



The Council
of State
Governments

The Future of Apprenticeship:

Inclusion, Expansion, and the Post-Pandemic World of Work

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This brief was produced in partnership with the State Exchange on Employment & Disability (SEED), an initiative of the U.S. Department of Labor's Office of Disability Employment Policy (ODEP). In partnership with organizations like The Council of State Governments (CSG), among others, SEED helps state and local governments develop and implement meaningful policies and practices that lead to increased employment opportunities for individuals with disabilities and a stronger, more inclusive workforce and economy.

Executive Summary

Workers, employers, and state governments experience the benefits of apprenticeships, from hands-on career training to meeting workforce needs and developing relationships with key job creators.

The nation's apprenticeship system is complex, with the federal government playing a critical oversight and coordination role. Twenty-five states register apprenticeship programs through the U.S. Department of Labor, while the remaining states, the District of Columbia, and Puerto Rico have state-level registration through a State Apprenticeship Agency. State governments incorporate a variety of different strategies and structure approaches to achieve many of the same stated goals, which include:

- Expansion into new fields and occupations;
- Fiscal and programmatic sustainability over time; and
- Inclusion of historically underrepresented populations, including individuals with disabilities, in work-based learning opportunities.

There are a number of strategies apprenticeship programs and state policymakers may want to consider in order to make the apprenticeship process and apprenticeship programs more inclusive, particularly for individuals with disabilities, including:

- Setting aspirational goals for inclusion;
- Working closely with individuals with disabilities and advocates who understand their unique needs;
- Developing strategic plans to create discrimination-free work environments and selection processes;
- Developing different kinds of occupational skills training that may play to the strengths of different individuals;
- Improving data collection about individuals with disabilities in apprenticeship programs;
- Implementing monitoring and reporting to ensure continuous improvement;
- Offering programs to prepare people for apprenticeships;
- Incentivizing employers through tax policies to connect typically underrepresented populations, including individuals with disabilities, to opportunities;
- Providing reasonable accommodations in the classroom and workplace, including assistive technology; and
- Providing other supports that allow individuals with disabilities to be successful in apprenticeships.

States are making apprenticeship programs more inclusive by creating strategies to meet state and federal requirements and casting a wider net by collaborating with other state agencies, community organizations, and partners.

States also are engaged in significant efforts to expand apprenticeship opportunities by:

- Awarding competitive grants;
- Creating transparency about their efforts;
- Investing federal dollars;
- Targeting specific industries for outreach; and
- Creating public sector opportunities for apprentices.

Industry-based expansion efforts in fields involving technology also are increasing the opportunities available. There is considerable momentum in fields where work can be done remotely, such as cybersecurity, and in occupations with cross-industry relevance, such as business services. Intermediary apprenticeship-sponsoring organizations, such as the technology jobs-focused Apprenti and federal efforts like the Cybersecurity Youth Apprentice Initiative, create new pathways to sustainable employment. But additional infrastructure will be needed to make expansion efforts successful and sustainable.

There are numerous reasons for optimism regarding the long-term future of these programs. One of them is the resilience apprenticeship programs demonstrated during the COVID-19 pandemic. While there were pauses in some programs initially as the pandemic shut down a wide swath of the economy in the spring of 2020, as the months progressed, many were able to pivot to online instruction and reconfigured opportunities. Some virtual learning programs launched or accelerated during the pandemic, and apprenticeships in health care settings continued even as those industries faced incredible strains. Apprenticeships in the hospitality and food industries had to find new ways to operate as businesses adjusted their models. Apprenticeships in the construction industry were mostly business-as-usual as public

works projects continued largely without interruption.

Other reasons for optimism include:

- Many years of bipartisan support at the federal level;
- Recent successes of expansion efforts;
- The possibility of a dedicated federal funding stream on the horizon; and
- The engagement of numerous partners.

Key Findings

The future of apprenticeships is hopeful, as there is no shortage of strategies states can deploy to further strengthen this valuable tool. These strategies include:

- Improving the inclusivity of apprenticeship programs:
 - Working with other agencies that serve individuals with disabilities
 - Creating pre-apprenticeships to prepare individuals for registered apprenticeships
 - Creating tax incentives for businesses
 - Requiring that program expansion initiatives increase diversity and inclusion
 - Working with community colleges to engage diverse populations
 - Encouraging the collection of disability inclusion data
 - Assessing the reliability of disability inclusion data
 - Considering the advantages and disadvantages of more online-focused apprenticeship opportunities
- Expanding apprenticeship to more occupations and industries:
 - Creating competitive grants for innovations in apprenticeship expansion

- Encouraging development of apprenticeships in health care, advanced manufacturing, information technology, and business services
- Increasing support for intermediaries and apprenticeship infrastructure
- Supporting expansion efforts of employers, trade associations, and other groups
- Looking to the public sector as an area for potential apprenticeship expansion
- Seeking greater transparency regarding the effectiveness of expansion
- Working with higher education institutions to assess the impact of the discretization of learning
- Ensuring the resilience of apprenticeship programs:
 - Assessing the pivot to remote formats during the pandemic
 - Emulating the programmatic flexibility of other countries
 - Getting expansion plans back on track
 - Directing state employees to again prioritize apprenticeship programs after pandemic-related assignment to other policy areas
 - Assessing pandemic and economic impacts on employers
 - Examining whether apprenticeships prove durable in the economic aftermath of the pandemic
 - Encouraging the federal government to create a dedicated formula funding stream for registered apprenticeships
- Seeking better coordination with federal partners and other stakeholders
- Strengthening the funding for apprenticeship programs:
 - Seeking champions throughout state government
 - Casting a wide net in identifying funding
 - Exploring “braided funding” (the weaving of multiple sources of funding)
 - Using funding designated for economic and pandemic recovery to support apprenticeship programs

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Introduction

Apprenticeships have long been recognized for their value in allowing apprentices to gain hands-on training and practical on-the-job experience that prepares them for and can catapult them into the world of work. Workforce development experts in the United States and around the world have long understood the value of apprenticeships in helping businesses develop highly skilled employees.

