MILKEN INSTITUTE

RECALIBRATING WORKFORCE DEVELOPMENT ACROSS CALIFORNIA:

Strategies for Recovery and Resilience

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EXECUTIVE SUMMARY

With workers in California and across America losing their jobs at record-setting numbers, it has become increasingly clear that the future of work is now. Within months, COVID-19 upended traditional work and education systems, accelerated the rapid adoption of digital systems and automation use across sectors, and displaced a largely low-wage and low-skill workforce. The pandemic has also exacerbated existing gaps and underlying inequities in California's economic landscape, exposing the magnitude of differences among demographic groups and their economic safety nets, affecting their abilities to acquire skills, access opportunities, and achieve upward economic mobility. These consequences, which have had the greatest impact on our most vulnerable communities, emphasize the urgency of shifting from a reactive to a proactive, regional approach to workforce development throughout the state.

To ensure that economic recovery reaches individuals and regions broadly, state efforts have focused on regional partnerships prioritizing inclusive growth. If applied appropriately, these collaborations have the potential to sustain local recovery and spur more resilient growth throughout the state. By implementing a place-based economic model that leverages existing networks and infrastructure, the resulting partnership programs can reduce costs, leverage organizational strengths, and create shared prosperity in outcomes.

The key to revitalizing California's economic strength lies in cultivating a 21st-century workforce that can adapt its skills for both short-term economic recovery and long-term employment in an evolving job market. Fundamentally, this undertaking begins by enhancing access to education and employment opportunities through targeted education and work-based training programs. When designed and implemented through public-private partnerships, these programs promote competency-based curricula while complementing employers' critical workforce needs.

Improving access to educational and employment opportunities will also require state guidance and active employer and industry engagement, as well as responsiveness from education and training providers. A robust, place-based regional system that leverages partnerships, dedicated investment, and outcome-driven curriculum can improve the workforce's long-term resilience.

Through research, we developed a case study approach in which we take a deeper look into best practices in education, business, and government. This exercise highlights relevant areas for improvement while extracting strategies to address existing gaps, bridge deficiencies in access to economic opportunity, and scale effective workforce development programs for immediate recovery efforts and beyond.

We recommend the following state policy actions:

ESTABLISH A SUPPORTING FRAMEWORK THAT CULTIVATES REGIONAL COMPETITIVENESS

By applying a new economic model that leverages existing collaboration and partnerships, state leaders can dismantle silos, leverage funding, and incentivize place-based investment (e.g., leveraging tax incentives to support and coordinate the following components: employer engagement, business formation, and concept to commercialization tied to industry sectors statewide).

IMPLEMENT CAREER TECHNICAL EDUCATION AND EMPLOYMENT (CTE^2) PROGRAMS THROUGH THE CALIFORNIA COMMUNITY COLLEGE SYSTEM

Mobilizing the statewide Sector Directors network and the Strong Workforce program to engage industry and employers across sectors and form regional employer collaboratives will advance an adaptable education-to-employment system. Through core-competency based curricula aligned with critical workforce needs, these efforts will support regional talent pipelines.

INTRODUCTION

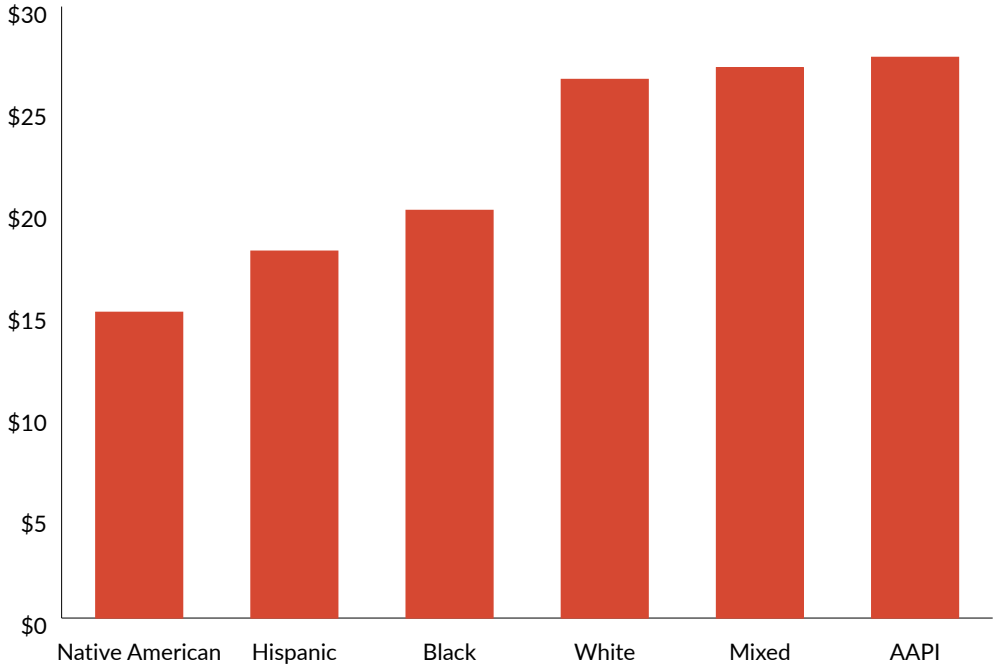
Prior to COVID-19, the state's post-2008 recession recovery mirrored US trends, reflecting historically low unemployment rates (California: 3.9 percent; US: 3.5 percent) and unprecedented job growth.[1] However, these trends shrouded an economic landscape harboring systemic disparities with limited opportunities for mobility and advancement. Recent decades demonstrated that inflation-adjusted wages grew only for the highest-paid workers, while wages for low- and mid-wage workers remained largely flat.[2] Because of stagnating wages and California's increasingly high living costs, workers—primarily those without traditionally higher levels of degree attainment—relocated outside the state. Despite anticipating the displacement of this largely low-skill, low-wage workforce, the consequences of this opportunity gap have rapidly intensified due to the pandemic.

