Building New Apprenticeship Programs

A BRIEFING PAPER FOR THE CALIFORNIA
APPRENTICESHIP INITIATIVE EVALUATION

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About This Brief

This brief is part of SPR's evaluation of the California Apprenticeship Initiative. The evaluation includes an additional four case studies and a pre-apprenticeship brief, which can be found at:
https://caihub.foundationccc.org/Research-and-Reports

Building New Apprenticeship Programs

I. Introduction

Apprenticeships have recently garnered attention in policy circles because they benefit both employers and apprentices in ways that other types of job training do not. Employers gain skilled workers at the end of the training and, during the apprenticeship, apprentices are contributing to the productivity of the employer organizations.[1] Further, since employers are providing the on-the-job training (OJT) component of apprenticeships, they can better ensure that the training meets their needs. Apprentices benefit because they gain skills and work experience, do not have to pay for their classroom training, and are paid by their employers.

Despite these benefits, registered apprenticeships in California are concentrated almost entirely in a few industries that employ only a small percentage of the state's workforce.[2] For example, in 2016, 70 percent of registered apprenticeships in California were in the construction trades, even though the construction industry only employs 5 percent of the state's workforce. By contrast, less than 1 percent were in manufacturing, transportation, and health care occupations combined, even though approximately 18 percent of the state's workers are employed in those industries.[3]

In 2015, to help address this imbalance and establish apprenticeships in industries where they are uncommon—particularly industries deemed by the state as a priority for economic growth—California's governor and state legislature created the ongoing California Apprenticeship Initiative (CAI) grant program.

EXHIBIT 1.
California Apprenticeship Initiative Overview

Inception:
2016

Apprenticeship Grantees:
40

Registered Apprentices:
800

Employer Partners:
75

Community and Industry Partners:
10

Note: Apprenticeship grantees include awards in 2016, 2017, and 2018; registered apprentices reported to DAS between January 2016 and February 2018 from 2016 (n=16) and 2017 (n=2) grantees; employer partners reported by 2016 grantees to Chancellor's Office and SPR; community and industry partners are for 2016 and 2017 grantees.

A California registered apprenticeship is characterized by five main components, each with an associated quality standard:

Programs provide both on-the-job-training and job-related classroom instruction; the classroom curriculum is critiqued and approved by a local education agency.

Participants are paid by the employer during the apprenticeship, and compensation follows wage progression scales.

On-the-job training is conducted in a work setting with the guidance of a more senior employee.

Programs meet California's minimum hours for registration: 144 hours of classroom instruction and 2,000 hours of on-the-job training.

Participants who complete the program receive an industry-recognized credential.

Sources: U.S. DOL (https://www.dol.gov/featured/apprenticeship/faqs); California DAS (https://extranet.ccccco.edu/Portals/1/WED/Apprenticeship%20Initiative/RFA1/Frequently-Asked-Questions-Update-2.pdf).

Another primary objective of the CAI effort is to increase diversity among the state's apprentices so that they better reflect the demographic composition of California. Currently, women make up about half of the state's workforce; in 2016, only 6 percent of the state's apprentices were women.[4]

The California Community Colleges Chancellor's Office (Chancellor's Office) is leading CAI. Over three rounds between 2016 and 2018, it has awarded 40 grants (totaling $27.5 million) to community colleges, school districts, and their partners to establish new apprenticeship programs in industries where apprenticeships are uncommon.[5] Sixteen of these grants were awarded in 2016 (Round 1), thirteen in 2017 (Round 2), and eleven in 2018 (Round 3). All of the apprenticeships established through CAI are registered with the California Division of Apprenticeship Standards (DAS), which ensures that the programs meet a minimum set of quality standards (Exhibit 1).

To support CAI grantees in achieving the goals of the initiative, Chancellor's Office contracted with the Foundation for California Community Colleges (Foundation) and Social Policy Research Associates (SPR) to provide technical assistance and create a community of practice among grantees and stakeholders. In addition, SPR was contracted to conduct an evaluation of CAI's implementation and early outcomes. This briefing paper was developed based on data collected as part of this evaluation and describes key findings.[6]

Early Outcome Findings

- **Seventeen CAI grantees have successfully established new apprenticeships in one or more occupations and have registered 800 new apprentices**.[7] All of these are in industries where apprenticeships are uncommon, such as advanced manufacturing (18 percent of programs), transportation and logistics (18 percent), and hospitality and culinary arts (12 percent). Round 2 and 3 grantees are in the process of establishing additional new apprenticeship programs in non-construction industries.

- **The gender diversity among apprentices in CAI-supported apprenticeship programs is significantly higher than among those registered in other state apprenticeships**. The share of women in Round 1 CAI-supported programs is almost five times greater than the share of women among all apprentices in California (27 percent vs. 6 percent, respectively). This is in part because CAI-supported apprenticeship programs are focused on occupations and industries where women are well represented (e.g., nursing) or that are relatively gender balanced (e.g., lodging manager, chemistry quality control technician). This trend is expected to continue among apprentices registered in Round 2 and 3 programs because these programs are also focused on occupations that are relatively gender balanced, such as hospitality occupations.

- **A majority of apprentices who participated in CAI programs found them to be very helpful**. A full 82 percent of surveyed apprentices found their apprenticeship programs to be very helpful (61 percent) or helpful (21 percent) in preparing them to work in their occupations. They pointed specifically to the opportunity to develop skills in real-world settings, gain work experience, and advance their careers.

- **Employer partners valued their investment in CAI apprenticeship programs because the programs successfully filled their needs for skilled talent and allowed them to have a significant role in designing and conducting trainings**. Employers also reported that apprentices were more knowledgeable about their occupations and more prepared to learn on the job than interns they had hired in the past.

- **CAI has helped facilitate statewide, system-level changes to support the development and sustainability of new apprenticeships**. These changes include the passage in 2018 of state legislation that equates community college reimbursement rates for apprentice classroom instruction (called Related Supplemental Instruction) and non-apprentice classroom instruction. This has made it more financially feasible for community colleges—many of which have developed apprenticeship programs under CAI—to continue to provide classroom training for apprentices.[8] Also in 2018, the state created an interagency apprenticeship advisory committee that will provide advice and guidance to DAS about how best to support and monitor apprenticeship programs in non-construction and non-firefighter trades, such as those developed by CAI grantees.[9]

Implementation Findings and Lessons Learned

- **Employer partners were necessary for designing apprenticeship programs, and identifying these partners early was helpful**. Grantees that had already identified employer partners prior to the grant had an easier time establishing their programs within the grant period.

