



CLOSING THE GAP

THE FUTURE OF APPRENTICESHIP IN CALIFORNIA

AT A GLANCE

The driving force of California's growing innovation economy is talent. However, there is also a growing mismatch between the type of talent in demand and the type of talent in supply. This paper describes why one of California's best options for closing this talent gap is to expand and modernize the State's apprenticeship system.

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DECEMBER 2018

ACKNOWLEDGMENTS

Special thanks to Diane Factor, Joel Vargas, Anne Stanton, Eric Rood, Glen Forman, John Dunn, Lauren Fernandez, Stephen Dodd, Bob Lanter, and Tim Rainey for their generous time in answering questions patiently; to SPR colleagues Leela Hebbar, Annelies Goger, Kristin Wolff, and Katie Caves for contributing materially to this report; and Jessie Oettinger and Kate Dunham for providing very helpful feedback on earlier drafts of this report. Special gratitude to Francene Kennedy, Eric Seleznow, and JFF colleagues who provided valuable support, insight, and guidance throughout this project.

This paper has been made possible with the generous support of the James Irvine Foundation and Salesforce.org.

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INTRODUCTION

Public investment in workforce training has been declining for decades, with one exception: apprenticeship. The United States has added more than 200,000 new apprentices since 2014, and California, which has more apprentices than any other state, has seen growth rates of over 50 percent in just the past couple of years. What's more, California Governor-elect Gavin Newsom recently proposed to grow the current number by nearly 500 percent to 500,000 over the next 10 years.¹ What makes apprenticeship so compelling is that it promises to solve a stubborn paradox.

The California economy contains this paradox, even when it is performing at its best: employers have a hard time finding workers, yet many workers have a hard time finding appropriate employment. This is—at least in part—because the faster an economy changes, the harder it is to predict what skills individuals will need in a future workplace.

However, when trainees alternate between the workplace and the classroom, the future becomes the present—the uncertainty of prediction disappears. This is the essence of apprenticeship, an ancient form of talent development that many believe will solve the modern paradox of the mismatch between available workers and available work. And solving this paradox would reduce California's societal inequities by nurturing talent everywhere—an especially promising prospect for young people in California.

Modern apprenticeships also address a number of additional problems:

FOR SOCIETY

- Lower unemployment rates—especially among youth.²
- Economic stimulation of having more early earners, which injects hundreds of billions of dollars into an economy the size of California's.
- Global competitiveness for an innovation economy whose lifeblood is talent.

FOR JOBSEEKERS

- A pathway to skilled employment that is debt-free.
- A positive return for apprentices who out-earn their peers by more than \$300,000 over the course of their careers.³
- A shortened training-to-career time.⁴

FOR EMPLOYERS

- A flexible approach that scales from a mom-and-pop shop to a multinational corporation.
- A positive return on investment.⁵
- An opportunity to help produce rather than just consume talent.

FOR EDUCATORS

- Highly permeable connections between apprenticeship and academic paths, which eliminates the stigma of academic tracking.
- More motivated learners, fewer dropouts, and a better learning environment for everyone.⁶
- The relevance of rigorous classroom/academic learning can be brought into sharper focus through a connection to real workplaces and career opportunities.

Expanded Definitions

Registered Apprenticeship

Apprenticeship is a proven approach for preparing workers for jobs while meeting the needs of business for a highly skilled workforce. It is an employer-driven, “learn-while-you-earn” model that combines on-the-job training, provided by the employer that hires the apprentice, with job-related instruction in curricula tied to the attainment of national skills standards. A Registered Apprenticeship must meet certain standards, including progressive increases in an apprentice’s skills and wages. It is approved either by the US Department of Labor’s Office of Apprenticeship, or by the California Department of Industrial Relations’ Division of Apprenticeship Standards.

Youth Apprenticeship⁷

Youth Apprenticeship is a structured, work-based learning program designed to start when apprentices are in high school. High-quality youth apprenticeship programs are built on partnerships that include employers, high schools, and providers of postsecondary education, most often a community college. High-quality youth apprenticeship programs include the following four core elements:

- Paid, on-the-job learning under the supervision of skilled employee mentors
- Ongoing assessment against established skills and competency standards
- Related, classroom-based instruction
- Culmination in a portable, industry-recognized credential and postsecondary credit

Modern Apprenticeship

For the purpose of this paper, we are using the term *modern apprenticeship* to describe a system that incorporates both of the above definitions across all relevant industry sectors and occupations, and that prepares youth, adults, and incumbent workers for career entry, reentry, or skill upgrades.

But despite all these benefits, California, with less than half of 1 percent of its workforce in apprenticeships, lags behind global apprenticeship powerhouses, such as Germany and Switzerland where 5 percent of their workforces are apprentices.⁸ While there are historical reasons for this disparity, it also suggests a vast and still largely untapped potential. Seizing this potential reduces California’s risk of being left behind in the global competition for talent—the lifeblood of innovation economies.

What if the participation rates in California approached these numbers? Estimates suggest that the California economy could absorb at least 650,000 apprentices, or eight times the number that are currently being trained.⁹ The resulting \$300,000 increase in lifetime earnings per apprentice amounts to an injection of \$195 billion into the state’s economy.

California is already poised to double the number of apprentices between 2016 and 2026. It also has more than 15 percent of the nation’s apprentices and is outpacing national trends. Clearly, the investment in apprenticeship has already begun.



WHY THIS PAPER?

Moving from pilot to implementation of a comprehensive modern apprenticeship system in California is not just a change in scale. It will require a change in the way apprenticeships are designed, launched, and implemented.

The good news is that California will not have to start from scratch. In the last four years, the state has launched several pilots to expand the model into new industries and occupations, resulting in important insights. There is now widespread agreement that apprenticeship offers promise. There is even great interest at the state and local levels to move California into a national leadership role on apprenticeship.

This paper, therefore, comes at the critical juncture between exploring and implementing a modern apprenticeship system for California. The paper is necessarily limited in scope and can neither cover the rich history of apprenticeship nor all of its current manifestations in the level of detail they deserve. However, it can help the stakeholders come to consensus around the design of California's future apprenticeship system.

