



Arizona Reskilling & Recovery Network:

A Workforce Development and Education/Training Framework

National Reskilling & Recovery Network

Arizona Network Team

(Facilitated by the National Governor's Association & the American Association of Community Colleges)



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Introduction

The COVID-19 pandemic has been a crisis of historic proportions, resulting in the infection of millions of Americans, the related deaths of more than 500,000 people, widespread business closures in the wake of the initial shutdowns and subsequent economic downturn, and the loss of millions of jobs. Yet, the fundamentals of the American and Arizona economy remain strong in this time of crisis, and signs of recovery are already underway. However, the effects of the pandemic and the subsequent recovery have not been experienced equally or equitably. Many Arizonans remain unemployed or employed in low-wage jobs, especially among discouraged and marginally attached workers, racial and ethnic minorities, and women. Equally, the long-term effects of Industry 4.0 (e.g., automation, artificial intelligence, cloud computing, mobile technology), demographic change such as the birth-death, high levels of low-wage jobs, and disproportionately low education levels serve as limiting factors to future economic development and growth. In this context, Arizona was selected as one of 20 states to join the National Governors Association (NGA) and the American Association of Community Colleges (AACC) Reskilling and Recovery Network. With support from Lumina Foundation and the Siemens Foundation, the Network will join state and community college institutional leaders to offer targeted assistance and identify fast strategies to give workers the skills necessary to succeed in an economy reshaped by the pandemic. The Arizona State Team is composed of representatives from the Office of the Governor of Arizona, Business and Industry, Arizona's Community Colleges represented by the Arizona Community College Coordinating Council (AC4), the ARIZONA@WORK system, Achieve60AZ, and local workforce development leaders. The Arizona State Team chartered the development of the Arizona Reskilling and Recovery Network Workforce Development and Education/ Training Framework to address the challenges of the COVID-19 pandemic in a systematic manner, in order to best serve our employers and communities.



Arizona Western College students planting jalapenos, tomatoes, and cilantro seedlings to monitor throughout the semester as part of a plant science class.

Framework Overview

Arizona's Reskilling and Recovery Network Framework is premised on addressing the near-term challenges resulting from the COVID-19 pandemic and the associated economic downturn, as well as needed structural alignment between economic development and workforce development from a policy and programmatic perspective. This Framework recognizes the important role that many education and workforce development institutions, associations, and other stakeholders have in meeting the needs of employers and serving the needs of workers who have been impacted by the pandemic. Under the auspices of the AACCC/NGA effort at the national level, the focus of this Reskilling and Recovery Network Framework is on the important role that Arizona's Community Colleges play in taking recovery and reskilling efforts to scale, in partnership with the ARIZONA@WORK system and employers, and in alignment to Arizona's economic development priorities and the Achieve60AZ framework and goals. As outlined by Opportunity America (2020), the infrastructure and responsiveness of community colleges and public workforce systems working in sync to meet the needs of both employers as well as reskilling workers is key to closing economic disparities across socioeconomic classes, racial/ethnic minorities, and by gender and thereby increasing economic vitality.

The Reskilling and Recovery Framework and its components, shown in [Figure 1](#), imbues a cyclical process with sequential steps. In practice, components and related actions or initiatives of the Framework may overlap or occur simultaneously. To start, the Reskilling and Recovery efforts are aligned to the Arizona Commerce Authority's (ACA) Five-Year Plan, including the stated outcomes of job creation, wage growth, capital investment, entrepreneurial vitality, and increased exports (Arizona Commerce Authority [ACA], 2017). By strengthening workforce development efforts in alignment with the Build, Align, Enhance strategy (ACA, 2017) in the targeted industries for the state

(Aerospace & Defense, Bioscience & Health Care, Business & Financial Services, Film & Digital Media, Manufacturing, Technology & Innovation) we will align talent to fill jobs in the in-demand occupations, as identified by ARIZONA@WORK, and with the educational attainment needed to meet Achieve60AZ goals. Meeting these aims will promote business and economic recovery for the State while preparing workers to fill jobs in increasingly higher-paying fields. Strategically aligning talent for priority sectors in the wake of an economic downturn requires identifying where the talent actually is "pooled" and moving in this volatile labor market, which jobs and workers were most impacted by the pandemic, and which jobs in the targeted industries are in demand and have gaps in the talent supply. A Data and Gap Analysis is underway to ascertain the skills gaps in Arizona, the need for talent in priority industries, patterns of unemployment, education levels, wages, the impact of Industry 4.0 and identifying disparities in these areas across socioeconomic class, racial/ethnic minorities, and gender.

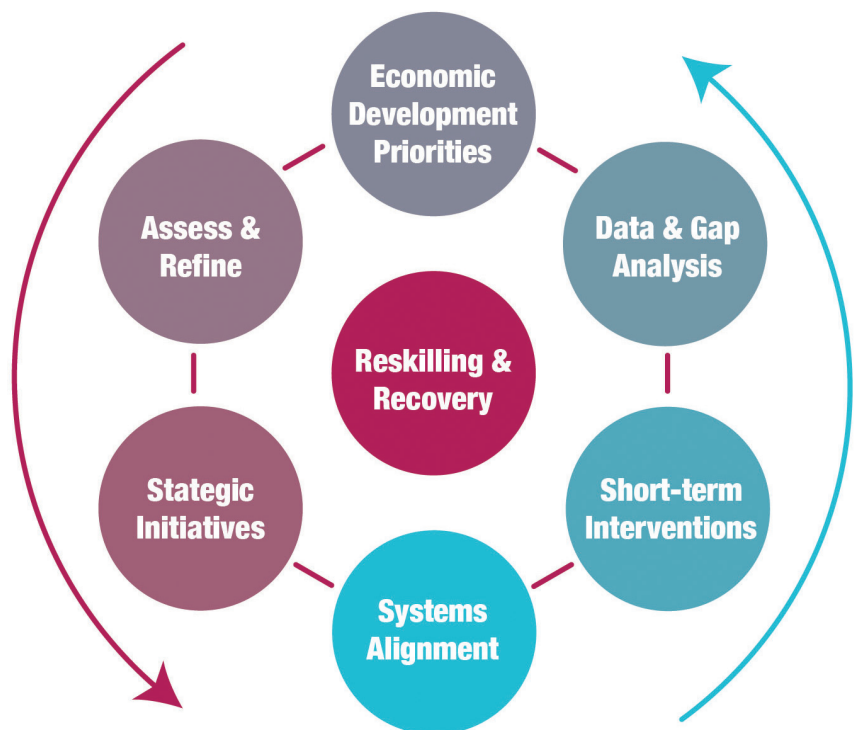


Figure 1. Arizona Reskilling & Recovery Framework

Short-term interventions and programs have already been developed and implemented by the ARIZONA@WORK system and Arizona's Community Colleges in response to initial data and workers' needs stemming from the immediate impact of the pandemic. Examples include the ACA's Return Stronger initiative, the Community College's statewide rollout of instructor-supported online training such as the Google IT Support Professional Certificate, and increase in short-term training opportunities provided by Arizona's Community Colleges that are listed on the ARIZONA@WORK's Eligible Training Provider List.



Pima Community College students receive instruction in the flight deck of a Boeing 727-200 series aircraft.

Successes with these recent programs have laid the groundwork for further Systems Alignment and Strategic Initiatives at the policy, programmatic, and practice levels. However, there are a number of policy and program opportunities to accelerate Arizona's attainment of the Achieve60AZ goal that 60% of working adults in Arizona earn a postsecondary credential of value by 2030 (Achieve60AZ, 2020). Strategic initiatives to strengthen and align our workforce are already underway such as: expanding early college high school models at scale in career & technical fields, expanding work-based learning and apprenticeship opportunities, developing short-term training programs for rapid reskilling, and increasing employer-sponsored education and training opportunities.

Stronger policies and funding mechanisms are needed to solidify such efforts, improve system alignment and efficiencies, incentivize employer participation, and decrease labor market disparities among racial/ethnic minorities and by gender. A robust policy and funding agenda in this respect will further increase Arizona's competitive advantage in economic development from a position of strength in workforce development.

The efficacy of the Framework will be measured in terms of workforce outcomes that align to economic development goals. Metrics will focus on these key drivers:

- Job placement in target industries;
- Closing the skills gap, particularly among racial/ethnic minorities and identified female single-earners/heads of households;
- Movement of low-wage workers to jobs with family-sustaining wages;

- Number of workers with education levels of high-school equivalency or less that earn a postsecondary credential with labor-market value; and,
- Increased public-private partnerships whereby employers sponsor employees in partnerships with community colleges, including apprenticeships, tuition reimbursement, and training.

Improvement in these metrics will further strengthen Arizona's competitiveness in an economic development context as well as bolster the workforce against the impact of future negative economic events.



Northland Pioneer College dual enrollment students receive advanced training in Electrical and Instrumentation.

Economic and Workforce Development Priorities

As a part of its economic development strategy, The Arizona Commerce Authority identified six target industries for Arizona in its 2017-2020 Five-Year Plan.

- Aerospace & Defense
- Bioscience & Health Care
- Business & Financial Services
- Film & Digital Media
- Manufacturing
- Technology & Innovation

All of these, save Film and Digital Media, are aligned to ARIZONA@WORK in-demand industries (which also add Construction, Profession and Technical Services, and Transportation and Warehousing). While Arizona's robust economy supports a large number of industries, according to the ACA these industries were strategically selected because they "create high-wage jobs, generate exports and encourage capital in-flows, have strong supply chains and multiplier effects and generate tax revenues that support public services" (ACA, 2017).

Each of these industries represents high concentrations of workers, high wage career paths, job growth, and industry expansion. For example, over 54,000 workers are employed in Aerospace & Defense in Arizona and the state is ranked in the top three states for aerospace manufacturing and the maintenance, repair, overhaul (MRO) sector. There are over 13,000 bioscience and healthcare businesses in Arizona employing over 300,000 people, with twice the national rate of healthcare employment. The Business & Financial Services industry employs over 400,000 workers, has the second largest concentration of employees in this field, and represents 15% of total private employment in the state. Manufacturing represents over 158,000 workers and generates 222,000 indirect jobs. Technology and Innovation continue to grow, with job categories crossing into multiple sectors (ACA, 2017)

In addition to the targeted industries and in preparation for the advent of Industry 4.0, the ACA identified opportunities for business expansion and job growth in companies that represent Next-Gen Tech Trends. Based on research in sustainability, Industry 4.0, and population, the ACA identified ten next-gen technology trends "in which Arizona has core competencies which lay the foundation for Arizona to establish a global leadership position. . . . These trends and new technologies will change the way business is conducted, lead to new innovations and facilitate economic growth" (ACA, 2017). These tech trends focus on key areas in which Arizona's Community Colleges are working with employers and stakeholders to address the challenges of job displacement and hybridization due to Industry 4.0 and environmental policy and change, such as Autonomous Vehicle Technology, Sustainability, Artificial Intelligence, and the Internet of Things.

A key alignment goal for the Reskilling & Recovery Network efforts will be to identify and prioritize the In-Demand Occupations as determined by the Office of Economic Opportunity (OEO), ARIZONA@WORK system, and local workforce development boards (LWDBs) by the In-demand Industries. In doing so, programs can be developed and resources can be driven to prioritize student enrollment and college investment in career pathways in these industries and for ARIZONA@WORK clients to engage in reskilling and upskilling opportunities aligned to this subset of In-Demand Occupations. Examples of such occupations are shown in [Table 1](#), and include occupations requiring the education levels offered at the community colleges:

Table 1, Sample of Arizona In-Demand Occupations that are Aligned to Target Industries and Education/Training Programs Available at Arizona's Community Colleges

Occupation Title	Average Annual Wages (2018)	Employment (2018)	Annualized Proj Emp Pct Chg (2018-2020)	Annual Projected Openings (2018-2020)	Education Level ¹
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¹ Education categories represent the minimum education level required for a given occupation. Education categories are as signed by the United States Bureau of Labor Statistics.

