Implementing Registered Apprenticeship Programs

Experiences of 10 American Apprenticeship Initiative Grantees

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PREPARED FOR:
U.S. Department of Labor
Employment and Training Administration
200 Constitution Avenue, NW
Washington, DC 20210

SUBMITTED BY:
Abt Associates
Capital Research Corporation
MEF Associates
Urban Institute

Abt Associates
6130 Executive Boulevard
Rockville, MD 20852

AUTHORS:
Abt Associates
Elizabeth Copson
Tresa Kappil
Karen Gardiner
Andrew Clarkwest
Hannah Engle

Capital Research Corporation
Alexander Trutko
John Trutko

MEF Associates
Asaph Glosser
Riley Webster

Urban Institute
Daniel Kuehn
Robert Lerman
Jessica Shakesprere

Abt
ASSOCIATES

About This Report

The U.S. Department of Labor (DOL)'s American Apprenticeship Initiative (AAI) funded 46 grantees across the country to expand registered apprenticeship into new sectors, such as healthcare, and to populations historically underrepresented in apprenticeships. DOL commissioned an evaluation of the AAI grants to build evidence about the effectiveness of registered apprenticeship for apprentices and employers. This report presents implementation study findings. The primary data source is interviews conducted during in-person site visits to 10 AAI grantees in spring 2019 and follow-up telephone calls with grant staff in fall 2020. The report documents the design and operation of grant activities and identifies potentially promising practices, implementation challenges, and lessons for future initiatives.

Authors

Abt Associates
Elizabeth Copson
Tresa Kappil
Karen Gardiner
Andrew Clarkwest
Hannah Engle

Capital Research Corporation
Alex Trutko
John Trutko

MEF Associates
Asaph Glosser
Riley Webster

Urban Institute
Daniel Kuehn
Robert Lerman
Jessica Shakesprere

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Glossary of Terms

Apprenticeship agreement: A written agreement between an apprentice and the apprentice's program sponsor, or sometimes an apprenticeship committee acting as agent for the program sponsor, that contains the terms and conditions of the employment and training of the apprentice.

Apprenticeship Training Representative (ATR): U.S. Department of Labor (DOL) or State Apprenticeship Agency (SAA) staff chiefly concerned with promoting and advising on apprenticeship training and other occupational skill development programs for workers in industry.

Competency-based program: An approach to registered apprenticeship that requires the apprentice to reach certain milestones indicating mastery of job-related subject matter and/or a task before moving on to the next step in the program, earning credentials and/or credits, or completing the apprenticeship program.

Incumbent worker: A worker employed in a position covered by the Fair Labor Standards Act who has worked for the employer for 6 months or more.[1]

Mentor: Provides on-the-job learning opportunities for apprentices. Mentors are other employees of the hiring employer.

Occupation, occupational field: The specific job associated with an apprenticeship program. The U.S. Department of Labor's (DOL) Office of Apprenticeship or a State Apprenticeship Agency, which assigns the job a distinct occupational code, must approve occupational fields. Grantees can operate multiple apprenticeship programs within an occupational field, and sponsors can operate multiple programs across different fields.

On-the-job learning (OJL): Every apprenticeship program includes OJL. Apprentices get hands-on training from an experienced mentor at the job site for typically not less than one year. Structured OJL experiences are developed by mapping the skills and knowledge that the apprentice must learn over the course of the program to be fully proficient at the job.[2]

Pre-apprenticeship program: Prepares individuals to enter and succeed in an apprenticeship program through an approved training curriculum based on industry standards. Can include educational and pre-occupational services (e.g., career and industry awareness workshops, job readiness courses), hands-on training in a simulated lab experience or through volunteer opportunities, and assistance in applying to apprenticeship programs. Pre-apprenticeship programs involve formal partnerships with at least one apprenticeship program sponsor.

Registered Apprenticeship Program (RAP): A structured program of work-based learning under mentors, providing both value to employers and wages and formal technical instruction to workers, and culminating in an industry-recognized credential that meets standards for registration by a Registration Agency. An apprenticeship sponsor for a specific occupation runs the training program. Sponsors are responsible for registering individual apprentices and determining whether they have successfully completed the apprenticeship program.

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[1] For the Workforce Investment and Innovation Act's definition of incumbent worker, see, https://www.dol.gov/agencies/eta/performance/definitions. For information on the Fair Labor Standards Act, see, https://www.dol.gov/agencies/whd/compliance-assistance/handy-reference-guide-flsa#2.

[2] For information on components of registered apprenticeship, including OJL, see, https://www.doleta.gov/oa/employers/apprenticeship_toolkit.pdf.

Registration Agency: The DOL Office of Apprenticeship or a federally recognized State Apprenticeship Agency acts as a Registration Agency, responsible for evaluating an apprenticeship program's apprenticeship standards and for determining whether the apprenticeship programs comply with federal regulations related to program design, worker protections, and other criteria. Programs that comply are "registered." Registered programs can access federal resources, State tax credits where available, and technical assistance.

Related technical instruction (RTI): Instruction that complements the apprentice's OJL, delivering the technical concepts and workforce and academic competencies needed to succeed on the job. A community college, a technical school, an apprenticeship training school, or the employer itself can provide the instruction. Education partners collaborate with employers to design the curriculum to deliver the skills and knowledge needed by apprentices. All partners work together to identify how to pay for the RTI, including the cost to the employer and other funds that can be leveraged.

Sponsor: Entity responsible for the overall operation of the registered apprenticeship program, working in collaboration with the partners. Sponsors can be a single employer or a consortium of employers. Alternatively, the sponsor can be any of a range of workforce intermediaries including an industry association or a joint labor-management organization. Community colleges and community-based organizations can also serve as sponsors.

Standards of Apprenticeship: Document describing apprenticeship components for a specific job role. Its individual standards include the purpose of the proposed apprenticeship program, the term of the apprenticeship, the provision of RTI, wage progression for the apprenticeship, supervision of apprentices, safety, registration of apprentices, work process schedule, probation period, periodic evaluation of apprentices' performance, completion requirements, and apprentice/mentor ratio.

Time-based program: An approach to registered apprenticeship that requires the apprentice to complete a certain number of hours of OJL and RTI.

1. Study Background and Summary of Grant Activities

The U.S. Department of Labor (DOL) launched the American Apprenticeship Initiative (AAI) in October 2015 to expand registered apprenticeship in the United States into sectors with few apprenticeships, such as healthcare and information technology (IT), and for populations historically underrepresented in apprenticeship, including women, racial and ethnic minorities, and veterans. DOL awarded $175 million in five-year AAI grants[3] to 46 grantees across the country.[4]

Apprenticeships are structured work-based training programs that combine technical instruction in a classroom with learning and mentoring experiences at an employer's worksite. Apprentices are employed during their training and earn progressively higher wages.[5] Apprenticeships provide training in a specific occupation and deliver occupational skills that are recognized and transferable across employers.[6]

AAI supports efforts to expand apprenticeships that are registered either with DOL's Office of Apprenticeship or with a federally recognized State Apprenticeship Agency (SAA). A registered apprenticeship adheres to guidelines around the length of related technical instruction (RTI) and on-the-job learning (OJL) provided by a mentor at the employer's worksite. A sponsor is responsible for the program and maintains the Standards of Apprenticeship, which documents the RTI, OJL, and other aspects of the apprenticeship. Apprenticeship completers receive an industry-recognized credential.

To learn more about grantee activities, employer experiences, and apprentice and pre-apprentice outcomes, DOL commissioned an evaluation of the AAI grants in 2016. The evaluation includes four sub-studies (see box). This report is the second of three to present findings from the implementation study. This report profiles 10 grantees selected for site visits and summarizes their grant-funded activities. A companion, implementation study report describes grant activities for all AAI grantees drawn on information collected through a survey and the DOL Apprenticeship Quarterly Performance Report (QPR) system.[7] An upcoming final implementation study report updates the point-in-time findings using Apprenticeship QPR data.

> **AAI Evaluation Sub-studies**
> - An **implementation study** of the grantee apprenticeship programs
> - A study of apprentice employment and earnings **outcomes**
> - A study measuring the **return on investment** to employers
> - An employer outreach and engagement **demonstration** that explores the impacts of training staff to market apprenticeships to employers

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[3] In 2020, DOL announced that grantees could apply for an extension to their five-year grants of up to 12 months, through September 30, 2021.

[4] One grant ended prior to the start of data collection for the evaluation.

[5] For example, wage increases can be tied to demonstration of skills mastery, completion of specified components, time in the program (e.g., increases annually). Wage increases are documented in the Standards of Apprenticeship for the specific occupational program.

[6] For a definition of apprenticeship see, https://www.apprenticeship.gov/employers/explore-apprenticeship.

[7] Gardiner, Karen, Daniel Kuehn, Elizabeth Copson, and Andrew Clarkwest. 2021. *Expanding Registered Apprenticeship in the United States: Description of American Apprenticeship Initiative Grantees and Their Programs*. Report prepared for the U.S. Department of Labor, Employment and Training Administration. Abt Associates, Rockville, MD : Abt Associates. https://wdr.doleta.gov/research/FullText_Documents/ETAOP2021-23_AAI_Grant_Program_Description_Final.pdf.

This chapter first describes the goals and design of the implementation study. It then presents the 10 grantees selected for site visits, including the selection criteria and grantee characteristics. Next, it describes key findings of visits to the 10 grantees. Each grantee's AAI-funded program is described in more detail in the grantee-specific profiles that follow this chapter.

1.1   AAI Implementation Study

The AAI implementation study aims to document the design and operation of grantee apprenticeship programs; identify promising practices and challenges that can inform policy and program design; and provide important context for the other sub-studies. Specifically, it answers the following broad research questions:

1. What are the context, characteristics, and partnerships of the grantees?

2. What are the strategies and activities for recruiting employers and registering apprenticeship programs?

3. What are the strategies for recruiting and supporting apprentices, including underrepresented populations?

4. How are instructional and training content developed and delivered?

5. For grantees that include pre-apprenticeships, what are the content and structure of the programs?

The primary data source for this report is interviews with grant staff and partners conducted during a spring 2019 site visit to each of the 10 grantees. The interviews covered a range of topics including outreach to employers to "sell" apprenticeship, apprenticeship program development and components (e.g., RTI and OJL, and credentials awarded to completers), supportive services available, and apprentice recruitment. The site visit teams also met with key grant partners, including at least one employer. If the grantee operated a pre-apprenticeship program, those discussions focused on recruitment, occupational and basic skills taught, support services provided, and pathways to a registered apprenticeship.

The box on the next page shows the range of staff interviewed during site visits. In fall 2020, the team conducted follow-up telephone calls with grant directors and other staff to document changes in activities since the site visit, plans to sustain activities after the grant ends, and implementation adaptations due to COVID-19.[8]

A second data source is a survey administered to all AAI grantees inquiring about a range of grant activities.[9] Responses from the 10 grantees are aggregated. The final data source is the Apprenticeship

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[8]   The evaluation team planned a second round of site visits. Due to the pandemic, travel was not possible. In lieu of in-person visits, the team interviewed key staff via WebEx and Zoom.

[9]   The evaluation team administered the grantee survey online to all AAI grantees in June and July 2019. All grantees responded. For details on the methodology, see Gardiner et al., 2021.

QPR system, which the report uses to describe the characteristics of apprentices and pre-apprentices, and apprenticeship occupations.[10]

1.2 Grantee Selection

The 10 grantees selected for site visits include the two grantees participating in the employer recruitment demonstration sub-study (see AAI Evaluation Sub-studies box above for a description of the demonstration sub-study; the two demonstration sites are identified in Exhibit 1-2), and eight grantees that varied based on the following criteria:

- Inclusion of at least one grantee from each of the four types of grantee institutions: State agency, sub-state agency, college, and sector-based organization;

- Variation in grantee performance relative to registered apprentice targets at the time of site selection; and

- Variation in grantee history with apprenticeship prior to AAI.

> **Types of In-depth Interview Participants**
>
> The evaluation team worked with grant directors to identify appropriate interview participants. Staff interviewed include:
> - Grant director
> - All grant-funded staff (e.g., staff involved with employer and participant recruitment, intake, case management, etc.)
> - Key sub-grantee staff (if applicable)
> - Key partners/stakeholders (e.g., industry associations, the local workforce development board)
> - Apprenticeship sponsors or intermediaries
> - One or more employers that hired AAI apprentices, including mentors who provided on-the-job training
> - RTI providers
> - Mentors involved in delivering OJL
> - Pre-apprenticeship staff and partners (if applicable)

The evaluation team also selected grantees that implemented an innovative or promising approach to engaging sponsors or employers, or enrolling apprentices; successfully met an implementation challenge; or accomplished a notable achievement.[11] Exhibit 1-1 shows the grantees selected for visits.

As Exhibit 1-1 shows, the 10 grantees represented a variety of institution types, most commonly sub-State government agencies (*n*=4) such as local workforce development boards, followed by State government agencies (*n*=3), community colleges (*n*=2), and a sector-based organization (*n*=1).

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[10]   The report uses Apprenticeship QPR data through September 2020. This period was selected to align with the timing of the follow-up telephone calls conducted with grantees as well as the grant end date for some of the 10 grantees.

[11]   The evaluation team recommendations for this criterion were drawn from the National Governors Association's *Registered Apprenticeship Reimagined: Lessons Learned from the American Apprenticeship Initiative* report, which highlights success stories among AAI grantees. https://www.nga.org/center/publications/registered-apprenticeship-reimagined/.

Exhibit 1-1. Grantees Selected for Site Visits
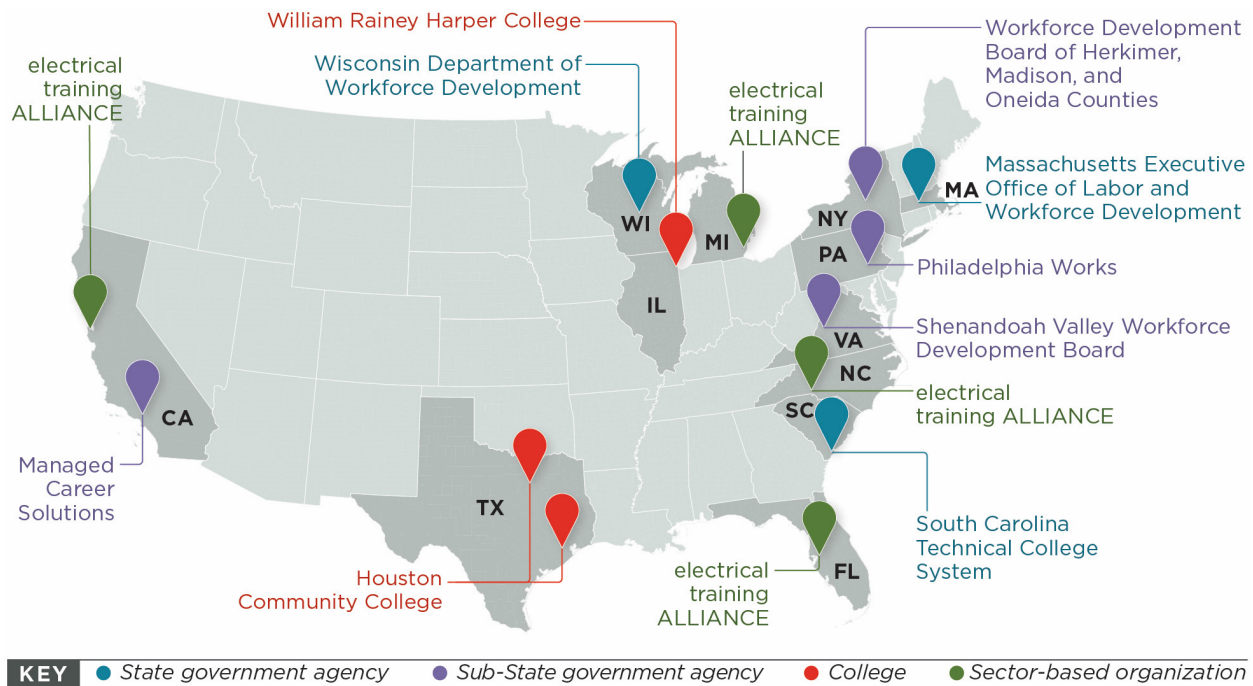
Exhibit 1-2 shows selected features of each grantee. Grantees differed by region and service area (from specific cities to statewide and multistate. Most (*n*=6) had prior registered apprenticeship experience. The four grantees new to apprenticeship often had experience implementing other DOL workforce training grants (e.g., Trade Adjustment Assistance Community College and Career Training grants) and/or operating workforce development services.

The 10 grantees' target industries included advanced manufacturing, IT, and healthcare. Grant amounts varied; accordingly, grantees had different targets for apprentices enrolled, and pre-apprentices, if applicable. Target apprentice enrollments ranged from 300 to 1,000. Lastly, seven grantees registered pre-apprentices, with one grantee (electrical training ALLIANCE) using AAI funds exclusively for an electrician-related pre-apprenticeship program. A final implementation study report will describe the extent to which grantees met their targets.

Exhibit 1-2. Selected Characteristics of Grantees Included in the Implementation Study

Grantee Lead Agency (*Grant name if applicable*)	Service Area(s)	Target Industries	Grantee Had Prior Experience with Registered Apprenticeship	Apprentices: Target Number and Number Registered *(as of September 2020)*	Pre-apprentices: Target Number and Number Served *(as of September 2020)*
electrical training ALLIANCE	Charlotte, NC; Detroit, MI; San Mateo, CA; Tampa, FL	Electrical industry (construction)	✓	Target: 1,019 Registered: 670	Target: 1,600 Served: 1,101
Houston Community College	Houston and Dallas, TX	Healthcare, IT, and plumbing	✓	Target: 620 Registered: 698	Target: 0 Served: 898
Managed Career Solutions *OpenTech Los Angeles Regional Apprenticeship Collaborative*	Los Angeles County, CA	IT, health IT, workforce development	✘	Target: 300 Registered: 189	Target: 200 Served: 444
Massachusetts Executive Office of Labor and Workforce Development* *Massachusetts Apprenticeship Initiative*	Worcester, North Shore, and Hampden regions, MA	Advanced manufacturing, healthcare, IT, diesel technician	✘	Target: 300 Registered: 206	Target: 0 Served: 47
Philadelphia Works*	Philadelphia, PA and surrounding counties	Healthcare and IT	✓	Target: 310 Registered: 96	Target: 190 Served: 260
Shenandoah Valley Workforce Development Board *Valley to Virginia Initiative*	Shenandoah Valley, VA	Advanced manufacturing	✓	Target: 600 Registered: 1,086	Target: 35 Served: 188
South Carolina Technical College System *Apprenticeship Carolina*	State of South Carolina	Advanced manufacturing, healthcare, IT	✓	Target: 1,000 Registered: 2,096	Target: 0 Served: 0
William Rainey Harper College *Apprenticeships on Demand*	Greater Chicagoland, IL	Advanced manufacturing, IT and cybersecurity, finance and insurance, professional services	✘	Target: 313 Registered: 169	Target: 0 Served: 0
Wisconsin Department of Workforce Development *Wisconsin Apprenticeship Growth and Enhancement Strategies*	State of Wisconsin	Advanced manufacturing, healthcare, IT	✓	Target: 1,000 Registered: 689	Target: 0 Served: 0

Exhibit 1-2. Selected Characteristics of Grantees Included in the Implementation Study (continued)

Grantee Lead Agency (*Grant name if applicable*)	Service Area(s)	Target Industries	Grantee Had Prior Experience with Registered Apprenticeship	Apprentices: Target Number and Number Registered *(as of September 2020)*	Pre-apprentices: Target Number and Number Served *(as of September 2020)*
Workforce Development Board of Herkimer, Madison, and Oneida Counties ***Central New York Regional Apprenticeship Program***	Central upstate New York	Advanced manufacturing, IT and cybersecurity	✘	Target: 350 Registered: 396	Target: 600 Served: 482

SOURCE: AAI Evaluation Grantee Survey, site visits, Apprenticeship QPR, as of September 2020.
NOTES: Some grantees did not identify a pre-apprentice target number in their grant application, but still served pre-apprentices.
   * Grantee participating in the demonstration.

1.3   Key Findings from Implementation of Selected Grantee Programs

The AAI Funding Opportunity Announcement allowed grantees flexibility to design activities based on the specific needs of their target population and service area economy.[12] This section examines implementation across four dimensions: identifying industry needs and developing apprenticeship programs; engaging employers; apprentices; and pre-apprenticeship programs.

1.3.1   Identifying Industry Needs and Developing Apprenticeship Programs

Grantees reported that they implemented registered apprenticeship programs in response to industry and workforce needs in the grant service areas. To identify these needs, grantees consulted partners, including employers, industry associations, and for grantees not part of the workforce development system (e.g., colleges), local workforce development boards.

Grantees determined target apprenticeship industries and occupations based on labor needs, with input from employers and industry associations. For example, Harper College and Philadelphia Works consulted with employers and industry associations to identify occupations with projected labor shortfalls. State agency grantees—Massachusetts Executive Office of Labor and Workforce Development and Wisconsin Department of Workforce Development—depended on local workforce development boards to assess needs in their local areas. The South Carolina Technical College System received labor market updates from local economic development agencies.

■ ***Grantees reported advanced manufacturing was an important industry in which to expand apprenticeship.***

Several grantees, among them the Massachusetts Executive Office of Labor and Workforce Development; Shenandoah Valley Workforce Development Board; and the Workforce Development Board of Herkimer, Madison, and Oneida Counties, reported many advanced manufacturing jobs in their areas went unfilled as older workers retired and employers struggled to find workers with the necessary skills to replace them. Shenandoah Valley Workforce Development Board focused on apprenticeships in that industry, for example, because advanced manufacturing employed the second-largest share of the local workforce,

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[12]   See *Notice of Availability of Funds and Funding Opportunity Announcement for the American Apprenticeship Initiative*. See https://www.dol.gov/sites/dolgov/files/ETA/grants/pdfs/FOA-ETA-15-02.pdf.

behind the government sector. The South Carolina Technical College System reported that an influx of advanced manufacturing employers in response to State economic incentives created a demand for skilled workers. This in turn drove employer interest in expanding and creating advanced manufacturing apprenticeship programs.

■ *Grantees reported challenges to developing apprenticeship programs in IT and healthcare.*

IT and healthcare employers have not traditionally used apprenticeships to train workers. Thus, despite the demand for skilled workers in these industries, grantees needed to sell employers on the concept of and value in registered apprenticeship programs. Grantees reported that a common challenge to recruiting IT employers for apprenticeship programs was ensuring that RTI was relevant to constantly changing industry needs. Managed Career Solutions and the Wisconsin Department of Workforce Development, for example, found that the structure of their apprenticeship programs, as reflected in the Standards of Apprenticeship, needed to be flexible enough to accommodate those rapidly changing needs. To address this challenge, Wisconsin focused RTI on general industry skills while using OJL to teach evolving technical skills needed by the employer, such as programming languages. Managed Career Solutions developed apprenticeship standards with a core set of competencies that employers tailored to align with their specific business needs or industry-specific skills.

Registered apprenticeship programs in the healthcare industry had different challenges, particularly related to State accreditation standards. For example, the Wisconsin Department of Workforce Development learned that accreditation standards used by technical colleges, the primary providers of healthcare training programs, did not align with the medical assistant apprenticeship structure. Specifically, state technical colleges use standards established by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) for their medical assistant training programs, including the required number of clinical hours. CAAHEP does not recognize paid hours as clinical hours. Instead of using the technical colleges for RTI, one local workforce development board developed a medical assistant apprenticeship program with University of Wisconsin (UW) Health. The program followed a different accreditation standard, which enabled apprentices to be paid for clinical hours. UW Health (the employer) provided both the RTI and the OJL.

■ *Grantees registered more apprentices in manufacturing and construction than in IT and healthcare.*

As Exhibit 1-3 shows, grantees registered 40 percent of apprentices in manufacturing apprenticeships and 23 percent in construction ones. Perhaps reflecting some of the difficulties associated with nontraditional occupations, the 10 grantees registered just 14 percent of apprentices in healthcare or IT programs (9 percent and 5 percent, respectively). Still, grantees registered almost one-quarter of apprentices in "other" occupations, many of which were nontraditional, including banking, insurance, and transportation.

Exhibit 1-3. Distribution of Grantees' Apprentices Registered, by Occupational Field

Manufacturing	Construction	Healthcare	IT	Other
40%	23%	9%	5%	24%
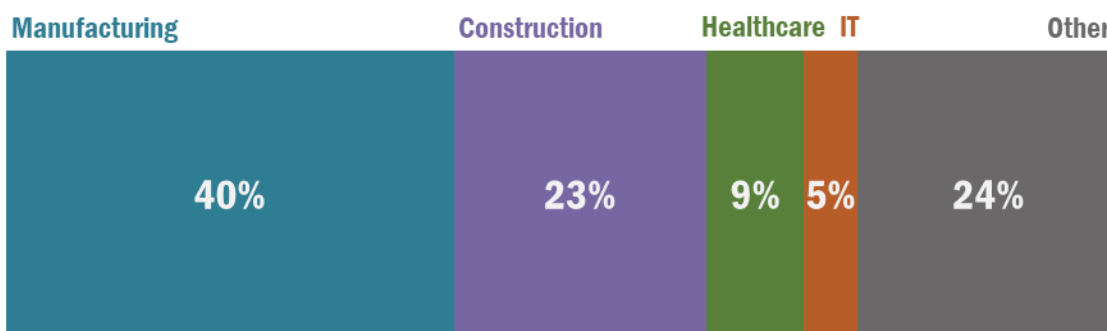
SOURCE: Apprenticeship QPR, as of September 2020. *N*=6,286 apprentices.

1.3.2   Engaging Employers

Employers are central to apprenticeships. They hire apprentices, provide OJL through their staff mentors, and pay apprentices a wage that increases commensurate with the apprentice's skill development or time in the apprenticeship. Apprenticeship is a commitment and investment for employers. Grantees reported there is no standard approach to selling apprenticeship; it is important to tailor outreach to the employer's specific needs and familiarity with apprenticeship programs.

■ *Grantees funded staff to identify employers and assist them with apprenticeship design and registration.*

Eight of the 10 grantees funded staff devoted to employer engagement. Often staff focused initially on approaching employers that had a prior relationship with the grantee, explaining that these employers trusted the grantee organization. That trust facilitated discussions around apprenticeships and the employer's workforce development strategies. For example, Managed Career Solutions approached employers that hired the grantee's former on-the-job training program participants. The Wisconsin Department of Workforce Development distributed grant funds to local workforce development boards to fund full- or part-time employer engagement staff. Those staff, in turn, conducted outreach to employers to develop new or expand existing apprenticeship programs.

South Carolina Technical College System's employer engagement staff ("apprenticeship consultants") traveled within their assigned regions to talk with existing employer contacts about apprenticeship as a workforce solution. The apprenticeship consultants also followed up with new contacts, such as employer representatives who attended apprenticeship outreach events or employers identified by a technical college instructor.

State or sub-State workforce development agency grantees also engaged their business development units in employer outreach because these units had existing and sometimes long-term relationships with local employers. For example, grant-funded employer outreach staff at Philadelphia Works and Shenandoah Valley Workforce Development Board collaborated closely with business development unit staff. Employer outreach staff who focused on apprenticeship development briefed business development staff on how to describe registered apprenticeship as a customizable workforce investment tool to employers with whom they met, and then refer interested employers to grant-funded staff to take the next step.

■ *Grantees identified employers through partner referrals.*

Multiple grantees reported that trade and industry associations consistently referred employers. One of the Massachusetts Executive Office of Labor and Workforce Development's two sub-grantees collaborated with trade associations—the Northeast Advanced Manufacturing Consortium and Western Massachusetts Chapter of the National Tooling and Machining Association—to advertise apprenticeship to their employer members; associations then referred interested employers to the sub-grantee.

Grantees in States that register apprenticeships through an SAA reported that SAA Apprenticeship Training Representatives (ATRs) referred employers in the grant's target industries to grantee staff. Although ATRs assist employers directly with apprenticeship registration, they also made referrals because grantees could offer incentives to employers to offset the costs of apprenticeship (see below for more on incentives). Both Shenandoah Valley Workforce Development Board and Workforce Development Board of Herkimer, Madison, and Oneida Counties reported working closely with their SAAs.

Finally, other State entities referred employers. In South Carolina, for example, economic development agencies across the State kept the South Carolina Technical College System abreast of local workforce needs and referred interested employers to grantee staff.

■ *Grantees' employer selling points focused primarily on worker productivity and customized skill sets.*

The grantee survey inquired about selling points grantees use to recruit employers for apprenticeships. As shown in Exhibit 1-4, all 10 grantees reported their staff describe how apprenticeship can contribute to improvements in worker productivity, and how apprenticeship can train workers with a skill set tailored to the employer's specific needs. Other common selling points include how apprenticeship can provide a steady source of skilled workers who without this training could otherwise be difficult to recruit and hire, reduction in staff turnover, and broader social benefits such as reducing inequality.

Exhibit 1-4. Grantees' Selling Points to Engage Employers

Selling Point	Percent
Improvements in worker productivity	100%
Customized skill set that is specific to an employer's needs	100%
Steady source of skilled workers who are difficult to hire directly	80%
Reduces turnover	80%
Broader social benefit such as reducing inequality or closing the skills gap	80%
Develops workers' skill set without them leaving the workforce	70%
Helps make workers self-sufficient	40%
Local RTI providers have valuable training opportunities that can be accessed through apprenticeship	30%

SOURCE: AAI Evaluation Grantee Survey. *N*=10 grantees.

■ *Grantee sponsorship or identification of a sponsor reduced employers' time and effort associated with program development and registration.*

Some grantees served as apprenticeship sponsors or connected employers to existing sponsors, thus reduced the time and effort employers needed to invest in the design and registration of an apprenticeship. Staff from three grantees reported that sponsorship facilitated recruitment of small and mid-sized employers, as those had less capacity to develop and register their own programs. The Workforce Development Board of Herkimer, Madison, and Oneida Counties, for example, partnered with a regional manufacturers' alliance to act as a group sponsor of advanced manufacturing apprenticeships. Harper College was sponsor for all its apprenticeship programs, except for an apprenticeship at a large insurance company. Massachusetts Executive Office of Labor and Workforce Development's two workforce board sub-grantees also served as program sponsors.

■ *Availability of grant funds to offset RTI and OJL costs facilitated employer adoption of apprenticeship.*

Grantees reported that financial incentives—such as assistance with RTI costs (e.g., tuition) and/or to offset the costs associated with OJL mentor time—made apprenticeship an attractive option for some employers. Most grantees offered support for RTI, ranging from $750 to $7,500 per apprentice. Grantee support for costs associated with mentor time ranged from $1,200 to $10,000 per apprentice or mentor. In addition to financial incentives available through the grant, some States, notably Massachusetts and South

Carolina, offered apprenticeship tax credits, which grantee staff emphasized in their conversations with employers.

1.3.3   Apprentices

With the AAI grant's emphasis on expanding apprenticeship opportunities for historically underrepresented populations, grantees targeted recruitment strategies accordingly. This section describes characteristics of apprentices, and strategies to recruit them.

■ ***Grantees had some success registering diverse populations into apprenticeships.***

As of September 2020, two-thirds of apprentices were from populations underrepresented in registered apprenticeship. About one-quarter of apprentices registered were women (24 percent), 23 percent were Black non-Hispanic, and 15 percent were Hispanic (Exhibit 1-5). Apprentices, on average, were not college age; 71 percent were age 25 or older. Few were veterans (8 percent) or people with disabilities (2 percent).

Apprentice demographics varied by grantee, likely reflecting the occupations of their apprenticeships as well as their target populations (e.g., incumbent workers). As of September 2020, the proportion of women apprentices ranged from 10 percent to 48 percent (Wisconsin Department of Workforce Development and Philadelphia Works, respectively). The proportion of apprentices who were Black non-Hispanic, ranged from 5 percent to 62 percent (Wisconsin Department of Workforce Development and Philadelphia Works, respectively), and the proportion who were Hispanic (any race) ranged from 3 percent to 43 percent (South Carolina Technical College System and Houston Community College, respectively). Managed Career Solutions registered the highest proportion of people with disabilities (18 percent).[13]

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[13]   By way of comparison, nationally 11 percent of new apprentices are women, 12 percent are Black/African American non-Hispanic, and 26 percent are Hispanic (any race) as of fiscal year 2020. https://www.dol.gov/agencies/eta/apprenticeship/about/statistics/2020.