To do so, we will first quantify the growth of apprenticeship as a training model for adults and incumbent workers in California, and explore its current strengths and limitations. We will catalog some of the more recent initiatives to modernize apprenticeship. We will then describe the key features of a future apprenticeship system and explore how it must include a focus on youth starting in high school. Finally, we will conclude with a set of recommendations for policymakers and practitioners.

“...a comprehensive modern apprenticeship system in California is not just a change in scale. It will require a change in the way apprenticeships are designed, launched, and implemented.”

Apprenticeship in California— A Resurgence

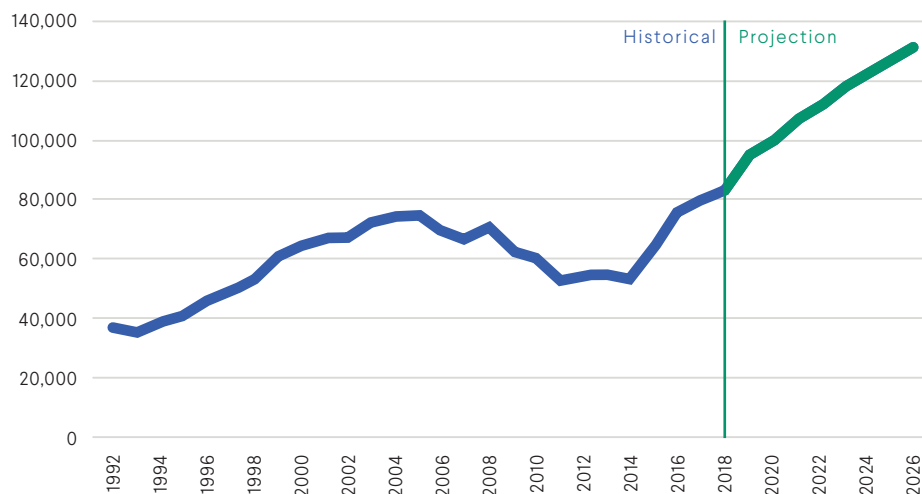
California has by far the largest apprenticeship market in the United States. Nevertheless, those 84,000 apprenticeships are only a tiny fraction of the 4.8 million open jobs in the state, revealing a tremendous opportunity for growth. According to a recent study by the Harvard Business School and Burning Glass, the potential for occupations that could use apprenticeships nationally is at least three times higher than the current number, and the potential for job openings that could be covered through apprenticeships is eight times higher than the current number.¹⁰ This means that more than 650,000 California job openings could be covered by apprenticeships.

The number of apprentices nationwide is already up 54 percent since 2013 and businesses that never considered them before are adopting earn-and-learn strategies in a range of industries like health care, finance, and tech. Unprecedented levels of public and private investment are fueling this growth.

EXHIBIT 1

Active Apprentices 1992-2026

Source: Unpublished 2018 Data; California Division of Apprenticeship Standards



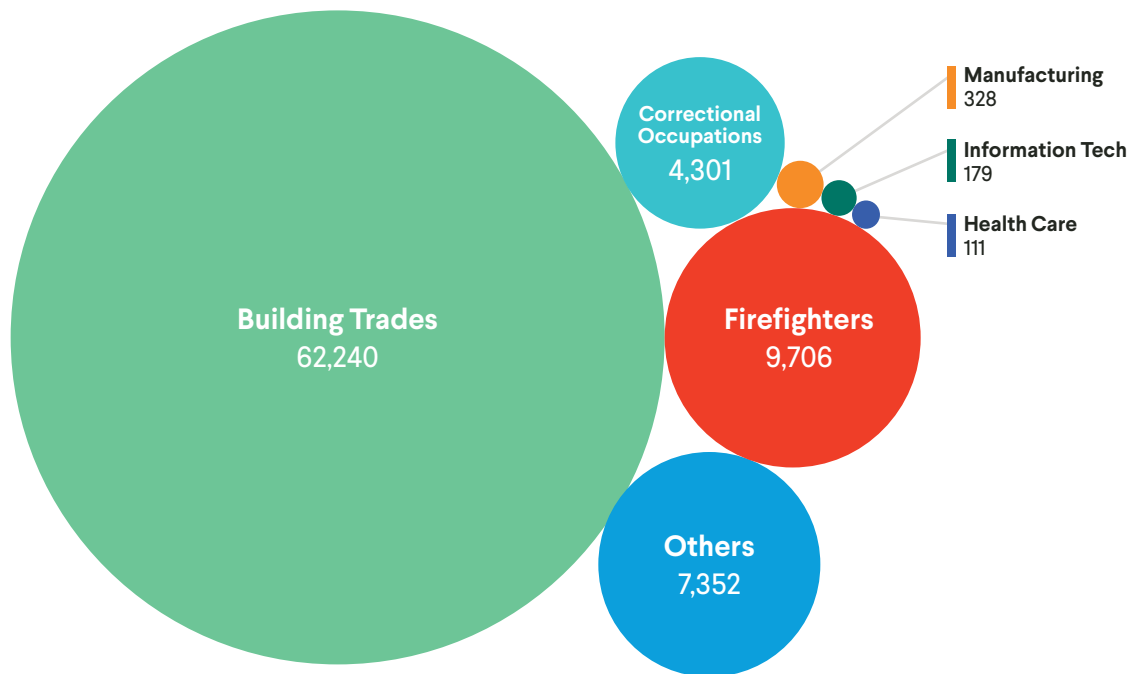


EXHIBIT 2

Active Apprentices by Industry Sector in California

Source: Unpublished 2018 Data; California Division of Apprenticeship Standards.

Apprenticeships in California are experiencing a similar recent growth spurt that matches the state’s economic boom. The Labor and Workforce Development Agency announced recently that it had surpassed 80,000 active apprentices for the first time in its history, and that—if recent growth trends can be sustained—it would reach Governor Brown’s goal of doubling the number of apprenticeships from 64,000 in 2016 to 128,000 by 2026.¹¹

This boom follows a relatively uneven decade from 2006 to 2016 where the apprenticeship trendline also matched

the general economic trend with no net growth in the number of apprenticeships. Following the great recession of 2008, apprenticeship slots went into a decline and did not show any significant growth again until 2015.

