

GREATER PHOENIX CHAMBER
FOUNDATION

State of the Workforce: Arizona's Talent Pipeline Analysis

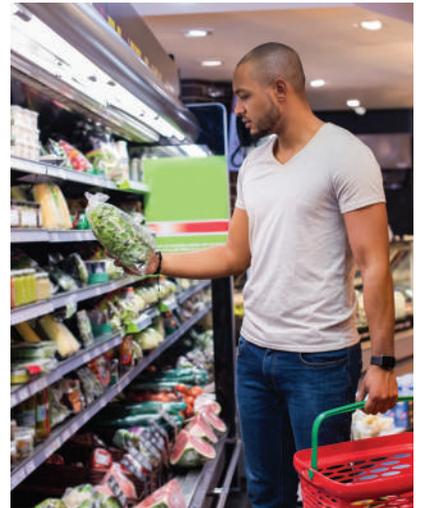


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Trevor Stokes authored this report and is making the world of work understandable as a consultant to economic development, education, and workforce projects around the country.



State of the Workforce

Introduction

Across the American economy, innovation has been the driving force behind the development of new products, improved technologies, and business models that have lifted standards of living around the world. Now, critical issues with sourcing and developing the talent necessary to support industry growth is causing industry to turn that innovative spirit to the issue of workforce.

The recent surge of economic growth has given rise to new challenges on the human capital front. There are more open jobs right now than unemployed people. The unemployment rate is hovering at historically low levels. Practically everyone who wants a job has a job, so where do employers find an available talent pool? And within that talent pool, where do they find candidates with the right skills? How can they expect to find appropriate skills if our schools are teaching outdated concepts and technologies?

In the face of these challenges, the Greater Phoenix Chamber Foundation has stepped into a leadership role, convening industry, education, and community leaders from the region's most critical industry sectors in targeted efforts to develop industry-led solutions to one of the most pressing issues in business today.

This report seeks to provide a baseline perspective on seven of the region's most important industries. The hope is that these profiles can serve as a starting point from which leaders and stakeholders can engage with each other and with the talent development ecosystem to develop the innovative and collaborative approaches that are so desperately needed. It is hoped that these responses will be data-driven, collaborative, and innovative.

There are numerous initiatives in the Greater Phoenix region that are making significant progress on the workforce front. Some of the world's most innovative and effective educational and training institutions are in our back yard, and our employer community regularly demonstrates its willingness to step up to the plate when called on to be a part of the solution. This report is our latest effort to empower business and education partnerships that are so critical to our region's future.

Key Industries & Occupations

Advanced Manufacturing is one of Arizona's legacy industries, and its importance to the regional economy is only increasing. An extraordinary growth pattern has been seen over the last couple years, and the significant needs of our manufacturing sector translates into significant career opportunities for those who are appropriately prepared.

Finance and Insurance is one of our fastest-growing industries, and headlines announcing major expansions or relocations of leading firms into the Greater Phoenix region have been numerous of late. More than 38,000 people work for banks and lending institutions, and another 130,000 work for insurance carriers. The securities and commodity contracts brokerages industry is one of our three highest-paying sectors.

The emerging supply of talent, though, is crimped by perceptions of the industry as old, boring, and unscrupulous, and related educational programs underperform projected growth for this sector. Availability of credit and investment capital is a concern for the Valley's entrepreneurial and small business ecosystems, and the health of this sector has an impact on many others.

Health Care is a behemoth in the Arizona economy with more than 380,000 people employed across the state. In particular, hospitals are becoming an even larger part of the region's health care sector. They also offer excellent wages that average \$72,000. The emerging supply of talent, particularly in specialty nursing and some types of doctors, though, far underperforms projected growth for this critical sector.

Information Technology (IT) is more than just an industry. It is a skill set that is required by almost every industry and occupation in our economy. As an industry, software development is significant, but as a skill set, it is approaching ubiquitous. An amazing array of software supports industries of all types. Software developers work in manufacturing, retail, utilities, and construction companies. Cybersecurity is similar in its expansive scope, and insufficient development of these skills presents a challenge to employers across the board. This report considers

State of the Workforce

the IT sector as a whole, and notes the difference between the number of degrees being awarded in these fields and the number of jobs to be filled by candidates with these skills.

Skilled Construction Trades have been on the radar of regional leadership for years, yet projects are being delayed, and growth plans revamped because of the desperate shortage of qualified craft professionals.

While a lot of employers don't require a college degree to work in these occupations, there is a real opportunity to encourage more people to consider these careers and to qualitatively improve the talent pool through trade schools, certificate programs, and degrees.

Retail, Accommodation, and Hospitality is an extremely broad sector that employs a lot of Phoenix-area workers in frontline positions. Because so many

of the jobs are entry-level and low-wage, workforce development and education systems tend not to prioritize them. However, the skills developed in these jobs often provide invaluable real-world experience that forms the foundation for more sophisticated and more lucrative careers. More than 400,000 people are employed in these jobs, including an additional 33,000 since 2016.

Transportation and Warehousing is included not just because of its own scope and impact, but also because of its critical role in the supply chain of almost every other sector. As noted in the report, "industries like manufacturing, construction, education, and tourism grind to a halt when transportation services are insufficient."

The warehousing and storage subsector has experienced the second-largest level of growth among the Greater Phoenix region's industries.



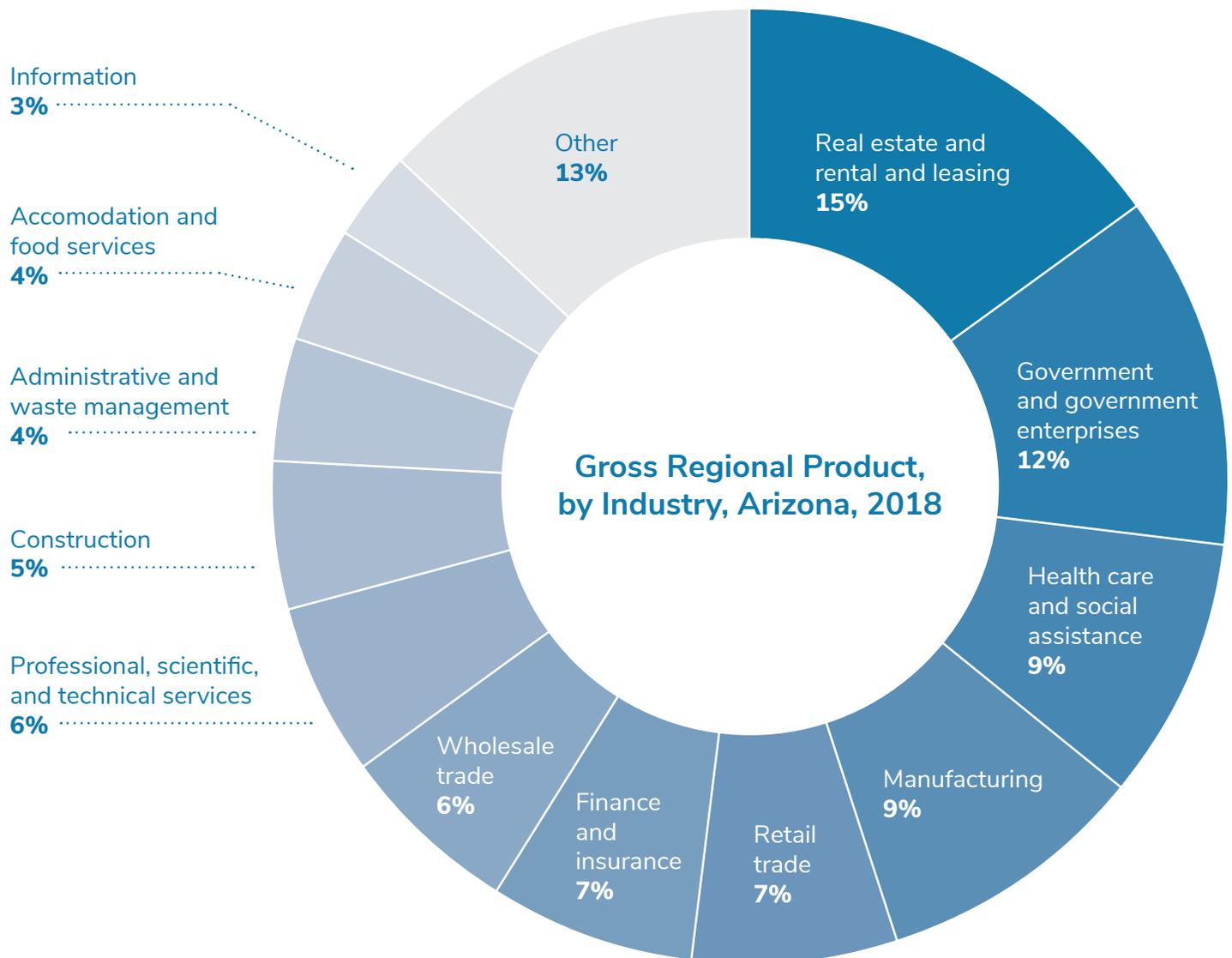
The Greater Phoenix Chamber Foundation has stepped into a leadership role, convening industry, education, and community leaders from the region's most critical industry sectors in targeted efforts to develop industry-led solutions.

State of the Workforce

Regional Workforce

The Greater Phoenix region was one of the hardest hit during the Great Recession and a very focused and intentional effort was made to diversify the economy thereafter. As a result, the Valley has seen tremendous growth in a number of key sectors. Additionally, Arizona has seen growth in gross regional product (GRP), realizing the fourth-highest growth in 2018.¹

Diversification of industries also led to diversification of the workforce. Today's employees require more advanced skills leading to higher median household income. Median income in the Greater Phoenix region is \$61,500, \$4,900 higher than Arizona's median income and the US median household income.²



1 <https://www.bizjournals.com/phoenix/news/2019/05/05/arizona-gdp-growth-in-2018-among-best-in-nation.html>

2 <https://www.deptofnumbers.com/income/arizona/phoenix/>

Foundation Collaboratives

The Foundation

The Greater Phoenix Chamber Foundation (Foundation) leads the charitable and education objectives of the Greater Phoenix Chamber (Chamber) and promotes economic prosperity and quality of life for the Greater Phoenix region. The Foundation's charitable activities focus on community development, improving health and prosperity for the region.

Workforce Development Collaboratives

Serving as a catalyst for partnership, the Foundation convenes four employer-led workforce collaboratives to address the growing skills gap facing our community. Drawing from the U.S Chamber of Commerce Foundation's (USCCF) Talent Pipeline Management™ (TPM) framework, employer-led collaboratives represent a pivotal shift where businesses play a much stronger role in outlining the skills needed to prepare talent. Our employer-led collaboratives drive the demands of our talent pipelines by:

1. Aligning educational training to necessary job skills
2. Providing workplace experiences to prepare talent for open positions
3. Promoting career awareness and exploration, broadening understanding of different career pathways

Industries Served:

- **Skilled Construction Trades: Build Your Future Arizona**
In Arizona, there are projected to be more than 155,000 vacant construction trade positions through 2022. This struggle to find qualified employees has real economic consequences for not only construction firms, but our entire economy.
- With close to \$2 million in investments from the construction sector, the Foundation built a coalition of support to launch the Build Your

Future (BYF) campaign in Arizona. BYF Arizona's mission is to create a sustainable and skilled craft workforce by creating awareness about high paying construction careers, training opportunities, and mapping career paths to employment in these high demand occupations.

- **Cybersecurity**
With over 7,000 vacant positions for cybersecurity professionals at all levels throughout Arizona, it is imperative the Greater Phoenix region acquire and develop the talent needed to protect the integrity of the region's online presence.

The Cybersecurity Collaborative launched Apprenti Arizona, an apprenticeship program for mid-level cybersecurity talent. In addition, with the help of a TPM employer subcommittee, the collaborative conducted a competency review for cyber professions, and identified and communicated significant changes in hiring requirements to education and training providers.

- **Financial Services**
Arizona is a financial services hub with a growing number of positions, especially entry-level, financial advisors in training, analysts, and investment professionals.

In collaboration with the Maricopa County Community College District (MCCCD), the Financial Services Collaborative launched the Financial Industry Training (FIT), a month-long program to prepare individuals to pass the initial exam toward licensing, the Securities Industry Essentials Exam (SIE). In addition to exam preparation, FIT participants are introduced to top industry employers and receive support with resume and interview preparation.

- **Hospitals**
Arizona is expected to experience a 23% growth in demand specific to six specialty nursing areas, with an anticipated 20,500 openings by 2025. These specialty areas include operating room, emergency room, critical care, oncology, telemetry, and home health.

Foundation Collaboratives

The Foundation identified a lack of training programs and supported MCCC in their efforts to secure \$5.8 million in funding from the legislature to fund needed infrastructure to develop new simulation centers and specialty nurse programs. The Foundation has also partnered with Amazon's Career Choice program to train and transition associates working at their facility center into high demand specialty technical roles at local hospitals.