Aircraft Mechanics and Service Technicians	\$62,275	5,272	2.4%	537	Postsecondary non-degree award
Computer Network Support Specialists	\$60,547	5,471	2.8%	559	Associate's degree
Computer User Support Specialists	\$52,087	14,879	3.1%	1,575	Some college, no degree
Electrical and Electronics Engineering Technicians	\$63,549	2,844	3.0%	334	Associate's degree
Engineering Technicians, Except Drafters, All Other	\$59,207	2,298	3.5%	284	Associate's degree
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	\$46,042	8,902	5.5%	1,395	Postsecondary non-degree award
Heavy and Tractor-Trailer Truck Drivers	\$45,429	26,794	2.9%	3,701	Postsecondary non-degree award
Industrial Engineering Technicians	\$63,515	2,163	3.1%	258	Associate's degree
Licensed Practical and Licensed Vocational Nurses	\$54,086	6,839	2.9%	691	Postsecondary non-degree award
Registered Nurses	\$77,001	59,136	3.5%	5,218	Associate's degree
Telecommunications Equipment Installers and Repairers	\$59,081	3,024	1.2%	354	Postsecondary non-degree award
Web Developers	\$70,447	3,314	3.8%	366	Associate's degree

Job training and placement in In-Demand Occupations that are not in the Target Industries is still strategically aligned to the Framework approach as long as opportunities for upward mobility and family-sustaining wages are evident. The complete list of Arizona's In-Demand Occupations are listed in Appendix A on page 43; In-Demand Occupations for each local area and by industry can be found at <https://www.azcommerce.com/oeo/labor-market/in-demand-jobs/>. In order to prioritize education and training efforts including reskilling, we will quantify the impact of the pandemic and associated economic downturn, especially across socioeconomic class, racial/ethnic minorities, and by gender.

Data and Gap Analysis

Arizona's recovery from the initial economic impact of the pandemic has been relatively strong, and the fundamentals of Arizona's business environment remained robust throughout the crisis, due in large part to the response of the state with interventions in support of small businesses. However, structural weaknesses in the labor market and workforce in Arizona continue to impact long-term economic development and job growth in high-wage career pathways. Equally, economic growth and recovery prior to and after the pandemic has been geographically disparate, with greater Phoenix being the only area of the state to see real growth in jobs and GDP. For example, greater Phoenix accounts for approximately 70.2% of Arizona's total Real GDP, Phoenix's GDP per capita is \$44,534, which is 12.5% higher than the state's GDP per capita at \$39,583. Greater Phoenix is the only region in Arizona that has a GDP per capita above the state average (Engel, 2020).

Addressing these issues will be key to the Reskilling and Recovery Network's success. The Framework outlines these high-level areas for which further data analysis may be needed to strengthen the short-term interventions already underway, and ensure that systems alignment, policy, and programs achieve equitable outcomes for all Arizonans across all races, ethnicities, genders, and geographies.

Unemployment

At the height of the pandemic, Arizona's unemployment rate reached 13.4% in April, 2020, had fallen to 5.9% by August, 2020, and risen again to 6.7% in October, 2020 (Arizona Office of Economic Opportunity [OEO], 2020a). Even at 6.7%, this outpaced the U.S. unemployment rate of 7.9% in September (Bureau of Labor Statistics [BLS], 2020). While the drop in Arizona's overall unemployment rate is a success, this refers to the U-3, or "official" unemployment rate, and references people who were not working in the data reference period, were willing to work, and actively sought employment (Hammond, 2020). However, unemployment measures that include discouraged, marginally attached workers, and employed part-time for economic reasons indicate that Arizona's structural unemployment rate (U-6) was at 11.3% for the fourth quarter of 2020 (OEO, 2020b). When it comes to full unemployment measurements (U-4 through U-6), Arizona lags other states, pointing to the need for the recommended systems alignment initiatives and policies of this Framework (OEO, 2020b).

The Skills Gap and Reskilling and Recovery

The term "Skills Gap" is used in many different ways in the education and workforce development lexicon, and generally refers to the mismatch between workers with skills employers want and need versus the skills they generally find among hirees. However, broad quantification of these skills in a labor market context can be done along education-levels, as has been conducted by the National Skills Coalition (NSC).

The NSC Skills Mismatch analysis for Arizona (Figure 2) shows that the state has the same number of workers requiring a Four-Year degree as the number of jobs requiring similar levels of education, at 32%. However, Arizona has more workers with High-School Equivalency alone (22%) than is required in the labor market (17%). In addition 600,000 Arizonans over the age of 25 have less than a high school

equivalency (Achieve60AZ, 2020). Conversely, there are too few workers in the Skills Training level (jobs requiring a postsecondary certificate, industry-recognized certification, two-year degree, or apprenticeship). In Arizona, 51% of jobs are at the Skills Training level, but only 46% of Arizona workers are qualified for these jobs. Thus, the short-term interventions and systems alignment recommendations of this Framework focus on strategically shifting talent from the High-School Equivalency category to the Skills Training Level, in accordance with the goal of Achieve60AZ.

earning the right level credential for entry into careers with projected job and wage growth--it is increasingly about the skills not the credentials. For example, Carnevale et al. (2020) point out that 27% of workers with an associate's degree earn more than the median for workers with a bachelor's degree. In Arizona, jobs in the Skills Training level with family-sustaining entry level wages and opportunities for increased wages over time abound, including those shown in Table 1.

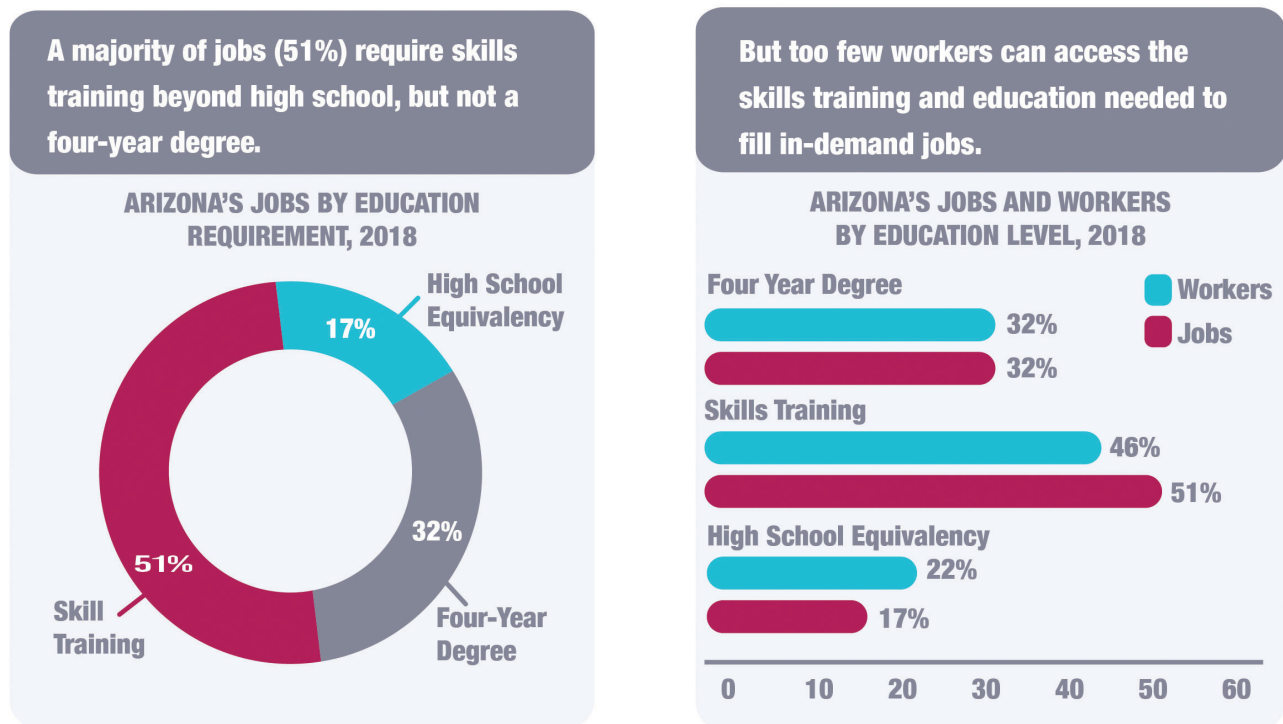


Figure 2. National Skills Coalition skills mismatch analysis in Arizona, 2018

Moving talent from one of these categories to another is not simply a matter of increasing credential attainment rates, but ensuring that workers attain credentials that lead to family-sustaining wages in the targeted industries, preferably in In-Demand occupations and career pathways. Credential attainment alone does not guarantee such job placement or wages. Carnevale, Cheah, Van Der Werf, and Gulish (2020) highlight that entry-level wages, increased wages over time, and lessened debt are increasingly determined by workers

Short-term interventions are and will continue to focus on closing working learners' skills gaps for more rapid reskilling and job placement in target industries and our systems alignment recommendations focus on policy and program measures to shift talent accordingly and over time.

Education Levels, Wages, and Job Vulnerability

The NSC Skills Mismatch data for Arizona and the ensuing economic impact is further quantified by Achieve60AZ, whose overarching goal is that 60% of Arizonans between the ages of 25-64 hold a postsecondary credential or degree by 2030. Currently, 46% of people have attained this measure (Figure 2). In addition, Achieve60AZ (2020) cites these educational level challenges in the state:

- Only 55% of high school graduates in Arizona enroll in college in the fall semester. Data from the pandemic era is forthcoming but early indications are that many formerly college-bound students are waiting to enroll (i.e., the “gap year”).
- Opportunity youth--emerging workers age 16-24 who are neither working nor enrolled in school--comprise 13% of all people age 16-24.
- There are great disparities in educational attainment by race/ethnicity in Arizona. For example, 67% of Asians and 48% of Whites in Arizona age 25-64 have attained a two-or-four-year degree, but attainment rates for the Hispanics/LatinX is 22%, for Black/African Americans is at 36%, and Native Americans is at 18%.

It is not surprising that people who have not attained a postsecondary credential or degree are more likely to hold low-wage jobs and are most at risk for unemployment. Brookings (2020a) recently conducted research on low-wage jobs in many metropolitan statistical areas (MSAs) areas across the US (including Arizona), and published the information in the low-wage worker dashboards. As an example, the low-wage worker data for the Phoenix-Mesa-Scottsdale MSA shows that

there are 728,200 low-wage workers in the Phoenix-Mesa-Scottsdale MSA, comprising 43% of the MSA's workforce. Common points across most of the data for Arizona's MSAs shows that workers with lower education levels are more likely to be in low-wage jobs, and that both low-wage jobs and lower education levels are concentrated among racial and ethnic minorities, particularly among Hispanic/LatinX people (Brookings, 2020a). The industries with the highest concentrations of these jobs saw the greatest levels of unemployment throughout the pandemic in Arizona.

The differences in risk for unemployment based on education levels are quite stark, as shown in Figure 3. In Arizona, the pre-pandemic unemployment rate for people with less than high school equivalency was 7.6%. It was 4.7% for those with a high school diploma, and only 3.8% for those with some college or associate degree (OEO, 2020c). In this same vein, the labor force participation rate for people with less than high school equivalency was only 61.2%, and jumped by over 10 percentage points to 71.3% for those with high school equivalency. The labor force participation rate in 2019 for workers with some college or associate degree was 76.6% (OEO, 2020c).

