

## Research



# Earn and Learn: A Review of a Proposal to Expand Apprenticeships in High-Growth Industries

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## Executive Summary

This study examines the apprenticeship grant program proposed by the Promoting Real Opportunity, Success, and Prosperity through Education Reform (PROSPER) Act, a bill to reform and reauthorize the Higher Education Act.<sup>[1]</sup>

- Today's registered apprenticeships are concentrated in particular industries, such as manufacturing and construction, that are not expected to be principal sources of job creation in the future.
- The PROSPER Act would create a new competitive grant program that seeks to expand apprenticeships in high-growth industries, such as health care and professional services.
- The proposed apprenticeship grants could create 733 apprenticeship programs and result in 88,700 new apprentices by 2024.
- Research shows that workers who participate in apprenticeships tend to earn over \$6,000 each year more than similar workers who do not.

## Introduction

At the end of 2017, the House Committee on Education and the Workforce voted to advance the PROSPER Act, a bill that would reform and reauthorize the Higher Education Act of 1965.<sup>[2]</sup> The legislation aims to support students in completing affordable post-secondary education that better prepares them with the skills needed to succeed in today's labor force. A key component of the bill is a new competitive grant program that would expand apprenticeships in high-growth industries.

Apprenticeships provide workers with on-the-job education, enabling them to develop essential skills while earning an income. In turn, an apprenticeship can enable a low-skilled, low-wage worker to pursue a career with promising wage growth. Today's registered apprenticeships, however, are not properly aligned with the industries that demand the most skilled workers. In particular, apprenticeships are heavily concentrated in goods-producing industries, like manufacturing and construction, while the vast majority of job growth is projected to occur in service-providing industries, such as health care and professional and business services. U.S. apprenticeships need to be reoriented to prepare workers for the jobs employers will demand. The PROSPER Act aims to do this by incentivizing participating education providers to prepare workers for in-demand jobs while providing them with the operational flexibility that best fits the local labor market.

## Background

An apprenticeship is a workforce development program that involves on-the-job learning from a master of the trade and may sometimes incorporate classroom or lab study. Carpenters, masons, and many other professionals often learn their trade through an apprenticeship. Some professions have long-standing apprenticeship programs, such as the International Brotherhood of Electrical Workers program.<sup>[3]</sup>

There is strong bipartisan support for expanding the nation's apprenticeships. President Trump issued an [executive order](#) to expand apprenticeships,<sup>[4]</sup> and Secretary of Labor Alexander Acosta has argued that apprenticeships “teach the skills needed to find a good, stable job and to succeed in that job.”<sup>[5]</sup> During the Obama Administration, then-Secretary of Labor Thomas Perez also spoke highly of apprenticeships, saying that an apprenticeship “is the other college, except without debt.”<sup>[6]</sup>

Congressional and industry leaders have also recently expressed a strong interest in expanding apprenticeships. During a recent hearing held by the House Subcommittee on Higher Education and Workforce Development,<sup>[7]</sup> Chairman Brett Guthrie argued that apprenticeships can help close skills gaps and stressed that successful apprenticeship programs are greatly benefiting workers and employers.<sup>[8]</sup> An industry leader described why his company invests over \$80 million annually in various types of worker education, such as apprenticeships and tuition reimbursement programs.<sup>[9]</sup> And a manufacturing industry representative expressed support for President Trump's executive order on apprenticeships and requested that congressional leadership craft legislation to promote employer-led apprenticeship programs.<sup>[10]</sup>

## How PROSPER Act's Apprenticeship Grants Would Work

In an effort to provide support for today's workforce development needs, the PROSPER Act creates a new “earn-and-learn program”: an education program with an apprenticeship that provides students paid on-the-job education and classroom instruction and leads to a recognized postsecondary credential. The PROSPER Act would authorize \$183,204,000 annually for fiscal years (FYs) 2019 through 2024 and direct the Secretary of Education to award competitive grants of up to \$1,500,000 to eligible partnerships for one to four years. Grantees are required to provide matching funds from non-federal sources equal to or greater than 50 percent of the grant amount. An eligible partnership includes a consortium of one or more businesses and institutions of higher education (IHEs).