- **Effective strategies for identifying and engaging employer partners included extensive and persistent industry networking and convenings with groups of employers**. Further, identifying problems for which apprenticeship could offer a viable solution (e.g., persistent worker or skill shortages, mass retirements) was a more effective strategy for engaging employers than "selling" apprenticeship as a generally good strategy.

- **Program staff and leaders with deep industry knowledge, extensive professional networks, and effective communication skills were more effective at employer engagement than staff without these characteristics**. In the absence of staff with these characteristics, engaging a labor market intermediary with industry expertise was an effective strategy.

- **Having a thorough understanding of the requirements and competencies for a job and the relationship of those requirements to an employer's general work flow helped ensure that an apprenticeship program would be designed successfully**. Grantees were able to gain this in-depth understanding of a job by ensuring that employer partners were involved in the program design process and that they provided feedback on curricula and job competencies.

- **Integrating college certificates and industry certifications into apprenticeship programs was valuable because the skills that apprentices gained became more portable**. Apprentices expressed appreciation for these certifications. Although an apprentice earns a journeyman certificate upon completion of an apprenticeship, this certificate is often not well-recognized in the industries that CAI-supported programs have focused on. Thus, some apprentices suggested the addition of other types of third-party credentials, such as industry certifications.

- **Community colleges and school districts were able to effectively establish new apprenticeship programs and serve as classroom training providers**. In the past, community colleges and school districts have not typically developed apprenticeship programs or served as classroom training providers for these programs—most often, these roles were played by a union or an employer. Nevertheless, the successful experience of colleges and districts that received CAI grants demonstrates that they can effectively play those roles.

- **Employer staff members who served as mentors played a key role in program success**. According to apprentices, mentors helped them apply their skills in a work setting, shared practical insights about the work they had learned over the years, and passed on institutional knowledge about their organizations and industries.

- **The sequencing of classroom training and OJT worked well when instruction about a specific task was covered in the classroom shortly before it occurred during OJT**. Both employers and apprentices reported that apprentices were better prepared for the tasks they carried out during OJT when those tasks had recently been covered in the classroom training component. Being able to apply the skills they had just learned in the classroom helped apprentices to better master them.

- **Planning for program staff turnover or turnover within an employer partner's organization was important for ensuring continuity of program operations**. Program staff leaving their positions was a challenge because program implementation was often paused until new staff were hired. Similarly, when an employer contact left his or her position during program development, this sometimes resulted in the employer withdrawing from the program. Grantees recommended having multiple contacts at a given employer and documenting the program development process to make it easier to onboard new staff.

II. Program Structure

CAI apprenticeship programs, like all registered apprenticeship programs in California, have three main components: the recruitment and enrollment process, classroom training, and OJT. In this section we describe the operation of these three components, as well as how grantees managed their programs.

Apprentice Recruitment and Enrollment

The first component of an apprenticeship program is the process by which apprentices are recruited and enrolled. In about three fourths of Round 1 programs, the programs were designed to support lateral transitions or promotions within the employer's own workforce. As such, the employer played the lead role in recruiting workers for apprenticeship positions.

In one program, an employer recruited apprentices from local high schools and community colleges, making presentations at Career Technical Education (CTE) programs in both types of institutions and inviting students to apply for positions on the company website. Some high school apprentices were able to receive college credit for apprenticeship classes taken via a dual enrollment agreement between the high school and the college.

In a few cases, the college or a labor market intermediary partner played a large role in recruitment, advertising a position to currently enrolled college students and other target populations and referring apprentice candidates to the employer partner for consideration for hiring as apprentices.

Once apprentices were recruited—and usually after they were approved by the employer—they had to complete the required enrollment process. This typically entailed meeting with program staff, completing program-related forms, and, where the college was the training provider, applying to the college and registering for classes.

Enrolling apprentices in a community college was sometimes time consuming. For example, one grantee reported having to coordinate with multiple people at the college prior to enrolling. The college streamlined the process in collaboration with the admissions office. In particular, the college admissions director granted apprenticeship program staff the capacity to conduct enrollment, thus reducing the number of people they had to coordinate with to enroll an apprentice at the college.

Classroom Training

A second primary component of an apprenticeship program is classroom training. Among Round 1 and Round 2 CAI programs, the classroom training provider was usually a community college, an adult education program run by the school district, or an industry training partner.[10] As of December 2017, most of the community college programs (58 percent) awarded credit for this training (Exhibit 3). These programs were often structured so that apprentices could earn one or more certificates as a result of the training and, with the completion of additional general education courses, an associate degree.

Instead of awarding college credit, some programs awarded industry credentials. For example, one program offers a certification from a social media management software company and another offers a third-party quality improvement certification. Apprentices that successfully complete the third-party certification exam receive the certification.

EXHIBIT 3.
Type of Classroom Training by Grantee Type, Rounds 1 and 2

Type of Class	College Grantee		School District Grantee	
	N	(N=19) %	n	(N=5) %
College credit class	11	58%	1	20%
College non-credit class	4	21%	3	60%
College contract education	1	5%	1	20%
Other	5*	26%	3**	60%
No response	4	21%	0	0%

Source: Survey of 2016 and 2017 grantees, December 2017.

Note: The table is organized by grantee type not training provider, so there is no column for industry training partner. When an industry training partner was the training provider, they were hired by the lead grantee (a college or school district). The survey was emailed to 24 grantees.

*Classes aligned with certification requirements, online certificate classes, or on-site plant trainings.

**Includes extended education, adult education, adult education credit classes, and California Department of Education non-credit classes.

On-the-Job Training

The third primary component of an apprenticeship program is OJT. During OJT, apprentices learn how to complete job tasks and put skills learned in the classroom to use in the workplace. Learning while on the job enables apprentices to understand how their work is part of an organization's general processes. As one employer explained, this makes apprentices "more knowledgeable. They become better employees by having that holistic vision of operations."

Mentors are a key aspect of the OJT component. Mentors essentially serve as trainers, typically supervising apprentices and training them on new job tasks. They provide apprentices with practical advice on how to do their jobs better (e.g., strategies for communicating with difficult patients) and are available to answer questions throughout the apprenticeships. OJT mentors also sometimes help design programs by reviewing curricula for the classroom training component and by helping to identify job competencies that apprentices need to master during OJT.

Mentors are typically more senior employees at their organizations who supervise the work of apprentices, and they are expected to use already developed supervisory skills in the process. Despite the importance of their role, training and guidance on how to serve in this role has been limited. For example, one program provided an orientation for supervisors who would serve as mentors; another designed the program to include experienced mentors who were different from the apprentices' work supervisors to serve as apprentice mentors. Because this type of mentorship support was limited, some program staff and apprentices noted that training for mentors in their programs would have been helpful.