Exhibit 1-5. Apprentice Characteristics
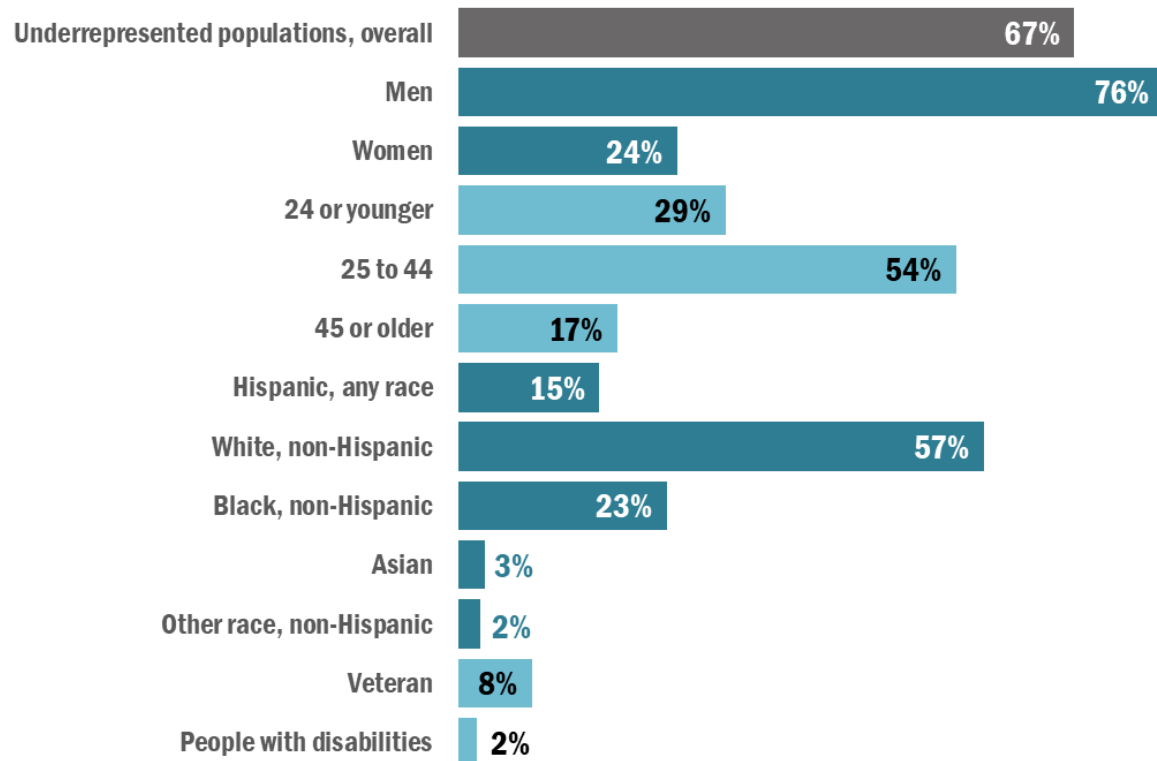
Characteristic	Percentage
Underrepresented populations, overall	67%
Men	76%
Women	24%
24 or younger	29%
25 to 44	54%
45 or older	17%
Hispanic, any race	15%
White, non-Hispanic	57%
Black, non-Hispanic	23%
Asian	3%
Other race, non-Hispanic	2%
Veteran	8%
People with disabilities	2%

SOURCE: Apprenticeship QPR, as of September 2020. Percentages calculated based on the number of apprentices for whom data was available. Underrepresented overall *N*=5,812; gender *N*=6,286; age *N*=6,293; race/ethnicity *N*=5,842; veteran/disability *N*=6,295.

■ *Some employers used apprenticeships to train incumbent workers for higher-skilled occupations.*

Grantees reported that some employers used apprenticeship to train incumbent workers for more highly skilled jobs. Meanwhile employers looked for new workers externally to fill the positions vacated by those upskilled incumbent workers. Grantees stated, and employers concurred, that it was easier for employers to fill lower-skilled positions through external hires than to identify external candidates for higher-skilled positions. Additionally, some employers reported a preference for investing training resources, including apprenticeship, in known workers who demonstrated capabilities and readiness for more complex roles. Massachusetts Executive Office of Labor and Workforce Development's grant activities focused on incumbent workers and encouraged employers to enhance the skills of their existing workforce. Depending on the characteristics of the employer's workforce, the focus on incumbent workers might decrease options to broaden apprenticeship opportunities to underrepresented groups.

■ *Grantees generally used common recruitment strategies to identify potential apprentices.*

Per the AAI Funding Opportunity Announcement, all 10 grantees reported targeting historically underserved populations as a key demographic, but also recruited apprentices more broadly. Grantees advertised apprenticeships widely, including through organizational websites, social media, radio, and posters and brochures in community and faith-based facilities. Grantees used American Job Centers (AJCs) to post information about apprenticeship opportunities, either in posters and brochures or on websites and AJC social media. Some grantees operated AJCs themselves (e.g., Shenandoah Valley Workforce Development Board; Workforce Development Board of Herkimer, Madison, and Oneida Counties) and the customers they served often overlapped with the target populations for their AAI grants. Some grantees, including Managed Career Solutions, Shenandoah Valley Workforce Development

Board, and Harper College, maintained websites specific to their AAI programs to advertise apprenticeships and share eligibility and application information.

Grantee staff made presentations and/or set up information tables at events to reach particular target populations. For example, grantees targeting high school graduates spoke to senior classes about apprenticeship as a postsecondary education and training option (e.g., Philadelphia Works, Shenandoah Valley Workforce Development Board). Some set up information tables in student common spaces and/or held information sessions to inform students about apprenticeship and discuss the application process (e.g., Houston Community College, South Carolina Technical College System, Harper College). Grantees also set up information tables at events for other target populations, including veterans, Hispanics, and women.

Some grantees engaged partners to recruit specific target populations. Philadelphia Works, for example, sought to recruit apprentices younger than age 24 for its healthcare (pharmacy technician) and IT apprenticeships. Having somewhat limited access to this population through its standard services, the grantee worked with a youth-focused organization to recruit apprentices. Managed Career Solutions recruited apprentices from a local YWCA that served individuals typically underrepresented in the IT occupations targeted by the grant.

1.3.4   Pre-Apprenticeship Programs and Pre-Apprentices

Seven of the 10 grantees enrolled pre-apprentices in pre-apprenticeship programs in a range of industries and of varying lengths, including an electrical industry pre-apprenticeship (electrical training ALLIANCE), IT-related pre-apprenticeships (Managed Career Solutions, Philadelphia Works, Workforce Development Board of Herkimer, Madison, and Oneida Counties), and a manufacturing pre-apprenticeship for people with disabilities (Shenandoah Valley Workforce Development Board). Pre-apprenticeship programs ranged in length from two weeks to six months.

- ■ *Some grantees described pre-apprenticeship programs as a way to prepare underrepresented populations for, and encourage their hiring into, registered apprenticeship programs.*

Shenandoah Valley Workforce Development Board worked with a local vocational rehabilitation services provider to develop a five-month residential manufacturing pre-apprenticeship program for people with disabilities. The program included accommodations to make the content and hands-on instruction accessible, and a social and behavioral skills training designed to prepare participants for the workplace. Managed Career Solutions supported underemployed and unemployed individuals in an IT-related pre-apprenticeship that trained participants in coding and programming, graphic arts, and 3D printing to help them develop IT skills and ultimately qualify for an apprenticeship. Philadelphia Works and its partners targeted individuals ages 18 to 24 who are out of school and not working, enrolling them in IT generalist and behavioral health services pre-apprenticeship programs to provide work exposure and basic job-related skills for subsequent apprenticeships in these areas.

- ■ *Some pre-apprenticeship programs enabled employers and pre-apprentices to determine whether the occupation was a good fit for the potential apprentices.*

electrical training ALLIANCE reported that its pre-apprenticeship program gave the Joint Apprenticeship and Training Committees that administer and oversee its programs a chance to assess apprentice candidates before hiring them into an apprenticeship. The pre-apprenticeship program aimed to address the low completion rate of its inside wireman apprenticeship by exposing pre-apprentices to the industry and job expectations. Shenandoah Valley Workforce Development Board helped a large multinational manufacturer to develop a two-week pre-apprenticeship that recruited and screened apprenticeship candidates. It included a week of classroom instruction and a week of instruction on the factory production line.

■ *Compared to AAI apprentices, a larger share of pre-apprentices were women, as well as younger and more racially diverse.*

As of September 2020, almost 90 percent of pre-apprentices were from underrepresented populations. A greater proportion of women were pre-apprentices than apprentices: women made up 33 percent of pre-apprentices (Exhibit 1-6) compared with 24 percent of apprentices (Exhibit 1-5). Similar proportions of pre-apprentices were White non-Hispanic, Black non-Hispanic, or Hispanic of any race (about 30 percent). Forty (40) percent were age 24 or younger. electrical training ALLIANCE, which used grant funds exclusively for pre-apprenticeship in electrical trades, and Massachusetts Executive Office of Labor and Workforce Development, registered the highest proportion of veterans (16 percent and 15 percent, respectively). Thus, it appears that relative to apprenticeships, pre-apprenticeships served individuals with a greater diversity of characteristics as well as those new to the workforce who could benefit from preparatory training and skills development prior to pursuing other work.

Exhibit 1-6. Pre-Apprentice Characteristics
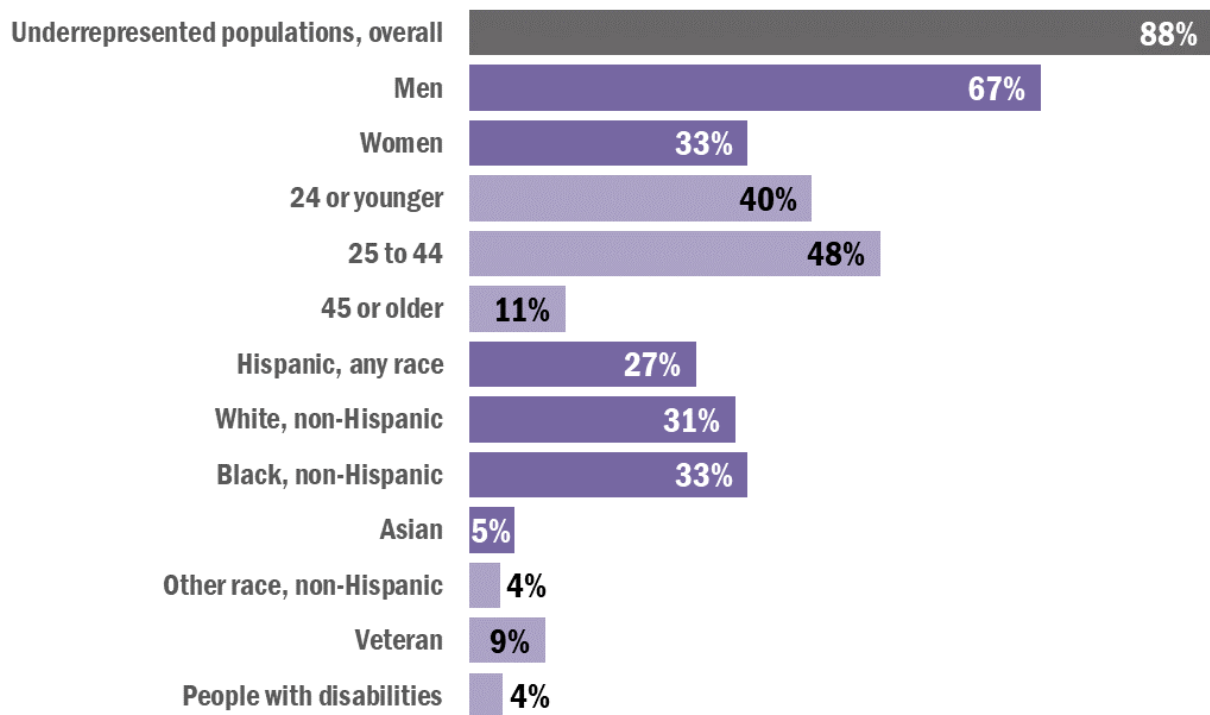
Characteristic	Percentage
Underrepresented populations, overall	88%
Men	67%
Women	33%
24 or younger	40%
25 to 44	48%
45 or older	11%
Hispanic, any race	27%
White, non-Hispanic	31%
Black, non-Hispanic	33%
Asian	5%
Other race, non-Hispanic	4%
Veteran	9%
People with disabilities	4%

SOURCE: Apprenticeship QPR, as of September 2020. Percentages calculated based on the number of pre-apprentices for whom data was available. Underrepresented overall *N*=3,074; gender *N*=3,457; age *N*=3,453; race/ethnicity *N*=3,271; veteran/disability *N*=3,490.

The remainder of this report presents summaries of each of the 10 grantees included in the implementation study. The summaries describe the occupational areas targeted by the grantee, grant activities, participant characteristics and recruitment efforts, and strategies to engage and assist employers in developing and registering apprenticeship programs. The summaries then discuss apprenticeship and/or pre-apprenticeship programs developed under the AAI grant. They conclude by reporting grantees' plans to sustain grant activities and implementation lessons from operating the AAI grant.

2.   electrical training ALLIANCE

electrical training ALLIANCE[14] is a labor-industry collaborative between the National Electrical Contractors Association (NECA) and the International Brotherhood of Electrical Workers (IBEW) established in 1941 to support the training of electrical workers nationwide. electrical training ALLIANCE has a long history of developing registered apprenticeship training curricula and standards to meet the evolving needs of the industry. A nationwide network of 285 local Joint Apprenticeship and Training Committees (JATCs) administer the registered apprenticeship programs. Local JATCs provide the related technical instruction (RTI), which is funded by their local NECA member contractors and IBEW unions.[15] NECA contractors employ the apprentices and provide on-the-job learning (OJL).

Historically JATCs do not operate pre-apprenticeship programs. electrical training ALLIANCE leadership reported they developed the pre-apprenticeship program to improve completion rates in their registered apprenticeship programs, which had declined in recent years. electrical training ALLIANCE used its American Apprenticeship Initiative (AAI) grant to design and pilot a new pre-apprenticeship program intended to increase completion rates of the inside wireman apprenticeship (four to five years). At the same time, electrical training ALLIANCE aimed to encourage underrepresented populations to consider registered apprenticeship programs in the industry.

GEOGRAPHIC AREA SERVED
North Carolina

● electrical training ALLIANCE
Sector-based organization

GEOGRAPHIC AREA SERVED
Michigan

● electrical training ALLIANCE
Sector-based organization

GEOGRAPHIC AREA SERVED
California

● electrical training ALLIANCE
Sector-based organization

GEOGRAPHIC AREA SERVED
Florida

● electrical training ALLIANCE
Sector-based organization

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electrical training ALLIANCE at a Glance

Grantee type: Sector-based organization

Geographic coverage: 15 Joint Apprenticeship and Training Committees (JATCs) across the country

Grant amount: $4,779,700

Target industry: Electrical (construction)

Registering body: Varies by location of each JATC

Prior experience with registered apprenticeship: Yes

Target number of registered apprentices: 1,019

Number of apprentices registered (as of 9/2020): 670 (6% of target)

Target number of pre-apprentices: 1,600

Number of pre-apprentices served (as of 9/2020): 1,101 (69% of target)

Grant period: September 2015 to September 2021

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[14]   Now branded electrical training ALLIANCE, it was previously called the National Joint Apprenticeship and Training Committee (NJATC).

[15]   Where possible, JATCs also avail themselves of grant funding sources to help pay for training.

electrical training ALLIANCE staff described the ways in which pre-apprenticeship could increase apprenticeship completion rates. First, JATCs have more time to observe and assess apprentice candidates before inviting them to participate in the registered apprenticeship program. Second, pre-apprenticeship helps candidates understand the nature of the post-apprenticeship career and whether it is a good fit for them before they decide to enter the apprenticeship. Pre-apprenticeship also helps prepare participants for the curriculum rigors of the apprenticeship program.

electrical training ALLIANCE recruited 13 JATCs to participate in the pre-apprenticeship pilot[16] and collaborated with them to design its curriculum. Four of the JATCs participated in the AAI implementation study: Charlotte (North Carolina), Detroit (Michigan), San Mateo (California), and Tampa (Florida). Exhibit 2-1 illustrates how pre-apprenticeship fit into the JATC system for three of these sites. As shown, NECA and IBEW funded electrical training ALLIANCE generally (red lines). With the AAI grant, electrical training ALLIANCE provided funding for pre-apprentice recruitment and RTI to the local JATCs (blue lines). The grant also provided funds for the local JATC pre-apprenticeship programs. Local NECA contractors and the local IBEW union provided funds to JATCs for their standard operations associated with registered apprenticeships (green lines). NECA contractors provided OJL to pre-apprentices and paid their wages (purple line).

Exhibit 2-1. Organizational Structure of Pre-Apprenticeship Design

_____
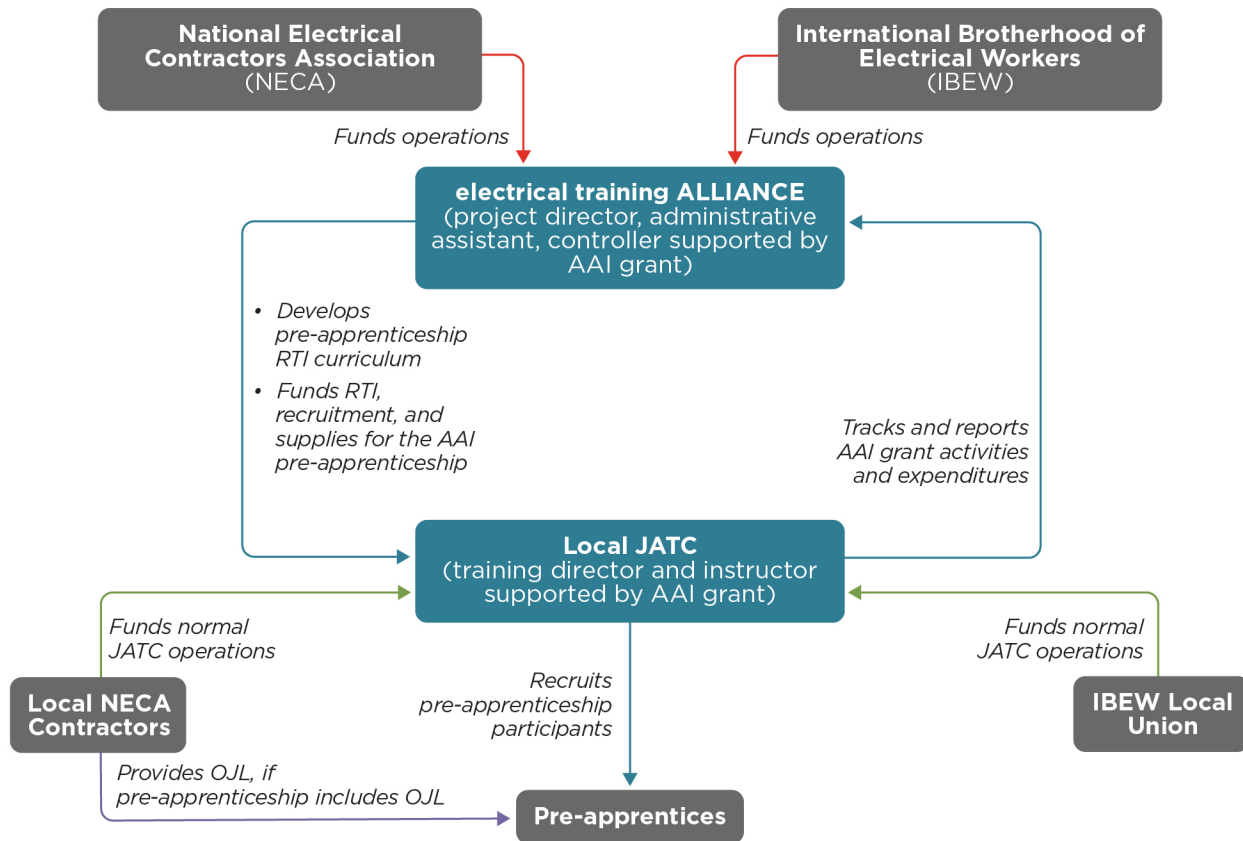
[16] Over the course of the grant a few JATCs left the pilot and a few others joined. Active programs as of 12/30/20 were Charlotte, NC; El Paso, TX; Latham, NY; Phoenix, AZ; Portland, OR; Raleigh, NC; Reno, NV; Richmond, VA; Riverside, CA; San Diego, CA; San Mateo, CA; Tampa, FL; and Winter Park, FL. Inactive programs as of 12/30/20 were Columbus, OH and Detroit, MI.

2.1 Target Occupational Area

The pre-apprenticeship prepared candidates for entry into electrical training ALLIANCE's largest registered apprenticeship program—inside wireman. Completers of this apprenticeship program are electrician journeyworkers, whose job responsibilities are installing the power, lighting, controls, and other electrical equipment in commercial and industrial buildings. The inside wireman apprenticeship prepares apprentices for a range of career pathways, available to journeyworkers, that have different technical or management specializations. The electrician journeyworker credential is nationally recognized, and thus journeyworkers can work in any part of the country. The credential portability is important because, as JATC staff reported, demand for electrical workers, including journeyworker electricians, varies across the country depending on construction industry activity.

> **Four Nationally Representative Metropolitan Area Economies**
>
> **Unemployment rate, June 2019:**
>
> - Charlotte, NC: 3.8%
> - Detroit, MI: 4.4%
> - San Mateo, CA: 2.2%
> - Tampa, FL: 3.4%
>
> **Electricians, by share of employment:** 0.5% in all four metropolitan areas
>
> SOURCES: Unemployment rate: U.S. Department of Labor, Bureau of Labor Statistics.
> Focus industries: U.S. Department of Labor, Bureau of Labor Statistics, for May 2019.
> https://www.bls.gov/oes/current/oessrcma.htm.

2.2 Grant Activities

electrical training ALLIANCE's AAI grant focused on developing and implementing a pre-apprenticeship, with the goal of registering 1,000 pre-apprenticeship completers in the inside wireman registered apprenticeship program. AAI grant funding flowed from electrical training ALLIANCE to local JATCs. Funding supported implementation of the pre-apprenticeship at the local JATC level, as well as electrical training ALLIANCE's coordination of JATCs' efforts. Specifically, AAI grant funds supported the following activities:

- **Management by electrical training ALLIANCE staff.** The **electrical training ALLIANCE project director** managed grant activities overall and played a central role in developing and managing relationships with local JATCs. The **electrical training ALLIANCE administrative assistant** supported grant management and coordination with local JATCs. The grant covered 80 percent of the project director's salary and 100 percent of the administrative assistant's salary. The **electrical training ALLIANCE controller** managed the budget and financial reporting and fundraised for administrative needs. The AAI grant funded 20 percent of the controller's time.

- **JATC staff costs.** electrical training ALLIANCE paid staff costs for each participating **JATC's training director** to recruit, screen, and enroll pre-apprentices and **instructors** to provide the training and routinely engage with employers (NECA contractors). The grant did not fund employer recruitment efforts or employer staff costs to mentor pre-apprentices (where relevant). Local JATCs drew on an existing set of employers from among the local electrical contractors who were NECA members.

- **Additional JATC costs for recruitment and RTI.** electrical training ALLIANCE covered 290 instructor hours. The grantee provided additional funding for training site coordination and pre-apprentice recruitment. electrical training ALLIANCE also set aside funding for instructors to travel to an annual instructor-focused program that convened every summer.[17]

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[17] The program was held at the University of Michigan.

- **Training supplies for training providers.** JATC training providers could use up to $1,200 to purchase office and classroom supplies. electrical training ALLIANCE also covered $5,500 of instructor supplies.

- **Financial support for pre-apprentices.** electrical training ALLIANCE provided supportive services, specifically financial assistance through a **stipend** (up to $500 through time-based completion), and purchased **books and online courses** for RTI ($600). The grantee also provided up to $430 for **tools and boots**, which included a full tool kit for each pre-apprentice at a discounted price ($235, rather than $400) through an agreement with tool suppliers.[18] Completers kept the tool kit.

2.3   Pre-Apprenticeship Design

electrical training ALLIANCE designed the RTI curriculum for the pre-apprenticeship with input from employers and local JATCs, and assistance from Mosaic Learning, a for-profit instructional design firm.[19] JATCs administered the training. Some curriculum components were the same regardless of JATC, whereas other components could be customized as needed. electrical training ALLIANCE developed the required competencies for the pre-apprenticeship and established the required number of RTI hours.

Local JATCs decided:

- The schedule for RTI (full-time or part-time, day or night, weekdays or weekends);

- The amount of OJL, with all JATCs required to provide a minimum of 80 hours of OJL to each participant; and

- At the completion of the pre-apprenticeship program, the entry method into the registered apprenticeship (direct entry or interview).

The local JATCs recruited employers to provide OJL from their membership base of local NECA contractors—the same employers who hired apprentices for the inside wireman registered apprenticeship.

The subsections below describe variations among four JATCs included in the implementation study: Charlotte, NC; Detroit, MI; San Mateo, CA; and Tampa, FL.

2.4   Pre-Apprenticeship RTI

The 220-hour RTI curriculum, used by all JATCs that administered the pre-apprenticeship, covered reading comprehension and math skills, safety awareness and precautions, electrical theory, and basic technical skills such as conduit bending. The safety precautions and technical skills training involved hands-on lab learning with tools used in the field.

As with electrical training ALLIANCE's inside wireman registered apprenticeship program, instructors drawn from industry provided RTI for pre-apprenticeships. One site served recently transitioned veterans, with RTI provided by a veteran. Staff at this site reported that their shared experience as veterans facilitated rapport and communication between the instructor and pre-apprentices.

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[18]   Klein Tools and IDEAL Tools.

[19]   https://www.mosaiclearning.com/.

2.5   *Participant Characteristics and Recruitment*

Across the JATCs, pre-apprentices were predominantly men and 95 percent were age 44 or younger. About one-third were Hispanic of any race and one-third were non-Hispanic Black. One in six were veterans. (See Exhibit 2-2.)

In recruiting participants, the grantee focused on underrepresented populations, specifically women, racial and ethnic minorities, people with disabilities, underemployed workers,[20] and veterans. Local JATCs determined which specific underrepresented populations to recruit and recruitment methods. The amount of effort that JATCs needed to put into recruiting pre-apprentices varied across sites. electrical training ALLIANCE provided funds for staff time to support recruitment. Local JATC training directors had primary responsibility for pre-apprentice recruitment.

Exhibit 2-2. Pre-Apprentice Characteristics, electrical training ALLIANCE

Pre-Apprentice Characteristic	
Men	81%
Women	19%
24 or younger	40%
25 to 44	55%
45 or older	5%
Hispanic, any race	35%
White, non-Hispanic	23%
Black, non-Hispanic	32%
Asian	2%
Other race, non-Hispanic	8%
Veteran	16%
People with disabilities	3%

SOURCE: Apprenticeship Quarterly Performance Report (QPR), as of September 2020. Gender *N*=1,099; age *N*=1,096; race/ethnicity *N*=1,092; veteran/disability *N*=1,101 pre-apprentices.

The San Mateo JATC drew all pre-apprentices from applicants to its inside wireman registered apprenticeship program. This JATC had nearly 10 applicants for each available registered apprenticeship slot and thus had no difficulty recruiting participants. The registered apprenticeship program accepted applicants with the highest aptitude test scores. Applicants from underrepresented populations who scored slightly below the cutoff for the registered apprenticeship program were invited to participate in the pre-apprenticeship program. The pre-apprenticeship invitation, in effect, provided an alternative route into the registered apprenticeship for those who accepted.

Other JATCs also used existing registered apprenticeship program applicant lists to recruit pre-apprentices, but they had to supplement these lists with additional strategies because they did not have the excess demand that San Mateo did. The other JATCs used a variety of strategies, such as job board postings, job fairs, referrals from non-profit organizations and schools, and word-of-mouth. Two JATCs and electrical training ALLIANCE leadership cited the Helmets to Hardhats job board—which is run by a non-profit that aims to help transitioning active-duty service members enter construction careers—as a productive source for finding candidates. Some JATCs had success working with local workforce development boards for referrals.[21]

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[20]   electrical training ALLIANCE defined "underemployed" as individuals who have been employed in what the Code of Federal Regulations (CFR) calls "unskilled work" and defines as follows: "Unskilled work is work which needs little or no judgment to do simple duties that can be learned on the job in a short period of time, usually 30 days or less. For example, unskilled occupations include work where the primary work duties are handling, feeding, and off-bearing, or machine tending in which a person can usually learn to do the job in 30 days or less, and little specific vocational preparation and judgment are needed. A person does not gain work skills by doing unskilled jobs." (CFR § 404.1568)

[21]   Some JATCs reported that some workforce development boards did not work with them because boards had their own AAI grants and thus pre-apprentices would not count toward the boards' performance metrics.

Overall, JATC interviewees did not report recruitment as an unsurmountable challenge.[22] For instance, Detroit's JATC reported recruitment challenges for the first cohort, but once word got out about the pre-apprenticeship, candidates were "knocking on our door." Similarly, Tampa's training director reported that recruitment "hasn't been a problem" overall. In fact, applicants who learned of its pre-apprenticeship via job board postings had re-located from as far away as New York City to participate.

2.6   Engaging Employers

JATCs approached their member NECA contractors to provide OJL to pre-apprentices. As noted earlier, JATCs can work only with employers that are NECA members. JATC staff reported employers saw pre-apprenticeship as a valuable way to recruit, screen, and prepare future apprentices. JATC staff cited no substantive barriers to recruiting employers to hire pre-apprentices, in large part due to employers having prior experience with registered apprenticeship and existing partnerships with JATCs.

2.7   Pre-Apprenticeship Implementation Variations across Local JATCs

JATCs had latitude in how they implemented certain aspects of the pre-apprenticeship, based on their own capacity, goals, and understanding of the local workforce and employers' needs. According to staff, JATCs considered different factors when designing and implementing the pre-apprenticeship program. These included providing pre-apprentices with the skills they would need to succeed in the registered apprenticeship program and determining how best to facilitate completion of the pre-apprenticeship. Exhibit 2-3 compares how three JATCs operated their programs.[23]

Exhibit 2-3. Comparison of Pre-Apprenticeship Design across Three Sites

Program Aspect	JATC		
	San Mateo	Detroit	Tampa
Total program length	1 year	10 weeks	8 weeks
OJL requirement	2,000 hours	80 hours	80 hours
OJL hourly wage	$23.10	$17.42	$15.01
Timing of RTI	2 nights per week	Weekdays (alternating days with OJL)[b]	Weekdays, full-time
Completers' access to the registered apprenticeship	Direct interview[a]	Direct interview[a]	Direct entry[a]

SOURCE: Grantee interviews and grant materials.
NOTES: [a] "Direct interview" means that all pre-apprenticeship completers were offered the opportunity to interview for an inside wireman registered apprenticeship slot without having to pass the aptitude test that it typically required. "Direct entry" means that all pre-apprenticeship completers had a guaranteed offer to enter the inside wireman registered apprenticeship.
[b] Detroit's pre-apprentices participated in RTI five days per week for weeks 1 and 2. For weeks 3 and 4 they spent two days per week in RTI and three days in OJL. Weeks 5, 7, and 9 were full-time RTI. Weeks 6, 8, and 10 were full-time OJL.

The San Mateo JATC pre-apprenticeship program required 2,000 hours of OJL, starting as soon as a job site placement was made. To ensure that pre-apprentices were available to employers and that RTI did not present a schedule conflict, the JATC provided RTI two evenings per week. Although the overall time commitment was long relative to other sites, pre-apprentices were paid for their OJL hours, meaning they did not have to forego employment in order to participate.

At the other end of the spectrum, the Tampa JATC provided RTI for six weeks, full-time, during the day, followed by two weeks of full-time OJL. Pre-apprentices could complete the program relatively quickly,

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[22]   However, it should be noted that the JATCs included in the implementation study were among the most successful in enrolling pre-apprentices.

[23]   For brevity, the discussion does not include the fourth JATC studied. Charlotte did also include RTI in its pre-apprenticeship; pre-apprentices were paid $14.15 per hour.

but found it difficult to work a separate job simultaneously; typically, they had to forego income for the six weeks of RTI. Completers had direct entry into the inside wireman registered apprenticeship. Pre-apprentices who demonstrated both the ability and the commitment to complete the program knew that they would be rewarded with an apprenticeship slot.

Like Tampa, the Detroit JATC program required 80 hours of OJL, but pre-apprentices started OJL earlier, enabling them to get a sense of job site conditions. Both RTI and OJL occurred during the day. After two weeks of RTI—which included safety training—pre-apprentices alternated between RTI and OJL, depending on the week.

The variation in approach might partially reflect different emphases. San Mateo emphasized pre-apprenticeship to reduce attrition in the registered apprenticeship program. Its extensive pre-apprenticeship OJL helped ensure that candidates were a good fit before entering the registered apprenticeship. Tampa described pre-apprenticeship primarily as a means to broaden the recruiting pipeline into registered apprenticeship.

2.8   Employer Perceptions of the Value of the AAI Pre-Apprenticeship

Employers reported having similar goals for the pre-apprenticeship as JATCs:

- **Broadening the labor pipeline.** One employer noted that "this program helped me man a job where I needed 20 people. I was able to obtain a half dozen pre-apprentices." Another emphasized the value of diversifying the recruitment pipeline: "I really like the idea that they were recruiting specific demographics. Women, minorities, veterans."

- **Identifying individuals who were more likely to succeed as apprentices.** One employer observed that through the pre-apprenticeship "we were getting a much better-quality apprentice than we were off the streets." Employers specifically emphasized the pre-apprentices' work ethic. For example: "If they come in off the street, they might not have the right attitude. Pre-apprentices know what they're in for and hit the ground running [as apprentices]." Another employer noted that the pre-apprentices showed commitment to the profession: "The pre-apprenticeship has helped identify individuals who really want to learn and create a career."

- **Developing safety awareness.** Employers observed that a common challenge with new apprentices is that they lack understanding of safety, which can lead to serious problems on a job site. Employers appreciated pre-apprentices' safety awareness. One employer described apprentices who had come from the pre-apprenticeship: "Their mindset of safety is much greater. Apprentices are the most in danger to potential accidents." Graduates of the pre-apprenticeship "know what you have to do on the job to be safe."

- **Ensuring readiness to learn.** Employers noted that pre-apprentices were easier to work with than someone with no prior experience because of their foundational preparation and workplace experience. One employer characterized apprentices who came from the pre-apprenticeship as having "the aptitude, attitude, and knowledge for working with contractors. It has helped us reduce waste time and lessen the learning curve."

2.9   Plans to Sustain Grant Activities

The grantee hoped that JATCs would see pre-apprenticeship's value and adopt it. At the time of this report, electrical training ALLIANCE was exploring how to tailor pre-apprenticeship so that completers could have a path into all its registered apprenticeship programs (residential electrician, installer electrician, and lineman, in addition to inside wireman). The grantee's leadership believed that there was interest among JATCs, noting that one or two of the pilot JATCs planned to make pre-apprenticeship a requirement for all entrants to their inside wireman registered apprenticeship program.

However, funding the pre-apprenticeship poses challenges to its continuation. Local JATCs must convince their member NECA contractors and IBEW local unions that pre-apprenticeship is worth funding. It was not clear that many JATCs outside of the pilot would adopt pre-apprenticeship. JATCs have considerable experience with registered apprenticeship programs but not pre-apprenticeships, so implementing pre-apprenticeship with more JATCs will take effort. electrical training ALLIANCE staff observed that having an experienced training director who was motivated to try new things seemed to make it more likely that a JATC would implement pre-apprenticeship or retain it.

electrical training ALLIANCE also applied what it learned under the AAI grant to the design and implementation of a new, short (one-year) registered apprenticeship program with its DOL H-1B Closing the Skills Gap grant.[24] The new program targeted members of underrepresented populations and incumbent workers who could benefit from up-skilling and an opportunity to demonstrate that they could succeed on the job. Completers of the short apprenticeship program received a certificate that they could take to any JATC in the country to enter a five-year apprenticeship program. Unlike the pre-apprenticeship hours, the hours accumulated during this one-year apprenticeship transferred to the five-year apprenticeship.