In California, as in the rest of the country, the building industry actually played the dominant economic role in these trends, since over 74 percent of apprenticeships are in construction and the building trades. The remaining 26 percent of industry distribution includes firefighters at 12 percent, correctional

officers at 5 percent, and only 9 percent for all other occupations combined. Further diversification into industries and occupations that are less susceptible to economic downturns or have counter-cyclical growth patterns may help with the long-term sustainability of apprenticeship as a pathway into careers.¹²

INVESTMENTS TO GROW AND TRANSFORM APPRENTICESHIP

Fortunately, the federal government is advancing several apprenticeship initiatives with a view toward expanding opportunities in new industries and occupations. This includes more than \$500 million in federal and state investments and legislative changes since 2016:

- In 2016, the US Department of Labor (DOL) awarded \$175 million in **American Apprenticeship Initiative** grants to 46 public-private partnerships—6 of which are in California—of employers, organized labor, nonprofits, local governments, and educational institutions to expand high-quality apprenticeships.
- Also in 2016, following a bipartisan agreement, Congress approved \$90 million in its **first-ever annual funding for apprenticeship**. Of this, \$60 million went toward new grants to 37 states (including California) to

expand apprenticeship, while over \$20 million went toward growing industry intermediaries, engaging businesses, and increasing diversity in apprenticeship programs.

- **Additional congressional** appropriations for apprenticeship have increased in subsequent years to \$95 million in Fiscal Year 2017, \$145 million in FY18, and \$160 million approved for FY19.
- **The Workforce Investment and Opportunities Act** contains numerous provisions that are designed to promote the use of apprenticeship as a workforce development strategy, including adding Registered Apprenticeship programs to the Eligible Training Provider List, promoting on-the-job contracts in support of apprenticeship programs, and supporting career pathways for youth, including out-of-school youth, through apprenticeships.

Over the last three years, California also invested in a range of apprenticeship programs and updated its apprenticeship-related policies:

- California's **Employment Training Panel** has been funding more than \$100 million annually in incumbent worker training and has also been increasing its proportional investment

in apprenticeship. The ETP has funded more than 10,000 apprentices since 2012.

- In 2015, the state launched the **California Apprenticeship Initiative** to diversify the occupations as well as the demographics of apprentices. From 2016 to 2018, the CAI invested a total of \$27.5 million in proposition 98 funds to create 75 grants to community colleges, secondary school agencies (such as school districts), and their partners to establish new Registered Apprenticeship and pre-apprenticeship programs.¹³ CAI grantees have registered more than 900 apprentices and pre-apprenticeship programs have enrolled more than 2,000 participants.
- Starting in 2014, the California Workforce Development Board allocated \$2.85 million of **California Clean Energy Jobs Act** funding to build pre-apprenticeship programs in emerging green industries for formerly incarcerated jobseekers—especially women.¹⁴
- Also since 2014, The California Workforce Board’s **Workforce Accelerator Fund** has been investing \$21.1 million in projects that accelerate employment and re-employment strategies. In its first five cycles, 45 of 98 projects planned to employ “apprenticeship or work-based

learning” strategies.

- With the help of a 2016, \$1.8 million federally funded **State Apprenticeship Expansion Grant**, the state is pursuing an ambitious diversification goal into high-demand occupations in information technology (IT), advanced manufacturing, health care, and transportation while increasing opportunities for women and other underrepresented groups.
- The recently-passed **2018-19 Omnibus Education Trailer Bill** both eliminates the cumbersome separate enrollment status of student apprentices in community colleges and increases the available funding for their classroom training.¹⁵ This allows community colleges to integrate apprentices fully into the complete curriculum of courses, putting them right on par with their other students. It removes a significant complication in expanding apprenticeship programs through the community college system.
- Finally, the legislative action that may prove to be the most impactful for the future of apprenticeship in California is the recent passage of **Assembly Bill 235**, which augments the California Department of Labor’s Division of Apprenticeship Standards.¹⁶ DAS, first founded in the 1930s, had been using a single

approach to qualifying apprenticeship programs for registration. AB-235 retains the current approval process for the construction and firefighting trades, and adds a second process for approval of programs in all other industries. The bill also establishes a seven-step approval process for pre-apprenticeship programs, which are short-term programs designed to help participants prepare and meet eligibility for state apprenticeship programs.

In addition to the direct investments in the expansion of apprenticeships, California has also invested in Career Pathways, Sector Initiatives, and other work-based learning initiatives in an effort to build better linkages between education, the workplace, and pathways to postsecondary education. They include the following:

- **Linked Learning** is a \$100-million initiative of the James Irvine Foundation launched in 2006. It seeks to demonstrate that learning should not be separated into academic and vocational tracks but instead should always combine rigorous academics with applied experiences.
- Starting in 2013-14, the [Career Pathways Trust](#) awarded \$500 million to 79 educational organizations. These school districts, county offices

of education, community colleges, and charter schools designed career pathways connecting high-school students to higher education and careers aligned with workforce needs in their regions.

- The state from 2015 to 2018 also awarded an additional \$900 million in [Career Technical Education Incentive Grants](#) to accelerate the development of new career and technical education (CTE) programs.
- The **Strong Workforce Program** established in 2016, focuses on improving the availability and quality of CTE that culminates in certificates, degrees, and other credentials. It directs \$248 million in annual funds to California's 114 community colleges to support smaller class sizes, CTE equipment costs, and regional planning and coordination. This effort supplements the \$2 billion in California's annual formula funding for CTE instruction.
- The California Workforce Board launched its **Slingshot Initiative** in 2014. Through planning and implementation grants it generates regional coalitions tasked with addressing big regional challenges to economic opportunity, intergenerational income mobility, and rapid innovation. The state

board authorizes these coalitions, led by industry champions to execute their action plans and implement their regional strategies autonomously.

All of these initiatives taken together have the potential of making a further expansion of apprenticeship easier in several ways. They improve career pathways in growth industries and occupations, they enhance linkages between educators and industry, and they improve the range and rigor of CTE.

