



Apprenticeships and Their Potential in the U.S.*

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Government, foundation, and workforce leaders are displaying keen interest in apprenticeships as a way to give job seekers skills, credentials, and access to careers. This increased interest is also part of the greater attention to workforce development strategies that engage employers. Apprenticeships have a long history with roots in ancient times. The Code of Hammurabi of Babylon, which dates back to the 18th century BCE, required artisans to teach their crafts to the next generation. By the 13th century, a type of apprenticeship emerged in Western Europe in the form of craft guilds.¹ In the colonial U.S., now-famous apprentices included George Washington (surveyor), Benjamin Franklin (printer), and Paul Revere (silversmith).

The modern concept of apprenticeships is a “learn and earn” strategy with “work-based learning.” In the U.S., these programs may be categorized as registered apprenticeships (RAs) regulated by the U.S. Department of Labor (DOL), non-RAs, and youth apprenticeships. This article focuses on RAs, including the expansion of RAs to new industry sectors and disadvantaged populations.

Registered Apprenticeships

In 1911, Wisconsin created the first state RA system, and in 1937, Congress enacted the National Apprenticeship Act, which authorized the federal government to oversee the nation’s apprenticeship system in cooperation with the states. Registered apprentices get structured on-the-job training (OJT), related training and instruction,² wages, industry-recognized credentials, and direct access to jobs and careers. Employers, in turn, obtain highly trained employees and increased productivity and may be able to better retain employees. The number of apprentices in the RA program has fluctuated. Between the 2002 and 2014 fiscal years, it reached a high of 469,238 in 2002 and a low of 357,692 in 2011 and trended upward to 375,425 in 2013, 410,375 in

2014, and 445,900 apprentices as of October 2015, according to the DOL.³ (See the table for statistics regarding RA activity in 2014 in Pennsylvania, New Jersey, and Delaware.)

Most registered apprentices have been in construction and the skilled trades, such as electricians, plumbers, and carpenters. RA programs are sponsored by an employer or group of employers, labor-management organizations, industry associations, or an intermediary such as a community-based organization or community college. The length of an RA program depends on the complexity of the occupation and whether it is time based (a required number of hours in OJT and related instruction), competency based, or a hybrid of the two. RA programs range from one to six years depending on the occupation.

The present RA system is “bifurcated,” explained John V. Ladd, administrator of the Office of Apprenticeship (OA) in the DOL. In 26 states, including Pennsylvania and Delaware, state apprenticeship agencies oversee registration, provide assistance, and monitor regulatory compliance. In the balance of the states, including New Jersey, RAs are regulated by federal DOL staff in the state. There “can be significant variations” in the two branches of the RA system, Ladd said.

Ladd explained that the OA “is trying to reinvent registered apprenticeship and make it a more innovative and flexible model” and that some new RA models are under development. The new models plan to do the following:

- Allow apprentices to receive technical instruction in a more flexible way, such as through classes that begin before the apprentice starts at the worksite or alternating time at work with classes that may be conducive to college-based programs, possibly enabling apprentices to complete an apprenticeship in one year. (Tradition-

*The views expressed here do not necessarily represent the views of the Federal Reserve Bank of Philadelphia or the Federal Reserve System.

¹See www.britannica.com/topic/apprenticeship and <http://ow.ly/Ulia9>.

²Related training and instruction are available at community colleges, technical schools, or apprenticeship training schools; through employers; or by accessing resources online.

³About 20 percent of all registered apprentices are in the United States Military Apprenticeship Program in the Navy, Marine Corps, and Coast Guard. The program was started in 2008.



Registered Apprenticeship Activity in Pennsylvania, New Jersey, and Delaware in 2014 Fiscal Year

State	Active Apprentices	Number of Apprentices Who Have Completed Programs	Active Programs	Largest Number of Apprentices
Pennsylvania	10,821	1,882	744	Electricians, carpenters, correction officers, and plumbers
New Jersey	5,322	1,310	867	Electricians, carpenters, plumbers, and construction craft laborers
Delaware	1,069	130	311	Electricians, plumbers, HVAC, and carpenters*

Sources: U.S. Department of Labor, *Delaware Department of Labor

ally, apprentices concurrently received OJT and related technical instruction.) Increasingly, employers are using curricula from community colleges that ultimately will provide college credits to apprentices.