Apprenticeships today come in a wide variety of shapes and sizes and involve the support of a wide variety of stakeholders. From the federal and state governments to large and small employers to community colleges and intermediary support groups, all have a vested interest in ensuring the success and sustainability of apprenticeship programs.

Apprenticeships, like most vocational activities, experienced a challenging year in 2020 as the Coronavirus pandemic forced some programs to shut down, at least temporarily. But apprenticeship programming was not as hard hit as originally feared, despite school and business contractions and closures. In fact, many programs have been able to adapt to new models involving more online instruction that may have a post-pandemic impact on the way apprenticeships are conducted.

With apprenticeships maintaining widespread bipartisan support and stakeholder involvement, apprenticeships can aid in the nation's economic recovery and workforce development efforts in the years ahead. As the nation faces a transformed labor market, apprenticeships can help businesses recover a skilled workforce and help put people back to work with paid training, allowing them to upgrade their skills, shift career paths, enter new and emerging industries, and populate vacant positions in industries that have faced unique challenges during the pandemic.

Apprenticeships are showing signs they will be able to pivot in the years ahead as workplaces and industries undergo profound changes. These changes may include everything from pandemic-influenced office redesigns to automation. But it will take more investment, engagement, innovation, and ingenuity to ensure apprenticeships fully evolve. Fortunately, states already are engaged in activities around apprenticeships that are likely to build on the promise of an inclusive, diverse, forward-focused, and resilient vocational training industry to serve the future workforce in a rapidly changing and continually uncertain economy.

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I. Defining Apprenticeships

Registered Apprenticeship:

A proven, more than 80-year-old training program model registered and validated by the U.S. Department of Labor. Starting with apprenticeships mainly in the manufacturing, construction, and utilities industries, the program eventually expanded to include training for police and firefighters, emergency medical technicians, and health and safety workers. Today, registered apprenticeships are being created in non-traditional sectors such as energy conservation, health care, and information technology.¹

Youth Apprenticeships:

Designed specifically for high school students, these combine academic and technical classroom instruction with work experience through a registered apprenticeship program. They allow students to learn about options available to them as they consider whether to continue their education, begin full-time employment, or pursue something in between.²

Inclusive Apprenticeship:

The U.S. Department of Labor has made Equal Employment Opportunity (EEO) regulations a cornerstone of registered apprenticeship programs. Equal opportunity is promoted for apprentices and applicants in registered apprenticeship programs by prohibiting discrimination based on race, color, religion, national origin, sex, sexual orientation, age (40 or older), genetic information, and disability.³ The Office of Disability Employment Policy supports apprenticeship program models that are inclusive of individuals with disabilities by working with national and state policymakers and providing examples of effective practices.⁴ Apprenticeship sponsors are required to provide reasonable accommodations, upon request, to applicants and apprentices with disabilities to allow them to perform critical job functions. Examples include physical accessibility of facilities, flexible work schedules, new or modified tools, and equipment and personnel support as needed.⁵

Pre-Apprenticeships:

Recognized by the U.S. Department of Labor but not registered with the Department, these prepare individuals to enter and succeed in a registered apprenticeship program. These programs incorporate a curriculum based on industry standards; hands-on training or volunteer opportunities; agreements with the sponsors of registered apprenticeships that facilitate entry of program participants; and support services like childcare and transportation to allow apprentices to succeed. Pre-apprenticeship programs also allow for the recruitment and preparation of various underrepresented populations that will facilitate increased diversity and inclusivity.⁶

Work-Based Learning:

This is a universal term for a student's sustained interactions with industry or community professionals in workplace settings or simulated environments at an educational institution. They foster in-depth, firsthand engagement with the tasks required in a given career field that are aligned to curriculum and instruction.⁷ Work-based learning can include internships, mentorships, and apprenticeships and offer students an opportunity to test-drive a career. The Workforce Innovation and Opportunity Act of 2014 speaks to the use of federal vocational rehabilitation funds in working with employers to design work-based learning activities for individuals with disabilities. Work-based learning also is a required activity as part of pre-employment services for individuals with disabilities under federal law.⁸

II. Value of Apprenticeships

Apprenticeships provide a variety of benefits to workers, employers, and state governments.

For apprentices, the benefits include:

- Earned compensation;
- Hands-on career training;
- The potential to earn college credit;
- A career once the apprenticeship is complete;
- Little or no educational debt; and
- The ability to earn certified portable credentials accepted by industries and employers nationwide.

For employers, the benefits include:

- The ability to offer training tailored to specific needs;
- Increased knowledge transfer through mentors and education courses;
- Enhanced employee retention; and
- A developed pipeline of qualified workers.

States can reap the benefits of apprenticeship programs in building their workforce, because apprenticeships help states:

- Recover from the economic impact of the covid-19 pandemic by fostering the implementation of sustainable workforce development practices;
- Increase the pipeline of qualified public and private sector employees;
- Connect individuals with high-quality jobs;
- Spur widespread workforce improvements by creating a model for other employers to follow;
- Customize training and reduce onboarding and workforce training costs by letting employees learn on the job;
- Develop relationships with private sector companies by establishing training programs, filling needs of local businesses, attracting new partners, and developing new investment; and

- Improve workforce development measures of success, such as employment, retention, earnings, and credential attainment numbers.⁹

The value of apprenticeships to individuals with disabilities is even more profound. Some employers may be reluctant to hire these individuals because they lack understanding about potential employee capabilities or worry about providing reasonable workplace accommodations for individuals with disabilities.¹⁰ An inclusive apprenticeship opportunity can allow an individual with a disability to demonstrate their value to an employer as well as gain new skills that can set them on the path to a career. Inclusive apprenticeships also can help employers increase the hiring and retention of individuals with disabilities.