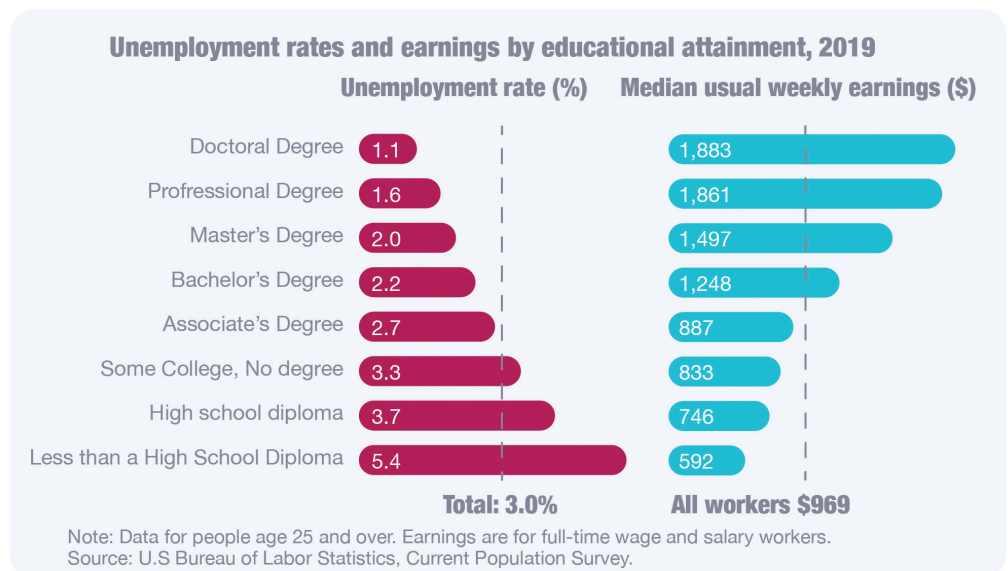


Figure 3. Unemployment earnings by educational level, 2019

These disparities and patterns highlight the vulnerability of jobs in Arizona among low-wage workers, which was exacerbated by the pandemic (Brookings, 2020b). Across the state, 22.1% of jobs are vulnerable and Arizona ranks 6th in the U.S. for job vulnerability (Brookings, 2020b). Lund, Ellingurd, Hancock, and Manyika (2020) highlight that the unemployment impacts of the COVID-19 pandemic disproportionately impacted women and racial/ethnic minorities, especially those with low wage jobs. For example, In February, 2020, Nonwhite workers comprised 37% of unemployed workers in the U.S., but after the March, 2020 shutdown, they comprised 58% of unemployed workers. Women comprised 47% of unemployed workers in February, 2020, which increased to 54% in March, 2020, after the pandemic-caused shutdowns. Lund et al.(2020) state:

The March 14 household survey data from the Bureau of Labor Statistics (BLS) show that racial minorities make up 20 percent of the labor force but 25 percent of the newly unemployed. This disparity may in part result from a difference in the ability to work from home. White workers are 37 percent more likely than their nonwhite counterparts to hold jobs that can be performed remotely. Race is an especially strong predictor of job vulnerability in many large cities where the people staffing retail shops, bars, and restaurants are disproportionately nonwhite. (p. 8)

These data points highlight the need to expand current short-term recovery interventions as well as long-term strategies that bolster the economy for low-wage workers and increase their resilience to the impact of future economic crises.

The Impact of Industry 4.0

We are living and working in an era of unprecedented rates of change in technology, demographics, culture, economics, and the environment (Friedman, 2016). Set upon a foundation of global connectivity and trade in the early 2000's, the rapid advances in digital technology and social media that

exploded in 2007 were propelled by Moore's Law at such a pace as to challenge the relevance and viability of most established social and business norms in the developed world (Friedman, 2016). According to Gelsinger (2018), the four new superpowers of innovation are mobile technology, the cloud, artificial intelligence (AI) and the internet of things (IoT). Together, they are driving this advent of technological change and the subsequent societal and business responses. Gelsinger (2018) states:

As these innovations quickly mature and build on one another, they are reshaping every aspect of society, from healthcare to education to transport and financial inclusion. The question, then, is how do we ensure that these technological superpowers serve all of humanity? (para. 3)

It is in response to questions such as this that governments, institutions, and businesses are further exploring the impact of such changes to society and their corresponding business models, and employing innovation frameworks as a response (Gibson, 2015).

Seminal reports such as those from the McKinsey Global Institute and the Council on Foreign Relations (Alden & Taylor-Kale, 2018; Manyika et al., 2017) highlight the impact of Industry 4.0 and these technologies on economies, societies, and jobs. Well documented and researched predictions such as these garnered headlines and exemplified the need to rapid and innovative responses:

- As many as one-third of American workers may need to change occupations and acquire new skills by 2030 if automation adoption is rapid (Alden & Taylor-Kale, 2018; Manyika et al., 2017).
- Nearly two-thirds of the 13 million new jobs created in the US since 2010 required medium or advanced levels of digital skills, and there is a lack of such skills in the workforce (Alden & Taylor-Kale, 2018).

- By 2030, 375 million workers, 14% of the global workforce, may need to switch occupations as advances in artificial intelligence disrupt work (Manyika et al., 2017).

In addition to the technological challenges and opportunities posed by the four new superpowers, demographic shifts where declining birth rates are leading to decreased enrollment in traditional education and job training pathways are causing a dearth of skilled talent (Alden & Taylor-Kale, 2018; Blivin & Mayo, 2019; Manyika et al., 2017). In addressing the confluence of technological and demographic change, Manyika et al. (2017) state:

[W]ith sufficient economic growth, innovation, and investment, there can be enough new job creation to offset the impact of automation. . . . But [sic] a larger challenge will be ensuring that workers have the skills and support needed to transition to new jobs. Countries that fail to manage this transition could see rising unemployment and depressed wages. (p. 12)

It is in this context of ensuring a well-trained and relevant workforce that higher education has been called upon as a key industry for inculcating and expanding innovation in response to these challenges (Aoun, 2017; Alden & Taylor-Kale, 2018; Blivin & Mayo, 2019; Friedman, 2016).

These predictions are longer esoteric and removed from a local context. For example, recent research conducted by the University of Arizona in Pima County found that 42.5% of all jobs in Pima County are at risk for being disrupted or displaced by automation over the next decade (Hammond & Rice, 2018). This does not mean absolute job loss, as stated by Hammond and Rice (2018), “this does not necessarily imply net jobs losses for Pima County (or nationally).

Automation will displace workers from some jobs/occupations. It will also create jobs in other occupations, although those jobs will likely require more and different skills” (p. 4). In the analysis, Hammond and Rice found that the jobs at most risk of automation were the same jobs in which low-wage workers

are concentrated in Arizona, and were most impacted by the pandemic (e.g., food service, hospitality, low-level production, retail and sales).

Equally Sigelman, Bittle, Markow, Francis and Bersin (2019) found that these jobs will increasingly be hybrid and involve skill-sets across traditionally siloed occupations and industries. They state that hybrid jobs will grow twice as fast as non-hybrid jobs over the next decade. While the risk of job automation varies across industries and job types, in general, 42% of jobs are at risk of automation while only 12% of hybrid jobs have the same risk. Escobari, Seyal and Meaney (2019) highlight the opportunities and risks for low-wage workers in this respect:

Low-wage workers are struggling—and not for a lack of new jobs. The coming flood of innovation will create new tasks and occupations, and the labor market will demand new skills just as quickly as it will shrink others. Robots may not be likely to wholly replace America’s workers anytime soon, but the flood of new technologies will radically displace workers, eliminating jobs in some industries while expanding others. (p. 2)

In light of these trends, this Framework includes strategies that will assist Arizona in meeting the challenges of Industry 4.0. It is incumbent on educators and policy makers that we develop and support programs that meet these challenges and provide greater opportunity for emerging and incumbent workers, especially among low-wage earners, racial/ethnic minorities, and women.

Short-Term Interventions

The sudden onslaught of the pandemic, the immediacy of the economic downturn, and the historical rate and volume of unemployment led to rapid responses from multiple institutions of government, education, and employers. As with many things, the pandemic accelerated trends that were already underway (e.g., virtualization of learning) including the advent of automation in the workplace (Bouquet, 2020).

Upskilling and Reskilling Defined

Amidst the numerous reskilling efforts and rapid research underway, various terms have been used to define relearning, upskilling, recareering, and similar terms. We are using the World Economic Forum's (2019) definitions as follows:

- Upskilling: learning new competencies to stay in current role, due to the change in skills required, or adding certain competencies for career progression.
- Reskilling: learning new sets of competencies to transition to a completely new role. (p.4)

In this vein, upskilling and reskilling are processes, not events, that can occur rapidly or take time, depending on the skill set the worker(s) already possess. Thus, a system to assess workers' skills is essential to determining which workforce development services, and educational and training options are the most effective and efficient in terms of helping people meet their career goals, address their immediate needs, and ensure the highest and best use of public dollars.

In this context, we focus our efforts on reskilling due to the immediate impact of the pandemic as well as the sustained and projected effects of automation and demographic change. Workers who have been displaced by the effects of the pandemic-related economic downturn as well as those discouraged, marginally attached workers, and employed part-time for economic reasons, fall into three overarching categories for reskilling:

1. Workers eligible for immediate job placement in target industries;
2. Workers needing only short-term training in micro-pathways for job readiness in target industries; and,
3. Workers requiring a postsecondary certificate/degree/apprenticeship to reskill/recareer.

The pandemic has been detrimental to the livelihood of hundreds of thousands of Arizona workers and their families. Those displaced workers with the requisite and transferable skill set needed for immediate job placement in target industries and in-demand occupations should be placed as soon as possible through the services provided by the ARIZONA@WORK system and in partnership with employers who are hiring at this time. Over time, investment in instruments that more accurately quantify and align transferable skills across industries is needed for increased efficiency in this process.



Cochise College recently completed construction for a state-of-the-art cyber lab to provide training in innovative and cutting-edge programs like Virtual Reality Development and Cybersecurity.

Many workers will not have the requisite or transferable skills for placement into jobs with family-sustaining wages in target industries, but they will likely have multiple skills (World Economic Forum, 2019) that do transfer well to new jobs, and will only require a shorter-term training regimen to close the gap. In this context, Arizona's Community Colleges are developing micro-pathways in target industries and for in-demand occupations to address these needs. Education Design Lab defines micro-pathways as "two or more stackable credentials that can be packaged as a validated market signal connecting learners to employment in high growth careers" (Education Design Lab, 2020).

With respect to upskilling, the assessment of workers' skills may render a need for training and placement into new jobs within the same career pathway instead of reskilling altogether. The systems required for reskilling and upskilling are nearly the same, with two (2) key differences: (1) workers in need of upskilling will likely require training mainly in the second category of need (short-term training such as in micro-pathways for job readiness in target industries), and (2) the relevant training will usually follow the earning of a certificate and/or degree as compared to entry-level education and training (World Economic Forum, 2019). The impacts of automation will increase the need for upskilling at scale as lower-level jobs within industries are significantly altered or displaced altogether (Escobari, et al, 2019; Hammond & Rice, 2018)

Modalities

The pandemic also accelerated the shift online and hybrid modalities of education and training that was already underway, with an emphasis on preserving face-to-face instruction for those areas for which hands on and experiential learning experiences are absolutely required. While the rapid shift to online and hybrid modalities was necessitated by safety and circumstances of the economic shutdowns and social distancing protocols, there are indications that online and hybrid modalities are preferred by working adults

for reasons outside of the pandemic. Specifically, 30% of Americans indicate that online education is their preferred option, even if the pandemic were not a factor. Nearly half of women would choose an exclusively online option and 60% of Black Americans would do so if funding were available (Strada, 2020a). These data are verified by Coursera's 644% increase in enrollment during the pandemic and Udemy's 425% increase (SocialTech.ai, 2020). Community Colleges can be a differentiator in this space as most students would prefer a connection to their local institutions (SocialTech.ai, 2020). Equally, preference for non-degree and skills-based options simultaneously increased.

Since the onset of the pandemic, Strada Education Network has conducted frequent polls and studies on Americans' attitudes, behaviors, and preferences with respect to education and training as a result of the economic shutdowns and prior circumstances. Most telling regarding educational types, Strada (2020b) found that 68% of Americans have expressed a consistent preference for non-degree and skills training options, citing as their top reasons: better value; better fit for personal needs; and more beneficial to job and career advancement (Strada, 2020c). Additionally they found that 38% of Americans state that the most important factor in choosing an education program is whether or not the program is related to their work and suited to their personal needs, even above cost and convenience (28%) (Strada, 2020c).

Online and hybrid education creates opportunities for working learners to be engaged in the skill development process without having to leave the workforce. The shift to virtual and hybrid education was forced upon many institutions, but early indications are that it is a permanent change adult learners desire (Strada, 2020). As evidenced by the rapid shift to virtual and hybrid models of the pandemic, Arizona's Community Colleges will require additional resources to strengthen these models in terms of access and efficacy, especially for racial/ethnic minorities, women, and rural communities.