Sequencing of Training Components

Most Round 1 CAI apprenticeship programs provided classroom training concurrently with OJT. This structure allowed programs to sequence training so that apprentices learned about given topics in the classroom before they encountered them on the job. The apprentices appreciated this sequencing. For example, one apprentice noted, "I like to be able to learn stuff here [at college] and then be able to apply it in the field." Another explained, "It is nice to know why [you are doing a task that way]. Then it helps with problem solving. If you know where you started from, it helps you figure it out."

Due to the challenges of coordinating this sequencing, however, some programs found it difficult to ensure that a topic would be covered in class shortly before being covered during OJT. For example, specific tasks to be completed on the job are not always predictable—such as when an apprentice in food services must fill in as a banquet hostess if someone is absent.

Program Management

CAI grantees typically manage their new apprenticeship programs via a program manager who is responsible for leading the development and implementation of the program. Each also has an apprenticeship committee responsible for overseeing the program—including wage progression, advancement, and job performance—and for assisting in resolving disputes. Members of each committee usually include employer representatives, union representatives (where applicable), a DAS representative, and an education representative. The latter two representatives were non-voting members.

Program manager turnover—as well as turnover among other program staff—was a challenge during program development because the process was often paused until someone new was hired. To be prepared for these challenges, grantees recommended documenting the program development process to make it easier to onboard new staff.

III. Program Development

CAI grantees must complete several steps to develop their new apprenticeship programs, including finding an employer partner, developing the curriculum, and gaining approval from DAS. According to multiple grantees, the most critical of these steps was finding an employer partner. They commonly reported that this step was challenging and time-consuming—particularly because they were trying to engage employers who were often unfamiliar with apprenticeship. As such, they had the additional task of explaining the apprenticeship model. Despite these challenges, 15 of the 16 Round 1 grantees were successful in recruiting employer partners either before or during their grant periods.[11]

The strategies grantees found to be most effective in identifying and engaging employer partners include the following:

- **Networking**. Successful strategies used by grantees include networking with industry contacts, hosting employer forums to discuss apprenticeship, and conducting outreach at existing events (e.g., college industry advisory committee meetings) to raise awareness about apprenticeship. Several grantees also emphasized that networking was not isolated to the grant initiative. Rather, it was ongoing and part of their organizations' overall employer outreach strategies.

- **Listening for demand**. Grantee staff stated that a key strategy for identifying and engaging employers was listening and being attuned to whether they had any demand for apprenticeship, recognizing that it would not be a good fit for all employers. They found that employers experiencing a persistent shortage of skilled workers were much more willing to consider the apprenticeship model than those without a shortage. Additionally, employers who were concerned about expected shortages created by retirements or who had openings in occupations where traditional training programs had not been established or had no track record (e.g., cybersecurity) were also more open to considering participation in an apprenticeship program.

- **Knowledgeable program staff and grantee organizational leadership**. Another effective strategy for employer identification and engagement was to hire program staff with deep industry knowledge and relationships with industry stakeholders. Grantees also noted the importance of having leaders from their organizations (e.g., presidents, deans) who were willing to engage employers and were familiar with the apprenticeship model. Knowledge of the industry made it easier to communicate with employers and understand their labor force needs.

- **Labor market intermediaries**. Some grantees, especially those without staff members with extensive industry knowledge, found it helpful to partner with labor market intermediaries.[12] These grantees found intermediaries helpful because they had extensive employer contacts in (and deep knowledge of) the industries targeted for apprenticeship programs. In addition, some even had prior experience establishing apprenticeship programs. Thus, this was an effective strategy for identifying and engaging with employers.

Program Design and Planning

Once one or more employer partners had agreed to participate, the next step in the program development process typically entails designing the program. This includes developing the curriculum for the classroom training component as well as identifying the competencies apprentices would need to master during the OJT component.

Grantees outlined a number of approaches and strategies that they thought made program design efforts more successful. One strategy was to ensure that they designed the program based on a thorough understanding of the job and its required competencies, as well as how these competencies related to employers' organization and industry standards. This approach was operationalized by ensuring that curriculum developers received iterative feedback from employers about whether the curriculum would both meet their needs and ensure that apprentices achieved the required competencies. Further, most grantees had employer staff—including mentors—develop the job competencies that guided the OJT component.

Grantees reported some challenges related to the curriculum development and recruiting teaching staff. New curriculum development was challenging because it took a lot of time, mostly because there were many partners involved, from program staff to employer partners and college curriculum review committees. Finding teaching staff was also time intensive because qualified candidates often had to have both teaching credentials and industry experience. Some Round 1 grantees mentioned that starting these tasks as early as possible helped expedite program implementation within the grant performance period.

DAS Approval Process

A final step in the apprenticeship program development process for CAI grantees is to register their new programs with DAS. The registration process involves preparing the program standards (e.g., classroom training curriculum, required job competencies, wage progression schedule, apprentice selection criteria) and submitting them to DAS for review and approval. The standards are typically prepared in consultation with a DAS consultant who explains the requirements, attends committee meetings as needed, and provides clarifications during the registration process.

Although Round 1 grantees expressed overall satisfaction with the DAS program approval process, some did suggest enhancements. These include:

- A guide to help new stakeholders navigate the process;
- Increased standardization and consistency of the information provided by DAS staff;
- Revision of the program registration forms to better accommodate apprenticeships in non-construction trades; and
- Enhancements to the DAS website to make information about existing apprenticeship programs easier to find.
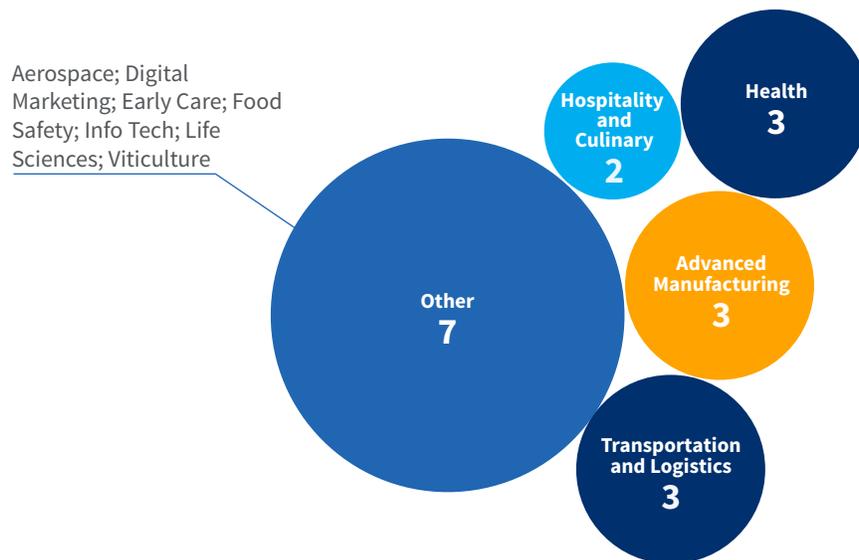
IV. Outcomes

Overall, in the three years since CAI grants were first awarded, grantees have made significant progress in achieving the initiative's aims. This section describes these early outcomes.