- **Education**

The Foundation believes education is for everyone and supports initiatives that improve college and career readiness for Arizona's students. Through thoughtful and intentional business engagement, the Foundation will help transform Arizona's future workforce by scaling the academy model in K-12 schools. Designed after the Academies of Nashville, this innovative learning environment breaks down large, comprehensive high schools into smaller, more intimate academies focused on various career pathways, operating as "schools within a school." In an academy model, students transition through industry-based classes and receive hands-on learning based on their interests and aptitude. Businesses play a key role in this process by determining target industries, related pathways, and credentials. Businesses support this model by providing students the tools and experiences necessary for real-world applications.

Workforce Partnerships

Through employer-led collaboratives and unique community partnerships, the Foundation is helping to identify and develop job-ready talent needed to set Arizona apart in the race for economic prosperity.

- **Job Data Exchange (JDX)**

The JDX is a set of open data resources, algorithms, and reference applications used to improve how employers communicate competency and credentialing requirements for in-demand jobs, automating the communication process with education providers.

- **RetailWorks AZ**

As the third largest employer in the Greater Phoenix region, the retail industry accounts for more than 229,000 jobs.

The Foundation partnered with the Center for the Future of Arizona's RetailWorks AZ initiative to develop innovative ways to help entry-level, and front-line workers gain the skills necessary to advance their careers. This partnership also works to build a pipeline of skilled talent for adjacent industry sectors, such as hospitality, health care, and business services.

- **Talent Pipeline Management Academy of Arizona**

In partnership with the U.S. Chamber of Commerce Foundation (USCCF), the Foundation launched the TPM Upskill Academy of Arizona, the first-ever TPM Academy focused on upskilling talent. The Academy was designed to train workforce professionals throughout Arizona how to use a data-driven approach to solve talent gaps. The Foundation is proud to have 18 organizations from across the state in Arizona's Talent Pipeline Network.

Serving as a catalyst for partnership, the Foundation convenes four employer-led workforce collaboratives to address the growing skills gap facing our community.

Advanced Manufacturing

Introduction

What do companies make in Arizona? Across the state, production facilities of all shapes and sizes are producing world-class tortillas, saddles, beer, energy bars, election ballots, and chocolate. But they are also producing some of the world's most complex, sophisticated, and critical products and technologies, in extraordinarily advanced facilities, and with skills that didn't exist a decade ago.

“Americans don't worry about ICBM attacks. One reason they don't need to is because of the products we build in Chandler.”

***Terry Feehan, Vice President,
Northrop Grumman***

“This factory will help the U.S. maintain its position as the global leader in the semiconductor industry,”

Brian Krzanich, CEO, Intel

Manufacturing is one of Arizona's legacy industries, with a heritage stretching back well past to the state's beginnings. Today, that sector thrives on a level rarely seen. The state exported more than \$13 billion of manufactured goods in 2018, an increase of more than 20% over the previous year. Employment is skyrocketing. From March 2017 to March 2019, the sector added more than 15,000 jobs, a growth of more than 9.6%. As of March 2019, the sector employs more than 175,000 Arizonans, an 11-year high, at more than 5,000 establishments.

- Celgene's Phoenix location is manufacturing breakthrough therapies to treat melanoma and breast, lung, and pancreatic cancers.³
- Honeywell Aerospace in Phoenix was the first to invent many technologies that have shaped how people fly today. Its turbochargers are used by every auto and truck maker in the world.⁴

- In Scottsdale, Axon Enterprises is manufacturing body cameras, software, and other connected devices beyond its original TASER product.

Employment

Since 2016, employment in the manufacturing industry has increased in 42 states. Nevada added 12,000 jobs, while California's manufacturing sector grew by just 2%. Arizona added 11,000 jobs, ranking second among the states with 7% growth. There are 3,402 manufacturing establishments in the Phoenix metro area, and together they employ more than 127,000 people. The Great Recession hit Arizona's manufacturing industry hard. Employment peaked at 187,057 in 2006. By the end of 2010, however, the industry had shrunken significantly, bottoming out with a loss of almost 40,000 jobs before recovering and riding an amazing growth trajectory to its current levels.

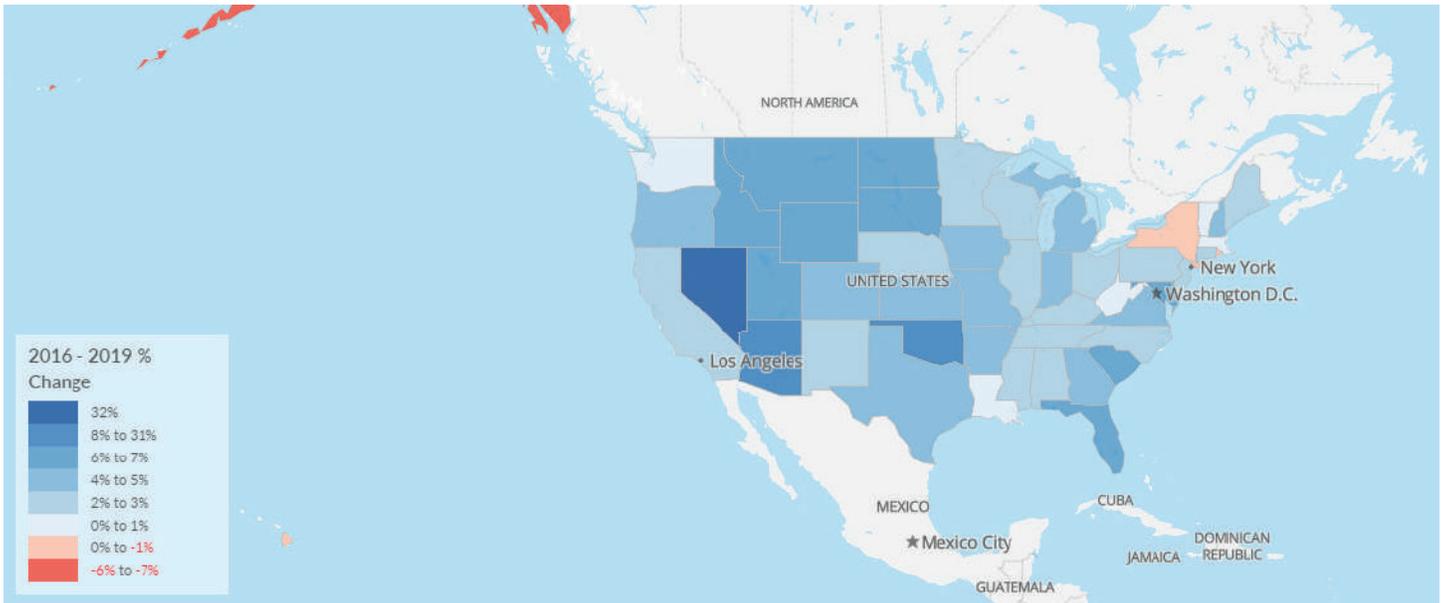
Occupations are very different from industries. Occupations are typically employed by a number of different industries. For example, occupations like machinists and assemblers are categorized under an occupation family called production occupations. These occupations, as one might expect, are employed most often in the manufacturing industry, or in other words, at businesses whose primary line of business is manufacturing. However, 8.5% of these occupations are employed in the administrative services industry. Retail trade employs another 3.9%, and wholesale trade 3.6%.

Because employment among production occupations is dispersed so widely across industries, it is instructive to look at specific fields as occupations, regardless of the industries that employ them. For this analysis, the top 15 occupations from the production occupations family were considered.

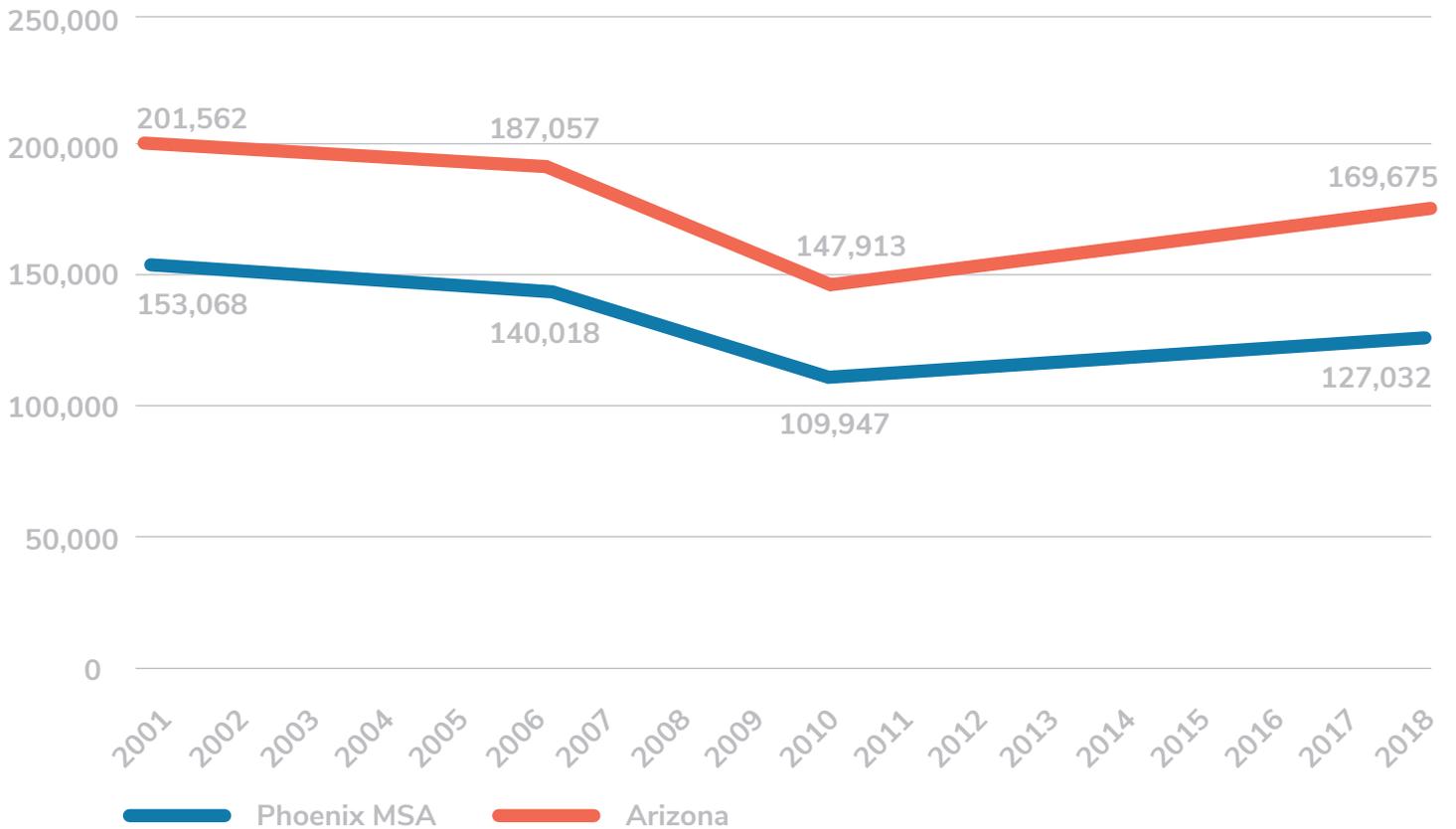
3 <https://www.armays.com/new-work-celgene-aseptic-facility/>

4 <https://www.azcentral.com/story/money/business/consumers/2017/05/05/arizona-made-honeywell-aerospace/81316858/>

Advanced Manufacturing



Manufacturing Employment, Phoenix and Arizona, Annual Averages, 2001-2018



Advanced Manufacturing

Occupation	Employment	Median Annual Wage
First-Line Supervisors of Production and Operating Workers	9,220	\$56,540
Inspectors, Testers, Sorters, Samplers, and Weighers	8,090	\$37,800
Welders, Cutters, Solderers, and Brazers	5,220	\$39,960
Electrical, Electronic, and Electromechanical Assemblers, except Coil Winders, Tapers, and Finishers	4,320	\$37,710
Machinists	4,180	\$46,580
Packaging and Filling Machine Operators and Tenders	3,880	\$27,320
Helpers-Production Workers	3,690	\$27,340
Water and Wastewater Treatment Plant and System Operators	2,100	\$46,180
Printing Press Operators	2,040	\$32,860
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	1,870	\$35,040
Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	1,810	\$34,090
Structural Metal Fabricators and Fitters	1,360	\$33,790
Computer-Controlled Machine Tool Operators, Metal and Plastic	1,350	\$36,500
Mixing and Blending Machine Setters, Operators, and Tenders	1,280	\$33,000
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	1,220	\$30,850

United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018



Advanced Manufacturing

Wage Profiles, Advanced Manufacturing

There are four pathways in the manufacturing career cluster: production, quality control, manufacturing production process development, and maintenance, installation, and repair. This profile provides samples from three pathways, as each has particular relevance to the industry.