Through a competitive grant-making process, the PROSPER Act aims to direct apprenticeships toward high-growth industries by requiring education providers to prepare students for in-demand fields, while providing them with the operational flexibility to meet local labor market needs. To receive the grant, an eligible partnership must submit an application to the Secretary of Education that identifies several components: (1) the businesses or IHEs that comprise the eligible partnership and are responsible for the administration and supervision of grant use for the program; (2) the source and amount of the required matching funds; (3) the number of students who would participate in and complete the program before the grant expires; (4) the amount of time, not exceeding two years, required to complete the program; (5) the relevant postsecondary credential that would be awarded to students who complete the program; (6) the anticipated earnings of students who complete the program; and (7) the description of the specific project for which the application is submitted, including a summary of the relevant classroom experience, pay that apprentices will receive, how the eligible partnership will finance the program after the grant period ends, the alignment of the program with state-identified high-growth industry sectors, and how the program will be evaluated.

Applications would be peer reviewed by a Department of Education (ED) panel composed of representatives from businesses, IHEs that offer two-year programs, and state workforce development boards established under the Workforce Innovation and Opportunity Act (WIOA).<sup>[11]</sup> Should the application be approved, the size of the grant awarded would be based on number of participants, anticipated income of program participants, and alignment of the program with state-identified high-growth industry sectors.

Partnerships would be able to apply grant money toward equipment, technology, instructional material, books, supplies, up to 50 percent of student wages, development of industry-specific programming, industry-recognized certification exams that lead to postsecondary credentials, and other associated fees. The ED through the Institute for Education Sciences (IES) would evaluate the grant programs based on effectiveness in expanding apprenticeship program opportunities offered by the employer-IHE partnerships, student participation, program completion rate, median earnings of participants, and more.

## **Estimates of Apprenticeship Program's Effect**

### **New Apprentices**

The grants awarded from this program would encourage the creation of more apprenticeship programs nationwide. The bill authorizes \$183,204,000 to carry out the apprenticeship program in FY 2019 and each of the five succeeding years, which combined would provide \$1,099,224,000 in total federal funding. To gauge the potential impact of these grants, this study assumes that the entire authorized amount is appropriated each year and that the government always awards programs the maximum grant of \$1.5 million. Dividing the total authorized \$1,099,224,000 by the \$1.5 million maximum grant leads to 733 new apprenticeship programs created between FYs 2019 and 2024.

How many apprenticeships could this create? While the apprenticeships created by this program would not necessarily be registered apprenticeships<sup>[12]</sup>, data on registered apprenticeships can serve as a useful guide for evaluating the potential impact of these grants. According to the Department of Labor (DOL), in 2016 there were 206,020 new apprentices participating in 1,701 new apprenticeship programs. Consequently, there were on average 121 new apprentices per each new program. Assuming that the 733 new apprenticeship programs created by the PROSPER Act also each average 121 apprentices, there would be 88,700 new apprentices between FYs 2019 and 2024.

To put the magnitude of the 88,700 new apprentices in perspective, consider that DOL statistics indicate the number of active registered apprentices has only grown at an annual average rate of 1.7 percent since 2008.<sup>[13]</sup> If the number of registered apprentices increased by 88,700 between FYs 2019 and 2024, that growth rate would more than double to 4.1 percent.

### **Employment Expectations**

The apprenticeships created under the PROSPER Act could also lead to an increase in skilled-employment. According to a [report](#) from Mathematica Policy Research, 45 percent of students complete registered apprenticeship programs.<sup>[14]</sup> Moreover, the [DOL](#) found that 91 percent of apprenticeship completers retain employment after the program ends.<sup>[15]</sup> Assuming that 45 percent of students complete the apprenticeships under the PROSPER Act, 39,900 of the 88,700 apprentices would finish their programs, while 36,300 (91 percent) would retain employment. This is comparable to the average number of jobs that the health care industry created each month in 2017. Table 1 details the findings.

Table 1. Estimates for the number of new programs, apprentices, and the expected employment outcome.