Recent Successes

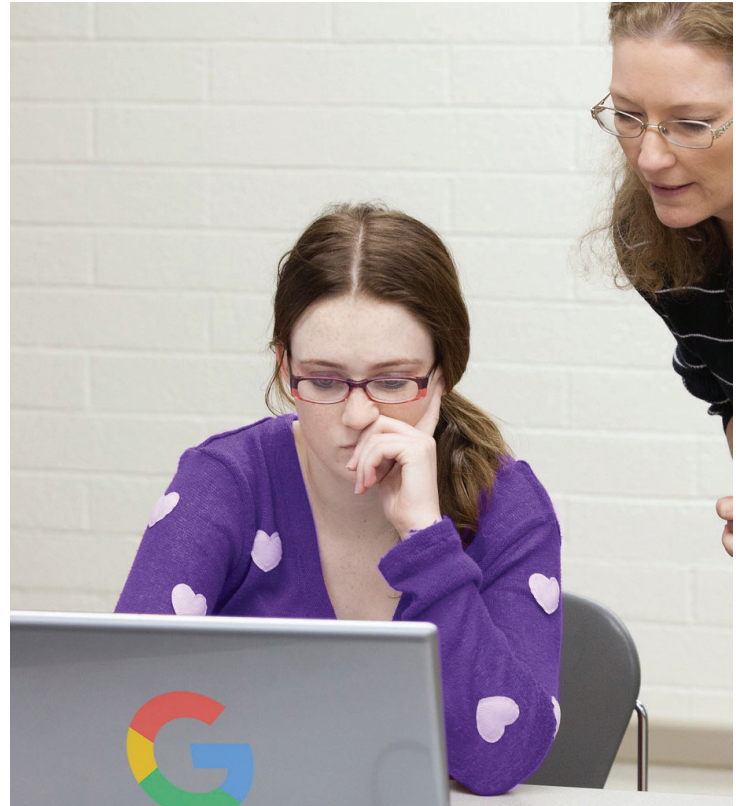
Arizona Return Stronger

In the Spring of 2020 Governor Ducey launched a new website to connect Arizonans statewide with employment training resources and virtual career counseling. The Return Stronger Upskilling website is designed to provide dislocated workers who are no longer employed due to the COVID-19 pandemic with a central place to learn about and connect with ARIZONA@WORK training opportunities.

The website brings together ARIZONA@WORK's comprehensive suite of training tools that provide support for those exploring a new career, assist those who wish to obtain an industry-recognized credential, or help workers complete their education by earning a GED. Additionally, the website connects job seekers with local career counselors who provide guidance and recommendations on programs and services aligned with their specific employment goals. To date, there have been 139,246 visits to the Return Stronger website and 17,796 form submissions (Maricopa County 61% of submission, Pima County: 13% of submissions, Rural Counties: 23% of submissions).

AC4 Google IT Certificate Initiative

Under the auspices of the AC4, Arizona's Community Colleges in collaboration with Jobs for the Future and Google, recently implemented the Google IT Support Certificate as a statewide consortium. Arizona's Community Colleges were approached by Jobs for the Future (JFF) in 2019 to lead a statewide effort to implement the Google IT Professional Support Certificate. In order to best support the initiative as a prototype for statewide economic recovery from the COVID-19 pandemic, the initiative was coordinated through the AC4 Workforce & Economic Development Committee.



Eastern Arizona College is part of a statewide consortium that offers students the Google IT Support Certificate.

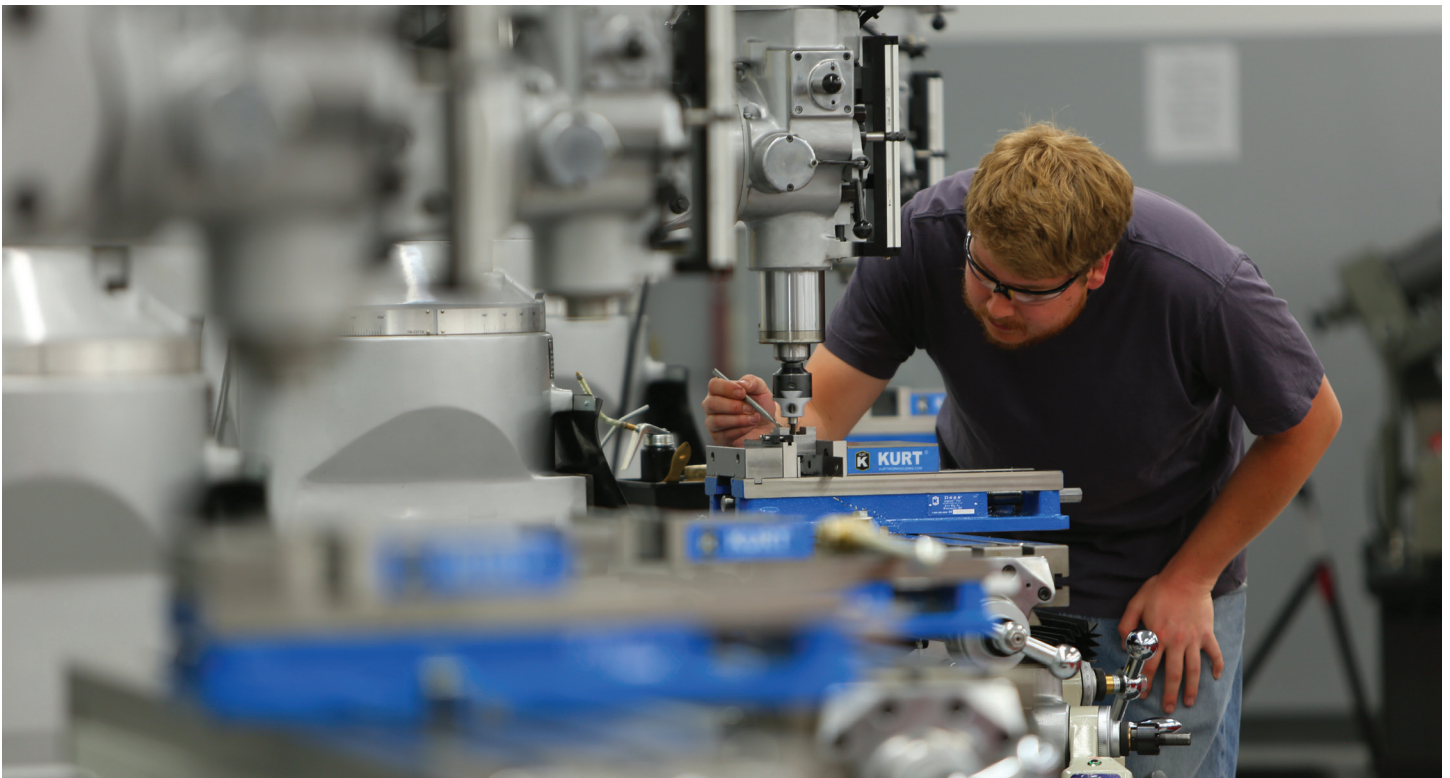
The Google IT Support Certificate is a 5-course certificate developed by Google that includes innovative curriculum designed to prepare participants for an entry-level role in IT support. The program is self-paced, competency-based, and wholly available online. The colleges launched the curriculum in both credit and noncredit options, and provided faculty and student services support through their learning management systems. Equally, the program is listed on the ARIZONA@WORK system's Eligible Training Provider List as an option for dislocated and displaced workers. The success of this initiative serves as a launching point for further statewide collaboration and coordination on workforce development programs, which will increase access to competency-based models and opportunities for prior-learning assessment (PLA) toward certificates and degrees; as well as increase opportunities for short-term training in virtual or hybrid modalities.

Arizona Advanced Technologies Network

The Arizona Advanced Technologies Network is an innovative partnership of state government, community college, industry, and nonprofit stakeholders. It was established in 2017 as the Arizona Advanced Technologies Corridor when Maricopa County Community College District, Central Arizona College and Pima Community College partnered together in collaboration with the Arizona Commerce Authority/Office of Economic Opportunity (ACA/OEO) to develop a unified, industry-recognized curriculum specifically designed to teach the skills needed for high-paying, high-tech advanced manufacturing jobs. The ACA/OEO provided labor-market data and convened industry and workforce system partners to garner support for and validate the work of the curriculum alignment effort. The community colleges worked together to unify their programs, and received over \$1.8 million funding

from the ACA/OEO to build the curriculum and purchase needed equipment to deliver the training.

The effort was successful and the three participating college districts launched their programs in the fall of 2018, as a unified Automated Industrial Technology program with stackable certificates, culminating in an Associate degree. Enrollment superseded expectations, with 540 students participating across the three college districts since the program launched in 2018. While the implementation of the unified Automated Industrial Technology program was the original goal of the Corridor, the consortium has expanded into the Arizona Advanced Technology Network in order to grow the manufacturing labor supply across Arizona. Multiple colleges participated in the parallel apprenticeship efforts and curriculum alignment for participating colleges will soon expand statewide.



A student at Gateway Community College receives training for a career in advanced manufacturing.

Systems Alignment and Initiatives

As previously highlighted, systems alignment efforts and strategic initiatives to strengthen and align our workforce are already underway such as: expanding early college high school models at scale in career & technical fields, expanding work-based learning and apprenticeship opportunities, developing short-term training programs for rapid reskilling, and increasing employer-sponsored education and training opportunities. Stronger policies and funding mechanisms are needed to solidify such efforts, improve system alignment and efficiencies, incentivize employer participation, and decrease labor market disparities among racial/ethnic minorities and by gender. A robust policy and funding agenda in this respect will further increase Arizona's competitive advantage in economic development from a position of strength in workforce development.

The Central Role of ARIZONA@WORK and Arizona's Community Colleges

As highlighted by Opportunity America, (2020), there are multiple entities involved in workforce development and all of them play an important role in ensuring employer perspectives are central, worker supports are included in program design, and diverse options are included to meet a myriad of workforce development challenges, especially in the pandemic recovery efforts. However, two systems provide the largest and most adaptable infrastructure, education and training options, and support services at the scale needed to meet this challenge: the public workforce system and the community colleges (Opportunity America, 2020).

In Arizona, this means the ARIZONA@WORK system and Arizona's Community Colleges hold this central role. Opportunity America (2020) concludes:

Both networks — community colleges and the public workforce system — are highly decentralized. Both sets of administrators are rooted in their regions, and the most effective place to spur reform is likely at the local level. What's needed starts with small, practical steps: co-location, combining staff and sharing labor market information. But that's only the beginning of what can be done. . . . Together, the two institutions can create a single, integrated talent pipeline to fuel economic growth across the region. (p. 95)

In this vein, community colleges continue to be where the vast majority of workers go to for education and training meet the Skills Training job levels as previously highlighted by the NSC (Figure 2), and as shown in Figure 4. In addition to providing the largest set of unified client

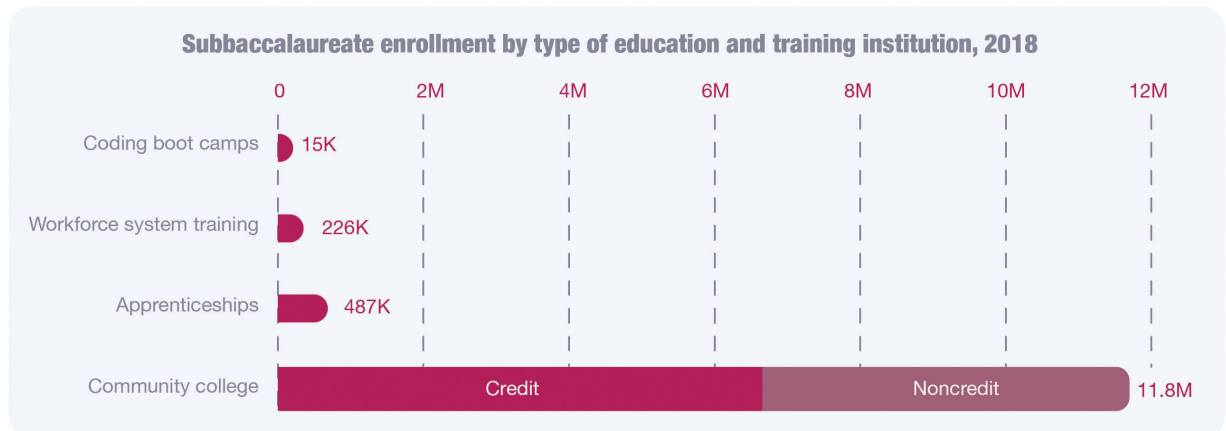


Figure 4. Subbaccalaureate enrollment by type of education and training institution, 2018, as shown in Opportunity America (2020)

support/job seeker services, the ARIZONA@WORK system maintains the most robust labor market data systems in Arizona at the state and local levels. Moving forward, the Arizona Commerce Authority/Office of Economic Opportunity is implementing an Integrated Data System (IDSA) that will synchronize data between Arizona's Community Colleges and the ARIZONA@WORK system.

State Longitudinal Data System

To better understand and improve government services, the state needs an integrated data system (IDS) to combine administrative data from various state agencies and educational institutions with the purpose of assessing the impact of those organizations on the lives of Arizonans over time. This will allow the state to better measure the value of various government programs and interventions; to understand how individuals may be affected by more than one agency; and to enhance government efforts to generate better outcomes.

