Center for American Progress

Now Is the Time to Invest in Apprenticeships

By Angela Hanks November 2016

In August, the president and CEO of the Federal Reserve Bank of New York delivered some long awaited good news: After years of stagnation, middle-wage jobs are coming back.[1] Between 2013 and 2015, middle-wage jobs accounted for nearly 43 percent of all job growth.[2] This is a welcome change.

During the Great Recession, the economy lost more than 8 million jobs. The employment-to-population ratio dropped to its lowest level in 25 years.[3] Middle-skill workers were some of the hardest hit, and they have also been the slowest to recover. Despite a long period of economic growth, job growth has been frustratingly concentrated at the high and low ends of the pay spectrum.[4]

Middle-wage job growth signals that the economy is getting stronger. As jobs that pay middle-class wages become more available, federal and state governments should step up investments in the workforce that will fill these jobs. Apprenticeship—a so-called earn and learn training strategy that combines on-the-job training with classroom instruction—has a proven track record of helping workers learn in-demand skills. Yet apprenticeship programs are relatively scarce. A lack of public and private investment in training, limited uptake across industries, cultural norms, and insufficient diversity and inclusion all make it a challenge to scale apprenticeship programs.

This issue brief reviews the status of middle-skill jobs and considers the obstacles—and opportunities—to using apprenticeship to fill them.

Middle-wage jobs vs. middle-skill jobs

Middle-wage jobs are not always middle-skill jobs. Middle-skill jobs are typically defined by the education level required—more than a high school diploma but less than a four-year college degree. Middle-wage jobs, by comparison, are defined in terms of wages. An analysis from the Federal Reserve Bank of New York loosely defines middle-wage jobs as those paying between $30,000 to $60,000 annually.[5] This brief proposes investing in training that leads to more middle-skill, middle-wage employment.

The state of middle skills

A skilled workforce is a key driver of economic growth. Workers who have higher levels of training and education are more productive, earn better wages, and are more likely to be employed than unskilled workers.[6]

For workers, having some education beyond high school is key to getting a good job. By 2020, two in three jobs will require some form of postsecondary education or training, according to the Georgetown Center on Education and the Workforce.[7] Workers who do not participate in such education or training are far more likely today to be living in poverty than their counterparts a generation ago.[8] Workers with a high school diploma are also more than twice as likely to be unemployed as college graduates, as well as more likely to be unemployed than workers with some college education or an associate's degree. Median wages are lower for these workers as well.[9]

Middle-skill credentials—such as an associate's degree or a certificate awarded by a college, apprenticeship, or other training program—can be a low- to no-cost option that leads to a well-paying job. Middle-skill credentials are increasingly popular among workers. In the past three decades, the number of vocational certificates awarded has increased by more than 800 percent.[10] Demand for these credentials has increased as well. In 2012, 54 percent of all jobs were middle-skill jobs.[11]

The data from the New York Federal Reserve Bank indicate that the labor market is getting stronger overall. They also show that there is reason to be optimistic about the middle-skill job market in particular. Between 2013 and 2015, nearly 2.3 million middle-wage jobs were created compared with 1.5 million high-wage jobs and 1.5 million low-wage jobs.[12] There have been significant increases in what the New York Fed calls traditional blue-collar jobs, which include construction, production, transportation, and installation and repair jobs, as well as increases in education and administrative support jobs.[13]

It is time to invest in apprenticeship

The return of middle-wage jobs indicates that employer demand is rebounding and that now is the time to invest in middle skills. An investment in apprenticeship is an investment in middle skills.