Occupation	Jobs	10th	25th	Median	75th	90th
Production Pathway						
First-Line Supervisors of Production and Operating Workers	9,220	\$34,380	\$43,270	\$56,540	\$74,240	\$96,250
Welders, Cutters, Solderers, and Brazers	5,220	\$28,210	\$33,820	\$39,960	\$49,620	\$61,500
Electrical, Electronic and Electromechanical Equipment Assemblers	4,320	\$26,980	\$31,960	\$37,710	\$45,310	\$51,490
Machinists	4,180	\$28,470	\$36,830	\$46,580	\$57,690	\$66,590
Computer-Controlled Machine Tool Operators, Metal and Plastic	1,350	\$23,260	\$26,530	\$36,500	\$48,510	\$59,430
Extruding, Forming, Pressing Machine Setters, Operators, and Tenders	1,060	\$23,220	\$25,350	\$31,900	\$39,160	\$49,100
Grinding, Lapping, Polishing, Buffing Machine Tool Setters, Operators	840	\$24,830	\$29,200	\$37,910	\$47,980	\$56,750
Tool and Die Makers	490	\$26,000	\$34,580	\$49,890	\$66,180	\$83,070
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	450	\$32,380	\$34,460	\$37,720	\$41,090	\$53,760
Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	270	\$25,960	\$30,690	\$37,800	\$46,860	\$53,430
Engine and Other Machine Assemblers	220	\$27,690	\$35,690	\$44,800	\$52,380	\$67,090
Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	-	\$23,280	\$26,480	\$33,930	\$44,470	\$51,180
Semiconductor Processors	-	\$27,630	\$31,390	\$35,980	\$40,140	\$47,750
Manufacturing Production Process Development Pathway						
Electrical and Electronics Drafters	650	\$41,350	\$52,560	\$62,830	\$75,300	\$90,120
Mechanical Drafters	900	\$41,370	\$48,430	\$60,060	\$78,170	\$99,250
Electrical and Electronics Engineering Technicians	3,190	\$38,650	\$50,110	\$63,190	\$75,920	\$86,760
Electro-Mechanical Technicians	350	\$35,530	\$42,710	\$51,800	\$69,510	\$92,300
Mechanical Engineering Technicians	850	\$34,760	\$41,490	\$57,000	\$72,260	\$82,950
Quality Control Pathway						
Inspectors, Testers, Sorters, Samplers	8,090	\$24,740	\$30,130	\$37,800	\$48,860	\$60,860

United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018

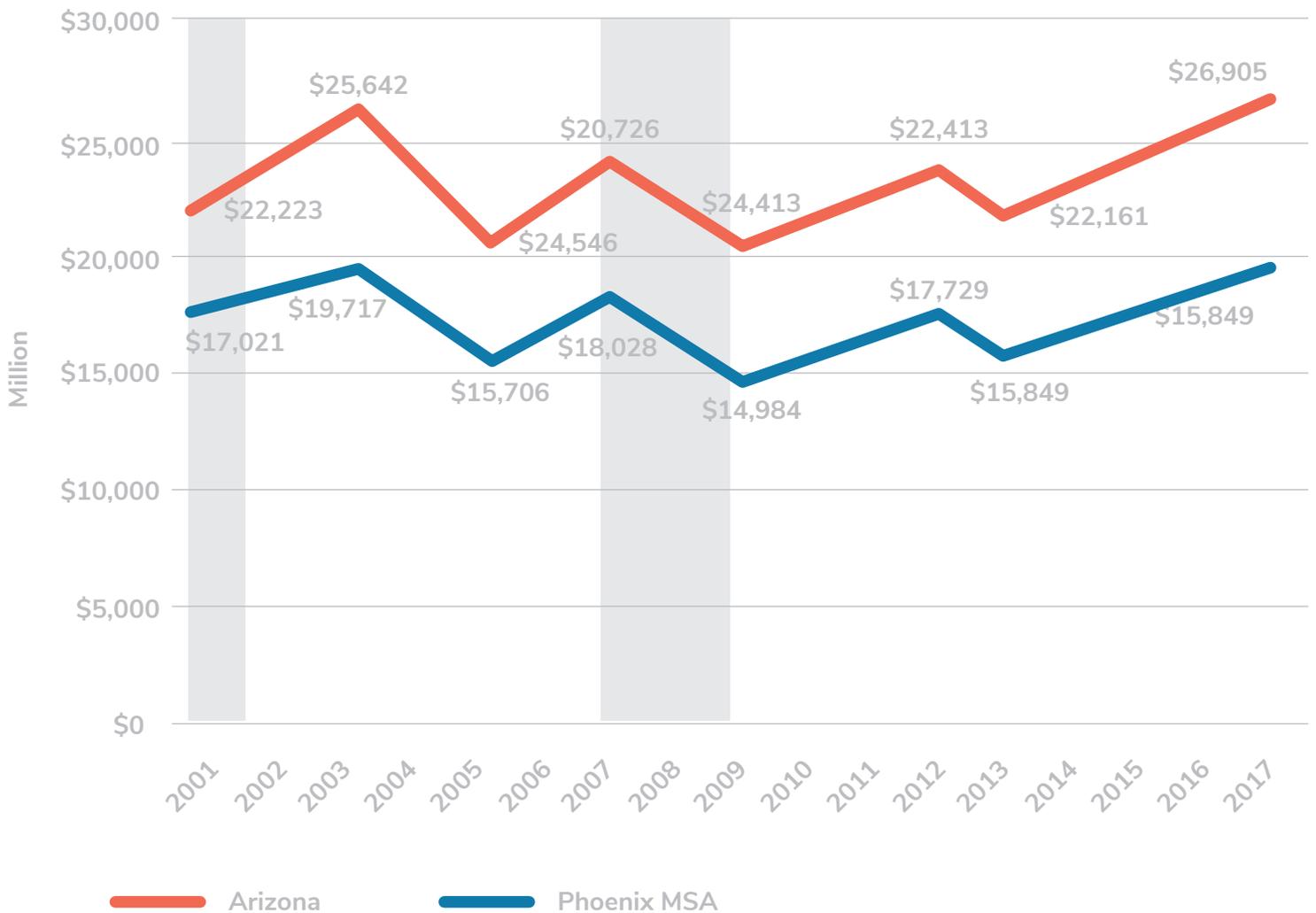
Advanced Manufacturing

Economic Impact

The contribution of the manufacturing sector to Arizona's economy is significant. In 2018, manufacturing contributed \$26.9 billion and ranked 4th among private industry sectors in terms of contribution to the gross regional product (GRP). Manufacturing accounted for 9% of all the state's economic activity. And, \$19.7 billion of that total came from the Greater Phoenix region.

The industry was in a growth pattern prior to the Great Recession and has experienced significant growth since.

Gross Regional Product, Manufacturing, 2001-2017, Arizona and Phoenix MSA



Advanced Manufacturing

Inventory of Workforce-Related Assets

Workforce Initiatives and Organizations

The Arizona Advanced Technologies Network (AATN)

The AATN is a collaborative effort of regional community colleges and industry leaders. The colleges solicited input from regional employers to design a new Automated Industrial Technology program and have deployed it across three initial college systems. The network seeks to encourage more young Arizonans to prepare for high-quality manufacturing careers through this one- or two-year program.⁵

Arizona Pathways to Prosperity

The Center for the Future of Arizona (CFA) strategically works with industry sector partnerships or industry leads to engage business and industry to create a sustainable model for industry-driven pathways. The Advanced Manufacturing working group includes representatives from Abrams Airborne, Hi-Tech Machining and Engineering, and others.⁶

Arizona Manufacturing Partnership (AMP)

AMP is an organization of Arizona manufacturers and partners that seeks to impact the region's manufacturing workforce through three primary goals:

- Promote the world-class image of manufacturing
- Encourage Arizona's educational system to prepare students to earn nationally-recognized, industry-validated credentials
- Serve as the liaison between manufacturing needs and education articulation

The Arizona Manufacturers Council (AMC)

The AMC is the official state affiliate of the National Association of Manufacturers, and the organization aims to promote and enhance a positive business climate for manufacturing and related industries that operate within Arizona. One of the AMC's guiding principles is "improving employer access to highly skilled employees by supporting strong accountability measures, innovative management techniques, enhanced academic rigor, and efficient use of resources to improve education throughout Arizona."⁷

Arizona Advanced Manufacturing Institute (AzAMI)

AzAMI offers a comprehensive, holistic approach to meeting a variety of advanced manufacturing needs through a combination of core programs: electronics, drafting, automation and machining, and welding as an enterprise of Mesa Community College.

Education and Apprenticeships

Arizona Department of Education – Career and Technical Education Unit (CTE Unit)

The Arizona Department of Education plays a key role in connecting the manufacturing industry with career and technical education resources at the high school level. Through their Manufacturing Programs Advisory Council, the CTE Unit is exploring ways to market career paths in CTE fields to parents and students. They are also exploring other issues and opportunities to assist in recruiting and retaining a skilled workforce.

Programs currently offered to area high school students include precision machining and welding technologies.

Colleges and Universities

According to the National Center for Education Statistics, seven schools in the Greater Phoenix region offer precision production programs. All of these schools offer a certificate program, and two offer associate's degrees.

5 <https://chamberbusinessnews.com/2019/04/15/commerce-authority-community-colleges-tech-leaders-create-advanced-manufacturing-certification/>

6 <https://arizonafuture.org/pathways-to-prosperity/project-partners/>

7 <https://azmanufacturerscouncil.com/about-arizona-manufacturers-council/>

Advanced Manufacturing

Institution	Certificate Programs	Associate's Degrees	Bachelor's Degrees	Master's Degrees	Doctorate Degrees
Arizona Automotive Institute	X				
Rio Salado College	X				
Gateway Community College	X	X			
Mesa Community College	X	X			
East Valley Institute of Technology	X				
Western Maricopa Educational Center	X				

National Center for Education Statistics

Registered Apprenticeships, Arizona Department of Economic Security

In a registered apprenticeship, a worker earns a salary while receiving on-the-job training and related technical instruction. A skilled mentor oversees and trains the apprentice. It is a voluntary, industry-driven system for occupations requiring a range of high-level skills. It is full-time, paid employment, and training with built-in career placement.⁸

Across Arizona, there are 245 active apprentices in programs related to manufacturing.

Risks and Stressors on the Emerging Labor Supply

The industry suffers from an “uncool” factor in the minds of many young people who see manufacturing careers through an outdated lens.

Workers in the industry are much older than other industries. The combination of retiring workers and industry growth threatens to create a “perfect storm” in which the skills gap becomes dangerously acute.

Growth rate of the industry is outpacing the talent development ecosystem.

Emerging technologies, cybersecurity threats, and evolving environmental constraints require legacy employees to master and internalize new standards on a regular basis.

Targeted programs like sheet metal technology, machine shop technology, and metal fabrication are not offered at many institutions.

In the next section, the alignment between graduates of each related program and the associated demand for graduates will be clear.



⁸ <https://des.az.gov/services/employment/registered-apprenticeship/apprenticeship-employers>

Advanced Manufacturing

Workforce Stability and Sufficiency for the Sector

The number of individuals graduating from related postsecondary programs of study pales in comparison to the number of annual openings and projected growth in related occupations.

Description	Completions	Annual Openings	2019 Jobs
Machine Tool Technology/Machinist	6	1,327	10,152
Machine Shop Technology/Assistant	0	1,147	9,011
Welding Technology/Welder	325	540	4,442
Sheet Metal Technology/Sheetworking	0	526	4,376
Cabinetmaking and Millwork	0	278	2,208
CNC Machinist Technology/CNC Machinist	28	160	1,328
Metal Fabricator	0	141	1,189
Precision Metal Working, Other	0	93	726
Tool and Die Technology/Technician	0	52	473
Boilermaking/Boilermaker	0	16	151
Ironworking/Ironworker	4	12	70
Precision Production Trades, General	0	0	0

National Center for Education Statistics, Integrated Post Secondary Educational Data System, 2018-2019 and Arizona Office of Economic Opportunity Employment Projections

Conclusion

Because enrollment in the region's postsecondary education programs is far outpaced by demand for graduates, and because regional firms are desperate for qualified talent, and because the apprenticeship and CTE systems, while contributing mightily are not capable in their current forms of producing enough qualified workers to meet the demand, this report rates the advanced manufacturing sector at a **CRITICAL IMBALANCE**.



Finance and Insurance

Introduction

Finance and insurance is an extremely broad industry category, including some of the largest, fastest-growing and most high-paying industries in the Greater Phoenix region. Altogether, these businesses employ 145,000 people in the Greater Phoenix region, including 77,000 in the credit intermediation sector (banking, savings institutions, credit unions, sales financing, etc.) and 47,000 at 2,982 separate establishments in the insurance carriers industry.