However, because coordination among them is weak, there are also signs that their collective impact is diminished.¹⁷ For example, employers have reported that the multitude of programs that independently are trying to build partnerships can easily overwhelm smaller employers and make them reluctant to participate in any of them. In addition, some of the initiatives that attempted to bring the workplace into schools have not proven to be sustainable after initial grant funds were exhausted. Furthermore, the complexity of the landscape and of funding streams that ebb and flow has policymakers and funders confused about where they should invest to get the highest returns. Finally, the lack of a consistent data infrastructure across educational and workforce partners exacerbates the difficulty of studying this critical intersection between education and career.



San Francisco, California

The New Face of Apprenticeship in California

These investments have started to take hold in California, with apprenticeships starting to grow beyond their traditional space in the construction trades—in healthcare, IT, and financial services—and with new partners engaging in their design and delivery. Of the initiatives listed above, the three with the most impact on nontraditional apprenticeships (the ETP, the American Apprenticeship Initiative, and the CAI) are described in more detail below. Since evaluations of these three initiatives have not yet been released, it is too early to draw firm conclusions. However, observations gleaned from scaling apprenticeships within the current regulatory framework are continually emerging and forming the basis for ongoing refinements.

KEY INFORMATION

THE EMPLOYMENT TRAINING PANEL

Created in 1982, the Employment Training Panel (ETP) is a California state agency that provides support for incumbent worker training in order to retain businesses and jobs in the state, increase the competitiveness of companies in California, and enhance workforce skills.

- The ETP is governed by an eight-member Panel that has representation from labor, business management, and state government.
- The ETP's programs are funded through a tax collected from employers alongside the unemployment insurance tax and through other sources of state funding to support special training initiatives.
- The ETP prioritizes approving applications for training funds that align with statewide priorities and special initiatives, such as training in priority industries and training for veterans, youth with disabilities, and small businesses in areas with high unemployment.

APPRENTICESHIP AT THE EMPLOYMENT TRAINING PANEL¹⁸

The ETP puts \$100 million annually toward incumbent worker training and began funding apprenticeships in 2012. Since then, its allocation to apprenticeships has increased to 25 percent of the \$100 million budget, doubling the number of funded apprenticeships from 5,000 to around 10,000 annually in just 6 years—at least an order of magnitude larger than any other program. The ETP has a strong network of intermediaries that assist with delivering training funding, including community colleges, industry associations, and labor groups.

As the only program in California self-funded through employer taxes, the ETP could have an even greater impact on nontraditional apprenticeships and with greater expedience than other programs. Though the ETP still sponsors apprenticeships primarily in the traditional construction sector, since 2014, it has also been promoting apprenticeships in nontraditional sectors as well, funding more than 550 apprentices in occupations and industries ranging from hospitality industry to advanced manufacturing and even the merchant marines.

“...the ETP could have an even greater impact on nontraditional apprenticeships and with greater expedience than other programs.”

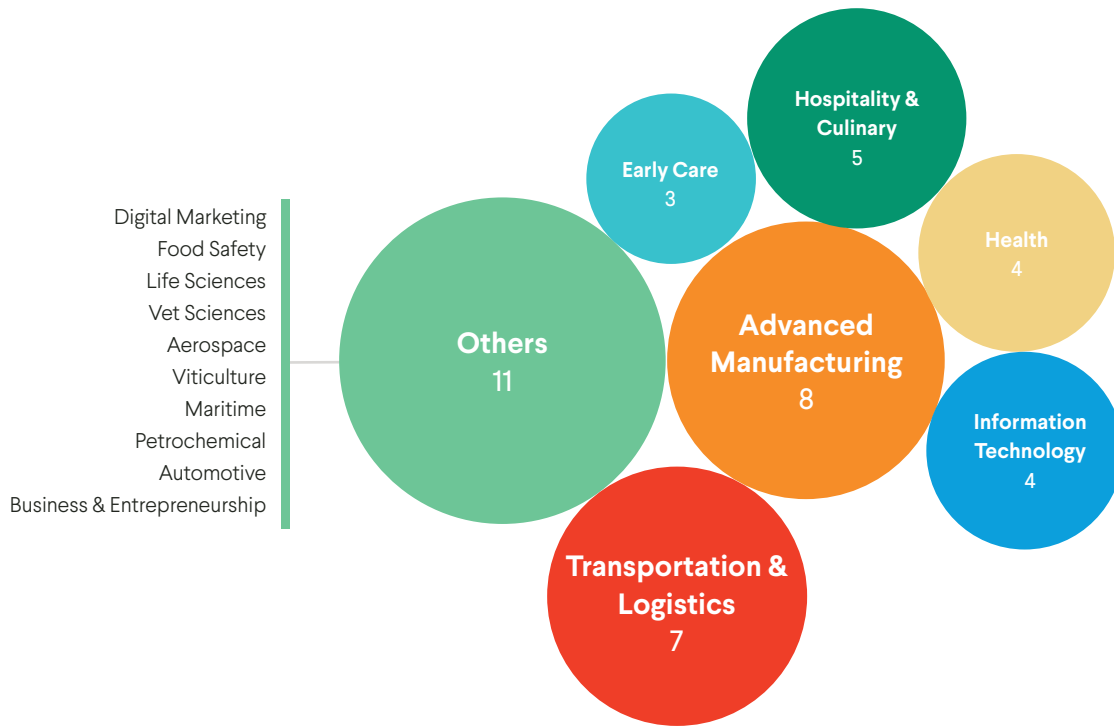
CALIFORNIA APPRENTICESHIP INITIATIVE

The CAI is aimed at supporting the establishment of apprenticeships in industries deemed a priority for the state’s economic growth and increasing the diversity of access points to work-based learning pathways. The CAI is administered by the California Community College Chancellor’s Office, which between 2016 and 2018 has awarded 40 grants totaling \$27.5 million, launching more than 800 apprenticeships. Grant recipients include community colleges, school districts, and their partners.