Apprenticeship is a win-win-win for workers, employers, and the public good. The data tell the story. On average, an individual who completes an apprenticeship earns $50,000 annually.[14] A 2012 study also found that people who complete apprenticeships earn more than $300,000 more than nonapprentices in wages and benefits over the course of their careers.[15] And employers retain 91 percent of apprentices once they have completed their programs.[16]

In an era of soaring college costs and when many students are shouldering large amounts of student debt, apprenticeship can offer a debt-free credential. It may even help cut down on the time and cost of earning an academic degree. Increasingly, apprentices can obtain academic credit for their time on the job. In some instances, they can even simultaneously earn an associate's degree.[17]

Apprenticeships are good for employers as well. Employers can tailor these programs to meet their exact skills need. Such programs also help ensure that businesses have a steady supply of skilled workers. According to one Canadian study, employers received \$1.47 back for every \$1 invested in apprenticeship.[18] A U.S. Department of Commerce study released in November examined the return on investment in apprenticeship at 13 firms. Each of the firms studied "found value in the program and identified benefits that more than justified the costs and commitments they made to the apprentices."[19]

Apprenticeship programs are also an effective government investment. In 2013, Washington state projected that for every \$1 it spent on apprenticeship, taxpayers would see a \$23 return on investment.[20]

Administration of the Registered Apprenticeship system in the United States

The U.S. Department of Labor's Office of Apprenticeship administers the Registered Apprenticeship system. As noted in a Center for American Progress report, "Training for Success," the system consists of a national office, six regional offices, and local offices in each state.[21] The Office of Apprenticeship directly administers the program in 25 states and delegates some operational authority to state apprenticeship agencies in 25 states and the District of Columbia.

The Office of Apprenticeship is responsible for:

- Program approval and standards
- Program and apprentice registration
- Worker safety and health
- Issuing certificates of completion
- Ensuring that programs offer high-quality training
- Promoting apprenticeships to employers

State apprenticeship agencies devote most of their resources to approving new occupations for apprenticeship and on program and apprentice registration with the U.S. Department of Labor.[22]

Why there are not more apprentices in the United States

So why are there so few apprentices? A still-recovering economy and weak aggregate demand are at least partially to blame. Apprenticeships are also largely concentrated in the building and construction trades.[23] In the aftermath of the Great Recession, as demand for construction workers plunged, so did the number of available apprenticeships nationwide. As the economy has improved, demand for construction labor and apprentices has grown.[24] By 2015, the number of new apprentices increased 80 percent from 2010.[25]

While demand is an important factor of the dearth of apprentices, there is more to it than that. A lack of employer and industry engagement, insufficient government support, cultural norms, and insufficient diversity and inclusion remain obstacles as well.

Lack of employer and industry engagement

Where demand for middle-skill workers exists, market failures may be the cause.[26]

First, it appears that employers are progressively underinvesting in training. A recent analysis exposed a startling trend: From 2001 to 2009, the frequency with which employers trained their workers declined by 27.7 percent. Most troublingly, the biggest decline took place from 2001 to 2004; this indicates that the lack of training cannot be explained by the Great Recession alone.[27]

Some employers may be assuming that it is simply too costly to train their workers, or that the costs outweigh the benefits. For small- and medium-sized companies, this may be a valid concern. A firm hiring one to two new workers per year may not be able to do it alone. In some instances, labor unions or other workforce intermediaries work in partnership with multiple employers to deliver apprenticeship training.[28] However, as union density has declined, so has the incidence of employer-provided training.[29]

Other employers may have concerns that their trained workers will leave before the company can reap the benefits of their enhanced productivity. According to a 2007 survey of apprenticeship sponsors, 1 in 4 sponsors perceived poaching as a major problem. However, even among the sponsors for whom poaching was a concern, 85 percent said they “would still strongly recommend” apprenticeship programs.[30]

At publicly traded firms, reluctance to invest in training may stem from pressure on managers to maximize profits in the short term at the expense investments in long-term growth. According to a recent CAP report, pressure to cut costs, along with a lack of incentives for managers to invest in workers, have likely caused public companies to forgo productivity-enhancing investments in training.[31]

Finally, employers may simply be unfamiliar with the apprenticeship model. Apprenticeships have been largely confined to the construction trade. Employers in industries such as health care, energy, or advanced manufacturing may not be aware that the model could be adapted to their field. They may also be unaware that there are existing programs in their industries. For example, the recently launched Alaska Health Care Apprenticeship Consortium brings together multiple employers to offer apprenticeships in occupations such as certified nursing assistant, home health aide, and surgical technologist.[32] Similarly, the AFL-CIO is working with training programs in Boston and Los Angeles to develop new apprenticeship programs in the hospitality industry.[33]

Limited public resources and a lack of coordination across programs

The federal Office of Apprenticeship receives just $34 million annually—less than 1 percent of the overall U.S. Department of Labor's budget.[34] Most of these resources are dedicated toward approving new programs; registering programs; issuing credentials to apprentices upon program completion; ensuring program quality and equal employment opportunity; and providing technical assistance.[35] There is no regular funding explicitly dedicated to seeding new programs and expanding into new industries and occupations.