Major companies like Wells Fargo, Chase, State Farm, Union Bank, and Silicon Valley Bank have all announced major expansions or relocations in the Greater Phoenix region, and the region has established itself as a hub for leading financial services and insurance firms. Headlines over the last three years have reinforced the identity of the Greater Phoenix region as a hotbed for cutting-edge finance and insurance firms:

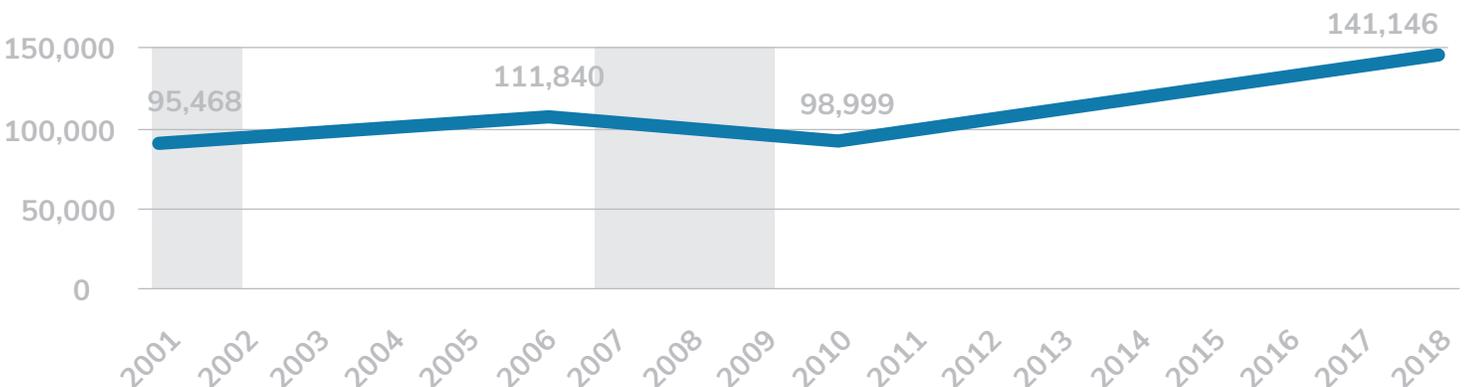
- Oscar, one of the country’s fastest growing health insurance startups, announced recently that it will expand its presence in Tempe and add 400 jobs.
- Upgrade, a Silicon Valley Financial Technology (FinTech) firm moved into Renaissance Center I in downtown Phoenix.
- Voya Financial announced a major new office in Phoenix to support 1,000 additional jobs in the company’s retirement, employee benefits and individual life businesses.

- Bank of the West announced a new office in Tempe with office space for 1,000 people.
- ADP announced a new Tempe location with 1,500 new jobs and a \$33.75 million investment.
- Progressive announced it’ll be hiring 375 employees to fill customer service, sales, bilingual Spanish customer service, and claims positions in its Phoenix office.

Employment

- Since 2016, employment in the finance and insurance industry has increased in 38 states. California’s finance and insurance sector added just 238 jobs, while Florida added 12,786. Arizona added 27,600 finance and insurance jobs, ranking first among the states with 8.6% growth.
- There are 6,452 finance and insurance firms in the Phoenix metro area, and together they employ more than 141,146 people. The Great Recession hit Arizona’s finance and insurance industry hard. Employment peaked in 2006 at 112,058. By the end of 2010, however, the industry had shrunk precipitously, bottoming out at 98,999 people before recovering and riding an amazing growth trajectory to 141,146 employees in 2018.

Finance and Insurance Employment, Phoenix MSA, 2001-2018, Annual Averages

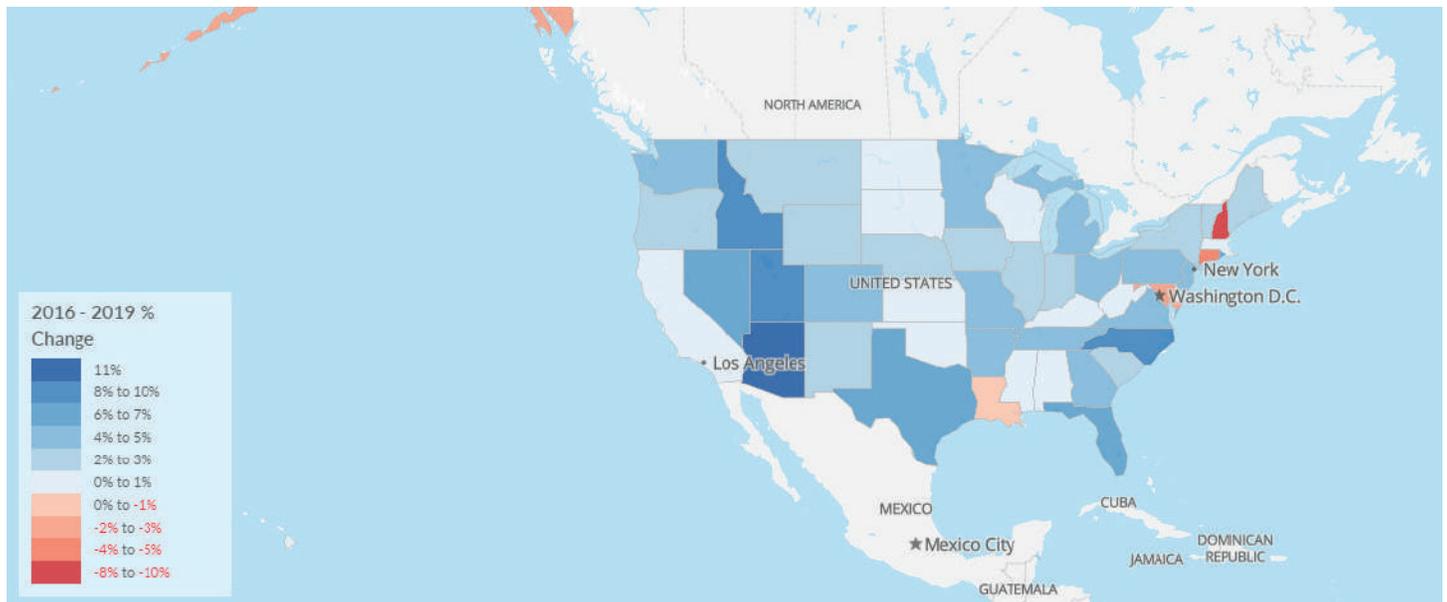


Finance and Insurance

Finance and Insurance

When considering different perspectives on the finance and insurance workforce, it is important to note the difference between industries and occupations. Industries are types of businesses, defined by the outputs of their primary business lines. Occupations are sets of responsibilities, typically performed by a single person in a single day. Occupations are typically employed by a number of different industries. For example, nationally, while 8.4% of accountants and auditors work in various finance and insurance industries, 32% work for professional, scientific, and technical services, 8.3% work for governments, and another 0.5% work for utilities.

Because employment among finance and insurance occupations is dispersed so widely across industries, it is instructive to look at particular fields as occupations, regardless of the industries that employ them. For this analysis, all occupations from the finance occupation family were considered.



There are 6,452 finance and insurance firms in the Phoenix metro area, and together they employ more than 141,146 people.



Finance and Insurance

Occupation	Employment	Median Annual Wage
Accountants and Auditors	15,940	\$65,990
Claims Adjusters, Examiners, and Investigators	8,910	\$58,310
Loan Officers	7,850	\$53,920
Loan Interviewers and Clerks	6,670	\$41,380
Securities, Commodities, and Financial Services Sales Agents	6,540	\$51,670
Insurance Sales Agents	6,010	\$46,510
Insurance Claims and Policy Processing Clerks	5,930	\$40,670
Compliance Officers	5,410	\$59,630
Financial Analysts	4,580	\$74,240
Personal Financial Advisors	2,950	\$78,920
Financial Specialists, All Other	2,690	\$71,620
Credit Counselors	2,090	\$41,900
Credit Analysts	1,640	\$55,680
Insurance Underwriters	1,490	\$72,450
Financial Examiners	1,360	\$50,710
Brokerage Clerks	1,280	\$47,460
Insurance Appraisers, Auto Damage	690	\$58,610
Credit Authorizers, Checkers, and Clerks	680	\$40,900
Appraisers and Assessors of Real Estate	640	\$50,850
Financial Clerks, All Other	470	\$44,300
Statistical Assistants	190	\$36,510

United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018



Finance and Insurance

Wage Profiles, Finance and Insurance

There are five pathways in the finance occupation family: securities and investments; business finance; accounting; insurance; and banking services. This profile examines each pathway, as each has particular relevance to the industry, and the following table provides data on the wage distributions of some of the most critical occupations in Arizona.

Occupation	Jobs	10th	25th	Median	75th	90th
Accounting Pathway						
Accountants and Auditors	15,940	\$40,540	\$52,050	\$65,990	\$83,320	\$103,520
Banking Services Pathway						
Tellers	3,990	\$24,350	\$26,910	\$30,280	\$34,650	\$38,830
Credit Analysts	1,640	\$41,330	\$46,020	\$55,680	\$75,260	\$100,070
Credit Authorizers, Checkers, and Clerks	680	\$28,730	\$33,460	\$40,900	\$48,930	\$58,530
Loan Interviewers and Clerks	6,670	\$21,860	\$29,620	\$41,380	\$50,490	\$59,730
Loan Officers	7,850	\$23,330	\$34,620	\$53,920	\$80,850	\$111,090
Bill and Account Collectors	7,290	\$24,880	\$28,890	\$34,980	\$41,440	\$49,580
Financial Clerks, All Other	470	\$32,140	\$37,260	\$44,300	\$51,100	\$60,470
Business Finance Pathway						
Budget Analysts	710	\$50,650	\$57,080	\$67,490	\$84,610	\$100,380
Financial Analysts	4,580	\$47,020	\$57,780	\$74,240	\$93,620	\$111,760
Financial Managers	9,270	\$56,260	\$75,200	\$108,080	\$148,740	\$205,360
Tax Preparers	1,120	\$22,180	\$28,400	\$35,520	\$41,090	\$71,570
Treasurers and Controllers	N/A	\$55,660	\$72,750	\$103,910	\$142,670	*
Insurance Pathway						
Actuaries	160	\$71,288	\$87,194	\$99,841	\$111,363	*
Claims Adjusters/Examiners/Investigators	8,910	\$36,320	\$45,550	\$58,310	\$77,100	\$101,000
Insurance Appraisers, Auto Damage	690	\$41,210	\$49,180	\$58,610	\$71,710	\$82,540
Insurance Claims/Policy Processing Clerks	5,930	\$31,830	\$35,170	\$40,670	\$49,670	\$62,720
Insurance Sales Agents	6,010	\$27,180	\$33,640	\$46,510	\$65,920	\$105,110
Insurance Underwriters	1,490	\$42,480	\$54,700	\$72,450	\$92,430	\$107,290
Securities and Investments Pathway						
Brokerage Clerks	1,280	\$34,860	\$40,510	\$47,460	\$57,090	\$66,040
Personal Financial Advisors	2,950	\$43,110	\$53,890	\$78,920	\$119,350	*
Securities, Commodities, Financial Sales	6,540	\$33,820	\$38,380	\$51,670	\$85,280	\$151,540
Financial Specialists, All Other	2,690	\$38,210	\$48,620	\$71,620	\$99,950	\$137,030
Compliance Officers	5,410	\$37,120	\$45,910	\$59,630	\$80,810	\$102,520
Credit Counselors	2,090	\$29,650	\$34,900	\$41,900	\$52,270	\$68,790
Financial Examiners	1,360	\$33,280	\$37,840	\$50,710	\$76,540	\$106,750
Appraisers and Assessors of Real Estate	640	\$21,850	\$35,160	\$50,850	\$61,080	\$71,920

United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018

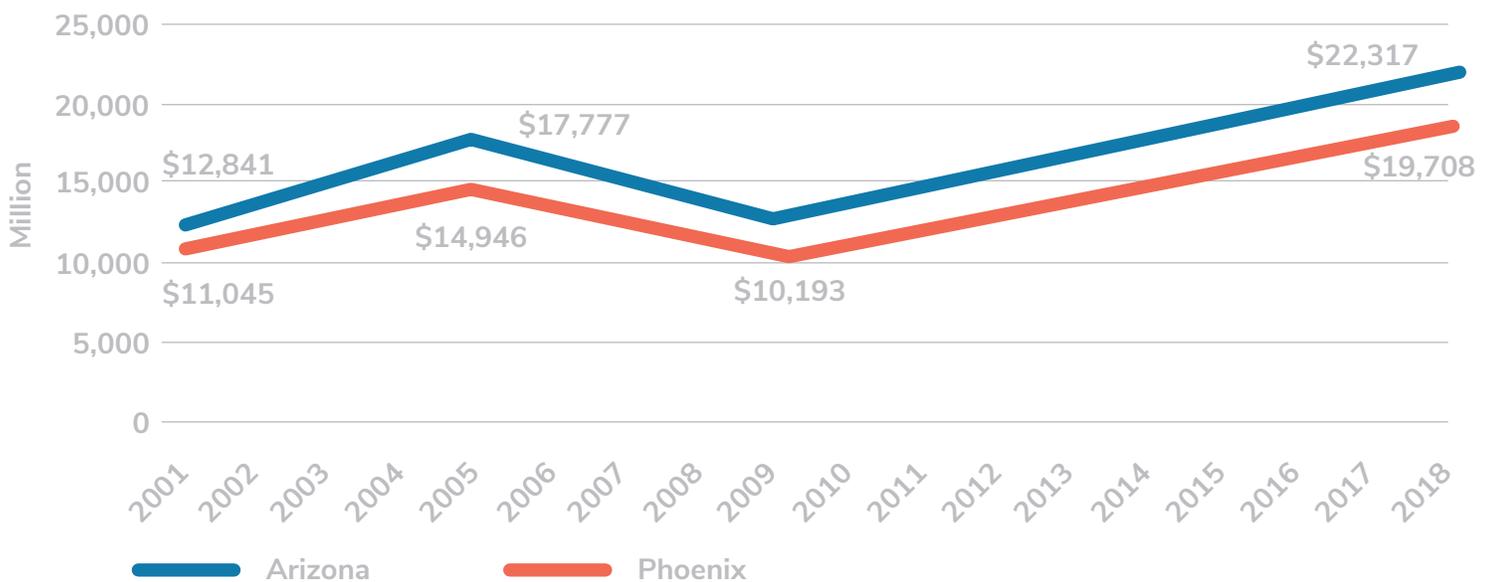
*Wages above \$178,500 are not disclosed.