Research shows that young people with disabilities who participate in apprenticeships and other work-based learning opportunities experience stronger career outcomes. Ninety-four percent of apprentices who complete an apprenticeship program retain employment with an average annual salary well above the average national median income.¹¹

III. State Policies to Make Apprenticeship Inclusive

Achieving disability inclusion in apprenticeships requires a wide array of strategies, but it begins with goal setting. It is important to set aspirational, yet achievable and measurable, goals and have a clear picture in mind of what diversity, equity, and inclusion should look like within an apprenticeship program. State apprenticeship agencies can work with employers, program sponsors, and other stakeholders to establish expectations and define eligibility and selection processes.¹²

Apprenticeship stakeholders can work together on strategic plans to create discrimination-free environments; review personnel processes to address barriers to equal opportunity; conduct targeted outreach and recruitment; and implement monitoring and reporting to ensure continuous improvement across the program.¹³

Employers by themselves often do not have the capacity to design and develop inclusive apprenticeship programs. Specialist disability employment service providers can provide indispensable knowledge of the challenges, needs, and strengths of individuals with disabilities in the workplace setting.¹⁴

Programs also can create opportunities for apprenticeship candidates to learn about opportunities that may be available to them and about what they would need to achieve success in the workplace. Employers can work with community-based organizations to offer pre-apprenticeships and readiness programs that help gauge the strengths of individual apprentice candidates.¹⁵

Employers offering apprenticeships also can work with their partners to develop different kinds of occupational skills training modules that may allow different apprentice candidates to excel. For example, some apprentices with disabilities may do well with hands-on training while others may be more adept with online learning. Employers



and their partners can make sure to structure programs that adhere to the principles of Universal Design for Learning, a framework to help designers structure programs that any learner can understand.

Sponsors of registered apprenticeships with five or more apprentices are required to develop affirmative action programs. They also are required to invite all apprentices and applicants to fill out a one-question voluntary disability disclosure form that offers the choice of "Yes, I have a disability (or previously had a disability)," "No, I don't have a disability," and "I don't wish to answer." The effort is a recognition of a previous lack of data collection on individuals with disabilities in apprenticeship programs and allows programs to measure disability inclusion against a non-mandatory national benchmark goal of at least seven percent of apprentices being individuals with disabilities.¹⁶

State policymakers may want to consider inclusive policies at various stages of the apprenticeship development and implementation process:

During development, ensure the program considers the unique strengths and needs of individuals with disabilities. For example, **Wisconsin's** Bureau of Apprenticeship Standards collaborates with the Division of Vocational Rehabilitation to ensure a disability perspective is incorporated into the development process.¹⁷

In preparing workers, ensure that individuals with disabilities have the necessary skills. For example, many states offer pre-apprenticeships. The **Oregon** Bureau of Labor & Industries website lists approximately 25 pre-apprenticeship programs in the state, split nearly evenly between those offered to youth and those for adults.¹⁸

To incentivize employers, ensure individuals with disabilities are reached and connected with apprenticeship opportunities. Some states provide tax incentives to businesses that hire apprentices with disabilities.

- **Iowa** allows qualifying small businesses an additional deduction on their state income tax returns.¹⁹
- Businesses in **Maryland** that employ individuals with disabilities may be eligible for a tax credit for wages, childcare, and transportation expenses paid to qualified employees.²⁰
- **New York's** Workers with Disabilities Tax Credit offers businesses up to \$2,100 for each individual hired.²¹
- **Tennessee** provides a job tax credit of \$5,000 for each net new full-time job and a credit of \$2,000 for each net new part-time job for individuals with disabilities who are receiving Tennessee state services related to the disabilities.²²

Federal tax incentives also are available to assist employers with the expense of making structural adaptations to their businesses to accommodate employees with disabilities.²³

States should provide support and remove barriers so apprentices with disabilities can be successful. Support may include mentoring through a network of peers to help apprentices with disabilities navigate workplace challenges.²⁴ **New Jersey** lawmakers passed legislation in 2020 that established a pilot program to offer stipends to offset transportation and childcare costs for apprentices. Workers who are underrepresented in apprenticeship programs, including individuals with disabilities, are to be given priority under the measure.²⁵

IV. Federal Requirements for Inclusive Apprenticeships

The U.S. Department of Labor in 2016 updated Equal Employment Opportunity (EEO) regulations for registered apprenticeship programs. Under the regulations:

- Apprenticeship sponsors may not discriminate against apprentices and applicants on the basis of disability and are required to provide reasonable accommodations to those who qualify.
- Sponsors are required to extend outreach and recruitment efforts to all persons, including individuals with disabilities.
- A national aspirational goal was established that at least seven percent of a sponsor's apprentices, for each major occupational group

within the apprenticeship program, should be qualified individuals with disabilities.

- Beginning in January 2019, sponsors have been required to start inviting applicants for apprenticeships and current apprentices to self-identify whether they have a disability using a voluntary disability disclosure form. Sponsors developing affirmative action plans for their programs could then begin documenting the number of apprentices and applicants self-identifying.²⁶
- Individuals who believe they have been discriminated against on the basis of disability have the right to file a written complaint with the agency that registered the apprenticeship program.
- Title I of the Americans With Disabilities Act, which speaks to disability discrimination,²⁷ established the standards on which compliance with apprenticeship EEO non-discrimination requirements are assessed.²⁸

While these federal requirements are important and state officials can do a great deal to advance the inclusion of individuals with disabilities in apprenticeships, it is largely employers who facilitate inclusion and document that inclusion based on the self-identification of individuals who apply. But employers can foster an inclusive and welcoming work environment that includes tools and accommodations necessary to ensure employee success. This allows apprentices to feel comfortable about self-identifying as individuals with disabilities. Moreover, state governments can model this behavior in public sector apprenticeships, which can encourage private sector employers to follow suit.

Some employers also have made available opportunities tailored

specifically to individuals with disabilities. For example, Microsoft, Amazon, the Healthcare Career Advancement Program (H-CAP), and the Industrial Manufacturing Technician Apprenticeship Program (IMT) run apprenticeships that seek to enhance supports for fully including individuals with disabilities through the Apprenticeship Inclusion Models initiative.