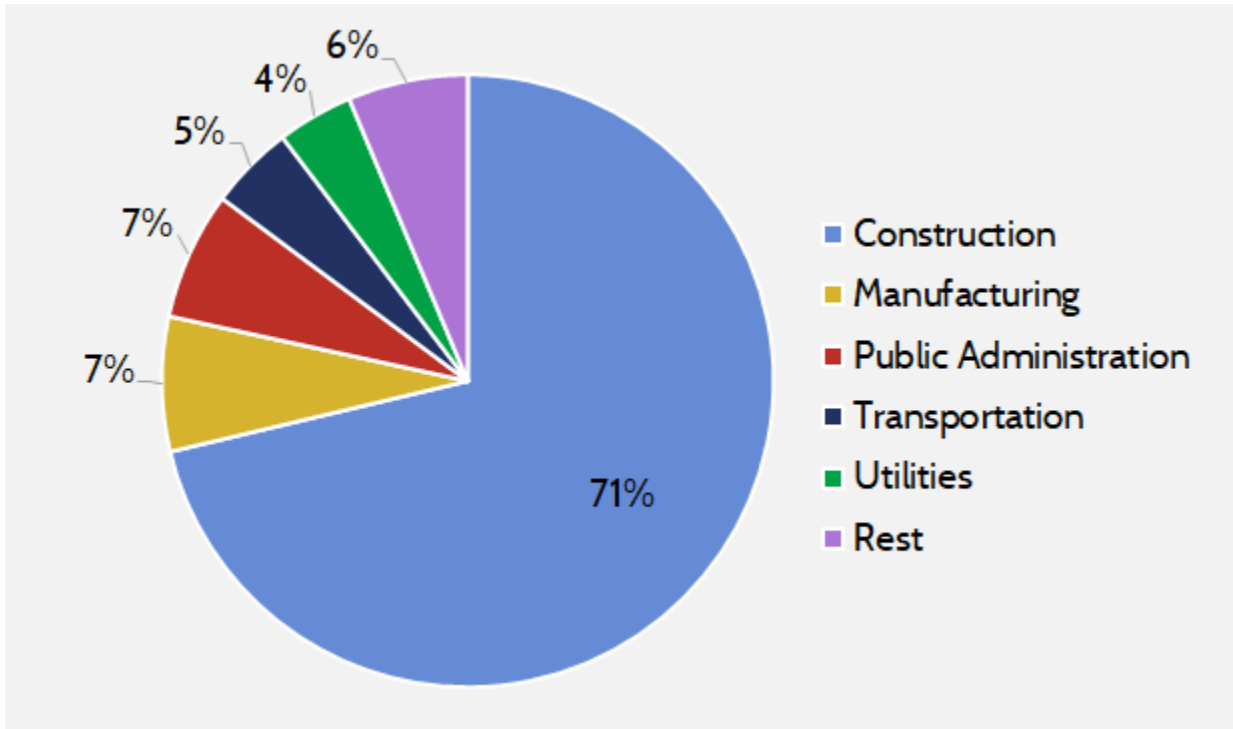
Amount that new draft bill authorizes to carry out the program in FY 2019	\$183,204,000
Total number of fiscal years the bill proposes to authorize appropriation (FYs 2019-24)	6
Total amount of funding provided over those years	\$1,099,224,000
Maximum grant amount for each program	\$1,500,000
Number of new apprenticeship programs	733
Average number of apprentices per program (DOL)	121
Number of new apprentices	88,693
Program completion rate (Mathematica)	45%
Total number of completers	39,912
Percentage of people employed after completing apprenticeships	91%
Total number of employed after completion	36,320

## Occupation and Industry Distribution

Perhaps so few workers currently complete registered apprenticeships because the current system is not well suited to prepare workers for the industries where workers are in demand. The PROSPER Act aims to improve upon the current apprenticeship system by encouraging partnerships that receive grants to educate apprentices for in-demand fields.

If successful, this would be a major improvement from the current registered apprenticeship system. The DOL provides industry information on over 200,000 non-military apprentices, the vast majority of whom are in construction. Chart 1 contains the industry distribution of non-military apprentices in FY 2016.

Chart 1. Non-Military Apprentices by Industry for FY 2016<sup>[16]</sup>



In FY 2016, 71 percent of non-military active apprentices were in construction. Compared to construction, the rest of the economy had relatively few apprentices. Manufacturing, public administration, transportation, and utilities were the next four industries with the most apprentices. Yet each only accounted for 4 percent to 7 percent of active apprentices. The rest of the industries combined only contained 6 percent of active apprentices. These included industries that are generally high-skill, such as health care, education, information, and finance.