EXHIBIT 3

Apprenticeship Industries Represented Among CAI Grantee Applications 2016–2018

Source: Grantee interviews and applications 2016–2018



INDUSTRY ¹⁹	OCCUPATIONS
Advanced manufacturing	Maintenance mechanic, manufacturing technician, mold maker
Transportation	Overhead line worker
Health and life sciences	Nurse, community health care worker, microbiology quality control technician
Hospitality	Lodging manager, food service manager
Early childcare	Teacher
Other	Cybersecurity technician, information security analyst, inland boatman, viticulture technician, food safety technician



Exhibit 3
First group of ten Care Navigator apprentices to be deployed to five federally qualified health centers.

Some key growth sectors with new apprenticeship programs include manufacturing, transportation and logistics, nursing, IT, and hospitality and culinary. The CAI is also aimed at increasing diversity among apprentices so that they better reflect the demographic composition of the state. One of the top priorities is increasing the share of female apprentices, both by diversifying the recruitment strategies in male-dominated professions, such as IT and manufacturing, and by establishing apprenticeship programs in traditionally female-dominated occupations, such as health care and hospitality. As a result of these strategies, 27 percent of CAI apprentices are female, compared to only 6 percent of all Registered Apprentices in California.

One pioneering example is an apprenticeship for community health workers called the **Care Navigator Apprenticeship Program** launched by the **Worker Education and Resource Center Inc. (WERC)** with support from the LA Care Health Plan and The California Endowment. This program is designed to provide participants who have cultural affinity toward the patient population that they will serve entry into community health work with community health clinics in Los Angeles County. Its first graduating class was comprised of 80 percent women.

Community health worker apprentices participated in a 2,000-hour apprenticeship program, registered

“Bus driver has always been looked at as just a job you can . . . throw anybody behind the wheel and they can do it. But it’s not, you have to really develop your skills, not just driving, but actually dealing with people.”

– Jamaine Gibson

Coach Operator
Apprenticeship Coordinator
**Santa Clara Valley
Transportation Authority**

with DOL and DAS, specifically designed for the partnering employers. Most of the program participants were bilingual in Spanish and had prior personal experience with the safety-net health care system. To find people with these qualities, WERC recruited in the neighborhoods surrounding the community health clinics. The [Care Navigator Apprenticeship Pilot program](#) includes a 150-hour curriculum focused on building core competencies in navigation, communication and motivational interviewing skills, health literacy, cultural competency, professionalism, IT skills, advocacy, and team member effectiveness. The on-the-job learning with a mentor at the clinic developed more specific skills depending on the patient population and their needs. By the end of the program, 90 percent of apprentices completed and received their credential and were permanently hired by one of the partnering clinics.

Another example is the **coach operator apprenticeship at Santa Clara Valley Transportation Authority (VTA)**, the first transit agency in the country to offer such a program. Combining classroom with on-the-job training allowed the VTA to ensure that trainees learned the exact technical skills for handling their vehicles while gaining the interpersonal skills that are so critical for handling unpredictable passenger interactions.

Jamaine Gibson is the coach operator apprenticeship coordinator at the VTA and a graduate of the program himself. He said that it had always bothered him that the “bus driver has always been looked at as just a job you can . . . throw anybody behind the wheel and they can do it. But it’s not, you have to really develop your skills, not just driving, but actually dealing with people. And it takes time—you’re carrying those people’s lives in your hand, those families’ lives. That’s a big responsibility.”

A modern public transit bus has up to 50 computers on board. Nowadays, apprentices spend far more time on computer diagnostics than they do on changing tires. Because technologies are changing so quickly, transit agencies themselves are best positioned to know what training is needed when. The VTA has just graduated its 100th coach operator this summer.

AMERICAN APPRENTICESHIP INITIATIVE (IN CALIFORNIA)

The American Apprenticeship Initiative has a similar goal to the CAI. It seeks to expand the use of apprenticeships into high-growth and high-tech industries, including health care, IT, and advanced manufacturing. In 2016, the AAI launched 46 grant programs across the United States—6 of them in California. The initiative is just past the midpoint of a 5-year investment. The following table includes AAI grantees that operate apprenticeships in California and the industry sectors they target.

For example, the City and County of San Francisco’s **TechSF** initiative was funded by the AAI to help address the city’s pressing talent development needs in the local communication

SITES ²⁰	INDUSTRIES
Managed Career Solutions Inc. —Los Angeles, California	IT and health information technology industry, and for the expansion of existing programs in biotechnology (in California, Maryland, and Michigan)
Mission College —Santa Clara, California	IT industry in Silicon Valley for computer user support specialist (help desk specialist) and data center technician
Able-Disabled Advocacy Inc. —San Diego, California	Information and communications technologies, and advanced manufacturing industries
Los Rios Community College District —Sacramento, California	Advanced manufacturing
TechSF —City and County of San Francisco, California	Information and communications technology
UAW-Labor Employment and Training Corporation —Cerritos, California	Advanced manufacturing industry

technology sector. The initiative launched apprenticeship programs at local social media giants such as LinkedIn, Zendesk, and Pinterest. These three as well as other employers have formed a Communication Technology Sector Committee to explore ways to improve the access underserved populations have to the tech sector. To that end, TechSF is developing an advertising campaign using video and social media to reach segments of society that have not traditionally been connected to the industry. The project is also working with San Francisco's community college to expand STEM education in local high schools so they can serve as recruitment points for apprenticeship programs.

In a similar effort in Los Angeles, the AAI funded **Managed Career Solutions** to connect youth to new careers in the IT and health care fields. MCS offer apprenticeships in programming, web development, cybersecurity, and health information technology. In addition, they offer an apprenticeship for individuals with disabilities through the Exceptional Minds Studio, a Los Angeles-based computer animation studio with a three-year training program for young adults with autism.



WHAT NONTRADITIONAL APPRENTICESHIP PILOTS REVEAL

Again, official evaluation results of each of these three initiatives have not yet been released. However, some preliminary observations can be shared now.

- CAI grantees have achieved a greater gender diversity than traditional apprenticeship programs in the state.
- Employers reported participating in the CAI to alleviate skill shortages in their particular sector.
- Employers expressed a high degree of satisfaction with their apprentices.
- Community colleges played an important role in helping students navigate the process.
- Some employers who had no experience with apprenticeship found the DAS registration process daunting.
- Not all employers were interested in collaborating with their competitors when developing industry-wide programs.
- CAI grantees reported that finding employer sponsors proved to be challenging in a number of cases.
- Although interest among grantees is high, only a few sites have pursued developing youth apprenticeships to date.