2.10   Implementation Lessons from Operating the AAI Grant

Interviews with electrical training ALLIANCE staff, JATC staff, and employers suggested several lessons for program design and implementation:

- **Pre-apprenticeship appears to help JATCs find a broader and more diverse pipeline of individuals who can succeed in electrical training ALLIANCE's apprenticeship programs.** The AAI pre-apprentices come from more diverse backgrounds than apprentices registered under the AAI grant more broadly. Employers spoke positively of pre-apprentices. They noted that pre-apprentices were particularly safety aware when first entering OJL which resolved a key concern that employers often had with new apprentices. They also noted that completers of the pre-apprenticeship program valued the apprenticeship opportunity particularly highly and tended to be motivated to succeed.

- **JATC's existing relationships with employers facilitated recruitment of employers to offer pre-apprenticeship OJL.** JATCs needed to recruit employers willing to bring pre-apprentices on their job sites and pay the pre-apprentices. As NECA contractors, employers partnered with JATCs to offer registered apprenticeship programs, but pre-apprenticeship was new to them. Because of the established relationship between JATCs and employers, staff reported that employers trusted the JATCs, which made them willing to bring on pre-apprentices. After explaining the reasons for and design of the pre-apprenticeship, JATCs recruited enough employers for OJL.

- **To promote transition into registered apprenticeship programs, JATC staff recommended aligning the timing of pre-apprenticeship completion with the start dates for registered apprenticeship cohorts.** The pre-apprenticeship programs tended to be offered more regularly than the lengthier registered apprenticeship programs which began new cohorts only periodically. Thus, some pre-apprentice completers could not immediately transition into a registered apprenticeship program. As a result, according to JATC staff, some pre-apprentices may not have completed the pre-apprenticeship because they left the program early to enter the inside wireman registered

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[24]   For information on the Closing the Skills Gap grants, see the Funding Opportunity Announcement, https://www.grants.gov/web/grants/view-opportunity.html?oppId=317245. DOL provides information on this Funding Opportunity Announcement at https://www.apprenticeship.gov/investments-tax-credits-and-tuition-support/active-grants-and-contracts and https://www.dol.gov/agencies/eta/grants/2019. For the list of grant awards, see https://www.dol.gov/newsroom/releases/eta/eta20200218.

apprenticeship program. Others may not have pursued the registered apprenticeship program because they found other work while waiting for the next cohort to begin.

- **JATCs showed that different pre-apprenticeship program designs—in terms of calendar length, timing, and extent of OJL—can work.** The JATCs interviewed were among electrical training ALLIANCE's most successful in pre-apprentice recruitment and completion. Each achieved success with a different program design. San Mateo viewed the pre-apprenticeship as a one-year audition for the registered apprenticeship program, although there was no guarantee that pre-apprenticeship completers would receive an apprenticeship slot at the end. The Detroit program ran ten weeks and interspersed the 80 hours of OJL with RTI. The Tampa pre-apprenticeship compressed RTI into just six weeks and provided 80 hours of OJL. Tampa's program could be completed more quickly, and the promise of direct entry into the registered apprenticeship program reduced attrition. However, its full-time commitment limited the ability of participants to work which may have prevented some candidates from participating.

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electrical training ALLIANCE Responses to the COVID-19 Pandemic

The pandemic interrupted pre-apprenticeship programs to some extent. The greatest challenges were to RTI, but programs adapted. Some continued in-person training, but physically distancing. Others shifted to virtual training using videoconferencing. Those that conducted remote training still had in-person training for certain hands-on activities and for testing.

COVID-19 also affected labor demand in some local areas. For example, Disney World is a key apprenticeship employer for the Tampa JATC. Its closure reduced slots available for apprentices in the short term, which could have downstream impacts on pre-apprenticeship slots.

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3. Houston Community College

The Houston Community College (HCC) system has more than 30 years of experience operating apprenticeships. HCC has 22 campuses in the Houston, Texas, metropolitan area offering workforce training in construction and manufacturing; health sciences; and science, technology, engineering, and math, among others. With its American Apprenticeship Initiative (AAI) grant, HCC expanded apprenticeships into information technology (IT) and healthcare and enhanced an existing plumbing registered apprenticeship program. HCC's sub-grantee, Dallas College, also implemented a healthcare apprenticeship program.

HCC's primary grant roles included establishing and maintaining relationships with employers that sponsored AAI apprenticeships; recruiting apprentices; providing pre-apprenticeship training for pharmacy technician apprentices; and purchasing equipment to modernize an existing plumbing apprenticeship program.

3.1 Target Occupational Areas

Through partnerships with CVS Health and JPMorgan Chase, HCC used AAI grant funds to establish apprenticeships in the healthcare and IT occupations, respectively.[25] At the time of the visit in June of 2019, the Houston-Galveston Area Workforce Solutions One Stop Center listed occupations in both industries on its High Skills, High Growth Jobs List. CVS Health had a pharmacy technician apprenticeship program and partnered with HCC to recruit apprentices and provide tailored pre-apprenticeship training. HCC assisted JPMorgan Chase with registering new apprenticeship programs for computer support specialist, network and computer systems administration, and computer systems analyst.

GEOGRAPHIC AREA SERVED

Texas

● Houston Community College

College

Houston Community College at a Glance

Grantee type: Community college

Geographic coverage: Houston and Dallas, Texas, metropolitan areas

Grant amount: $4,292,955

Target industry: IT, healthcare, plumbing

Registering body: Office of Apprenticeship, U.S. Department of Labor

Prior experience with registered apprenticeship: Yes

Target number of registered apprentices: 620

Number of apprentices registered (as of 9/2020): 698 (112% of target)

Target number of pre-apprentices: 0

Number of pre-apprentices served (as of 9/2020): 898

Grant period: September 2015 to September 2021

Also, HCC purchased digital layout equipment for a 24-hour course on electronic mapping of plumbing systems for plumbing apprentices. This training helped apprentices in an existing plumbing apprenticeship, operated by the Houston Area Plumbing Joint Committee, to upgrade their skills in response to the increasing technological demands of the occupation.

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[25]   CVS Health operates apprenticeships in locations across the country outside the AAI grant.

3.2   Grant Activities

HCC's grant activities focused on provision of pre-apprenticeship training (including paying for instructors) and apprentice recruitment. Specifically, grant funds supported the following activities:

- **HCC staff.** The **project director** managed grant activities overall and played a central role in maintaining relationships with employers and the Houston Area Plumbing Joint Committee. The **project manager** provided general support for all grant-funded staff and oversaw AAI data entry. The **information specialist** recruited pharmacy technician apprentices. The **career services specialist** provided career readiness services for IT apprentices. The **pharmacy technician instructor** created and taught new pre-apprenticeship training courses for the pharmacy technician apprenticeship. The grant funded part of the **digital layout instructor's** time and equipment for an enhanced plumbing course.

- **Dallas College staff.** Dallas College, a sub-grantee, oversaw the pharmacy technician apprenticeship program in the Dallas area. The **grants coordinator** worked with the HCC project director to coordinate grant activities. The **information specialist** recruited students for the pharmacy technician apprenticeship. A part-time **externship coordinator** placed apprentices who completed the pre-apprenticeship training in an externship at a CVS Health pharmacy.

- **Pre-apprenticeship training costs.** HCC used grant funds to cover the costs of the pre-apprenticeship training for pharmacy technician apprentices.

- **On-the-job learning (OJL)**. HCC reimbursed CVS Health for costs associated with apprentices' OJL (excluding apprentice wages), up to $795 per apprentice. HCC also reimbursed CVS Health for any staff time spent on grant-related tasks such as externships and apprenticeship placement.[26]

- **Equipment for training providers.** HCC used grant funds to purchase laser-based layout and positioning equipment for the new digital plumbing layout course offered by the Houston Area Plumbing Joint Committee.

- **Financial support for apprentices and pre-apprentices.** HCC provided support services, specifically financial assistance to pre-apprentices participating in training for the pharmacy technician apprenticeship, including reimbursement for **parking, uniforms** (e.g., scrubs), and **books**. Apprentices and pre-apprentices also had access to resources through HCC, including an on-campus food bank and counseling.

> **Houston and Dallas Area Economies**
>
> **Unemployment rate, June 2019:**
>
> - Houston: 4.0%
> - Dallas: 3.5%
>
> **HCC focus industries, by share of employment:**
>
> - IT (Houston: 1%; Dallas: 2%)
> - Healthcare (Houston: 13%; Dallas: 12%)
> - Plumbing (Houston: 7%, Dallas: 6%)
>
> SOURCES: Unemployment rate: U.S. Department of Labor, Bureau of Labor Statistics. Houston Metropolitan Statistical Area includes Houston, The Woodlands, and Sugar Land. Dallas Metropolitan Statistical Area includes Dallas, Fort Worth, and Arlington. https://beta.bls.gov/dataViewer/view/timeseries/LAUMT482642000000003; https://beta.bls.gov/dataViewer/view/timeseries/LAUMT481910000000003;jsessionid=CD6E0AB0DA89CC29ED1D4CD9A4CEEF77. Focus industries: U.S. Department of Labor, Bureau of Labor Statistics, for May 2019. https://www.bls.gov/oes/current/oessrcma.htm.

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26   The grant did not fund any JPMorgan Chase apprenticeship activities.

3.3 Participant Characteristics and Recruitment

Apprentices were predominantly men and age 25 or older. More than two-fifths of apprentices were Hispanic of any race and one-third were non-Hispanic White. Less than 10 percent were veterans. More than half of pre-apprentices were women and age 25 or older. Half of pre-apprentices were non-Hispanic Black and one-quarter were Hispanic of any race. Fewer pre-apprentices were veterans. (See Exhibit 3-1.)

The information specialist recruited pharmacy technician apprenticeship participants primarily from HCC by presenting to student organizations and in classes, and by periodically staffing a table in common areas throughout HCC's campuses. The information specialist also traveled to organizations such as local workforce boards, Goodwill, and United Way to present the program to potential applicants as well as to staff working with potential applicants.

JPMorgan Chase required students to have an associate degree in IT and a 3.25 grade point average (GPA) and be a U.S. citizen to be eligible for its IT apprenticeship. At the beginning of the grant, the program director recruited IT apprentices from the pool of graduates from HCC's associate degree in IT. The program director also presented to students in their final-semester IT capstone courses. The program director submitted interested and eligible candidates' resumes to JPMorgan Chase, which contacted a subset to interview for the apprenticeship. However, JPMorgan Chase accepted so few referred candidates into its program that the program director ceased recruitment efforts for the IT apprenticeship.

HCC did not recruit for the course in digital plumbing layout. Rather, the Houston Area Plumbing Joint Committee recruited and enrolled plumbing apprentices for its program.

Exhibit 3-1. Apprentice and Pre-Apprentice Characteristics, Houston Community College

Apprentice Characteristic	
Men	77%
Women	23%
24 or younger	31%
25 to 44	62%
45 or older	7%
Hispanic, any race	43%
White, non-Hispanic	33%
Black, non-Hispanic	20%
Asian	2%
Other race, non-Hispanic	1%
Veteran	7%
People with disabilities	2%
Pre-Apprentice Characteristic	
Men	43%
Women	57%
24 or younger	30%
25 to 44	55%
45 or older	16%
Hispanic, any race	26%
White, non-Hispanic	17%
Black, non-Hispanic	50%
Asian	5%
Other race, non-Hispanic	1%
Veteran	4%
People with disabilities	1%

SOURCE: Apprenticeship Quarterly Performance Report (QPR), as of September 2020. For apprentices, gender, age, and veteran/disability N=698; race/ethnicity N=618. For pre-apprentices, gender and veteran/disability N=898; age N=890; race/ethnicity N=847.

3.4 Engaging and Assisting Employers

HCC's employer engagement focused primarily on identifying employers for the pharmacy technician apprenticeship. HCC and Dallas College staff worked closely with CVS Health staff to place apprentices into CVS Health pharmacies in the Houston and Dallas areas. To increase the number of students placed in pharmacy technician apprenticeships in Houston, HCC established a partnership with Walgreens in the last year of the grant.

3.5   Apprenticeship Programs

As of September 2020, HCC had registered three apprenticeship programs under the AAI grant, according to data reported to DOL. All apprentices were registered in competency-based programs.[27] The majority (73 percent) of AAI apprentices entered construction occupations, and about one-quarter (27 percent) registered in healthcare occupations (Exhibit 3-2). Plumbing, which is considered a construction occupation, had several employer partners as part of the apprenticeship that predated AAI. Increasingly these partners required apprentices with technical skills, which is why the instructors of related technical instruction (RTI) for the plumbing apprenticeship added the AAI-supported 24-hour course in digital layout for all plumbing apprentices. CVS Health is the main employer for the healthcare occupation, hiring apprentices for the pharmacy technician apprenticeship. In the last year of the grant, Walgreens began hiring apprentices for the pharmacy technician apprenticeship, as well. HCC staff reported they placed few students in the IT apprenticeship with JP Morgan Chase.

Exhibit 3-2. Occupations of Registered Apprentices, Houston Community College
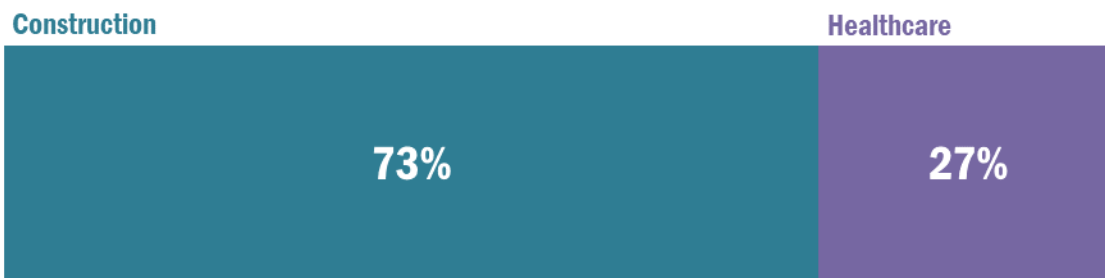
SOURCE: Apprenticeship QPR, as of September 2020. *N*=698 apprentices.

Spotlight on Apprenticeship: CVS Health's Pharmacy Technician Program

HCC partnered with CVS Health to develop a pharmacy technician apprenticeship program in the Houston and Dallas areas. CVS Health staff reported that their objectives in developing the pharmacy technician apprenticeship were twofold: to develop a pipeline of skilled workers and to increase participation by underrepresented groups. HCC modified existing courses to create a 16-week pre-apprenticeship program to teach skills specific to working as a pharmacy technician with CVS Health that also prepared participants for state certification. The program was free to participants.

HCC recruited pre-apprentices. Interested candidates first attended an orientation to learn about the program and eligibility criteria, which included a high school diploma or equivalent and passing a background check and drug test. CVS Health interviewed candidates and scored them in five domains: customer service, team-oriented behaviors, delivering results, following procedures, and stability. Candidates had to score above a certain threshold to be eligible for the pre-apprenticeship program.

During the pre-apprenticeship, participants had to pass a trainee licensing exam through the Texas State Board of Pharmacy; pass a second, more thorough background check; and perform sufficiently on an assessment specific to CVS Health called a Virtual Job Tryout. After successfully completing all three requirements, a participant entered the second portion of the pre-apprenticeship program: a 128-hour unpaid externship at a CVS Health pharmacy. Depending on their performance during the externship, they were then eligible for an apprenticeship placement in a CVS Health pharmacy. At the time of the visit by the evaluation team, about 40 percent of HCC's pre-apprenticeship completers entered an apprenticeship in a CVS Health pharmacy.

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[27]   Data reported to DOL's Apprenticeship QPR system, September 2020.

Spotlight on Apprenticeship: CVS Health's Pharmacy Technician Program (continued)

For the pharmacy technician apprenticeship program, the pre-apprenticeship training, RTI, OJL, and resulting credentials were as follows:

- **Pre-apprenticeship training.** In the first part of the pre-apprenticeship, participants completed the 16-week training program at HCC. The pharmacy technician instructor developed the curriculum, tailoring it to CVS Health's needs. Courses included drug classification, pharmacy math, community pharmacy, and a lab where participants practiced their skills in a mock retail pharmacy. Participants had to score an average grade of at least 70 percent in drug classification, pharmacy math, and community pharmacy and at least 75 percent in the lab to pass the pre-apprenticeship training and continue to their externship.
- **Pre-apprenticeship externship.** As the second part of the pre-apprenticeship program, participants completed a 128-hour unpaid externship. The pharmacy manager determined the nature of the extern's work. HCC staff worked with CVS Health staff to identify placements for pre-apprentices in locations that were geographically convenient with enough hours to satisfy the externship requirement.
- **Apprenticeship training.** Once they had completed their pre-apprenticeship externship and were placed as an apprentice in a CVS Health store, they completed 175 hours of RTI provided by CVS Health through proprietary online modules and classroom-based instruction.
- **OJL.** During the apprenticeship, mentors oversaw apprentices to ensure they developed the appropriate competencies, such as working the pick-up and drive-thru workstations, inventory management, refilling prescriptions, and customer service. Wages started at $9.25 per hour and increased to $13.80 per hour over the course of the apprenticeship.
- **Certificates and credentials.** Participants who completed the 16-week pre-apprenticeship training received 12 transferable credits they could use toward HCC's full pharmacy technician certification program or an associate degree in health sciences. To graduate from the apprenticeship, apprentices had to pass the National Pharmacy Technician Certification Board Exam.

3.6 Plans to Sustain Grant Activities

HCC used AAI grant funds to pay for training costs and costs associated with OJL for the pharmacy technician apprenticeship program, but did not anticipate continuing the program after the grant ends. At the time of the follow-up call in fall 2020, the college did not have alternative sources of funding available to continue the program. The Houston Area Plumbing Joint Committee continued to use equipment purchased with grant funds.

3.7 Implementation Lessons from Operating the AAI Grant

Staff interviewed suggested several lessons from implementing AAI grant activities:

- **HCC staff reported that participants were attracted to the pre-apprenticeship training because it was offered at no cost and because of the name recognition of the apprenticeship employer (CVS Health).** According to the program director, the opportunity for training at no cost to the participant generated considerable interest in the program from potential apprentices. The program director estimated that most participants were low-income individuals seeking a career path. The ability to pursue a steady career without having to make a significant upfront investment was appealing for many program recruits. The information specialist also stated that partnering with CVS Health helped recruitment efforts, because it was a recognized name.

- **As a community college, HCC had access to a large student body from which to recruit as well as existing facilities and faculty to provide training.** The information specialist had many avenues through the HCC system from which to recruit. Having access to student organizations and classrooms, as well as the general student body within each of the 22 campuses, meant the information specialist could focus on recruiting students directly, rather than having to build relationships with other organizations to refer and recruit. Each of HCC's 22 campuses specializes in certain areas of study, and the information specialist focused recruitment efforts on campuses with

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areas of study relevant to the pharmacy technician apprenticeship, such as health sciences. HCC also had the facilities necessary to provide the pre-apprenticeship training for the pharmacy technician apprenticeship, including a mock retail pharmacy in its lab facilities.

- **Relying on a small number of employers presented opportunities as well as challenges.** With only one employer for the pharmacy technician apprenticeship, HCC could customize the pre-apprenticeship training to prepare apprentices to work in a CVS Health pharmacy specifically. However, having a single employer also limited employment opportunities for program completers. If a pre-apprentice did not pass the Virtual Job Tryout (estimated by staff to be two out of every 10 apprentices who did not pass), CVS Health would not place them in an externship at a pharmacy, effectively ending the apprenticeship opportunity. If CVS Health did not hire them as apprentices after their externship, participants had no alternative option to pursue an apprenticeship with another employer through HCC. According to staff, finding apprenticeship placements that would provide apprentices with enough hours became especially challenging when CVS Health pharmacies participating in the apprenticeship program converted several of their pharmacy technician positions from full-time to part-time. This led HCC to seek out a second employer for the pharmacy technician apprenticeship, partnering with Walgreens in the last year of the grant. HCC also partnered with one employer for the IT apprenticeship, JPMorgan Chase. However, staff from HCC reported that many students graduating from HCC with an associate degree in IT could not meet one or both of Chase's hiring criteria (i.e., a GPA of 3.25 or higher and U.S. citizenship).

> **HCC Responses to the COVID-19 Pandemic**
>
> At the height of the pandemic, HCC moved all classes for the pre-apprenticeship training online. The college also used an online simulation for the lab portion of the pre-apprenticeship training. As of fall 2020, HCC allowed in-person labs again, but kept the rest of the pre-apprenticeship training online. Throughout the pandemic, pre-apprentices continued their externships.

4. Managed Career Solutions

OpenTech Los Angeles Regional Apprenticeship Collaborative (OpenTech LA)

Managed Career Solutions (MCS) is a for-profit workforce development provider in Los Angeles County. MCS operates American Job Centers (AJCs) under contracts with the Los Angeles County Workforce Development Board, providing Workforce Innovation and Opportunity Act (WIOA)-funded services to job seekers and employers.

MCS used its American Apprenticeship Initiative (AAI) grant to design and operate the **OpenTech Los Angeles Regional Apprenticeship Collaborative (OpenTech LA)**. July 2019 interviewees described MCS's primary roles in the grant as (1) identifying and engaging employers in the region to develop and register apprenticeship programs; (2) assisting employers with registering apprentices; (3) reimbursing employers for costs associated with mentoring apprentices; and (4) recruiting participants and providing funding for partner-run pre-apprenticeship programs.[28]

4.1 Target Occupational Areas

MCS developed an information technology (IT) apprenticeship program, as well as a workforce development specialist apprenticeship program to support its own operations. MCS also worked with a staffing agency that had existing apprenticeships in bioscience and biomedical manufacturing.

When MCS received its AAI grant in 2015, average unemployment in Los Angeles County was 6.6 percent, the lowest since 2007 when it was 5.1 percent.[29] Fewer people looking for jobs made it difficult for employers to find skilled workers. At the same time, the already robust IT sector was growing.[30] In addition to jobs specifically in the IT sector, other sectors such as entertainment and healthcare needed IT professionals. MCS developed

GEOGRAPHIC AREA SERVED

California

● Managed Career Solutions
Sub-State government agency

MCS at a Glance

Grantee type: Sub-State government agency

Geographic coverage: Los Angeles County, California

Grant amount: $2,974,070

Target industry: IT, health information technology, workforce development

Registering body: State Apprenticeship Agency, California Department of Industrial Relations, Division of Apprenticeship Standards; Office of Apprenticeship, U.S. Department of Labor

Prior experience with registered apprenticeship: No

Target number of registered apprentices: 300

Number of apprentices registered (as of 9/2020): 189 (62% of target)

Target number of pre-apprentices: 200

Number of pre-apprentices served (as of 9/2020): 444 (222% of target)

Grant period: September 2015 to September 2020

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[28] MCS's AAI grant funded activities supporting pre-apprenticeships and apprenticeships in a range of industries and occupations, including IT, workforce development, healthcare, and bioscience. The evaluation team's discussions with grantee leadership focused primarily on the IT pre-apprenticeship and apprenticeship programs, and thus they are the focus of this profile.

[29] Local Area Unemployment Statistics, https://www.bls.gov/lau/lamtrk15.htm.

[30] Mitra, Somjita, Shannon M. Sedgwick, Rafael De Anda, and Angel Perdomo. 2017. *Los Angeles: People, Industry and Jobs 2016-2021*. Institute for Applied Economics: Los Angeles County Economic Development Corporation. https://www.wiblacity.org/images/reports/LAEDC_PeopleIndustryandJobs_2016-2020.pdf.

OpenTech LA to increase access to IT-related professions among low-income individuals and those underrepresented in the IT industry such as women, racial and ethnic minorities, and people with disabilities.

In addition to OpenTech LA, MCS used AAI grant funds to develop and register a workforce development specialist apprenticeship. The apprenticeship aimed to increase competencies among its workforce development staff serving clients in the AJCs.

4.2   Grant Activities

According to MCS leadership, OpenTech LA built on its on-the-job training (OJT) programs operated for the Los Angeles County Workforce Development Board and its own efforts to strengthen career pathways for the low-income job seekers MCS served. Grant funds supported the following OpenTech LA activities:

> **Los Angeles County Area Economy**
>
> **Unemployment rate, June 2019:** 4.5%
>
> **OpenTech LA focus industries, by share of employment:**
>
> - IT (4%)
> - Professional and business services (14%)
> - Education and health services (18%)
>
> SOURCES: Unemployment rate: Los Angeles County, CA, U.S. Department of Labor, Bureau of Labor Statistics https://beta.bls.gov/dataViewer/view/timeseries/LAUCN060370000000003.
> Focus industries: U.S. Department of Labor, Bureau of Labor Statistics, for February 2019: https://data.bls.gov/timeseries/SMU06310846000000001?amp%253bdata_tool=XGtable&output_view=data&include_graphs=true. Note that industry names do not align precisely between those used for AAI and those available from the Bureau of Labor Statistics.

- **MCS staff.** MCS's **director of development** and **management information system manager** oversaw grant activities, tracked grant data, and supervised other MCS staff involved in the grant. Two additional MCS staff, a **program assistant** and a **business services coordinator** managed most day-to-day operations. The program assistant recruited, screened, and enrolled apprentices and pre-apprentices. The business services coordinator recruited potential employers and monitored apprentices' placement and progress.

- **Pre-apprenticeship costs.** MCS funded pre-apprenticeship technology boot camps offered by local training programs. Boot camps are short-term, intensive programs designed to teach fundamentals quickly. MCS used these existing training programs to build IT skills among participants interested in IT apprenticeships. The grant covered the costs to pre-apprentices of attending coding boot camps at Los Angeles City College, including tuition and the paid internships at employers identified by MCS. Staff reported use of grant funds to support the costs of the coding and programming module for the YWCA of Greater Los Angeles's Digital Learning Academy, a six-month training in digital communication.[31]

- **Related technical instruction (RTI) costs.** The AAI grant funded RTI for apprentices. MCS staff worked with individual apprentices and employers to identify training options. MCS made bulk purchases from online training providers such as Career Academy and Udemy.

- **Mentorship costs.** MCS reimbursed employers up to $3,000 per apprentice to offset employers' costs associated with training apprentices and providing on-the-job learning (OJL).

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[31]   This module is one of four offered through the Digital Learning Academy. All are free to participants, as the YWCA uses multiple grants and funding streams to support the costs of program operations. MCS's AAI grant is one of those sources of funding.

4.3   Participant Characteristics and Recruitment

Fifty-seven percent of apprentices were men and the majority were age 25 or older. Forty percent of apprentices were Hispanic of any race, and slightly more than 20 percent were non-Hispanic White or Asian (23 and 21 percent, respectively). Eighteen percent were people with disabilities. Seventy-one percent of pre-apprentices were men and pre-apprentices tended to be younger than apprentices—44 percent were age 24 or younger compared with 30 percent of apprentices in this age group. (See Exhibit 4-1.)

MCS recruited apprentices and pre-apprentices primarily from the AJCs it operated. To advertise the program, MCS maintained a public-facing website for OpenTech LA, which included information on apprenticeship and an application page. The AAI program assistant directed interested individuals to either pre-apprenticeship or apprenticeship programs based on their skill levels. The assistant made this informal assessment—of whether an applicant needed to participate first in a pre-apprenticeship program—based on an awareness of employer requirements for apprentices. MCS also recruited apprentices from pre-apprenticeship programs, and employers referred incumbent workers for training in more advanced IT positions.

MCS staff reported that many of the individuals who expressed interest in OpenTech LA had limited IT skills and experience and thus were more appropriate for pre-apprenticeship programs.

4.4   Engaging and Assisting Employers

Employer engagement for OpenTech LA drew heavily on MCS's existing relationships with employers through its operation of workforce programs for the

Exhibit 4-1. Apprentice and Pre-Apprentice Characteristics, OpenTech LA

Apprentice Characteristic	
Men	57%
Women	43%
24 or younger	30%
25 to 44	61%
45 or older	9%
Hispanic, any race	40%
White, non-Hispanic	23%
Black, non-Hispanic	13%
Asian	21%
Other race, non-Hispanic	3%
Veteran	4%
People with disabilities	18%
Pre-Apprentice Characteristic	
Men	71%
Women	29%
24 or younger	44%
25 to 44	45%
45 or older	11%
Hispanic, any race	42%
White, non-Hispanic	18%
Black, non-Hispanic	20%
Asian	18%
Other race, non-Hispanic	3%
Veteran	4%
People with disabilities	3%

SOURCE: Apprenticeship Quarterly Performance Report (QPR), as of September 2020. For apprentices, gender, age, and veteran/disability *N*=189; race/ethnicity *N*=184. For pre-apprentices, gender and veteran/disability *N*=444; age *N*=440; race/ethnicity *N*=435.

Los Angeles County Workforce Development Board. Staff marketed OpenTech LA to employers that had hired MCS customers in the past from on-the-job training programs or that had relationships with MCS AJC business services staff.

In addition, MCS actively marketed apprenticeships to new employers. AAI-funded staff, including the business services coordinator, attended networking events, conferences, and other community events in order to talk with employers about MCS's business services, which included assistance with developing apprenticeships. Staff began outreach by asking about employer needs generally and, if appropriate, how apprenticeship might align with those needs.

MCS staff reported that employers often hesitated initially to develop apprenticeship programs, anticipating burdensome standards and associated paperwork. MCS attempted to streamline its forms and

employer agreements to reduce the amount of employer paperwork and to clarify employers' roles in apprenticeship. The grantee also registered the apprenticeships with the DOL Office of Apprenticeship.

MCS staff reported that they had greater success engaging smaller employers, especially those with fewer than 100 employees, in apprenticeship discussions. For them the $3,000 reimbursement for mentorship costs was an incentive to try OpenTech LA to address their staffing needs.

For employers that agreed to hire apprentices, MCS was the intermediary between potential apprentices and the employer. For every employer with an apprenticeship slot, OpenTech LA staff worked with the employer to refine the job description to ensure it met the standards specific to registered apprenticeships. MCS staff used these job descriptions to identify OpenTech LA candidates for the open positions, then sent candidate resumes to the employers for review and interviews. According to MCS staff, employers generally spoke with multiple candidates for each apprenticeship slot.

4.5 Apprenticeship Programs

As of September 2020, MCS had registered 42 apprenticeship programs under the AAI grant, according to the Apprenticeship QPR system. Of registered apprentices, most (58 percent) participated in competency-based programs, 30 percent in time-based programs, and 12 percent in hybrid programs.[32]

Registered apprentices were in a range of industries: IT (19 percent), manufacturing (15 percent), and healthcare (14 percent) (Exhibit 4-2). Roughly half (52 percent) were in "other" occupations, which includes apprentices in MCS's own workforce development specialist apprenticeship.

Exhibit 4-2. Occupations of Registered Apprentices, OpenTech LA

IT	Manufacturing	Healthcare	Other occupations
19%	15%	14%	52%
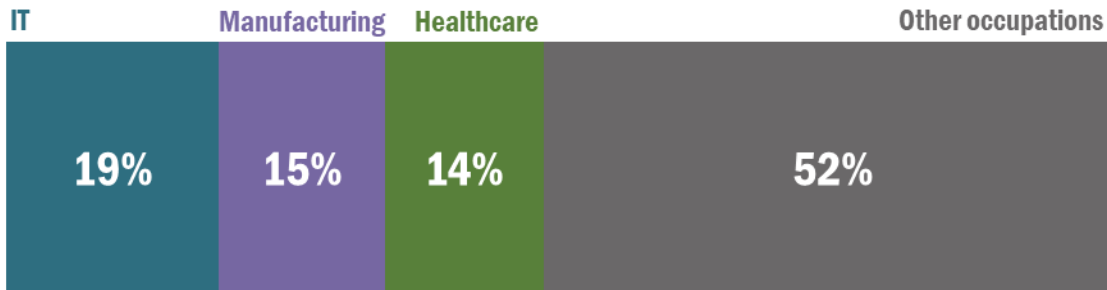
SOURCE: Apprenticeship QPR, as of September 2020. N=188 apprentices.

Examples of IT apprenticeship occupations included IT project management specialist, computer support specialist, clinical laboratory scientist, and health information technology specialist. Manufacturing apprenticeships were typically in the fields of bioscience and biomedical manufacturing, such as quality control technician. MCS had less involvement in developing and registering these occupations. Instead, a third-party staffing agency registered the manufacturing occupations with the state apprenticeship agency, the Division of Apprenticeship Standards, and MCS used grant funds to reimburse the staffing agency for costs associated with mentorship.

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[32] Data reported to DOL's Apprenticeship QPR system, September 2020.

Spotlight on Apprenticeship: OpenTech LA's IT Project Manager Program

OpenTech LA targeted IT project management because the entry-level occupation offered an onramp to technology jobs for those without prior IT experience and/or barriers to employment. MCS developed Standards of Apprenticeship applying its knowledge of occupational requirements and labor market trends. The standards specified a core set of competencies that employers tailored to align with their specific business needs or industry-specific skills. For example, the software used by employers in the entertainment industry differs from that used by healthcare employers, so competencies naturally vary.

MCS recruited employers in need of IT project managers, which then signed on to MCS's standards. MCS recruited apprentices and provided candidate resumes to the employers for review. Approximately 10 employers hired IT project manager apprentices over the course of the grant.

For the IT project manager apprenticeship program, the RTI, OJL, and resulting credentials were as follows:

- **RTI.** Apprentices completed 144 hours of RTI. MCS helped employers and apprentices identify RTI options from a range of online training modules related to project management and programming skills. Apprentices completed RTI concurrent with OJL.
- **OJL.** Individual employers set OJL schedules, but apprentices typically worked full-time, and the apprenticeship generally lasted one year. The apprenticeship was competency-based. Apprentices completed the OJL portion of the apprenticeship by advancing through three main competency groups: technical (e.g., project management and planning), behavioral (e.g., leadership, creativity, commitment), and contextual (e.g., programming skills, business knowledge). The structure of mentorship varied by employer, but the standards specified there could be no more than three apprentices assigned to each mentor. For employers that hired cohorts of employees, mentorship could involve structured meetings with multiple apprentices and mentors. Smaller employers relied on apprentices' supervisors to provide one-on-one mentorship. Wages started at $12 per hour and increased to at least $14 per hour after six months. However, some employers paid apprentices the same prevailing market wages as non-apprentice hires, which were sometimes substantially higher.
- **Certificates and credentials.** The IT project manager apprenticeship resulted in the award of a Certificate of Completion of Apprenticeship from DOL. MCS staff reported that a high proportion of apprenticeship completers stayed with their same employer.

