

Apprenticeships: Helping Youth Develop the Skills Needed by Today's Employers

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Apprenticeships are a cost-effective training program that combines serious work-based learning and classroom instruction at very modest cost to government. Apprentices are employees, so they earn while they learn with close guidance by mentors. For youth who have trouble entering and staying in the labor force, apprenticeships provide an incentive to work hard learning skills that lead to careers that pay well. When young people can secure good-paying jobs, they are more apt to marry and live with their children. In surveys, nearly all employers believed that apprenticeships help them meet their skill demands and 3 in 4 reported improved productivity. For taxpayers, by the time former apprentices reach age 65, each dollar invested yields a remarkable return of \$23 in benefits. South Carolina expanded its Registered Apprenticeship Program at modest cost, and Wisconsin is one of only a few states that operate a youth apprenticeship program. In 2014-15, the Wisconsin Youth Apprenticeship Program reached 2,500 high school juniors and seniors in one of its 10 career clusters. The lowest student enrollments that have room for growth were in STEM (science, technology, engineering, and math); architecture and construction; information technology (IT); and arts, A/V technology, and communications.

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Policymakers are searching for ways to deal with the erosion of middle-class jobs and the highest rates of youth joblessness since the 1950s.¹ Today's young people face high underemployment and unemployment that jeopardizes their long-term success in work and family life.² Declining job prospects go hand-in-hand with the rise in unmarried parenthood among high school graduates with little or no college education.³

For decades, the transition from school to career has been challenging for youth. However, today's youth are exposed to less vocational education⁴, and employers increasingly are complaining about the mismatch between the skills they need and those youth possess.⁵

What can motivate young people to work and to develop skills that are valued in the job market?⁶ Policymakers are finding common ground on one strategy for achieving these goals—expanding youth apprenticeships.⁷ Apprenticeships are distinctive in meeting both the supply side and the demand side of the labor market. When robust apprenticeship systems are in place, youth learn employability skills for rewarding careers, youth unemployment is kept low, the state's productivity is kept high, and employers are ensured a workforce with strong technical and employability skills. What's more, these benefits accrue at very little cost to the public purse.⁸

This chapter begins by explaining what youth apprenticeships are and how they work. Next the chapter turns to the research evidence on youth apprenticeships—their costs and benefits for youth, employers, and taxpayers. The apprenticeship programs in Wisconsin are overviewed followed by the lessons learned from one of the country’s most innovative programs in South Carolina. The chapter closes with implications for state policymakers.

What Youth Apprenticeships Are and How They Work

Apprenticeships are a time-honored, cost-effective training program that increases productivity by combining serious work-based learning and classroom instruction at very modest cost to government.⁹ Apprentices are employees who participate at the workplace and earn a wage with close mentoring by professionals. Unlike part-time jobs, apprentices learn skills in formal classes and apply their learning at the workplace in a highly structured setting. Unlike on-the-job-training, apprentices take formal classes so they develop a mastery of the occupation, rather than simply the ability to do the job.¹⁰ Unlike internships, which are typically short-term, registered apprentices remain with the firm for four to six years and youth apprentices for one to two years.¹¹

Apprenticeships can begin as early as age 16 but typically take place after high school; the average age in the United States of a starting apprentice is his or her mid-20s. Community colleges frequently provide the academic instruction required for apprenticeships. The course work is generally equivalent to at least one year of community college.¹² In some cases, however, apprentices take enough course work to earn an associate’s degree.¹³

Sponsors of apprenticeship programs in the United States generally register their programs with the U.S. Department of Labor’s Office of Apprenticeship or with state apprenticeship agencies. Registered apprenticeships in the building trades have existed for over 100 years in the United States. Despite expansion to other trades, apprentices currently make up only 0.2% of the U.S. labor force.¹⁴ Apprenticeships primarily focus on construction and manufacturing occupations, with large-scale programs in carpentry, electrical, machining, maintenance, pipe-fitting, shipbuilding, and welding. Apprenticeships also are available in other occupations such as auto and truck repair, child care, long-term care, police and fire, trucking, and utilities. To respond to today’s high-growth occupations, apprenticeships are being developed in advanced manufacturing, healthcare, and information technology.