Finance and Insurance

Economic Impact

The contribution of the finance and insurance sector to Arizona’s economy cannot be overstated. In 2018, finance and insurance contributed \$25.1 billion and ranked 5th among private industry sectors in terms of contribution to the gross regional product (GRP). Finance and insurance accounted for 6.9% of all the state’s economic activity. In 2017, the sector totaled \$23 billion and more than \$19.5 billion of that came from the Greater Phoenix region.

Finance and Insurance Industry, Gross Regional Product, 2001-2018



Inventory or Workforce-Related Assets

Workforce Initiatives and Organizations

The City of Phoenix Advanced Business Services (ABS) Sector Partnership

The ABS Sector Partnership is an industry-led, community-supported collaboration, dedicated to increasing the competitiveness of service centers in the Greater Phoenix region.

Greater Phoenix Chamber Foundation, Workforce Collaborative

Several finance and insurance companies, who are typically fierce competitors for clients and talent, are collaboratively pursuing solutions to meet increasing workforce demand. Specifically, this collaborative was launched to address critical shortages for entry-level financial advisors and financial analysts.

The Independent Insurance Agents and Brokers of Arizona (IIABAZ)

Professional education is critical to a successful and profitable career in the insurance industry. Every year, IIABAZ offers exciting opportunities to expand your professional horizons with ITEC and Member Benefit Seminars. All of these education programs are designed to help insurance producers thrive in the most competitive of marketplaces.⁹

The Arizona Insurance Institute

The Arizona Insurance Institute is an independent, non-profit trade association dedicated to supporting and growing Arizona’s insurance and financial services industry. Its members support a healthy business climate and competitive marketplace for consumers.¹⁰

Finance and Insurance

The Arizona Builders Alliance (ABA) Finance in Construction Seminars

The ABA offers three, seven-hour Finance in Construction Seminars annually – two in Phoenix and one in Tucson. The courses, which are taught by CPAs and insurance bonding representatives teaches basic accounting and financial concepts for the construction industry.

Chicanos Por La Causa (CPLC) Bilingual Bank Teller Training Program

CPLC is one of the largest Hispanic nonprofits in the country, promoting stronger and healthier communities throughout the southwestern United States. At its new Community Engagement Center in Desert Sky Mall, CPLC offers an innovative workforce development program focused on bilingual bank teller training.¹¹

Apprenticeships

Registered Apprenticeships, Arizona Department of Economic Security

Apprenticeship programs are a relatively new phenomenon within the finance and insurance fields, but they certainly hold a lot of promise. Liberty Mutual recently launched a high-profile apprenticeship program in partnership with the Arizona Commerce Authority and the Department of Economic Security.¹²

“We are excited to work with the State of Arizona on this unique program and by the prospect of the extensive pool of experienced employees we now have the opportunity to reach,” said Joe Kiley, Manager of Talent Acquisition for Liberty Mutual Insurance. “Today we formally signed on our first three apprentices...We look forward to working closely with the state to identify more candidates for our field sales roles and the opportunity to use this nationally-recognized education and training program to raise awareness about the exciting careers offered by the insurance industry.”

The new apprentices will work in Liberty’s Scottsdale, AZ office in a year-long training program that includes: licensing in personal lines, life and health, product knowledge; policy quoting, phone and appointment skills; and concludes with a property and casualty license. At the end of six months, the apprentices will be eligible for sales associate roles and at the successful completion of the full year, they will be qualified for a sales representative position. The apprenticeship program is a natural fit with Liberty Mutual’s coaching-centric environment in which employees have the opportunity to constantly develop their skills and to move up or laterally within a function or seamlessly among different areas of the company.

In 2017, The Hartford insurance company and its partner, Rio Salado College, launched its apprenticeship program which allows students to complete 61 credit hours of college coursework and 2,400 hours of paid, on-the-job-training at The Hartford claims center in Phoenix. After the two-year program, these students are eligible for full-time employment with The Hartford, in addition to earning their associate’s degree.

In 2018, finance and insurance contributed \$25.1 billion and ranked 5th among private industry sectors in terms of contribution to the gross regional product (GRP).

9 <https://www.iiabaz.com/Education/Pages/ITEC/default.aspx>

10 <https://arizonainsuranceinstitute.com/about-arizona-insuranceinstitute/>

11 <https://www.bilingualbanker.com/>

12 <https://www.azcommerce.com/news-events/news/liberty-mutual-insurance-launches-arizona-apprenticeship-program/>

Risks and Stressors on the Emerging Labor Supply

The industry suffers from an “uncool” factor in the minds of many young people.

In 2018, the Arizona Insurance Institute conducted a survey of its members’ perspectives on the industry’s workforce issues. Findings from that research are particularly relevant to this report:

1. Workforce issues in this industry seem to be unusually centered on recruitment instead of retention. People who experience these careers tend to stay in them.
2. More than 80% described their outlook on the industry as optimistic. An industry with an outlook that promising should not have an issue recruiting talent. There is a disconnect between reality and perception.
3. There are quality opportunities in the insurance industry that don’t necessarily require advanced levels of education.
4. The industry faces a significant perception issue.
5. The industry is in dire need of a platform and a narrative for communicating its value proposition to potential workers.

Growth rate of the industry is outpacing the talent development ecosystem.

Since the end of the Great Recession, the average number of new jobs per year is larger than the combined total of graduates from finance and insurance programs across every institution in the region combined.

Emerging technologies present challenges for legacy employees.

Evolving technologies in the financial and insurance space threatens to leave the skills profiles of the incumbent workforce behind.

Targeted programs like insurance science, international finance and actuarial science are not offered at many institutions.

In the next section, we see the alignment between graduates of each related program and the associated demand for graduates.



Evolving technologies in the financial and insurance space threatens to leave the skills profiles of the incumbent workforce behind.

Finance and Insurance

Workforce Stability and Sufficiency for the Sector

The number of individuals graduating from related postsecondary programs of study pales in comparison to the numbers of annual openings and projected growth in related occupations. Finance and insurance is one of the sectors to analyze in these terms because an abnormally large percentage of its workforce holds a college degree, and alignment between that emerging supply and projected demand provides a fairly comprehensive perspective.

Description	Completions	Annual Openings	2019 Jobs
General Office Occupations and Clerical Services	15	12,449	95,319
Business/Commerce, General	1,438	7,966	90,698
Administrative Assistant and Secretarial Science, General	12	6,234	43,735
Executive Assistant/Executive Secretary	0	6,234	43,735
Accounting Technology/Technician and Bookkeeping	606	4,028	31,946
International Business/Trade/Commerce	378	3,824	44,082
Customer Service Management	61	2,780	27,240
Office Management and Supervision	19	2,780	27,240
Banking and Financial Support Services	6	2,749	20,944
Finance, General	895	2,730	30,397
Accounting and Business/Management	182	2,726	30,701
Accounting and Finance	15	2,726	30,701
Accounting and Related Services, Other	0	2,411	18,106
Insurance	6	2,380	26,572
Taxation	33	1,843	19,253
Credit Management	0	1,677	19,168
Auditing	0	1,565	16,372
Business Administration, Management and Operations, Other	58	1,283	13,359
Finance and Financial Management Services, Other	0	942	11,704
Financial Planning and Services	0	884	9,879
International Finance	7	741	9,666
Public Finance	0	741	9,666
Management Information Systems, General	307	695	8,482
Investments and Securities	0	616	6,835
Business/Office Automation/Technology/Data Entry	13	488	2,854
Small Business Administration/Management	59	439	5,869
Business Statistics	0	73	977
Business/Managerial Economics	1	51	301
Actuarial Science	13	16	213

National Center for Education Statistics, Integrated Post Secondary Educational Data System, 2018-2019 and Arizona Office of Economic Opportunity Employment Projections

Conclusion

Because enrollment in the region's postsecondary education programs is far outpaced by demand for graduates, and because regional firms are desperate for qualified talent, and because the apprenticeship and CTE systems, while contributing mightily are not capable in their current forms of producing enough qualified workers to meet the demand, this report rates the finance and insurance sector at a **CRITICAL IMBALANCE**.

Health Care

Introduction

The shortage of qualified talent in health care fields is no secret – Arizona is heading toward a shortage of 28,000 nurses within ten years. Most health care occupations require a college degree, and the educational programs teaching them are expensive to operate. Nonetheless, there is a real opportunity to encourage more people to consider these careers and to qualitatively improve the talent pool through trade schools, certificate programs, and degrees. This report will look at both occupational and industry data to quantify demand and will look at job postings to understand the skills and qualifications employers need.

Health care is a broad industry with a number of sub-sectors that are experiencing tremendous growth in the Greater Phoenix region. According to Economic Modeling Specialists International (EMSI), ambulatory health services, which includes doctor's offices, dentist's offices and similar providers, has grown by 128% since 2001. Nursing and residential care facilities grew by 93%, and hospitals saw 88% growth. All of these industries offer higher-than-average wages, and the combination of current and projected demand and earning potential makes this a high-value sector for those in the education and workforce development space.

In terms of economic output, the health care industry is one of the state's most valuable, and the continued growth and vitality of this sector is critical to the economic health of the region and the state as a whole.

The region's largest employers include Dignity Health, HonorHealth, Mayo Clinic, Phoenix Children's Hospital, Steward Health Care, and United Healthcare. The single largest employer in the state is Banner Health.¹³

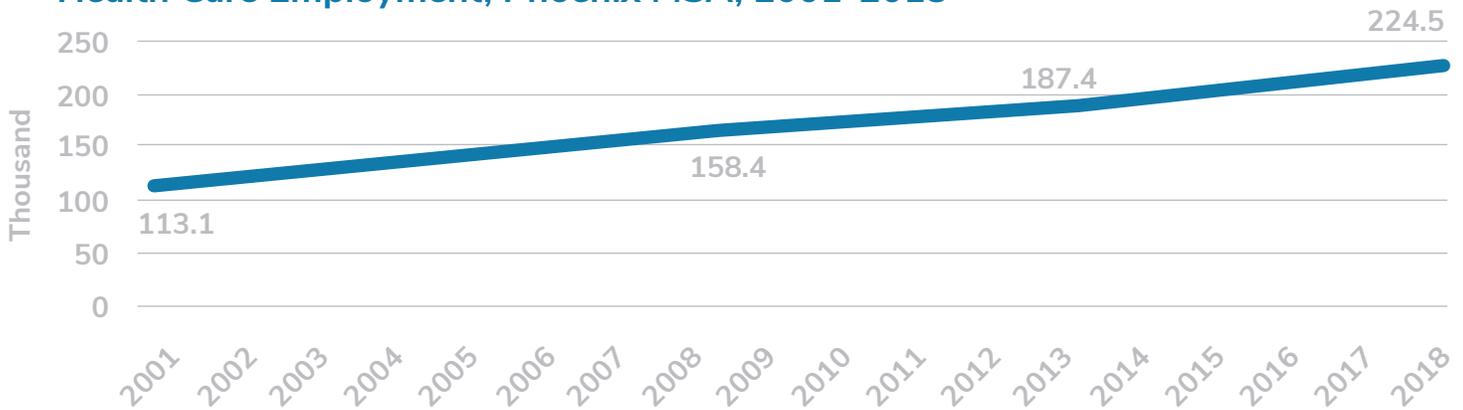
Employment

Since 2016, employment in the health care industry has increased in all 50 states. California's health care sector added less than 89,000 jobs, and Florida added 41,000. Arizona added just over 24,000 health care jobs, ranking 6th among the states with 8.2% growth.

There are 9,450 health care establishments in the Phoenix metro area, and together they employ more than 224,000 people. During the Great Recession, the rate of hiring in health care slowed slightly but did not decline.

In this report, the health care industry is defined as ambulatory health care services, hospitals, and nursing and residential care facilities.