Employers participating in this apprenticeship emphasized the value of MCS in identifying potential apprentices and screening applicants to ensure that apprentices' skills and experiences aligned with employer expectations. They valued the $3,000 reimbursement for mentorship costs and emphasized that it helped offset hiring costs.

4.6 Pre-Apprenticeship Programs

MCS supported pre-apprenticeship programs implemented by community-based organizations and community colleges that provided training in OpenTech LA's targeted occupational areas. For example, MCS partnered with several IT training programs to help pre-apprentices gain skills needed to qualify for MCS's IT apprenticeships, such as increased proficiency with industry standard software programs. OpenTech LA recruited apprentices from these pre-apprenticeship programs, such as the Digital Learning Academy operated by the local YWCA. In addition, these programs often served populations typically underrepresented in MCS's target industries.

> ### Spotlight on Pre-Apprenticeship: YWCA's Digital Learning Academy
>
> The YWCA of Greater Los Angeles's Digital Learning Academy launched in 2014. The six-month academy trained 16- to 39-year-olds who wanted to enter the technology sector or develop their IT skills. To be eligible for the academy, applicants needed a high school diploma or GED and to be underemployed or unemployed. The YWCA provided the program at no cost to students who enrolled, serving 45 to 55 students each year.
>
> OpenTech LA funded the coding and programming module, according to MCS and YWCA staff. The YWCA funded other program modules through grants from businesses, local government, and philanthropic organizations.
>
> - **Curriculum.** The Digital Learning Academy curriculum had four, 6-week modules: print production, graphic arts, coding and programming, and 3D printing. Pre-apprentices could enroll in any combination of the four modules. The YWCA partnered with employers to design some modules. For example, Xerox helped develop the curriculum for the print production module. The YWCA also worked with Xerox to design a companion print production social enterprise where pre-apprentices helped operate the YWCA's print shop business. Classes met from 9 am to 3 pm daily. There was no homework, as many of the pre-apprentices worked evenings or weekends and did not have out-of-school access to the hardware and software they used in class.
> - **Certificates and credentials.** Pre-apprentices received Digital Learning Academy certificates upon completion of each module.
>
> YWCA staff reported several possible pathways for Digital Learning Academy graduates. Some entered an MCS apprenticeship program through OpenTech LA. Some took more advanced training at either the YWCA or other training providers in the community to develop a more specialized skill set. The YWCA placed others in paid internships aligned with their field of interest.

4.7   Plans to Sustain Grant Activities

As of the conclusion of the AAI grant, MCS had no specific plans to continue apprenticeships. However, as an AJC operator, leadership reported it might be possible to use some portion of MCS's WIOA funding to support employers interested in pursuing apprenticeship. In addition, MCS might be able to use other grants or contracts to support on-the-job-training, including reimbursing employers for wages. Doing so would be like OJL in apprenticeships, where MCS had used AAI funds to reimburse employers for mentors' time.

4.8   Implementation Lessons from Operating the AAI Grant

Interviews with MCS staff suggested several lessons from implementing OpenTech LA and the AAI grant activities:

- **MCS's experience providing workforce development services and its connections to the employer community facilitated apprenticeship program implementation.** MCS has a long history of providing workforce services in Los Angeles County through funding sources such as WIOA, county and state contracts, and federal grants. OpenTech LA staff reported that MCS had long-standing relationships with employers and employers trusted the organization to help them identify job candidates. As a result, it was easier for staff to sell employers on registered apprenticeship, particularly in industries and occupations with less prior experience with apprenticeship. Conversations with employers suggested that their prior positive experience with MCS's on-the-job-training figured prominently in their willingness to participate in the apprenticeship program.

- **Grantees that hire their own registered apprentices have unique insights into the employer perspective, enabling them to better sell apprenticeship to other employers.** As part of OpenTech LA, MCS developed and registered an apprenticeship program to increase the skills and training of its own workers. As a result, among the employers associated with its AAI grant, MCS registered the largest number of apprentices as a single employer. Grant funds offset the cost of formalizing the

standards and subsidized the staffing costs associated with providing mentorship to these apprentices. Staff reported that the experience developing and registering MCS's program gave them a deeper understanding of registered apprenticeship that they applied to engaging employers and recruiting apprentices.

- **Partnerships with existing IT training providers facilitated enrollment of pre-apprentices.** OpenTech LA relied on existing IT training programs operated by local colleges and community-based organizations for pre-apprenticeship training. In addition, because these boot camps had curricula in place, MCS could enroll and serve pre-apprentices immediately. OpenTech LA also leveraged these programs' recruitment efforts to identify and enroll pre-apprentices under the grant. Upon completion, pre-apprentices could potentially transition to apprenticeships, including the IT project manager apprenticeship that was a focus of the grant.

- **IT apprenticeship programs presented employer recruitment challenges.** MCS staff reported that apprenticeship programs in IT were relatively new as a training strategy. Thus, it took effort to sell employers on developing such programs. Additionally, MCS staff found it difficult to identify appropriate training providers for RTI. The training needs in IT change rapidly as technology advances, and so the standards and work process schedules needed to allow sufficient flexibility that the RTI and OJL could be updated as needed to align with the most recent technology. Rapid changes can also make it difficult to establish uniform industry standards for the skills apprentices need to learn to be employable. Despite these challenges, MCS believes that IT presented opportunities for apprenticeship programs, particularly given that it is a growing industry with a strong demand for skilled workers.

MCS Responses to the COVID-19 Pandemic

MCS staff reported that the pandemic impeded plans for additional employer recruitment. The economic uncertainty generated by the pandemic made it more difficult to recruit employers. MCS reported that prior to the pandemic, small businesses were receptive to developing IT apprenticeship programs and benefitted from the grant-provided reimbursement to cover mentors' time. However, small employers, hit hard by the pandemic's effects, were less able to hire new staff into apprenticeships. Moreover, much of MCS's employer recruitment depended on networking at events and face-to-face engagement with employers, which was not possible.

The pandemic also affected in-person learning and work opportunities for pre-apprentices and apprentices. Staff reported that the limitations on in-person instruction proved particularly difficult for apprentices who had developmental disabilities who benefitted from in-person instruction and OJL, and virtual RTI did not offer the same support.

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5. Massachusetts Executive Office of Labor and Workforce Development

Massachusetts Apprenticeship Initiative (MAI)

The Massachusetts Executive Office of Labor and Workforce Development (EOLWD) oversees training and workforce development across the Commonwealth's 16 local workforce areas.[33] Within EOLWD, the Department of Career Services staff oversaw and reported on American Apprenticeship Initiative (AAI) grant activities, but subcontracted grant implementation to two local workforce boards—the MassHire Hampden County Workforce Board and the MassHire North Shore Workforce Board.[34] These workforce boards serve six counties across western, central, and northeast Massachusetts.[35] With the **Massachusetts Apprenticeship Initiative (MAI)**, EOLWD and its partners sought to address the shortage of skilled workers in advanced manufacturing and expand apprenticeship into nontraditional industries, namely healthcare and information technology (IT). In addition, EOLWD aimed to incorporate apprenticeship programs into long-term regional economic development plans and create new pathways for upskilling workers to meet employer needs. Finally, EOLWD intended to increase apprenticeship accessibility for employers and workers and improve apprentice outcomes (such as apprenticeship completion, credential receipt, and increased earnings).
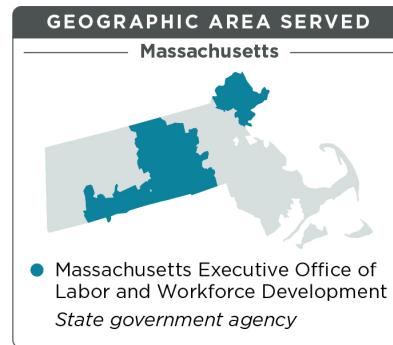
GEOGRAPHIC AREA SERVED

Massachusetts

● Massachusetts Executive Office of Labor and Workforce Development
State government agency

Executive Office of Labor and Workforce Development at a Glance

Grantee type: State government agency

Geographic coverage: The Worcester, North Shore, and Hampden regions of Massachusetts

Grant amount: $2,999,999

Target industry: Advanced manufacturing, healthcare, IT, diesel technician

Registering body: Office of Apprenticeship Expansion & Work-Based Learning, Executive Office of Labor and Workforce Development

Prior experience with registered apprenticeship: No

Target number of registered apprentices: 300

Number of apprentices registered (as of 9/2020): 206 (69% of target)

Target number of pre-apprentices: 0

Number of pre-apprentices served (as of 9/2020): 47

Grant period: September 2015 to September 2021

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[33]   EOLWD oversees the Department of Unemployment Assistance, the Department of Career Services, the Department of Labor Standards, the Department of Industrial Accidents, the Department of Labor Relations, and the Commonwealth Corporation.

[34]   Additionally, the MassHire Hampden County Workforce Board participated in the AAI employer engagement demonstration with a third workforce board, the Central Region Workforce Board (serving Worcester, MA). Activities and outcomes related to this demonstration are the subject of a separate report.

[35]   "MassHire" is branding for the Massachusetts workforce system; all its workforce boards and career centers are under MassHire. The AAI grant sought to promote apprenticeship statewide. Thus, grant staff could help employers in any part of the state establish apprenticeship programs. Most grant activities, though, were concentrated in the areas served by these three workforce boards.

5.1   Target Occupational Areas

MAI targeted occupations in advanced manufacturing, healthcare, and IT, as well as diesel technician. According to EOLWD leadership, employers in these industries lacked a stable pipeline of skilled workers and routinely had vacancies, attributable to industry expansion and an aging and retiring workforce, particularly within advanced manufacturing. Occupations targeted in advanced manufacturing included computer numerical control (CNC) operator, first line supervisor, maintenance mechanic, manufacturing group leader, modular systems installer, electrical discharge machine (EDM) operator, manufacturing quality control inspector, and heating, ventilation, and air conditioning (HVAC) technician.

EOLWD staff reported that historically most apprenticeship programs in the state focused on construction-related occupations. MAI sought to expand apprenticeship into less traditional occupations: healthcare (e.g., pharmacy technician, sterile processing technician, polysomnographic technician, and medical assistant), IT, and diesel mechanic technician. When the grant was awarded in 2015, unemployment rates in the state ranged from a high of 6.5 percent in Dukes County to a low of 3.9 percent in Middlesex County, with an average across the state of 4.8 percent (20th lowest in the nation).[36, 37]

> **North Shore and Hampden Area Economies**
>
> **Unemployment rate, June 2019:**
>
> - North Shore: 4.1%
> - Hampden: 3.2%
>
> **MAI focus industries, by share of employment:**
>
> - Manufacturing (North Shore: 10%; Hampden: 9%)
> - Education and health services (North Shore: 24%; Hampden: 25%)
> - IT (North Shore: 1%; Hampden: 1%)
> - Diesel technician (North Shore: 0.2%; Hampden: 0.2%)
>
> SOURCES: Unemployment rate: U.S. Department of Labor, Bureau of Labor Statistics. Worcester metropolitan area used as proxy for North Shore.
> https://beta.bls.gov/dataViewer/view/timeseries/LAUMT257960000000003;
> https://beta.bls.gov/dataViewer/view/timeseries/LAUCN250130000000003.
> Focus industries: U.S. Department of Labor, Bureau of Labor Statistics, for February 2019. Worcester Metropolitan Statistical Area used as proxy for North Shore. Springfield used as proxy for Hampden County: https://www.bls.gov/regions/new-england/ma_springfield_mn.htm;
> https://www.bls.gov/regions/new-england/ma_worcester_mn.htm.

5.2   Grant Activities

Grant funds for MAI supported staff to reach out and provide technical assistance to employers to expand apprenticeship. Grant funding supported the following:[38]

- **MAI staff at EOLWD.** The grant supported Department of Career Services staff who oversaw, monitored, and reported grant activities: a **policy and program operations manager** served as the grant director, a **grants management specialist** provided day-to-day oversight of the program, and an **assistant secretary for program and performance management** monitored and reported data on grant activities to DOL. Using AAI grant funding and an additional DOL grant (State Apprenticeship

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[36]   Local Area Unemployment Statistics, https://www.bls.gov/lau/lamtrk15.htm.

[37]   Unemployment rate in 2015 for two key workforce areas served under the grant were as follows: (1) Hampden County, 6.4 percent; (2) Essex County (where the North Shore workforce board and its comprehensive workforce center are located), 5.0 percent. The North Shore Workforce Board serves a region north of Boston, along the Atlantic coast that includes 19 cities and towns, including Lynn, Gloucester, Beverly, and Salem. In June 2015, the unemployment rate for the workforce development area served by the North Shore Workforce Board was 4.8 percent. https://www.bls.gov/lau/lamtrk15.htm; https://masshire-northshorewb.com/regional-economy/workforce-development-area-wda-profile/.

[38]   EOLWD did not include pre-apprenticeships in its AAI grant application, but in 2020 added a pharmacy technician program operated at Quinsigamond Community College, with CVS Health as the employer partner.

Expansion), EOLWD hired two **apprenticeship liaisons** to help coordinate apprenticeship program expansion across the state.

- **MAI staff at the workforce boards.** Two workforce boards—MassHire North Shore and MassHire Hampden County—had a **director of workforce development programs** who communicated with state-level officials about the grant and coordinated grant activities locally. Two **apprenticeship marketing staff** (one at the North Shore Workforce Board and one at the Hampden County Workforce Board) conducted employer outreach; helped design and register apprenticeship programs for employers; identified and secured, as needed, related technical instruction (RTI) providers; and recruited and screened potential apprentices if requested.

- **RTI costs.** The grantee reimbursed employer RTI costs. The average reimbursement was $4,000 per apprentice, but ranged from $2,100 to $7,500.[39]

5.3 Participant Characteristics and Recruitment

Apprentices were predominantly men and age 25 or older. About one-third of apprentices were non-Hispanic White and another third were Hispanic of any race. Fewer than one in 10 was a veteran. Half of pre-apprentices were non-Hispanic White and relative to apprentices, more were veterans. (See Exhibit 5-1.)

From the start of its grant, MAI targeted incumbent workers and thus recruited many apprentices through employers. MAI staff encouraged employers to consider establishing or expanding apprenticeship programs as a mechanism for enhancing the skills of their existing workforce. An estimated 70 percent of MAI apprentices were incumbent workers.

MAI apprenticeship marketing staff at the Hampden County and North Shore Workforce Boards conducted outreach to build awareness among employers of the benefits of apprenticeship. To increase awareness of apprenticeship opportunities among unemployed and employed workers interested in upgrading their skills, MassHire Career Centers distributed brochures and used social media posts to disseminate information.

5.4 Engaging and Assisting Employers

At the state level, EOLWD and its Division of Apprenticeship Standards (DAS) promotes apprenticeships to employers by distributing information about apprenticeship programs and the resources available to support employers to develop programs. EOLWD and DAS also disseminate an apprenticeship tool kit to help employers better

Exhibit 5-1. Apprentice and Pre-Apprentice Characteristics, MAI

Apprentice Characteristic	
Men	71%
Women	28%
24 or younger	18%
25 to 44	58%
45 or older	24%
Hispanic, any race	32%
White, non-Hispanic	35%
Black, non-Hispanic	19%
Asian	3%
Other race, non-Hispanic	11%
Veteran	8%
People with disabilities	1%

Pre-Apprentice Characteristic	
Men	77%
Women	23%
24 or younger	15%
25 to 44	57%
45 or older	28%
Hispanic, any race	30%
White, non-Hispanic	50%
Black, non-Hispanic	9%
Asian	2%
Other race, non-Hispanic	9%
Veteran	15%
People with disabilities	0%

SOURCE: Apprenticeship Quarterly Performance Report (QPR), as of September 2020. For apprentices, gender *N*=205; age and veteran/disability *N*=206; race/ethnicity *N*=194. For pre-apprentices, gender and race/ethnicity *N*=44; age and veteran/disability *N*=47.

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[39] AAI grant funds were not used to offset on-the-job-learning costs.

understand apprenticeship programs and how such programs can be a promising approach to building a skilled workforce.

Responsibility for direct employer outreach and engagement rested with the MassHire Hampden County and Mass Hire North Shore Workforce Boards. During the grant period, staff disseminated information about apprenticeships and MAI to employers at conferences and other industry events, and through calls and follow-up visits to employers in the targeted industries. If an employer expressed interest in an apprenticeship program for its workers (or prospective employees), the workforce boards' apprenticeship marketing staff followed-up by telephone and in person to provide additional information about the benefits of apprenticeship, the basics of how apprenticeship programs operate (including discussion of key components RTI and on-the-job learning (OJL)), steps involved in designing and registering an apprenticeship program, and the role employers play in providing training and mentoring to apprentices. When an employer decided to move forward with an apprenticeship program, the marketing staff helped identify specific goals for the employer and apprentices under the program, designed key elements of the program with a focus on the RTI and OJL program components, identified and secured an appropriate RTI provider, and provided guidance on the steps involved in registering and launching the apprenticeship program.

Additionally, the two workforce boards served as the program sponsor if employers expressed interest. In this capacity, the workforce boards registered apprenticeship programs, as well as supported the costs and paperwork involved in administering the programs. Staff reported that this option appealed to small and mid-sized employers that did not have the staff capacity to design and register an apprenticeship program themselves.[40]

Staff reported several challenges to engaging employers in apprenticeship programs. Many employers in nontraditional industries were unaware of apprenticeship as a training strategy, or they perceived the process of designing and registering a program as burdensome. In response to these challenges, the two workforce boards intensified employer outreach efforts, with a particular focus on working with trade associations, which had pre-existing relationships with large numbers of employers in the advanced manufacturing, healthcare, and IT sectors targeted under the grant.

> **Spotlight on Apprenticeship: Northeast Advanced Manufacturing Consortium's Role in Employer Outreach and Group Sponsorship**
>
> Four MassHire workforce board directors, including at MassHire North Shore, established the Northeast Advanced Manufacturing Consortium (NAMC) to promote manufacturing in Northeast Massachusetts and develop a pipeline of skilled workers necessary for the region to remain competitive in advanced manufacturing. NAMC engaged its 200 consortium members (mostly manufacturing firms) to consider setting up apprenticeship programs to address skills needs.
>
> NAMC staff worked closely with MassHire North Shore Workforce Board staff to advertise apprenticeship to manufacturing employers to address skills shortages. With AAI grant funding, NAMC and MassHire North Shore provided up to $5,000 per apprentice to help offset RTI costs for employers that established an apprenticeship program or expanded an existing one. NAMC helped employers develop a training plan that outlined the types and lengths of training delivered on the job, complemented by specialized RTI providers of the employer's choice. NAMC also sponsored apprenticeships for select occupations in the advanced manufacturing sector. Using NAMC's already registered apprenticeships made it easier for interested employers to adopt apprenticeship because it reduced the burden of creating and registering their own programs.

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[40] Prior to receiving its AAI grant, the MassHire Hampden County Workforce Board had not sponsored registered apprenticeship programs; without the AAI grant, it would not have likely pursued registering an apprenticeship program.

5.5   Apprenticeship Programs

As of September 2020, EOLWD and its partners registered 21 apprenticeship programs under the AAI grant (according to data reported to DOL). More than four-fifths of apprentices were enrolled in time-based programs (89 percent); the remainder were in competency-based (10 percent) or hybrid (2 percent) programs. Two-thirds (67 percent) of AAI apprentices entered manufacturing occupations (Exhibit 5-2). The remainder entered occupations in IT or healthcare (12 percent each). Eight percent entered other occupations, primarily in installation, maintenance, and repair.

Exhibit 5-2. Occupations of Registered Apprentices, MAI
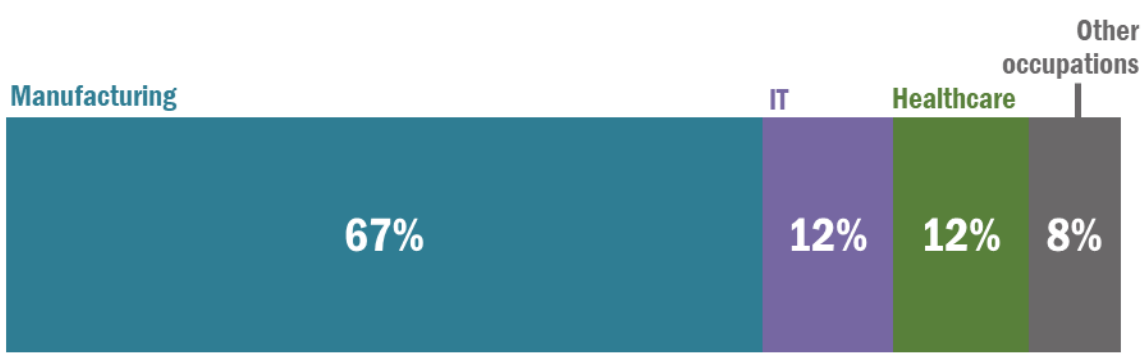
SOURCE: Apprenticeship QPR, as of September 2020. *N*=206 apprentices.

Most apprenticeships in manufacturing occupations were time based—2,000 hours of OJL and 150 hours of RTI—and typically one year in duration. Most apprenticeships in the healthcare and IT occupations were competency-based.

The two workforce boards connected employers to a range of RTI providers across the service area, with a focus on community colleges (including Middlesex, North Shore, Essex, Springfield Technical, Bunker Hill, and Quinsigamond Community Colleges). In some instances, employers provided in-house instructors for the RTI component. All apprentices who completed received a Massachusetts Division of Apprenticeship Standards Certificate of Completion.

Spotlight on Apprenticeship: Baystate Health's Pharmacy Technician Apprenticeship Program

Baystate Health, a non-profit healthcare system, operates hospitals across Massachusetts. The hospital system sought training for pharmacy technician positions. MassHire Hampden County sponsored Baystate Health's pharmacy technician program and offset its RTI costs. Baystate Health hires workers through standard practices, primarily from retail pharmacies. Once hired, a worker could apply for an apprenticeship position. Some apprentices entered the program as state-licensed entry-level pharmacy workers, but needed to develop specialized skills to work as a pharmacy technician within a hospital setting. Workers in other hospital departments could apply too if they were interested in a career change. Key features of the apprenticeship program included the following:

- **RTI.** The RTI was 150 hours, conducted concurrently with OJL. As apprentices worked their way through modules, they needed to pass exams demonstrating competency before moving on to the next module in the program. Baystate Health staff in the pharmacy department, including registered pharmacists and certified pharmacy technician supervisors, delivered the RTI, which featured a combination of virtual learning and in-person instruction. RTI costs were about $4,300 per apprentice and fully covered by the grant.
- **OJL.** Because OJL was competency-based, the apprenticeship duration varied by apprentice, but generally was about one year. A mentor, usually a pharmacy technician or a pharmacist, delivered OJL, mostly one-on-one with an apprentice in the hospital's pharmacy. Before moving to the next program step, the mentor confirmed the apprentice passed proficiency exams and demonstrated required competencies.
- **Certificates and credentials.** Upon successful completion of the apprenticeship, apprentices received a certificate of completion. In addition, pharmacy technicians had to adhere to licensing requirements and be certified by the Pharmacy Technician Certification Board.

Apprentices received a wage increase six months after program enrollment and again at the end of the apprenticeship. Additionally, Baystate Health hired those who successfully completed the apprenticeship as full-time pharmacy technicians.

5.6 Plans to Sustain Grant Activities

At the time of this report, the Massachusetts Governor and the Massachusetts Apprenticeship Council were leading efforts to secure new grant funds to establish new apprenticeships and expand existing ones across the Commonwealth. In addition to the AAI grant and an ApprenticeshipUSA State Expansion Grant, the state received a DOL State Apprenticeship Expansion grant in 2020.[41] Building on its AAI effort, the state aimed to expand registered apprenticeship to new industries; reach out to, and enroll, underrepresented apprentices; maintain quality of programming; improve relationships with employers; and improve infrastructure with a new database of apprenticeship opportunities and resources.[42]

To increase employer interest in apprenticeship, in 2019 the state enacted an apprenticeship tax credit of $4,800. AAI grant staff also reported that the state budget included a line item earmarked for apprenticeship expansion, which could allow for the expansion of the Division of Apprenticeship Standards staff. Staff stressed the importance of leveraging experience gained by the Hampden County and North Shore Workforce Boards in implementing AAI grant activities to identify promising practices that other workforce boards across the state could adopt. These include workforce boards conducting outreach to inform and engage employers with apprenticeship, as well as serving as apprenticeship sponsors to ease the burden on employers of program design, registration, and ongoing administration.

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[41] In 2020, Massachusetts received $3.3 million in State Apprenticeship Expansion funds; earlier, in 2016, Massachusetts received $1.5 million in ApprenticeshipUSA State Expansion Grant funds.

[42] For additional details, see Approved Minutes for the Massachusetts Apprentice Council Meeting, 02-28-20, at https://www.mass.gov/news/see-the-approved-minutes-for-the-massachusetts-apprentice-council-meeting-02-28-20.

> **Spotlight on Apprenticeship: Mack Technologies' First Line Supervisor Apprenticeship Program**
>
> Mack Technologies (Mack), located in Westford, provides printed circuit board assembly, systems assembly, and electronics contract manufacturing services. Working closely with MassHire North Shore, Mack developed and implemented a first line supervisor apprenticeship program. First line supervisors oversee work on manufacturing assembly lines, keep track of production schedules, help resolve issues on the production floor, and serve as the interface between other employees and management. In designing and implementing its first ever apprenticeship program, Mack aimed to increase line productivity and reduce manufacturing waste while offering a promotion opportunity for existing employees to advance to first line supervisor positions.
>
> Mack initiated the apprenticeship program after leadership attended a North Shore Workforce Board meeting and learned about apprenticeship programs and the assistance available under the AAI grant. Mack's Human Resources Department had subsequent discussions with the North Shore Workforce Board apprenticeship marketing staff about designing and registering an apprenticeship program that would meet Mack's training needs. With guidance from the apprenticeship marketing staff, Mack refined the NAMC-developed RTI and OJL program components to align with its manufacturing process. Mack invited prospective RTI providers to comment on the curriculum and describe how they would implement it. Mack selected Middlesex Community College (MCC) to contextualize and tailor instruction to Mack's workforce needs.
>
> Apprentices enrolled in cohorts. Mack selected incumbent workers as apprentices based on their leadership qualities and interest in moving into positions of greater responsibility. Employees already in unofficial leadership positions got priority. Key features of the apprenticeship program included the following:
>
> - **RTI.** The 150 hours of RTI was concurrent with OJL. MCC instructors came onsite at Mack Technologies during standard work hours. Apprentices made presentations to demonstrate their understanding of the material. RTI included modules on leadership training, team building, problem solving, communicating in the workplace, conflict management, and supervisor strategies. Because RTI occurred at the workplace, apprentices saved time and costs associated with travel to MCC.
> - **OJL.** OJL was 1,500 hours. Two Mack staff served as mentors. OJL programmatic components encompassed understanding work safety, process flow diagrams and engineering drawings, company standard operating procedures, coordination and supervision of production employees, technologies used in production, and production quality assurance.
> - **Certificates and credentials.** Apprentices completed Occupational Safety and Health Administration (OSHA) safety training and certification. They also received a certificate of completion and a pay raise (amount dependent on experience and time employed) upon completion of the apprenticeship.
>
> A Mack official reported the firm greatly valued the program because it developed leadership skills and led to increased efficiency and decreased waste in the workplace. It also helped retain employees who might have left for other advancement opportunities.

5.7 Implementation Lessons from Operating the AAI Grant

Staff interviews suggested the following lessons for developing apprenticeships:

- **Workforce boards and trade associations acting as apprenticeship program sponsors can help encourage employers, especially small and mid-sized ones, to consider apprenticeship as a training option.** Apprenticeship sponsorship by a local workforce board or other entities (such as a trade association) can help entice employers to consider apprenticeship by reducing planning and registration costs, bringing expertise about apprenticeship design and operation, and reducing costs associated with ongoing program administration and paperwork. Additionally, local workforce boards have a built-in employer base, with 51 percent of the board representation required to be from local businesses. These employers can serve an important role in getting the word out to other employers about apprenticeship. If they are involved in apprenticeship, they also have a vital role in communicating with other business leaders about the advantages of using apprenticeship as a model for recruitment, training, and retention of a skilled workforce.

- **Reducing RTI costs can encourage employer involvement in apprenticeship.** The two participating workforce boards used grant funds to cover RTI costs and help employers design and implement RTI. With grant funds, MAI covered RTI costs (on average $4,000 per apprentice).

Additionally, workforce board staff helped with RTI curriculum design and identifying and securing an RTI provider. Together, funds and staff assistance are strong incentives for employers to try apprenticeship. Staff also reported the apprenticeship tax credit offered by the state beginning in 2019 helped them market apprenticeship as a viable approach to recruit, train, and retain workers and served as an additional incentive to employers.

EOLWD Responses to the COVID-19 Pandemic

Beginning in mid-March 2020, the COVID-19 pandemic began affecting apprenticeship programs across Massachusetts as well as the employer outreach efforts of the two workforce boards. Many apprenticeship programs either suspended RTI and OJL or moved training activities to virtual platforms. However, not all occupations could accommodate virtual training. With employers cutting back staff or placing holds on new hires, selling apprenticeship to employers became more difficult as well. To facilitate online instruction, EOLWD sought and received DOL approval to use AAI grant funds to purchase tablets and cover the costs of internet connectivity for apprentices.

The temporary closure of MassHire facilities complicated efforts by AAI program staff to conduct in-person activities with businesses that had been preparing to register new apprenticeship programs. It also affected efforts to reach out to new businesses as part of the broader employer engagement effort under the grant. AAI program staff shifted employer outreach and engagement efforts from in person to telephone, email, and social media.

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6. Philadelphia Works, Inc.

Philadelphia Works, Inc. is the workforce development board for the city of Philadelphia. A non-profit organization, it administers the Workforce Innovation and Opportunity Act (WIOA) funds for the city, serving job seekers and employers through its American Job Centers, known as PA CareerLink® centers.

Philadelphia Works received an American Apprenticeship Initiative (AAI) grant to expand apprenticeship in the healthcare and information technology (IT) fields in Philadelphia and its surrounding counties. The grant targets Opportunity Youth, defined as individuals between ages 18 and 24 who are out of school and not working. The grantee's primary roles included identifying and engaging employers in the region to develop and register apprenticeship programs or sign on to existing group programs, and assisting employers with registering apprentices. Philadelphia Works also helped recruit pre-apprenticeship participants for programs operated by or in cooperation with its apprenticeship sponsors; funded related technical instruction (RTI) tuition for apprentices; and defrayed the cost of mentor instruction for on-the-job learning (OJL).[43]

Nine sub-grantees received funds to support their apprenticeship programs and other grant activities. These sub-grantees included District 1199C Training & Upgrading Fund, a local group sponsor of apprenticeship programs in healthcare; JEVS Human Services, a non-profit workforce intermediary; and Communities in Schools–Philadelphia/Urban Technology Project (UTP), a school-based sponsor of IT apprentices.[44] Philadelphia Works leveraged other partnerships with local workforce agencies and youth organizations as well.

GEOGRAPHIC AREA SERVED

Pennsylvania

● Philadelphia Works
Sub-State government agency

Philadelphia Works at a Glance

Grantee type: Sub-State government agency

Geographic coverage: Philadelphia and surrounding Pennsylvania counties

Grant amount: $2,999,722

Target industry: Healthcare, IT

Registering body: State Apprenticeship Agency, Pennsylvania Apprenticeship and Training Office

Prior experience with registered apprenticeship: Yes

Target number of registered apprentices: 310

Number of apprentices registered (as of 9/2020): 96 (31% of target)

Target number of pre-apprentices: 190

Number of pre-apprentices served (as of 9/2020): 260 (137% of target)

Grant period: September 2015 to June 30, 2021

6.1 Target Occupational Areas

Philadelphia Works targeted behavioral health, pharmacy technician, and IT occupations for the AAI grant. Research on job openings and other labor market information demonstrated strong job growth in these areas in the region. In some cases, there were existing apprenticeship programs in these occupational areas that could be expanded under the grant. Specifically, Philadelphia Works has had long-

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[43] Additionally, Philadelphia Works participated in the AAI employer engagement demonstration. Activities and outcomes related to this demonstration are the subject of a separate report.

[44] For more on District 1199C Training & Upgrading Fund, see https://www.1199ctraining.org/. For more on JEVS Human Services, see https://www.jevshumanservices.org/. For more on the Urban Technology Project, see https://utp-philly.org/.

standing relationships with District 1199C's registered apprenticeship programs in healthcare and the IT apprenticeship programs operated by UTP and JEVS.

Staff from District 1199C and Philadelphia Works reported that they had discussions prior to the AAI grant regarding how to improve job quality for behavioral health workers, who provide both mental health and substance use disorder care in a healthcare or school setting. These jobs had high turnover rates and employees were often not well compensated for their work. District 1199C's previous success with apprenticeship in other healthcare occupations suggested to staff that registered apprenticeship could help raise the quality and stature of behavioral health jobs.

While IT apprenticeships and work-based learning existed in Philadelphia prior to the grant, the AAI grant

> **Philadelphia Area Economy**
>
> **Unemployment rate, June 2019:** 5.7%
>
> **Philadelphia Works focus industries, by share of employment:**
>
> - Education and healthcare services (22%)
> - IT (2%)
>
> SOURCES: Unemployment rate: U.S. Department of Labor, Bureau of Labor Statistics. https://beta.bls.gov/dataViewer/view/timeseries/LAUCT426000000000003. Focus industries: U.S. Department of Labor, Bureau of Labor Statistics, for February 2019. Philadelphia metropolitan area includes Philadelphia, PA; Camden, NJ; and Wilmington, PA. https://www.bls.gov/regions/mid-atlantic/pa_philadelphia_msa.htm.

enabled Philadelphia Works to tailor those opportunities to Opportunity Youth. Some partners had existing apprenticeships, but others did not. For example, UTP operated IT apprenticeship programs for youth before the AAI grant, while JEVS did not.