- Increase emphasis on competency-based programs rather than time-based programs.
- Permit community colleges or community-based organizations (CBOs) to sponsor apprenticeships and to provide the administrative functions that labor unions have traditionally done in the construction sector. Ladd cited New Century Careers in Pittsburgh as an example of such a CBO.
- Make it easier for younger people to participate in the RA. (Whereas the average age of RA participants is about 28, the average age of apprentices in Switzerland is about 17, according to the DOL.)

The OA is working to simplify the registration process for employers with the goal that it can be completed largely online. Ladd commented that most employers need a fuller infrastructure to make it easier for them to participate in the RA program and that, until now, the building trades have been one of the only sectors with such an infrastructure. Ladd said that South Carolina's statewide RA program, Apprenticeship Carolina,⁴ has created an infrastructure that makes it easier for employers to participate in RAs.

Apprenticeship Carolina is a division of the 16-college South Carolina Technical College System. Regional representatives help employers design RA programs and submit registration paperwork to the DOL. The technical training component of the RA programs is aligned with academic coursework provided by the colleges, enabling apprentices to be eligible for federal student aid. Employers with RA programs are eligible to receive a tax credit of \$1,000 for each registered apprentice. Apprenticeship Carolina has served 13,634 apprentices; currently, 6,475 apprentices are enrolled in 761 RA programs in South Carolina, according to program staff.

Ladd added that "we must align workforce and education much better." He observed that the alignment is strong in Switzerland and that apprenticeship there "is embedded in the culture." He noted that apprentices are much older in the U.S. than in other countries. Ladd also pointed out the

important role played by guidance counselors in informing young people about the range of career options, which can include apprenticeships.

New Funding

In 2014, the Obama administration called for a doubling of American apprenticeships over the next five years. In September 2015, the DOL awarded \$175 million in American Apprenticeship Initiative Grants to expand apprenticeship programs primarily in high-growth sectors, such as information technology, health care, and advanced manufacturing, and to connect apprenticeships more closely with education and career advancement.

The grants are intended to increase access to apprenticeships for underserved populations, including women, young men and women of color, persons with disabilities, low-skilled populations, and veterans. The 46 grantees are committed to train 34,000 apprentices over the next five years.⁵ According to the DOL, the grantees include:

- **Philadelphia Works, Inc.** Plans include the creation of a new behavioral health apprenticeship with District 1199C's Training & Upgrading Fund, expansion of an existing computer support specialist and information technology apprenticeship program with a focus on disadvantaged youths and others, and development of a pre-apprenticeship program.
- **West Central Job Partnership.** This partnership, which focuses on the Pittsburgh region and Ohio, plans to increase manufacturing apprenticeships; recruit veterans, unemployed and low-skilled individuals, and foster youths; increase community college capacity to provide related technical instruction; and streamline apprentice recruitment, assessment, and prescreening processes.

The DOL has been making ongoing efforts to build closer connections between the RA program and other federal programs (e.g., Job Corps and YouthBuild) and federal resources (e.g., federal financial aid and veterans' GI Bill benefits). It is also trying to build stronger connections with the public workforce system.

⁴See www.apprenticeshipcarolina.com/about.html.

⁵See www.dol.gov/apprenticeship/grants.htm.

Starting in 2015 under the Workforce Innovation and Opportunity Act (WIOA), all RA programs that request to be on the eligible training provider list will automatically be qualified to receive federal workforce funding as pre-approved training providers for the workforce system. WIOA also allows higher reimbursement to employers for OJT expenses.

Return on Investment

Employers weigh costs and responsibilities before they commit to sponsoring apprentices. According to a Mathematica Policy Research analysis in 2012 of RAs in 10 states,⁶ employers incur costs for training, paying apprentices' wages, managing the RA program, and mentoring apprentices. According to the DOL, employer responsibilities also include identifying when wages should be increased according to competency gains, determining the set of competencies that prove an employee has the skills to perform a job independently after an apprenticeship, and developing or using a curriculum to train apprentices.