Establishment of Apprenticeship Programs in New Industries

As of February 2018 (the end of the Round 1 performance period), fifteen Round 1 grantees and two Round two grantees had established one or more new apprenticeship programs in 11 industries where apprenticeship is uncommon in California.[13] Further, Round 2 and 3 grantees are in the process of developing approximately 20 more programs.

As illustrated in Exhibit 4, the largest number of new programs was in advanced manufacturing (n=3), transportation and logistics (n=3), and health (n=3).

EXHIBIT 4.
Apprenticeship Industries Represented Among CAI Grantees, 2016–2018

Aerospace; Digital Marketing; Early Care; Food Safety; Info Tech; Life Sciences; Viticulture

Hospitality and Culinary
2

Health
3

Other
7

Advanced Manufacturing
3

Transportation and Logistics
3

Source: DAS, February 2018.

Seven programs are unique in their industries—viticulture, aerospace, and food safety, for example. The specific occupations that the new apprenticeships focus on are varied and include maintenance mechanic, overhead line worker, nurse, and lodging manager, among others. A more complete list of these occupations can be found in Appendix C.

Registered Apprentices and Completions

In the first nine months of the Round 1 grant period (January 2016 to September 2016), the number of registered apprentices was relatively small (n=229 from 9 programs) because many grantees needed at least a year to design their programs and have them approved by DAS. In the subsequent 12 months (October 2016 and September 2017), the number of registered apprentices increased more rapidly to 645 (from 15 programs). By February 2018, the total was 800, which includes registered apprentices from fifteen Round 1 grantees and two Round 1 grantees (Exhibit 5). It is expected that the number of apprentices registered in CAI-supported programs will increase substantially in 2019, after more Round 2 grantees complete the program design process and obtain DAS approval. (DAS approval is a prerequisite for enrolling apprentices).

As of early 2018, 139 of the 800 registered apprentices had completed their apprenticeships. This number is also expected to grow substantially by the end of 2019, as the large numbers of apprentices enrolled in 2017 and 2018 reach the end of their apprenticeship programs.[14]

EXHIBIT 5.
CAI Registered Apprentices, 2016–2018

Cumulative Number of CAI Registered Apprentices
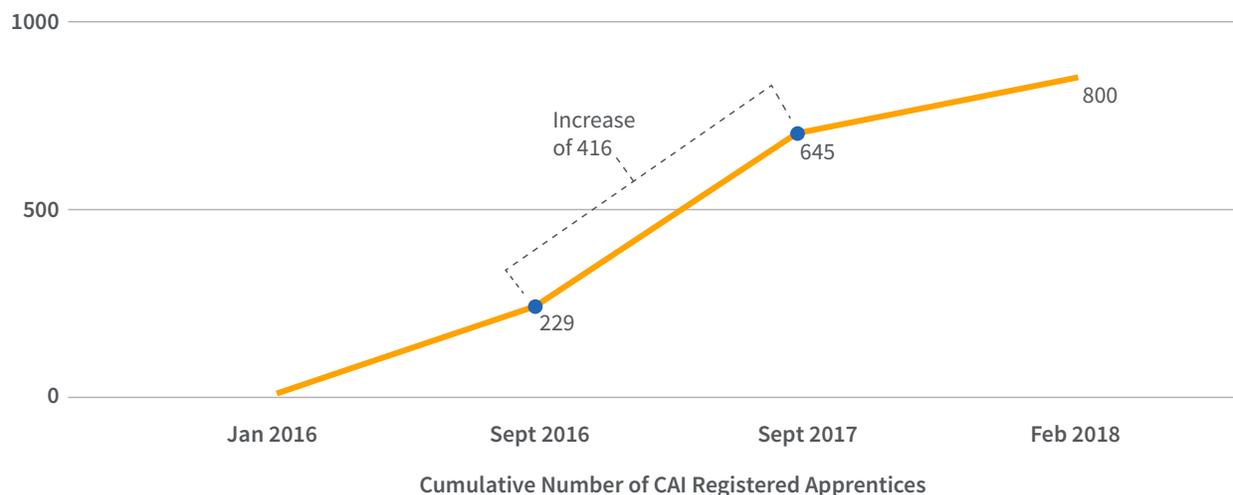
Sources: Data for 2016–2017 come from SPR; data for 2018 come from DAS.

Note: The February 2018 total includes all registered apprentices ever enrolled in Round 1 or Round 2 grantees for the period from January 21, 2016, to February 8, 2018. The September 2017 total includes all apprentices enrolled in round 1 grantees between January 21, 2016 and September 30, 2017. The September 2016 total spans January 21, 2016 and September 30, 2016.

Registered Apprenticeship Demographics

Another goal of CAI was to increase the diversity of apprentices in California. CAI-supported apprenticeship programs are more gender-diverse than other California programs. The share of female apprentices in CAI-supported Round 1 programs was almost five times greater than the share of women among all apprentices in California (27 percent vs. 6 percent, respectively; see Exhibit 6). This is at least in part because a number of CAI-supported apprenticeship programs are in industries where women tend to be better represented—for example, health care and hospitality—than they are in the construction trades, which make up the majority of non-CAI apprenticeships in California.[15]

Exhibit 6 also shows that the success of CAI-supported apprenticeship programs in terms of racial diversity has been more mixed. Round 1 CAI programs had a larger share of Asians, a similar share of Blacks, and a lower share of Latinos than the general population of California apprentices. However, CAI's results are generally consistent with California's overall racial diversity, with the exception of Asians: The percentage of Round 1 CAI apprentices who were Asians was nearly double that of the population of Asians in the state as a whole.

With respect to the higher share of Asian apprentices in CAI programs, much of the boost comes from two programs that have enrolled a large proportion (40 percent or more) of Asian apprentices. When these two programs are removed from the data, the share of CAI apprentices who are Asian falls to 7 percent, which is about half the percentage of Asians in California's population.

EXHIBIT 6.
Demographics of CAI Registered Apprentices in Round 1 Programs

Characteristic	CAI Apprentices	All CAI Apprentices	CA Population
Female	27%	6%	50%
Asians	25%	5%	15%
Black	8%	7%	7%
Latino	36%	49%	39%

Sources: DAS, February 2018 (CAI apprentices); DAS, December 2016 (CA apprentices); U.S. Census, 2016 (CA population).