The initial focus is to assess the efficacy of the education and workforce systems. For example, an IDS with integrated education-workforce data can be used by state policymakers to design and fund programs that help people gain skills effectively and move into sustainable jobs; by workforce program managers to measure the effectiveness of their services based on employment outcomes; by community colleges and universities to benchmark and improve outcomes for their students; by parents and students to support informed decisions on education choices; and by researchers who want to know what type of services are most effective.

Future studies may entail including data about health, health care, incarceration and other topics, allowing the state to have a broader view of how state agencies intersect with and affect the lives of Arizonans. OEO is overseeing the development of the IDS in phases. In the first half of 2021, OEO will develop and establish the IDS using the following individual-level data:

- Education records from the Maricopa County Community College District (MCCCD)
- Education records from the Pima County Community College District (PCC).
- Participant records from the Workforce Innovation & Opportunity Act programs in the Arizona Department of Economic Security (DES)

- Participant records from the Adult Education program in the Arizona Department of Education (ADE).
- Wage records from the Unemployment Insurance program data repository in OEO

Shifting Talent Strategically

The following strategies and initiatives are action items that, when employed in concert with each other, will shift talent strategically to Target Industries and In-Demand Occupations. More importantly, these strategies address issues of equity by increasing access to education and training, increased wages, and upward mobility out of low-wage job categories. We have shown how low-wage workers, racial/ethnic minorities, and women were disproportionately impacted by structural impacts of low-wage job markets, the impacts of Industry 4.0, and the pandemic. Each of these strategies is aimed at addressing these issues in the near-and-long terms.

Early College Models in CTE/Workforce Education

In Arizona, only 37% of high school students enroll in college within one year of high school graduation, while the average age of community college attendees is increasing (Lambert & Roark, 2019). This shows the need for increased intentionality in increasing early college participation and enrollment. Arizona's Community Colleges in partnership with CTEDs and the ARIZONA@WORK system seek to expand dual-credit enrollment opportunities for enrolled high school students and opportunity youth. These initiatives serve students in grades 9 through 12 and will target and enroll students who are at risk of dropping out of school and who might not otherwise go to college.

In addition to increased Career & Technical Education (CTE) dual-credit opportunities, CTE Early College High Schools allow students to enter high-skill and high-wage jobs in the target industries by earning a high school diploma, stackable credentials, and up to an Associate of Applied Science (AAS)

degree simultaneously. Building upon existing partnerships between Arizona's Community Colleges and secondary schools, and the subsequent and rapid increase in CTE dual credit, collaboration and planning among the colleges, secondary schools, the ARIZONA@WORK system, and local and regional business and industry partners, plans are already underway to expand CTE dual-credit enrollment up to and including the establishment of CTE Early College High Schools, with these goals:

- To create and sustain a college and career-focused culture among student groups in Arizona that are historically at-risk of dropping out of high school or that are underrepresented in college, by expediting attainment of stackable credentials and a AAS degree in high-skill and high-wage technical fields upon high school graduation;
- To maximize target population high school graduates' opportunities for family-sustaining wages in high-skill and high-wage careers in target industries in Arizona for increased social and economic upward mobility;
- To decrease the drop-out rate among student groups in Arizona that are historically at-risk of dropping out of high school or that are underrepresented in college;
- To better serve Opportunity Youth with increased access to high-school equivalency options and co-enrollment in CTE/Workforce educational opportunities; and,

- To improve effectiveness of existing CTE programs through efficient utilization of college and CTED facilities, human, technological, and curricular resources for the delivery of technical education.

As part of CTE dual-credit programs and Early College High Schools, students will be expected to undertake rigorous academics and career technical education coursework in order to graduate with a high school diploma and an AAS degree. These programs focus on student employment in target industries with the highest growth, demand, skills and wages in the region, including occupations in these career fields.



A dual enrollment student at Coconino Community College demonstrates items he created as part of an engineering class at Coconino High School, including a prosthetic hand and forearm made with the help of a 3D printer, Virtual Reality glasses, and a device straight out of an "Iron Man" movie that fires a shot of burning gas.

Work-Based Learning and Apprenticeship

Arizona Community Colleges are committed to providing education and training to our communities which results in certifications, and industry credentials to fill high-wage jobs at the Skills Training level that require more than a high school education, but not a four-year degree. In conjunction with this training, work-based learning opportunities in the form of internships and apprenticeships are a critical component of program offerings as they provide flexibility for employers and workers alike in terms of scheduling and access. These work-based learning opportunities can help bridge the gap to these jobs and serve various populations ranging from high school youth, opportunity youth, adult learners or incumbent workers in need of upskilling or specialized training.

Earn-and-learn models increase access and equity by allowing participants to gain viable skills while earning income and reducing student loan debt. Apprenticeships are a combination of job-related education, supervised on-the-job training, and include a wage progression after a certain level of skills attainment is reached. Apprenticeship provides a number of benefits for both employers and apprentices, and allows employers an opportunity to build a structured training program which meets both organization and industry standards. Mentors work alongside employees to provide training and allow apprentices to see the impact their actions have on productivity, quality, safety and customer service. Many industries are facing an aging workforce, and apprenticeship provides a structured system to successfully facilitate the transfer of knowledge from experienced employees to new recruits.

Arizona's Community Colleges are expanding the apprenticeship landscape in Arizona, not just by providing related technical instruction, but by partnering with employers to get programs started and taking on the role of intermediary sponsors. Last year, Pima Community College became the first community college in Arizona to become an intermediary sponsor. Since that time, Arizona Western College and Central Arizona College have also become sponsors, thus further demonstrating the growing reach and infusion of community colleges into workforce development.

To build capacity and scale the expansion, the aforementioned Arizona Advanced Technologies Corridor was awarded a U.S. Department of Labor grant to accelerate and expand earn and learn models in apprenticeship, both registered and industry recognized (IRAP). This grant project will create earn-and-learn apprenticeship programs in advanced manufacturing, and demonstrates that Arizona's community colleges are committed to working in collaboration with employers to build a stronger Arizona and serve over 3,000 participants over the next four years, almost doubling the current number statewide.



Central Arizona College and Sundt Construction, Inc. worked together to develop four craft trade pathways in structural welding, heavy equipment operation, pipefitting and industrial construction technology. Enrollment has grown to more than 300 students each year and more than 150 program graduates with a 100% employment placement rate.

Reskilling and Upskilling at Scale

The Reskilling and Recovery Network Framework provides the structure needed for Arizona to rapidly scale reskilling and upskilling efforts across the state. To best meet the needs of both Arizona's employers and workers, colleges must be flexible and offer interchangeable credit and non-credit programs that are aligned with third-party industry credentials and priority jobs.

Reskilling

Concentrating on the identified six target industries for Arizona, reskilling programming for each sector must include flexible training options to increase the success of adult learners and dislocated workers by providing multiple ways to earn industry-recognized credentials. This flexibility includes a combination of modalities, online whenever possible, with hands-on learning as needed in either an actual or simulated workplace environment. Participants can learn one competency at a time while taking flexible stackable non-credit courses, which when added together can fulfill degree requirements. Skills and certifications are aligned with industry needs and informed by industry advisory committees through a structured process. This alignment best facilitates a competency-based approach to skills attainment, which is needed for the rapid development of a qualified labor pool.

Upskilling and Lifelong Learning

As previously stated, the systems required for reskilling and upskilling are nearly the same, with two (2) key differences: (1) workers in need of upskilling will likely require training mainly in the second category of need (short-term training such as in micro-pathways for job readiness in target industries), and (2) the relevant training will usually follow the earning of a certificate and/or degree as compared to entry-level education and training (World Economic Forum, 2019). The impacts of automation will increase the need for upskilling at scale as lower-level jobs within industries

are significantly altered or displaced altogether (Escobari, et al, 2019; Hammond & Rice, 2018). Arizona's Community Colleges will increase upskilling opportunities, including increasing noncredit and short-term offerings and in partnership with industry.

Employer Leadership/Employer-sponsored Education and Training

Arizona Community Colleges are able to support upskilling of existing employees through Employer Sponsored Education and Training. By leveraging the federal tax benefit for such education (up to \$5,250 per participant per year), local workforce board incumbent worker training up to 20% of its Adult/Dislocated Worker allocation), and actively engaging employers to create customized training plans, Arizona's Community Colleges are able to provide additional benefits for employees while also filling needs within business partners' organizations. Training plans can be developed to facilitate training at the employer's site, or at a college's campus and can be delivered on a just-in-time timeline once curriculum is created. This initiative supports the upskilling needs of incumbent workers and is highlighted by Achieve60AZ (2020) as a key strategy for increasing educational attainment in Arizona in a workforce development context.

IETs in Adult Ed./HSE/Ability to Benefit

Integrated Education and Training (IET) is a WIOA-defined program model that integrates three required components: (1) adult education and literacy, (2) workforce preparation, and (3) workforce training. IETs offer basic skills instruction concurrently and in the context of the CTE career field, accelerating acquisition of both the basic academic skills and the career-specific skills. Successful IETs engage collaborative partners from Adult Basic Education, Career and Technical Education, and the ARIZONA@WORK system to provide the expertise and wraparound support needed to ensure student retention and completion.

The Ability to Benefit (ATB) provision of Federal Financial Aid (FFA) allows adult learners who do not yet have a High School Equivalency (HSE) diploma to use FFA to fund their CTE training as long as the student is enrolled in a career pathways program and the student can demonstrate the ability to benefit from postsecondary education. ATB expands access and equity for adult learners who have the ability to succeed in entry-level CTE certificate programs given the wraparound support of a career pathways program.

Although most adult education programs and many community colleges have piloted IET programming, the model is not yet being done at scale, which is needed to address equity issues stemming from low HSE levels in Arizona. The Reskilling and Recovery Network would do well to raise awareness about the value of the IET model and encourage all community colleges in Arizona to work closely with adult education programs to develop and offer ATB-eligible IET programs for career pathways that are aligned to in-demand occupations in the target industries. Equally, the most successful IET programs engage a group of collaborative partners in co-designing and co-implementing all programming and services. Community colleges and adult education programs alike would benefit from training in collaboration and IET program development.

Design for Industry 4.0

In light of the aforementioned impact of Industry 4.0 and the future of work, it is incumbent that we develop programs that meet the challenges of Industry 4.0 and provide greater opportunity for emerging and incumbent workers to be ready for these hybrid jobs, especially among low-wage workers, racial/ethnic minorities, and women. Work at Arizona's community colleges is already underway to prepare our communities for Industry 4.0. Some of these initiatives are highlighted below:

Arizona Western College - Unmanned Aerial Systems Certificate

Arizona Western College's Unmanned Aerial Systems program started in 2018. It is designed to prepare students for careers in the growing field of Unmanned Aerial Systems (UAS). The operations of UAS have a variety of research and commercial applications, with rapid growth and continually evolving applications. The college's flexible curriculum immerses students in either an in-depth or a cross-disciplinary approach to the study of geospatial science and aviation, maximizing a students' abilities to develop skills sets for hybrid-jobs in the field beyond the core disciplinary requirements of a degree program. The UAS program emphasizes remote observation with aviation fundamentals and complete knowledge on aviation safety and FAA regulations, and includes curricula and training in operations, remote sensing, data collection and analysis.

Maricopa Community College District Artificial Intelligence & Machine Learning Program

The MCCCCD Associate of Applied Science (AAS) in Artificial Intelligence and Machine Learning is the first such degree offered in Artificial Intelligence at the community and technical college-level in Arizona. It focuses on building machine learning models that can be used for predicting, making decisions and enhancing human capabilities. The program prepares students for entry level positions in a variety of fields using artificial intelligence, including the information technology, automotive, healthcare, aerospace, industrial, and manufacturing industries. The AI program consists of courses that have been developed by MCCCCD's faculty and Intel leaders based on Maricopa AI curriculum and Intel software and tools. Intel will also contribute technical advice, faculty training, summer internships, and Intel mentors for both students and faculty members. The program's first phase will start online at Estrella Mountain Community College and Chandler-Gilbert Community College.

Pima Community College - Autonomous Vehicle and Operations Specialist Program

Pima Community College developed the first in the Nation Autonomous Vehicle Driver and Operations Specialist certificate program in collaboration with autonomous truck company, TuSimple. The program equips certified truck drivers with the knowledge to prepare them for a career in the rapidly expanding industry of autonomous trucking. The program is an innovative, multi-disciplinary venture to upskill commercial drivers in the areas of logistics, computer information systems, autonomous vehicles, and automated industrial technology (basic electronics). With this program, Pima and TuSimple have demonstrated that autonomous driving can create new career opportunities. TuSimple has promised to prioritize hiring the certificate graduates for jobs at its Tucson testing and validation center. Pima launched the program in August 2019, The program is an example of Arizona's Community Colleges' strategic focus on workforce development, including the future of work. The curriculum will be available in collaboration with colleges nationwide as part of a larger initiative to help develop a pipeline of talent for autonomous trucking.