Often IT apprenticeship programs are sponsored by technology companies or IT training providers. Philadelphia Works, however, aimed to register and expand IT apprenticeships outside of IT companies that still had IT hiring needs.

When the grant was awarded in 2015, annual average unemployment in the city of Philadelphia was 7.1 percent. Unemployment was lower in the Philadelphia metropolitan area at 5.3 percent (the same as the national average unemployment rate for 2015). The AAI grant served some apprentices in the broader Philadelphia metropolitan area, although most were in the city.[45] Philadelphia Works targeted Opportunity Youth for paid work experience in part because of higher unemployment rates among this age group.

6.2   Grant Activities

With the AAI grant, Philadelphia Works sought to build on previous partnerships with training providers and existing apprenticeship programs active in the Philadelphia area. Grant funds for the Philadelphia Works AAI initiative supported the following activities:

- **Philadelphia Works staff.** The **project director** was fully funded by the grant, managed grant activities overall, and played a central role in developing relationships with grant partners, including District 1199C, JEVS, and UTP. The grant also fully supported two **apprenticeship program specialists** who were responsible for managing partner relationships, conducting outreach to employers, and providing technical assistance.[46] Workforce boards in three neighboring counties (Bucks, Chester, and Montgomery) each had a **workforce board staff member** partially supported

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[45]   For unemployment in the city of Philadelphia, see https://www.bls.gov/lau/laucnty15.txt. For the metropolitan area, see https://www.bls.gov/lau/lamtrk15.htm.

[46]   The grant supported one full-time apprenticeship program specialist; the second apprenticeship program specialist was supported by grant funds and other funding sources.

by the grant, who was responsible for managing relationships with partners and employers in their counties and providing free technical assistance to apprenticeship programs.

- **Payments to sub-grantees.** Philadelphia Works supported nine program sponsors and other partners through sub-grants. Sub-grant payments covered RTI costs (see below), program development costs, supportive services (including transportation passes), equipment, and mentor stipends. Most of these payments were negotiated with each partner and varied depending on its needs and available funds, although mentor stipends were $1,200 per mentor across all partners. Partners used few grant funds for equipment purchases, although some did purchase laptops and related equipment.

- **RTI costs.** Philadelphia Works paid many of the apprentices' technical instruction costs with the AAI grant funds through the sub-grants mentioned above. The exact amounts paid varied by apprenticeship program. Philadelphia Works determined the amount of RTI costs that it paid for each sponsor when it developed that sponsor's sub-grant agreement. The amount depended on the total RTI costs to the employer, other costs covered by the grant, and remaining grant funds. The AAI grant paid for as little as $715 per apprentice for programs with lower RTI costs, and up to $2,000 per apprentice for programs with higher tuition.

6.3 Participant Characteristics and Recruitment

Nearly half of apprentices were women and the majority were age 24 or younger.[47] Almost two-thirds were non-Hispanic Black. Pre-apprentices had similar age and gender characteristics as apprentices. About two-thirds of pre-apprentices were non-Hispanic Black and one-fifth were Hispanic of any race. Five percent of pre-apprentices were people with disabilities. (See Exhibit 6-1.)

Philadelphia Works relied heavily on partner youth-serving organizations for recruitment of Opportunity Youth. For example, Philadelphia Youth Network and Kensington Career and Technical High School helped to recruit pre-apprentices and apprentices for a CVS Health pharmacy technician program. UTP used its pre-apprenticeship partner (AmeriCorps) and RTI

Exhibit 6-1. Apprentice and Pre-Apprentice Characteristics, Philadelphia Works

Apprentice Characteristic	
Men	52%
Women	48%
24 or younger	93%
25 to 44	7%
45 or older	0%
Hispanic, any race	16%
White, non-Hispanic	15%
Black, non-Hispanic	62%
Asian	5%
Other race, non-Hispanic	1%
Veteran	1%
People with disabilities	0%
Pre-Apprentice Characteristic	
Men	48%
Women	52%
24 or younger	98%
25 to 44	2%
45 or older	0%
Hispanic, any race	21%
White, non-Hispanic	8%
Black, non-Hispanic	68%
Asian	2%
Other race, non-Hispanic	0%
Veteran	0%
People with disabilities	5%

SOURCE: Apprenticeship Quarterly Performance Report (QPR), as of September 2020. For apprentices, gender *N*=95; age and veteran/disability *N*=96; race/ethnicity *N*=91. For pre-apprentices, gender and age *N*=256; race/ethnicity *N*=244; veteran/disability *N*=260.

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[47] All Philadelphia Works apprentices had to be age 24 or younger at the time of registration because it targeted its AAI grant to Opportunity Youth. Some could have been older when their information was recorded in the DOL Apprenticeship QPR system.

partner (JobWorks) for recruitment. Common recruitment strategies included social media campaigns, radio advertisements, and personal networks.

6.4   Engaging and Assisting Employers

Philadelphia Works engaged employers by cultivating previous relationships and supporting new business outreach. Because Philadelphia Works oversees the PA CareerLink centers for the city, outreach by AAI grant staff built on the existing relationships between the centers and local employers, including pre-existing apprenticeship programs (e.g., those offered by District 1199C and UTP). Common recruitment strategies included searching through the *Philadelphia Business Journal* for employers who were hiring, Indeed.com, and individual company websites. The Philadelphia Works business services staff supported the AAI grant staff by mentioning apprenticeship to their clients when appropriate in their own outreach efforts and referring potential apprenticeship sponsors to the AAI grant staff. AAI grant staff then arranged in-person meetings to discuss registering an apprenticeship program in more detail and to understand what kind of support the employer needed from the grant.

Sponsors that existed prior to the grant registered many of Philadelphia Works' apprentices, using AAI funds to expand their efforts. For example, the District 1199C healthcare programs and UTP's IT programs were registered in the early 2000s. Under the grant, District 1199C added a new apprenticeship program for direct support professionals (a behavioral health occupation) and signed on four new employers. Philadelphia Works also supported expansion of these programs by paying for RTI and supportive services and by developing relationships with local youth-serving organizations to bring Opportunity Youth into apprenticeship. Although Philadelphia Works helped new programs register and assisted with registering individual apprentices as needed, it did not manage their registration of individual apprentices.

Philadelphia Works sub-grantees also conducted outreach to employers, most notably sub-grantees District 1199C and JEVS. District 1199C's group non-joint apprenticeship program included both unionized and non-unionized employers. District 1199C helped with employer outreach on the grant by working with Philadelphia Works to identify new employers to sign on to District 1199C's Standards of Apprenticeship and to expand programs at current employer partners. As a non-profit career services organization, JEVS had its own business services staff, including a staff member dedicated to apprenticeship expansion.

Grant staff reported that employer outreach to new sponsors with no prior relationship could be slow because of its focus on relationship building and because employers that are interested in apprenticeship do not always have immediate training needs. Philadelphia Works approached a large behavioral health organization early in the grant period about registering behavioral health apprenticeship programs. Despite this early contact, the company only began developing the apprenticeship program with Philadelphia Works at the time of the site visit in April 2019. Although the program development process was intensive, the company was still hesitant to take the step of registering a program. Bucks County Intermediate Unit, an educational service agency and sub-grantee, registered a behavioral health technician program with the assistance of Philadelphia Works and the Bucks County Workforce Board (a grant partner). The first cohort started in fall 2018. The Intermediate Unit had no prior experience with apprenticeship and relied heavily on Philadelphia Works's guidance and technical assistance.

6.5   Apprenticeship Programs

As of September 30, 2020, Philadelphia Works had registered or expanded 10 apprenticeship programs under the AAI grant, according to grant data reported to DOL. Sixty-seven percent of apprentices were registered in competency-based programs and the remaining 33 percent were in hybrid time- and

competency-based programs.[48] Close to half (48 percent) of AAI apprentices entered IT occupations and 18 percent registered in healthcare occupations (Exhibit 6-2). Almost a third (34 percent) registered in "other" occupations, mostly as behavioral health technicians who were often employed by healthcare providers but not counted as a healthcare occupation using standard occupational codes. Prominent apprenticeship occupations included behavioral health technician, direct support professional, pharmacy technician, and computer support specialist.

Exhibit 6-2. Occupations of Registered Apprentices, Philadelphia Works
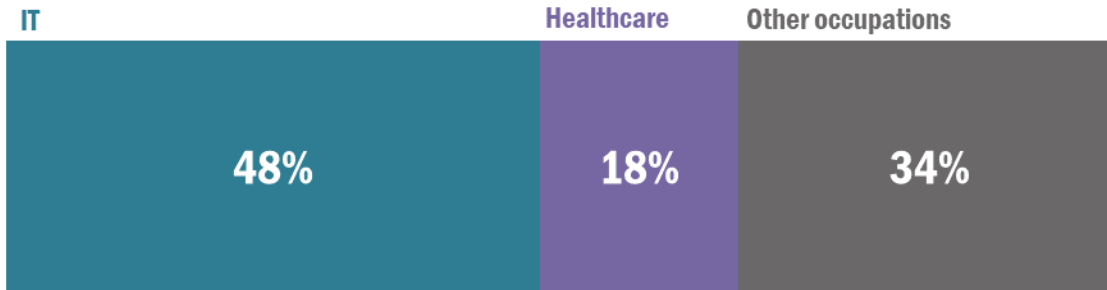
SOURCE: Apprenticeship QPR, as of September 2020. *N*=96 apprentices.

Employers sponsoring and registering apprenticeship programs included local non-profits and healthcare providers, a national pharmacy chain, and the local school district. Employers used a variety of training providers for RTI: private RTI providers such as JobWorks and CVS Health as well as postsecondary institutions including Bucks County Community College, Community College of Philadelphia, and Jefferson University.

> **Spotlight on Apprenticeship: District 1199C's Direct Support Professional Group Apprenticeship Program**
>
> The District 1199C Training & Upgrading Fund is a joint training fund established by a collective bargaining agreement between District 1199C, the National Union of Hospital & Health Care Employees (NUHHCE), and 11 Philadelphia hospitals. Like many joint training funds, District 1199C operated group apprenticeship programs. Unlike most joint training funds, however, its programs were not joint apprenticeship programs; instead, they included both unionized and non-unionized apprentices. Multiple employers signed on to District 1199C's group apprenticeship standards and implemented its apprenticeship program (with minor variations allowable) at their facilities. District 1199C helped coordinate with partners and provided financial and administrative support for the programs.
>
> District 1199C had a history of operating apprenticeship and other training programs in healthcare. The AAI grant supported it to develop a direct support professional apprenticeship program. Direct support professionals work with people with intellectual or developmental disabilities, helping them to successfully engage in their communities, schools, and work. District 1199C and Philadelphia Works jointly determined that direct support professional offered a promising occupation of potential growth for District 1199C and represented an important in-demand job for Philadelphia residents.
>
> Working with Philadelphia Works, District 1199C developed a one-year, competency-based direct support professional apprenticeship program. The program began with a three-month pre-apprenticeship that provided trainees with exposure to the field and connection to employers. The pre-apprenticeship was not always conducted onsite, with the employer operating the apprenticeship program, but employers were involved and helped to contextualize the academic preparation offered in the pre-apprenticeship. District 1199C operated the pre-apprenticeship and vetted candidates for the apprenticeship program.

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[48]   Data reported to DOL's Apprenticeship QPR system, September 2020.

> **Spotlight on Apprenticeship: District 1199C's Direct Support Professional Group Apprenticeship Program (continued)**
>
> As a group program, the District 1199C direct support professional apprenticeship could vary in some details across employers, but maintained the same basic structure. The RTI, OJL, and resulting credentials were as follows:
>
> - **RTI.** RTI was delivered at District 1199C one day a week concurrently with the OJL. District 1199C delivered 300 hours of RTI in total. After completion of the 300 hours, apprentices took a three-credit behavioral health course at Jefferson University to complete their RTI. In total, the 300 hours of RTI at District 1199C could translate to 21 additional credits, or 24 credits in total, at Jefferson University, which offered an accelerated associate degree program to apprentices after completion. District 1199C staff reported that 24 credits of RTI put apprentices ahead of other direct support professionals, who are often promoted into more advanced positions in behavioral health after only 12 credits of classroom instruction.
> - **OJL.** Although the program was competency-based, OJL typically took 2,000 hours to complete. Apprentices were in employer-provided OJL 32 hours a week, concurrently with their RTI. Apprentices typically received one-on-one OJL from mentors. The AAI grant defrayed mentor costs with a $1,200 payment per mentor. Employers reported that the competency model allowed them to be flexible in delivering OJL and account for the barriers that individual apprentices faced. In addition to working with the mentor on the job, apprentices had a weekly meeting with their mentor to discuss progress. Employers regularly reported apprentices' progress through their competencies to District 1199C as the sponsor of the program.
> - **Certificates and credentials.** The direct support professional apprenticeship resulted in the award of an apprenticeship completion certificate and 24 college credits at Jefferson University which could be used toward an accelerated associate degree. The 24 credits included three credits awarded for a behavioral health course taught by Jefferson University instructors and 21 credits awarded to honor the 300 hours of RTI delivered by District 1199C.

6.6 Pre-Apprenticeship Programs

Philadelphia Works supported five pre-apprenticeship programs as of September 30, 2020. Each was associated with a specific registered apprenticeship program under the grant. Although successful pre-apprentices often moved on to the apprenticeship, they were not guaranteed a slot. The programs ranged in length from six to eight weeks for the pharmacy technician program to a year for the digital service fellows program (a pre-apprenticeship in IT). Different partners provided pre-apprenticeship training, including the apprenticeship program sponsor (in the case of District 1199C's direct support professional pre-apprenticeship), traditional RTI providers such as the Community College of Philadelphia and a local technical high school (for certain components of the CVS Health pharmacy technician pre-apprenticeship), and other partners such as AmeriCorps (for the digital service fellows program). Most of these pre-apprenticeship programs predated the AAI grant, but the grant provided financial support for training through a sub-grant, or recruitment support through a grant partnership.

At the time of the site visit, Philadelphia Works was helping a large behavioral health company to build a new three-month pre-apprenticeship program to prepare Opportunity Youth entering its advanced behavioral services apprenticeship program.

Spotlight on Pre-Apprenticeship: Urban Technology Project's IT Generalist Pre-Apprenticeship Program

The Urban Technology Project (UTP) and Communities in Schools of Philadelphia partnered with AmeriCorps to offer a year-long IT generalist pre-apprenticeship program: the AmeriCorps digital service fellows program. The pre-apprenticeship provided work exposure and initial classroom instruction to prepare participants for one of the UTP apprenticeship programs, including computer support specialist/IT generalist. AmeriCorps started the digital service fellows program in 2002, independently of the UTP apprenticeship program, which was registered in 2005.

UTP recruited externally for the pre-apprenticeship program; it did not draw on current AmeriCorps volunteers. Staff reported that recruitment had been difficult in a strong labor market because the pre-apprenticeship included only a modest stipend. Another obstacle to recruiting Opportunity Youth for the AAI grant through the AmeriCorps pre-apprenticeship was that AmeriCorps is charged with supporting the Philadelphia school system, so if a school recommended a student as a pre-apprentice, AmeriCorps had to hire that person rather than an Opportunity Youth.

Intake from the pre-apprenticeship program to the UTP apprenticeships was flexible and varied depending on the candidate. Typically, intake involved vetting by the pre-apprenticeship program and a technical skills interview. The interview included an online demonstration of a technical task, iPad-based interview questions, and a face-to-face interview that included a situational problem (e.g., a customer service problem for the computer support specialist apprenticeship program). A UTP staff member supported by the AAI grant ensured that applicants met all eligibility requirements for both AmeriCorps and the AAI grant.

- **Curriculum.** The digital service fellows program was one year (1,700 hour) and included 304 hours of RTI. The RTI hours were transferable to the UTP apprenticeship program, so they could potentially account for a significant portion of the apprenticeship's RTI hours. JobWorks, a national non-profit that delivers workforce development services and training in the Midwest and Mid-Atlantic regions, provided most of the RTI for the pre-apprenticeship. In addition to technical training in IT, JobWorks taught professional and life skills (e.g., punctuality and time management) to UTP pre-apprentices. JobWorks also provided RTI for UTP's apprenticeship programs. Almost all the pre-apprenticeship RTI was classroom based, in contrast with UTP's apprenticeship program, which mixed classroom-based instruction and other delivery methods. Course curriculum was designed around competencies that highly correlated with CompTIA exam content. The curriculum used classroom engagement methods and project-based learning. Sometimes JobWorks contracted with college instructors who came in to teach; other times classes were virtual.
- **Certificates and credentials.** The digital service fellows pre-apprenticeship program resulted in a CompTIA certification and could provide the pre-apprentices with up to six transferable credit hours to Peirce College for a network class.
- **Supportive services.** JobWorks provided access to a pool of tutors for its pre-apprentices. Staff reported that students who were more engaged in the coursework made the most use of the tutors. JobWorks also provided access to a professional licensed life coach and one-on-one counseling sessions to all participants. Pre-apprentices were also paired with an apprentice who could provide support and guidance during the program.

UTP described the pre-apprenticeship as key to the long-term success of its apprenticeship program. RTI and OJL hours from the pre-apprenticeship could be credited to the apprenticeship program. UTP has received two workforce grants from the state to continue support for the pre-apprenticeship program after the end of the AAI grant period.

6.7   Plans to Sustain Grant Activities

Philadelphia Works's AAI grant ended on June 30, 2021. During the final year of the grant, staff focused on planning for the sustainability of grant activities. Staff at Philadelphia Works suggested that many of the grant activities would be sustained and built upon through WIOA training funds, Temporary Assistance for Needy Families youth development funds, and support from Pennsylvania's State Apprenticeship Expansion grant and the state's PAsmart Grants.[49] Staff emphasized that one of their most important lessons from AAI was that success in apprenticeship requires partners with a commitment to the apprenticeship program and a shared goal of supporting Opportunity Youth. Accordingly, their sustainability strategy included maintaining and building these partnerships. One new source of partners

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[49]   PAsmart Grants are workforce development funds secured by the Governor of Pennsylvania and administered by the Pennsylvania Department of Labor and Industry.

and technical assistance was the Partnership to Advance Youth Apprenticeship (PAYA) National Network, which Philadelphia Works was invited to join in 2019. The network is run by the New America Foundation for the purpose of expanding youth apprenticeship opportunities.[50]

6.8 Implementation Lessons from Operating the AAI Grant

Staff interviews suggested several lessons from implementing Philadelphia Works's AAI grant activities:

- **Philadelphia Works staff deemed its relationships with employers and program sponsors essential for developing and expanding programs.** Philadelphia Works operates the city of Philadelphia's PACareerLink® centers, so it had pre-existing relationships with employers and apprenticeship program sponsors. Grant staff used these existing relationships to conduct employer outreach, develop new apprenticeship programs, and expand existing apprenticeship programs. Many of the AAI apprentices registered with sponsors that operated prior to the grant but expanded their programs or created new ones with AAI assistance. For example, District 1199C's healthcare apprenticeship programs operated prior to the grant; with grant funds, Philadelphia Works helped District 1199C develop a new direct support professional program and signed on four new employers.

- **Incentives can help engage employers, but they should be tailored to employer needs.** Philadelphia Works encouraged expansion of apprenticeship by making incentive payments, but each payment was individually negotiated with employers and program sponsors to support their needs. In some cases, employers needed to direct more funds to RTI costs; for others this was less important and program development costs were more pressing. Most employers received mentor stipends of $1,200 per mentor to defray the cost of OJL.

- **Opportunity Youth, particularly those with challenges to participation in apprenticeship, need support systems in place, including but not limited to supportive services.** Recruiting and retaining Opportunity Youth was difficult. Programs provided traditional supportive services, including transportation assistance, but the lack of childcare assistance made program completion difficult for some apprentices, for example. Apprenticeship program sponsors also learned the importance of providing formal and informal counseling support, in that it sometimes went beyond normal "professional boundaries" of how an employer would engage an employee. Program sponsors often learned about the types of supports that apprentices needed over the course of the grant; in many cases these needs were highly individualized to the apprentice.

- **Grant-supported pre-apprenticeship programs can build from a variety of existing training and onboarding processes.** The AAI grant supported five pre-apprenticeship programs, and the development of a sixth program. The pre-apprenticeships varied in length and content, and demonstrated that a variety of existing training efforts and onboarding processes can be aligned with registered apprenticeship programs to serve as pre-apprenticeships. UTP used an existing AmeriCorps Digital Service Fellows program as a pre-apprenticeship to expand access to its IT apprenticeships. CVS Health used its national online training modules as a pre-apprenticeship to ensure that all apprentices have a common baseline of understanding of pharmacy procedures and processes. Most of the pre-apprenticeships were unpaid, although the Digital Service Fellows program (which was longer than other pre-apprenticeships) did come with a stipend for participants.

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[50]   https://www.newamerica.org/education-policy/partnership-advance-youth-apprenticeship/.

Philadelphia Works Responses to the COVID-19 Pandemic

Philadelphia Works hired a new staff member in fall 2020 to track program performance and to help grant-supported programs pivot in response to the pandemic. Philadelphia Works staff all worked remotely at the time of the follow-up interview. Across all apprenticeship programs supported by the grant, the major disruption was the difficulty that Opportunity Youth faced accessing safe transportation to work and fears about working in person. Transportation difficulties were exacerbated by the irregular schedule shifts that became necessary to ensure social distancing.

Grant-supported apprenticeship programs responded differently to the pandemic depending on their occupation. Direct support professional and pharmacy technician apprentices continued to go to work in person. Pre-apprenticeships, RTI, and OJL had to be adjusted in these programs to ensure safety and adhere to social distancing guidelines. For example, CVS Health suspended its pre-apprenticeship externship because it could no longer host non-employees onsite. Instead of having apprentices first go through the pre-apprenticeship, CVS Health began hiring apprentices directly. Where pharmacy technician positions were limited, apprentices would work in other capacities at the store. Demand declined for the District 1199C program for direct support professionals, and apprentice applicants raised concerns about the safety of working in person.

UTP's IT apprenticeship programs grew significantly during the COVID-19 pandemic because of the high demand in the Philadelphia school system for IT support for online learning. A new assistant director hired at UTP was crucial to growing the program during this period and coordinating demand for services in the classroom. UTP was also affected by the Black Lives Matter demonstrations in Philadelphia and the unrest in the city. Apprentices needed additional supportive services to help them process these events, so UTP implemented a weekly "pulse check" with apprentices, to ensure that they were fully equipped and supported. The IT apprenticeship program at JEVS did not grow during the COVID-19 pandemic, primarily because of staffing changes that affected program operations.

Staff at Philadelphia Works anticipated continued growth in the IT, direct support professional, and pharmacy technician apprenticeship programs going forward, even though the latter two programs experienced pandemic-driven setbacks.

7. Shenandoah Valley Workforce Development Board

Valley to Virginia (V2V) Initiative

The Shenandoah Valley Workforce Development Board (SVWDB) provides workforce development services to 10 largely rural counties and six cities in the Shenandoah Valley region of Virginia. A non-profit organization based in Harrisonburg, SVWDB administers the Workforce Innovation and Opportunity Act (WIOA) funds for the region, serving job seekers and employers through its American Job Centers, known as Virginia Career Works centers.

SVWDB received an American Apprenticeship Initiative (AAI) grant to design and operate the **Valley to Virginia (V2V)** initiative. SVWDB's primary roles on the AAI grant included identifying and engaging employers in the region to develop and register apprenticeship programs; assisting employers with registering apprentices; recruiting pre-apprenticeship participants; funding the related technical instruction (RTI) tuition for apprentices; and purchasing job-related tools and equipment on behalf of apprentices and pre-apprentices.

7.1   Target Occupational Areas

Advanced manufacturing is a prominent industry in the Shenandoah Valley region, employing the second largest share of the local labor force, after the government sector.[51] V2V staff reported that several factors contributed to the unmet demand among manufacturers for skilled workers. First, older workers, many of whom spent their careers in manufacturing, were retiring. Second, potential workers had an outdated view of manufacturing jobs and were not interested in applying. Many viewed these jobs as manual, low-skilled, and hazardous when in fact many advanced manufacturing jobs are high-skilled positions that require an understanding of technology and computer-assisted processes. Third, technology in the industry continues to advance. To keep up with these advances, employers needed workers who knew how to operate and maintain the latest equipment. Lastly, the region had a low unemployment rate, 4.6 percent in the Harrisonburg metropolitan area in 2015, the year of the grant award and the lowest rate since 2008, when it was 3.6 percent.[52] Fewer people looking for jobs made it difficult for employers to find skilled workers.

GEOGRAPHIC AREA SERVED

Virginia

● Shenandoah Valley Workforce Development Board
Sub-State government agency
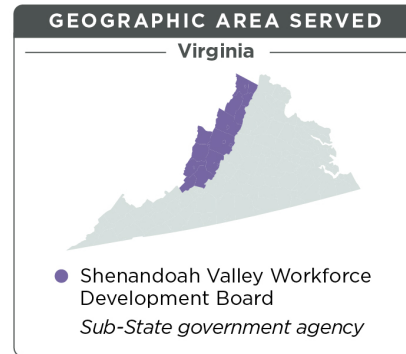
Shenandoah Valley Workforce Development Board at a Glance

Grantee type: Sub-State government agency

Geographic coverage: Shenandoah Valley, Virginia

Grant amount: $4,000,000

Target industry: Advanced manufacturing

Registering body: State Apprenticeship Agency, Virginia Department of Labor and Industry (VDOLI)

Prior experience with registered apprenticeship: Yes

Target number of registered apprentices: 600

Number of apprentices registered (as of 9/2020): 1,086 (181% of target)

Target number of pre-apprentices: 35

Number of pre-apprentices served (as of 9/2020): 188 (537% of target)

Grant period: September 2015 to June 2021

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[51]   Shenandoah Valley, Virginia Community Profile from the Virginia Economic Development Partnership, 2018, https://www.vedp.org/community-profiles.

[52]   Local Area Unemployment Statistics, https://www.bls.gov/lau/lamtrk15.htm.

7.2   Grant Activities

With the AAI grant, SVWDB sought to build on efforts started under a previous DOL grant to develop work-based learning programs for advanced manufacturers in the region. Staff reported that employers liked the work-based learning model, and apprenticeship was a natural extension. Grant funds for the V2V initiative supported the following activities:

> **Shenandoah Valley Regional Economy**
>
> **Unemployment rate, June 2019:** 2.7%
>
> **V2V focus industries, by share of employment:**
>
> - Manufacturing (production occupations) (9%)
> - Construction (5%)
> - Installation, maintenance, and repairs (5%)
>
> SOURCES: Unemployment rate: U.S. Department of Labor, Bureau of Labor Statistics. Rockingham County. https://beta.bls.gov/dataViewer/view/timeseries/LAUCN511650000000003.
> Focus industries: U.S. Department of Labor, Bureau of Labor Statistics, for May 2019. Harrisonburg used as proxy for Shenandoah Valley. https://www.bls.gov/oes/current/oes_25500.htm#47-0000.

- **V2V staff.** The **project director** managed grant activities overall and played a central role in developing relationships with employers. The **business development manager** identified employers, met with them to discuss registered apprenticeship, and assisted those interested to develop an apprenticeship program (see more on employer engagement below). The **program coordinator** handled the paperwork to register apprentices on behalf of employers and collected data on apprentice completion. The **programs specialist** recruited, screened, and enrolled pre-apprentices, then assisted them in identifying courses and training providers, developing resumes, and identifying potential employers for apprenticeships. A **grant coordinator** housed at Lord Fairfax Community College enrolled pre-apprentices and helped with business development.

- **RTI costs.** Intended as an incentive to encourage employers to develop apprenticeship programs, V2V paid half of each apprentice's technical instruction costs, averaging about $2,600 per person. The other half was paid for by the apprenticeship sponsor (which in Virginia is typically the employer) or through other sources such as WIOA funds, federal financial aid, or state incentives to businesses. Either V2V paid the training provider directly or the employer paid the training provider and was reimbursed by V2V.

- **Equipment for pre-apprenticeship training provider.** V2V helped pre-apprenticeship program training provider Wilson Workforce Rehabilitation Center (WWRC; discussed below) purchase classroom equipment needed to provide hands-on training to participants. This new equipment ensured that WWRC's pre-apprentice training used appropriate and current machinery and technology.

- **Financial support for apprentices and pre-apprentices.** V2V provided supportive services, specifically financial assistance to reimburse for gas; purchase uniforms, tools, and equipment (e.g., work boots, helmets, and specialized equipment for people with disabilities); and purchase books for RTI. Pre-apprentices who transferred into an apprenticeship received a $100 gift card upon registration, and all who completed the apprenticeship received another $100 gift card.

- **Hershey Company job coach.** Mid-grant, V2V funded a part-time job coach through a third party. This job coach worked with pre-apprentices at the Hershey Company during the two-week pre-apprenticeship (described below) to help them identify and address personal challenges that otherwise might impede completion of the pre-apprenticeship program and, if hired, their longer-term retention by Hershey. For those hired into Hershey's industrial manufacturing technician (IMT) apprenticeship, the job coach continued to assist them during that program.

7.3   Participant Characteristics and Recruitment

Apprentices were predominantly men, age 25 or older, and non-Hispanic White. Approximately one in ten was a veteran. Relative to apprentices, more pre-apprentices were men and they tended to be younger—more than 90 percent age 44 or younger. About one-quarter of pre-apprentices were people with disabilities, in line with the target population of one of the pre-apprenticeship programs (see **Spotlight on Pre-Apprenticeship** below). (See Exhibit 7-1.)

Recruitment strategies included referrals from the Virginia Career Works centers and partner organizations; advertisements on television, radio, and social media; and fliers posted in community and faith-based facilities and local community and technical colleges. V2V staff also attended special events for transitioning veterans, Hispanic individuals, and women, and made presentations at high schools to interest younger workers in advanced manufacturing jobs.

V2V staff reported that several employers preferred to hire incumbent workers for apprenticeship positions. Employers developed apprenticeship programs to train existing workers for more skilled positions for which it was more difficult to recruit from the outside. They then hired externally for less skilled positions that tended to be easier to fill.

7.4   Engaging and Assisting Employers

V2V staff reported that the most common way they identified employers interested in developing apprenticeship programs was the state's apprenticeship agency, the Division of Registered Apprenticeship in the Virginia Department of Labor and Industry (VDOLI). Local representatives from VDOLI contacted the V2V project director and business development manager when they came across an employer for which apprenticeship could help address a labor need. The business development manager typically arranged an in-person meeting with the employer's leaders, human resources managers, and prospective mentors for the apprentices. V2V staff also identified employers through referrals from the Virginia Career Works business services staff. Finally, the V2V project director had long-standing relationships in the region with employers through prior work and conducted outreach to those deemed good prospects.

In meetings with employers, the V2V business development manager first asked them to describe their labor needs and the challenges they faced in meeting them. If apprenticeship seemed likely to help address the issues, the business development manager then discussed registered apprenticeship programs, which include RTI and on-the-job learning (OJL) components. They also discussed the flexibility the

Exhibit 7-1. Apprentice and Pre-Apprentice Characteristics, V2V

Apprentice Characteristic	
Men	80%
Women	20%
24 or younger	27%
25 to 44	51%
45 or older	22%
Hispanic, any race	7%
White, non-Hispanic	79%
Black, non-Hispanic	12%
Asian	1%
Other race, non-Hispanic	1%
Veteran	9%
People with disabilities	6%
Pre-Apprentice Characteristic	
Men	89%
Women	11%
24 or younger	52%
25 to 44	42%
45 or older	6%
Hispanic, any race	10%
White, non-Hispanic	75%
Black, non-Hispanic	10%
Asian	1%
Other race, non-Hispanic	3%
Veteran	4%
People with disabilities	24%

SOURCE: Apprenticeship Quarterly Performance Report (QPR), as of September 2020. For apprentices, gender *N*=1,084; age and veteran/disability *N*=1,086; race/ethnicity *N*=1,064. For pre-apprentices, gender *N*=187; age and veteran/disability *N*=188; race/ethnicity *N*=146.

employer had to structure and design the program so that the apprentice was trained to fit the employer's specific needs for a particular job. The business services manager also explained the steps in the process to develop and register a program, helped the employer identify training providers if needed, and provided guidance on how to establish a wage schedule.

If the employer decided to move forward with developing an apprenticeship program, the V2V business development manager provided a referral to the local VDOLI representative, who then worked with the employer on the sponsorship paperwork and approved the curriculum and work process schedule.[53] Staff reported in interviews that on average it could take five conversations before an employer decided to move forward with sponsoring an apprenticeship program.

When the program was registered and the employer ready to hire an apprentice, V2V staff completed and submitted the apprentice registration paperwork on behalf of the employer. As discussed above, V2V also paid half of the RTI costs. V2V staff reported that the tuition assistance was an incentive for employers new to apprenticeship and wary of committing to a training strategy.

7.5   Apprenticeship Programs

As of September 2020, V2V had registered 95 apprenticeship programs under the AAI grant, according to grant data reported to DOL. Fifty-seven (57) percent of apprentices were registered in time-based programs and the remaining 43 percent in hybrid time- and competency-based programs.[54] The majority (73 percent) of AAI apprentices entered manufacturing occupations, and about one-fifth (21 percent) registered in construction occupations (Exhibit 7-2). Examples of apprenticeships included industrial manufacturing technician, maintenance technician, refrigeration mechanic, HVAC technician, and welder. Employers sponsoring and registering apprenticeship programs ranged from small local manufacturing companies to a large multinational chocolate manufacturer and a biotech company. Employers used a variety of RTI training providers, including Blue Ridge Community College, Lord Fairfax Community College, Massanutten Technical College, an online training provider Tooling U-SME, as well as employers' own proprietary trainings.