The **Apprenticeship Inclusion Models (AIM)** initiative was a program

supported by the U.S. Department of Labor's Office of Disability Employment Policy (ODEP) that sought to expand access to inclusive apprenticeships for individuals with disabilities over a two-year period. The program supported several pilot sites that received training and assistance to test innovative approaches to apprenticeships. The pilots were focused on industries like health care, advanced manufacturing, and information technology, three fields that appear ripe for apprenticeship expansion in the years ahead. A number of intermediary partners, such as the technology jobs-oriented Apprenti, the Healthcare Career Advancement Program, and the Boston-based nonprofit Jobs for the Future (which facilitates advanced manufacturing opportunities) were involved in the pilots.²⁹ As part of the technology-oriented opportunities, Amazon and Microsoft hosted 448 apprentices at pilot sites. Approximately twelve percent self-identified as individuals with disabilities. Ninety-six percent of those who completed the program secured careers in the technology sector with an average salary of \$66,000.³⁰

V. State Approaches to Inclusive Apprenticeships

State apprenticeship officials have sought to make programs more inclusive in a variety of ways, including by meeting state and federal legal requirements and by casting a wide net when it comes to outreach and collaboration.

Three **Delaware** state agencies have an initiative with the National Alliance for Partnerships in Equity to analyze the level of participation of students with disabilities in work-based learning opportunities, including pre-apprenticeships and registered apprenticeships. Three Delaware school districts participated in a first-year pilot in which educators, vocational rehabilitation counselors, and others sought to align strategies and implement solutions around increasing the number of students with disabilities in work-based learning and career pathways programming.³¹

Iowa recently invested \$10 million to expand registered apprenticeships. In September 2020, Governor Kim Reynolds announced \$5 million in grants from the state's Coronavirus Relief Fund for high schools, nonprofit organizations, and small businesses with less than 50 employees and an additional \$5 million in grants for postsecondary institutions and health care employers. The grant funding can be used to purchase equipment, tools, simulators, instructional materials, updated curricula, or other items to expand or create Registered Apprenticeship programs.³² The apprenticeship expansion funds awarded by the state came with a requirement that each initiative increase minority populations approximately ten percent. Twenty-three individuals with disabilities, including several wounded veterans, took part in programs that received the grant funding. The state also has been looking closely at how workplaces can be modified to accommodate individuals with disabilities.

Ohio's apprenticeship agency, Apprentice Ohio, works in close collaboration with a diverse group of state agencies and other stakeholders to provide inclusive apprenticeship programs. The agency works to develop programs that can be inclusive and write into selection requirements that if a worksite can accommodate an individual who can then perform a particular job, the employer should do so. The organizations and agencies they regularly collaborate with include Opportunities for Ohioans with Disabilities and the Ohio Department of Developmental Disabilities.

Massachusetts' apprenticeship office works closely with Americans With Disabilities Act coordinators and diversity coordinators to make apprenticeship offerings more inclusive. The office also is working to build relationships with career centers and break down silos that exist in the wider workforce system. Officials see a great opportunity to engage with diverse populations in utilizing community colleges in the state to lead the instructional part of apprenticeships. They also hope to rectify an underrepresentation of diverse populations in some sectors where apprenticeships are offered, including the financial and lending sectors.

Missouri has been part of an innovation cohort to increase apprentice diversity and was one of five states to receive training from the U.S. Department of Labor. There have been investments in programs that serve people with disabilities, a priority for the Apprenticeship Missouri office and Missouri Governor Mike Parson. The office engaged with the University of Missouri at Kansas City on a grant to study the inclusivity of their programs, but some gaps in the data have been discovered. Employers may not be asking the right questions of apprentices to determine if they have disabilities and apprentices often do not know how to respond when asked.

New Hampshire has taken advantage of something called the Universal Outreach Tool, a resource that helps apprenticeship sponsors find diverse and qualified candidates for their apprenticeships. As policymakers in a small state, officials are able to have a more personalized approach to placing apprentices and ensuring their success. Officials work to engage populations and provide additional services they may need to participate in the apprenticeship program. Programs may rely on braided funding (the weaving of multiple sources of funding), including state, federal, and private streams. For example, an apprentice may be eligible for funding through the vocational rehabilitation agency and through another source if they served in the military. Apprenticeship officials package the funding in a way that allows apprentices to successfully complete the program. Outreach specialists work on recruiting certain populations for particular jobs and look for funding for individuals. They also coordinate with others who might be able to provide resources an apprentice with a disability might need, whether it is transportation to a job site or assistive technology. The state's approach is to focus on the needs of the individual, which can vary widely, rather than one-size-fits-all.

In **Pennsylvania**, the Jewish Employment and Vocational Service (JEVS) Human Services programs in the Philadelphia area have made similar disability inclusion efforts. JEVS hireAbility School to Work program, for example, helps prepare students with disabilities to transition from the world of school to adulthood, work, postsecondary education, and vocational training. The program helps facilitate each student's career

plan and path including through work-based learning opportunities that allow them to identify interests, aptitudes, and preferred work environments.³³

In **Virginia**, the Shenandoah Valley Workforce Partnership has selected disability as a priority indicator in recruiting and supporting participants in apprenticeship and pre-apprenticeship programming. Their partners in those recruitment efforts include organizations like the Virginia Department for Aging and Rehabilitative Services and the Virginia Department for the Blind and Vision Impaired.³⁴

VI. State and Federal Oversight of Apprenticeships

The nation's apprenticeship system is complex. Depending on a state's approach, the federal and state governments play different roles in overseeing registered apprenticeship programs. That has resulted in a myriad of different approaches to and interpretations of stated goals for apprenticeship, such as inclusion and expansion.

For example, the State Director of Apprenticeship for **New Hampshire** is an employee of the U.S. Department of Labor, based in Concord, New Hampshire. The state is one of 25 that uses the U.S. Department of Labor Office of Apprenticeships to register apprenticeships. The remaining states oversee registration of apprenticeships on behalf of the federal government.

Where state employees develop the program and assist program sponsors, the apprenticeship offices are often small. The apprenticeship office in **Maine**, for example, is largely a one-person shop.

Some states also have their own apprenticeship programs outside the registered system. For example, **Minnesota's** Apprenticeship Initiative incentivises businesses to offer apprenticeships but does not require that they be registered. As noted earlier, youth apprenticeships and other work-based learning can exist outside the U.S. Department of Labor system as well.