Yavapai College - 3D Construction & Affordable Housing

In January of 2020, Yavapai College launched what is believed to be the nation's first 3D Construction Program. The 3D Construction Program is a modification to the college's current construction program and features the emerging technology of 3D printing to construct houses. By using 3D printers, consumers will save an enormous amount of time and money to construct a house, as the 3D printer would print the interior and exterior walls of homes using a special concrete mixture. This new process would enhance several trades and early estimates suggest the printers can have the foundation, interior, and exterior walls completed for a medium-sized home in 3-5 days. After roofing, electrical, plumbing, and other services are installed, it is estimated that these 3D printed homes will help alleviate Yavapai County's attainable housing shortage. Yavapai College has begun exploring partnerships and determining curriculum for the program with the hopes of having the program up and running for the Fall 2020 semester.



Pima Community College and TuSimple representatives with TuSimple's self-driving truck (right) at TuSimple's testing and development center in Tucson, Ariz.

In this vein, future support is needed to ensure that Arizona's Community Colleges have the resources needed to develop education and training programs aligned to the ACA's Next Gen industry sectors.

Marketing/Connection Platforms

Meeting the workforce needs of industry in an expeditious manner is critical to the economic growth of our communities. Working as a state system to meet current and future employment demands necessitates a common tool for career exploration and job-seeking and placement. Such a tool can serve as a collaborative platform to build an ecosystem where employers, community colleges and the workforce system can intersect and drive talent to priority jobs within the target industries. A unified platform to drive the workforce to an established set of career pathways allows for the efficient assessment of skills and interests, career exploration, and direct connection to credit and noncredit training aligned to

industry needs and which is available through the colleges. Employers' ability to post open positions and hire based on skills matching, lends itself to a strategic model and direct connections between students/trainees and available jobs with family-sustaining wages and opportunities for advancement. In this vein, Maricopa CCCD is currently piloting PipelineAZ and will implement the tool for all career exploration and job placement functions in the college district.



Arizona Western College creates career track jobs through programs like culinary arts that prepares students for careers in food service.

Supporting Policy Recommendations

Expenditure Limit Changes

The EL formula, an Arizona Constitutional provision adopted by voters in 1980, limits community college spending based on each district's 1980 expenditures, adjusted for student growth and inflation. This formula is outdated and disincentivizes, in some cases prohibiting, the development of the types of programs and capital investment required to replicate and scale the types of initiatives highlighted above. This formula assumes that the services provided and sophistication of CTE offerings necessary to grow Arizona's economy have not changed since the adoption of this limit 40 years ago. Since Arizona's Community Colleges provide the high quality/high cost workforce programs students and business partners demand, and ensure swift economic recovery and long-term, sustainable economic growth, the expenditure limitation problem must be addressed.

The expenditure limit has long presented a challenge for community colleges, one that has grown more critical over the past 5 years. The EL formula assumes that college programs look (and cost) about the way they did in 1980. In reality, the cost to maintain workforce programs that meet the demands of Arizona businesses has skyrocketed. Currently, it costs, in general, 10 to 12 times more to educate a nurse than it does an English major. While the formula is written into Arizona's Constitution, the language allows the legislature to define how students are counted and/or weighted for EL calculation purposes.

Workforce Development, Short-term Training, and Expenditure Limit Changes

Proposed structural changes to the Expenditure Limit (EL) formula that support the Strategic Initiatives outlined in this Framework include:

- Weight CTE/workforce training to better reflect the cost differential between workforce and academic programs (change the definition of a FTSE for workforce specific courses/programs).

- Allow FTSE generated for non-credit workforce training for reskilling and upskilling to be included in the EL calculations.
- Exclude dedicated workforce funding appropriated by the legislature from the definition of "local revenues" as was done for Prop 301 funds. This would allow the colleges to spend those monies as directed by the State without the artificial barriers the EL formula creates. This could either happen through a legislative change or by designating STEM Workforce and other workforce specific funding as grants vs. appropriations.
- Exclude certain expenditures from EL calculations:
 - Debt service portion of State retirement contributions
 - IT costs
 - Capital equipment
- Revise the statutory FTSE formula to better reflect our students course-taking patterns (primarily part-time) and respond to market needs for short-term training.

Related Federal Policy

Arizona's Community Colleges support the expansion of Pell Grant funding to include short-term credit and noncredit workforce development programs as outlined in the American Association of Community Colleges (Baime, Juszkiwicz, & Phillippe, 2020).

Technology and Innovation Workforce Development Fund

In 2019, House Bill 2657 was drafted to establish a Technology and Innovation Workforce Development Fund to support employer training of incumbent and net new employees with specific provisions requiring that employers partner with one of Arizona's Community Colleges, recognizing our value of high quality workforce development and technical training. The provisions of former House Bill 2657 as well as other similar programs, such as the Skills Development Fund in Texas, would establish a program that simultaneously addresses the economic development priorities of the

Target Industries, workforce needs of employers seeing to relocate or expand in Arizona, and the upskilling/reskilling needs of incumbent workers, while maximizing the training capacity of Arizona's community colleges. We recommend the establishment of the Technology and Innovation Workforce Development Fund as a partnership program between the ACA/OEO, Arizona's Community Colleges, and Arizona employers.

Expansion of the Arizona Advanced Technologies Network to Rural Communities

As Arizona companies continue to face major challenges in sourcing and hiring qualified talent, the demand for state-wide educational programs that meet these specific needs continues to be a priority for communities across Arizona. We recommend funding the formal expansion of the Arizona Advanced Technology Corridor (AATC), which currently includes Maricopa Community College District, Central Arizona and Pima Community College, into a statewide network of community colleges serving multiple geographic rural areas across Arizona. This includes the establishment of a shared governance structure among the participating colleges for the Advanced Technology Network (AATN), and seed funding akin to the approximately \$600,000 that original AATC college districts each received from OEO.

The transition of the Arizona Advanced Technology Corridor (AATC) into the Arizona Advanced Technology Network (AATN) would enhance an emerging workforce by offering a unified certificate program, universally recognized by all Arizona community college partners. Leading rural sectors would benefit from an expanded pool of a certified workforce that have a matching skill set of proven abilities that could potentially fill immediate jobs across aligned industries and contribute to the growth and development of the economic diversity in each rural region. Graduates of the Arizona Advanced Technology Network would serve as an essential workforce tool in helping current Arizona rural companies

expand, while also attracting additional companies to the state, making Arizona a destination of choice for high-value manufacturing companies.

Dual-Credit Cap Removal

In the 2021 Arizona state legislative session, House Bill 2021 proposed the elimination of the 25% class cap for Dual Enrollment in Arizona for students in the ninth and tenth grades, placing an artificial cap on students that are ready for college-level coursework. The bill also enabled students taking the equivalent of three (3) credit hours of college coursework to receive a full Carnegie unit toward their high school diploma instead of ½ of a Carnegie unit as is the case now. These changes are needed in order for Arizona Community Colleges to implement CTE Early College High Schools and streamline ARIZONA@WORK programs for Opportunity Youth that lead to college credit in high-demand jobs in Target Industries. Only two early college high schools exist in Arizona, and the elimination of this cap will increase opportunities for all high school students to earn college credit up to and including an Associate degree. This will increase student access and success, especially among racial/ethnic minorities and female students.

ApprenticeshipAZ

In Arizona many people are employed, yet still struggling to make ends meet and looking for opportunities to build their skills (Achieve60AZ, 2020). At the same time, employers are looking to fill high-wage jobs at the Skills Training level. Earn and learn work-based models, such as apprenticeships meet both of those needs. However, Arizona is absent from the list of states with a policy to support and encourage businesses to establish work-based learning and apprenticeship programs (Wilson & Mehta, 2017). By taking a systems approach, ApprenticeshipAZ would assist eligible Arizona businesses who sponsor or develop a registered apprenticeship program to receive a \$1,000 direct tax credit for each registered apprentice employed for at least six months during each

year of apprenticeship for up to four years. The tax credit could be used as an incentive to increase the number of apprenticeships offered in our state and is intended to offset the direct and indirect costs of establishing the registered apprenticeship program. Implementing ApprenticeshipAZ could attract new companies interested in moving to the state and also would provide a comprehensive workforce solution to their workforce needs. A statewide approach would demonstrate Arizona's commitment to education, business and industry and its communities by preparing our state's workforce for the jobs of today, the careers of tomorrow and economic growth.

Ability to Benefit/Integrated Education and Training

Federal Financial Aid guidance on the Ability to Benefit (ATB) provision allows each state to define their own criteria for ATB student eligibility. This state-defined option needs U.S. DOE approval before it can be implemented. The Office of Career Technical and Adult Education (OCTAE) has indicated that, absent a state-wide community college board in Arizona, individual colleges can submit a proposal for a new state option on behalf of the colleges in the state. Thus, we recommend a State-Defined Option for ATB Eligibility in Arizona.

Arizona's Community Colleges will design a Dual-Credit Model for Adult Learners and Opportunity Youth. As of now, dual enrollment is restricted to learners enrolled in K-12 school districts. California recently expanded the definition of dual enrollment students to include adults, which allows the use of the dual enrollment model with adult learners, circumventing the need to use ATB. Thus, we recommend that Arizona expand the language around dual-credit to include Adult Education students to allow colleges more leeway to offer concurrent CTE and Adult Education.

Related Federal Policy

At the federal level, COABE and NSC have identified a need for additional funding for federal WIOA Title II to support the educational needs of Adult Learners as a result of the pandemic and to help them to access reskilling and upskilling (professional learning, technology needs such as hotspots/wifi/laptops, additional staffing, costs of assessment, and student supports). At the federal level, the ask is for \$692 million for WIOA Title II adult education programs in the final FY21 appropriations bill. Additional federal allocations would allow local education agencies to hire more full-time professionals and invest in systemic professional development. At the state level, the ask is for Governors to use Governor's Emergency Education Relief (GEER) funding from CARES act to support Adult Ed (professional learning, technology needs such as hotspots/wifi/laptops, additional staffing, costs of assessment, and student supports).

Prior Learning Assessment

In May of 2016, the Arizona State Legislature passed Senate Bill 1267, which requires that under Arizona Revised Statute 15-1898, veterans be awarded credit for their prior learning while in the military. Passage of this bill allowed not only veterans to receive credit for previously acquired knowledge and learning, but also translated to awarding of credit for all working adults, regardless of veteran status. We recommend that the provisions of former SB 1267 be expanded to include all client populations of the ARIZONA@WORK system as well as provisions for first responders, apprentices, and licensed professionals seeking enrollment in Arizona's Community Colleges. Further prioritizing the awarding of credit for prior learning to more identified populations, including the required Title clients of ARIZONA@WORK, and training ARIZONA@WORK job center staff on opportunities for Prior Learning Assessment at each college reduces barriers to entry for working adults into community college programs. This strategy will help close the skills gap, particularly for racial/ethnic minorities and women.

Assess & Refine

The efficacy of Reskilling and Recovery Framework will be measured against these quantitative and qualitative measures, with an emphasis on economic impact, job growth, effectiveness of education and training, and equity in both access and success for targeted populations including racial/ethnic minorities and women. The following high-level metrics will be used and refined accordingly:

- Job placement rates including in Target Industries and In-Demand Occupations;
- Decrease in skills gap in Arizona as measured by the movement of workers with high-school equivalency or less to Skills Training level;
- Movement of low-wage workers into jobs with family-sustaining wages;
- Increase in documented Public-Private Partnerships including Employer Sponsored Education and Training and Work-based Learning/Apprenticeships;
- Improved performance in WIOA and other workforce development metrics; and,
- Economic impact of workforce development efforts.



Yavapai College's School of Career and Technical Education has partnered with Freeport McMoRan and other companies to develop apprenticeship programs. Freeport McMoRan provides tuition, books, and supplies, and offers paid jobs for students while they are in school.