Registered Apprenticeships and some Youth Apprenticeships are subject to government- or industry-recognized training standards, particularly for their workplace component.¹⁵ Apprenticeships typically lead to an industry-recognized credential that certifies the capacity to perform the required tasks of a fully qualified worker in the occupation. Apprentices also learn employability skills required on the job such as communication, dealing with supervisors and coworkers, problem solving, responsibility, and teamwork.^{16,17}

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Benefits to Young People

Young people find apprenticeships attractive because they are motivating, practical, and affordable. For many young people, it is motivating to learn by doing, particularly for those who perform better in work-based settings than in purely school-based ones.¹⁸ In stark contrast to the typical part-time job, some young people like the direct, practical connection between what they are learning in the classroom and what they are doing on the job. Finally, apprenticeships are affordable because young people earn while they learn and avoid amassing student debt.¹⁹

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Apprenticeships teach career skills, but at the same time play a positive role in young people's development. The adults involved in apprenticeships serve as mentors, on-the-job supervisors, and teachers. These adults provide guidance and demand professionalism, but still allow young people to learn from making mistakes. Constructive advice from adults while learning difficult tasks helps apprentices gradually develop independence and self-confidence.^{20,21} Apprenticeships, because of their course component, also can narrow the gap in postsecondary attainment for men and minorities. In addition, apprenticeships can build connections to the workforce for students who are less likely to attend a four-year college.²²

Benefits to Employers

Most firms benefit from investing in apprenticeships. Financially, the first year of apprenticeships involves significant costs in wages and supervision, but most firms recoup their costs during the training period itself. In a survey of 900 U.S. employers, the overwhelming majority believed apprenticeships are valuable and involve net gains. Nearly all believe the apprenticeship program helped them meet their skill demands, and 87% would strongly recommend registered apprenticeships. Surprisingly, only 1 in 4 employers regard "poaching" as a serious problem, where a firm trains an apprentice who is hired away by another firm. Even among employers concerned about poaching, 85% still highly recommend apprenticeships.²³

Employers report wide-ranging benefits of apprenticeships. In a study of 4,000 employers, nearly 3 in 4 mentioned improved productivity as a primary benefit and 4 in 10 said it helped them secure new business. For existing employees, apprenticeships raise worker productivity, increase worker morale, and reduce safety problems.²⁴ For new employees, apprenticeships save money in recruitment and training, and reduce the excessive costs when skilled workers cannot quickly be hired.²⁵ Because apprenticeships are employer-driven, it is much more likely that the skills taught are the very ones demanded in the workplace.²⁶

One important benefit of apprenticeships that is seldom captured in studies is its positive impact on innovation. When workers are well-trained on the firm's production processes, they are better positioned to make incremental innovations to both products and processes.²⁷

Costs and Benefits to Taxpayers

A primary advantage of apprenticeships is their low cost. Government costs for apprenticeships are modest in comparison to full-time schooling.²⁸

Studies show U.S. registered apprenticeships are extraordinarily cost-effective.²⁹ In a study of 10 states, participants in registered apprenticeship programs showed a \$6,000 to \$6,500 boost in earnings each year.³⁰ A cost-benefit analysis of registered apprenticeships was conducted in Washington state. By 2½ years after the program, registered apprentices earned an average of nearly \$78,000 more than a comparison group. The benefits to taxpayers were three times the cost. Considering gains to both taxpayers and participants, the benefits exceeded five times the cost. By the time former apprentices reach age 65, taxpayers received a remarkable \$23 in benefits for each dollar invested.^{31,32}

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Wisconsin's Registered Apprenticeship Program