Yet the industries for which registered apprenticeships prepare workers match neither the industries where employers currently demand the most workers, nor the industries projected to experience the quickest job growth. Job openings, measured by the Bureau of Labor Statistics' (BLS) Job Openings and Labor Turnover Survey (JOLTS), provide a useful sense of the industries that currently demand the most workers.<sup>[17]</sup> While registered apprenticeships mainly prepare workers for construction jobs, today employers in health care and professional and business services are demanding the most workers.

Table 2 contains the industry distribution of job openings according to the most recent month of data, November 2017.

Table 2. Industry Distribution of Job Openings, November 2017<sup>[18]</sup>

Industry	Distribution
Mining and Logging	0.3%
Construction	3.2%
Manufacturing	5.7%
Wholesale Trade	3.6%
Retail Trade	11.3%

Transportation, Warehousing, and Utilities	3.2%
Information	1.3%
Financial Activities	5.8%
Professional and Business Services	18.6%
Educational Services	1.5%
Health Care	18.6%
Leisure and Hospitality	13.4%
Other Services	3.4%
Government	10.2%

In November 2017 there were 5.9 million job openings, a large portion of which were in skilled industries that largely lack registered apprenticeships. Health care and professional and business services demanded the most workers, accounting for 37.2 percent of job openings (18.6 percent each). Neither of those industries are among the top five for registered apprenticeships. In 2016, only 0.9 percent of apprentices were in health care and 0.1 percent were in professional and business services. Other industries with a large portion of the job openings included leisure and hospitality (13.4 percent) and retail trade (11.3 percent). Moreover, while 71 percent of registered apprentices were in construction, only 3.2 percent of job openings were in that industry.

The number of job openings has steadily risen in recent years, suggesting that employers are having an increasingly difficult time finding the skilled workers they need. Job openings peaked in September 2017 at 6.2 million and have remained close to that level since. If employers remain unable to fill these jobs, the lack of skilled labor could significantly restrict production and economic growth. The apparent mismatch between the registered apprenticeship system and these job openings suggests apprenticeships are not currently well targeted to fill these skill gaps or help workers meet employer needs.

BLS industry employment projections indicate that registered apprenticeships are also not properly oriented toward the jobs of the future.<sup>[19]</sup> Specifically, BLS projects that the United States will add 10.7 million nonagricultural jobs between 2016 and 2026. The industries with the most job growth are similar to the industries that currently demand the most jobs. Table 3 contains the industry distribution of projected job growth during the next decade.

Table 3. Industry Distribution of Projected Job Growth, 2016-2026<sup>[20]</sup>

Industry	Distribution of Job Growth
Mining and Logging	0.8%
Construction	8.0%
Manufacturing	-6.9%
Wholesale Trade	1.4%
Retail Trade	3.8%
Transportation, Warehousing, and Utilities	3.4%
Information	0.5%

Financial Activities	4.5%
Professional and Business Services	20.1%
Educational Services	4.7%
Health Care	37.2%
Leisure and Hospitality	12.3%
Other Services	3.3%
Government	6.8%

37.2 percent of all projected job growth will be in health care and 20.1 percent will be in professional and business services. Again, those two industries tend to be high-skill, yet each account for less than 1 percent of registered apprentices. Meanwhile, the 71 percent of registered apprentices in construction will be competing for employment in an industry that accounts for 8 percent of projected job growth. And although manufacturing has the second highest number of registered apprentices (7.3 percent), employment in the industry is expected to decline during the next decade.

Considering these data, it is evident that existing registered apprenticeship programs are not in line with the current or projected labor market. The Center for American Progress provides some explanations for why other industries have been underinvesting in apprenticeships.<sup>[21]</sup> One is that employers in industries other than construction may simply be unfamiliar with the apprenticeship model or may not be aware that the model could be adapted to their field. Another is that some employers think that developing worker skills is too costly, fearing that those workers will be “poached” by other employers.

If policies can help direct worker development to these in-demand fields, apprenticeships can start to become a much more effective solution. There are three ways in which the PROSPER Act’s proposed apprenticeship program could help address the current mismatch.

First, under the bill, application reviews and awards would be based on alignment of the program with state-identified high-growth industry sectors that have a substantial current or potential impact on the state, and that contribute to economic growth in the region. This allows the states the opportunity to launch apprenticeship programs in industries where skilled workers are demanded.