Exhibit 7-2. Occupations of Registered Apprentices, V2V
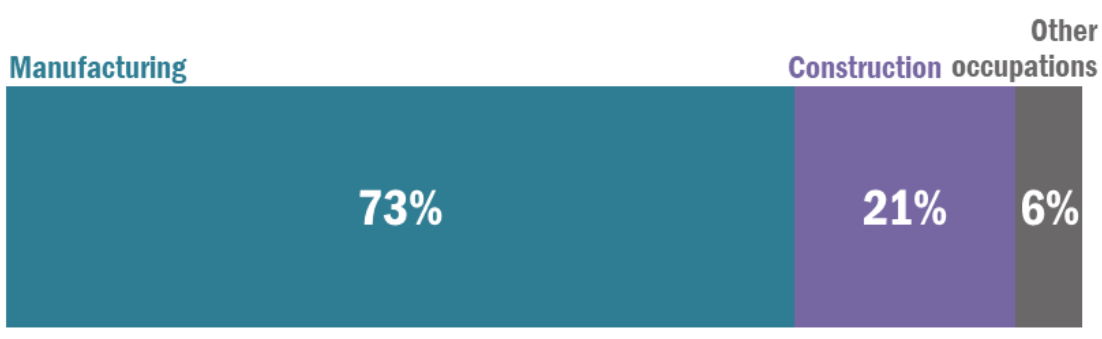
SOURCE: Apprenticeship QPR, as of September 2020. *N*=1,086 apprentices.

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[53]   In Virginia, each employer sponsors its own apprenticeship program(s).

[54]   Data reported to DOL's Apprenticeship QPR system, September 2020.

Spotlight on Apprenticeship: The Hershey Company's Industrial Manufacturing Technician Program

The Hershey Company, producer of chocolate and snack foods, developed an industrial manufacturing technician (IMT) apprenticeship program with assistance from V2V. IMTs operate and monitor production lines. The V2V project director, who had an established relationship with Hershey staff from previous initiatives, proposed developing the IMT occupation into a registered apprenticeship program after learning of Hershey's need for technicians. Hershey staff reported that their objectives in developing the IMT apprenticeship were to create a pipeline of skilled workers, increase interest in manufacturing careers, and improve retention of technicians.

Working with V2V, Hershey developed a two-week pre-apprenticeship that served as a pre-hire training to recruit and screen candidates into the IMT apprenticeship. The first week involved classroom training on employability skills provided by a non-profit organization. In the second week, participants received job instruction on the Hershey production line. Pre-apprentices earned about $12 per hour for full-time participation over the two weeks.

When assessing candidates from the pre-hire training for an IMT apprenticeship, Hershey staff looked for workers with strong communication skills and the availability to perform shift work; candidates must also pass an in-house math and reading assessment. V2V later funded a job coach to help pre-apprentices identify and address personal challenges that otherwise might impede their completion of the program or retention by Hershey, if hired. Examples of issues the job coach helped address included reliable transportation to the job site and appropriate workplace behaviors. Hershey staff reported that they hired most completers of the pre-hire training into the IMT apprenticeship. V2V staff registered apprentices.

V2V staff facilitated development of the program by helping Hershey identify the non-profit training partner. In addition, because Hershey had limited staff capacity, V2V advertised the pre-apprenticeship program and managed enrollment, screening applicants according to Hershey's criteria and paying for work boots needed by pre-apprentices.

The IMT apprenticeship was a competency-based program. The RTI, OJL, and resulting credentials were as follows:

- **RTI.** RTI was 216 hours (provided over approximately five weeks), taught onsite in a classroom by Hershey staff using Hershey's proprietary web-based trainings. V2V reimbursed Hershey for half the RTI instructor's wages. The curriculum was based on the Manufacturing Skills Institute's Manufacturing Technician Level 1 (MT1) certification curriculum and tailored to Hershey's needs.[55] It included Hershey's new hire orientation and the three MT1 modules: (1) Math and Measurement, (2) Spatial Reasoning and Manufacturing Technology, and (3) Business Acumen and Quality. RTI had to be completed before the apprentice continued with OJL.
- **OJL.** OJL was full-time (40 hours per week) and lasts 3,000 hours (provided over approximately 18 months). OJL was overseen by experienced Hershey staff who had applied for the mentor role and received training on the position.[56] During OJL, apprentices observed machine operators, practiced repeating a step until they could do it independently, learned to assess what was wrong with a malfunctioning machine, and learned to repair machines. Wages started at $19 per hour and increased to $26 per hour over the course of the apprenticeship. Hershey's human resources department, in consultation with a mentor, determined when the apprentice advanced in the pay scale.
- **Certificates and credentials.** The IMT apprenticeship resulted in the award of three certifications: Manufacturing Specialist (MS) for completion of the first two modules, the MT1 certification for completion of all three, and the Virginia Department of Labor Certificate of Completion. Hershey staff reported that some of its experienced IMTs had entered the 8,000-hour mechatronics apprenticeship program that had operated at Hershey since 2012.[57] Apprentices in that highly skilled multidisciplinary engineering position earned about $23 per hour at the start of the apprenticeship and ended around $34 per hour.

[55] The Manufacturing Skills Institute's MT1 curriculum is endorsed by the Virginia Manufacturers Association. The Institute develops industry trainings that can be delivered by its instructors or by educational institutions and other training providers that partner with it to use its curricula. See http://manufacturingskillsinstitute.org/certifications/manufacturing-technician-level-1-skill-standards/.

[56] Training of mentors was based on the Training Within Industry model, which prepares mentors to help trainees master a task by breaking it into repeatable steps and teaches mentors to provide feedback and resolve conflict. See https://www.twi-institute.com/twi-training/.

[57] Hershey's mechatronics apprenticeship program was developed prior to the V2V initiative; however, mechatronics apprentices could be registered under V2V.

7.6   Pre-Apprenticeship Programs

V2V supported eight pre-apprenticeship programs as of September 2020. V2V staff helped design some of these programs for specific employers—such as Hershey, discussed above—to develop skills and knowledge applicable to the employers' registered apprenticeship programs. More commonly, V2V supported enrollment in existing courses or programs offered through community and technical colleges that local employers indicated would prepare job candidates for their hiring needs. Examples of these courses included manufacturing technology training, mechatronics, welding, and HVAC. Because these courses did not lead directly into apprenticeships, the V2V program specialist staff member assisted graduates of the course in finding an employer that could offer an apprenticeship. V2V maintained a list of courses that qualified as pre-apprenticeships and used grant funds to pay tuition for participants enrolled in them.

**Spotlight on Pre-Apprenticeship: Wilson Workforce and Rehabilitation Center's
Manufacturing Technology Training Program**

In 2017 with assistance from V2V, the Wilson Workforce and Rehabilitation Center (WWRC) developed the five-month, residential, 625-hour manufacturing technology training (MTT) pre-apprenticeship program to prepare people with disabilities for jobs in the manufacturing industry. Affiliated with the Virginia Department for Aging and Rehabilitative Services (DARS), WWRC provided vocational and medical rehabilitation services to people with disabilities with the goal of helping them find employment.

WWRC was interested in developing a manufacturing vocational program for several years, and V2V provided funds to offset some costs for staff time to design the program and funds to purchase equipment and machines for hands-on instruction. In addition, V2V staff encouraged WWRC to align the curriculum with DOL's standards for pre-apprenticeship programs so that completers could be designated as pre-apprentices. V2V and WWRC staff reported the program helped distinguish completers from other job or apprenticeship candidates.

DARS field representatives across the state referred applicants to MTT. WWRC staff conducted a four-day in-person assessment of applicants' skills, aptitudes, and job readiness to determine whether they qualified and had the potential to succeed in the program and in a manufacturing job. WWRC ran three cohorts of the MTT program per year, enrolling up to 12 participants in each. During the program, participants resided at WWRC.

- **Curriculum.** WWRC's 625-hour MTT pre-apprenticeship program included several components, with all content taught by a WWRC instructor. The primary component was the 16-week vocational training based on the Manufacturing Skills Institute's MT1 certification program. The curriculum was the same as that discussed above for Hershey's IMT apprenticeship program, but it was structured and paced to be accessible to people with disabilities. The instructional format involved hands-on learning using the machinery, role playing for workplace scenarios, and regular competency tests. A secondary component was a two-week social and behavioral skills training to prepare people with disabilities for the workplace. It covered topics such as communication and interpersonal skills, attendance and punctuality, initiative, and dependability, and responding to supervision. Lastly, the program included a nine-day forklift operator training and 10-hour Occupational Safety and Health Act (OSHA) training.
- **Supportive services.** Participants in WWRC's pre-apprenticeship program received supportive services through WWRC and through V2V. While residing at WWRC during the program, participants had access to the center's extensive in-house supportive services including speech therapy, behavioral support, and academic assistance provided by special education instructors. WWRC staff assisted participants with resume development and interviewing skills. V2V also could purchase work boots, tools, and equipment for pre-apprentices who needed them.
- **Certificates and credentials.** MTT pre-apprentices could sit for two certification exams: the Manufacturing Specialist (MS) certification and the MT1 certification. In addition, they could take the exam for the WorkKeys National Career Readiness Certificate. Those who completed also obtained an OSHA-10 certificate and a forklift operator certificate.

Several completers of WWRC's program were hired into registered apprenticeship programs with local advanced manufacturers, including Hershey's IMT apprenticeship (described above) and an electronics manufacturer. Additionally, V2V staff introduced WWRC staff to and facilitated conversations with employers that might be interested in hiring its pre-apprentices.

7.7   Plans to Sustain Grant Activities

Staff described several plans for sustaining V2V grant activities. At the time of this report, plans include:

- The V2V grant coordinator housed at Lord Fairfax Community College will bring experience developing apprenticeship programs with employers to a new business engagement role funded by the local Virginia Career Works Center. In fall 2020, Virginia expanded to the Shenandoah Valley and other regions a workforce development initiative that used a social networking platform to connect employers and job seekers.[58] The V2V grant coordinator transitioned to a full-time role that involved working with employers to identify job openings and post them to the social networking platform, and working with community organizations to refer job seekers to Virginia Career Works Centers to be assessed for open positions. In this capacity, the grant coordinator will engage with employers in a broad array of industries and, when appropriate, bring apprenticeship to their attention as an option for training workers.

- Hershey and WWRC plan to continue the pre-apprenticeship programs developed under V2V. Hershey plans to continue the pre-hire training for its IMT apprenticeship program and will keep the role of the job coach, having found that the coach helps retain participants and improve their workplace skills. Hershey staff will recruit, screen, and enroll participants going forward. WWRC will continue the MTT pre-apprenticeship program. As of fall 2020, it was exploring a second pre-apprenticeship program in information technology, given the success of the MTT program.

- V2V staff reported that many employers indicated they will continue to operate the apprenticeship programs established under V2V. V2V staff helped initiate programs with many employers. Because VDOLI staff were involved too, employers know whom in the state apprenticeship agency to contact if they need to adjust or are interested in starting additional apprenticeship programs.

7.8   Implementation Lessons from Operating the AAI Grant

Staff interviews suggested several lessons from implementing V2V and the AAI grant activities:

- **V2V staff reported several factors that facilitated employer engagement and take-up of apprenticeship, including staff capacity to assist employers, funds to offset employer costs, and a strong working relationship with VDOLI**. First, V2V staff simplified the process for and reduced the burden on employers to develop and register an apprenticeship program. Without this assistance, many manufacturers that operate on lean budgets with limited staff capacity would have been challenged to develop an apprenticeship program on their own. Second, grant funds that pay for a portion of RTI costs encouraged employers to develop programs, particularly when they did not have prior experience with apprenticeship and were hesitant to invest resources in it. Lastly, V2V and VDOLI staff reported that their strong working relationship contributed to employer engagement. Local VDOLI representatives connected V2V with employers so V2V staff could assist them with apprenticeship paperwork and provide tuition assistance for RTI. Conversely, V2V staff set up meetings between VDOLI and employers so that VDOLI staff could advise on aspects of program design, such as RTI curricula and training providers. This advising helped ensure the program developed would be approved by VDOLI easily and quickly.

- **A flexible approach to helping employers develop apprenticeship programs facilitated their willingness to invest time and resources.** Situated within a workforce board, V2V staff viewed their role as convening the right partners to help an employer develop an apprenticeship program with which they will be satisfied. For instance, V2V did not require employers to use a particular type of

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[58]   For further information about the initiative, called Network2Work, visit https://www.governor.virginia.gov/newsroom/all-releases/2020/october/headline-860718-en.html.

training provider. Rather, employers could choose a training provider—community college, technical college, online training provider, or in-house—best suited to their needs. V2V then advised the employer on a particular training provider that would be a fit for the apprenticeship program. V2V staff also tailored assistance to support employers' unique needs, such as advertising Hershey's pre-apprenticeship and screening and enrolling applicants into the program.

- **V2V staff found value in Hershey's pre-hire training to ensure the pre-apprentice is a good fit for an apprenticeship in the IMT occupation and with the employer.** Interviewees from V2V, Hershey, and WWRC (whose MTT pre-apprentices sometimes transition to Hershey's pre-hire training) saw value in Hershey's two-week pre-hire program. Many potential apprentices had limited work experience generally or were unfamiliar with manufacturing jobs specifically. Not only did the pre-hire training teach workplace skills, but participants spent a week onsite to better understand the job requirements and the work environment, while being paid for their time. This type of short-term paid orientation could be particularly helpful in retaining younger workers and economically disadvantaged workers in training. Interviewees also reported the grant-funded job coach role added later in the grant period further helped participants in Hershey's pre-hire training develop workplace skills and address barriers to successful completion of both the pre-hire training and the apprenticeship into which pre-apprentices transitioned.

- **When there is no defined or articulated transition from a pre-apprenticeship program to an apprenticeship program, it can be challenging to place pre-apprentices into apprenticeships.** Most of the programs that V2V qualified as pre-apprenticeships were programs offered at local community and technical colleges. Employers reported to V2V that they used these programs to identify qualified job applicants. However, V2V staff said that it often was challenging to place pre-apprenticeship completers into apprenticeships, notwithstanding employers' demand for workers with credentials such as MT1, HVAC, and welding certificates. According to V2V staff, not enough apprenticeship slots were available for pre-apprenticeship completers, although V2V staff worked to register additional programs. Staff reported that placement worked best when an employer committed to making hires from a pre-apprenticeship program, such as Hershey from its pre-hire training. WWRC's MTT pre-apprenticeship program for people with disabilities did not have a direct transition into apprenticeships. However, WWRC's employer relationships and those facilitated by V2V staff resulted in several employers hiring multiple MTT completers as apprentices.

SVWDB Responses to the COVID-19 Pandemic

Community and technical colleges paused many in-person classes and had limited online course offerings early in the pandemic. V2V staff helped apprentices identify alternative online courses, such as through ToolingU, so that at least some could continue with their training. Because of their working relationship with the VDOLI curriculum specialist, V2V staff easily got the online courses approved as a substitute to those originally specified in the Standards of Apprenticeship. Second, when some in-person classes resumed, enrollment was limited to maintain social distancing. V2V staff reported that as a result, courses filled up quickly, and some apprentices had difficulty getting in.

At different points during the first six months of the pandemic, many employers in the region had to furlough or lay off employees. When one employer furloughed apprentices, V2V continued supporting their RTI costs so they could continue with their technical instruction. The employer later called these apprentices back to work. Hiring slowed in 2020 for many employers. Apprehensive about hiring until longer-term impacts of the pandemic on their business were certain, employers added few apprentices under V2V between March 2020 and the time of the study's follow-up telephone call in fall 2020.

Grant staff reported that the Hershey pre-apprenticeship program proved particularly valuable to hospitality and restaurant workers laid off because of pandemic-related downsizing, some of whom enrolled in the pre-apprenticeship to prepare for a significant career change. The pandemic prevented WWRC from running the summer and fall cohorts of its MTT pre-apprenticeship program. Its pre-apprentices reside in WWRC dormitories, and WWRC could not risk the possible spread of COVID-19 among participants if it were to hold the training.

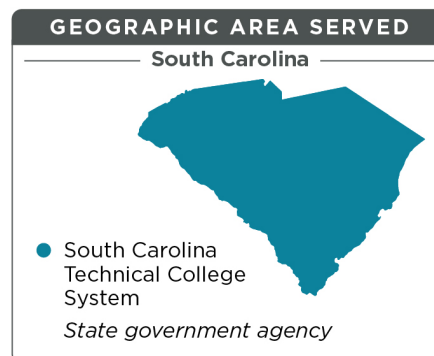# 8. South Carolina Technical College System

Apprenticeship Carolina

The South Carolina Technical College System, headquartered in Columbia, oversees the network of 16 technical colleges throughout the state. **Apprenticeship Carolina** is the division of the South Carolina Technical College System charged with expanding apprenticeship in the state.

The South Carolina Technical College System received an American Apprenticeship Initiative (AAI) grant to continue existing apprenticeship expansion activities through Apprenticeship Carolina. Since 2007, Apprenticeship Carolina expanded the number of registered apprentices in the state, helped employers design and register apprenticeship programs, and connected these programs to related technical instruction (RTI) offered by the state's technical colleges. Apprenticeship Carolina used most of its AAI grant to fund its South Carolina Apprenticeship Initiative (SCAI) grants, which defrayed RTI costs of participating programs. The AAI grant also supported two registered program specialists, who supported the work of Apprenticeship Carolina's existing apprenticeship consultant staff.

8.1 Target Occupational Areas

South Carolina's AAI grant aimed to expand apprenticeship into nontraditional fields, including healthcare; installation, maintenance, and repair; information technology (IT); and advanced manufacturing. Grant staff also targeted public sector apprenticeship programs, particularly public water treatment facilities and wastewater programs. Although Apprenticeship Carolina targeted many occupations within these sectors, it focused on registered programs and apprentices in advanced manufacturing. Although manufacturing accounts for only 12 percent of employment in South Carolina,[59] more than half of Apprenticeship Carolina's AAI apprentices are employed in manufacturing. Manufacturing has a prominent role in the state's registered apprenticeship system because of the high demand for skilled workers in this industry and the technical college system's existing occupational training programs.

The state uses economic incentives to attract manufacturing companies to sponsor new apprenticeship programs and to encourage the technical college system to work with employers. These include apprenticeship tax credits, tax rebates for training in enterprise zones, and incentives for companies to

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GEOGRAPHIC AREA SERVED

South Carolina

- South Carolina Technical College System
State government agency

South Carolina Technical College System at a Glance

Grantee type: State government agency

Geographic coverage: State of South Carolina

Grant amount: $5,000,000

Target industry: Advanced manufacturing, healthcare, IT

Registering body: U.S. Department of Labor, Office of Apprenticeship

Prior experience with registered apprenticeship: Yes

Target number of registered apprentices: 1,000

Number of apprentices registered (as of 9/2020): 2,096 (210% of target)

Target number of pre-apprentices: 0

Number of pre-apprentices served (as of 9/2020): 0

Grant period: September 2015 to March 31, 2021

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[59] South Carolina Department of Commerce, Research and Data Dashboard, https://www.sccommerce.com/research-data.

move to the state. Several manufacturers are headquartered in Germany or other countries familiar with apprenticeship and were attracted to South Carolina because of these supports. An economic development specialist who partnered on grant activities reported that 10 years ago manufacturers considered relocating to South Carolina primarily for affordable real estate, as well as tax credits and other financial incentives. Today manufacturers prioritize a skilled local workforce or the capacity to train skilled workers, hence their interest in apprenticeship training options.

South Carolina had record-low unemployment rates in recent years. When the grant was awarded in October 2015, average unemployment in the state was 5.6 percent, the lowest since March 2008; by November 2019, it had declined to 2.4 percent.[60] These low unemployment rates played a role in attracting interest from employers because it provided an important recruitment source in a tight labor market.

> **South Carolina Economy**
>
> **Unemployment rate, June 2019:** 3.1%
>
> **Apprenticeship Carolina focus industries, by share of employment:**
>
> - Advanced manufacturing (12%)
> - Healthcare (12%)
> - IT (1%)
>
> SOURCES: Unemployment rate: U.S. Department of Labor, Bureau of Labor Statistics. https://beta.bls.gov/dataViewer/view/timeseries/LAUST45000000000003. Focus industries: South Carolina Department of Commerce, Research and Data Dashboard, https://www.sccommerce.com/research-data.

8.2   Grant Activities

AAI grant funds for the Apprenticeship Carolina initiative supported the following activities:

- **RTI Costs.** Most of the grant (84 percent) supplemented SCAI funding to support apprentices' RTI. SCAI grants could only be used for RTI delivered at the state's technical colleges, and apprentices were counted under the AAI grant only if they were supported by a SCAI grant.[61] Programs received up to $2,500 per apprentice from the SCAI grant, which could cover a substantial portion or even all of an employer's RTI costs. In addition to covering some or all of the training costs, SCAI grants aimed to encourage a strong relationship between the apprenticeship system and the technical college system by incentivizing apprenticeship programs to use technical colleges for RTI. Apprenticeship programs applied for a SCAI grant by submitting an RTI plan, with justification for the RTI training and an estimate of how many apprentices needed support. Initially Apprenticeship Carolina approved most SCAI grant applications if the training was justified, but the application process helped ensure that apprenticeship programs had a well-developed RTI plan in place for their apprentices. As SCAI grant funds diminished over time, the review committee became stricter in their review of grant applications to conserve funding.

- **Apprenticeship Carolina staff.** The **project director** managed grant activities and coordinated the SCAI grant program. The project director also helped to manage relationships with employers and the registration process. The AAI grant funded two **registered program specialists** to support employers after the apprenticeship consultants registered their programs. Registered program specialists helped register apprentices in DOL's Registered Apprenticeship Partners Information Data System (RAPIDS), the administrative data system for registered apprenticeship programs. Specialists also helped find supportive services for apprentices, and they coordinated with technical colleges and other partners. The registered program specialists helped employers establish partnerships with the technical college system, but they did not provide ongoing support to operate the program once the partnership was established and employers received the technical assistance that they required. A

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[60]   Local Area Unemployment Statistics, https://data.bls.gov/timeseries/LASST450000000000003.

[61]   Technical colleges often provide RTI for apprenticeship programs in South Carolina, even outside of the AAI grant, because of the close relationship between Apprenticeship Carolina and the technical college system.

long-term goal of Apprenticeship Carolina is to find continuing financial support for the registered program specialist position after the AAI grant ends to complement the work currently done by the apprenticeship consultants. An **IT business analyst** managed all data entry for the grant and coordinated payment of the SCAI grants to reimburse approved RTI costs. The project director and registered program specialists also supported other apprenticeship expansion initiatives under the AAI grant, including the state's accelerator events, which brought employers together to learn about apprenticeship and resources available to develop and register programs.

- **A return on investment (ROI) study of AAI apprenticeship employers.** At the time of this report, the University of South Carolina's Moore School of Business was conducting the ROI study, which included a survey of participating employers.[62]

8.3   Participant Characteristics and Recruitment

Apprentices were predominantly men and age 25 or older. Fifty-eight percent were non-Hispanic White and 37 percent were non-Hispanic Black. Six percent were veterans. (See Exhibit 8-1.)

Employers hired apprentices and reported that they recruited potential apprentices from the local technical colleges and American Job Centers (called SC Works) and through standard job advertisements on television, radio, and social media. Representatives from the technical college system also advertised apprenticeship positions to their current and prospective students.

Exhibit 8-1. Apprentice Characteristics, Apprenticeship Carolina

Apprentice Characteristic	
Men	71%
Women	29%
24 or younger	25%
25 to 44	49%
45 or older	27%
Hispanic, any race	3%
White, non-Hispanic	58%
Black, non-Hispanic	37%
Asian	1%
Other race, non-Hispanic	1%
Veteran	6%
People with disabilities	0%

SOURCE: Apprenticeship Quarterly Performance Report (QPR), as of September 2020. Gender and age *N*=2,095 apprentices; race/ethnicity *N*=1,794; veteran/disability *N*=2,096.

8.4   Engaging and Assisting Employers

Employer engagement was the primary responsibility of the apprenticeship consultants, who were not funded by the AAI grant. Apprenticeship consultants covered one or more of the 16 regions served by South Carolina's technical college system. Apprenticeship consultants regularly visited with employers in their region one-on-one and at outreach events. Some employers were referred to apprenticeship consultants by SC Works or the Enterprise Zone Retraining Program[63] or directly from the technical college system. State and local economic development agencies kept Apprenticeship Carolina informed of the local workforce needs of the 16 regions. Industry- and occupation-specific accelerator events were important methods for reaching employers. One accelerator event to promote and provide technical assistance on developing apprenticeship programs focused on emergency medical technicians, resulting in five new registered apprenticeship programs for that occupation.

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[62]   This study is not published, but preliminary results that have been publicly shared indicate a positive ROI.

[63]   The Enterprise Zone Retraining Program provides tax credits for companies that retrain incumbent workers on new processes or equipment. https://www.sccommerce.com/incentives/south-carolina-workforce-training#:~:text=Enterprise%20Zone%20Retraining%20Credit%20Program,-Manufacturing%20companies%20located&text=This%20program%20reimburses%20companies%20for,per%20%20employee%20against%20withholding%20taxes.

Apprenticeship consultants helped employers design and register their apprenticeship programs. The apprenticeship consultants relied on previous standards and their own knowledge of what was required for an approved set of standards, and they worked with employers so that the program design met these requirements. Often the local technical college was involved in program design conversations with the employer. Representatives of the technical college system provided input on the design of the RTI for the apprenticeship program and often had strong connections with local employers, so they understood employers' training needs.

Once the employer approved the standards, the apprenticeship consultant submitted the standards to DOL's Apprenticeship Training Representative (ATR) for the state. Staff reported that Apprenticeship Carolina had a strong working relationship with the ATR and that in their experience, standards usually were approved within two business days.

8.5   *Apprenticeship Programs*

As of September 2020, Apprenticeship Carolina had registered 145 apprenticeship programs under the AAI grant, according to grant data reported to DOL. About two-thirds (65 percent) of apprentices were registered in time-based programs, about one-quarter (27 percent) in competency-based programs, and the remaining 8 percent in hybrid programs.[64] Slightly more than half (55 percent) of AAI apprentices entered manufacturing occupations, and slightly more than one-tenth (12 percent) registered in healthcare occupations (Exhibit 8-2). Examples of these apprenticeships included maintenance technician, pharmacy technician, patient care technician, and certified nursing assistant. Close to one-third of apprentices (31 percent) registered in "other" occupations, reflecting the wide variety of programs supported in South Carolina. Jobs in wastewater treatment, a public sector targeted by the grant, are included in other occupations.

Exhibit 8-2. Occupations of Registered Apprentices, Apprenticeship Carolina
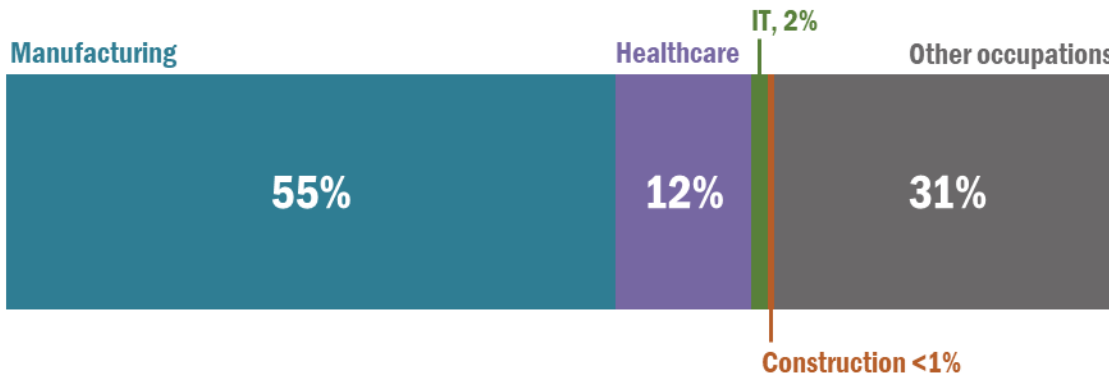
SOURCE: Apprenticeship QPR, as of September 2020. *N*=2,096 apprentices.

The three employers sponsoring and registering apprenticeship programs and interviewed for this study ranged from a small local bakery to a large bicycle manufacturing company and a pharmaceutical manufacturer. Staff and instructors at Central Carolina Technical College and Midlands Technical College reported working closely with apprenticeship programs. Across the state, Trident Technical College and Greenville Technical College also were among the most active apprenticeship program partners, according to grant staff.

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[64]   Data reported to DOL's Apprenticeship QPR system, September 2020.

Spotlight on Apprenticeship: Nephron Pharmaceuticals' Pharmacy Technician Program

Nephron Pharmaceuticals Corporation is a pharmaceutical manufacturing company that relocated from Florida to South Carolina in 2016. Nephron registered a pharmacy technician apprenticeship program with the assistance of Apprenticeship Carolina. Most pharmacy technicians work in retail pharmacies, but at Nephron the technicians manufacture drugs for hospital systems and other healthcare providers. Nephron manufactures hydration products, pain medications, and anesthesia in their outsourcing division. It also produces generic versions of drugs deemed by the federal government to be in short supply. Nephron staff reported that one of the factors that attracted the company to South Carolina was the strong pharmaceutical and manufacturing education and training in the state's technical college system and apprenticeship system.

Working with Apprenticeship Carolina, Nephron developed a competency-based apprenticeship program that took 13 to 16 months to complete. Apprentices typically began their apprenticeship earning $17.50 an hour, with an increase to $18.50 after seven months, and then to $22.00 after program completion. At the end of the apprenticeship, apprentices took the state certification exam for pharmacy technicians. At the time of the study team's site visit, eight cohorts of apprentices had started the program. The company also had a youth apprenticeship program not supported by the AAI grant. Youth apprentices at the company were commonly recruited for the pharmacy technician apprenticeship program and could enter the program after completing their youth apprenticeship.

The RTI, on-the-job learning (OJL), and credentials for the pharmacy technician apprenticeship program are described below:

- **RTI.** Midlands Technical College delivered RTI in two 10-week semesters of courses over seven months. The RTI was concurrent with the OJL; apprentices took these courses part-time while they worked full-time at Nephron Pharmaceuticals. The curriculum was like the program taken by retail pharmacy technicians, although the college added manufacturing content to make the instruction more relevant to Nephron apprentices. In addition to the pharmacy technician curriculum, apprentices participated in an intensive two-day, 23.5-hour course on pharmaceutical manufacturing at the Kennedy Pharmacy Innovation Center at Midlands Technical College.[65] The RTI for the apprenticeship also included online employability skills training. The SCAI grants paid for a portion of the RTI for Nephron apprentices, although Nephron itself covers $3,000 to $7,000 per apprentice for RTI, depending on whether the apprentice lived in the county. Technical college tuition is higher for out-of-county residents.

- **OJL.** As a competency-based program, the amount of time that apprentices participated in OJL varied, but usually lasted between 13 and 16 months. Apprentices began OJL in the outsourcing division of the plant. All apprentices learned Nephron's robust documentation procedures, which were essential for the regular audits of the company by the U.S. Food and Drug Administration. From the outsourcing division, they rotated through every task that they could undertake as technicians at Nephron, including rotating among machines that performed different functions. In addition to their pharmacy technician tasks, apprentices were trained in equipment maintenance. Nephron had its own research and development department and frequently built and maintained its own machines. Apprentices worked side-by-side with their mentors, who were certified pharmacists. Nephron staff reported that individual apprentices worked better with some mentors than with others, so apprentices rotated through mentors to find an appropriate match. OJL mentors were not in contact with the RTI instructors at Midlands Technical College, but they did help the apprentices with homework as needed.

- **Certificates and credentials.** At the end of the apprenticeship, apprentices took the state certification examination for pharmacy technicians. The certification was the primary credential for the apprenticeship program, and passing was one of the main determinants of successful completion of the apprenticeship. Some apprentices earned their certification after they finished the RTI, before the apprenticeship itself was complete. In addition to the pharmacy technician certification, apprentices earned a college certificate for completing their studies at Midlands Technical College.

Apprenticeship Carolina helped Nephron develop and register its apprenticeship program, facilitated the partnership with Midlands Technical College, and paid some of the RTI costs with the SCAI grant.

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[65] The Kennedy Pharmacy Innovation Center was established with a gift from Lou and Bill Kennedy, co-owners of Nephron Pharmaceuticals, https://kennedycenter.sc.edu/.

8.6   Plans to Sustain Grant Activities

Apprenticeship Carolina's AAI grant was extended to March 31, 2021, and at the time of this report grantee staff had started identifying new funding sources to sustain grant activities. Apprenticeship consultants and the registered program specialists continued their work with the support of $12 million in new grants, including funds from a 2020 DOL Building State Capacity to Expand Apprenticeship through Innovation grant, and a DOL Youth Apprenticeship Readiness grant. Apprenticeship Carolina staff reported that the one-on-one assistance that the apprenticeship consultants and registration program specialists provided to employers was the most valuable element of the AAI grant program, and they considered it important to continue that work with new funding.

By the end of the original AAI grant period (September 2020), Apprenticeship Carolina expended its grant funds and discontinued the SCAI grants, instead using its other funding sources to support the registration program specialists. Apprenticeship Carolina also developed relationships with new partners during its extension period, including the state's Urban League chapters and Historically Black Colleges and Universities.

8.7   Implementation Lessons from Operating the AAI Grant

Staff interviews suggested several lessons from implementing Apprenticeship Carolina and the AAI grant activities. These include:

- **The strong Apprenticeship Carolina infrastructure facilitated employer outreach by AAI-funded registration program specialists.** Apprenticeship Carolina had a long history of employer outreach prior to the AAI grant, and it continued to use these strategies to expand apprenticeship in the state. The state's apprenticeship consultants were knowledgeable about apprenticeship and the ATR's requirements, which allowed them to draft apprenticeship standards that both met employers' needs and could be registered quickly. By focusing the program development process on the needs and interests of the employer, Apprenticeship Carolina avoided investing resources in intermediaries, group programs, or many partnerships. Consultants traveled regularly to meet with employers to understand their training needs. This system of employer outreach has made apprenticeship an important part of South Carolina's workforce development system that is recognized and respected by employers.