Robert I. Lerman, professor emeritus in the department of economics at American University and fellow at the Urban Institute, observed that barriers to employer involvement in apprenticeships include limited information, misperceptions that apprenticeships will facilitate unionization, and low government funding levels for community college courses related to apprenticeships.⁷ In a paper on Canadian apprenticeships, he noted employer concerns that "apprenticeship training tends to be too specific in an era of rapid advances in technology and uncertainty about occupational demands" and that companies may lose their investment if other firms hire workers who have completed apprenticeships.⁸ Another issue is the completion rate of RA participants. The authors of the Mathematica Policy Research study found that about 45 percent of the participants completed their apprenticeships and obtained certificates.

The Mathematica Policy Research study had assessed the effectiveness of the RA program and performed a cost-benefit analysis. The authors concluded that:

- RA participants had substantially higher earnings than did non-RA participants. In the ninth year following program enrollment, RA participants earned an average of \$5,839 more than similar non-RA participants. The authors estimated that RA participants who completed their programs would have career earnings that were an average of \$240,037 higher than the earnings of similar non-RA participants.
- The benefits of the RA program appear to be much larger than the costs, although the authors said they could not



Cesar Reza was in a YouthBuild program in Denver, CO, when he earned his GED, was exposed to career fields, and decided to pursue an electrical apprenticeship. He attends construction classes on Tuesday evenings and works 40 hours a week as an apprentice. His career goal is to become a journeyman electrician. Photo Credit: U.S. Department of Labor

estimate the net social benefits of the government investment as distinct from those of the private investment.

Employers and state agencies are interested in the return on investment (ROI) of their participation in RA programs. As a result, economists at Case Western Reserve University and the U.S. Department of Commerce are conducting a study on the ROI to U.S. employers that participate in RAs.⁹ The state of Washington conducts a detailed analysis of the costs and benefits of RA programs and other workforce development programs in that state.¹⁰

The DOL's Ladd commented that "ROI is a challenge in the U.S. In Germany, the federal or state governments pay for education-sector investments related to apprenticeships, enabling employers to have a good ROI on apprenticeships. The United States does not fund RA programs to support such things as tuition or costs to a company of operating an RA program. The system is voluntary. A national tax credit

⁶See Debbie Reed, Albert Yung-Hsu Liu, Rebecca Kleinman, et al., *An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States*, Mathematica Policy Research, July 25, 2012, available at <http://ow.ly/Ulxm>. The 10 states include New Jersey and Pennsylvania.

⁷See Robert I. Lerman, "Proposal 7: Expanding Apprenticeship Opportunities in the United States," The Hamilton Project, Brookings Institution, 2014, available at <http://ow.ly/UIDmN>. Also see the American Institute for Innovative Apprenticeship, available at <http://ow.ly/UTEMG>.

⁸See Robert I. Lerman, *Expanding Apprenticeship Training in Canada: Perspectives from International Experience*, Canadian Council of Chief Executives, 2014, available at <http://ow.ly/UIDHF>.

⁹See Department of Commerce, "Joyce Foundation, JPMorgan Chase, and the Annie E. Casey Foundation Support Apprenticeship Return on Investment Study," September 8, 2015, available at <http://ow.ly/UIIGp>. The apprenticeship ROI study is funded by the Joyce Foundation, JPMorgan Chase, and the Annie E. Casey Foundation.

¹⁰See Workforce Training and Education Coordinating Board, "2015 Workforce Training Results," 2015, available at <http://wtb.wa.gov/Documents/Apprenticeship2015.pdf>.

for employers would go a long way in expanding apprenticeships in the U.S.”¹¹

Lessons from Other Countries

There is growing interest in learning from successful apprenticeship programs in other countries. This past summer, the U.S. Departments of Commerce, Education, and Labor signed declarations of intent with their counterparts in Germany and Switzerland for cooperation, information sharing, and fact-finding visits on career and technical education and apprenticeships. Also, the German Embassy has started a Skills Initiative to share information about best practices in sustainable workforce development in cooperation with German companies that are implementing apprenticeship programs in their U.S. manufacturing facilities.¹²