In the last week of March 2020, the state received over 1 million claims for unemployment insurance (UI). The unemployment rate spiked to 5.3 percent as employers lost 99,500 nonfarm payroll jobs across the state, ending a decade-long record period of job expansion.[3] By May, the state had lost 2.4 million jobs and reached an unemployment rate of 16.3 percent,[4] leveling off to 13.3 percent only in July.[5] The number stands above the 12.3 percent mark at the height of the Great Depression. Including Pandemic Unemployment Assistance (PUA) claims, one in four Californian workers has filed a UI claim since the start of the crisis, far exceeding Great Depression levels.[6] Though UI claims were concentrated among lower-educated workers early in the pandemic, the share of UI claims among higher-educated workers has increased as layoffs become more evenly distributed across industries.

Still, the cumulative impact of the crisis is far greater for California's less advantaged workers. For instance, Hispanic workers make up 41.5 percent of the state's essential workforce but earn lower wages and have lower rates of educational attainment than most other groups of essential workers (Figure 1).[7] Nationally, Hispanics face some of the highest unemployment rates, highlighting the need for targeted upskilling for low-wage essential workers and the newly unemployed.

Figure 1. Hispanic Essential Workers Earn Less than Other Groups

Median Wages for Essential Workers in California, 2019



Note: *AAPI refers to Asian-American and Pacific Islander*
Source: *Milken Institute analysis of Current Population Survey Public Use Microdata (2019)*

As current students, recent graduates, and the massive wave of recently unemployed workers enter the labor force, state and local leaders in education, business, and policy must collaborate to direct resources effectively to California's incumbent and emerging talent pipeline. This effort requires recognizing the context and geographies of our state, directing place-based economic development, and creating jobs through innovative programs that align existing assets and partners with industry leaders. Further, a proactive strategy will require coordination and investment, leveraging networks and funds to support state and regional workforce development efforts in a post-COVID landscape.

STATE EFFORTS

1. REGIONAL COLLABORATION TOWARDS INCLUSIVE GROWTH

The governor's economic agenda, "California for All," aims to improve economic conditions through inclusive growth strategies and regional collaboration. The Governor's Office also manages the Technology and the Future of Work Commission, including national- and state-recognized civil leaders across the business community and higher education.

Prior to the commission, most of the conversation regarding the future of work was a skills conversation, which later became a quality-of-jobs conversation. As California faces many challenges caused by COVID-19, the tone has shifted to an all-encompassing discussion about skills, job quality, wages, broadband equity, and more.

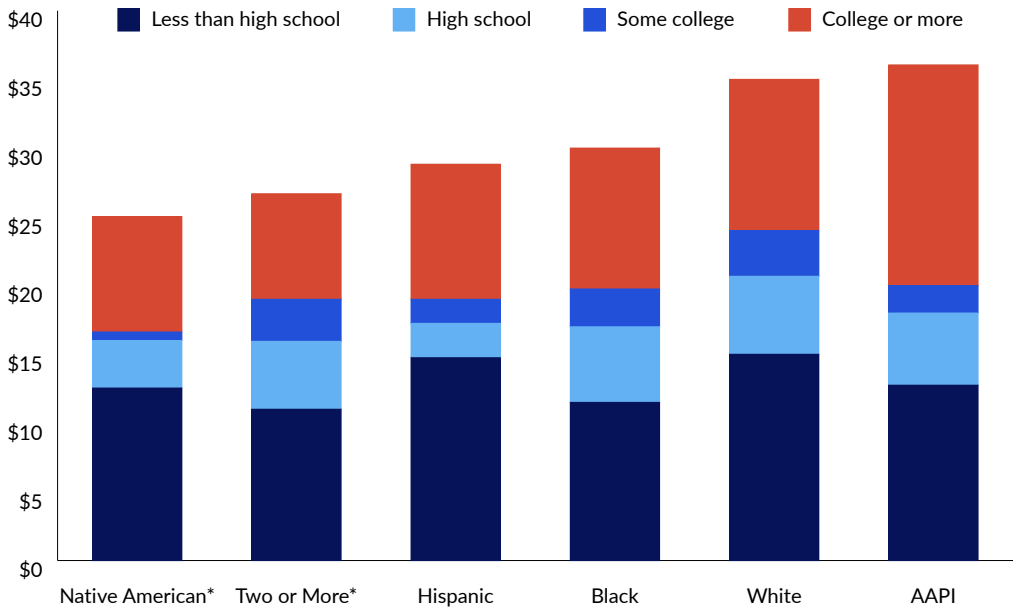
Reflecting a regional approach to economic recovery, AB 3205 aimed to establish the Regions Rise Grant Program in the Governor's Office of Business and Economic Development (GO-Biz).[8] Introduced by Assemblymember Rudy Salas (32nd District), the legislation focused on enabling regional collaboration and the development of inclusive strategies for economic prosperity. Regional polices such as AB 3205, if enacted, would incentivize coordination among local governments, private businesses, education, and philanthropy leaders working to enhance regional competitiveness through the use of distinct funding and operational capabilities to tackle shared challenges.

One of the more urgent shared challenges facing economic recovery efforts is addressing not only the magnitude of statewide unemployment but also the inequity in outcomes of traditional education-to-career pathways. While the commission focuses on long-term skills and getting the most vulnerable populations trained and in durable jobs, understanding the relationships between demographics (e.g., gender, age, race, degree attainment) and outcomes can better inform policymakers to build inclusive and equitable systems.

In addressing the need for short-term reskilling and job creation, placement, and safety, state efforts must consider that markers of educational attainment do not always reflect outcomes for all groups (Figure 2).

Figure 2. Hispanic Workers Earn Less for their Education

Median Wages for California Essential Workers by Education and Race, 2019



* *Data for Native American/Two or More races reflect national-level data due to sample size limitations.*

Source: *Milken Institute analysis of Current Population Survey Public Use Microdata (2019)*

Furthermore, as remote and virtual work become increasingly normalized, the state must prioritize the overarching need to advance technology-based skills at scale. While technology-based skills underpin many emerging job opportunities,[9] they are found more readily in coastal and urban cores,[10] exacerbating not only the geographic and demographic skills gap but also the potential for rural and inland regions to fall short in statewide recovery. Given the reach of technological disruption, programs must consider digital skills that adapt to a shifting employment landscape, and state leadership must direct investments towards initiatives that integrate this new reality.