These pilots have encountered no major obstacles to expanding apprentices into nontraditional occupations. On the contrary, the latent demand is there and the challenges are primarily in the logistics of execution.



Youth Apprenticeship—The Game Changer for California

Despite the grant programs described in the previous section, apprenticeships are still rare enough that most Californians have never heard of any, let alone met an actual apprentice. They are even less likely to have met a nontraditional apprentice and less likely still to ever have met a youth apprentice.

Youth apprenticeship is exceedingly rare in California, with only 188 or 0.2 percent under 18 years old.²¹ The average age of California's current 85,500 apprentices is 29, far older than virtually every other nation. (The average age of Swiss apprentices, for example, is just 17.) The following section will describe why youth apprenticeship is so rare and explore why its introduction and widespread adoption in California could be a game changer for both high school youth and out-of-school youth.

One obvious reason youth apprenticeship is so rare is that most current apprenticeship programs were designed expressly to exclude youth. They either legally ban minors or require a high school diploma, or both.

There are historical reasons for this. California and the rest of the United States deliberately disconnected secondary education from careers when it abandoned vocational education in the 1960s and 1970s. This shift occurred in response to legitimate fears that students of lower academic achievement were being permanently tracked into less challenging courses. Deprived of the critical thinking skills that develop agility and stigmatized as less capable, they effectively were denied the option of college and became trapped in low-skill jobs, limiting their prospects for upward mobility. The abandonment of vocational education was not a forgone conclusion.

KEY INFORMATION

YOUTH CAN BE APPRENTICES

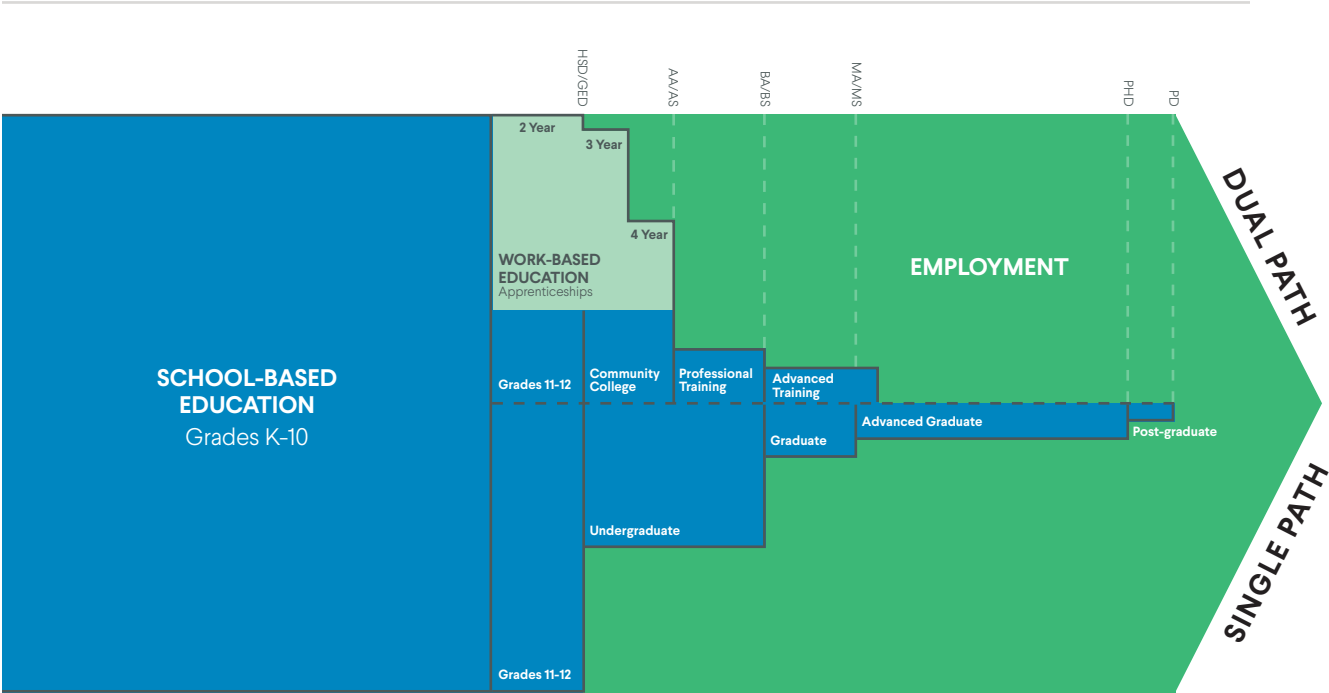
High school students enrolled in secondary school who meet the minimum legal age of 16 can be employed as apprentices. Across the country, Registered Apprenticeship programs for high school students have diverse definitions and requirements but often share a common framework of partnerships between employers, high school districts, and community colleges. This framework, if states and localities choose to implement it, has the capacity to improve the consistency and quality of programs on a national level. Such programs must comply with all applicable laws, including federal regulations on child labor as stated in the FLSA in addition to state child labor laws (see Child Labor Bulletin 101). Programs must also comply with state workers' compensation laws.

In response to the same concerns, the United States could have done what many European countries did: they eliminated permanent academic tracking and retooled their youth vocational programs into more challenging, respected, and flexible modern apprenticeships. In contrast, many educators in the United States concluded that high schools should prepare students exclusively for college and that “college for everyone”—with at least a bachelor’s degree—would be the best equalizer of future career prospects.²² When it became apparent, after the turn of the millennium, that the college-for-everyone approach did not lead to success for most, US high schools and colleges started looking for ways to reconnect students with careers.²³

Rather than overhaul the entire educational system, schools made a number of attempts to reintroduce career elements into the academic environment. Career pathways and career academies seek to engage enrolled high school students in work-related topics. Such “connected learning” approaches weave industry themes into lessons taught by classroom teachers and reinforced through occasional work exposure during unpaid, unregulated, unaccredited internships. Linked Learning has tried to take these models a step further by promulgating an approach and strategy for transforming education to be a more integrated enterprise contributing to economic development. These school-based efforts form a solid foundation for modern youth

apprenticeships, which are neither school-based nor work-based—they are both.