Health Care Employment, Phoenix MSA, 2001-2018



13 <https://www.azcentral.com/picture-gallery/money/business/jobs/2019/04/15/arizona-republic-100-states-largest-employers-2019/3413146002/>

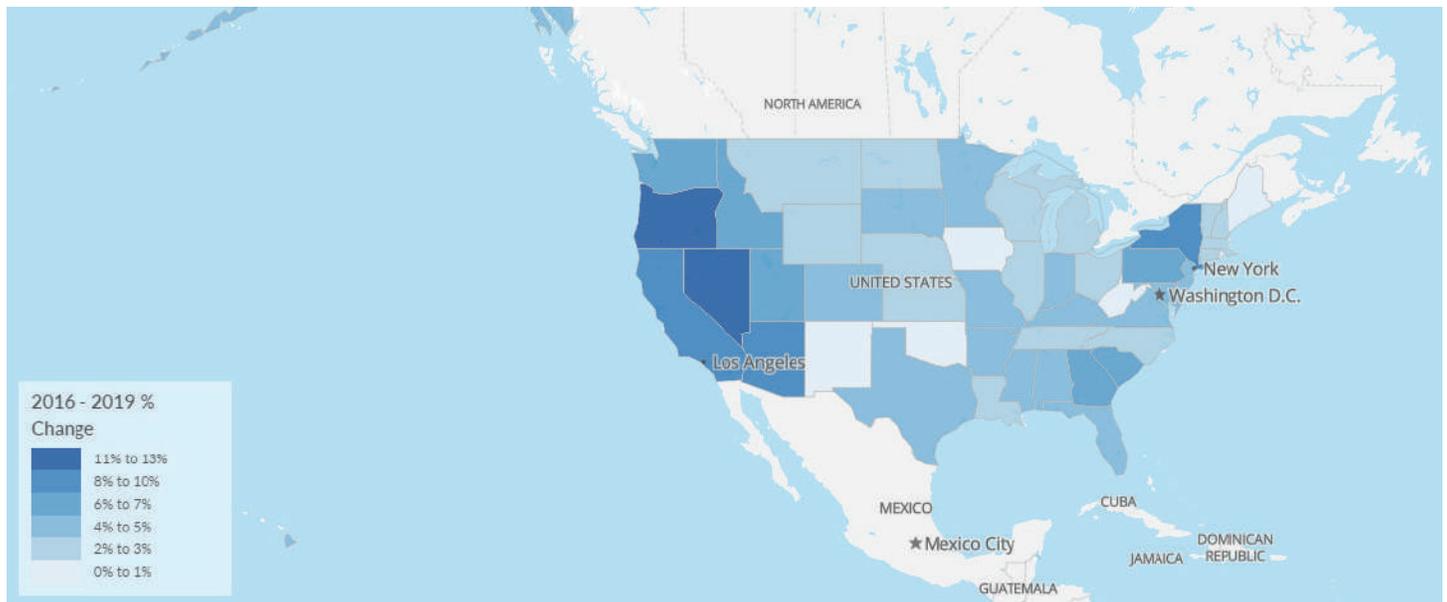
Health Care

Health Care Occupations

Individuals working in health care are typically employed by a variety of industries. For example, across the U.S., while 75.5% of health care practitioners and health care support workers are employed in the health care and social assistance industry, another 12.4% work in government, and another 4.3% work in retail trade.

More than 100 health care occupations – ranging from acupuncturist to urologist – are considered to have a “bright outlook” with above average job creation and hiring potential.

Because employment among health care occupations is dispersed so widely across industries, it is instructive to look at all the industries that employ them. For this analysis, all occupations from the health care practitioners and health care support occupation families were considered.



More than 100 health care occupations are considered to have a “bright outlook” with above average job creation and hiring potential.

Health Care

Occupation	Employment	Median Annual Wage
Registered Nurses	38,270	\$76,990
Home Health Aides	14,080	\$24,410
Medical Assistants	12,990	\$33,620
Nursing Assistants	9,590	\$31,140
Pharmacy Technicians	6,380	\$34,110
Pharmacists	5,390	\$126,400
Clinical Laboratory Technologists and Technicians	5,370	\$53,440
Dental Assistants	4,830	\$43,930
Licensed Practical and Licensed Vocational Nurses	4,830	\$55,920
Medical Records and Health Information Technicians	4,610	\$37,360
Physicians and Surgeons, All Other	3,660	*
Physical Therapists	2,880	\$85,390
Radiologic Technologists	2,500	\$66,650
Nurse Practitioners	2,370	\$111,700
Dental Hygienists	2,280	\$91,270
Family and General Practitioners	2,190	\$199,340
Psychiatric Technicians	2,160	\$34,370
Health Technologists and Technicians, All Other	2,050	\$43,830
Dentists, General	1,940	\$174,410
Emergency Medical Technicians and Paramedics	1,910	\$36,780
Respiratory Therapists	1,840	\$58,850
Massage Therapists	1,790	\$38,060
Physical Therapist Assistants	1,750	\$48,150

United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018

*Wages above \$178,500 are not disclosed.



Health Care

Wage Profiles, Health Care

There are five pathways within the health care career cluster: therapeutic services, diagnostic services, health informatics, support services, and biotechnology research & development. This profile focuses primarily on the therapeutic career pathway, and the following table provides data on the wage distribution of some of the most critical occupations in Arizona.

Occupation	Jobs	10th	25th	Median	75th	90th
Registered Nurses	38,270	\$56,010	\$65,910	\$76,990	\$90,920	\$101,550
Home Health Aides	14,080	\$22,210	\$23,040	\$24,410	\$26,870	\$29,840
Medical Assistants	12,990	\$26,470	\$29,330	\$33,620	\$37,980	\$41,700
Nursing Assistants	9,590	\$25,940	\$28,020	\$31,140	\$35,800	\$39,420
Pharmacy Technicians	6,380	\$25,350	\$28,650	\$34,110	\$39,530	\$47,180
Pharmacists	5,390	\$97,190	\$111,820	\$126,400	\$145,570	\$159,260
Clinical Laboratory Technologists and Technicians	5,370	\$31,300	\$39,270	\$53,440	\$68,350	\$79,850
Dental Assistants	4,830	\$32,850	\$37,960	\$43,930	\$48,650	\$51,710
Licensed Practical and Licensed Vocational Nurses	4,830	\$42,180	\$49,190	\$55,920	\$61,750	\$69,890
Medical Records and Health Information Technicians	4,610	\$25,920	\$30,560	\$37,360	\$48,940	\$62,210
Physicians and Surgeons, All Other	3,660	\$114,510	\$176,140	*	*	*
Physical Therapists	2,880	\$64,320	\$72,310	\$85,390	\$101,700	\$121,800
Radiologic Technologists	2,500	\$43,980	\$55,210	\$66,650	\$78,330	\$91,850
Nurse Practitioners	2,370	\$54,320	\$89,880	\$111,700	\$127,480	\$149,300
Dental Hygienists	2,280	\$73,530	\$84,590	\$91,270	\$97,950	\$101,970
Family and General Practitioners	2,190	\$109,100	\$162,810	\$199,340	*	*
Psychiatric Technicians	2,160	\$25,630	\$29,340	\$34,370	\$38,540	\$44,070
Veterinary Assistants and Laboratory Animal Caretakers	2,150	\$23,300	\$25,720	\$29,160	\$32,790	\$36,940
Health Technologists and Technicians, All Other	2,050	\$30,230	\$35,210	\$43,830	\$60,620	\$79,480
Dentists, General	1,940	\$60,500	\$112,250	\$174,410	*	*
Emergency Medical Technicians and Paramedics	1,910	\$25,410	\$29,430	\$36,780	\$46,300	\$57,650
Respiratory Therapists	1,840	\$46,950	\$53,290	\$58,850	\$64,530	\$74,740
Massage Therapists	1,790	\$22,040	\$30,810	\$38,060	\$48,660	\$62,270

United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018

*Wages above \$178,500 are not disclosed.

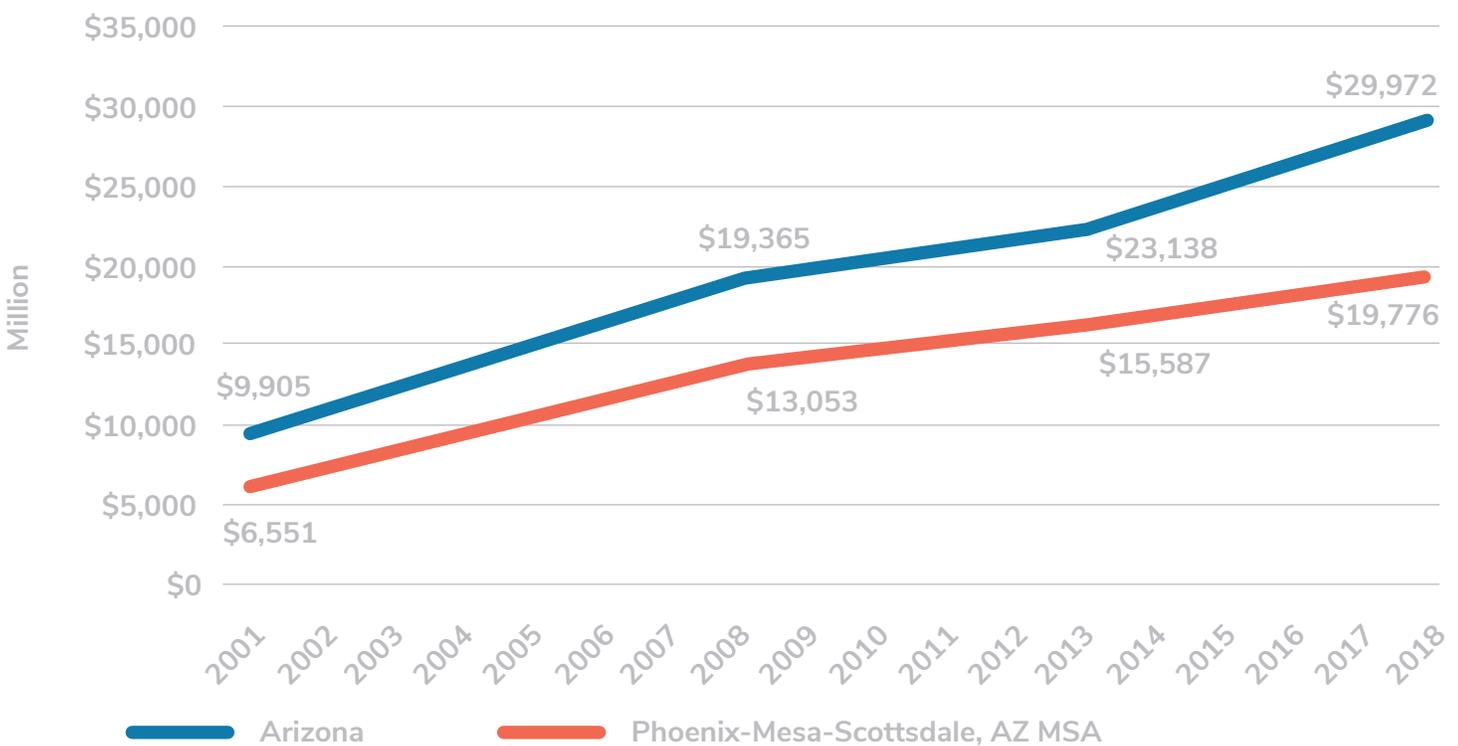
Health Care

Economic Impact

In 2018, health care (including social assistance) contributed \$29.9 billion and ranked 2nd, tied with manufacturing, among private industry sectors in terms of contribution to the gross regional product (GRP). Health care accounted for 8.6% of all the state's economic activity. Just less than \$19.8 billion of the state total came from the Greater Phoenix region.

The health care industry experienced consistent growth over the past 18 years, with a slight uptick in the early stages of the Great Recession. Health care is one of few industries that supported the economy through the recession.

Health Care Industry, Gross Regional Product, 2001-2018



Inventory of Workforce-Related Assets

Workforce Initiatives and Organizations

CVS Health Workforce Initiatives

The CVS Health Workforce Initiatives team partners with state and federal workforce agencies to provide employment services and training to underserved communities. They've helped thousands of people access meaningful employment opportunities. They also work with schools, churches, universities, faith-based, and community organizations to hire people with diverse backgrounds. The core workforce programs include registered apprenticeships, programs for veterans and spouses, and "ageless" workers.¹⁴

Health Care

Arizona Primary Care Physician Workforce Report

The Arizona Primary Care Physician Workforce Report features data, using Rural Urban Commuting Areas (RUCA) codes, to assess the distribution of the physician workforce in Arizona, and highlights differences in the distribution by training location and physician specialty. It is used as a guide in the development of policies and programs addressing the health care needs of all communities within the state.¹⁵

Greater Phoenix Chamber Foundation, Workforce Collaborative

Clinicians and talent acquisition managers of the region's largest hospital systems identified challenges filling specialty nursing positions, which ultimately impacts their ability to hire new nursing graduates, further compounding the nursing shortage. The collaborative is working with Maricopa Community Colleges (MCCCD) to create new training programs to upskill nurses into specialty positions.

Arizona Nursing Workforce Center

The Arizona Action Coalition (AZAC) was awarded a two-year Robert Wood Johnson Foundation State Implementation Plan Grant to facilitate the development of an inter-professional statewide health care workforce collaborative and steering committee to guide the development of a sustainable model for health care workforce data collection, dissemination, and management for Arizona.

The Future of Nursing Initiative

The Arizona Foundation for the Future of Nursing (AzFFN) secured a grant from the Foundation of the National Student Nurses' Association. The grant will utilize input from nurses all over Arizona to help identify high-priority nursing workforce and practice issues that will impact the work of Arizona nurses in the next five to ten years. The outcomes of this grant will drive innovative solutions such as pilot programs, demonstration projects, and possible legislation. The Arizona Nurses Association (AzNA) is pleased to provide the support for this significant initiative.

