rates of incarceration (Binder and Bound, op. cit.) – though some or all of these factors are somewhat endogenous with respect to work effort. Among women, the lack of affordable child care and paid leave likely contribute to the recent flat trends in participation among women, especially since these rates have continued to rise in other countries that provide more such family-work balance and support (Black et al., 2017).

One possible policy implication of the above trends and their causes is that rising skill-development – through higher levels of education or job training – might help partially counter these declines, if they result in higher market wages (and associated increases in labor supply) or higher employer demand at prevailing wage levels (and perhaps increasing labor market search effectiveness as well). How much might these factors matter?

In Table 2, I present a few suggestive calculations on this topic. Using recent data from the Bureau of Labor Statistics, I present different labor force and employment outcomes for the US population by education; then I calculate by how much unemployment would decline and labor force participation (and the employment-to-population ratio) would rise if high school dropouts and graduates in the US had similar labor force outcomes to those with *some college* (but no BA degree). This gives us some sense of the extent to which better skills might contribute to "full employment," by at least this one measure.

The results show very clearly that unemployment rates decline monotonically with higher education, while labor force participation and employment rise. Interestingly, the outcomes of those with "some college" are closer to those of high school than four-year college graduates.[23] Of course, these differences in employment outcomes across education categories likely reflect

[23] Most students with "some college" have only a year of higher education, usually in community colleges (Holzer and Baum, 2017); so it is not surprising that their earnings are more similar to those of high school graduates than BA degree earners.

both the causal effects of education as well as unobserved skills and preferences of the individuals in each category.

If high school dropouts and graduates had the same labor force outcomes as those with some college, their unemployment rates would be .5 percentage points lower, while labor force participation and employment rates would each be about 3 percentage points higher. In other words, more education or training could make a difference – but it would not fully eliminate the large declines in labor force participation in recent decades or cause a dramatic drop in unemployment.

And whether job training could help workers achieve employment outcomes, on average, that are equivalent to those of workers with "some college" is questionable. As noted, the estimated impacts of training on earnings are often modest. Of course, the very best versions of training – like the sectoral programs – could generate earnings more similar to those of workers with some college, though not for all.[24] Given the screening that some sectoral programs use to ensure strong trainees, not all high school dropouts and graduates would be able to complete these programs and benefit from them to the same extent. And the "general equilibrium" issues noted earlier, that might limit demand for all of these better trained workers, raise further doubt about the potential effect of training on aggregate employment outcomes.

So the bottom line is that effective job training, if scaled and made available to many more workers, could improve their unemployment and labor force participation rates, though probably not by enough to achieve any real definition of "full employment." To do the latter, many other contributors to low labor market activity – including disabilities and the effects of criminal records for men, and child care or paid leave for women – would be needed as well.

2. *The Impacts of Workforce Development on Employment (and Earnings): What the Evidence Shows*

By how much do various kinds of job training and workforce services affect employment as well as earnings?

I have reviewed the evidence on labor market impacts of the following kinds of training or services for out-of-school youth and adults:

- Community college certificate programs – for credit or not;
- WIA-financed training;
- WIA-financed services (core or intensive); and
- Sectoral training.

[24] Average annual earnings for those with "some college" in the US is approximately $40,000 per year (National Center for Education Statistics, 2023). While most trainees without higher education credentials earn less than that, Katz et al. (2020) note that participants in a few of the best programs eventually achieve that level of annual earnings.

Many of the studies that generate estimated impacts on *employment* (as opposed to earnings only) appear in Table 3. While the studies have a range of strengths and weaknesses (noted above), the estimated impacts of these credentials or services are mostly positive on employment (as well as earnings). Only the RCT evaluation of WIA training generated no significant impact on either outcome, though this might reflect the limitations of that study and sample. Still, even in that study, estimated impacts of core and intensive services on employment and earnings (relative to core only) are both positive - as is also true in Heinrich et al.