Second, applicants would be required to provide a detailed description of the apprenticeship program. The review panels would then provide recommendations to improve the program and reasons for its grant decision. This requirement would help employers unfamiliar with the apprenticeship system to develop an apprenticeship model tailored to their fields and to the existing systems for postsecondary education (community or technical colleges) and workforce development in their regions.

Finally, public funding would partially offset the cost of educating workers and mitigate employer concerns regarding the cost of losing the workers whose skills they helped to develop. This in turn encourages businesses to make long-term investments in their workers, rather than avoid worker development programs and minimize short-term costs.

## Impact on Earnings

The apprenticeship programs created under the PROSPER Act would also likely raise the earnings of the



workers who participate. Research has shown that those who simply participate in apprenticeships tend to earn more than workers who do not. Apprentices who go on to complete their programs tend to earn even higher wages. Mathematica Policy Research analyzed registered apprenticeships in 10 states and found that on average those who participated in apprenticeships earned \$6,595 more per year than similar workers who did not participate. Over their entire careers, apprenticeship participants earned on average \$98,718 more than similar non-participants. Moreover, the apprentices who completed their programs earned on average \$240,037 more than similar nonparticipants during their careers. Apprenticeship programs in the study occurred most commonly in the construction industry where workers are frequently electricians, plumbers, and carpenters.<sup>[22]</sup>

The wage benefits of apprenticeships are apparent both nationwide and in state and local areas. Nearly nine out of ten students nationwide are employed upon completing their apprenticeships, while a student who completes an apprenticeship, on average, earns a starting wage of more than \$60,000 per year.<sup>[23]</sup> That is higher than the average starting salary of students who graduate with bachelor's degrees. Additionally, the Center for American Progress found that those who finished their apprenticeship programs in Washington state earned \$63,141 per year on average, while a control group of non-participants earned \$47,115.<sup>[24]</sup>

Given that this bill allows awarded grants to be used to subsidize up to 50 percent of apprentice wages, participants of programs funded by this bill could end up receiving even higher wages than participants in traditional programs. Furthermore, the fact that the bill requires local business and education leaders to design apprenticeship programs for high-growth industries could set up participants for even more accelerated career wage growth.

Although each state would vary in program design and labor demand, new apprenticeship programs created from this bill, if designed and implemented successfully, could lead to much higher earnings among participants and successful apprentices nationwide.

## **Conclusion**

The PROSPER Act could lead to at least 733 apprenticeship programs and 88,700 new apprentices by FY 2024. The operational flexibility given to local business and education leaders combined with the pro-growth requirements from the federal government would encourage states to launch new apprenticeship programs in industries that actually demand workers. This would be a welcome change, as the current registered apprenticeship system is centered on construction and manufacturing, industries that are not most central to job growth. Apprenticeships have also been shown to raise participating worker earnings. If lawmakers successfully encourage apprenticeships in high growth industries, the wage premium of completing an apprenticeship could be even higher.

[1] "PROSPER Act," H.R.4508, Rep. Virginia Foxx, 115th Congress (2017-2018), <https://www.congress.gov/bill/115th-congress/house-bill/4508>.

[2] Ibid.

[3] "History of Apprenticeship," Washington State Department of Labor and Industries, accessed January 8,



2018, [www.lni.wa.gov/TradesLicensing/Apprenticeship/About/History/](http://www.lni.wa.gov/TradesLicensing/Apprenticeship/About/History/).

[4] Presidential Executive Order Expanding Apprenticeships in America, President Donald Trump, Executive Order, Executive Office of the President of the United States, June 15, 2017, <https://www.whitehouse.gov/presidential-actions/3245/>.

[5] Alexander Acosta, “President Trump knows: Apprenticeships will boost wages and fill jobs,” Des Moines Register, June 14, 2017, <https://www.desmoinesregister.com/story/opinion/columnists/2017/06/14/president-trump-knows-apprenticeships-boost-wages-and-fill-jobs/397009001/>.

[6] Nico Savidge, “Labor Secretary Thomas Perez touts apprenticeships in Madison visit,” Wisconsin State Journal, October 21, 2016, [http://host.madison.com/wsj/news/local/education/university/labor-secretary-thomas-perez-touts-apprenticeships-in-madison-visit/article\\_166f8b39-ef12-53ad-9347-7645f1616400.html](http://host.madison.com/wsj/news/local/education/university/labor-secretary-thomas-perez-touts-apprenticeships-in-madison-visit/article_166f8b39-ef12-53ad-9347-7645f1616400.html).