Each year in Wisconsin, employers train about 10,000 registered apprentices in about 200 different occupations. Registered Apprenticeships last between two and six years, but typically take four years. In 2014, 2,454 Wisconsin employers helped train apprentices in construction, industrial/manufacturing, and service trades. The Wisconsin Department of Workforce Development recently received a \$5 million grant to register new apprenticeships in 12 high-growth occupations such as advanced manufacturing, healthcare, and information technology (IT). In partnership with the Wisconsin Technical College System, they will expand existing programs and provide entry points for specific underrepresented populations. (For further information, contact Karen Morgan, Director of the Bureau of Apprenticeship Standards at the Wisconsin Department of Workforce Development.)

Wisconsin's Youth Apprenticeship Program

In the United States, the apprenticeship program is almost entirely separate from high schools and serves very few workers under the age of 25. Wisconsin is one of only a few states in the country that operates a youth apprenticeship program.³³ In the 2014-15 school year, Wisconsin's Youth Apprenticeship Program offered 1- to 2-year apprenticeship options to more than 2,500 high school juniors and seniors. The Wisconsin Youth Apprenticeship Program requires 450 to 900 hours in work-based learning and two to four related occupational courses. The program draws on industry skill standards, so those who complete the program receive a Certificate of Occupational Proficiency in the relevant field. Some students also receive technical college credits.

Given its track record since 2009, at least 75% of youth apprentices are expected to successfully complete their program and receive a state skill certificate. At least 60% of those who complete two years as apprentices are expected to be offered employment by the employer that provided the on-the-job training.

Recently, Wisconsin’s Bureau of Apprenticeship Standards has been tasked with bridging youth apprenticeships to the state’s registered apprenticeship program. Youth Apprentices can prepare students to enter the Registered Apprenticeship Program, but it is not a strict prerequisite.

Figure 1. Wisconsin’s Youth Apprenticeship programs fall under 10 career clusters with enrollments varying by wage, gender, and minority status.

Enrolled Student Breakdown by Program Area (2014-15 Fiscal Year)

Program Area Name	Student Count	Average Wage	Female	Minority
Agriculture, Food, & Natural Resources	442	9.74	30% Female	2% Minority
Architecture & Construction	84	9.98	8% Female	21% Minority
Arts, A/V Technology, & Communications	5	9.26	60% Female	40% Minority
Finance	183	9.44	64% Female	12% Minority
Health Services	395	10.34	90% Female	12% Minority
Hospitality, Lodging, & Tourism	397	8.18	62% Female	9% Minority
Information Technology	74	9.06	12% Female	4% Minority
Manufacturing	617	10.01	8% Female	8% Minority
Science, Technology, Engineering, & Math (STEM)	95	9.23	25% Female	7% Minority
Transportation, Distribution, & Logistics	257	11.44	6% Female	4% Minority

**Data provided on September 24, 2015 by the Wisconsin Youth Apprenticeship Program, Department of Workforce Development.*

In Wisconsin, youth apprenticeships fall under 10 career clusters with the largest student enrollments in manufacturing; agriculture, food, and natural resources; and hospitality, lodging, and tourism. The lowest enrollments in Wisconsin Youth Apprenticeships that have room for growth are in science, technology, engineering, and math (STEM); architecture and construction; information technology (IT); and arts, A/V technology, and communications.

Each broad field includes subfields with their own detailed skill standards. In health services, for example, the broad pathways are therapeutic services, health informatics, and ambulatory support services. All pathways require knowledge of the health industry, core employability skills, and safety in the job. Skill standards for the therapeutic pathway include dental assistant, medical assistant, nursing assistant, and pharmacy assistant. Health informatics involves operating all the software and managing the records for a medical office. Ambulatory support service modules cover imaging, other laboratory work, client services, dietary assistance, optometry, and physical therapy.