Operational Plan

In order to bring the systems alignment efforts and strategic initiatives to full scale, an operational plan will be developed by Arizona's Community Colleges in partnership with ARIZONA@WORK and other stakeholders. This plan will outline the process and operations by which the three categories of workers for reskilling/upskilling are served. To reiterate, these workers are those who have been displaced by the effects of the pandemic-related economic downturn and those discouraged, marginally attached workers, and others employed part-time for economic reasons. As cited previously, the three overarching categories of workers for reskilling are:

1. Workers eligible for immediate job placement in target industries;
2. Workers needing only short-term training in micro-pathways for job readiness in target industries; and,
3. Workers requiring a postsecondary certificate/degree/apprenticeship to reskill/recareer.

At a high-level, these major components of the operational plan will be developed by June of 2021:

- 1. Workers Served:** Identification of displaced, discouraged, and marginally attached workers, and those employed part-time for economic reasons.
 - Identification of workers eligible for ARIZONA@WORK services and funding.
 - Identification of workers not eligible for ARIZONA@WORK services and funding.
- 2. Skills Assessed:** Skills assessment of workers by the three categories.
- 3. Education and Training:** Identification and solidification of reskilling education and training regimen aligned to the target industries.
 - Reskilling education and training regimen developed or in development by Arizona's Community Colleges to be placed on ETPL.
 - Development and implementation of new programs if needed.



Eastern Arizona College's Nursing Program is a National League for Nursing Center of Excellence that prepares students for immediate entry into the workforce and advanced studies.

- 4. Funding:** Identification of funding related to reskilling among local, state, and federal resources.
- Identify funding streams that exist, including WIOA, CARES, grants, employer-sponsored education/training, and foundation funding.
 - Compare to reskilling needs and identify further funding sources, if needed.
 - Align funding to strategic initiatives identified in the Reskilling & Recovery Workforce Development Education & Training Framework.
- 5. Marketing and Outreach:** Develop and implement a marketing and outreach campaign for Workforce Development and training initiatives.
- Include brand development for the effort.
 - Design campaign around the three populations' needs.
 - Orient campaign around services and connections to training programs and supportive services.
 - Engage employers with respect to upskilling, work-based learning, employer-sponsored education and training, and supportive services.

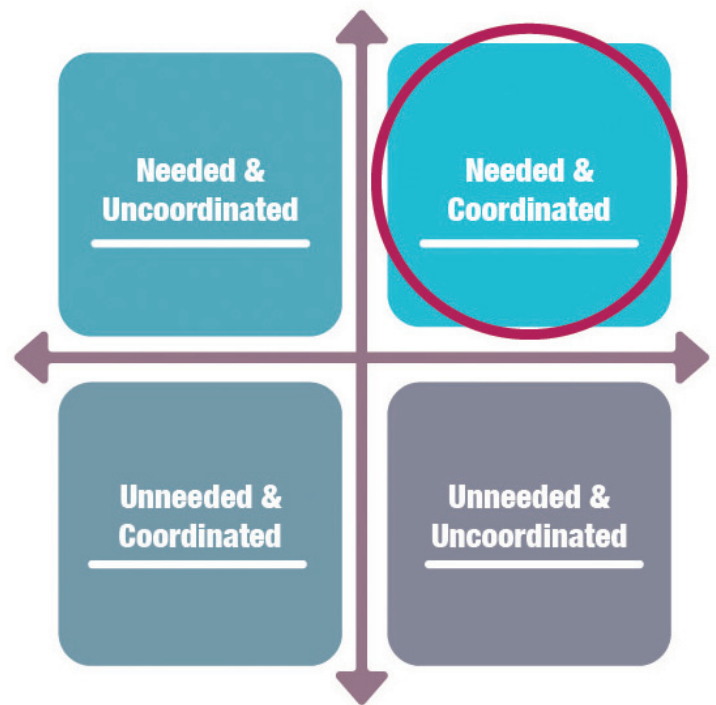


Figure 5. Duplication of efforts matrix

training regimen can add value to populations served, but the uncoordinated duplication and implementation of such solutions diffuses resources and lessens the impact on those we aim to serve. We will strive for the needed and coordinated quadrant with this plan, to maximize public resources that exist in the context of stewardship and mission fulfillment, and to garner private support for efficient and effective education and training solutions.

As with any systematic effort, the implementation of the Workforce Development and Training Framework for Recovery and Response requires inclusivity, partnership expansion, and broad-based participation. Equally, it requires careful attention to how and when efforts are duplicated among stakeholders, as indicated in the Duplication of Efforts Matrix (Figure 5).

Some problems are large and complex enough to require duplication of efforts. This is the case with the large scale economic devastation and workforce challenges caused by the pandemic. However, unneeded and uncoordinated efforts as shown in the lower-left quadrant, do not help and oftentimes create more systemic problems. Equally, unneeded efforts that are well coordinated waste time and resources needed to bring solutions to bear. Interestingly and as shown in the upper left quadrant, needed solutions such as reskilling

Reskilling & Recovery - Bringing it all Together

Acceptance and implementation of the initiatives and supporting policy recommendations of this Reskilling and Recovery Framework will bolster the short-term interventions underway as well as ensure long-term initiatives and strategies that will strengthen Arizona's economy and increase job growth and prospects. Specifically, leveraging the strengths of Arizona's two largest and most organized workforce development systems--Arizona's Community Colleges and the ARIZONA@WORK system--provides Arizona an efficient and effective means to long-term job growth as we recover from the impact of the COVID-19 pandemic. In accordance with the aims of Achieve60AZ and our economic development goals, these are the outcomes of the Reskilling and Recovery Framework for Arizona:

1. Career Pathways & Family-Sustaining Wages

- Career pathways in Arizona are data-driven in the context of Target Industries and In-Demand Occupations and have demonstrated upward mobility for learners and workers.
- Early college models are scaled and all high-school age youth have an opportunity to earn college credit in a technical field and/or participate in a youth apprenticeship.
- We will increase work-based learning opportunities/apprenticeships for incumbent workers in Target Industries and In-Demand Occupations.
- We will maximize upskilling opportunities through ARIZONA@WORK client services aligning to Arizona Community Colleges' offerings and the reestablishment of the Job Training Grant.
- Increase opportunities for reskilling and upskilling through certificates and degrees for all Arizonans

2. Employer Leadership

- We will strengthen employer-led sector partnerships.
- Work-based learning and apprenticeships will increase.
- We will continue to support placement in programs that lead to family-sustaining wages (e.g., So. AZ Women's Foundation model).

- We will support incentives to expand employee retention strategies and employer sponsored education/training.

3. Future of Work

- Allow for career lattices so that workers can move across sectors and close skills gaps expeditiously through short-term training.
- We will increase programs to expand hybrid jobs and prepare for future impacts of Industry 4.0.
- We will increase digital literacy at all skill levels.
- Data systems will be aligned to the ACA/OEO Integrated Data System (IDS)

System Access and Equity

Arizona's workers face multiple barriers as they reskill and upskill in the workforce. As the provisions of the Framework are implemented, supporting meaningful access and equity to training and employment opportunities must also look toward barrier reduction and access to: transportation, affordable high-speed broadband, and medical/behavioral health services. Additionally, one of the most significant barriers for training and/or working parents is affordable childcare. Expanded access to high quality and affordable child care whether through subsidies or public-private partnerships is essential for parents ability to reskill and rejoin the workforce.

Local Community Based Organizations (CBO's) that support students, families, veterans and dislocated workers are key partners for Arizona's Community Colleges in supporting reskilling and recovery. CBO's such as Chicanos Por La Causa and Job Path collaborate directly with the college and provide holistic supports to mitigate the multiple barriers faced by Arizona families. An innovative solution that employers can implement to support and retain their existing and newly hired workforce is through an Employer Resource Network or ERN. In an ERN, employers form a consortium and pool resources to provide much needed supports to employees. Supports include case management, success coaching, and connections to community resources.

Closing

The far-reaching implications of the COVID-19 pandemic have challenged our economy and caused disruptions that may last for a generation or more. In spite of the strong fundamentals of the American and Arizona economy, the effects of the pandemic and the subsequent recovery have not been experienced equally or equitably. As cited, many Arizonans remain unemployed or employed in low-wage jobs, especially among discouraged and marginally attached workers, racial and ethnic minorities, and women. Equally, the long-term effects of Industry 4.0 (e.g., automation, artificial intelligence, cloud

computing, mobile technology), demographic change such as the birth-death, high levels of low-wage jobs, and disproportionately low education levels serve as limiting factors to future economic development and growth. In this context, the strategic alignment, initiatives, and policy recommendations of this Arizona Reskilling & Recovery Framework will help us better serve our employers and communities, and strengthen opportunities for upward mobility for all of Arizona's workers.



Cochise College's Cybersecurity Associate of Applied Science degree prepares students for employment in the field of information systems security.

Appendix A: Arizona In-Demand Occupations

Occupation Title	Average Annual Wages (2018)	Employment (2018)	Annualized Proj Emp Pct Chg (2018-2020)	Annual Projected Openings (2018-2020)	Education Level ¹	Rating by Education Level
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¹ Education categories represent the minimum education level required for a given occupation. Education categories are assigned by the United States Bureau of Labor Statistics.

Accountants and Auditors	\$69,185	21,532	3.4%	2,680	Bachelor's degree	4
Aerospace Engineering and Operations Technicians	\$71,505	588	4.4%	78	Associate's degree	4
Aerospace Engineers	\$107,233	2,225	3.7%	220	Bachelor's degree	3
Aircraft Mechanics and Service Technicians	\$62,275	5,272	2.4%	537	Postsecondary non-degree award	4
Airline Pilots, Copilots, and Flight Engineers	\$132,244	3,192	2.4%	379	Bachelor's degree	3
Anesthesiologists	\$279,164	1,147	3.3%	69	Doctoral or professional degree	3
Architects, Except Landscape and Naval	\$95,223	1,858	3.4%	199	Bachelor's degree	3
Architectural and Civil Drafters	\$58,701	1,936	4.3%	255	Associate's degree	3
Automotive Service Technicians and Mechanics	\$44,360	17,084	2.7%	2,078	High school diploma or equivalent	5
Billing and Posting Clerks	\$38,252	11,830	3.6%	1,627	High school diploma or equivalent	3
Bookkeeping, Accounting, and Auditing Clerks	\$40,934	24,416	2.0%	3,240	High school diploma or equivalent	3
Brickmasons and Blockmasons	\$46,291	1,148	3.9%	146	High school diploma or equivalent	3
Bus and Truck Mechanics and Diesel Engine Specialists	\$46,636	5,816	3.0%	702	High school diploma or equivalent	4
Bus Drivers, Transit and Intercity	\$42,277	3,995	4.0%	661	High school diploma or equivalent	4
Business Operations Specialists, All Other	\$67,667	14,202	2.5%	1,652	High school diploma or equivalent	5
Carpenters	\$43,461	17,737	4.8%	2,540	High school diploma or equivalent	5
Cement Masons and Concrete Finishers	\$41,746	6,801	5.7%	1,160	Less than high school	5
Chemical Equipment Operators and Tenders	\$40,194	617	6.1%	108	High school diploma or equivalent	4
Civil Engineers	\$84,770	5,200	4.2%	610	Bachelor's degree	5
Cleaners of Vehicles and Equipment	\$25,672	8,758	3.4%	1,556	Less than high school	4

Commercial Pilots	\$79,994	1,736	2.7%	212	High school diploma or equivalent	4
Computer Network Architects	\$101,752	2,842	3.2%	278	Bachelor's degree	3
Computer Network Support Specialists	\$60,547	5,471	2.8%	559	Associate's degree	3
Computer Occupations, All Other	\$85,013	7,352	3.2%	734	Bachelor's degree	3
Computer Systems Analysts	\$88,972	13,680	3.1%	1,322	Bachelor's degree	5
Computer User Support Specialists	\$52,087	14,879	3.1%	1,575	Some college, no degree	5
Computer-Controlled Machine Tool Operators, Metal and Plastic	\$38,819	1,121	4.2%	162	High school diploma or equivalent	4
Construction and Building Inspectors	\$56,809	1,945	2.5%	261	High school diploma or equivalent	3
Construction Laborers	\$36,000	25,196	4.4%	3,774	Less than high school	5
Cost Estimators	\$66,412	4,922	5.6%	785	Bachelor's degree	5
Cost Estimators	\$66,412	4,922	5.6%	785	Bachelor's degree	4
Counter and Rental Clerks	\$27,268	9,928	2.7%	1,558	Less than high school	3
Customer Service Representatives	\$34,574	89,224	2.5%	13,821	High school diploma or equivalent	4
Dental Assistants	\$40,677	7,445	3.4%	1,090	Postsecondary non-degree award	3
Dental Hygienists	\$85,887	3,059	3.4%	291	Associate's degree	4
Dental Laboratory Technicians	\$45,240	871	4.2%	136	High school diploma or equivalent	3
Dentists, General	\$186,869	3,254	3.5%	201	Doctoral or professional degree	5
Dentists, General	\$186,869	3,254	3.5%	201	Doctoral or professional degree	4
Diagnostic Medical Sonographers	\$83,317	2,026	4.4%	198	Associate's degree	5
Drywall and Ceiling Tile Installers	\$41,832	5,055	4.2%	674	Less than high school	5
Earth Drillers, Except Oil and Gas	\$51,987	740	3.4%	105	High school diploma or equivalent	3
Electrical and Electronics Engineering Technicians	\$63,549	2,844	3.0%	334	Associate's degree	3
Electrical Engineers	\$106,257	4,711	3.3%	462	Bachelor's degree	4
Electrical Engineers	\$106,257	4,711	3.3%	462	Bachelor's degree	3
Electrical Power-Line Installers and Repairers	\$81,948	1,852	1.9%	183	High school diploma or equivalent	3