- **AAI-funded registered program specialists filled a gap in the state's support for employers interested in apprenticeship.** Because apprenticeship consultants focused on designing and registering programs, they were often unavailable to support employer needs after program registration. The registered program specialists were responsible for assisting registered program sponsors with supportive services, recruitment, data reporting, registering apprentices in RAPIDS, and managing relationships with RTI providers. As a part of the AAI grant, registered program specialists also helped employers apply for SCAI grant funding.

- **Community and technical college systems can provide a strong foundation for apprenticeship expansion activities.** Apprenticeship Carolina's approach to expanding apprenticeships was built around integrating apprenticeship into the education and training activities of the technical college system. The AAI grant supported a deeper integration of registered apprenticeship and the technical college system through the SCAI grants. Some registered apprenticeship programs supplemented college-based RTI with other online training, but every program started under the grant was tied by requirement to the college system.

- **The longstanding linkages between apprenticeship programs and the technical college system in South Carolina facilitates sustainability of the apprenticeship programs after the AAI grant ended.** The AAI grant supported a streamlined program model that places primary responsibility for

the apprenticeship program with the employer with the technical college system playing an institutionalized supporting role. Programs needed minimal ongoing operational support from the grantee after program registration which means that when the AAI grant ended, the programs themselves continued. Apprenticeship Carolina also purposefully allowed a broad range of industries and occupations across all regions of the state to be supported by grant activities so that virtually any employer interested in apprenticeship could participate. Since the key program partners (the employer and the technical college system) do not rely on grant funding to support staff or programming, Apprenticeship Carolina staff consider them more likely to persist beyond the AAI grant.

Apprenticeship Carolina Responses to the COVID-19 Pandemic

Apprenticeship Carolina staff reported that because the technical college system exclusively provided RTI for AAI apprentices, when the pandemic started the majority of the RTI went online as a result. Most lab courses reopened in person in the summer of 2020, but with limited class sizes. Later in the year, colleges began to open non-lab courses with restricted class sizes and virtual delivery when possible.

Some apprenticeship programs had postponed RTI or even whole cohorts of apprentices. For example, a hospital system hired new apprentices but delayed their RTI because it had furloughed its training director and because the hospitals had too much work for the certified nursing assistants and other apprentices to do. A second apprenticeship program did not delay RTI but delivered classroom training virtually and provided virtual mentorship. As employers hire more and learn how to deliver training remotely, Apprenticeship Carolina staff expected continued growth in apprenticeship.

The pandemic affected Apprenticeship Carolina's employer outreach activities because the apprenticeship counselors typically traveled across the state to meet employers in person to discuss how to develop apprenticeship programs. During the pandemic, meetings with employers were shorter or did not occur in person at all. Apprenticeship counselors sometimes conducted webinars and virtual meetings instead of in-person meetings. Despite this reduction in activity, Apprenticeship Carolina continued registering programs, including 12 new apprenticeship programs in February 2021.

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9.   William Rainey Harper College

Apprenticeships on Demand (AOD)

William Rainey Harper College (Harper College) is a community college in Palatine, Illinois, a northwest suburb of Chicago. Harper College serves more than 35,000 students annually, offering associate degrees and certification programs as well as advanced career programs, workforce training, professional development, and continuing education classes.[66]

Harper College used its American Apprenticeship Initiative (AAI) grant to create and administer the **Apprenticeships on Demand (AOD)** program. The college housed the program in its Workforce and Economic Development office. The college had four primary roles on the grant: (1) sponsor most apprenticeship programs, (2) provide related technical instruction (RTI) for the apprenticeship programs, (3) identify potential employers to offer apprenticeships, and (4) screen potential apprentices and register them once they are hired by the employer.[67] AAI was the college's first experience with apprenticeship.[68]

9.1   Target Occupational Areas

AOD staff sought to expand apprenticeship to nontraditional industries, such as banking and finance, insurance, advanced manufacturing, and information technology (IT) / cyber security. In selecting occupational areas of focus, AOD staff considered whether demand existed, as demonstrated through interest from employers or industry associations. AOD reported that they primarily worked with small or mid-sized businesses.[69]

GEOGRAPHIC AREA SERVED

Illinois

● William Rainey
   Harper College
   College
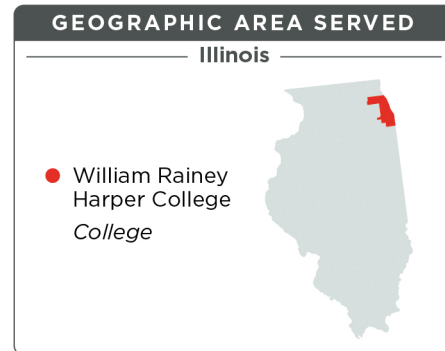
Harper College at a Glance

Grantee type: Community college

Geographic coverage: Greater Chicagoland, Illinois

Grant amount: $2,500,000

Target industry: Advanced manufacturing, finance and insurance, professional services, IT/cyber security

Registering body: U.S. Department of Labor

Prior experience with registered apprenticeship: No

Target number of registered apprentices: 313

Number of apprentices registered (as of 9/2020): 169 (54% of target)

Target number of pre-apprentices: 0

Number of pre-apprentices served (as of 9/2020): 0

Grant period: September 2015 to September 2020

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[66]   Harper College, https://www.harpercollege.edu/about/index.php.

[67]   For the apprenticeship programs it sponsors; some employers sponsor their own programs.

[68]   Although the college is new to apprenticeship, staff had experience implementing DOL's Trade Adjustment Assistance Community College and Career Training (TAACCCT) grants, which sought to train unemployed and underemployed adults in high-demand occupations.

[69]   The reference to small or mid-sized business is based on staff reports and the exact definition used by the grantee is not known. In the industries targeted by the grantee, the U.S. Small Business Administration defines a small business as the following: 500 to 1,250 employees for manufacturing; $8 million to $41.5 million in average annual receipts for finance and insurance and professional services; and 150 employees for information technology. For more information, see https://www.sba.gov/document/support--table-size-standards.

Additionally, because Harper College provided the RTI, AOD staff focused on existing programs of study that faculty could adapt for the apprenticeship. This avoided a lengthy approval process that was not feasible within the five-year grant period.

9.2   Grant Activities

Harper College's **AAI grant supported several staff**:

- The **head of outreach,** who developed relationships with employers to create apprenticeship opportunities and oversaw part-time outreach staff;

- **Outreach staff,** part-time contractors who assisted the head of outreach to develop relationships with employers;

- An **academic coach,** who met with apprentices every semester, ensured class schedules were correct, registered apprentices for classes each semester, and checked in with employers on apprentices' performance and progression; and

- A **data specialist,** who guided potential apprentices through Harper College's application process; and if they were accepted, the apprenticeship hiring process with employers; and for those hired, apprentice registration with DOL's Office of Apprenticeship (OA). The data specialist also managed the grant funds.

> **Chicago Area Economy**
>
> **Unemployment rate, June 2019:** 4.1%
>
> **AOD focus industries, by share of employment:**
>
> - Professional and business services (19%)
> - Manufacturing (8%)
> - Financial activities (7%)
> - IT (2%)
>
> SOURCES: Unemployment rate: U.S. Department of Labor, Bureau of Labor Statistics. Chicago Metropolitan Statistical Area includes Chicago, Naperville, and Elgin. https://data.bls.gov/timeseries/LAUMT171698000000003?amp%253bdata_tool=XGtable&output_view=data&include_graphs=true.
> Focus industries: U.S. Department of Labor, Bureau of Labor Statistics, for February 2019: https://www.bls.gov/regions/midwest/news-release/areaemployment_chicago.htm.

The grant did not support the dean of workforce and economic development, who managed and oversaw AOD grant activities as part of her college position.

AOD used grant funds to produce **employer outreach and recruitment materials**, such as brochures and information packets. AOD staff developed an apprenticeship-specific website to promote and describe apprenticeships.[70] The website provided general information, such as what apprenticeships involved, and detailed course and competency schedules. It also listed employers that operated apprenticeship programs and described the process for new employers to hire an apprentice and for potential apprentices to apply.

9.3   Participant Characteristics and Recruitment

Most apprentices were men (71 percent). Apprentices were divided equally between those who were traditional college students, ages 24 or younger, and those 25 or older. Over half were non-Hispanic White and about one-fifth were Hispanic of any race. Four percent were veterans. (See Exhibit 9-1.)

AOD staff recruited apprentices using multiple strategies, including the apprenticeship website, brochures in local libraries and businesses, local government e-blasts, and radio spots. Interested individuals attended an informational session at the college to learn more about apprenticeship and the application process. Because all apprentices enrolled at Harper College and took college-level RTI courses, applicants had to demonstrate college-level English and math skills on assessment tests. Following successful completion of these tests, AOD and Harper's Job Placement Resource Center staff helped

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[70]   https://www.harpercollege.edu/apprenticeship/index.php.

applicants develop resumes and then sent them to employers that offered apprenticeships. Less often, applicants contacted employers on their own. Employers selected applicants for both interviews and the offer of an apprenticeship. Once hired by an employer, the apprentice was enrolled at Harper College by the grant staff. An employer could also enroll incumbent workers in the apprenticeship program, provided they passed the college assessment tests.

AOD staff reported strong interest in apprenticeship. Each semester, approximately 800 individuals attended an information session, 500 of them took the assessment tests, and 320 were accepted into the pool of potential apprentices. AOD staff worked primarily with small and medium-sized businesses, most employers hired only a few apprentices. Only about 60 apprenticeship slots were available per semester.

Exhibit 9-1. Apprentice Characteristics, AOD

Apprentice Characteristic	
Men	71%
Women	29%
24 or younger	50%
25 to 44	44%
45 or older	6%
Hispanic, any race	22%
White, non-Hispanic	54%
Black, non-Hispanic	12%
Asian	12%
Other race, non-Hispanic	0%
Veteran	4%
People with disabilities	2%

SOURCE: Apprenticeship Quarterly Performance Report (QPR), as of September 2020. Gender, age, and veteran/disability *N*=169 apprentices; race/ethnicity *N*=167.

9.4   Engaging and Assisting Employers

AOD's outreach staff focused on recruiting employers in the target industries in Harper College's geographic area, the northwestern suburbs of Chicago. Because apprentices took RTI classes on campus and participated in on-the-job learning (OJL) at the employer site, both employers and apprentices were generally near college so that apprentices could commute relatively easily among home, the work site, and the campus.

The outreach team used several methods to alert employers to apprenticeship opportunities. Harper College's marketing department sent postcards to businesses in the college's district; staff also advertised with local business associations and local governments. The apprenticeship website had information about the benefits of apprenticeship to employers and a contact form employers used to express interest. AOD staff approached employers by cold-calling, attending job fairs, reviewing LinkedIn profiles for employer contacts, and using their own contacts. AOD staff also asked employers with apprentices to help recruit other businesses by sharing their apprenticeship experiences.

AOD staff hosted quarterly breakfasts at Harper College for prospective employers, where they provided more information about apprenticeship programs. During these events, staff described the apprenticeship program options, the college's provision of RTI and an academic coach, and the benefits and costs to the employer. An employer with AOD apprenticeships described its program experience. Prospect employers then toured the college and training labs (e.g., for advanced manufacturing).

AOD staff reported that generally it took six to nine contacts with a new prospect before reaching the person at the employer who could make the decision to offer apprenticeships, and upwards of a year to get a decision. In part because Harper College focused on nontraditional occupations, many prospects never considered apprenticeship as an option because of its association with construction-related trades. Harper College sponsored and registered programs with OA, and thus employers themselves did not have to complete the registration paperwork. AOD staff noted this was an important feature for their target small and mid-sized employers, which would not otherwise have the capacity to plan and implement an apprenticeship program.

AOD staff reported a key talking point when approaching a prospect was the high level and quality of customer service they provided. Employers paid Harper College a flat fee of $2,500 to $3,000 per apprentice per semester, depending on the apprenticeship program. The fee covered the apprentices' RTI-related costs (Harper College registration fees, RTI course fees, books, and any tools needed). AOD staff also screened applicants on behalf of the employer. Finally, the fees that employers paid minimized their time commitment, because they did not have to create a curriculum or fill out registration paperwork.

9.5   Apprenticeship Programs

At the time of the site visit, AOD had created and registered eight apprenticeship programs, each in a nontraditional occupation. By the end of the grant in September 2020, AOD had registered two additional apprenticeship programs, for a total of 10. About one-quarter of apprentices registered in manufacturing occupations, such as computer numerical control precision machining, industrial maintenance mechanic, and electromechanical technician (Exhibit 9-2). Close to three-quarters of apprentices were in "other" occupations, such as insurance, banking and finance, graphic arts print production, marketing and sales management, supply chain management/logistics. Few apprentices registered in IT (e.g., cyber security/networking).

Exhibit 9-2. Occupations of Registered Apprentices, AOD

| Manufacturing | IT, 3% | Other occupations |
| 24% | | 73% |

SOURCE: Apprenticeship QPR, as of September 2020. *N*=168 apprentices.

Ninety-two (92) percent of apprenticeships were hybrid format, meaning they required both a minimum number of hours of OJL and a demonstration of competency to progress to the next step in the program.[71] AOD apprenticeship programs were two to three years in duration. Most apprentices spent three days per week at the employer site for OJL and two days at Harper College attending RTI. Except for the cybersecurity program, all the apprenticeship programs resulted in an associate degree. Cybersecurity apprenticeship RTI courses were non-credit; completers thus did not earn an associate degree but could test for six CompTIA credentials.[72] All apprentices also received a certificate from DOL at the end of their apprenticeship.

Prior to starting an apprenticeship, the apprentice signed a written apprenticeship agreement that outlined the terms and conditions of the RTI and OJL. Harper had a suggested apprenticeship agreement that employers could choose to use. In addition to outlining basic responsibilities for apprentices and employers, the agreement allowed employers to note a minimum number of years that apprentices had to stay with the employer after completion of the apprenticeship. Or employers could ask the apprentice to reimburse the employer for some portion of the fees it paid to Harper College if apprentices left early. AOD included this provision in the apprenticeship agreement to help employers mitigate the risk of losing the fully trained worker upon completion of the apprenticeship.

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[71]   Data reported to DOL's Apprenticeship QPR system, September 2020.

[72]   For information on CompTIA certificates, go to https://www.comptia.org/home.

> **Spotlight on Apprenticeship: The First Bank of Highland Park's Banking and Finance Apprenticeship**
>
> Harper College created the banking and finance apprenticeship program at the request of the Illinois Bankers Association to address a need for new entry-level worker recruitment methods (e.g., loan officers or personal bankers). Harper College modified its existing business administration program to reflect the competency and course needs outlined by the Bankers Association. AOD staff developed the standards of apprenticeship, the RTI courses, and curriculum, and they registered the program with DOL.
>
> The First Bank of Highland Park, one of the five largest privately held banks in the Chicago area, was the first employer to hire a banking and finance apprentice. Bank staff reported that launching the apprenticeship was "seamless"; that is, Harper College created and registered the program and recruited potential apprentices. Prior to working with Harper College, the bank had not considered apprenticeship as a recruitment tool for entry-level positions.
>
> - **RTI.** Harper College provided the RTI over two years. The apprentice enrolled as a Harper College student and attended classes all day on Tuesdays and Thursdays during 12-week semesters (fall, spring, and summer). Apprentices took a few general education courses such as Composition and Fundamentals of Speech Communication, but most courses focused on banking and finance. These included Financial Institution Operations, Business Law, and Introduction to Financial Accounting.
> - **OJL.** Two bank staff mentored apprentices in monthly check-ins, and supervisors monitored work daily. Apprentices spent Mondays, Wednesdays, and Fridays at the bank. Their training followed the typical trajectory of newly hired entry-level staff. First, they staffed the bank's mail deposits and drive-thru window and learned basic deposits. Once the supervisor determined the apprentices had mastered the position and associated transactions, they began working in the lobby as tellers, providing a greater variety of services including processing checking and savings deposits, issuing personal money orders and cashier's checks, and redeeming U.S. Savings Bonds. After mastering these skills, apprentices learned to open bank accounts and other aspects of personal banking (i.e., banking that provides specialized financial services to consumers as individuals as opposed to businesses). At each step, the supervisor determined when the apprentices mastered the position's competencies by assessing their comfort level with each activity.
> - **Certificates and credentials.** Each semester, apprentices earned 9 to 12 college credits, which culminated in an Associate in Applied Science Degree in Business Administration with a concentration in Financial Management.
>
> Apprentices began at $14 per hour and ended at $15.46. Per the wage schedule in the standards of apprenticeship, apprentices received an annual wage increase.

9.6   Plans to Sustain Grant Activities

In anticipation of the end of the AAI grant, Harper College made significant changes to the staffing structure of AOD with an aim to sustain the apprenticeship programs.

- The head of outreach began a new role as manager of workforce initiatives at Harper College. In this role she managed the existing apprenticeship programs in addition to overseeing internships and general employer outreach for the college.

- The academic coach position was split between three workforce coordinators from the Harper College Job Placement Resource Center. One workforce coordinator oversaw the manufacturing apprentices, one oversaw the insurance apprentices, and one worked with apprentices in all the other (smaller) programs. Workforce coordinators were still responsible for their original duties, such as posting job openings and reviewing resumes for college students.

- A Harper College marketing specialist assumed the data specialist role. The specialist would continue to help potential apprentices navigate the application and registration processes.

In addition to continuing the 10 apprenticeship programs created during the grant, as of this report Harper College was planning an industry-recognized apprenticeship program to train incumbent certified nursing assistants at a healthcare employer to become registered nurses.

9.7   Implementation Lessons from Operating the AAI Grant

AOD staff interviews indicated several lessons from implementing AAI grant activities. These included these:

- **Community colleges are well positioned to sponsor apprenticeship programs, thus facilitating apprenticeships for employers.** AOD staff reported that community colleges are suited for the sponsor role for many reasons: staff often have experience operating workforce training programs, such as Harper College's TAACCCT grant-supported manufacturing program; and existing courses of study can be modified relatively easily to meet RTI needs. By taking apprenticeship program development a step further—outlining standards of apprenticeship—community colleges can remove a barrier to employers' adoption of apprenticeship: registering the program with DOL or the state apprenticeship agency. AOD staff reported this was especially beneficial to small and mid-sized businesses, which otherwise did not have the capacity to develop and register an apprenticeship on their own. Staff reported that though community colleges might be well positioned to sponsor apprenticeship programs, college faculty had to be supportive and willing to engage in the process. Harper College found that some faculty had to be persuaded to participate, and others ultimately declined to take part in RTI development.

  Harper College shared resources with other community colleges interested in apprenticeship. It posted details about each of its apprenticeship programs on its website for their use. Staff helped the City Colleges of Chicago create an apprenticeship program for a large insurance company. With external foundation funding, Harper College held two conferences attended by approximately 100 community colleges from across the country that were interested in creating apprenticeship programs of their own.

- **The AOD approach could help sustain apprenticeships after the grant ended.** By requiring employers to pay a flat fee per apprentice to cover the costs of college enrollment, books, and tuition for RTI, a college does not need to rely on grants or other funds to support apprenticeships in the future. AOD staff made the point when recruiting employers that employers also bear costs when recruiting and hiring entry-level workers. Unlike a standard new hire, apprentices initially earn lower wages than fully qualified new employees, and those savings can support the apprentice's RTI. Moreover, the apprentice will learn skills within the context of the employer's operations and culture.

- **Focusing on small and mid-sized employers in nontraditional industries limits apprenticeship slots.** Staff found that even when the college registered apprenticeship programs on behalf of employers, small and mid-sized employers in nontraditional industries such as banking often did not have the capacity to take more than one or two apprentices. As a result, the number of apprenticeship applicants greatly exceeded the number of available apprenticeship slots. According to Apprenticeship QPR data, as of the end of its grant in September 2020, Harper College registered 64 percent of its overall apprentice target.

- **Registering apprenticeships in nontraditional occupations can be challenging, but staff can overcome obstacles.** According to AOD staff, the first hurdle to creating registered apprenticeships in nontraditional occupations is that the occupation must fit within the constructs of an existing DOL-approved occupation. Then DOL undertakes a lengthy process to approve it as a registered apprenticeship. DOL requires feedback from multiple stakeholders on the necessary RTI and OJL components of the new occupation. As a result, AOD staff found ways to fit its focal occupations within those already approved.

  Second, AOD outreach staff reported that employers in nontraditional industries often associate apprenticeships with the construction trades (e.g., electricians, carpenters, and plumbers). Outreach staff reported that it takes multiple contacts to locate the ultimate decision maker at the employer and then upwards of a year to launch its apprenticeship program. AOD staff addressed these challenges by

hiring a team of sales staff with multiple contacts with employers and by holding recruitment events that offered attendees employers who had already hired apprentices.

- **AOD strengthened Harper College's overall engagement with local businesses**. AOD staff reported that prior to the AAI grant, Harper College's employer engagement strategy mainly was conducting small, customized trainings for businesses. Staff noted that the college's AAI grant-related employer engagement strategies led to a more intentional approach to working with the business community, one where the college's workforce office and academic programs needed to collaborate. As of this report, college leadership planned to continue this collaboration to help sustain the apprenticeship programs initiated through AAI.

Harper College Responses to the COVID-19 Pandemic

The COVID-19 pandemic affected how Harper College staff delivered RTI, the number of apprenticeship slots, and employer outreach. After the Illinois governor instituted a stay-at-home order in March 2020, all classes at Harper College, including the RTI for apprentices, went online. After the order ended in June 2020, the college continued most classes online, but made accommodations for apprentices in courses that required hands-on lab work (e.g., advanced manufacturing). The college reduced the number of students in each lab section to ensure workstations were socially distanced. Staff reported that virtual classes made building cohesion among a cohort of apprentices more difficult. Additionally, staff noted apprentices had more difficulty staying engaged during online classes because they were alone, as opposed to sitting in class with their peers, and/or because some faculty were not experienced teaching online and had difficulties interacting with students. Moreover, not all apprentices had the equipment necessary for virtual courses. For these students, staff arranged for the Harper College library to lend laptops and provide hotspots.

The pandemic affected the number of apprenticeship programs the college offered for the 2020-21 academic year. Prior to the pandemic, AOD staff had anticipated that 50 employers would hire apprentices in fall 2020, but they fell short of that estimate. Some newly recruited employers either reduced the number of their apprentice slots or canceled their apprenticeship program entirely. As well, some unspecified number of employers that had hired apprentices in the past paused hiring due to uncertainty about their operations considering the pandemic-related economic downturn. Harper College staff also reported that a few apprentices were laid off, particularly in the supply chain apprenticeships.

Finally, the pandemic affected employer recruitment efforts. When the pandemic began, staff had to abandon a spot with a local business radio talk show, as well as in-person events and meetings such as the employer breakfasts. Staff continued outreach via phone/voicemail and email though staff reported they had limited success with these methods in the past.

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10. Wisconsin Department of Workforce Development Bureau of Apprenticeship Standards

## *Wisconsin Apprenticeship Growth and Enhancement Strategies (WAGE$)*

The Wisconsin Department of Workforce Development oversees the state Bureau of Apprenticeship Standards (BAS). Within BAS, Wisconsin has operated a statewide registered apprenticeship model for 109 years. In 2015, BAS received an American Apprenticeship Initiative (AAI) grant to design and operate **Wisconsin Apprenticeship Growth and Enhancement Strategies (WAGE$)**. Through WAGE$, BAS expanded Wisconsin's apprenticeship model to new populations, employers, and occupations through partnerships with the 11 local workforce development boards (WDBs) across the state. Grant-funded apprenticeship liaisons in each WDB championed apprenticeships locally.

10.1 Target Occupational Areas

The WAGE$ grant targeted multiple occupations in three industries: advanced manufacturing, healthcare, and information technology (IT). The grant services the entire state and thus includes metropolitan areas of varying sizes and rural areas. Because industry types and concentrations vary widely across the state, BAS considered local WDBs to be in the best position to determine the occupations included in WAGE$.

WDBs in the northern part of the state, home to lakes and vacation destinations, tended to focus on IT occupations, due to the presence of large insurance firms and the tourism industry that need skilled IT workers. Advanced manufacturing is a prominent industry in areas along Lake Michigan from Milwaukee to Green Bay. The Northeast Wisconsin Manufacturing Alliance, with 180 members, makes up a quarter of the economy in the Green Bay region, for example. Thus, the local WDB focuses on occupations in the manufacturing industry. The Madison area (in south central Wisconsin), which is the state capital and the location of the University of Wisconsin-Madison, focuses on healthcare occupations because of the prevalence of scientific institutions and hospitals.

WAGE$ staff reported a tight labor market and a shortage of skilled workers across industries.[73] In 2015, when the grant was awarded, the average unemployment rate in Wisconsin was 4.5 percent.[74] Staff
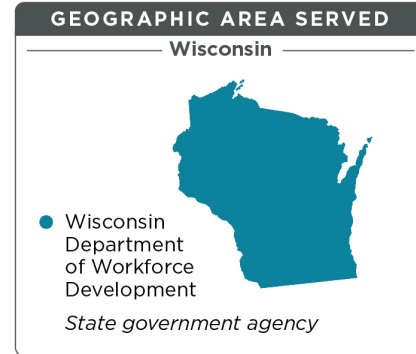
GEOGRAPHIC AREA SERVED

Wisconsin

● Wisconsin Department of Workforce Development

State government agency

Wisconsin Department of Workforce Development at a Glance

Grantee type: State government agency

Geographic coverage: State of Wisconsin

Grant amount: $5,000,000

Target industry: Advanced manufacturing, healthcare, IT

Registering body: Wisconsin Bureau of Apprenticeship Standards (BAS)

Prior experience with registered apprenticeship: Yes

Target number of registered apprentices: 1,000

Number of apprentices registered (as of 9/2020): 689 (69% of target)

Target number of pre-apprentices: 0

Number of pre-apprentices served (as of 9/2020): 0

Grant period: September 2015 to September 2020

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[73] Data were collected prior to the COVID-19 pandemic.

[74] U.S. Bureau of Labor Statistics data, provided by the Federal Reserve Bank of St. Louis, https://fred.stlouisfed.org/series/LAUST550000000000003A.

viewed WAGE$ as an opportunity to address a skills gap in large and growing industries by using apprenticeship.

10.2   Grant Activities

With the WAGE$ grant, BAS built on the Workforce Innovation and Opportunity Act (WIOA) implementation efforts occurring in 2015, at the time of the grant award. Specifically, BAS wanted to increase awareness and understanding of apprenticeship among WDB and American Job Center business services staff so they could present the idea to employers as a potential strategy to meet their labor needs. Despite the state's long history with apprenticeship, grant staff reported that business services staff had an insufficient understanding of how to work with employers to develop apprenticeship programs. BAS distributed most grant funds to the 11 WDBs to fund apprenticeship liaison positions within the business services teams.

> **Wisconsin Economy**
>
> **Unemployment rate, June 2019:** 3.4%
>
> **WAGE$ focus industries, by share of employment:**
>
> - Manufacturing (16%)
> - Healthcare (15%)
> - IT (2%)
>
> SOURCES: Unemployment rate: U.S. Department of Labor, Bureau of Labor Statistics. https://beta.bls.gov/dataViewer/view/timeseries/LASST550000000000003. Focus industries: U.S. Department of Labor, Bureau of Labor Statistics, for February 2019: https://www.bls.gov/regions/midwest/wisconsin.htm.

Grant funds for the WAGE$ initiative supported the following:

- **WAGE$ staff at BAS.** The BAS **grant manager** oversaw grant activities and played a central role in strategic planning, budgeting, reporting, and technical assistance to each of the local WDBs. The BAS **grant outreach coordinator** served as the liaison between BAS and the apprenticeship training representatives (ATRs),[75] who were housed at Wisconsin technical colleges, and the local grant-funded **apprenticeship liaisons** (see below). The grant outreach coordinator convened colleges, employers, and the Worldwide Instructional Design System (WIDS).[76] WIDS is an external service that assisted in designing and aligning curriculum by facilitating the Developing a Curriculum (DACUM)[77] process and establishing standards and work process schedules for each new apprenticeship program. The grant outreach coordinator also promoted the rollout of new apprenticeship programs through press events.

- **Local WDB planning and administration.** At the start of the grant, local WDBs used grant funds to develop a strategic plan that included goals and activities for engaging employers, expanding apprenticeships to new industries, and recruiting from targeted populations (Tribal communities, racial and ethnic minorities, women, youth, and ex-offenders). Each strategic plan required a budget request, budget narrative, staffing plan for apprenticeship liaisons, and a work plan. Each quarter, the WDBs sent a progress report to the grant manager, providing updates on activities conducted to meet the goals in the strategic plan and progress toward goals—for example, for recruiting employers and registering apprentices, including apprentices from underrepresented populations.

- **Apprenticeship liaisons at the local WDBs.** Most of the grant money allocated to the WDBs funded apprenticeship liaison positions. The WIOA-funded business services staff who presented a range of

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[75] The ATR positions were established in 1911 when Wisconsin started the state apprenticeship program. They are funded through state General Program Revenue funds and none of their salary is funded through the WAGE$ grant. Their primary role is to serve as a liaison between employers and the technical colleges (RTI providers) in the state.

[76] https://www.wids.org/.

[77] http://www.dacum.org/.

services available to employers to assist with their hiring needs. By contrast, apprenticeship liaisons focused specifically on expanding apprenticeship programs. Some WDBs, such as the Bay Area WDB, funded their entire apprenticeship liaison salary with the grant. Others funded the position partly with the grant or used the grant to support more than one liaison, each of whom spent some dedicated portion of their time on expanding apprenticeship. Liaisons' primary focus was outreach to employers, but they also tried to engage potential apprentices from underrepresented populations.

10.3 Participant Characteristics and Recruitment

Apprentices registered under WAGE$-supported programs were predominantly men and age 25 or older. Over 80 percent were non-Hispanic White. Women, veterans, and other races and ethnicities each constituted 10 percent or less of apprentices registered. (See Exhibit 10-1.)

Local WDBs used various strategies to recruit apprentices from underrepresented populations. They identified candidates from among participants in other programs that they ran or partnered with—such as WIOA, Reemployment Services and Eligibility Assessment (RESEA), technical colleges, community-based organizations, and the state youth apprenticeship program.

BAS and local WDB staff reported success in identifying candidates from underrepresented populations, but difficulties placing them in apprenticeships. Employers preferred to use incumbent workers to fill registered apprenticeships because they knew the workers and were more comfortable investing in them. As a result, most registered apprentices (92 percent[78]) were incumbent workers (meaning those already working for the employer).

Exhibit 10-1. Apprentice Characteristics, WAGE$

Apprentice Characteristic	
Men	90%
Women	10%
24 or younger	19%
25 to 44	69%
45 or older	12%
Hispanic, any race	6%
White, non-Hispanic	83%
Black, non-Hispanic	5%
Asian	4%
Other race, non-Hispanic	2%
Veteran	7%
People with disabilities	0%

SOURCE: Apprenticeship Quarterly Performance Report (QPR), as of September 2020. Gender N=687 apprentices; age and veteran/disability N=689; race/ethnicity N=684.

Some employers approached specific incumbent workers to invite them to apply for an apprenticeship. Other employers internally advertised opportunities. For instance, one manufacturing employer reported advertising apprenticeship programs on lobby television monitors and discussing opportunities in regular employee review meetings. Of the remaining 8 percent of apprentices who were not incumbent workers, some were previous youth apprenticeship apprentices with the employer.

10.4 Engaging and Assisting Employers

Apprenticeship liaisons collaborated with ATRs to promote apprenticeship to employers. They identified and built relationships with the employers through outreach and business development. Once the apprenticeship liaison identified an employer interested in registering an apprenticeship program, the liaison handed off the employer to the ATR to help design or expand an apprenticeship program and navigate the registration process. ATRs could help employers adopt existing apprenticeship standards, including the structure, content, and provision of on-the-job learning (OJL) and related technical instruction (RTI). Employers sponsored their programs. The ATR handled all the paperwork for registering the apprenticeship with BAS.

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[78]   Data reported to DOL's Apprenticeship QPR system, September 2020.

Apprenticeship liaisons described relationship building as essential to outreach and business development. They worked with employers with whom they had existing relationships, and reached out to new employers with identifiable workforce needs that might be good candidates for apprenticeships. For example, small and mid-sized manufacturing firms might not be able to afford to hire specialists for different functions such as programming, operating, and maintaining automated manufacturing devices. With this in mind, the apprenticeship liaison might target smaller employers to hire or upskill workers into the mechatronics apprenticeship program, which trained workers to be generalists.

To identify new employers, apprenticeship liaisons solicited referrals from their current employer partners and cold-called new ones in relevant industries. When approaching employers, liaisons discussed the benefits of apprenticeship, including using it as a solution to address challenges such as a shortage of skilled workers, high staff turnover, or an aging workforce. To retain incumbent workers by upskilling them rather than losing them to full-time school was also a selling point.

Employers sponsoring and registering apprenticeship programs ranged from small local companies to a large cheese manufacturer. In healthcare, the employer was a large university medical system.

10.5 Apprenticeship Programs

As of September 2020, WAGE$ had registered 207 apprenticeship programs under the AAI grant, according to data reported to DOL. Slightly more than half of the 689 apprentices (53 percent) were registered in time-based programs and the remaining were in hybrid time- and competency-based programs.[79] The majority of employers used the Wisconsin technical college system as the RTI provider, except for the healthcare system, which provided training internally.

Examples of WAGE$-supported new or expanded apprenticeships included mechatronics, maintenance technician, welder/fabricator, automated welder, industrial manufacturing technician, medical assistant, data analyst, IT service technician, and software developer.

More than one-quarter (27 percent) of AAI apprentices registered in manufacturing occupations (Exhibit 10-2). Two-thirds (66 percent) entered other occupations. Most of the other occupations were in installation, maintenance, and repair, and these apprentices were typically employed in the manufacturing industry in occupations such as mechatronics technician (see **Spotlight on Apprenticeship** below).