The magnitudes of the estimated positive impacts on employment vary a great deal across studies and programs. For instance, the estimated effects of WIA training on employment in Heinrich et al. are larger than those in Andersson et al., though the studies use similar methods and data (but from different states).[25] Of the best sectoral programs, the estimated impacts of Per Scholas and Project Quest on employment are similar, though the impact in the latter rises substantially in years 9-11 (to about .09 from an average of .03). Estimated impacts in Year Up on employment are insignificant overall, though impacts on *full-time* employment are large (10 percentage points). Estimated impacts of certificates from community colleges in Kentucky on employment in Jepsen et al. (2014) are much larger for females than males, though this is not observed elsewhere.[26]

Of course, it is also important to note that these are point estimates of *quarterly* employment probabilities - i.e., the likelihood of having any positive earnings at all. Since such an impact could occur in any of the 13 weeks that constitute a quarter, the implied estimates at a point in time are much smaller. By a different metric, Katz et al. (2020) estimate the impacts of programs on the numbers of quarters (out of 8) with positive earnings in years 2 and 3 – and the estimates average .25 (and .56 for Per Scholas), which is consistent with a .03 impact in any quarter.

Estimates of certificate impacts on employment at a point in time, using survey data, also vary in magnitude. In Baum et al., certificate holders have employment rates that are .09 larger than those of high school graduates, but comparable to those of GED holders.[27] Since these estimates are from traditional log (wage) equations without controls for cognitive skills or work experience, they are likely upward biased. But comparing estimates of certificate program completers and non-completers, estimates of impacts on employment rates are as high as .12

[25] Estimates of impacts of WIA training on quarterly employment in Heinrich et al. average about .05 for adult and dislocated workers per quarter after the first year - though for females, early estimates are as high as .13. In Andersson et al., estimates average about .02-.03 per quarter after the first year.

[26] Most studies of certificate degree impacts on earnings in Belfield and Bailey (op. cit.) focus on quarterly earnings rather than employment rates, though include estimates of employment effects (e.g., Xu and Trimble, 2016).

[27] The estimates of the effects of certificates on earnings are generated using data from the Adult Training and Education Survey (ATES) data from 2016. The survey asks about attainment of both for-credit and not-for-credit certificates retrospectively.

in the short-term.[28] Unobserved heterogeneity between the latter groups likely biases the estimate upward, as does the likelihood of impact fadeout over time (and general equilibrium issues as well).

One other approach might have a more positive effect on employment outcomes, especially among workers who are viewed as "hard-to-employ": subsidized jobs in the private or public sector. But there is currently little broad use of such approaches in the US; such programs are also costly, and we have little rigorous evidence of their effectiveness to date.[29]Indeed, such programs could help improve employment among the least-skilled people during the time when they are in effect, but much less after the programs end; in other words, we would need not one-time investments but ongoing spending on to sustain employment increases in these cases.

Overall, it appears that workforce training and services, as well as the certificates they often generate, have positive impacts on employment rates, though we remain very uncertain about their magnitudes. Higher earnings from many of these programs and services might also lure some workers back to the labor force. As is often true, the ultimate impacts would depend heavily on our ability to scale the best models and target them to those most who would benefit the most from this help.

Whether these estimated positive impacts reflect transitions from unemployment or not in the labor force to employment is also not clear in any case. But given the wide range of forces that have contributed to lower employment and labor force participation over time - as noted above - I am inclined to believe that the effects of such training are potentially helpful but hard to realize and would not remedy all of the other causes of lower employment or labor force activity (like disability, criminal records or expensive child care) for the different populations described above.

3. What Can We Learn from Workforce Development in the EU and Elsewhere?

In the EU and elsewhere, many countries invest quite heavily in what they call "Active Labor Market Policy" (ALMP). These are designed to increase rates of employment among those who are unemployed or not actively seeking work; they might also raise worker earnings, though that is a secondary goal.

ALMP includes the following policies:

- Job training – in the classroom or on-the-job;

[28] Baum et al. use data from the Beginning Postsecondary Survey (BPS) to estimate the short-term impacts of obtaining certificates, relative to certificate students who have not completed their programs.