Note: Results are for apprentices enrolled in the 16 programs receiving grants in 2016.

Employer and Apprentice Experiences

Employer partners and apprentices interviewed and surveyed for the evaluation both expressed satisfaction with CAI programs.[16] This section summarizes the feedback collected from these two groups, beginning with employers. It is important to note that the findings in this section are not derived from a representative sample and therefore cannot be generalized across the population of apprentices and employers involved in CAI programs (See Appendices A and B for more detail on evaluation methods).

EMPLOYER FEEDBACK

Employers reported several benefits of participating in CAI apprenticeship programs. First, the programs have helped them alleviate a shortage of skilled workers, and they valued the opportunity to help design CAI programs. Most also appreciated how the OJT was complimented by classroom training. One employer noted that CAI apprentices were better prepared for work at her organization than new workers recruited in other ways, such as through internships: "The apprentices were very well prepared, and more so than interns we've had, because the apprentices knew so much from the classroom training such as medical terminology and the importance of continued care."

Another employer specifically valued how its college partner had helped recruit apprentices, explaining that the college was able to access candidates that the employer's human resources department typically did not reach. This employer representative further reported that apprentices recruited by the college were also more likely to have a passion for the field, and that their enthusiasm had raised the morale of coworkers and supervisors. Additionally, two employers explained that creating an apprenticeship program contributed to the organization's corporate responsibility goals, which included collaborating with community partners like the community college.

Employers also suggested ways in which CAI programs could be improved. As noted earlier, one indicated that the timing of classroom training and OJT could be better coordinated so that instruction about specific tasks was presented in the classroom just prior to assignment in the OJT experience. Another employer suggested the apprentices should be better screened (by the college and employer) because some had not been as academically prepared for the classroom training component as needed. Alternatively, the respondent suggested that a remediation component could be added to help prepare apprentices for the classroom training.

To operate a modern bus (coach) at the Santa Clara Valley Transportation Authority (VTA) is to manage more than 50 computers—many connected to smart transportation infrastructure and customers' mobile devices—from inside a 40,000-pound vehicle with a cost of about $1M. The job requires mechanical and technological know-how, attention to detail, and a full complement of public engagement skills, so drivers (coach operators) can provide top-notch customer service while maintaining an efficient, safe, and pleasant environment for everyone. Today's coach operators are skilled professionals. High quality training for these workers is essential.

After decade of working together on mentoring and support programs, credit-based training, and career advancement through an effort called Joint Workforce Investment, VTA and Amalgamated Transit Union Local 265 had learned how to train and support workers—both in the classroom and on the job. In 2015, VTA worked with Mission College to formally register the first Coach Operator Apprenticeship in the country with the US Department of Labor's Office of Apprenticeship. In 2016, they registered the program with the California Division of Apprenticeship Standards and VTA, ATU, and Mission College all became leaders in the emerging CAI community. VTA's Coach Operator Apprenticeship provides a path for workers seeking to build careers by combining learning and paid work—an important consideration in Silicon Valley's high-cost economy. The program combines credit-based classroom instruction with on-the-job training and mentoring. Apprentices earn journeyman certificates and 18 college credits upon completion of the program. Today, apprenticeship is the sole training program for coach operators at VTA, and it is the starting point for a career in the fast-changing transportation industry. The program has since attracted the attention of other transit authorities in and outside of California who are interested in adopting it.

Classroom Instruction

"*Having good instructors and being able to learn from them in a classroom setting helped prepare me for the job.*"

On-the-Job Training

"*A benefit I have received is the clinical approach of actually working with patients hands on. I really like how I am becoming resourceful and knowledgeable in ways to help patients.*"

Skill Building

"*I have learned how to create marketing tools and how to approach solving a problem within the workplace. I have earned more responsibilities and a raise at my current job.*"

Mentorship

"*My mentors had been giving me excellent [advice] and feedback on my work observations.*"

APPRENTICE FEEDBACK

Overwhelmingly, surveyed apprentices found their CAI apprenticeship programs to be very helpful (61 percent) or helpful (21 percent) in preparing them for work. On a separate question, 79 percent agreed that these programs helped prepare them to advance in their careers.[17]

Apprentices also reported several specific benefits to participating in a CAI program. In particular, they reported that they learned new skills from their apprenticeships, from both the classroom training component and the OJT component.

- The classroom training was useful because it provided relevant knowledge and skills and allowed apprentices to earn college and industry certifications. Apprentices reported coursework experiences that were meaningful to them. For example, they explained that it "allow[ed] us to integrate 'design thinking' into our workplace," helped teach how microbiology relates to food preparation, and helped in "making our own websites." At the same time, some apprentices requested additional content (e.g., "computer classes," "regulatory issues," "more about the electrical side") and expressed interest in attending more classes.

- The OJT experience gave apprentices an opportunity to apply their skills and gain work experience. Apprentices reported that OJT allowed them to gain work experience, learn "industry jargon," and learn how to become more resourceful in finding ways to approach their work. For example, they said it helped them learn "about technical application," how to "communicate professionally with my superiors," and how to "approach solving a problem within the workplace." As one respondent put it, being on site "put into perspective all of which we had learned." They also indicated that interacting with other apprentices allowed them to learn from their peers and expand their professional networks.

- Apprentices valued the combination of classroom and OJT. Apprentices consistently valued participating in both classroom and OJT because the former provided them an understanding of the "why" behind specific tasks, while the latter provided opportunities to use and learn skills in a "real-world" setting. As noted earlier, however, some also reported that this sequencing was sometimes not well-coordinated.

Apprentices also valued the instructors and OJT mentors, describing them as knowledgeable and encouraging. They appreciated their instructors' willingness to think "out of the box" and to help them navigate new challenges in the workplace. Apprentices valued how their OJT mentors shared practical insights and institutional knowledge about their industries and organizations. They also reported that OJT mentors helped connect what they learned in the classroom to work settings. For example, one said a mentor "gave me excellent advice," while another called a mentor "very helpful and informative." Yet another explained that "follow up with my mentor is very crucial."

At the same time, about four percent of surveyed apprentices suggested that mentors needed more training on how to support them effectively. They suggested that programs should "give them [mentors] more training", "establish mentorship guidelines", "educate my mentor."

V. Program Sustainability

A key goal for CAI grantees is to find alternative sources of funding so they can sustain their apprenticeship programs after the grant's end.[18] To achieve this goal, grantees have been working to access multiple potential sources of funding. Grantees are working to access Workforce Innovation and Opportunity Act (WIOA) Adult and Dislocated Worker program and California Employment Training Panel funds to support the classroom training component of their programs.[19] One grantee has already succeeded in working with a local workforce development board to enable the use of WIOA funding for eligible veterans.