Exhibit 10-2. Occupations of Registered Apprentices, WAGE$
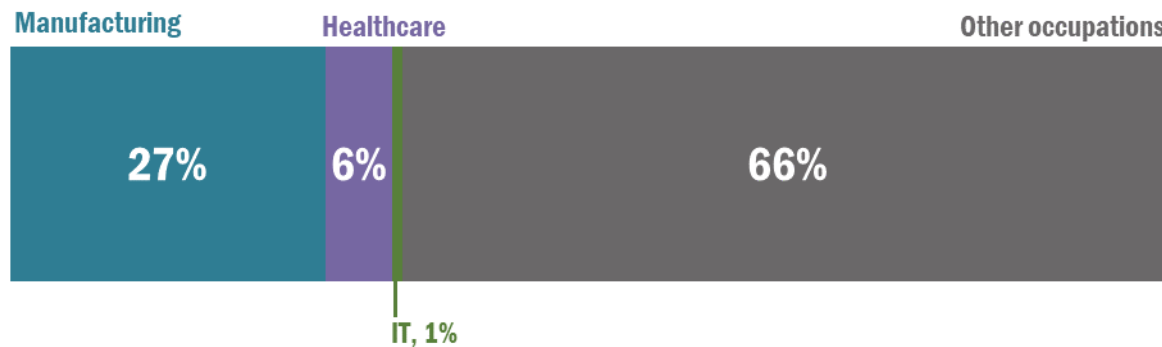
SOURCE: Apprenticeship QPR, as of September 2020. *N*=684 apprentices.

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[79]   Data reported to DOL's Apprenticeship QPR system, September 2020.

Healthcare and IT occupations accounted for much smaller proportions of registered apprentices. WDBs faced challenges promoting apprenticeship in nontraditional industries such as IT and healthcare. One WDB, for instance, had trouble finding enough IT employers to launch an apprentice cohort. It also faced concerns that the RTI would not keep pace with rapid changes in the IT industry. As another example, the medical assistant apprenticeship encountered conflicts with accrediting standards used by technical colleges that prohibited trainees from being paid (discussed in Section 10.7 below).

Spotlight on Apprenticeship: Lakeshore Technical College's Mechatronics' Technician Program

BAS developed the mechatronics technician program and curriculum in partnership with employers and the Wisconsin Technical College System as a new apprenticeship under the WAGE$ grant. Mechatronics technicians are trained in a range of skills—mechanical engineering, electrical engineering, coding, and welding—that are required in factories that rely heavily on robotics and other electronic and mechanical systems in manufacturing. A large employer might be able to employ specialists in each of those fields. Small and mid-sized manufacturers (of which there are many in Wisconsin), however, often need workers with well-rounded skill sets in multiple disciplines to program, operate, maintain, and repair equipment. With the rapidly changing nature of automation in manufacturing, employers described the mechatronics program as highly valuable for the industry.

The Bay Area WDB assisted Lakeshore Technical College in adopting the mechatronics program. The college drew on its existing manufacturing courses and faculty. Its ATR worked with the Bay Area apprenticeship liaison to recruit a half dozen local employers for a first mechatronics apprenticeship cohort.

RTI and OJL were concurrent, with RTI provided one day a week and OJL four days a week. For the mechatronics apprenticeship, the RTI, OJL, and resulting credentials are as follows:

- **RTI.** The RTI is 864 hours (one day a week for 8 hours), taught onsite at Lakeshore Technical Collage. Classrooms contained innovative, state-of-the-art, hands-on equipment of the types used by manufacturing employers. The curriculum included the following: trades math review, DC and AC electricity, electrical codes for mechatronics, welding basics, mechatronic principles power transmission systems, fluid power systems, motors and motor control, machining concepts, introduction to programmable local controllers, human-machine interface technologies and controller applications, introduction to robotic systems, and introduction to robotic integration.
- **OJL.** OJL was part-time (four days a week) for 9,132 hours (provided over approximately five years). During OJL, apprentices worked with a mentor to develop the ability to perform work safely, install mechanical equipment, install electrical equipment, maintain mechanical equipment, troubleshoot mechatronic systems, operate machine shop tools and machines, weld and fabricate parts, maintain automation systems, modify devices and systems, and maintain documents and records.
- **Certificates and credentials.** The mechatronics apprenticeship resulted in the award of a Journeyworker Card, an in-demand credential in the manufacturing field. Apprentices also earned 24 hours of transferrable college credit.

10.6 Plans to Sustain Grant Activities

Staff interviews suggested several plans for sustaining WAGE$ grant activities. As of this report, these included the following:

- Knowledge would carry over. Although the apprenticeship liaison positions might not be retained, most of the staff who filled those positions would remain in some capacity. They likely would work in business services roles where they could apply the experience gained under the grant to continue expanding apprenticeship. Apprenticeship liaisons convened many stakeholders during the grant, so information had been broadly disseminated and likely would continue to circulate.

- The relationships that apprenticeship liaisons developed with ATRs would help promote stronger coordination between BAS and local WDBs and, in turn, more effective engagement of employers throughout the process of registering an apprenticeship program.

- The new programs developed under the AAI grant would also continue due to employer interest in those programs. BAS planned to update program curricula as needed to keep pace with technological change.

- BAS received a DOL State Expansion Grant and an Apprenticeship State Expansion grant, which would support its apprenticeship expansion efforts until 2023. BAS had already integrated many of the WAGE$ practices, such as the liaisons' approach to outreach.

- BAS planned to continue recruiting underrepresented populations using lessons learned from the WAGE$ grant. Under the expansion grants, BAS planned to expand certified pre-apprenticeship and youth apprenticeship programs throughout the state, to help broaden the pipeline into registered apprenticeships.

10.7 Implementation Lessons from Operating the AAI Grant

Staff interviews suggested several lessons from implementing WAGE$ and the AAI grant activities. These included the following:

- **Employers generally hired incumbent workers as apprentices, complicating efforts to recruit from underrepresented populations.** The grantee required each WDB to identify at least one underrepresented target population in its strategic plan. But, as of September 2020, most apprentices registered under the AAI grant were incumbent workers—most of whom were not from underrepresented populations. Given the commitment and investment required of them (up to five years for advanced manufacturing), employers stated a preference for filling apprenticeship slots with incumbent workers because they were confident they would persist in the apprenticeship and remain with the employer after completion.

  Staff reported that youth apprenticeship was one strategy for diversifying the apprentice population. It could introduce a wider range of candidates to employers, while requiring less investment from them, than would a full registered apprenticeship. Having had a chance to observe the youth apprentice, the employer might then be more willing to hire them into a registered apprenticeship. Although BAS had long been involved with youth apprenticeship, youth apprenticeships and registered apprenticeships had been largely siloed from each other. BAS leadership reported that they intended to develop strategies to help make youth apprenticeships more of a pipeline into registered apprenticeships.

  Grantee staff also planned to continue efforts to recruit Tribal populations. Apprenticeship liaisons who created partnerships with Tribal nations had made introductions between them and the ATRs assigned to the geographical area. The introductions occurred well before the grant's end to establish ATRs as workforce partners with the Tribal nations and incorporate the ATRs into routine communications and meetings.

- **Rapid change in the IT industry is a challenge for maintaining the relevance of an apprenticeship program's RTI.** Only one local WDB facilitated an IT apprenticeship. One challenge with apprenticeship in the IT industry is that by the time an IT program is developed and registered, and apprentices complete it, the skills the RTI and OJL teach might no longer be sufficient—some might no longer be relevant. For instance, some programming languages can quickly grow in importance and others decline. BAS was considering approaches to address that challenge. One focus was how to update IT curricula quickly, recognizing that revisions to apprenticeship standards take time and thus pose challenges for improving turnarounds. Another approach was to reduce the need to update standards by focusing RTI on more general skills (e.g., programming basics) that were likely to be more durable, leaving the more specific (and more rapidly evolving) technical skills to be identified by employers and taught via OJL.

- **Gaining a critical mass of employers to launch a first cohort for a new apprenticeship program can be challenging.** For a college to enter a new field, it needs to enroll enough students to cover the course costs. Although industry input informed the curricula for the apprenticeships developed with WAGE$ support, many employers were reluctant to sign on until they saw that the program produced workers with the right skills. Even interested employers had difficulty enrolling more than one apprentice at a time due to the cost of RTI and the time out of work an apprentice spends attending RTI. The WAGE$ grant supported aggressive marketing to employers by funding apprenticeship liaison positions with the goal of securing enough committed employers to form a first cohort. Other innovative solutions might also be possible. For instance, one college made RTI for its IT service desk technician program available online statewide, allowing it to draw on a larger pool of potential employers than would have been possible if the RTI were delivered in person.

- **National credentialing standards used by Wisconsin's technical colleges made it difficult to introduce healthcare apprenticeships.** Few registered apprenticeship programs were in healthcare. One reason was the incompatibility of apprenticeship standards with credentialing standards. Technical colleges in Wisconsin whose medical assistant training programs are accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) must meet its standards, including for number of clinical hours. CAAHEP does not recognize paid hours toward that standard. At least three other medical assistant credentialing entities exist, but the colleges were used to CAAHEP and were unwilling to switch. The Madison WDB circumvented the problem by working with University of Wisconsin (UW) Health to develop a medical assistant apprenticeship program that instead met the accreditation standards of the National Healthcareer Association.[80] Instead of a college providing the RTI, UW Health (the employer), provided both the RTI and the OJL itself. In the final year of the grant, technical colleges agreed to start providing RTI for the CAAHEP-accredited medical assistant apprenticeship. At the time of the follow-up call, only one college had started enrolling students. BAS expected the college would enroll its first cohort after the grant ends, in January 2021.

Wisconsin Department of Workforce Development Responses to the COVID-19 Pandemic

COVID-19 severely curtailed employer outreach conducted by apprenticeship liaisons and ATRs. Per statewide orders, BAS staff, ATRs, and apprenticeship liaisons worked remotely starting at the beginning of the pandemic. From March through May 2020, apprenticeship liaisons halted employer outreach altogether. In June, the liaisons resumed outreach virtually, with the liaisons and ATRs working closely to meet the needs of employers. As of this report, most of that support continues to be virtual.

The pandemic also reduced employers' prioritization of apprenticeship. Layoffs were common and employers focused on simply retaining and bringing back their employees, not moving incumbent workers into apprenticeships or hiring apprentices. As of fall 2020, however, employers had again begun to focus on starting apprenticeship programs and registering apprentices.

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[80] https://www.nhanow.com/.

11. Workforce Development Board of Herkimer, Madison, and Oneida Counties
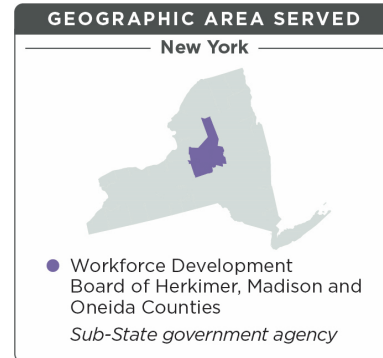
Central New York Regional Apprenticeship Program

The Workforce Development Board (WDB) of Herkimer, Madison, and Oneida Counties provides workforce development services across a three-county area in upstate New York. A non-profit organization based in Utica, the WDB administers the Workforce Innovation and Opportunity Act (WIOA) funds for the region, serving job seekers and employers through its American Job Centers, known as Working Solutions Centers.

The WDB received an American Apprenticeship Initiative (AAI) grant to design and operate the **Central New York Regional Apprenticeship Program**. The grantee's primary roles under the AAI grant included overall administration of grant funds; coordinating with partners to help employers develop on-the-job learning (OJL) and related technical instruction (RTI); identifying RTI providers; and registering new apprenticeship programs with the state apprenticeship agency. With AAI grant funds, the WDB also helped offset costs of RTI and OJL of apprentices.

The AAI grant serves a 19-county area in central upstate New York (including the three counties the WDB directly serves under WIOA).[81] The large geographic area includes urban areas (such as Syracuse), smaller cities and towns, and rural communities, with regional employers facing varying challenges to meeting their workforce hiring and skill requirements.

At the time of the grant award in 2015, the annual average unemployment rate across the 19 counties in the service area ranged from a low of 4.4 in Tompkins County to a high of 7.3 percent in St. Lawrence County. Of the 19 counties, 10 recorded average annual unemployment rates of less than 6 percent.[82]

GEOGRAPHIC AREA SERVED
New York

● Workforce Development Board of Herkimer, Madison and Oneida Counties
Sub-State government agency

Workforce Development Board of Herkimer, Madison, and Oneida Counties at a Glance

Grantee type: Sub-State government agency

Geographic coverage: Central upstate New York

Grant amount: $2,998,116

Target industry: Advanced manufacturing, IT, cybersecurity

Registering body: State Apprenticeship Agency, New York State Department of Labor

Prior experience with registered apprenticeship: No

Target number of registered apprentices: 350

Number of apprentices registered (as of 9/2020): 396 (113% of target)

Target number of pre-apprentices: 600

Number of pre-apprentices served (as of 9/2020): 482 (80% of target)

Grant period: September 2015 to September 2021

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[81]   Initially, the grant served only six counties, but added 13 more in an effort to meet the goals of the grant and fully expend the grant funds. The 19 counties are Broome, Cayuga, Chemung, Chenango, Cortland, Delaware, Herkimer, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Otsego, Schuyler, St. Lawrence, Steuben, Tioga, and Tompkins.

[82]   Local Area Unemployment Statistics, https://www.bls.gov/lau/lamtrk15.htm.

11.1   Target Occupational Areas

In the wake of several decades of economic decline and population loss in the region, the WDB designed its AAI grant activities to help develop a pipeline of skilled workers for the advanced manufacturing, information technology (IT), and cybersecurity industries, especially critical for small and mid-sized businesses that contributed the bulk of the region's growth.[83]

In particular, the manufacturing sector needed younger workers with the requisite skills to replace skilled workers nearing retirement age. The targeted manufacturing occupations included computer numerical control machinist, welder, plant maintenance mechanic, quality assurance auditor, electronics technician, and industrial maintenance technician. IT occupations included software developer. The apprenticeships in the cybersecurity field included a combination of criminal justice and computer-technology instruction and work-based learning. The program prepared apprentices to enter IT jobs protecting cyber-networks in varied sectors, including banking and finance, transportation, the petrochemical industry, law enforcement and defense communications, and government and homeland security.

> **Utica Area Economy**
>
> **Unemployment rate, June 2019:** 5.5%
>
> **Central New York Regional Apprenticeship Program focus industries, by share of employment:**
>
> - Manufacturing (9%)
> - IT (1%)
> - Cybersecurity (<1%)
>
> SOURCES: Unemployment rate: U.S. Department of Labor, Bureau of Labor Statistics. Herkimer County. https://beta.bls.gov/dataViewer/view/timeseries/LAUCN360430000000003.
> Focus industries: U.S. Department of Labor, Bureau of Labor Statistics, for February 2019: https://www.bls.gov/regions/new-york-new-jersey/ny_utica_msa.htm; https://www.bls.gov/oes/current/oes_46540.htm.

Although grant activities focused on these key occupations, the grant supported apprenticeships across a broader range of occupations, including some for specialized jobs involving only one or two registered apprentices per employer.

11.2   Grant Activities

Though the WDB had extensive experience operating multi-county, multi-agency partnership grants, until award of the AAI grant, it had not supported apprenticeships. AAI grant funds for the Central New York Regional Apprenticeship Program supported the following activities:

- **Grant staff.** The grant funded three key staff. The **project director** managed grant activities overall and two **employment coordinators** engaged employers and key partners to create new apprenticeships in the region. The employment coordinators worked closely with key partners (discussed below), including The Manufacturers Association of Central New York (MACNY), Mohawk Valley Community College, and the Workforce Development Institute. They identified employers potentially interested in apprenticeship, met with them to discuss apprenticeships, and assisted those interested to develop and register new apprenticeship programs.

- **RTI and OJL costs.** The AAI grant funded RTI (up to $5,000 per apprentice), which could include attendance in person through local training providers (such as community colleges) and online training (such as from Tooling U-SME).[84] The grantee paid RTI providers either directly or by

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[83]   The original grant application included a focus on two additional industries—nanotechnology and drones—but the WDB did not pursue these industries because early in its grant, the employers that made commitments to participate during the grant proposal submission period relocated elsewhere in the United States.

[84]   AAI grant funds were available to pay subscription costs for apprentices for online instruction. Tooling U-SME offers more than 500 online classes and instructor-led presentations. Tooling U-SME courses are reviewed and validated by industry experts and aligned with industry standards and certifications (for more information, see https://www.toolingu.com/).

reimbursing employers for their RTI payments. Apprentices who attended State University of New York (SUNY) colleges could access RTI funds through the SUNY Apprenticeship Program (though each SUNY college had to apply for these funds independent of the AAI grant).[85] The AAI grant also covered costs associated with OJL (up to $10,000 per apprentice), which primarily covered salaries for the mentors who provided OJL for apprentices.[86]

- **Supports for apprentices and pre-apprentices.** The WDB could co-enroll apprentices and pre-apprentices in WIOA to use WIOA funds to cover supportive services costs for AAI participants. WIOA funds supported gas reimbursement; purchase of uniforms, tools, equipment, and books; and assistance with childcare expenses. The WDB and other partnering organizations noted above also established referral arrangements with a wide range of social service agencies and local non-profit organizations for mental health and substance abuse counseling, emergency food service, legal assistance, healthcare and benefits, work clothing, transportation, and domestic violence counseling.

11.3 Participant Characteristics and Recruitment

Apprentices were predominantly men and age 44 or younger. Close to three-quarters were non-Hispanic White and 14 percent were non-Hispanic Black. Eight percent of apprentices were veterans. Pre-apprentices had similar gender and age characteristics, but a greater percentage were non-Hispanic White and fewer were non-Hispanic Black. People with disabilities accounted for 1 percent of apprentices and 4 percent of pre-apprentices. (See Exhibit 11-1.)

WDB staff reported that many apprentices were incumbent workers, that employers selected apprentices among their new or entry-level workers. Pre-apprenticeship programs funded under the AAI grant targeted unemployed, underemployed, and newly hired incumbent workers in need of skill upgrades.

Exhibit 11-1. Apprentice and Pre-Apprentice Characteristics, Central New York Regional Apprenticeship Program

Apprentice Characteristic	
Men	85%
Women	15%
24 or younger	38%
25 to 44	49%
45 or older	13%
Hispanic, any race	7%
White, non-Hispanic	72%
Black, non-Hispanic	14%
Asian	3%
Other race, non-Hispanic	4%
Veteran	8%
People with disabilities	1%
Pre-Apprentice Characteristic	
Men	82%
Women	18%
24 or younger	24%
25 to 44	52%
45 or older	24%
Hispanic, any race	4%
White, non-Hispanic	86%
Black, non-Hispanic	5%
Asian	4%
Other race, non-Hispanic	1%
Veteran	9%
People with disabilities	4%

SOURCE: Apprenticeship Quarterly Performance Report (QPR), as of September 2020. For apprentices, gender *N*=394; age *N*=395; race/ethnicity *N*=388; veteran/disability *N*=396. For pre-apprentices, gender *N*=460; age *N*=473; race/ethnicity *N*=463; veteran/disability *N*=482.

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[85]   The SUNY Apprenticeship Program grant was for up to $5,000 per apprentice to cover costs of RTI for apprentices enrolled at a SUNY college. When coupled with the AAI grant, up to $10,000 was available to offset the cost of RTI for each apprentice.

[86]   During the grant period, the WDB increased the RTI coverage from $3,000, to $5,000 per apprentice. The grantee also introduced a change whereby AAI grant funds could be used to reimburse employers up to $10,000 per apprentice to cover OJL costs.

11.4 Engaging and Assisting Employers

Initially, the employment coordinators used a variety of methods to reach employers, such as phone calls, emails, and dissemination of brochures highlighting the benefits of apprenticeship for employers and workers. However, these early efforts did not generate much interest in apprenticeship. Over time, the employer engagement strategies evolved to focus on partnering with organizations that had strong connections to employers, and gradually engagement efforts gained traction. Partners MACNY, Mohawk Valley Community College, the Workforce Development Institute, and the state apprenticeship agency drew on long-standing employer connections. For example, MACNY played a crucial role in helping the WDB to identify manufacturers in the Central New York area potentially interested in apprenticeship or pre-apprenticeship. MACNY staff accompanied employment coordinators to meetings with employers to provide background on apprenticeship and pre-apprenticeship programs; their benefits to the employer and workers; and effective strategies to assist employers in planning, registering, and implementing new apprenticeship programs. As the grant progressed, employers that successfully developed apprenticeship programs through the Central New York Regional Apprenticeship Program referred others.

Once an employer agreed to establish an apprenticeship program, the employment coordinators, along with staff from the state's apprenticeship office, MACNY, and the selected RTI provider, worked closely with the employer to design the apprenticeship program. The state's apprenticeship office reviewed the apprenticeship plan and ensured all paperwork was complete and met requirements for registration with the state apprenticeship agency. In addition to working closely with the WDB on employer engagement, MACNY served as a group sponsor of apprenticeships in advanced manufacturing occupations. This group sponsorship facilitated the rapid formation of apprenticeship programs, especially for mid-sized and smaller advanced manufacturing employers (see the text box below).

Spotlight on Apprenticeship: The Manufacturers Association of Central New York's Group Sponsor Role in Fostering Employer Engagement

The Manufacturers Association of Central New York (MACNY) is a manufacturing trade association with more than 350 member companies across a 26-county area of central New York State. In 2016, MACNY became the first New York manufacturing association to serve as a group apprenticeship sponsor, registering apprenticeship programs in seven occupations with the state apprenticeship agency: toolmaker, computer numerical control machinist, maintenance mechanic, welder, electronics technician, electromechanical technician, and quality assurance auditor.

MACNY coincidentally began its own apprenticeship efforts at the same time that the WDB received its AAI grant. The two organizations recognized the advantages of a partnership in which MACNY brought outreach/marketing skills and established connections with employers, and the WDB provided funds to offset RTI and OJL costs, help develop apprenticeship programs, and referred employers for MACNY membership.

As a group sponsor, MACNY conducted outreach to companies to encourage them to sign on to an existing registered apprenticeship program in one of the seven occupations. Because the seven programs were registered with the state, WDB staff reported that it was easy, fast, and less burdensome for an employer to start an apprenticeship program in any of those seven occupations. In some cases, employers might have one occupation sponsored through MACNY and then register their own apprenticeship(s) in other occupations. As a liaison with the state apprenticeship agency, MACNY worked with employers to address challenges and answer questions.

The RTI provider varied by occupation and employer. MACNY assisted each employer in arranging RTI, which included outreach to community colleges and other training organizations (e.g., Tooling U-SME).

The quality control auditor program lasted two years, and the remaining six apprenticeship programs lasted four years each. All seven programs required 2,000 hours of OJL and 144 hours of RTI per year. Both RTI and OJL were tailored to the specific workforce requirements, processes, and equipment of each employer.

Apprenticeship completers received a New York State Journeyman Certificate. Apprentices could also obtain an associate degree, though this depended on the willingness of the individual apprentice to take additional coursework to meet the associate degree requirements.

11.5 Apprenticeship Programs

As of September 2020, the WDB had registered 76 apprenticeship programs under the AAI grant, according to grant data reported to DOL. About three-fifths (59 percent) of apprentices were registered in time-based programs and the remaining two-fifths in competency-based (38 percent) or hybrid (2 percent) programs.[87] Half of the AAI apprentices entered manufacturing occupations, and more than one-third entered IT occupations (38 percent) (Exhibit 11-2). Employers sponsoring and registering apprenticeship programs ranged from small local manufacturing employers to IT firms and a large multinational manufacturer. Mohawk Valley Community College was the main in-classroom RTI provider; Tooling U-SME was the primary source of online instruction.

Exhibit 11-2. Occupations of Registered Apprentices, Central New York Regional Apprenticeship Program

SOURCE: Apprenticeship QPR, as of September 2020. *N*=396 apprentices.

Some key characteristics of the apprenticeships under the AAI grant included the following:

- Completion of all apprenticeships in the advanced manufacturing sector resulted in a New York State Journeyman Certificate. Some apprentices also earned an associate degree by completing additional courses to meet community college degree requirements. IT apprentices received industry-recognized certifications, such as Microsoft Certified Technology Specialist.

- Most apprenticeships in the manufacturing sector were time-based, typically requiring four years (2,000 hours of OJL and 144 hours of RTI per year). Apprenticeships in the IT sector were competency-based and shorter in duration, lasting 12 to 18 months.

- Within the manufacturing sector, apprentices typically started at $13 to $14 per hour, and hourly wages gradually increased to $17 to $22 during the four years of an apprenticeship. Within the IT sector there was more variation (as apprentices might already have had an associate or bachelor's degree and job-related experience). Wages typically started at $15 to $16 per hour and increased to about $30 per hour by the end of the apprenticeship period.

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[87] Data reported to DOL's Apprenticeship QPR system, September 2020 (*N*=396 apprentices).

Spotlight on Apprenticeship: Revere Copper Products, Inc.'s Electrician Apprenticeship Program

Revere Copper Products, Inc., founded in 1801, is among America's oldest manufacturing companies. Headquartered in Rome, New York, the company is employee owned, with about 350 employees, including about 250 workers represented by United Auto Workers Local 2367. Prior to the AAI grant, Revere Copper had an electrician apprenticeship program that had been inactive for several years. With the availability of grant funds and the need for a pipeline of skilled workers to fill projected retirement-related vacancies, Revere Copper re-established apprenticeships.[88] For its electrician apprenticeship program, Revere Copper staff worked closely with MACNY and Mohawk Valley Community College to update the RTI and work process schedule.

Revere Copper advertised for apprentices on its website and with the New York State Department of Labor until it had a sufficient pool of applicants. Applicants had to be at least age 18, have completed the requirements for a high school diploma or possess a GED, and have the physical ability to perform the work. Candidates submitted a Revere Copper employment application, along with a resume. Revere Copper's Human Resources Department followed routine prescreening procedures before its Committee on Apprenticeship conducted blind reviews and scored each candidate, typically selecting about five candidates for interviews and verbal testing with a series of industrial application questions. Ultimately, the panel selected one to three apprentices, depending on the number of positions. These finalists then had to pass a drug screen and criminal background check.

Key features of the electrician apprenticeship program included the following:

- **RTI.** The RTI, provided by Mohawk Valley Community College, was 144 hours per year, for a total of 576 hours over four years. Apprentices completed two for-credit courses at the college each year, for a total of eight. Apprentices attended regularly scheduled classes along with other students enrolled at the community college.
- **OJL.** OJL was full-time (40 hours per week), for a total of 8,000 hours over four years. Most OJL was one-on-one under the supervision of a journeyman, but sometimes included group projects. Over the course of the apprenticeship, each apprentice worked with most journeymen in every department and on every shift. OJL topics were In Shop Maintenance (600 hours); Special Control Equipment (1,750 hours); Instrumentation Testing and System Operation (500 hours); Construction Work (1,150 hours); Rolling Mill (2,500 hours); Bar Copper – Environmental (600 hours); Casting Shop and Weigh Room (650 hours); General Maintenance (175 hours); and Store Room (75 hours).
- **Wage increases.** For each 1,000 hours completed, the apprentice received a raise (according to the union contract). Over the four years and eight wage increases, hourly wages increased from $17.53 to $22.73.
- **Certificates and credentials.** Upon completion of RTI and OJL, each apprentice received a New York State Journeyman Certificate. With several additional courses, an apprentice could earn an associate degree from Mohawk Valley Community College.

According to the Revere Copper representative who developed and oversaw the apprenticeship program, it provided a pipeline of new skilled workers that the firm retained: "The apprentice program has been great—it has provided us with skilled tradespeople. It's hard to get someone off the street who understands what we do here. If we grow one here, they work every shift, every machine; and after they've gotten four years' worth of training, they know their stuff. Most often they'll stay with us."

11.6 Pre-Apprenticeship Programs

The WDB aimed to enroll 600 pre-apprentices with its AAI grant. Through September 2020, it enrolled 482 pre-apprentices, or about 80 percent of its target. The WDB articulated two pre-apprenticeship goals: pre-apprenticeship programs provide the training individuals need to qualify for an apprenticeship, and pre-apprentices learn about the occupation and whether it is a good fit.

Some pre-apprenticeship programs targeted incumbent workers (often newly hired in entry-level positions) to provide particular training or education, such as shop math or precision measurement, required by the employer before the worker entered an apprenticeship. Other programs targeted

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[88]   In addition to the electrician apprenticeship program (profiled here), Revere Copper Products, Inc. developed and registered two other apprenticeship programs with AAI grant assistance: mechanic and machinist.

unemployed or underemployed workers who needed to boost skills to be able to compete for an apprenticeship position. The WDB's Working Solutions Centers helped recruit these potential participants. All pre-apprenticeship programs under the grant led to consideration for an apprenticeship position.

The WDB tailored pre-apprenticeship activities to the occupation and specific workforce requirements of employers. Soft skills, shop math, precision measurement, machine operations, and blueprint reading were examples of training provided as part of the pre-apprenticeship. Pre-apprenticeship completers received a certificate of completion. Programs were short term, typically two to six weeks, but could be as short as 40 hours.

11.7 Plans to Sustain Grant Activities

As of this report, grantee staff planned to continue to collaborate with their partners on the AAI grant and expand partnerships to other organizations to continue supporting apprentices and employers engaged in apprenticeship and pre-apprenticeship programs. They reported that they believed partnerships among employers, RTI providers, and workforce organizations supported and encouraged expansion of apprenticeship programs registered under this grant. Partners could also continue to advocate for new apprenticeship formation in the region.

Grantee staff hoped to use WIOA funding and a newly awarded women's pre-apprenticeship/apprenticeship state grant (especially for nontraditional occupations) to offset RTI and other costs associated with these programs. Staff noted they continued to explore other funding sources to replace AAI grant funds.

11.8 Implementation Lessons from Operating the AAI Grant

Staff interviews suggested several lessons from implementing the Central New York Regional Apprenticeship Program and the AAI grant activities. These included the following:

- **Retirement of long-tenured skilled workers creates opportunities for apprenticeship to help build a skilled workforce.** A challenge for manufacturing firms in the grant region was the retirement of long-tenured skilled workers (e.g., machinist, computer numerical control operators, and electricians) and the inability to find and retain new skilled workers to fill current and future vacancies. Apprenticeship can be an effective tool for recruiting and training new workers to meet employer workforce needs and skill requirements. Employers partnering under the grant cited the need for a new pipeline of skilled replacement workers as a motivation for getting involved with apprenticeship.

- **Availability of funds to cover some or all the cost of RTI and/or OJL can induce employers to consider and establish an apprenticeship program.** The AAI grant provided up to $5,000 per apprentice to cover costs of RTI (potentially supplemented by another $5,000 from the SUNY Apprenticeship Program) and up to $10,000 per apprentice to cover OJL.

- **Group sponsorship can facilitate adoption of apprenticeship by small and mid-sized employers.** Group sponsorship can be a selling point for encouraging employers to consider apprenticeship as a recruitment and training option because it streamlines the process of apprenticeship planning and registration. The MACNY group made it easy for employers interested in apprenticeship in one of the seven occupations to implement a program. If needed, MACNY staff were available to guide employers with development of their recruitment and selection of apprentices. They also provided training to employers on how to effectively provide OJL and to mentor apprentices to enhance the likelihood of their completing the program. MACNY also could help with tailoring and refining RTI to meet the employer's skill requirements and, if needed, identifying potential RTI providers. Finally,

once a program was operational, as the program sponsor, MACNY served as the liaison with the state apprenticeship agency, reducing the burden of apprenticeship reporting and administration for the employer.

- **Engaging new employers and expanding apprenticeship sponsorship requires addressing employers' commonly perceived challenges in planning, registering, and operating apprenticeship programs.** The AAI grantee and partners encountered various impediments in persuading employers to consider apprenticeship programs. These included lack of knowledge about apprenticeships and the steps involved in designing/registering/implementing them; fear of required paperwork to register apprenticeships; costs and burden associated with providing OJL; costs of RTI; fear that apprentices will leave the firm during or shortly after their apprenticeships; and fear of ongoing administrative paperwork and reporting to the state apprenticeship agency. Grantee staff reported there is no standard approach for discussing apprenticeship programs with employers. They described the importance of listening to employer concerns and tailoring responses to them. Additionally, involving other employers with recent experiences in forming and operating apprenticeship programs helped allay concerns about challenges and made new employers better aware of the potential benefits of apprenticeship.

- **Establishing partnerships with other organizations—such as industry associations, RTI providers, and the state apprenticeship agency—is a key to promoting and expanding apprenticeships.** Under the AAI grant, the WDB forged partnerships to facilitate outreach to employers and establish new apprenticeship programs. Each partner organization brought unique skills and resources to promote and support apprenticeships in the service area. For example, the WDB—particularly because of its partnerships—effectively identified employers to offer apprenticeships and helped them structure and implement new apprenticeship programs (e.g., designing curriculum, preparing and submitting paperwork to register the program, helping with recruitment and selection of apprentices, ongoing administration of the apprenticeship).

WDB of Herkimer, Madison, and Oneida Counties Responses to the COVID-19 Pandemic

The COVID-19 pandemic stalled employer outreach and engagement efforts due to statewide shutdowns of government entities, RTI providers, and employers. The grant-funded employer coordinators could not conduct in-person outreach efforts as they had been, and generally employers had less interest in apprenticeship as they laid off employees and stopped or slowed hiring of new workers (including apprentices). Existing apprenticeship programs, as well as the grantee's ongoing work on employer engagement and design and registration of new apprenticeship programs, were generally suspended beginning in mid-March 2020. Area RTI providers also suspended in-person instruction, which led to suspension of apprenticeship RTI—unless instruction was being provided online or could be transitioned online.

Gradually, beginning in summer and into fall 2020, some employers resumed and expanded operations. With this return, some apprenticeship programs resumed, in some instances at reduced capacity and usually delivering RTI instruction and OJL virtually when possible. Some apprenticeships, however, still required in-person and hands-on training, such as welding programs. Over the summer months, the employment coordinators restarted employer outreach efforts, attending virtual employers' industry roundtables, and making phone/online contact with interested employers. As a result, since the beginning of the pandemic through September 2020, the WDB added 15 to 20 new employer partners interested in and moving along the pathway to forming new apprenticeship programs.

For pre-apprenticeships, employer layoffs and reductions in hiring negatively affected enrollments in and expansion of pre-apprenticeship programs. As a result, the WDB did not enroll many new pre-apprentices between the start of the pandemic and September 2020. It anticipated that pre-apprenticeship activity would gradually increase as employers increased production and hiring, along with expanded online course and platform availability.