Since 2015, the Obama administration and Congress have invested $265 million in new funding to support apprenticeship. The majority of that funding has been disbursed in the form of grants and contracts dedicated to expanding apprenticeships into new industries and occupations.

By comparison, the U.S. Department of Labor spends about $3 billion each year on other training and employment services.[36] The U.S. Department of Education awarded nearly $129 billion in federal loans and grants in 2015 to students in programs offering a range of postsecondary credentials.[37]

Apprenticeships also do not fit neatly into the nation's existing postsecondary education and training systems. They neither quite belong to the traditional higher education system—in this case, community and technical colleges—nor do they really belong to the nation's workforce investment system.

Community colleges and other postsecondary institutions can and do offer apprenticeship programs, but there are few policy levers available to incentivize such programming. The 2014 Workforce Innovation and Opportunity Act—which authorizes the public workforce system—encourage states and local areas to better integrate and align apprenticeship programs with the public workforce system. However, most of the opportunities for alignment are voluntary.[38]

Apprenticeships thus exist neither wholly within or outside these systems. This makes it a challenge for employers to leverage the resources that both systems bring to bear, such as funding and expertise. It also makes it difficult for employers to simply figure out where to go to get help starting a new program.

Cultural norms

Even prior to the Great Recession, the United States had far fewer apprentices compared with other countries that utilize a similar workforce training model. If the United States had the same number of apprenticeship starts as Germany or the United Kingdom, for example, there would have been 2 million or 2.5 million in 2015, respectively, as opposed to just less than 200,000.[39]

There is also still a stigma around middle skills in the United States. Workers may associate middle-skill jobs with low wages and limited opportunities for advancement or continued education. That outlook is at odds with reality for many middle-skill jobs. In a recent brief, economist Harry Holzer wrote that much of the middle-skill job growth is occurring in what he dubs the newer middle. Jobs include health care technicians, paralegals, chefs, retail managers, protective services, and sales representatives. Many of these jobs require additional education beyond high school and technical skills mastery.[40] Indeed, in the past few years, employers and other Registered Apprenticeship sponsors have launched apprenticeship programs in health care, information technology, and other high-tech and science, technology, engineering, and math, or STEM, sectors.[41]

Insufficient diversity and inclusion

Apprenticeships also tend to skew heavily white and male. This is especially true for high-wage apprenticeships. In 2013, just 2 percent of construction apprentices—apprentices that tend to earn the highest wages—were women.[42] Both women and people of color are overrepresented in the lowest-wage apprenticeship programs. For instance, black workers hold 8 percent of the highest-wage apprenticeships in occupations like electrician or plumber, but 14 percent and 21.7 percent of apprenticeships in lower wage jobs like construction laborers or correctional officers, respectively. In a country that is increasingly diverse, the lack of inclusion in apprenticeship is a problem for ongoing sustainability and future growth.[43]

Recent progress to expand apprenticeships

There has been recent policy and programmatic progress to expand apprenticeship. In 2014, President Barack Obama set a national goal to double the number of apprenticeships in five years. Since then, the U.S. Department of Labor has launched a new ApprenticeshipUSA initiative, which has worked to expand apprenticeship by providing technical assistance, issuing guidance to stakeholders, and organizing employers across industries to develop strategies to expand apprenticeship into new fields. The agency has also awarded more than $250 million in grants and contracts to support apprenticeship.[44] That funding includes an unprecedented $90 million appropriation from Congress.[45]

These funds will support a range of activities, including:

- **$175 million** in partnership grants to launch apprenticeships in new industries
- **$20.4 million** for industry and equity intermediary contractors, which will provide technical assistance to employers and work to increase underrepresented groups' access
- **$50.5 million** in state grants aimed at integrating apprenticeship into state education and workforce systems
- **$10.6 million** in state grants to expand and expedite apprenticeship programs[46]

States too have begun to make investments in apprenticeship programs. Recent strategies include employer tax credits and subsidies for training or related instruction.[47]

South Carolina's Apprenticeship Carolina program offers employers a tax credit for each apprentice they sponsor. The program also offers hands-on technical assistance provided by apprenticeship navigators. The state's technical college system employs these navigators.[48]

Some states have adopted the South Carolina model, while others have chosen to provide tuition assistance or to organize employers to identify new industries for apprenticeship.[49] In Minnesota, the PIPELINE project set up industry councils made up of employers, higher education representatives, and organized labor that established competency standards for a set of agreed-upon occupations.[50] The state then awarded competitive dual-training grants to employers seeking to train workers to meet those standards. The state is on its third round of grant funding.[51]

These federal and state efforts have begun to pay off. The number of registered apprentices in the United States increased by nearly 20 percent between 2013 and 2015.[52]

Apprenticeships in the insurance industry

In 2015, a group of 15 Chicago-area insurance companies—led by Zurich Insurance Group and Aon, which are based in Switzerland and the United Kingdom, respectively—announced a new effort to bring apprenticeships to the U.S. insurance industry. Aon launched its apprenticeship program in partnership with Harold Washington College in 2015.[53] Zurich Insurance Group, partnering with William Rainey Harper College, will begin its program in early 2017.[54] These programs will prepare workers for jobs in account management, client support, and financial analysis and technology.[55]

Conclusion

Recent middle-wage job growth demonstrates that despite persistent wage inequality—which must be addressed through policies to raise wages—there are still opportunities for workers to find good jobs.[56] As the economy improves, smart investments in developing and sustaining the nation's human capital are needed. Apprenticeships are an effective way to build the supply of middle-skill workers.

In order to make that happen, federal and state governments must step up to the plate.

The progress that policymakers have made at the federal level is laudable—particularly at a time when funding for new programs is difficult to come by and bipartisan agreement is rare. Still, the recent funding opportunities are relatively small and largely depend on Congress and the next administration's continued interest in apprenticeship.

Congress and the next administration should focus on advancing policies that ensure greater access to apprenticeship programs. The Center for American Progress has proposed a number of policy changes that would help achieve that goal. These recommendations include supplying employers with financial support to establish apprenticeship programs; better aligning the interests of investors, executives, and workers to encourage workforce training; marketing apprenticeship to businesses; facilitating state-based efforts to expand apprenticeship; improving coordination between apprenticeship programs and the public workforce system and community colleges; updating and strengthening regulations governing equal employment opportunity in apprenticeship; expanding pre-apprenticeship programs; and improving data collection so that policymakers have reliable information on which to base training decisions.[57]

It is also critical that policymakers continue to invest in and learn from successful models and that they work to further integrate apprenticeships into the nation's postsecondary education and training systems. These policy changes will ensure that more workers can get a well-paying job.

Angela Hanks is the Associate Director for Workforce Development Policy on the Economic Policy team at the Center for American Progress.

Endnotes

1 William C. Dudley, "Remarks at the New York Fed's Economic Press Briefing on the Regional Economy," Federal Reserve Bank of New York, August 18, 2016, available at https://www.newyorkfed.org/newsevents/speeches/2016/dud160818.

2 Author's calculation of New York Federal Reserve, "Job Growth in the Region" (2016), available at https://www.newyorkfed.org/medialibrary/media/newsevents/mediaadvisory/2016/Regional-Economy-Press-Briefing-Presentation-08182016.pdf.

3 David Autor, "The Polarization of Job Opportunities in the U.S. Labor Market: Implications for Employment and Earnings" (Washington: Center for American Progress and The Hamilton Project, 2010), available at http://economics.mit.edu/files/5554.