To support the OJT component of their programs, each grantee relies on an employer partner to cover the cost of apprentice salaries and mentoring. Grantees recognize that continued support from an employer partner to cover these costs depends on the employer's need for workers in the apprenticeship program's occupations, a need that—particularly for smaller employers—may only occur every two to three years. Therefore, grantees that have the staff capacity are also engaged in general continued outreach to identify other employers interested in serving as employer partners for their programs.

Some grantees are also considering applying for Workforce Accelerator Fund grants from the California Workforce Development Board or grants from Chancellor's Office to provide support for their new apprenticeship programs.

Policy and System Changes Affecting Sustainability

Three recent changes at the state level should also help grantees with sustaining their apprenticeships (Exhibit 9). First, a recent change to state law, brought about in part by the leaders of CAI, should help grantees sustain at least the classroom training component of their programs. Second, another change to state law amends the process for registering non-construction apprenticeships. The new process makes the DAS approval process more flexible and is expected to make it easier for grantees to customize existing programs for new employers. Since, as mentioned earlier, staff often engage in continued outreach to identify new employers to participate in existing programs, the changes are expected to help them when incorporating new employers into programs.

Third, at the community college system level, the recent development of Chancellor Office's *Vision for Success*,[20] a strategic planning document for the California's community college system, should also assist grantee programs with sustainability. The *Vision for Success* emphasizes the importance of student learning, curricular pathway options, preparing for in-demand jobs, and cross-sector partnerships, all of which provide a strategic planning framework that is complimentary to apprenticeship programs and so should make it more likely that the leadership of grantee colleges will be willing to continue their support of the programs developed under CAI.

EXHIBIT 9.
Key Changes in California's Apprenticeship Policy

Two recent state-level legislative and policy changes aim to support the sustainability of apprenticeship programs. In June 2018, **AB 1809** increased the reimbursement rate to colleges for courses that provide related supplemental instruction (RSI) to apprentices as a part of a registered apprenticeship program.[21] Prior to the change, students in RSI were reimbursed at a lower rate than traditional college students for exactly the same instruction. The new legislation establishes parity and removes the financial disincentive for colleges to enroll apprentices in credit-bearing courses.

In September 2018, **AB 235** amended the Labor Code to authorize a separate process for approval of non-construction apprenticeship programs. The change is designed to create flexibility for DAS to support the development of new programs that have struggled with the rules, registration procedures, and standards associated with the current process. For example, non-construction apprenticeship programs can now be time based, competency based, or a combination. Prior to the change, completion of non-construction programs was time based (i.e. 2,000 hours of on-the-job learning and 144 hours of related classroom instruction). In addition, under the new legislation, DAS is authorized to create standards to register pre-apprenticeship programs that are connected to state-registered apprenticeship programs.

Chancellor's Office *Vision for Success* and Apprenticeship

The *Vison for Success* outlines several goals and commitments for the California Community College system. These goals and commitments are aligned with apprenticeship programs in important ways:

Several *Vision for Success* goals compliment the goals of apprenticeships. For example, the first Vision for Success goal (increasing the percent of students who annually "acquire associates degrees, credentials, certificates, or specific skill sets that prepare them for an in-demand job.") is defined broadly enough to capture apprenticeship certificates. Similarly, another *Vision for Success* goal[22] that aims to increase the number of students who are employed in jobs related to their community college field of study, is well-aligned with apprenticeship programs.

The *Vision for Success* commitment to partnering across systems is achievable through community college apprenticeship programs. Apprenticeship programs where a public community college system and an employer and/or union collaborate to create an apprenticeship program exemplifies partnering across systems.

The Vision for Success commitment to focus on students' end goals relies on guided pathways as an organizing framework, and apprenticeships enhance one of the key pillars of the framework—clear pathway options to employment. Apprenticeships diversify the curricular pathway options available to students and apprenticeship pathways are designed with clear end goals (e.g. 2,000 hours of on-the-job training and 144 hours of related classroom instruction).

VI. Conclusion

The California Apprenticeship Initiative has made substantial progress toward its goals since the initiative began in 2016. **Most notably, 17 grantees have established new apprenticeships in one or more occupations in industries where apprenticeships have not been common. As of early 2018, these grantees had enrolled 800 apprentices in industries such as transportation, health care, manufacturing, hospitality, and early care education**. Other key milestones achieved between 2016 and 2018 include:

- **Apprentices registered in CAI-supported apprenticeship programs are significantly more gender diverse than those registered in other state apprenticeships**. The share of women in Round 1 CAI-supported programs was 27 percent, compared to 6 percent among all apprentices in California in 2016. CAI programs have enrolled more women because they are in occupations where women are well represented (e.g., nursing) or that are relatively gender balanced (e.g., lodging manager, chemistry quality control technician).

- **Both employer partners and apprentices expressed satisfaction with the program**. Employers valued the program because it has filled their need for skilled talent and allowed them to have a role in designing training for apprentices. Apprentices appreciated the program because it has helped them develop skills, gain work experience, and advance their careers.

- **CAI helped facilitate system changes to support apprenticeship**. This includes changes to reimbursement rates for apprentice classroom training and the creation of an interagency advisory committee on apprenticeship. These changes are expected to help sustain and grow apprenticeship in a wider array of industries.

The key lessons learned that can inform future apprenticeship development are summarized below.

- Employer partners are necessary for designing the program, and identifying these partners early is helpful.

- Grantees' effective strategies for identifying employer partners include extensive and persistent industry networking, convenings of groups of employers, and partnerships with labor market intermediaries.

- Having a thorough understanding of the requirements and competencies for particular jobs and the relationship of those requirements to employers' general workflow helps ensure that apprenticeship programs are designed successfully.

- Integrating college certificates and industry certifications into apprenticeship programs is valuable because apprentices' skills become more portable when they are supported by third-party credentials.

- Mentors are an important component of a program because they support apprentices' professional growth. They helped apprentices apply their skills in work settings as well as share practical insights and institutional knowledge about particular organizations and industries.

Appendix A: Methodology

The evaluation of the 24 grantees receiving funds in 2016 (Round 1) was designed to learn how program implementation had progressed toward expected grant outcomes. Funding was awarded to apprenticeship and pre-apprenticeship programs as follows:

- A total of 16 apprenticeship grants were awarded in Round 1. For these programs, the evaluation team measured progress toward expected outcomes, including creating apprenticeship programs in industries where the approach had not been common, registering programs with DAS, enrolling participants, and creating partnerships to promote participation of underrepresented populations. Fourteen of the 16 grants were New & Innovative grants, which were intended to support the creation of sustainable apprenticeship programs approved by DAS. The remaining two were Accelerator grants. These were also intended to help create sustainable apprenticeship programs approved by DAS, but these grantees were further along in the process and each already had an employer partner interested in apprenticeship and/or had begun the DAS registration process.