To support a "California for All," revisiting the investments made in career technical education (CTE) after the last Great Recession may provide guidance in leveraging existing systems to improve short-term economic recovery and long-term workforce resilience.[11] Adapting a Career Technical Education and Employment (CTE^2) program designed to engage employers across industry sectors, evolve curriculum, and deliver critical skills tied to tangible outcomes would offer a built-in solution that catalyzes regional collaboration and supports inclusive and equitable growth.

2. CAREER TECHNICAL EDUCATION AND EMPLOYMENT

As the country's largest education system, serving 2.1 million students, the California Community College (CCC) system is uniquely positioned to be a critical asset in higher education, employer engagement, and local economic development within its existing regional ecosystems. Currently, the California Community College Chancellor's Office (CCCCO) employs a student-centric approach, informing and exploring student interests related to job demands, wages, and career paths.

However, the education system needs clear signaling on career pathways from employers and industry to effectively inform educational pathways. As such, the CCCCO drives more employer engagement strategies and focuses on partnerships that lead to outcomes, such as work-based learning experiences and, ultimately, job placement. These efforts include new earn-and-learn models to mitigate students' apprehension about apprenticeships, greater transparency in credentialing, and encouraging common credential language across industries.

In addition to strategic thinking, progress will require innovative approaches to operational funding. Before the COVID-19 pandemic impacted state budget models, the January 2020 budget proposal included a $20 million budget line item to experiment with new strategies, including employer- and industry-aligned initiatives. Despite being one of the largest General Fund expenditures, California's higher education allocations have slowly decreased over the years from 18 percent (1976-77) to 12 percent (2016-17) and have been offset by steep increases in tuition.[12] The three public higher education systems now face a new $1.7 billion cut in the revised budget, with the CCC losing the most at $740 million.[13]

Legislation introduced by Assemblymembers Eloise Gómez Reyes (47th District) and Sabrina Cervantes (60th District) highlighted the existing role of the California Community Colleges Economic and Workforce Development Program and the potential to expand that role through AB 1457.[14] Executed in partnership among GO-Biz, the California Community Colleges, the Employment Training Panel, and the Labor and Workforce Development Agency, the pilot project aimed to enhance a statewide network of regional business training centers. Participating community colleges would support the upskilling of the regional workforce by not only offering short-term training programs for displaced and incumbent workers in essential, emerging, and dominant industry sectors but also employing work-based training methods that result in stackable, industry-recognized certificates.

The project was not funded, partially due to duplicative functions in the current planning efforts by the California Community Colleges and Workforce Development Boards.[15] However, the state continues to support the colleges and their essential role in creating a better integrated workforce development system.

As evinced in the legislative efforts introduced in 2020, an effective recovery strategy will require the participation and engagement of all sides. In the short term, education and employers must expand their networks and get creative with leveraging other education, operation, and funding-related resources. These efforts will strengthen a new pipeline of sustainable careers aligned with regional industries for the long term.

In adapting to rapidly changing workforce demands, the CCCCO aims to streamline the education-to-employment process for job seekers, offer short-term skills training programs, push for credited programs, and encourage value in credentials such as Credit for Prior Learning (CPL). Additionally, to anticipate and provide in-demand and employable skills, the CCCCO is redesigning its systems to increase responsiveness to employer and industry needs. This approach includes evolving previously defined sectors and expanding contract education opportunities, which emphasize the critical role of employers.

Employers and industries too must invest in their future workforce. The goal is not to reinvent the wheel but revisit and apply successful workforce development programs that are resilient to challenges and adaptable to change. For example, High Road Training Partnerships (HRTP), a $10 million initiative under the California Workforce Development Board, models strategies to forming partnerships, particularly with industry. The board's model focuses on advancing economic opportunity, delivering skills for quality jobs, and building economic and environmental resilience. It also incorporates HRTP where these three areas come together. Thus far, the HRTP initiative has developed partnerships within eight sectors, demonstrating the potential for transformative collaboration among regional industries, employers, and California Community Colleges throughout the state.

"More than ever, California must connect unemployed and underemployed individuals with the qualifications they need to help fuel the state's economic recovery—and that starts with fast-tracking new, innovative options for higher education," said California Competes Executive Director Su Jin Gatlin Jez. "Leveraging our present moment to invest in Californians will reduce the impact of the current crisis on California's future and help our state recover that much faster—together."[16]

CASE STUDIES

This section provides a landscape analysis sourced from best practices and case studies identified from business, higher education, and government. In this case study exercise, we have categorized and analyzed examples from the US and globally that showcase innovative workforce development strategies and their use to achieve equitable educational and employment outcomes.

1.

APPLY REGIONAL COLLABORATION AND PARTNERSHIP AS AN ECONOMIC MODEL

Traditional economic development approaches have fallen short of delivering job opportunities and equity across sectors, industries, and geographies. Rather than rebuild the pre-COVID economic landscape, post-COVID recovery presents an opportunity to build an innovation-driven economy propelled by regional partnerships and enhanced investments that support community development. Establishing this dynamic will be critical in creating jobs and generating economic activity that overcome budget shortfalls, widespread unemployment, and decreased domestic production.

Developed by the Network for Global Innovation (NGIN), the Distributed Innovation Methodology[17] illustrates how a more economically resilient ecosystem model can be structured. This distributed approach strategically aligns components of the existing environment (i.e., natural resources, local industries, physical infrastructure, anchor institutions, communities, and more) into a network of interconnected hubs and spokes. Together, these networks enhance an innovation-driven economy, supporting both direct and indirect employment. Analysis of national labor statistics[18] suggests that one new innovation business job catalyzes five region-wide indirect jobs, as opposed to the one-to-one indirect job creation ratio from new retail or service jobs.