In November 2014, 40 U.S. business, civic, and government leaders traveled to Munich and Nuremberg, Germany, to learn about the German model for manufacturing competitiveness and German apprenticeships as part of the Global Cities Initiative led by JPMorgan Chase and the Brookings Institution. A report on the trip highlighted the importance of regional collaboration among public, private, and civic actors; targeted institutional intermediaries that address market and coordination failures; and incentive-based investments to support small and medium-sized businesses.¹³

In October 2015, the Urban Institute convened British training providers in Washington, D.C., for an event titled “How Did England Generate Two Million Apprenticeships?” The event was organized in part by Lerman, who pointed out that apprentices constitute only 0.2 percent of the U.S. labor force compared with 2.2 percent in Canada, 2.7 percent in Great Britain, and 3.7 percent in Australia and Germany.¹⁴ Lerman also reported that apprenticeships involve 55 to 70 percent of the young adult population in Austria, Germany, and Switzerland — countries where youth unemployment rates are very low.¹⁵ Apprenticeships and secondary schools are closely linked in those countries, he observed, but in most other countries, apprenticeships begin after secondary school.

Pre-apprenticeship Programs

Pre-apprenticeship programs are seen as important for disadvantaged populations in RAs. Such programs, which prepare individuals to enter and succeed in RAs, ideally should link closely with RAs and can provide career exposure and development of literacy and math skills.

Laura Ginsburg, special assistant, national industry promotion and strategic partnerships in the OA, explained that pre-apprenticeship programs provide important supportive services and remedial skills. She said, “The DOL has developed a quality framework for pre-apprenticeship that we urge all organizations to use. There are too many training organizations that train individuals with no job at the end of that experience. We want to ensure that pre-apprenticeship programs are linked to registered apprenticeships and a career.” The OA does not approve pre-apprenticeship programs but has issued a document on the subject¹⁶ and plans to develop a toolkit on these programs.

Conclusion

RAs, authorized under 78-year-old federal legislation, are getting more attention in recognition of the critical importance of engaging private-sector employers in addressing the workforce needs of unemployed and underemployed people. RAs, with a combination of structured OTJ training and related training and instruction, hold the promise of industry-recognized credentials and career access. RAs have been used primarily in the skilled trades and construction, but recent DOL grants are intended to catalyze their use by new populations in high-growth industries with new program models.

As private-sector employers weigh the costs and benefits of apprenticeships, intermediaries can assist employers to design programs, recruit participants, and register RA programs. The intermediaries range from state programs such as Apprenticeship Carolina, nonprofits such as Vermont Healthcare and Information Technology Education Center (HITEC), and joint labor-management programs.¹⁷

The declarations of intent signed this summer between the U.S. Departments of Commerce, Education, and Labor and their counterparts in Germany and Switzerland reflect a growing desire to learn from countries where apprenticeships are successfully embedded in educational and employment systems. The inherent challenge will be to apply and implement successful practices in the U.S. despite differences in educational systems and employment practices.

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¹¹ Two bills have been introduced that would provide a national tax credit to employers that have RA programs. U.S. Senators Cory Booker of New Jersey and Tim Scott of South Carolina have introduced the Leveraging and Energizing America’s Apprenticeship Programs (LEAP) Act. U.S. Senators Maria Cantwell and Susan Collins have introduced the Apprenticeship and Jobs Training Act of 2015.

¹² About 55 percent of high school graduates in Germany participate in a “dual system” of vocational education and training, according to the initiative. See www.germany.info/skillsinitiative.

¹³ See Joseph Parilla, Jesus Leal Trujillo, and Alan Berube, *Skills and Innovation Strategies to Strengthen Manufacturing: Lessons from Germany*, Brookings Institution, 2015, available at <http://ow.ly/UIMZ0>.

¹⁴ See Lerman, “Proposal 7,” 2014.

¹⁵ See Lerman, *Expanding Apprenticeship Training in Canada*, 2014.

¹⁶ See <http://ow.ly/UIOY3>. Another useful resource on the subject is <http://ow.ly/UIP2U>.

¹⁷ See <http://ow.ly/UR0xV>.



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