4 Dudley, "Remarks at the Economic Press Briefing on the Regional Economy."

5 Federal Reserve Bank of New York, "Job Growth in the Region."

6 Gary S. Becker, "Investment in Human Capital: A Theoretical Analysis," *Journal of Political Economy* 70 (5) (1962): 9–49; Bureau of Labor Statistics, *Labor Force Statistics from the Current Population Survey* (U.S. Department of Labor, 2016), Table 7, available at http://www.bls.gov/cps/cpsaat07.htm.

7 Anthony P. Carnevale, Nicole Smith, and Jeff Strohl, "Recovery: Job Growth and Education Requirements Through 2020" (Washington: Georgetown Center on Education and the Workforce, 2013), available at https://cew.georgetown.edu/cew-reports/recovery-job-growth-and-education-requirements-through-2020/.

8 Pew Research Center, "The Rising Cost of Not Going to College" (2014), available at http://www.pewsocialtrends.org/2014/02/11/the-rising-cost-of-not-going-to-college/.

9 Bureau of Labor Statistics, "Earnings and unemployment rates by educational attainment, 2015," available at http://www.bls.gov/emp/ep_chart_001.htm (last accessed November 2016).

10 Anthony P. Carnevale, Stephen J. Rose, and Andrew R. Hanson, "Certificates: Gateway to Gainful Employment and College Degrees" (Washington: Georgetown Center on Education and the Workforce, 2012), available at https://cew.georgetown.edu/cew-reports/certificates/.

11 National Skills Coalition, "United States' Forgotten Middle," available at http://www.nationalskillscoalition.org/resources/publications/file/middle-skill-fact-sheets-2014/NSC-United-States-MiddleSkillFS-2014.pdf (last accessed October 2016).

12 Federal Reserve Bank of New York, "Job Growth in the Region."

13 Ibid.

14 Debbie Reed and others, "An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States" (Washington: Mathematica Policy Research, 2012), available at https://www.mathematica-mpr.com/our-publications-and-findings/publications/an-effectiveness-assessment-and-costbenefit-analysis-of-registered-apprenticeship-in-10-states.

15 Ibid.

16 Employment and Training Administration, *The Federal Resources Playbook for Registered Apprenticeship* (U.S. Department of Labor), available at https://www.doleta.gov/oa/federalresources/playbook.pdf (last accessed October 2016).

17 Ben Olinsky and Sarah Ayres Steinberg, "Training for Success: A Policy to Expand Apprenticeships in the United States" (Washington: Center for American Progress, 2013), available at https://www.americanprogress.org/issues/economy/reports/2013/12/02/79991/training-for-success-a-policy-to-expand-apprenticeships-in-the-united-states/.

18 Canadian Apprenticeship Forum, "It Pays to Hire an Apprentice: Calculating the Return on Training Investment for Skilled Trades Employers in Canada" (2009), available at https://www.novascotia.ca/lae/Apprenticeshipboard/documents/CAF-FCA_ROTI_it_pays_to_hire_an_apprentice_ExecutiveReport_En_000.pdf.

19 Susan Helper and others, *The Benefits and Costs of Apprenticeship: A Business Perspective* (Washington: Case Western Reserve University and the U.S. Department of Commerce, 2016), available at http://www.esa.gov/sites/default/files/the-benefits-and-costs-of-apprenticeships-a-business-perspective.pdf.

20 State of Washington Workforce Training and Education Coordinating Board, "Apprenticeship," available at http://www.wtb.wa.gov/Documents/2_Apprenticeship_2013.pdf (last accessed XX October 2016).

21 Olinsky and Steinberg, "Training for Success: Apprenticeships in the United States."

22 Ibid.

23 Apprenticeship Programs: Equal Employment Opportunity 80 Fed. Reg. 68908 (November 6, 2015) (amending 29 C.F.R. pt. 29 and 30).

24 Bureau of Labor Statistics, "Construction Laborers and Helpers: Job Outlook," available at http://www.bls.gov/ooh/construction-and-extraction/construction-laborers-and-helpers.htm#tab-6 (last accessed October 2016).