Electricians	\$47,947	12,478	4.4%	1,985	High school diploma or equivalent	5
Electronics Engineers, Except Computer	\$103,512	5,728	3.2%	554	Bachelor's degree	4
Emergency Medical Technicians and Paramedics	\$38,263	3,476	3.2%	324	Postsecondary non-degree award	3
Engineering Technicians, Except Drafters, All Other	\$59,207	2,298	3.5%	284	Associate's degree	5
Engineers, All Other	\$94,448	2,409	3.6%	246	Bachelor's degree	4
Excavating and Loading Machine and Dragline Operators	\$48,335	1,209	3.4%	178	High school diploma or equivalent	3
Family and General Practitioners	\$209,808	3,534	3.1%	207	Doctoral or professional degree	4
Family and General Practitioners	\$209,808	3,534	3.1%	207	Doctoral or professional degree	3
Financial Analysts	\$78,648	5,218	3.6%	640	Bachelor's degree	3
Health Technologists and Technicians, All Other	\$48,838	3,732	4.0%	388	High school diploma or equivalent	4
Healthcare Social Workers	\$62,917	4,234	4.0%	612	Master's degree	4
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	\$46,042	8,902	5.5%	1,395	Postsecondary non-degree award	5
Heavy and Tractor-Trailer Truck Drivers	\$45,429	26,794	2.9%	3,701	Postsecondary non-degree award	5
Helpers--Carpenters	\$34,077	591	7.4%	135	Less than high school	4
Helpers--Production Workers	\$28,845	3,326	3.8%	642	Less than high school	3
Home Health Aides	\$25,466	17,290	5.9%	3,092	Less than high school	5
Industrial Engineering Technicians	\$63,515	2,163	3.1%	258	Associate's degree	4
Industrial Engineering Technicians	\$63,515	2,163	3.1%	258	Associate's degree	3
Industrial Engineers	\$95,943	4,270	4.6%	487	Bachelor's degree	5
Industrial Machinery Mechanics	\$50,990	3,976	2.9%	467	High school diploma or equivalent	4
Industrial Truck and Tractor Operators	\$35,906	11,132	6.4%	2,036	Less than high school	5
Information Security Analysts	\$93,958	2,980	4.7%	352	Bachelor's degree	4
Information Security Analysts	\$93,958	2,980	4.7%	352	Bachelor's degree	3

Installation, Maintenance, and Repair Workers, All Other	\$42,761	4,896	3.3%	641	High school diploma or equivalent	5
Installation, Maintenance, and Repair Workers, All Other	\$42,761	4,896	3.3%	641	High school diploma or equivalent	4
Insurance Sales Agents	\$59,157	9,475	2.5%	1,153	High school diploma or equivalent	3
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	\$26,406	38,197	2.4%	5,939	Less than high school	3
Laborers and Freight, Stock, and Material Movers, Hand	\$31,463	40,058	4.4%	7,435	Less than high school	5
Landscaping and Groundskeeping Workers	\$28,733	25,758	2.7%	3,838	Less than high school	4
Lawyers	\$145,746	12,312	3.2%	923	Doctoral or professional degree	5
Licensed Practical and Licensed Vocational Nurses	\$54,086	6,839	2.9%	691	Postsecondary non-degree award	4
Light Truck or Delivery Services Drivers	\$39,144	16,470	3.9%	2,464	High school diploma or equivalent	5
Loan Interviewers and Clerks	\$40,528	18,822	2.9%	2,368	High school diploma or equivalent	4
Logisticians	\$74,784	2,447	4.0%	342	Bachelor's degree	3
Machinists	\$48,300	9,299	4.3%	1,377	High school diploma or equivalent	5
Magnetic Resonance Imaging Technologists	\$79,118	1,039	3.3%	89	Associate's degree	3
Maintenance and Repair Workers, General	\$37,706	27,006	2.9%	3,479	High school diploma or equivalent	5
Maintenance Workers, Machinery	\$46,174	1,572	3.5%	220	High school diploma or equivalent	3
Management Analysts	\$85,886	12,816	3.2%	1,530	Bachelor's degree	5
Management Analysts	\$85,886	12,816	3.2%	1,530	Bachelor's degree	4
Market Research Analysts and Marketing Specialists	\$62,925	10,360	4.5%	1,504	Bachelor's degree	5
Massage Therapists	\$42,338	3,288	3.6%	467	Postsecondary non-degree award	3
Mechanical Engineers	\$98,389	4,514	4.6%	502	Bachelor's degree	5
Medical Equipment Preparers	\$36,657	1,545	3.7%	255	High school diploma or equivalent	3
Medical Secretaries	\$36,110	13,510	3.9%	2,033	High school diploma or equivalent	4
Mobile Heavy Equipment Mechanics, Except Engines	\$52,668	4,492	3.1%	576	High school diploma or equivalent	5

Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	\$36,191	1,687	3.6%	247	High school diploma or equivalent	3
Network and Computer Systems Administrators	\$85,849	7,916	2.6%	700	Bachelor's degree	3
Nonfarm Animal Caretakers	\$27,314	5,840	3.5%	1,108	Less than high school	4
Nurse Practitioners	\$110,751	3,296	5.1%	342	Master's degree	5
Occupational Therapists	\$94,803	2,057	4.0%	187	Master's degree	4
Occupational Therapists	\$94,803	2,057	4.0%	187	Master's degree	3
Office Clerks, General	\$37,732	52,431	2.1%	7,330	High school diploma or equivalent	3
Operating Engineers and Other Construction Equipment Operators	\$47,105	7,876	3.4%	1,154	High school diploma or equivalent	4
Operations Research Analysts	\$76,761	3,314	5.7%	398	Bachelor's degree	4
Operations Research Analysts	\$76,761	3,314	5.7%	398	Bachelor's degree	3
Packers and Packagers, Hand	\$26,775	5,618	4.7%	1,152	Less than high school	4
Painters, Construction and Maintenance	\$37,993	8,064	4.2%	1,057	Less than high school	5
Paralegals and Legal Assistants	\$48,374	6,061	4.1%	881	Associate's degree	3
Parts Salespersons	\$33,554	5,615	2.9%	874	Less than high school	4
Paving, Surfacing, and Tamping Equipment Operators	\$41,503	1,765	5.0%	277	High school diploma or equivalent	4
Personal Financial Advisors	\$107,164	4,419	4.3%	534	Bachelor's degree	4
Personal Financial Advisors	\$107,164	4,419	4.3%	534	Bachelor's degree	3
Pharmacists	\$125,206	5,572	2.3%	370	Doctoral or professional degree	3
Physical Therapists	\$88,798	3,970	4.3%	340	Doctoral or professional degree	5
Physician Assistants	\$101,591	2,446	5.2%	266	Master's degree	5
Physicians and Surgeons, All Other	\$229,086	6,293	2.8%	345	Doctoral or professional degree	4
Pipelayers	\$43,975	646	3.4%	90	Less than high school	3
Plasterers and Stucco Masons	\$43,411	2,154	4.4%	303	Less than high school	5
Plumbers, Pipefitters, and Steamfitters	\$48,950	9,227	4.9%	1,458	High school diploma or equivalent	5

Production Workers, All Other	\$37,424	4,177	3.6%	640	High school diploma or equivalent	4
Production, Planning, and Expediting Clerks	\$49,261	7,699	3.6%	1,077	High school diploma or equivalent	4
Radio, Cellular, and Tower Equipment Installers and Repairers	\$51,686	518	5.7%	87	Associate's degree	3
Radiologic Technologists	\$65,218	3,861	3.2%	330	Associate's degree	5
Real Estate Brokers	\$65,463	2,656	2.9%	325	High school diploma or equivalent	3
Real Estate Sales Agents	\$66,358	7,168	3.0%	882	High school diploma or equivalent	5
Registered Nurses	\$77,001	59,136	3.5%	5,218	Associate's degree	5
Respiratory Therapists	\$58,417	2,399	4.6%	228	Associate's degree	5
Retail Salespersons	\$27,045	104,177	0.8%	15,777	Less than high school	4
Retail Salespersons	\$27,045	104,177	0.8%	15,777	Less than high school	3
Roofers	\$38,391	4,295	4.8%	647	Less than high school	5
Sales Engineers	\$110,185	2,162	3.0%	289	Bachelor's degree	3
Sales Representatives, Services, All Other	\$54,518	20,562	3.2%	3,172	High school diploma or equivalent	5
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	\$63,553	20,181	3.3%	2,756	High school diploma or equivalent	5
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	\$83,580	6,957	2.8%	915	Bachelor's degree	3
Sheet Metal Workers	\$41,786	3,088	4.8%	486	High school diploma or equivalent	4
Shipping, Receiving, and Traffic Clerks	\$34,229	10,855	3.5%	1,489	High school diploma or equivalent	3
Social and Human Service Assistants	\$34,186	7,592	3.3%	1,168	High school diploma or equivalent	4
Software Developers, Applications	\$98,672	13,460	5.5%	1,654	Bachelor's degree	5
Software Developers, Systems Software	\$103,859	12,562	3.9%	1,316	Bachelor's degree	4
Speech-Language Pathologists	\$74,710	2,421	2.8%	192	Master's degree	3
Statisticians	\$80,327	1,017	6.4%	146	Master's degree	4
Structural Iron and Steel Workers	\$47,927	1,777	5.7%	300	High school diploma or equivalent	5

Surgical Technologists	\$50,676	2,380	3.4%	272	Postsecondary non-degree award	3
Tapers	\$46,977	1,405	4.4%	189	Less than high school	3
Telecommunications Equipment Installers and Repairers	\$59,081	3,024	1.2%	354	Postsecondary non-degree award	3
Telecommunications Line Installers and Repairers	\$50,803	1,847	3.2%	249	High school diploma or equivalent	3
Tile and Marble Setters	\$45,221	1,089	4.4%	144	Less than high school	4
Tool and Die Makers	\$53,271	750	4.0%	102	High school diploma or equivalent	3
Veterinarians	\$98,678	1,650	4.9%	143	Doctoral or professional degree	4
Waiters and Waitresses	\$30,217	54,068	2.7%	11,890	Less than high school	5
Web Developers	\$70,447	3,314	3.8%	366	Associate's degree	4
Welders, Cutters, Solderers, and Brazers	\$43,154	5,250	3.7%	771	High school diploma or equivalent	4
Welders, Cutters, Solderers, and Brazers	\$43,154	5,250	3.7%	771	High school diploma or equivalent	3

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About the Reskilling and Recovery Network

The Reskilling and Recovery Network is a partnership between the National Governors Association Center for Best Practices and the American Association of Community Colleges, with support from the Lumina and Siemens foundations. The purpose of the network is to involve 20-plus states that were selected to participate, including Arizona, to bring together state and community college leaders with workforce and industry partners to collaboratively identify and scale strategies that give workers the skills necessary to succeed in an economy reshaped by the pandemic.

About the Arizona Community College Coordinating Council

The Arizona Community College Coordinating Council (AC4) is an association of the ten accredited community college district CEOs. As primary providers of job training, workforce preparation, and university transfer education in Arizona, the districts are responsible for serving a diverse population of students throughout the state. The Council was created to provide a forum for advocacy, communication, and coordination, and to provide a unified voice for independent community college districts. The Council and its executive director also act as a single point of contact to the public, media, education community, and public policy makers.

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The Office of the Governor and ARIZONA@WORK, along with their partnering organization, takes no legislative position on policy recommendations derived from or in the document.



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