[7] “Expanding Options for Employers and Workers Through Earn-and-Learn Opportunities,” hearing, Committee on Education and the Workforce, Subcommittee on Higher Education and Workforce Development, July 26, 2017, [www.edworkforce.house.gov/calendar/eventsingle.aspx?EventID=401905](http://www.edworkforce.house.gov/calendar/eventsingle.aspx?EventID=401905).

[8] Opening Statement of Rep. Brett Guthrie (R-KY) Chairman, Subcommittee on Higher Education and Workforce.

[9] H. R. Hogan. Written testimony. Huntington Ingalls Industries, Vice President of Manufacturing and Material Distribution at Newport News Shipbuilding, a division of Huntington Ingalls Industries, Newport News, Virginia.

[10] Stacey Johnson Hughes, Written testimony, Kentucky Federation of Advanced Manufacturing Education (KY FAME) State Chairperson and HR Manager.

[11] The Workforce Innovation and Opportunity Act (WIOA), [www.doleta.gov/wioa/](http://www.doleta.gov/wioa/).

[12] For more information on registered apprenticeships, see <https://www.doleta.gov/oa/pdf/fsfront.pdf>.

[13] Authors’ calculation based on annual registered apprenticeship data available at [https://doleta.gov/oa/data\\_statistics.cfm](https://doleta.gov/oa/data_statistics.cfm).

[14] Debbie Reed et al., “An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States,” Final Report, Mathematica Policy Research, July 25, 2012, [https://wdr.doleta.gov/research/fulltext\\_documents/etaop\\_2012\\_10.pdf](https://wdr.doleta.gov/research/fulltext_documents/etaop_2012_10.pdf).

[15] “Frequently Asked Questions,” ApprenticeshipUSA Toolkit, United States Department of Labor, <https://www.dol.gov/apprenticeship/toolkit/toolkitfaq.htm>.

[16] “Registered Apprenticeship National Results Fiscal Year (FY) 2016 (10/01/2015 to 9/30/2016),” Employment and Training Administration, United States Department of Labor, October 19, 2017, [https://doleta.gov/oa/data\\_statistics.cfm](https://doleta.gov/oa/data_statistics.cfm).

[17] “Job Openings and Labor Turnover Survey,” Bureau of Labor Statistics, United States Department of Labor, <https://www.bls.gov/jlt/>.

[18] “Table A. Job openings, hires, and total separations by industry, seasonally adjusted,” Job Openings and Labor Turnover Survey, Bureau of Labor Statistics, United States Department of Labor, <https://www.bls.gov/news.release/jolts.a.htm>.

[19] “Employment Projections,” Bureau of Labor Statistics, United States Department of Labor, <https://www.bls.gov/emp/home.htm>.

[20] “Table 2.1 Employment by major industry sector, 2006, 2016, and projected 2026,” Employment Projections, Bureau of Labor Statistics, United States Department of Labor, [https://www.bls.gov/emp/ep\\_table\\_201.htm](https://www.bls.gov/emp/ep_table_201.htm).

[21] Angela Hanks, “Now is the Time to Invest in Apprenticeships,” Report, Center for American Progress, November 18, 2016

<https://www.americanprogress.org/issues/economy/reports/2016/11/18/292558/now-is-the-time-to-invest-in-apprenticeships/>.

[22] Debbie Reed et al., “An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States,” Final Report, Mathematica Policy Research, July 25, 2012, [https://wdr.doleta.gov/research/fulltext\\_documents/etaop\\_2012\\_10.pdf](https://wdr.doleta.gov/research/fulltext_documents/etaop_2012_10.pdf).

[23] Alexander Acosta, “President Trump knows: Apprenticeships will boost wages and fill jobs,” Des Moines Register, June 14, 2017, <https://www.desmoinesregister.com/story/opinion/columnists/2017/06/14/president-trump-knows-apprenticeships-boost-wages-and-fill-jobs/397009001/>.

[24] Ben Olinsky and Sarah Ayers, “Training for Success: A Policy to Expand Apprenticeships in the United States,” Center for American Progress, November 2013, [https://www.americanprogress.org/wp-content/uploads/2013/11/apprenticeship\\_report2.pdf](https://www.americanprogress.org/wp-content/uploads/2013/11/apprenticeship_report2.pdf).