While these programs could help states serve the goal of inclusion, the landscape of opportunities also could be confusing to those who stand to benefit from it. Fortunately, significant state government initiatives in apprenticeships can serve to galvanize stakeholders and create greater awareness among potential applicants of all available program opportunities.

In **California**, Governor Gavin Newsom has set a goal of 500,000 apprenticeships in the state by 2029. That goal is requiring a reexamination of how opportunities are developed, approved, and implemented in the state and a realignment of employers, training providers, and the workforce system. Employers are key because to create an apprenticeship, they must be willing to hire, train, and pay applicants. As California's Workforce Innovation and Opportunity Act plan notes, "while federal and state funds can cover some of the expenses for establishing new earn-and-learn opportunities, the costs of on-the-job training (in non-construction apprenticeship training) are primarily borne by the employer in the form of wages paid. Therefore, any effective strategy for scaling apprenticeship must put industry at the center."³⁵

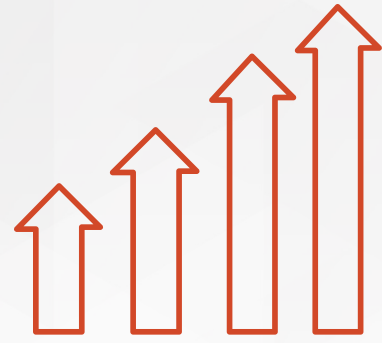
In **Utah**, the Governor's Committee on Employment for People with Disabilities presents annual awards to honor employers and individuals who promote efforts toward equal employment opportunities for individuals with disabilities.³⁶

Federal funding for registered apprenticeships is used to support federal staff, who work with employers to sponsor programs and ensure compliance with federal, state, and industry requirements. Additional funding for training, career counseling, and other services can come from apprenticeship sponsor's (employers, labor organizations, etc.), foundation funds, Workforce Innovation and Opportunity Act funds, state grants, or other sources.

The U.S. Department of Labor reports that just over half the states offer tax credits for hiring apprentices and tuition support for registered apprentices.³⁷



Non-traditional fields for apprenticeships also offer opportunities for expansion. But greater success in expansion will likely require additional infrastructure and support to ensure success and sustainability.



VII. Expanding Apprenticeships

While the expansion of apprenticeships into new fields will increase inclusion in the years ahead, traditional sectors continue to dominate in terms of growth as it remains easier to add apprentices to an existing program than launch a new one.

Apprenticeships in the building and construction trades dominate because they have a well-established infrastructure in place to support them, including labor unions, dedicated financing, and training incentives.

Apprenticeships are widely perceived as an option exclusive to blue collar occupations and industries rather than what some might consider more 21st century-oriented jobs. In 2018, the top industries for apprentices included construction, manufacturing, and transportation.³⁸

In **Minnesota**, for example, about ninety six percent of individuals actively enrolled in apprenticeships between 2015 and 2017 were working in skilled construction trades. While apprenticeship advocates would like to see state initiatives broaden apprenticeship opportunities into fields like health care, information technology, agriculture, and manufacturing, Minnesota's construction industry is the only one to fully embrace apprenticeships, according to a study by the Midwest Economic Policy Institute.³⁹

A few years ago, **Rhode Island** created a suite of programs designed to expand apprenticeships into new fields. The Governor's Workforce Board began offering grants

of up to \$25,000 through the non-trade apprenticeship development program to organizations creating new and innovative apprenticeship models outside the traditional trades. The program resulted in the creation of apprenticeship opportunities for machinists, nurses, community health workers, and land care specialists. The state also offered employers non-trade apprenticeship incentives of \$1,000 per registered non-trade apprentice.⁴⁰

Other states have explored legislation to facilitate expansion and inclusion in apprenticeships. **New Jersey** lawmakers in early 2020 created a task force to develop industry-specific recommendations for diversifying apprenticeship programs based on state demographics and data on historically underrepresented populations, including individuals with disabilities.⁴¹ Last year, the state also awarded \$3 million in grants as part of the New Jersey Apprenticeship Network's Growing Apprenticeship in Nontraditional Sectors (GAINS) program. The funding went to community colleges, universities, technology companies, training centers, and government agencies to create opportunities in medical occupations, telecommunications, hotel management, and cybersecurity.⁴² State policymakers have taken a variety of other actions in recent years through legislation, programmatic changes, or executive orders, including:

Alabama's legislature took action in 2016 (Senate Bill 90) to provide a tax credit for employers who employ apprentices.⁴³

Then **Florida** Governor Rick Scott issued an executive order in 2019 directing the Department of Education to develop best practices for partnerships between public and private sectors to seed apprenticeship programs.⁴⁴

Kentucky's Education and Workforce Development Cabinet implemented a civil service apprenticeship to include public service apprenticeships as part of the Kentucky Personnel Cabinet job classification system.⁴⁵

Missouri Governor Mike Parson issued an executive order in 2019 to create the Office of Apprenticeships and Work-Based Learning.⁴⁶

Nevada lawmakers in 2019 passed legislation (Assembly Bill 68) to revise nondiscrimination provisions applicable to apprenticeship programs.⁴⁷

State apprenticeship agencies also are exploring new ways to jumpstart non-traditional opportunities:

The **Michigan** Registered Apprenticeship Dashboard allows website visitors to check the number of active apprentices in the state by occupation and industry. As of January 2021, there were more than 19,000 apprentices (including approximately 11,000 in construction) involved in more than 1,100 programs. The next highest number of apprenticeships was in manufacturing (approximately 4,200), while one of the state's areas of focus - health care - had just 787. Michigan was awarded more than \$14 million in U.S. Department of Labor grants in 2020 to support registered apprenticeship programs with a focus on underrepresented populations (including youth with disabilities) in high-wage, in-demand careers in sectors such as advanced manufacturing, construction, energy, health care, information technology, and mobility.⁴⁸

Missouri's Carpenters Union has the most apprenticeships, but coming in second is the state Department of Corrections, given the growing interest in criminal justice. State apprenticeship officials emphasize a willingness to meet with employers and develop apprenticeships regardless of sector and one of their goals is to have a wide variety of occupations represented. The health care and hospitality industries have received attention and the agriculture sector, including winemaking, has received increased interest. That diversity helps create more inclusive programs that appeal to apprentice candidates.