[29] For positive and mostly descriptive evidence on subsidized employment or "transitional jobs" see Grant and Cooper (2023) and an earlier study by Roder and Elliott (2013). But Cummings and Bloom (2020) note that, with a few exceptions, most transitional jobs programs have few lasting impacts on the earnings of harder-to-employ workers once the subsidies end (and positive impacts before that).

- Job search assistance (or mandates);
- Subsidized employment in the private sector; or
- Subsidized employment in the public sector (including public service employment).[30]

ALMP thus encompasses the services that constitute workforce development in the US, but is broader and includes direct job creation in the private or public sectors. But the research here focuses not on the effects of job creation on employment, but rather whether the work experience or skills gained through such efforts raises employment afterwards.

Most countries in the EU and elsewhere spend more ALMP than does the US. Indeed, countries frequently spend .2-.5 percent of GDP on such programs (where the US spends about .1 percent); and, in a few well-known cases, the spending is dramatically higher (Holzer, 2021). For instance, Denmark spends over 1 percent of GDP on ALMP as part of its "Flexicurity" model, in which there are few constraints on private employment decisions by firms but generous income support workers while they retrain and seek new jobs (Kreiner and Svarer, 2022).

How effective are ALMP programs and policies abroad? The best study is by a meta-analysis of evaluations of over 200 studies and over 800 programs by Card et al. (2018). While their sample included small percentages (under 10 percent of the sample) of programs by the US, it is primarily a study of ALMP in the EU – with the addition of smaller numbers of studies from other Anglo countries (Australia, New Zealand, Canada and the UK) plus Latin America and other middle-income countries. Card et al. also report a mix of impacts on different outcomes – sometimes earnings and unemployment durations at other times (with the latter clearly more relevant for our purposes).

Card et al. find that, on average:

- Short-term program impacts on earnings or unemployment durations are quite small (.01-.03) but they rise over time and especially over the longer term, defined here as two years or more after training (with estimated impacts reaching an average of .05-.12);
- Job search assistance has fairly small positive impacts over time while training and private (but not public) sector employment subsidies have growing impacts over time;
- Positive impacts of job search assistance are seen most clearly among disadvantaged workers, while training impacts are largest for women and the long-term unemployed (and during recessions).

It is noteworthy that many of these programs have been operated at scale in the countries that use them – but whether or not they could be as effective in the US, if funded at the same levels,

[30] Public Service Employment (PSE) jobs refer to fully-financed public jobs created for those facing low labor demand, often with very limited skills; while subsidized jobs in the private or public sector refer to those that are subsidized by a public agency and might pay for workers partially or fully, and for limited lengths of time.

remains a huge question. In particular, American and EU labor markets differ in a number of ways.

For one thing, EU countries have long traditions of well-regarded career and technical education and work-based learning in their public school systems, which employers view as successful providers of the technical skills they need (Lerman, 2017). This might predispose them more positively towards ALMP in a variety of ways as well. On average, employers also accept a much higher rate of labor market mandates and regulation by the government, and are likely more positively disposed to and engaged with government training efforts (Freeman, 2008).

In addition, there is much more public support for childcare and family care than in the US, making it easier for those with family care responsibilities (primarily women) to respond to public training and employment opportunities. Finally, on at least some measures, the variation in basic skills that complement training is likely higher in the US than elsewhere (Chmielewski and Reardon, 2016), perhaps making it harder for the least-skilled to successfully complete technical training programs which employers would reward.

These differences make it even harder to infer the extent to which the EU experience with ALMP is relevant for the US labor market.

4. Conclusion

Could workforce development in the US play a greater role in raising aggregate employment and moving us towards "full employment"? The answer to this question depends heavily on our understanding of the US workforce system, and of our evidence on its performance, as well as on the nature of employment shortfalls in the US and how they have evolved over time.