Education and Apprenticeships

Arizona Department of Education – Career and Technical Education Unit (CTE Unit)

Programs currently offered to area high school students include medical records technologies, nursing services, medical assisting services, dental assisting, pharmacy support services, sports medicine and rehabilitation, laboratory assisting, home health aide, and an emerging bioscience program.¹⁶

Colleges, Universities, and Technical Schools

According to the National Center for Education Statistics, there are 44 institutions in the Greater Phoenix region offering programs in the health professions and related services family of programs. In 2018, these institutions awarded 26,560 degrees and certificates.



In 2018, health care accounted for 8.6% of all the state's economic activity.

14 <https://cvshealth.com/about/diversity/workforce-development-programs>

15 <https://crh.arizona.edu/publications/crh-report/2557>

16 <https://www.azed.gov/cte/programs/>

Health Care

Registered Apprenticeships, Arizona Department of Economic Security

Across Arizona, there are only five active registered apprentices in programs related to health care occupations.¹⁷

The University of Arizona

The Workforce Development Program (WDP), previously called the Recovery Support Specialist Institute (RSSI), was developed as a training for peers (people with mental illness and/or substance use disorders) and funded by Medicaid and state funds, as peer support services began to expand within the behavioral health care system.¹⁸

A.T. Still University (ATSU)/National Association of Community Health Centers Community Campuses

Currently, there are 25 community campuses where students gain hands-on experience as they are placed in medically underserved areas in community health centers for three of their four years of training.

Health at ASU: Innovative health and health care

Arizona State University (ASU) forges a new path in an area previously dominated by those with medical schools. For a decade, the university has been implementing a strategic plan to recruit world-class medical researchers and health policy analysts, forge networks and working alliances with institutions regionally, and globally, and transform “siloes” departments into new transdisciplinary schools and initiatives. It is extraordinary that a university without a medical school is playing a leading role in solving health problems and disrupting broken systems. But it is precisely because of this that ASU remains nimble and entrepreneurial, forging clinical partnerships with leading providers, while convening thought leaders to explore new approaches.¹⁹

Across Arizona, there are only five active registered apprentices in programs related to health care occupations.



Risks and Stressors on the Emerging Labor Supply

1. New international trade policy, national security threats, and environmental concerns require incumbent workers to internalize new legal, industry, and organization standards on a regular basis
2. Emerging technologies present challenges for legacy employees
3. Projected demand for specialty nurses far outpaces current levels of emerging supply
4. Cost (and perceived cost) of health care education
5. Distance education is not as viable for health care programs as for other fields
6. A shortage of qualified talent threatens every facet of the health care workforce
7. Job satisfaction and workplace quality are impacting the tenure of the nursing and hospital workforces

17 <https://des.az.gov/services/employment/registered-apprenticeship/apprenticeship-employers>

18 <https://www.fcm.arizona.edu/workforce-development-program>

19 <https://health.asu.edu/>

Health Care

Workforce Stability and Sufficiency for the Sector

The number of individuals graduating from related postsecondary programs of study pales in comparison to the numbers of annual openings and projected growth in health care occupations. The industry is unusually easy to analyze in these terms because an abnormally large percentage of its workforce holds a college degree, so alignment between that emerging supply and projected demand provides a fairly comprehensive perspective. There are 238 programs of study in the health care professions program family, and the top 25 are included here.

CIP Code	Description	Completions	Annual Openings	2019 Jobs
51.3801	Registered Nursing/Registered Nurse	7,892*	2,523	38,932
51.0702	Hospital and Health Care Facilities Administration/Management	1,704	485	5,812
51.0801	Medical/Clinical Assistant	1,418	1,543	14,362
51.0707	Health Information/Medical Records Technology/Technician	1,303	342	4,691
51.3802	Nursing Administration	1,293	485	5,812
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	974	261	2,295
51.1508	Mental Health Counseling/Counselor	595	341	3,430
51.0710	Medical Office Assistant/Specialist	546	2,416	22,310
51.0701	Health/Health Care Administration/Management	537	485	5,812
51.3902	Nursing Assistant/Aide and Patient Care Assistant/Aide	524	1,186	10,423
51.3501	Massage Therapy/Therapeutic Massage	450	193	1,844
51.1501	Substance Abuse/Addiction Counseling	429	341	3,430
51.0808	Veterinary/Animal Health Technology/Technician and Veterinary Assistant	427	399	3,245
51.0601	Dental Assisting/Assistant	415	562	4,965
51.1009	Phlebotomy Technician/Phlebotomist	357	117	1,191
51.1199	Health/Medical Preparatory Programs, Other	313	4,338	58,498
51.3805	Family Practice Nurse/Nursing	295	2,842	44,553
51.3817	Nursing Education	263	1,434	14,474
51.1901	Osteopathic Medicine/Osteopathy	262	342	6,039
51.0718	Long Term Care Administration/Management	239	485	5,812
51.3818	Nursing Practice	231	3,165	47,224
51.0805	Pharmacy Technician/Assistant	225	618	6,671
51.0714	Medical Insurance Specialist/Medical Biller	182	984	8,867
51.3814	Critical Care Nursing	181	2,680	41,412

National Center for Education Statistics and United States Bureau of Labor Statistics

*includes a very large number of distance education awards from Grand Canyon University, the University of Phoenix, and others.

Conclusion

Because enrollment in the region's postsecondary education programs is far outpaced by demand for graduates, and because regional firms are desperate for qualified talent, and because the CTE system, while contributing mightily, is not capable in its current form of producing enough qualified workers to meet the demand, and because apprenticeships in these fields are practically non-existent in Arizona, this report rates the Health Care sector at a **CRITICAL IMBALANCE**.

Information Technology

Introduction

Information technology (IT) is a broad, ever-shifting industry sector that evolves and adapts to market pressures at a rate that far outpaces the ability of labor market information systems to keep up. Several subsectors of the IT industry are among the region's fastest-growing and highest paying industries, and the value of the sector is obviously a topic of immense importance.

It is instructive, however, not only to evaluate IT as an industry, but also to view it as a skill set. Professionals in every industry, from agriculture to manufacturing to cybersecurity, depend on IT skills to perform their jobs.

Over the last 12 months, more than 17,500 online job postings have sought to fill openings in computer occupations across the Greater Phoenix region. Firms like Wells Fargo, IBM, Deloitte, Oracle, American Express, and Revature have advertised to fill these openings.

The most requested job titles among these postings was software engineer, followed by java developers, systems engineers, project managers, cloud engineer architects, and .NET developers.

More than 28,000 workers in the Greater Phoenix region are employed in computer systems design firms, and another 9,000 work in data processing, hosting, and related services. More than 2,600 work in internet publishing and broadcasting, an industry that has grown by more than 350% since 2010.

Description	Jobs-2010	Jobs-2018	Change	% Change	Earnings Per Job
Computer Systems Design, Related Services	17,188	28,623	11,435	67%	\$106,014
Data Processing, Hosting, Related Services	3,996	9,230	5,234	131%	\$119,196
Software Publishers	1,497	2,537	1,040	69%	\$129,369
Internet Publishing and Broadcasting	535	2,617	2,082	389%	\$81,097

United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018



Over the last 12 months, more than 17,500 online job postings have sought to fill openings in computer occupations across the Greater Phoenix region.

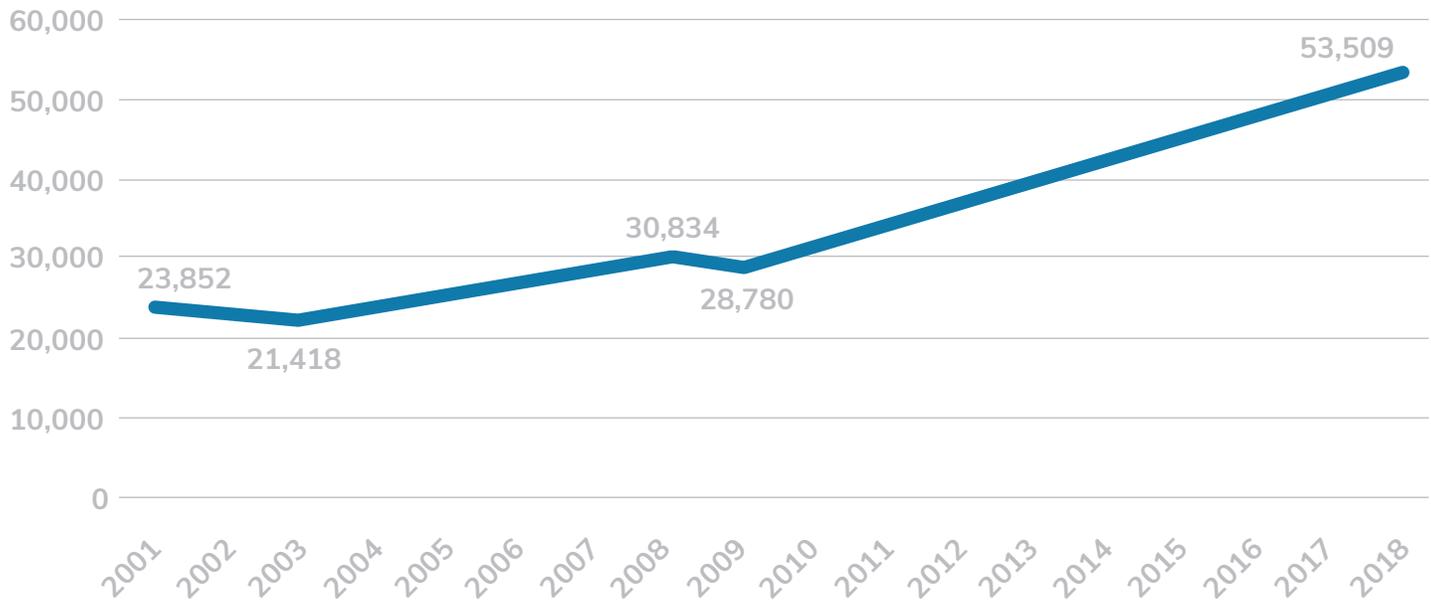
Information Technology

Employment

There are four primary components of the IT industry, as defined in this report: software publishers, data processing, hosting and related services, internet publishing and web search portals, and computer systems design and related services.

Since 2016, employment in the information technology industry has increased in every state but four. California's information technology sector leads the growth with just less than 75,000 additional jobs, and Texas follows with 27,000. Arizona added 5,694 IT jobs, ranking 14th among the states with 11.9% growth. There are 4,333 IT firms in the Phoenix metro area, and together they employ more than 53,000 people. The Great Recession had a modest impact on the industry, which quickly returned to robust growth.

Information Technology Industry Employment, Annual Averages, 2001-2018

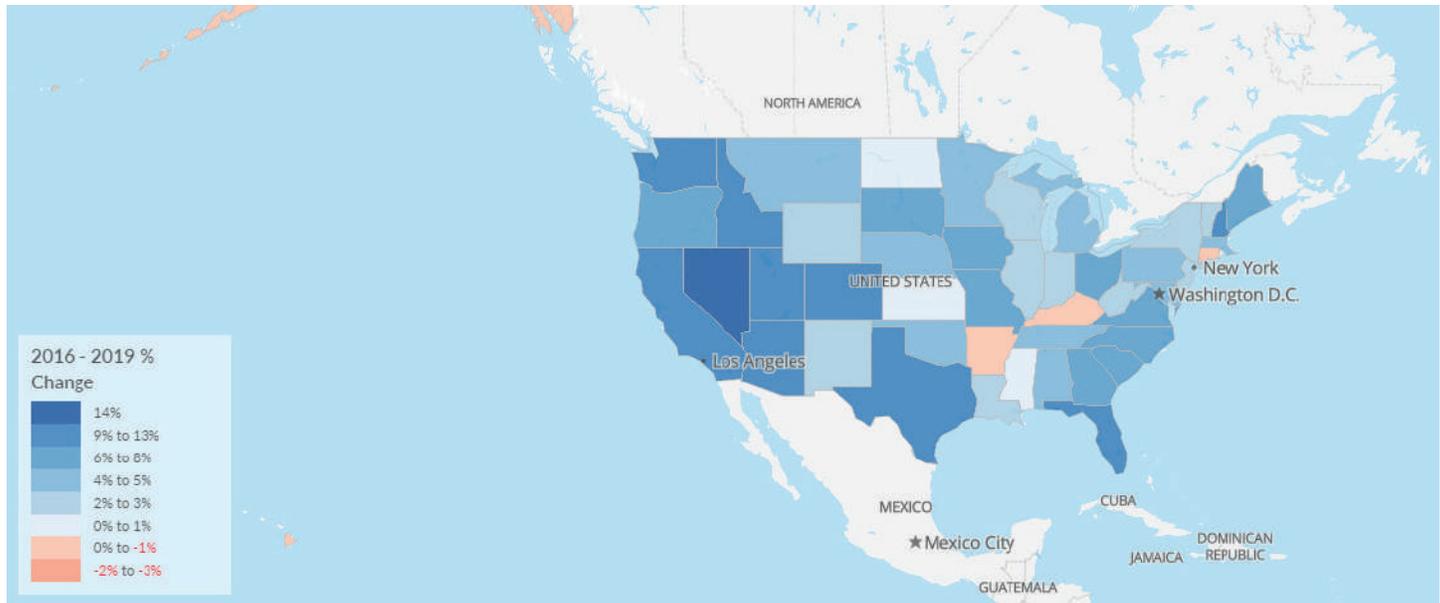


Because employment among information technology occupations is dispersed so widely across industries, it is instructive to look at the skilled information technology jobs as occupations, regardless of the industries that employ them.