The **Missouri** Chamber of Commerce and Industry recently launched Apprentice Connect, a service to help employers with registered apprenticeship programs find aspiring apprentices, developed in partnership with the Missouri Department of Higher Education and Workforce Development.⁴⁹ State officials expect the matching service to help them add 3,000-4,000 apprentices annually in areas like information technology, education, advanced manufacturing, and health care.⁵⁰ A program called Growing Growers Kansas City was developed in 2020 to match agriculture apprenticeship applicants with host farms in Missouri and neighboring **Kansas**.⁵¹

Partnerships in developing apprenticeships are underway for medical assistants and certified nursing assistants,⁵² in the hospitality industry,⁵³ and in information technology, where the Missouri Chamber Foundation recently received a \$6 million U.S. Department of Labor grant to train 5,300 new technology industry apprentices over the next four years.⁵⁴

In **Ohio**, the majority of apprentices go into the construction field. But the state also has an increasing number of opportunities in advanced manufacturing. Information technology has become a focus in Ohio as well, along with health care and business services.⁵⁵ In 2020, the state received a

\$9.4 million capacity-building grant from the U.S. Department of Labor to help expand apprenticeships by funding system improvements, incentives to help employers pay for the costs of training and tools, and pre-apprenticeship opportunities to better serve underrepresented populations, including individuals with disabilities.⁵⁶ In 2019, three community college and university campuses in the state—along with their corporate and academic partners—received additional funding to support the development and expansion of apprenticeships in the information technology-related and manufacturing industries.

Pennsylvania offers public sector apprenticeships through the Department of Agriculture. They also are working with information technology departments to develop apprenticeships. Pennsylvania even has an elevator inspection program, which they are expanding using federal funds.

Specific industries also have moved forward with initiatives aimed at expanding apprenticeships. The Consumer Technology Association (CTA), the trade association representing the U.S. consumer technology industry, joined forces with IBM in 2017 to create the CTA Apprenticeship Coalition. The Coalition is an effort to create and expand apprenticeship opportunities in increasingly in-demand fields such as software engineering, data analytics, project management, and hardware design. The more than 25 members of the Coalition includes Amazon, Ford Motor Company, Microsoft, Sony Electronics, Toyota, and Walmart.⁵⁷

With the number of craft breweries exploding in **Texas**, the state's Workforce Commission entered a partnership with South Texas College and local breweries to train in-demand, technology-savvy brewing professionals as part of a Brewery Apprenticeship program. The College and

Commission already were engaged in other efforts to match regional skills and workforce needs, having launched apprenticeship programs in biomedical maintenance, certified nursing, customer service, and cybersecurity.⁵⁸

States are seeing significant momentum and interest in information technology and business services. In many cases, these are jobs that can be done remotely and do not necessarily require being at a job site or passing certifications to advance. Pilots have begun to explore apprenticeships in information technology in states like **California, Connecticut, Delaware** and **Illinois** (particularly in the Chicago area).

Cybersecurity appears to be a promising career path, while insurance companies and banks are expressing an increasing interest in apprentices.

The Cybersecurity Youth Apprenticeship Initiative, funded by the U.S. Department of Labor's Employment and Training Administration Office of Apprenticeship and administered by the global consulting services company ICF, has a goal to create at least 900 new cybersecurity apprenticeships for youth by 2024.⁵⁹

In **Massachusetts**, the arrival of the technology jobs-focused intermediary Apprenticeships in Boston is helping create cohorts of individuals for business analyst, software programming, and cybersecurity jobs.

There is another area ripe for apprenticeship expansion: the public sector or civil service. Public sector apprenticeships provide a crucial bridge between a government's workforce needs and the pool of potential workers living in that region. Not only can states use apprenticeships to train qualified state employees; those employees also can utilize these valuable jobs in the private sector. Further, as state leaders face a so-called "silver tsunami" of experienced

government employees on-the-verge of retirement, government employers are concerned they may not be able to fill those jobs due to intense competition from the private sector. That could make public agencies more willing to offer apprenticeships to train replacements.

There are numerous examples both old and relatively new of public sector apprenticeships around the country. Among them:

California's 25-year-old firefighting apprenticeship program, which has employed more than 10,000 apprentices across 175 fire departments in the state.⁶⁰

An automotive technician specialist apprenticeship launched in **Kentucky** in 2018 to help the Kentucky Transportation Cabinet fill current and future jobs across the state's 12 transportation districts.⁶¹

An Emergency Medical Technician apprenticeship launched in 2018 by the city of Boston in conjunction with the **Massachusetts** Executive Office of Labor and Workforce Development designed to attract more diverse candidates and address staffing shortages.⁶²



VIII. Challenges Facing Apprenticeships

Impact of the COVID-19 Pandemic

Early on in the pandemic, factors like local requirements for business operations and concerns about a lack of personnel to support apprentices in the workplace prompted some apprenticeship programs to slow down or stop for a period.

Many were able to transition to remote formats, either by moving all training to online instruction or rearranging the timetables for the workplace-centered and related technical instruction components of the apprenticeship opportunity.

School closures in many parts of the country presented a challenge for many young people involved in apprenticeships, since schools often act as facilitators for the instruction portion of these programs.

But contrary to expectations, some programs accelerated or launched during the pandemic, often because the apprenticeship opportunities were found to be conducive to a virtual environment. While it may not have been in their original plans for those apprenticeships, states found that remote work necessitated by the pandemic provided an ideal opportunity to move forward in a virtual format.

Not all apprenticeships that continued through the pandemic were entirely virtual. For example, many health care apprenticeships continued in person, even as that industry faced unprecedented challenges. Young apprentices were allowed to stay in their roles at hospitals and health care facilities and gained valuable insights on working in those settings at a critical time.

Some fields that were seeing expansion in apprenticeships, most notably the hospital industry, did experience temporary setbacks. With many restaurants shut down

or adjusting their business models to serve customers with delivery and other options, some food service-related apprenticeships had to pivot to support institutional kitchens in essential sectors such as hospital dining, grocery store delicatessens, and elder meal delivery services.