The modern youth apprenticeship model finally completes the longtime quest for a new education-to-employment path of equal quality to the traditional academic path. They are equal because they both offer comparable credentialing, they both optimize the strengths of their respective teaching environments, and they are both completely permeable for participants who want to switch between paths.



PROPOSED
California Education to Employment Model

The proposed California Education to Employment Model illustration lays out the various school-based education, work-based education, and employment components of the equal “dual” path and “single” path system. After 10th grade, students can elect to begin the single path of pure academics or the dual path of apprenticeship.

The dual path maintains the school-based education (shown in a blue color) and adds a paid two-, three-, or four-year work-based education (shown in a light green color, denoting training-wage levels).

The two types of learning align with each other along the way. However, employers can avoid academic curricula and schoolteachers can avoid employment training. Instead, each environment can do what it does best. This approach also builds on something educators are familiar with: the connection between academics and technical learning on one hand and college and career readiness on the other.

Young people on either the single or dual path can first enter full employment (shown in a green color, denoting full-wage levels) right after either 12th grade or the two-year apprenticeship. Both groups of youths would have the equivalent of a high-school diploma but, generally speaking, the apprenticeship graduate would be better prepared for the workplace and would earn a higher wage.

However, both paths offer opportunities to delay full employment and earn advanced credentials. For example, youth on the dual path can earn the equivalent of a bachelor's degree by completing a professional training program after a four-year apprenticeship, as well as the equivalent of

a master's degree by completing advanced training after that. If, at any point, youth on the single path choose to try the dual path or vice versa, they can easily switch (denoted by the dashed line between the paths) and pursue a more work-based or school-based education and credential.

The California youth apprenticeship model offers all the benefits of modern apprenticeships listed in the introduction to this paper and then some—for workers, employers, schools, and for society. This is because, when an economy focuses its apprenticeship efforts on youth, it not only solves entrenched problems, it avoids them altogether. For example:

- Not only can apprenticeship-trained workers pay off educational debts sooner, youth apprentices never assume educational debts in the first place, are paid to attend school, and have higher lifetime earnings than other workers.
- Not only do employers save money hiring apprenticeship-trained workers, they make a profit training youth apprentices, who work at lower training wages while receiving the training ideal for the employer.
- Not only do apprenticeship-trained workers find satisfaction learning at work, youth apprentices find satisfaction learning both at work

and at school, which strengthens the classroom experience and helps reestablish our schools as optimal academic environments.

Given these benefits, it is not surprising that the idea of introducing youth apprenticeship on a broad scale has been gaining momentum with employers and educators. Other states, such as Wisconsin, South Carolina, and Colorado, have already successfully launched their own programs. Like these states, California has much to gain with a purposeful focus on youth and high-school based apprenticeships.

California's economy is one of the largest in the world. This means that typically profitable investments in talent development would simply create more profit here. But California's economy is also one of the most innovative and fast-paced in the world. And this means that California employers have even greater incentives here than elsewhere to customize worker training to their ever-changing needs. Given this, there can be no doubt that if a fully employer-funded model for worker education succeeds in other countries with less innovative or smaller economies (such as Switzerland—an economy one fourth the size), it can succeed in California.²⁴ California is also home to 560,000 disconnected youth, also referred to as *opportunity youth*—young people between

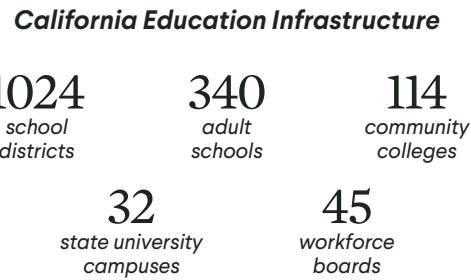
16–24-years-old who are neither enrolled in school nor participating in the labor market.²⁵ Reconnecting these opportunity youth and preventing future generations from disconnecting at these alarming rates will be one of the benchmarks of any youth-focused apprenticeship strategy.²⁶ The promise of delivering such enormous public benefits almost entirely through private investment has increasingly attracted the attention of not just employers and educators but of policymakers, as well.²⁷

IMPLEMENTING THE MODEL STATEWIDE

Deploying a youth apprenticeship system for a state with the administrative complexity and size of California is a challenge and presents remarkable opportunities. With an infrastructure that includes 1,024 school districts, 340 adult schools, 114 community colleges, 32 state university campuses²⁸ and 45 workforce boards, it requires developing clearly delineated roles for business, education, government, and intermediaries. The size and varied geography call for regional implementation.

To achieve this, California will be able to draw on its own advance work in the regulatory reform described earlier. California will also be able to draw on the work of others. Over the

last few years, California and the United States have developed transatlantic partnerships with European countries that have strong youth apprenticeship systems—in particular with Germany and Switzerland. In 2014, the DOL launched a formal partnership with Switzerland for mutual support in career and technical education. In addition, South Carolina, Colorado, and the State of Washington have all launched their reform efforts under ongoing consultations with Swiss and German agencies. California has already forged connections with all of these parties.



The Swiss model in particular has acquired a following in policy circles in Washington and Sacramento for many reasons. First, it offers businesses a positive return on investment. Second, it does not offer businesses any subsidies to offset their training costs. In fact, research suggests that subsidies distort the market and induce employers to participate for the wrong reasons.²⁹ And third, the fact that the Swiss model is not union-based makes it adaptable to a wide range of US industries.

To learn more about the Swiss model, two California delegations attended [Summer Institutes](#) at the Center on Economics and Management of Education and Training Systems (CEMETS) for 10-day, in-depth studies of the Swiss dual education system.³⁰ The 2018 California delegation, along with representatives of 6 other countries, developed the proposed California Education to Employment Model shown above. The delegation then brought it back to California and presented it at public workshops throughout the state.³¹

Refining California’s model will require an inclusive process that involves more research and consultations with a wide range of stakeholders, including leaders of large and small businesses, educators, and policymakers as is further described below.

Conclusion

WHY APPRENTICESHIP?