In Wisconsin, the Youth Apprenticeship Program is operated by 32 local partnerships, which include one or more school districts and at least one other partner such as Chambers of Commerce, Cooperative Educational Service Agencies, economic development corporations, nonprofits, technical colleges, workforce development boards, etc. The cost for the program is about \$2 million

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annually, all of which goes to these local partnerships through grants that offer instructional programs, marketing costs, student services, and so forth. The annual cost per student is about \$850. (For further information, contact Cathy Crary, Section Chief for the Youth and At-Risk Populations Section at the Wisconsin Department of Workforce Development.)

South Carolina's Innovative Expansion

South Carolina substantially expanded its Registered Apprenticeship Program at modest cost. Apprenticeship Carolina™ funded a \$1 million a year expansion of its program housed at the state's technical college system. In addition, the state provided annual employer tax credits of \$1,000 per apprentice per year. The result? An average of one new employer-sponsored apprenticeship was registered each week, doubling the number of apprentices in the state over a 5- to 6-year period. The expansion created opportunities across broad industry sectors including advanced manufacturing, healthcare, and IT. In sum, 4,000 new apprenticeships were offered for a total of about \$1,250 each, including the cost of the tax credit.³⁴

What's more, the modest \$1,000 subsidy opened the door for conversations among educators and employers about establishing an apprenticeship program. The direct links created between the technical college and the business community have raised collaboration in South Carolina to an unusually high level.³⁵

Implications for State Policymakers

One fundamental question is, "If we build it, will they come?" Attracting workers to take advantage of apprenticeship programs is rarely a problem. So the relevant policy question is how to encourage employers to increase the overall number of apprenticeships.³⁶ In the spirit of stimulating discussion, several policy options for state policymakers are mentioned.

- **Develop effective and sector-based marketing to employers to build apprenticeship programs.** Two significant barriers to building apprenticeship programs are too many misperceptions and too little information. First, misperceptions abound such as that expanding apprenticeships will bring in unions. There is no evidence that adopting an apprenticeship program will expand unions, but the myth still persists. Second, employers are unlikely to hear about apprenticeships from other employers or from workers in other firms. To publicize apprenticeship programs, state government could provide leadership, incentives, or funding for marketing in state agencies, the two-year colleges, technical colleges, high schools, and so forth.³⁷ The state could build a top-notch marketing team that can effectively reach individual employers. The teams can listen to the firms and, where appropriate, tailor apprenticeship solutions to their human resource problems. The marketing teams could be state employees, private training firms, technical colleges, or community colleges.

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- **Incentivize effective expansion of apprenticeships.** Financial incentives such as pay for performance could ratchet up the engagement of training providers (usually two-year or technical colleges). The revenue that training providers receive for marketing or expansion could be earned only when additional apprenticeship slots are established with employers. Training providers could be incentivized by the way they are reimbursed. Conceivably, each additional apprenticeship slot would increase the work-based component of the student's education and reduce the classroom component. For example, assume that the work-based component accounts for 75% of the cost and the school-based component for 25%. Allowing training providers to keep more than 25% would be a strong incentive to actively work with employers to develop new apprenticeship entry points.³⁸ Employers could be incentivized with tax credits for setting up an apprenticeship program at their work site. States also could help employers fund their apprenticeships using existing state and federal dollars, including Pell Grants. Special incentives could be given for populations that face employment challenges such as ex-offenders, veterans, dislocated workers, or minorities.
- **Expand existing school programs that already work with employers.** A good place to start is with Career Academies, schools within high schools, and with quality career and technical education (CTE) programs that have an industry or occupational focus. Career Academies and CTE programs include classroom-related instruction and sometimes internships with employers in fields ranging from health and finance, to travel and construction. Expanding the work component into an apprenticeship would enhance the training students receive and provide workplace experience that could lead to a certificate of occupational proficiency. In a rigorous evaluation, Career Academies improved labor market and family outcomes, especially for young men. Eight years after high school graduation, young men in Career Academies had earned an average of nearly \$30,000 more than their peers. In addition, young men in Career Academies were more likely to be married, to be custodial parents, and to be living independently with their children (see Kemple chapter in the 2013 Family Impact Seminar briefing report, *Preparing Wisconsin's Youth for Success in the Workforce*, at <http://wisfamilyimpact.org>).
- **Tap into existing discretionary employment and training funds.** Under the Workforce Investment Act, governors have discretionary funding that could be used to stimulate apprenticeships and improve linkages with community colleges.³⁹
- **Incorporate apprenticeships into projects the state is already funding.** States could use construction projects and other projects that fund large numbers of workers to promote apprenticeships or other types of career-based training.⁴⁰