Closed schools also delayed some aspects of apprenticeship expansion. **Idaho** officials intended to create an apprenticeship within the special education department of a school district to allow students to train to become teachers' aides. The state needs more teachers' aides in special education and wanted to work with those interested in the field to give them a career right after high school. But school districts were hard-hit by COVID and the state was unable to focus on creating this opportunity.

Some apprenticeship programs had an easier time than others transitioning to remote formats or pivoting to revised apprenticeship models. Apprenticeship opportunities where intermediaries were in place to manage things on behalf of multiple employers and apprentices tended to run more smoothly. Companies sponsoring their own program offerings or relying on a community college partner for virtual portions of the program experienced greater disruptions.

Other factors that determined whether apprenticeships were able to stay in operation during the pandemic included the nature of the industry, the maturity of the program, and built-in programmatic flexibility. In the construction industry, for example, many public works projects did not experience significant delays. Other countries with more mature, integrated apprenticeship systems suffered fewer disruptions during the pandemic and apprentices kept working in many cases. According to the National Center on Education and the Economy, the top performing countries in apprenticeship prioritized:

- Flexibility in sequencing of academic and work-based modules;
- Moving assessments of student competency and skills to video conference; and
- Allowing students to advance through the program with the expectation they would complete subjects or work placements in the future.⁶³

As with most aspects of American life, the world of apprenticeships was significantly disrupted by the COVID-19 pandemic. But remarkable resilience in 2020 allowed many programs and opportunities to adjust and move forward in often inventive ways.

As some state apprenticeship programs moved quickly to adapt to changing circumstances, some that were working on expanding opportunities were forced to put those efforts on the backburner.

California, for example, had been working on an expansion plan for some time. When the pandemic occurred, many state officials were re-tasked with other duties, including providing unemployment checks to affected citizens. But apprenticeship programs and pilots that already were in place found they had more time to figure things out and line up additional partners, so what could have been downtime proved productive.

In other states, the impact of COVID on apprenticeship programs varied widely:

Massachusetts saw a decline in the creation of new apprenticeships during the pandemic.

Michigan was down about 3,000 apprentices, but far less than initially expected as the transition to the virtual environment was smooth. While officials predicted apprenticeship growth could be slowed in traditional fields due to the pandemic, growth

was expected in the health care industry. However, a state hiring freeze hindered growth in the state apprenticeship agency designated to work on expansion efforts.

Missouri officials were encouraged by the resilience shown by the state's apprenticeship program. The state was second in the nation in 2020 in new and completed apprenticeships for the second year in a row, despite the pandemic. Although it depended on the employer, employer-sponsored apprenticeships in Missouri were much more likely to move forward without COVID-related delays than those supported by intermediaries and community colleges.

Apprenticeship officials in **New Hampshire** were able to maintain existing efforts and many companies continue to find apprenticeships valuable and want to resume in earnest once the pandemic is over. Employers the state works with have held onto their apprentices and had very few layoffs despite the feared economic impact from the pandemic.

In **New Mexico**, the impact of COVID on apprenticeships was minimal. Many industries involved in apprenticeships (particularly construction and other trades) are deemed "essential," so there has been little impact on current programming.

Some related instruction switched to online learning and those in information technology-related positions were able to work from home. However, one challenge for the state has been limited internet access in some rural areas.

In **Ohio**, the pandemic initially impacted apprenticeships significantly because colleges and schools were closed. But some students were allowed to continue to work as part of apprenticeships supervised by the schools if the work-based learning experience was deemed safe and attentive to social distancing and if the apprentice was considered an employee of the business and thus subject to local decision-making in partnership with parents, school leadership, and the employer.⁶⁴ Joint apprenticeship training centers in the building trades turned to online classes and remote learning and tools like Zoom and the learning management system Blackboard to continue their training programs.⁶⁵ Some innovative practices will likely continue post-pandemic, allowing the state's programs to be more accessible for individuals and allowing apprentices to log on from the comfort of their homes in order to complete their training. Officials reported in December 2020 that Ohio did not have any programs that were completely stopped because of pandemic-related concerns.

Significant momentum also is occurring in the health care space to attract entry-level people into the field and support incumbent workers advancing in areas like nursing, given recent demands.

However, since apprenticeships are built more around occupations, rather than industries, the greatest potential for growth could be in occupations with cross-industry relevance. Those would include information technology and business services roles such as project coordinators and human resources professionals.

But employers cannot be expected to expand existing apprenticeships on their own and create new opportunities from scratch. They will need additional support and infrastructure because for many employers in non-traditional sectors, it is all relatively new. Support for apprenticeship expansion can include intermediaries, universities and community colleges, and industry-focused associations.



IX. Future of Apprenticeships

Apprenticeship officials remain optimistic about the long-term future of apprenticeships. Regardless of who the employers of the future may be, there still will be a need for well-trained, highly skilled workers who are ready to go to work in a rapidly changing economy. Taking an inclusive approach to finding people who can fill a variety of roles in the workforce across an increasing number of evolving industries will continue to be important.

Those who work on apprenticeships believe federal and state governments will continue to support these programs as well. For example, **Missouri** officials such as, Jeanna Caldwell, Apprenticeship and Work-Based Learning Manager at the Missouri Office of Apprenticeship and Work-Based Learning, note apprenticeships have been a bipartisan effort at the federal level for many years. They expect funding will continue to be available because expansion of apprenticeships has been so successful in recent years. But it will be incumbent on postsecondary education, including four-year institutions, to help build sustainable apprenticeship programs so funding is not coming from the federal level alone.

Ohio officials also are optimistic about what the future holds for apprenticeships. Noting there has never really been a dedicated funding stream for registered apprenticeships, officials were thrilled to be part of a competitive grant program that began in 2016 to expand registered apprenticeships. The state subsequently received the largest amount offered by the program in 2019 and 2020.

Ohio officials note that in conversations with the U.S. Department of Labor, there has been speculation about the creation of a dedicated funding stream and formula funding for registered apprenticeships. They believe that would help Ohio's apprenticeship program

grow its presence, its ability to work with local areas and businesses, and increase staffing levels to create needed capacity.