- A total of eight pre-apprenticeship grants were awarded in Round 1. For these programs, the evaluation team looked at program implementation and enrollment of participants. The goal was to understand the extent to which grantees were creating programs, connecting to RA programs, and serving individuals from targeted underrepresented populations.

Data Sources and Collection

The evaluation team collected data from three groups—program staff, employer partners, and participants—using interviews, surveys, and site visits. The evaluation team also obtained administrative data about aggregate numbers of registered apprentices, completions, and participant demographics.

Interviews

The evaluation team invited the program managers of all 24 apprenticeship and pre-apprenticeship grantees to participate in phone interviews at the beginning of the grant period (approximately June 2016) and at the end of the grant period (January 2018). In each round of interviews, 22 of 24 grantees participated. The program manager of each grantee was interviewed at least once; 20 were interviewed at both the beginning and end of the grant period.

Evaluation staff interviewed eight representatives from four employer partners at the three apprenticeship sites selected for site visits. (Site visit selection criteria are outlined in Appendix B.) At two of these sites, representatives from all participating employers were interviewed. At the third site, one of five employer partners was interviewed. At the PA site, evaluation staff interviewed apprenticeship directors from two local RA programs that received PA program graduates. In addition to RA partners, evaluation staff also interviewed frontline staff and the director from the PA program's community partner, as well as a current apprentice who had participated in the PA program.

Evaluation staff categorized and analyzed notes from the semi-structured interviews and employed an iterative qualitative analysis procedure to provide a comprehensive description of the implementation process and to identify lessons learned. The iterative process involved identifying themes and expanding or adding to them as more interviews were analyzed. The research team sought to compare and contrast responses in order to identify themes and inconsistencies, triangulate results, and identify lessons learned across grantees.

Grantee Surveys

The evaluation team conducted two surveys of grantees:

- One survey was conducted early in the grant period to learn about implementation in areas like employer engagement and curriculum development. Twenty-two of twenty-three grantees (96 percent) responded to the survey. (At the time of the survey, one grant was in the process of being awarded.)

- A second survey of only the New & Innovative grantees was conducted in fall 2017. Overall, 24 grantees receiving New & Innovative grants in 2016 or 2017 were invited to complete the survey, and 20 (83 percent) did so.[1] The goal of this survey was to learn about apprenticeship grantee classroom training.

Participant Surveys

The evaluation team conducted a survey of apprentice and pre-apprentice program participants. The survey was distributed online and in person.

- The apprentice survey was distributed to apprentices in 12 of 16 programs. Three programs were excluded because they had not enrolled participants or their grants had ended by the time the survey was conducted; one other did not respond to our request to distribute the survey. The response rate was 37 percent (152 of 396).

- The pre-apprentice survey was distributed to participants at six of eight PA programs. One program was excluded because participants included individuals with disabilities that could restrict their ability to respond to the survey; another did not respond to our request to distribute the survey. The response rate was 8 percent (33 of 425). Because of the low response rate to this survey, results were not included in the PA brief.

Surveys were distributed to all individuals who were current or former program participants at the time, except at two grantees where an in-person survey was distributed at an event where a subset of participants was present.

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1 There were a total 27 New & Innovative grants in 2016 and 2017. The survey was distributed to 24 organizations because 2 organizations received both 2016 and 2017 grants, and 1 grantee withdrew and was therefore not emailed.

Participant Focus Groups

We conducted two in-person focus groups—one each at two of the three apprentice program site visits described in Appendix B. These focus groups included all apprentices who attended the classroom training component on the day of the site visit.

Document Review

Evaluation staff reviewed the grant applications of all three rounds of apprenticeship and pre-apprenticeship grantees. Staff also reviewed the grantee profiles, which regularly appear in the California Apprenticeship Newsletter (produced by SPR). Staff also reviewed documents gathered during site visits, such as OJT checklists, the program's student handbook, and sample schedules.

Administrative Data

The evaluation team obtained aggregate numbers about program enrollment, completions, and demographics from DAS and grantees. SPR began receiving data about apprentices from DAS in February 2018. Prior to that, SPR collected aggregate data on the number of registered apprentices, completions, and apprentice demographics directly from grantees. SPR continues to collect aggregate data from PA grantees about the number of participants, completions, and participant demographics.

Appendix B: Site Visit Selection Criteria

SPR's evaluation team selected four grantees from the 2016 CAI cohort to feature in case studies—three apprenticeship grantees and one pre-apprenticeship grantee. The general goal of the three apprenticeship case studies was to illustrate how grantees identified employers interested in the apprenticeship model and worked with them to create new registered apprenticeship programs. The goal of the pre-apprenticeship case study was to illustrate the role of pre-apprenticeship programs in the apprenticeship landscape. The study team selected the four grantees from among the 24 in the 2016 CAI cohort using the following criteria:

- **Type of grantee**. We selected at least one grantee from each of the three types of CAI grants: New & Innovative (n=14), Accelerator (n=2), and Pre-Apprenticeship (n=8). New & Innovative grants are intended to support the creation of sustainable apprenticeship programs approved by DAS. Accelerator grants are also intended to help grantees create sustainable apprenticeship programs approved by DAS, but these grantees were further along in the process and already had an employer partner interested in apprenticeship and/or had begun the DAS registration process. Pre-Apprenticeship grants are intended to create programs that prepare individuals for careers in occupations that utilize an apprenticeship training model. These grants are also intended to help diversify the pool of applicants for apprenticeship programs.

- **Success of implementation**. We selected grantees that were successful in implementing their programs. We considered Accelerator and New & Innovative grantees successful if they had employer partners secured early in the grant period. This enabled them to begin implementing their programs sooner and allowed the study team to conduct site visits to learn about the programs during the grant period. We also considered the level of employer involvement, selecting grantees where employers played an active role in the program design phase (e.g., curriculum development). We considered Pre-Apprenticeship grantees successful if they demonstrated a strong connection to an RA program. We also considered the extent to which Pre-Apprenticeship grantee programs were serving underrepresented populations. Data about the success of grantee implementation was collected through interviews conducted during the sixth month of the grant period.

- **Geographic variation**. We considered the geographic location of grantees to ensure representation from both rural and urban areas of California. This was a secondary selection criterion as compared to the type and "success" of grantees.

- **College partner role**. To ensure that some of the case studies featured programs where a community college was conducting employer outreach and delivering the classroom training component, we considered the variety of partners involved in each program and the extent of their involvement. This was intended to help us learn about the role of community colleges in program implementation.