INNOVATION AS AN APPROACH TO INCLUSIVE ECONOMIC GROWTH

Los Angeles Cleantech Incubator (LACI): In October 2011, LACI was launched in an eroding industrial zone of downtown Los Angeles. It focused on the deep technologies that needed to be invented, developed, tested, piloted, and produced to execute the city's dream of a green economy into reality. Whereas economic development is often associated with infrastructure projects, efforts to attract large companies, tax incentives to real estate developers, or the reduction in business tax rates, LACI introduced a new economic development strategy: sector-specific cluster development led by the creation of innovative technology companies. Its approach was direct: The best way to build an economy and create new jobs was to create new companies, and the best way to create new companies was to create an incubator.

LACI has now evolved from a downtown Los Angeles economic development initiative to a region-wide strategy through its development of satellite programs and regional cluster navigators and its convening power. LACI has strong working relationships with the region's research universities (e.g., Caltech, UCLA) and continues to establish highly regarded innovation centers (e.g., La Kretz Innovation Campus, Advanced Prototyping Center, LACI@CSUN, Silicon Valley Incubation Center, California Coalition for Cleantech Commercialization (4C), and more). LACI's involvement has since expanded statewide in coordination with the US Department of Energy and the California Energy Commission.

REGIONAL APPROACH TO EMPLOYER ENGAGEMENT AND WORKFORCE DEVELOPMENT

San Diego Regional EDC: In San Diego, networks have mobilized on multiple fronts to determine how best to leverage the region's human capital and talent pipeline towards facilitating an innovation-based economy. In aligning workforce and economic development, the conversation has progressed beyond simply decreasing costs to improving the talent pipeline by connecting academia and employers based on business needs and industry data.

To leverage these data, the San Diego Regional EDC created the Inclusive Economic Growth Steering Committee, which generates data-driven, measurable targets and recommendations to build a strong local talent pipeline, equip small businesses to compete, and address the affordability crisis in San Diego. In support of more partnerships, the city also received a $3 million investment as part of JPMorgan Chase's Advancing Cities Challenge. In collaboration with the San Diego Regional EDC, San Diego Workforce Partnership, United Way of San Diego, and San Diego & Imperial Counties Community College Association, Advancing San Diego will contribute to the regional goal of adding 20,000 skilled workers to San Diego County by 2030.

This framework of regional partnerships establishes conversations between business and policy leaders to coordinate effectively around local workforce needs and enable the city to develop a long-term data-based strategy for a sustainable pool of qualified, skilled workers. The six-month program, designed to expand small businesses' access to talent, uses an employer-led approach and a common platform for collecting data and communicating talent demand. The program convenes cross-sector employer collaboratives to discuss and validate skill demands, producing skills-based criteria that meet employer demands.

As these criteria are released, educational institutions can then align their curricula to gain eligibility towards a talent fund, which subsidizes employer-approved education and training (e.g., internships) between small businesses and students. The success of these programs relies not only on a network of regional partnerships but also on business and education systems to establish an effective workforce infrastructure for students. Currently, the San Diego Regional EDC partners with a company that specializes in remote internships, reducing geographic barriers and maximizing access to opportunities.

2.

LEVERAGE FUNDING AND INCENTIVIZE PLACE-BASED INVESTMENT

There is no one-size-fits-all solution in a state as large and diverse as California. As distinct regions better understand their communities, a place-based strategy considers the local needs, assets, and opportunities vital to economic recovery. For instance, a college's location and role in industrial clustering can benefit regional firms through the alignment of specialization and talent creation.[19] Seeding regional hubs and aligning state tax incentives with innovation also pay off in future jobs. When determining how to invest in our future workforce, state and local policymakers should consider the following questions: In addition to tax incentives, what alternative financial sources are available to fund targeted workforce development programs? How can California's public education systems be leveraged to enable improved value capture?

ALIGNING INCENTIVES FOR A VALUE CAPTURE STRATEGY: R&D

Arizona Technology and Research Initiative Fund: In November 2000, voters passed Proposition 301 in the state of Arizona, which not only approved a 0.6 percent increase in the state's sales tax earmarked for K-12 education, community college, and the state's three public universities (12 percent of the money raised) but also led to the establishment of the Technology and Research Initiative Fund (TRIF) a year later.[20] As a low-cost, low-regulation state, Arizona's overall level of funding for both K-12 and higher education lags behind many other states, though the same structures serve to benefit the state's economic competitiveness. TRIF is central in counteracting the limited higher education funding in the state's budget. It serves as an essential tool for attracting students, companies, and industries to Arizona, strengthening its technology transfer and innovation infrastructure, and improving its competitiveness in both public and private sectors.

TRIF has generated more than $1.1 billion in funding to the state's universities since 2001, leading to growth in startups, patents, and license income, as well as the creation of new bioscience institutes, retention, and faculty recruitment, and a consistently growing return on investment. From 2012 to 2019, the Arizona university system has seen its annual return on investment from TRIF funding nearly double from $232,647,448 to $433,655,365.[21] As of January 2020, a bill has been introduced in the current legislative session to replace and expand Proposition 301.[22]

SEEDING REGIONAL TALENT HUBS

Fresno DRIVE Initiative: Fresno DRIVE (Developing the Region's Inclusive and Vibrant Economy) is a 10-year Community Investment Plan to sustain and support an inclusive economy in Fresno and the region. The initiative convened over 300 individuals and over 150 organizations and institutions representing a diverse cross-section of civic, community, and business stakeholders in the Greater Fresno Region. This coalition, which was unprecedented in composition and scope, drafted a plan focused on three key areas: economic development, human capital, and neighborhood development. In four months, the DRIVE coalition: (a) assessed baseline data on Fresno's economy, human capital, and neighborhood quality, (b) aligned on a 10-year vision for inclusive economic development, (c) identified key actions and investments to achieve the 10-year vision, and (d) determined community impact of those investments.[23] This initiative demonstrated the ability of regions to collaborate successfully and create strategies that strengthen their regional economy when an investment in capacity building is made with the support of regional leadership.