- **Capitalize on funding for vulnerable groups that experience employment challenges.** Funding already may be available for target populations that could benefit from apprenticeships, such as dislocated workers, ex-offenders, and veterans. Apprenticeships are consistent with the high premium these groups often place on earning money while undergoing training.⁴¹

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Conclusion

Expanding apprenticeships is a potential gamechanger for improving the lives of Wisconsin young people who have trouble entering and staying in the workforce. Apprenticeships are a cost-effective approach to building a workforce that helps produce the supply of workers Wisconsin needs and meet the demand for workers that employers require. Although apprenticeships should include high-end options in fields such as engineering and finance, they have special appeal to students who do not have the aptitude for or interest in a four-year degree. For these students, apprenticeships can provide the incentive to work hard and learn skills that lead to careers that pay well. When young people can secure good-paying jobs, they are more apt to marry and live with their children. Strong families raise responsible children who become productive workers and committed family members. The success of one generation leads to the success of the next.

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References

- ²¹Halpern, R. (2009). *The means to grow up: Reinventing apprenticeship as a developmental support in adolescence*. New York: Routledge.
- ^{13,15,26,35,39,40,41}Lerman, R. I. (2010, October). *Expanding apprenticeship: A way to enhance skills and careers*. Retrieved from Urban Institute website: <http://www.urban.org/research/publication/expanding-apprenticeship-way-enhance-skills-and-careers>

- ^{29,31}Lerman, R. I. (2013, December). *The many benefits of expanding U.S. apprenticeships*. Retrieved from Urban Institute website: <http://www.urban.org/urban-wire/many-benefits-expanding-us-apprenticeships>
- ^{8,12,14,18,22,27,32,33,34,37,38}Lerman, R. I. (2014). *Expanding apprenticeship opportunities in the United States* (Hamilton Project Proposal 7). Retrieved from Brookings website: <http://www.brookings.edu/research/interactives/2014/hamilton-policies-addressing-poverty>
- ^{1,5,10,23,24,25,36}Lerman, R. I. (2014, May). *Do firms benefit from apprenticeship investments?* Retrieved from IZA World of Labor website: <http://wol.iza.org/articles/do-firms-benefit-from-apprenticeship-investments>
- ^{2,7,9,16,19}Lerman, R. I. (2015, February). *Bipartisan support emerges for expanding apprenticeships*. Retrieved from Urban Institute website: <http://www.urban.org/urban-wire/bipartisan-support-emerges-expanding-apprenticeships>
- ^{3,4,6,11,17,20,28}Lerman, R. I. & Packer, A. (2015, April). *Youth apprenticeship: A hopeful approach for improving outcomes for Baltimore youth* (Abell Report Vol. 28, No. 2). Retrieved from Abell Foundation website: <http://www.abell.org/publications/youth-apprenticeship>
- ³⁰Reed, D., Liu, A. Y., Kleinman, R., Mastri, A., Reed, D., Sattar, S., & Ziegler, J. (2012, July). *An effectiveness assessment and cost-benefit analysis of registered apprenticeship in 10 states*. Retrieved from U. S. Department of Labor website: http://wdr.doleta.gov/research/FullText_Documents/ETAOP_2012_10.pdf