On employment in the US: the NAIRU has declined over the past few decades, as a result of both demographic change and improved technology in job search. But labor force participation has declined among less-educated men, and has flattened out among less-educated women. Their nonparticipation like reflects both skill deficiencies that result in stagnant wages, and other barriers and costs to participating in the labor market – including criminal records (especially among black men), disabilities (and disability insurance), and the costs of child and family care to caregivers. If high school dropouts and graduates in the US were to develop the same skills and behaviors as those with some college (but less than a BA), their employment rates would rise but major disparities would remain.

When looking at publicly supported workforce development in the US, we see both strengths and weaknesses. The federal workforce programs are underfunded, and evidence on their effectiveness is quite mixed. Programs serving workers who have been displaced by technology or trade have different experiences (and sometimes weaker outcomes) than those who are disadvantaged, and only a small set of them receive income support while retraining. The

evidence suggests some positive effects on employment rates of these programs, though the estimated magnitudes of these impacts vary a great deal and remain quite uncertain.

A set of sectoral programs – which target high-demand industries with high-wage jobs for those without BAs – are very effective but much too small to have any aggregate labor market impact; and our ability to scale them is currently limited (by too few resources and too little knowledge of how to scale while maintain quality). Community college programs are also underfunded and suffer from other weak outcomes. Apprenticeships and other forms of incumbent worker training (or work-based learning) are promising but also suffer from low employer take-up. In general, employers are skeptical about the quality of the workforce system and interact with it relatively little.

Looking to the EU and other countries, we find more encouraging evidence on the impacts of "active labor market policy," especially over longer time periods. But these other countries are more willing to invest more substantial resources in workforce programs than the US, and have much stronger institutions of career and technical education in the public school and work-based learning. They have a very different tradition of centralization and public regulation of the labor market, and their workers likely suffer less from a lack of work readiness or support for childcare.

In light of these issues and evidence, I believe the US should: 1) Invest more heavily in workforce programs and services with strong evidence of effectiveness; 2) Experiment with efforts to scale these successful programs while evaluating efforts to do so; 3) Address a range of other barriers and costs associated with rising labor force inactivity in the US – including a prevalence of criminal records, disability and substance dependence, as well as the high cost of child care and family care in the US; and 4) Consider subsidizing employment in the private or public sector as a means of raising earnings or employment (at least during the period of subsidy for the hard-to-employ groups). Since the Earned Income Tax Credit already subsidizes low-income worker earnings, improving their net wages, further expansion of the EITC for those who are already work-ready should be considered as well to improve the net rewards of working.

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FIGURE 1: Labor Force Participation, Prime-Age Men