Competitive grants have been productive, but registered apprenticeships now have a proven record of accomplishment and performance outcomes, making them worthy of sustained support.

Ohio officials also are optimistic about the long-term future for apprenticeships as they see many partners leveraging their own resources to make apprenticeships happen. Many of Ohio's community colleges and education service centers are dedicating teams to grow and build apprenticeships and pre-apprenticeships.

But as noted previously, community colleges and others who act as intermediaries to create apprenticeship opportunities will not be able to do it on their own. Too, often there is not funding for those in the intermediary role. As programs and pilots begin, they often cannot make the transition to sustainability mode where they could potentially draw additional funding.

One worrisome sign when it comes to intermediary partners is that community colleges have been particularly hard hit by the pandemic. Fall 2020 enrollment was down 10 percent, a much steeper decline than the one percent decline seen at four-year institutions. That was despite predictions that the ongoing pandemic might see students opting for two-year colleges closer to home. Education analysts are now worried that tuition-paying students might not return to campus once the institutions return to normal operations, complicating the financial picture for community colleges.⁶⁶

Even as apprenticeship programs seek to get fully back on track as the pandemic recedes, these programs could retain some of the new formats that emerged in 2020 as workplaces shut down, reconfigured, and reassessed. Some may still need to figure out



how apprenticeships operate in restructured, redesigned workplaces, and some industries may lend themselves to more online components for apprentices.

But others worry that some positive elements of the apprenticeship experience may be lost with a push toward more online instruction. Apprentices may miss opportunities for mentorship and to develop their professional networks in the work setting. That could have a profound impact on apprentices from underrepresented communities who find themselves working in challenging new industries.

The ability of apprenticeships to pivot to new models could prove important in the years ahead. A recent report by the McKinsey Global Institute predicts that 45 million U.S. workers will be replaced by automation by the end of the decade, up from the 37 million projected before the pandemic. The pandemic, the report notes, not only caused changes to the economy that could

be permanent, including less business travel, it also accelerated existing trends in remote work, e-commerce, and automation. The jobs most likely to see the greatest post-pandemic transformation, the report finds, are those in workplaces where employees are in closer physical proximity.⁶⁷

Despite the challenges to apprenticeship programs over the last year, the future of apprenticeships appears very bright because of:

- Emerging new models and a willingness to evolve;
- Expansion into new industries;
- Programs and policies that allow for greater inclusion;
- The unwavering dedication of state and federal officials and other stakeholders; and
- The potential for continuing financial and political support.

These signs all point to a more sustainable future for apprenticeships that connects a more diverse and inclusive collection of individuals to job training and jobs in an expanding number of innovative industries.

X. Suggested Strategies for the Future of Apprenticeships

As noted throughout this report, states and apprenticeship programs have developed or identified strategies to help apprenticeships evolve and grow in the years to come. These strategies concern funding, inclusivity, expansion, and resilience.



To ensure long-term sustainable growth in **funding**, state officials may want to consider:

- Identifying champions for apprenticeships throughout state government to build support and sustainability for these programs even as apprenticeship agencies deal with limited staffing;
- Casting a wide net in seeking funding for apprenticeship programs, including from federal and state grant programs, foundations, apprenticeship sponsors (including employers and labor organizations), and other sources;
- Exploring “braided funding” (the weaving of multiple sources of funding including federal, state, and private streams) to meet the needs of apprentices who may be eligible in several categories; and
- Using funding designated for economic and pandemic recovery to support apprenticeship programs.



To promote and sustain **inclusivity**, state officials may want to consider:

- Working across state agencies to ensure apprenticeship programs reflect the unique strengths and needs of individuals with disabilities as apprenticeships are developed;
- Creating pre-apprenticeship opportunities to ensure those with disabilities have the necessary skills to participate in apprenticeships;
- Creating tax incentives for businesses that hire apprentices with disabilities;
- Requiring apprenticeship expansion initiatives increase diversity and inclusion;
- Working closely with community colleges to engage diverse populations;
- Encouraging the collection of disability inclusion data in these programs;
- Assessing the reliability of disability inclusion data;
- Assessing the advantages and disadvantages to greater inclusion presented by more online-focused apprenticeship opportunities; and
- Ensuring digital platforms for instruction are accessible to individuals with disabilities.



To **expand** apprenticeship opportunities, state officials may want to consider:

- Creating competitive grant programs to encourage innovation;
- Encouraging the development of apprenticeships in fields like health care and advanced manufacturing that appear ripe for future expansion, as well as in areas like information technology and business services that will have cross-industry relevance;

- Increasing support for the intermediaries and infrastructure to support apprenticeships in new and emerging fields to help put them on a more even playing field with apprenticeships in traditional areas like the building and construction trades;
- Providing greater transparency regarding the success of expansion of apprenticeships into other industries to generate and sustain political and public support;
- Assisting efforts of employers, trade associations, and other groups to expand the scope of apprenticeships; and
- Assessing the public sector and civil service as another potential area for apprenticeship expansion, especially as government employees continue to retire and become difficult to replace in the face of aggressive competition from the private sector.



To ensure **resilience**, state officials should consider:

- Emulating work-based learning programs in other countries that demonstrate the benefits of longstanding programmatic flexibility policies during the pandemic;
- Working to get pre-pandemic plans for apprenticeship expansion back on track as schools reopen and businesses seek a new normal in the months ahead;
- Having state apprenticeship agency employees re-tasked back to their departments and making additional hires as pandemic-era duties and state hiring freezes subside;
- Encouraging the federal government to create a dedicated funding stream and formula funding for registered apprenticeships; and
- Seeking better coordination with their federal partners and other stakeholders to ensure the future of apprenticeships.

Conclusion

Many factors point to a promising future for apprenticeships. But ultimately that future depends on the diverse collection of stakeholders who support this age-old occupational training pathway, including those in state government. They must continue to find new ways to work together and share effective strategies in order to ensure greater inclusion, sustainability, and resilience and to help apprenticeships expand into new areas to meet the needs of a rapidly transforming economy and workforce.

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