ANTICIPATING REGIONAL WORKFORCE NEEDS

Valley Vision: Throughout California, regional initiatives and collaborations also aim to solve the broader equity divide. Valley Vision, a regional intermediary, connects employers with education and workforce to advance solutions within the state's workforce infrastructure. It emphasizes the value of employer engagement and aligning programs to employer needs while also increasing employer responsibility and input in guiding skills training in the workforce and education systems. One priority for Valley Vision is building digital skills in the region and addressing the related equity issues. The 7.5 Coding Challenge is one of Valley Vision's digital skills initiatives that engage targeted, hard-to-reach populations (e.g., African American and Hispanic) in the region by implementing community-based outreach and creating an after-school curriculum for basic coding. The organization practices fundamentals of digital inclusion by increasing access to digital technology (via Sacramento Public Library) and managing regional broadband consortiums to expand broadband access in homes in underinvested neighborhoods of Sacramento County.

LEVERAGING ALTERNATIVE FUNDING SOURCES

Social Finance: An organization that practices investing in the workforce, particularly the health-care sector, is Social Finance, a nonprofit organization dedicated to mobilizing capital to drive social progress. Social Finance employs innovative financing strategies called Pay for Success, core principles of which include: clearly defined outcomes, data-driven decisions, uncommon cross-sector partnerships, strong governance and accountability, and catalytic capital to drive impact. A set of focused criteria determine workforce investment choices. In this case, for the health-care sector, criteria included targeting in-demand jobs, cost-effective programs, and evidence that training significantly impacts key student outcomes (e.g., placement, retention, wages). Social Finance is in the process of raising a $22.5 million health impact fund.

3.

FACILITATE AN ADAPTABLE EDUCATION SYSTEM

A key component of a robust and resilient education system is anticipating and adapting to change. Amid the pandemic, the state has experienced the acceleration of digital skill demands, the inequalities of the broadband gap, and massive unemployment across sectors. To reskill and upskill the California labor force will require restructuring the education system to meet current and future needs. This change means challenging old assumptions, addressing the core competency gap, and making the necessary adjustments to curricula, instruction, and pathways.

CHALLENGING ASSUMPTIONS AROUND LEARNING, EDUCATION, AND OUTCOMES

Finland: The Finnish education system has been praised as an international model of success. After initiating many intellectual and educational reforms over the years, Finland has revolutionized its educational system and taken the global lead in generating positive educational outcomes globally. Finland has removed requirements for standardized testing, critiquing the blanket method for subject comprehension. Instead, the system emphasizes the importance of a multi-disciplinary curriculum through "phenomenon-based" teaching,[24] which teaches students how to apply different skills and knowledge more closely resembling real-life problem-solving. The standard for instruction is high, with teaching programs among the country's most rigorous and selective professional schools, and all practicing teachers required to have master's degrees. Rather than focusing on merit-based competition, the system prioritizes cooperation, leveraging education to balance social inequality by providing free school meals, easy access to health care, psychological counseling, and individual guidance.[25]

DEFINING CORE COMPETENCIES TO INFORM CURRICULUM DEVELOPMENT

Career Technical Education (CTE) Model Curriculum Standards: Beginning in May 2011, 117 individuals representing secondary and post-secondary education, business, and industry, met to review CTE standards and make recommendations for improvement. Meetings took place within industry sectors, academia, and the general public to develop revisions and ensure alignment with industry standards, as well as the Common Core State Standards, Next Generation Science Core Ideas, and the History/Social Science Standards.[26] The State Board of Education adopted CTE Model Curriculum Standards to prepare students to be college- and career-ready. The development of the CTE Model Curriculum Standards allowed access and insight into individual industry sectors and pathways, describing the knowledge and skills that students need before entering a CTE program and outlining anchor standards, pathway standards, and academic alignment guidance.

However, as the nature of industry jobs changes in response to automation and technological innovation, among other factors, replicating a similar standard development process between education and industry would be valuable not only to update career pathways for current and future jobs but also to identify critical skills and competencies across all sectors. Defining these cross-sector (yet fundamental core competencies) provides a foundation to better inform competency-based education models in the K-12 system and beyond.

DEVELOPING PORTABLE SKILLS INVENTORY AND TRAINING

Worthi℠: Worthi is a free, online tool created by Citi and Burning Glass Technologies to provide market insights and resources for workers to improve their skills in the evolving job market. By leveraging data on over 1,800 roles and 17,000 skills, Worthi provides users with personalized insights that can help them identify their transferable skills for different opportunities and discover in-demand skills to increase their earning potential.[27] The tool also includes salary comparison features and online resources. The platform provides a user-friendly interface that highlights skills-based learning and supports inventory and analysis of cross-sector skills, alternative career pathways, and skills sought by potential employers.

Cell-Ed: Cell-Ed has created a mobile-based solution to reach, teach, and upskill workers equitably. Recognizing that most people have access to a cell phone but not always a computer, Cell-Ed can reach any mobile device. It serves as a customizable messaging platform and service, delivering free micro-lessons, two-way texting, and access to a live and bi- or multi-lingual coach for training designed for individual needs. Cell-Ed aims to reach every learner where they are and provides individualized learning and career pathways in real-time. While the organization first started educating non-literate working adults in the US, based on demand, and has trained over 50,000 US users, Cell-Ed has expanded to 14 countries. Now just over 45 percent of users are in the US. Digital platforms expand on the potential to increase access to upskilling and normalize portable skills training and credential opportunities (e.g., digital badges).

Portfolium: Portfolium is an online portfolio-building tool used by over 3,600 educational institutions to help assess the effectiveness of their programs and courses, certify students' competencies, and empower students to showcase their achievements and skills with evidence.[28] Within the platform is a Folio Network, which follows the students even after leaving school, allowing them to add and market new experiences as they acquire additional skills and work experiences (e.g., internships, volunteer work, and full-time jobs). Portfolium's innovative model provides a space for students to create a portable portfolio that tracks and certifies their achievements, projects, and competencies, using them to market skills and obtain employment.

INTEGRATING CREDENTIALED WORK-BASED LEARNING

American River College, Los Rios Community College District: In cooperation with various industry partners, American River College conducts a number of apprenticeship programs, which are formal systems of occupation training arranged between the college, employers, the Department of Labor, and/or the Division of Apprenticeship Standards. Ranging from one to five years, these apprenticeships combine paid employment, on-the-job training, and job-related college instruction to develop skilled, credentialed workers.[29] The Los Rios Community College District demonstrates one California Community College program among hundreds with equal impact.