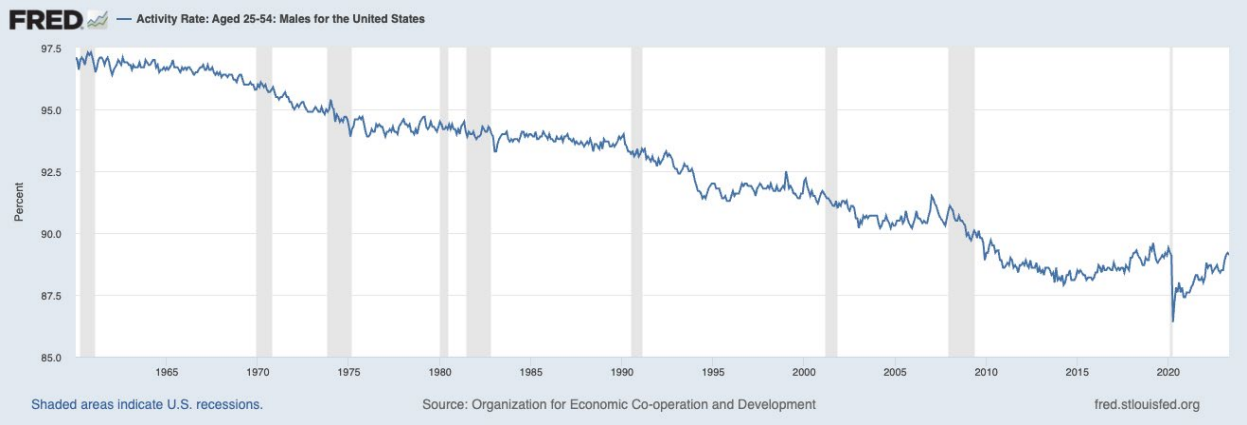


FIGURE 2: Labor Force Participation, Prime-Age Women

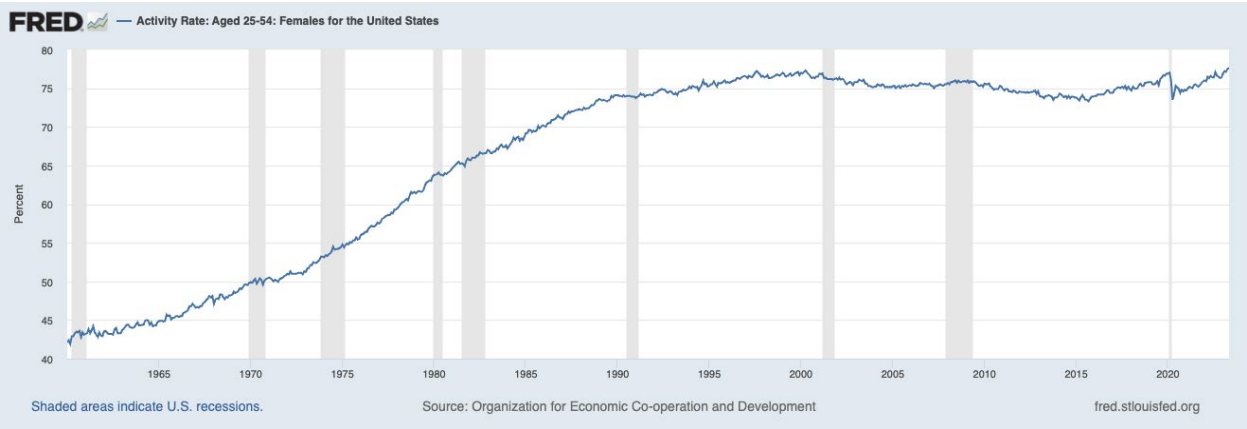
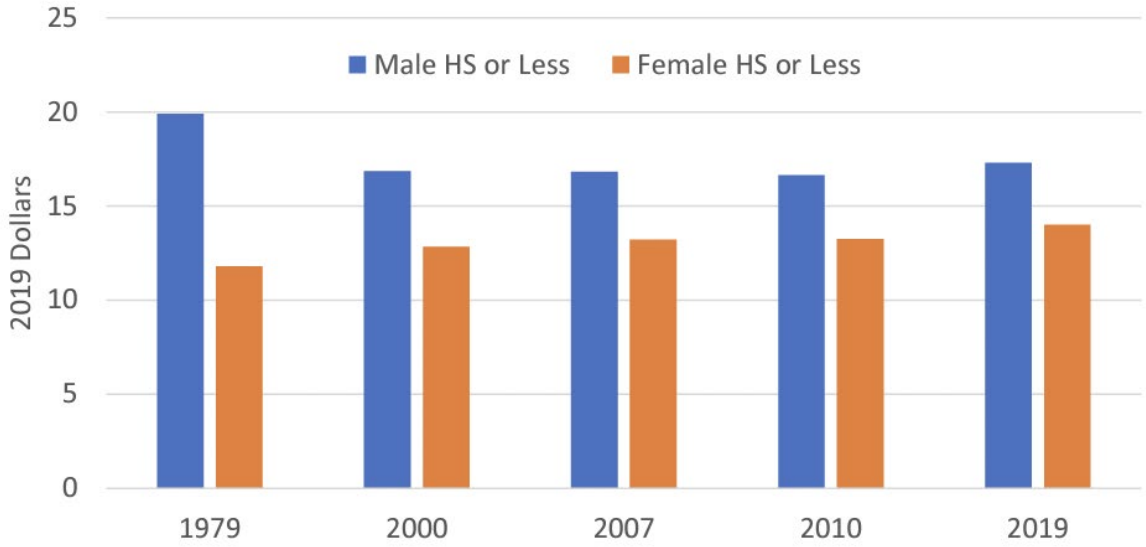