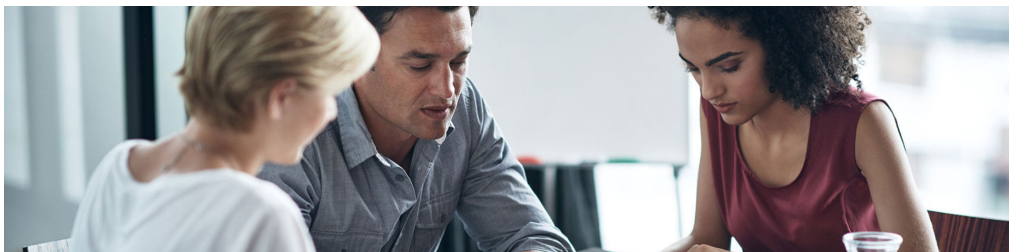
Sometimes, when economic problems are large and daunting, we assume that their solution must be complicated. However, in apprenticeship, we have an ancient and proven form of skill building that solves multiple problems simultaneously and is eminently adaptable to the modern economy.

- Instead of paying to learn, learners get paid.
- Instead of losing money on training, businesses make healthy returns.
- Instead of unrewarding jobs, skilled careers support the modern economy and grow the middle class.

Like any solution, the benefits of modern apprenticeship to workers, students, employers, and society as a whole are as profound as they are attainable. Perhaps the most surprising benefit of all is that all these public benefits come at almost no public cost. Very rarely does government have the chance to help so many citizens by simply allowing private industry to help itself.

HOW DO WE GET THERE?

What follow are recommendations for steps that transform apprenticeship in California from its current, more traditional form to one that incorporates modern, professional, and youth-oriented elements.



Because the recommendations cover apprenticeship programs for adult jobseekers and incumbent workers, and for high-school-age-youth, some of them will be relevant for both while others will only be relevant for one or the other.



- **Governance:** Given that modern apprenticeships are not technically government-funded programs, the governance model must be fully collaborative, with industry providing guidance on the regulatory framework needed for optimal results. To that end, establish a governor-facilitated, blue-ribbon commission led by experts from business and labor well versed in modern apprenticeship models. The commission needs to be advised by leaders from K-16 and higher education, workforce development, and research organizations, with requisite staff support and with the authority to prepare a package of regulatory and legislative proposals that will help industries execute the California Education to Employment Model.



- **Policy Alignment:** Promote the transition from a set of parallel and competing programs to a single and well-articulated system.
 - Conduct a legislative analysis to determine the changes that are required to facilitate implementation of youth apprenticeships, including the possibility of establishing an Office of Youth Apprenticeship to singularly focus on the development of high-quality youth and high school-based apprenticeships.
 - In addition to high school youth, design and support innovative apprenticeship programs to serve California's 560,000 opportunity youth. Source: Measure of America calculations using US Census Bureau American Community Survey, 2016.
 - Prepare an administrative package that includes

necessary regulatory changes at relevant educational and labor agencies and local school districts.

- Secure sustainable financing for secondary and postsecondary instruction. Building on the recent budget trailer bill, policymakers should also assess whether similar enabling legislation is needed at the secondary school level.
- Design a sustainable financing model for intermediaries that takes into consideration their key role of starting and managing apprenticeship programs.



- **Infrastructure Development:** Create guidelines for a streamlined online registration system and a shareable repository of curricula for all occupations.
- **Educational Alignment:** Improve alignment among high-school, community college, and four-year college course offerings and employers' specific needs for the creation of apprenticeship programs while ensuring that apprenticeships not become a second-tier alternative to an academic path but rather an equally rigorous path that combines academics with applied work experiences.
- **Program Development and Support:** Prepare an outreach, awareness, communications, and public engagement plan to counteract misperceptions about apprenticeship; inform potential participants about currently available opportunities.
- **Learn from the Experts:** Secure sponsorships for California delegations to attend the CEMETS Summer Institute on global apprenticeship to learn more about the successful Swiss model.
- **Outreach / Communications / Public Engagement:** Prepare an outreach, awareness, communications, and

public engagement plan to counteract misperceptions about apprenticeship; inform potential participants about currently available opportunities. Prepare branded presentations, and collateral. Promote and incent the use of apprenticeship intermediaries such as colleges, workforce boards, industry associations, community-based organizations, and others who can work with employers and other stakeholders to expand the use of apprenticeships.



- **Research and Learning-by-Doing:** Prepare a research plan and data infrastructure to set a baseline for tracking progress, outcomes, impacts, and continuous improvement over time.
 - Among the baseline studies, set up a California Employment Education Linkage Index and a California Youth Labor Market Index to be able to show improvements over time that result from implementing a modern youth apprenticeship system.³²
 - Develop agreements for data exchange and longitudinal data analysis.



WHY NOW?

California cannot afford to delay in adapting traditional apprenticeship to the modern economy:

- The 4th industrial revolution has brought with it a further acceleration of the pace of economic change.³³
- Our biggest global competitors have realized this and are investing accordingly. If California wants to lead, it needs to invest at least as much.
- In times of economic growth, when the demand for skilled labor is high, as it is now, the return on investment is most obvious for employers and they are more eager to engage.
- The lessons from California's recent investment in apprenticeship pilots through the CAI, the AAI, and the ETP are still fresh, the stakeholders have been mobilized, and the structures are in place.
- The recent passage of AB-235 facilitates the design of a new system because it provides for a new registration process for apprenticeships in nontraditional occupations and for pre-apprenticeship programs.
- The recent passage of the budget trailer bill guarantees sustainable funding of the classroom training portion of apprenticeships. The changes allow community colleges to provide the related education for apprentices in a more efficient manner, and open up most of the college catalog to apprenticeship.

California is poised between this early groundwork and full implementation of a system. It would be costly to lose the momentum that has already been achieved.

Endnotes

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28. 23 California State University and 9 University of California Campuses.
29. Stefan Wolters, “CEMETS,” (lecture, the University of Bern, July 2018).
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31. For example, at CWA's Meeting of the Minds on September 4, 2018, in Monterey as well as in Eureka, Sonoma, Ventura, Norco, and Bakersfield.
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