RAISING THE STANDARDS FOR INSTRUCTION AND IMPLEMENTATION

Georgia Teacher Alternative Preparation Program: Increasing the effectiveness of academic programs starts with program curricula but must ultimately be executed by instructors. However, the learning gap widens when instructors who have been on a purely academic track cannot add value based on real industry work experience, whereas practitioners who transition to instructors may lack the teaching skills to translate their experience. The Georgia Teacher Alternative Preparation Program is designed for professionals with bachelor degrees (in non-education fields) and industry experts who want to transition to teaching to earn teaching certifications in the state. Candidates can earn one of several licenses (e.g., core academic certificate, advanced degree alternative certificate, clinical practice certificate) through intensive training courses, mentored teaching, and other state qualification requirements. This program begins to address instruction standards, highlighting the importance of adding real-world experience into concept learning and developing the teaching skills to do it effectively.

ENCOURAGING COLLEGE AND FACULTY LEADERSHIP

Santa Monica College: Santa Monica College (SMC) demonstrates the success of an educational institution taking the lead on addressing the gap between market needs and workforce abilities. SMC specializes in teaching students the workplace and technical skills they need for direct employability, job retention, and career enhancement. It provides education and training in 36 career education programs and offers associate of arts degrees in 80 fields of study. SMC administers multiple economic development grants and workforce participation projects from various government funding sources to enhance the college's programs and services. These grant-funded projects are dedicated to upskilling and business expansion, enhancing services (e.g., assessment, career education, workplace skills, internships, and customized training to meet business and industry needs).

SMC leadership understands the importance of strong partnerships between education and industry and collaborates with local businesses through industry advisory councils (i.e., business executives and representatives), college administrators, and faculty experts. With nearly 34,000 students, SMC is among the largest of the state's 112 community colleges and the number one transfer institution to the University of California system.[30] The college is committed to providing the level of education needed to advance successfully to four-year institutions or directly into the job market. It stays current in assessing market and industry needs. Most recently, SMC developed a bachelor's degree program in interaction design, a field of study that examines how humans interact with technology and is relevant and applicable in a technologically advancing workforce space.

DEFINING CLEAR CAREER PATHWAYS

Vocatio: As a media network and online talent marketplace, Vocatio was developed to give students authentic context outside the education system, helping them better understand and connect to real options and alternative pathways to their career goals. Where employers rarely reach through traditional college systems and into high school systems, Vocatio engages, exposes, and guides students to meaningful careers based on their skills and interests.

4.

INCENTIVIZE EMPLOYER AND INDUSTRY ENGAGEMENT

The charge of designing an effective talent pipeline falls not only on institutions and educators but also on the industries and employers that seek a skilled, qualified workforce. Employers and industry leaders that understand this mutually beneficial relationship recognize the importance of prioritizing engagement and active investment in student outcomes. In doing so, employers can maximize impact on students' career pathways, signaling in-demand skills and leading program development for jobs of today and the future. Here, we expanded on three particular sectors: health, global trade, and advanced transportation and logistics.

INDUSTRY-RECOGNIZED CREDENTIALING: DEVELOPMENT AND DELIVERY

Futuro Health: Kaiser Permanente and United Healthcare Workers West (SEIU-UHW) have partnered to establish Futuro Health, a $130 million nonprofit organization dedicated to improving the health and wealth of communities by investing in allied health education, skills training, and retraining. The organization recognized a need to work backward in sourcing talent. It determined and anticipated aptitudes and skills needed for a job and then structured the appropriate credentials. In one of the organization's initiatives, having identified that 28 percent of Californians speak Spanish as a first language, Futuro recruited over 1,000 workers to build English competency contextualized for health care.

This initiative restructured training to remove barriers to employment by providing the language competency needed for the job. Futuro will deliver a new education-to-work model that supports candidates through career exploration and coaching, education financing, and targeted pathways toward credential or licensure attainment. They have also partnered with Western Governors University to provide students with an affordable competency-based education pathway for attaining credentials to become medical coders, medical assistants, and care coordinators. Futuro Health aims to solve for the gap of 500,000 workers in allied health-care services, using an affordable education-to-work model, and intends to graduate 10,000 new licensed, credentialed workers in California over the next four years.[31]

INDUSTRY-ALIGNED CURRICULUM AND TESTING

NASBITE Certified Global Business Professional (CGBP): The CGBP designation is managed by NASBITE International, established over 30 years ago as an association of North American Small Business International Trade Educators (NASBITE). About 18 years ago, NASBITE determined that more people needed to be educated to help companies export and foster economic development. At the time, however, no international trade credential existed to signal a candidate's qualifications for employment.

To find qualified, educated people to fill these roles, NASBITE developed the CGBP exam. NASBITE systematically conducted focus groups nationwide, met with diverse subject matter experts, and surveyed workforce needs over four domains: global management, global marketing, trade finance, and supply chain management. The four domains were distilled into 125 specific knowledge statements (the necessary information for each subject), and exam questions were developed based solely on these knowledge statements. When the first CGBP exam was launched in 2005, exam takers failed at a 50 percent rate. To increase the exam pass rate, NASBITE targeted the education side, supplementing relevant coursework and

streamlining international trade curricula to bypass unpractical academic courses. There are now over 2,000 CGBPs, and NASBITE continues to develop curriculum and accreditation programs. It will soon launch student pathway and corporate pathway programs.

EARLY INTEGRATION OF WORK-BASED LEARNING

Metro Transportation School: In partnership with the County of Los Angeles, LA Metro is developing a specialized Transportation School in South Los Angeles that guides students in ninth to twelfth grade towards transit-oriented careers through a curriculum based on science, technology, engineering, arts, and math (STEAM) skills.[32] This initiative is part of LA Metro's cradle-to-career approach to workforce development, which is intended to create a pipeline of equipped infrastructure workers and fill an expected workforce gap—almost 50 percent of metro workers will be eligible for retirement in the next five years. The school will specifically target youth aged 12–18 currently receiving services from or at risk of entering the county's child welfare system, probation/juvenile justice system, or homeless services.[33] With dozens of projects underway and a workforce rapidly approaching retirement age, LA Metro has created a workforce development initiative to increase the pool of skilled workers available for hire.