FIGURE 3: Median Real Hourly Wages among Employed Individuals with a High School Diploma or Less Education, Ages 25–54, by Gender



NOTE: Wages are adjusted for inflation (here and in all data presented below) using the chain-weighted GDP deflator for personal consumption expenditures.
SOURCE: Authors' calculations from Current Population Survey's Outgoing Rotation Groups.

Table 1: Workforce Development in the U.S.

Categories	Sub Categories	Providers	Federal Funding	State/Local Funding	Other Funding
Higher Education	•Degree Programs •Certificates •FC/NFC •Short/Long Term •Micro-Credential •Non-Credential	•Accredited Colleges •Public 2-Year •Private NFP •Private FP	•Higher Education Act (esp. Title IV)	•Institutional Subsidies	•Students
Non-HED Training & Workforce Services	•Services: Core, Intensive •Training: Classroom, On The Job	•American Job Centers •Community-Based Organizations/NFP •Industry-Related	•Workforce Innovation & Opportunity Act •Other Federal Programs	•Varied	•Workers
Incumbent Worker Training & Work-Based Learning	•Apprenticeship •Internship •Other	•Employers	•American Apprenticeship Grants	•Varied	•Employers •Workers
Career & Technical Education		•High Schools •Community Colleges •FP/NFP	•Perkins Act	•K-12 Funding	

Key:

FC/NFC = For Credit / Not for Credit

HED = Higher Education

FP/NFP = For-Profit / Not-for-Profit

Table 2: Employment Outcomes by Education: How Much Might More Education/Training Help?

	UR	LFPR	EPOP
HS Dropouts	.060	.466	.438
HS Graduates	.039	.570	.547
Some College	.031	.625	.605
Bachelor's or Higher	.020	.734	.729
All	.036	.626	.603

If HSD and HSG had outcomes equal to SC:

	UR	LFPR	EPOP
Difference	-.005	.028	.031
All	.031	.654	.634

Key:

UR = Unemployment Rate

LFPR = Labor Force Participation Rate

EPOP = Employment to Population Ratio

Data Source: Bureau of Labor Statistics, June 2023

Table 3: Estimated Impacts of Workforce Development on Employment

Categories	Study	Data	Methods	Estimated Impacts on Employment
WIA Training	• Fortson et al. (2017)	Survey and Administrative	RCT	No significant Impacts
	• Andersson et al. (2022)	Quarterly Earnings	Inverse Propensity Score Weighting	Positive Impacts: .02-.03
	• Heinrich et al. (2009)	Quarterly Earnings	Propensity Score Matching	Positive Impacts: .05-.06
WIA Services	• Fortson et al.	As Above	As Above	No significant Impacts
	• Heinrich et al. (2009)	As Above	As Above	Positive Impacts: .06-.07
Community College Certificates (For Credit)	• Baum et al. (2020)	BPS, ATES Surveys	Completer v. Non-Completer	Positive Impacts: .09
	• Jepsen et al. (2014)	Quarterly Earnings (KY)	Completer v. Non-Completer	Positive Impacts: .02 Males, .08 Females
Sectoral Training	• Roder + Elliot, 2021 (Project Quest)	Quarterly Earnings	RCT	Positive Impacts: .03 in Years 3-8, .09 in Years 9-11
	• Fein et al., 2022 (Year Up)	Quarterly Earnings	RCT	Positive Impacts: .10, Full-Time Employment
	• Katz et al., 2020 (Per Scholas, Work Advance)	Quarterly Earnings	RCT	Positive Impacts: .25 months employed (out of 8), .56 for Per Scholas

NOTE: All training impacts are measured beyond the first year after training/services are received and are averaged across quarters.