25 Author's calculation from U.S. Department of Labor's Office of Apprenticeship, "**Registered Apprenticeship National Results Fiscal Year (FY) 2015 (10/01/2014 to 9/30/2015),"** available at https://doleta.gov/oa/data_statistics.cfm (last accessed October 2016).

26 Angela Hanks, "Investing in Human Capital through Apprenticeship," Morning Consult, February 18, 2016, available at https://morningconsult.com/opinions/investing-in-human-capital-through-apprenticeship/.

27 C. Jeffery Waddoups, "Did Employers in the United States Back Away from Skills Training during the Early 2000s?," *Industrial Relations & Labor Review* 69 (2) (2015): 405–434.

28 Lisa M. Lynch, "Development Intermediaries and the Training of Low-Wage Workers." In Richard B. Freeman, Joni Hersch, and Lawrence Mishel, eds., *Emerging Labor Market Institutions for the Twenty-First Century* (Chicago: University of Chicago Press, 2004).

29 Council of Economic Advisers, "Worker Voice in a Time of Rising Inequality" (2015), available at https://www.whitehouse.gov/sites/default/files/page/files/cea_worker_voice_issue_brief.pdf.

30 Robert Lerman, Lauren Eyster, and Kate Chambers, "The Benefits and Challenges of Registered Apprenticeship: The Sponsors' Perspective" (Washington: The Urban Institute, 2009), available at http://www.urban.org/sites/default/files/alfresco/publication-pdfs/411907-The-Benefits-and-Challenges-of-Registered-Apprenticeship-The-Sponsors-Perspective.PDF.

31 Angela Hanks and others, "Workers or Waste? How Companies Disclose—or Do Not Disclose—Human Capital Investments and What to Do About It" (Washington: Center for American Progress, 2016), available at https://www.americanprogress.org/issues/economy/reports/2016/06/08/138706/workers-or-waste/.

32 Alaska Health Care Apprenticeship Consortium, "About," available at http://ahcac.net/about/ (last accessed November 2016).

33 Daniel Marschall, "AFL-CIO Welcomes National Apprenticeship Week as Apprenticeships Grow in Hotel and Hospitality," AFL-CIO Now, November 15, 2016, available at http://www.aflcio.org/Blog/Training/AFL-CIO-Welcomes-National-Apprenticeship-Week-as-Apprenticeships-Grow-in-Hotel-and-Hospitality.

34 U.S. Department of Labor, *FY 2017 Congressional Budget Justification, Employment and Training Administration, Program Administration*, available at https://www.dol.gov/sites/default/files/documents/general/budget/CBJ-2017-V1-11.pdf (last accessed October 2016); Author's calculations based on U.S. Department of Labor's 2016 budget of 13.2 billion, according to U.S. Department of Labor, *FY 2016 Department of Labor: Budget in Brief*, available at https://www.dol.gov/sites/default/files/documents/general/budget/2016/FY-2016BIB.pdf (last accessed XX MONTH YEAR XX).

35 U.S. Department of Labor, *FY 2017 Congressional Budget Justification, Employment and Training Administration, Program Administration*, available at https://www.dol.gov/sites/default/files/documents/general/budget/CBJ-2017-V1-11.pdf (last accessed October 2016).

36 U.S. Department of Labor, *FY 2017 Department of Labor Budget in Brief*, available at https://www.dol.gov/sites/default/files/documents/general/budget/FY2017BIB_0.pdf (last accessed XX MONTH YEAR XX).

37 Federal Student Aid, *Annual Report FY 2015* (U.S. Department of Education, 2015), available at https://www2.ed.gov/about/reports/annual/2015report/fsa-report.pdf.

38 U.S. Department of Labor, "FY 2017 Detailed Budget Documentation," available at https://www.dol.gov/general/budget (last accessed October 2016).