INDUSTRY ADAPTION IN THE DIGITAL AGE

Global Virtual Internship Program (VIP): Launched in 2019 by the California International Trade Center, the Global VIP[34] brings a collaborative and accessible approach to solving shared problems in the business, work, and college environments. The program directs small- to medium-sized businesses in identifying talented students to advance their e-commerce and digital trade strategies. Companies can select projects that provide targeted services (e.g., online marketing, e-commerce capability assessment, social media campaigns, and international market analyses).

Students participating in the internship then work collectively to scope the problem and identify gaps, analyze consumer trends and behaviors, and develop plans to address the client's needs. In preparation for the project, students complete online training and earn digital badges, demonstrating skill proficiency in various areas of e-commerce and trade. Under the direction of SEO and e-commerce experts, the remote work-based learning approach helps educators and students gain real-world experience by advancing students' technological skill sets and enabling businesses to grow their e-commerce presence through digital transformation. The program served four California regions within its first year, and student-led projects provided 5,180 technical assistance hours to businesses across the state.

EQUITABLE AND INCLUSIVE PROGRAMS

STEM Core Initiative: As a targeted industry engagement program, the initiative was designed to increase access to a high-growth industry for an underrepresented population with significant barriers to employment. Regional partners assembled to create pathways for an economically disadvantaged population in the community while meeting employers' needs for high-skill workers. The partners also leveraged the United States Department of Energy (DOE) resources as a force multiplier to achieve national impact. STEM Core program supporters from the DOE referenced the federal government's five-year strategic plan for STEM education. Efforts are underway at the national level to support the STEM workforce of the future and increase diversity, equity, and inclusion.[35]

National labs, which fall under the aegis of the DOE, have also been key partners. Currently, STEM Core cohort programs have enrolled 334 community college students at 13 colleges in California. The success of STEM Core illustrates how partners at the local, regional, and national levels can assemble to achieve outcomes that support broader public policy initiatives while having a significant impact at the local level. It also emphasizes the importance of structuring specific industry collaboration and supportive training models to place students into internships, as well as layer supplemental instruction when necessary to mitigate barriers associated with remediation instruction.[36]

CONCLUSION: ROADMAP TO RECOVERY AND RESILIENCE

The COVID-19 pandemic has accelerated job displacement and unemployment trends initiated by advances in technology and automation. Moreover, new, emerging forces affecting the workforce throughout the state only exacerbate existing social inequities embedded in our pre-COVID economic landscape. The new normal presents an opportunity to recalibrate traditional workforce development models and align them with systems that capture long-term return-on-investment. These returns stem from investment in talent, skills, and people, resulting in enhanced opportunity, regional growth, and social prosperity. What California lacks is a coordinated economic development model that can scale up investments in talent development. This deficiency prevents talented workers from fully participating in long-term regional growth.

Demonstrated in this compilation of case studies are the various methods and contexts in which employers, industry partners, philanthropy, and public-sector leaders are driving workforce development, skill-building programs, and training initiatives. These initiatives not only highlight the economic benefits resulting from investment in workforce development but also outline the impetus for state leaders to scale successful investments in education and training programs. The investments lead to better-paying jobs that enhance economic mobility.

The following roadmap highlights priority areas, actionable recommendations, and considerations in recalibrating the state's current workforce development model:

ESTABLISH A SUPPORTING FRAMEWORK THAT CULTIVATES REGIONAL COMPETITIVENESS. By applying a new economic model that leverages existing collaboration and partnerships, state leaders can break down silos, leverage funding, and incentivize place-based investment (e.g., leveraging tax incentives to support and coordinate the following components: employer engagement, business formation, and concept-to-commercialization tied to industry sectors statewide).

1. Organize regional collaboration and partnerships (i.e., ecosystems) that can facilitate place-based, scalable workforce development programs and incentivize the establishment of robust regional talent pipelines.

    a. Use NGIN's Distributed Innovation Methodology[37] to develop state hub and spoke initiatives that coordinate intra-region innovation infrastructure.

    b. Dismantle existing regional silos to streamline duplicative programs and better coordinate partnerships among regional assets: available workforce, economic development initiatives already funded, existing research centers (e.g., CCCs, UCs, CSUs), local corporations, utilities, and governments.

    c. Reestablish advisory committees with guidelines and inclusive representation (i.e., mandatory number of people from education, community brokers, industry experts, students, and other relevant stakeholders).

2. Promote state-led facilitation that garners access to opportunities that are traditionally unique to coastal, urban cores, and high-growth economics (e.g., technology-related skills).

3. Develop innovative financing solutions to fund sector-specific workforce development programs and compensate for existing gaps and budget reductions.

    a. Encourage state support for social impact bonds that allow colleges to apply for funding towards internships/apprenticeships and employer engagement programs.

    b. Align new and existing incentives that layer value capture strategies: R&D, New Market Tax Credits, Opportunity Zones, and other financial tools.

IMPLEMENT CAREER TECHNICAL EDUCATION AND EMPLOYMENT (CTE^2) PROGRAMS THROUGH THE CALIFORNIA COMMUNITY COLLEGES. Mobilize the statewide Sector Directors network and the Strong Workforce program to engage industry and employers across sectors. Form regional employer collaboratives. Advance an adaptable education-to-employment system that supports the formation of regional talent pipelines alongside core competency-based curricula aligned with critical workforce needs.

4. Form a state clearinghouse that centralizes resources, aggregates demographic and occupation data, defines clear career pathways for students and job seekers (informed by employers and industry), and provides opportunities for employer engagement.

a. Coordinate and communicate with ecosystem players (i.e., employers, industry experts, and education and training providers) to determine the current system and data gaps.

b. Evaluate core competencies across sectors to better inform competency-based curricula development at all education levels.

c. Define required core competencies, industry-specific competencies (e.g., technical skills), and degree attainment criteria to provide transparency and informed career pathways to job seekers.