Appendix C: Apprenticeship Occupations, 2016–2017 Grantees

Industry	Occupations
Advanced Manufacturing	Maintenance Machinist, Mold Maker, CNC Machinist, Maintenance Mechanic, Manufacturing Technician
Early Care	Teacher
Health Related	Registered Nurse, Community Health Care Worker, Health Information Technician
Hospitality and Culinary	Lodging Manager, Food Service Manager, Culinary Position (e.g., Cook)
Information Technology	Cybersecurity Technician, Information Security Analyst, Computer Support Specialist
Transportation and Logistics	Coach Operator, Overhead Line Worker, Service Mechanic, Bus Maintenance Mechanic, Cargo and Freight Agent, Electronic Industrial Control Mechanic
Other Industries	Auto Apprentice, Chemistry Quality Control Technician, Clinical Data Coordinator, Micro Quality Control Technician, Quality Assurance Associate, GXP Auditor, Chemistry Quality Control Technician, Communication Specialist, Digital Marketing Manager, Food Safety Technician, Inland Boatman, Non-Destructive Testing Technician, Safety Technician, Veterinary Technician, Viticulture Technician

Sources: DAS and grantee interviews.

Note: Not all 2017 and 2018 grantees had identified specific occupation names in June 2018, when this list was compiled.

Endnotes

1   Lerman, Robert. (2014). Do firms benefit from apprenticeship investments? IZA World of Labor, 55. Retrieved from http://wol.iza.org/articles/do-firms-benefit-from-apprenticeship-investments-1.pdf

2   Registered apprenticeships are apprenticeship programs that have been approved by the U.S. Department of Labor (DOL) or a state-level agency. California is one of the states that maintains a state-based apprenticeship registration system separate from the system managed by the DOL. California's agency is the Department of Industrial Standards, Division of Apprenticeship Standards (DAS). The federal and state approval process ensures that programs meet industry-level standards for OJT and the corresponding classroom instruction.

3   Apprentice statistic sources: California Department of Industrial Relations. (2016). State of California Department of Industrial Relations Division of Apprenticeship Standards: 2016 Legislative Report. Retrieved from https://www.dir.ca.gov/DAS/reports/2016LegReport.pdf; Also internal statistics from DAS. California workforce statistic sources: In December 2016, 4.6 percent of California's workforce was employed in construction and 11 percent was employed in manufacturing, transportation, and utilities combined (see https://www.labormarketinfo.edd.ca.gov/file/indhist/cal$shws.xls. In 2013, 7 percent of California's workforce was employed in health care (see https://www.labormarketinfo.edd.ca.gov/SpecialReports/Health_Care_in_CA.pdf).

4   California Department of Industrial Relations. (2016). State of California Department of Industrial Relations Division of Apprenticeship Standards: 2016 Legislative Report. Retrieved from https://www.dir.ca.gov/DAS/reports/2016LegReport.pdf

5   There are two types of apprenticeship grantees: 1) New & Innovative grants intended to support the creation of sustainable apprenticeship programs approved by DAS. 2) Accelerator grants also intended to help to create a sustainable apprenticeship program approved by DAS. However, these grantees are further along in the process and already have an employer partner interested in apprenticeship and/or have begun the DAS registration process.

6   The primary data sources for the evaluation findings are administrative data from DAS, interviews with apprenticeship program staff and employer partners, surveys and focus groups with apprentices, a review of grantee applications, and site visits to three apprenticeship sites. Appendix A describes these data sources and the evaluation methods in more detail.

7   Programs were established between January 21, 2016, and February 8, 2018. Fifteen of the 17 are Round 1 grantees and two are Round 2 grantees.

8   California is one of the few states that provides state funding to support apprenticeship classroom instruction (i.e. related supplemental instruction). California's 1970 Montoya Act allowed the state to apportion funds to support the classroom instruction portion of the apprenticeship program.

9   For apprenticeships in construction trades and firefighting, the California Apprenticeship Council (CAC), in conjunction with DAS, issues rules and regulations for apprenticeships.

10 In this way, CAI-supported apprenticeships are different from typical apprenticeships in the construction trades and firefighting, where the classroom training component is often provided by a union-supported training center.

11 One of the 15 grantees withdrew from the initiative prior to fully implementing the program, but did register apprentices. In at least three cases, grantees had identified an employer partner prior to applying for the CAI grant.

12 Labor market intermediaries are organizations with experience serving both employers and job seekers or workers.

13 One of the 17 grants supports two industries.

14 As discussed earlier in the brief, California-registered apprentices need to complete 144 hours of classroom instruction and 2,000 hours of OJT. Because 2,000 hours is about the number of hours in a year of full-time work, apprenticeships have to last at least one year.

Endnotes — continued

15 When programs where 80 percent of the apprentices are women (nursing, early care teacher, and community health care worker) are removed, the share of female apprentices participating in CAI programs remains three times higher than the share of female apprenticeships in California overall (18 percent vs. 6 percent). This occurs because about 30 percent of the remaining programs (four of 13) have enrolled approximately 40 percent or more female apprentices. These occupations include lodging manager, food safety technician, and chemistry quality control technician.

16 We interviewed eight representatives from four employer partners and conducted two focus groups with apprentices. Additionally, a total of 152apprentices responded to a survey about their program experiences. The response rate was 37 percent. Appendix A and B provides more detail on how employers partners and focus group participants were selected and how the survey was distributed.

17 Seventeen percent were neutral in their responses to whether the CAI program was helpful in preparing them for work. One percent reported they were dissatisfied either with the classes or the availability of equipment. Nineteen percent were neutral in their responses about whether the program helped them prepare for jobs higher on the career ladder, and 2 percent reported they disagreed with the statement.

18 The apprenticeship grant (i.e. New & Innovative grant) period is two years. The two Round 1 CAI Accelerator grants had a one-year grant period.

19 Details on WIOA funding for apprenticeships can be found at https://www.dol.gov/apprenticeship/docs/WIOA-RA-Fact-Sheet.pdf. Details on ETP funding for apprenticeships can be found at https://etp.ca.gov/wp-content/uploads/sites/70/2018/08/ETP_Press_Release-July2018.pdf

20 *Vision for Success*: *Strengthening the California Community Colleges to meet California's needs*. Retrieved from: http://californiacommunitycolleges.ccco.edu/portals/0/reports/vision-for-success.pdf

21 See http://www.dof.ca.gov/budget/Trailer_Bill_Language/documents/ApprenticeshipPrograms-ClaimingFTES.pdf

22 Goal 4 summary: Increase the percent of exiting CTE students who report being employed in their field of study.