39 Author's calculations from U.S. Department of Labor's Office of Apprenticeship, "Registered Apprenticeship National Results Fiscal Year (FY) 2015 (10/01/2014 to 9/30/2015);" *United Kingdom Skills Funding Agency and Department for Business, Innovation & Skills. "Apprenticeships geography, equality & diversity and sector subject area: starts 2002/03 to 2015/16," available at* https://www.gov.uk/government/statistical-data-sets/fe-data-library-apprenticeships *(last accessed October 2016); Statistisches Bundesamt, "Apprentices, newly concluded training contracts, termination of training contracts before the agreed date," available at* https://www.destatis.de/EN/FactsFigures/SocietyState/EducationResearchCulture/VocationalTraining/Tables/TimeSeries.html;jsessionid=0E7D06DABC4276C42EC730436E76F203.cae1 *(last accessed October 2016).*

See also Sarah Ayres Steinberg and Ethan Gurwitz, "The Underuse of Apprenticeships in America" (Washington: Center for American Progress, 2014), available at https://www.americanprogress.org/issues/economy/news/2014/07/22/93932/the-underuse-of-apprenticeships-in-america/.

40 Harry Holzer, "Job Market Polarization and U.S. Worker Skills: A Tale of Two Middles" (Washington: Brookings Institution, 2015), available at https://www.brookings.edu/research/job-market-polarization-and-u-s-worker-skills-a-tale-of-two-middles/.

41 U.S. Department of Labor, *American Apprenticeship Grant Award Summaries*, available at https://www.dol.gov/apprenticeship/pdf/AmericanApprenticeshipInitiativeGrantsAwardSummaries.pdf (last accessed September 2016).

42 Angela Hanks, "Apprenticeship Programs Are Leaving Out Women and People of Color. Here's How to Fix That.," TalkPoverty, August 30, 2016, available at https://talkpoverty.org/2016/08/30/apprenticeship-programs-leaving-women-people-color-heres-fix/.

43 Ibid.

44 U.S. Department of Labor, "ApprenticeshipUSA Investments," available at https://www.dol.gov/featured/apprenticeship/grants (last accessed October 2016).

45 P.L. 114-113, available at https://www.congress.gov/bill/114th-congress/house-bill/2029/text. XX JUST TO BE SURE: IS THIS THE CORRECT HYPERLINK/CITATION? XX

46 U.S. Department of Labor, "ApprenticeshipUSA Investments."

47 Angela Hanks and Ethan Gurwitz, "How States Are Expanding Apprenticeship (Washington: Center for American Progress, 2016), available at https://www.americanprogress.org/issues/labor/report/2016/02/09/130750/how-states-are-expanding-apprenticeship/.

48 Ibid.

49 Ibid.

50 Ibid.

51 Minnesota Department of Labor and Industry, "PIPELINE Project dual-training grants," available at http://www.dli.mn.gov/Pipeline_app.asp (last accessed October 2016).

52 Author's calculation from U.S. Department of Labor's Office of Apprenticeship, "Registered Apprenticeship National Results Fiscal Year (FY) 2015 (10/01/2014 to 9/30/2015)."

53 Alexia Elejalde-Ruiz, "Apprenticeships come to insurance and financial services industries," *Chicago Tribune,* March 7, 2016, available at http://www.chicagotribune.com/business/ct-insurance-apprenticeships-aon-zurich-0308-biz-20160307-story.html. Zurich Insurance Group, "Zurich to launch new apprenticeship program in U.S.," Press release, June 9, 2015, available at https://www.zurich.com/en/media/news-releases/2015/2015-0609-01.

54 Elejalde-Ruiz, "Apprenticeships come to insurance and financial services industries."

55 Ibid.

56 Michael Madowitz and Brendan Duke, "Jobs and Wages." In Carmel Martin, Andy Green, and Brendan Duke, eds., "Raising Wages and Rebuilding Wealth: A Roadmap for Middle-Class Economic Security" (Washington: Center for American Progress, 2016), available at https://www.americanprogress.org/issues/economy/reports/2016/09/08/143585/raising-wages-and-rebuilding-wealth/.

57 Olinsky and Steinberg, "Training for Success: A Policy to Expand Apprenticeships in the United States;" Hanks and others, "Workers or Waste? How Companies Disclose—or Do Not Disclose—Human Capital Investments and What to Do About It."