5. Revitalize the Economic and Workforce Development role of the California Community Colleges and position them as a critical actor in the state's COVID economic and workforce development recovery strategy.

   a. Expand the California Community Colleges' current "Vision for Success" scope[38] beyond outcome measures of enrollment, degrees, and transfers.

   b. Increase communication between statewide Sector Directors[39] and industry experts and employers to innovate college programming to align more rapidly to shifting employer norms (e.g., employer collaboratives to discuss constantly changing trends in rehiring, technology adoption, informing industry-aligned education/training, and establishing partnerships that provide internships/apprenticeships).

   c. Integrate additional data sources that capture emerging trends within industry-specific data, distributing findings across regions. Confirm data with industry and college administrations to develop and deploy short-term training models.

   d. Develop up-to-date training programs for faculty in which they engage with industry partners to maintain relevant expertise in newly-demanded jobs and skills.

APPENDIX

Figure A1. NGIN Ecosystem Model

POLICY LEADERSHIP

Makes innovation a central economic development strategy

Participants: Government entities at the city, county, and regional levels

INNOVATION SOURCES

Identifies innovation capable of delivering value at scale

Participants: Universities, corporations, and entrepreneurs

INNOVATION HUBS

Delivers region-wide commercialization programs

Participants: Accelerators, incubators, university entrepreneurship centers, etc.

FUNDING ACCESS

Attracts and fosters relationships with impact investors

Participants: Both private and public capital sources

INNOVATION WORKFORCE

Connects new and retrained talent with new opportunities

Participants: Talent in education, talent at work, and talent undergoing training and reskilling programs

STAKEHOLDER MOBILIZATION

Stimulates participation among community influentials

Participants: Business groups, foundations, workers' associations, etc.

MARKET CONNECTIVITY

Actively connects innovators to new markets, both locally and globally

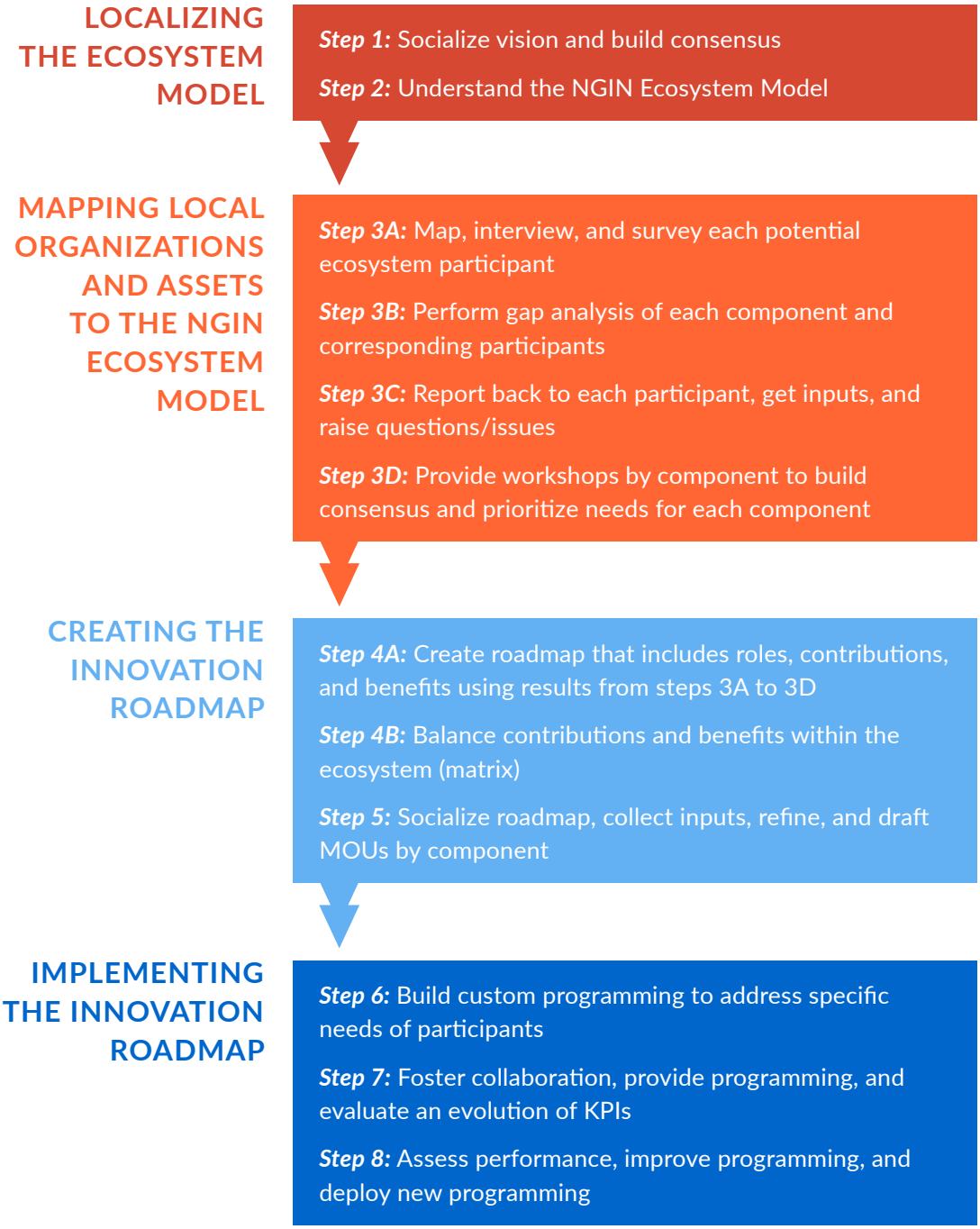
Participants: Commercialization initiatives and entrepreneurial programs

Source: *Adapted from NGIN (2020)*

One or more participants (e.g., organizations, institutions, individuals, etc.) that play similar roles represent each component. Each component presents a set of expected benefits and proposes its own contributions to keep the ecosystem balanced and each participant engaged.

Figure A2. NGIN Distributed Innovation Methodology

Distributed Innovation Methodology Overview



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39. State directors facilitate commitments from both colleges and regional business in understanding employability criteria, adapting hiring standards based on skills, understanding short-term credentialing requirements, and providing guidance on short- and long-term employer relations, including work-based learning opportunities.

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