While around a quarter of people in computer occupations are employed in the IT industry, another 3.8% work in commercial banking, 2.8% work for temporary help services, and 1.9% work in semiconductor manufacturing.

Information Technology

The United States Department of Labor, Employment and Training Administration designates occupations that are projected to have above-average growth as “bright outlook” careers. Almost all of these occupations are designated as having a “bright outlook.”



Occupation	Employment	Median Annual Wage
Computer User Support Specialists	13,430	\$47,450
Software Developers, Applications	12,740	\$100,700
Computer Systems Analysts	9,650	\$88,980
Software Developers, Systems Software	7,700	\$98,730
Computer Occupations, All Other	6,680	\$82,230
Computer and Information Systems Managers	5,980	\$135,440
Network and Computer Systems Administrators	5,930	\$82,090
Computer Network Support Specialists	4,840	\$53,780
Computer Programmers	2,520	\$85,120
Computer Network Architects	2,270	\$102,640
Information Security Analysts	2,050	\$97,110
Web Developers	2,020	\$63,890
Database Administrators	1,560	\$92,490
Computer, Automated Teller, and Office Machine Repairers	1,380	\$37,100
Computer Hardware Engineers	1,170	\$109,410
Computer and Information Research Scientists	120	\$125,180

United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018

Information Technology

Wage Profiles, Computer Occupations

There are four pathways with the information technology career cluster: network systems, information support and services, web and digital communications, and programming and software development. This profile focuses on all the career pathways, as reflected in the following table of wage distribution of some of the most critical occupations in Arizona.



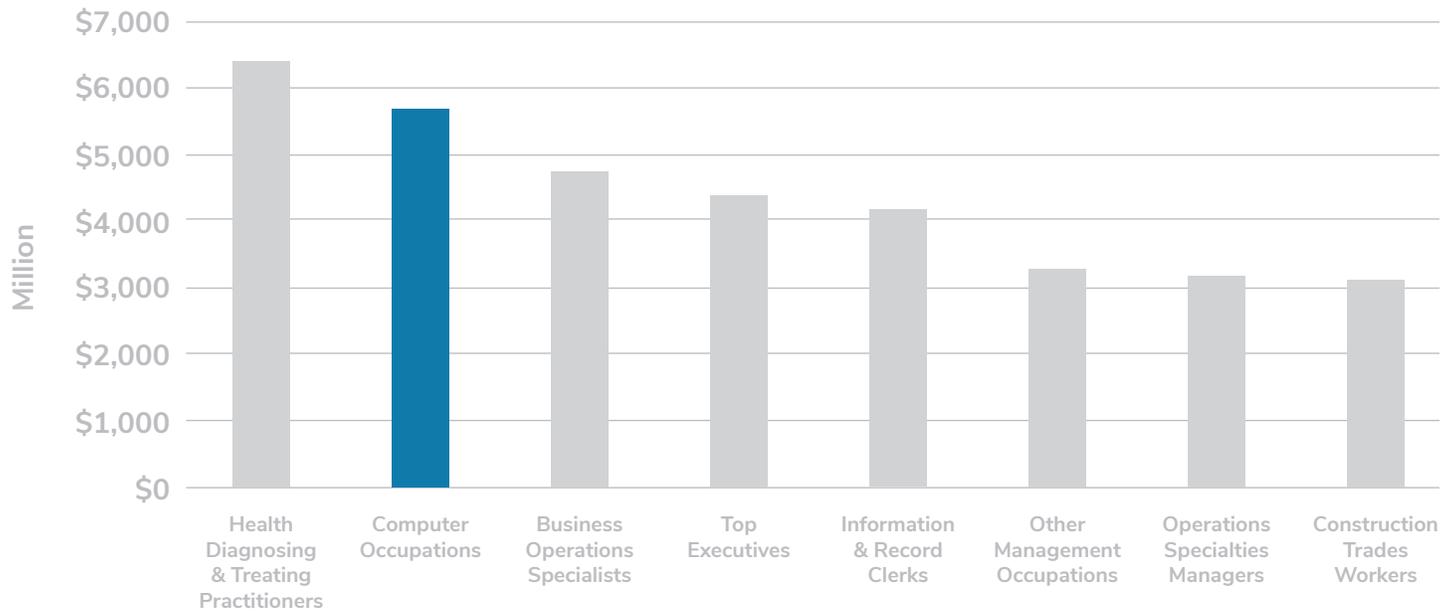
Occupation	Jobs	10th	25th	Median	75th	90th
Information Support and Services						
Computer User Support Specialists	13,430	\$29,610	\$36,270	\$47,450	\$63,230	\$86,200
Computer Hardware Engineers	1,170	\$70,710	\$82,110	\$109,410	\$132,280	\$156,750
Computer Occupations, All Other	6,680	\$41,890	\$60,120	\$82,230	\$109,160	\$134,320
Network Systems						
Computer Network Architects	2,270	\$62,910	\$81,320	\$102,640	\$126,110	\$151,450
Computer Network Support Specialists	4,840	\$34,250	\$41,340	\$53,780	\$74,420	\$97,610
Database Administrators	1,560	\$51,020	\$66,980	\$92,490	\$115,180	\$131,350
Information Security Analysts	2,050	\$55,610	\$73,010	\$97,110	\$119,730	\$139,310
Network/Computer Systems Admins	5,930	\$50,310	\$63,100	\$82,090	\$107,010	\$128,520
Programming and Software Development						
Computer Programmers	2,520	\$53,970	\$68,540	\$85,120	\$103,940	\$142,330
Computer Systems Analysts	9,650	\$55,660	\$69,190	\$88,980	\$108,850	\$127,350
Software Developers, Applications	12,740	\$57,640	\$74,800	\$100,700	\$123,670	\$146,910
Software Developers, Systems Software	7,700	\$60,060	\$77,110	\$98,730	\$122,920	\$150,160
Web and Digital Communications						
Web Developers	2,020	\$41,730	\$53,580	\$63,890	\$82,360	\$115,390
Management and Other						
Computer/Information Systems Managers	5,980	\$82,430	\$106,930	\$135,440	\$163,210	\$201,180
Computer/Information Research Scientists	120	\$88,570	\$103,470	\$125,180	\$147,740	\$163,540

Information Technology

Economic Impact

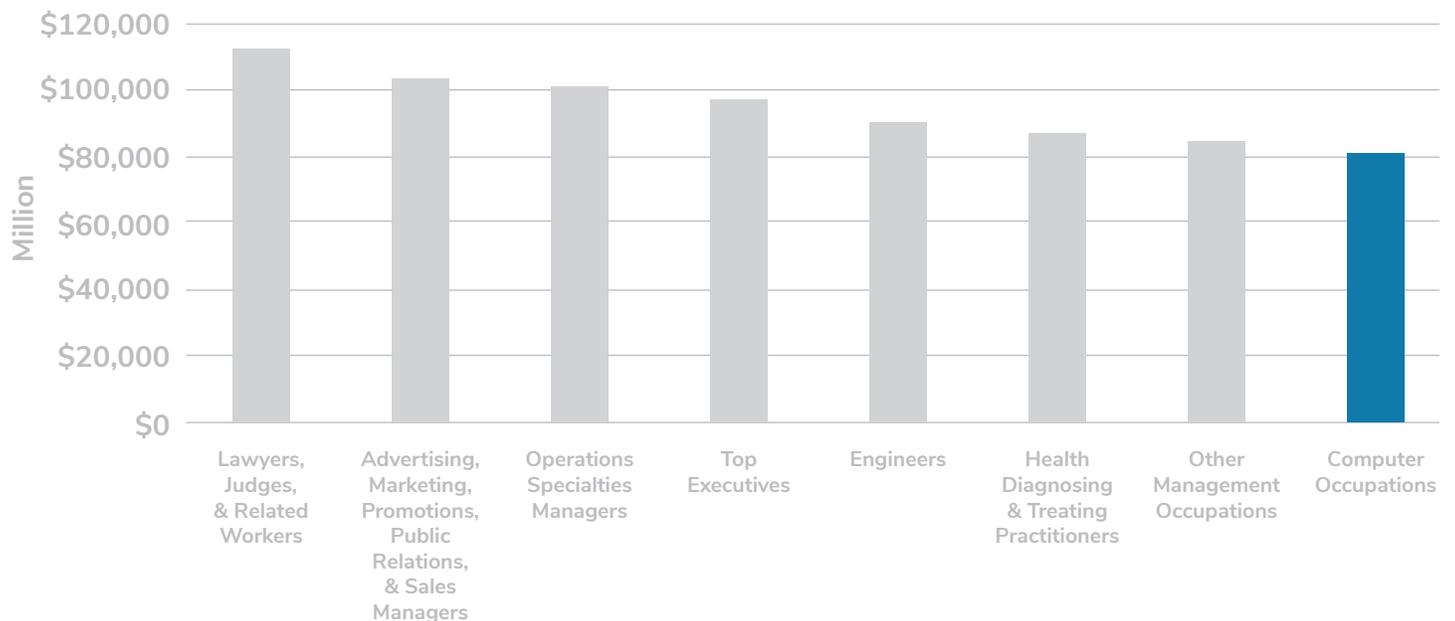
Computer occupations rank 2nd among occupations families for total wages paid in the Greater Phoenix region and 8th for average earnings.

Total Wages Paid, By Occupation Family, Phoenix MSA, 2018



Computer occupations are also one of the highest paying occupation families in the Greater Phoenix region's labor market.

Median Earnings, Top Eight Occupation Families, Phoenix MSA, 2018



United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018

Information Technology

Inventory of Workforce-Related Assets

Workforce Initiatives and Organizations

Greater Phoenix Chamber Foundation, Cybersecurity Workforce Collaborative

The Cybersecurity Workforce Collaborative has partnered with members of the Arizona Technology Council (AZTC) to develop a continuum of workplace experiences and share best practices to expand these opportunities.

A robust action plan has been developed around four key areas:

1. A collaborative marketing and communications strategy promoting cybersecurity careers in Arizona – one product of which is AZCyberTalent.com
2. An education strategy focused on aligning education programs with employer needs and capacity building
3. Increasing internal and external workplace experiences for job seekers
4. Collecting and utilizing supply and demand data to make more informed decisions to strategically address talent shortages in cybersecurity²⁰

Arizona STEM Network | Science Foundation Arizona

The Arizona STEM Network, led by Science Foundation Arizona, is a collaboration between businesses, educators, government, and philanthropy with a common agenda to graduate more Arizona students prepared for the global economy through science, technology, engineering, and mathematics (STEM) education.²¹

Education and Apprenticeships

The Arizona Blockchain Initiative

The Arizona Blockchain Initiative strives to educate state residents on blockchain technology and cybersecurity. It offers a variety of resources and workshops for communities across the state, including workshop curriculum to provide skill-building and an introduction to careers in emerging technologies.²²

Registered Apprenticeships, Arizona Department of Economic Security

Across Arizona, there are 101 active apprentices in programs related to information technology.

Colleges and Universities

Many post-secondary schools in Arizona offer courses, certificates, and degrees in various information technology areas.



Computer occupations are also one of the highest paying occupation families in the Greater Phoenix region's labor market.

²⁰ <https://www.azcybertalent.com/>

²¹ www.sfaz.org/STEM

²² www.azblockchain.org/home



The average number of new computer occupations jobs per year is larger than the combined total of graduates from information technology programs across every institution in the region.

Risks and Stressors on the Emerging Labor Supply

New international trade policy, data integrity mandates, and national security threats require incumbent workers to internalize new industry and organization standards on a regularly.

With the constant goal of making the personal data more secure and the IT industry more socially responsible, legislation regularly undergoes improvements and reviews which companies often struggle to keep up with.

Not only can it be hard to access the relevant information and resources, it requires time, funds, and commitment to building workers skills and knowledge on the changes. By nature, the IT industry has a largely distributed workforce, acting as an extra roadblock for businesses when trying to supply training.

Cost (and perceived cost) of IT education

Education in many IT fields can be relatively expensive. The cost of a college degree in an IT field seems to be perceived as an insurmountable obstacle in the minds of many young people, especially among those in households without a college graduate.

Growth rate of the industry is outpacing the talent development ecosystem

Since the end of the Great Recession, the average number of new computer occupations jobs per year is larger than the combined total of graduates from information technology programs across every institution in the region.

Information Technology

Workforce Stability and Sufficiency for the Sector

The number of individuals graduating from related postsecondary programs of study pales in comparison to the numbers of annual openings and projected growth in computer occupations.

CIP Code	Description	Completions	Annual Openings	2019 Jobs
11.0103	Information Technology	2,000	2,670	36,772
11.0701	Computer Science	702	4,796	61,239
11.1003	Computer/Information Systems Security/Information Assurance	580	2,700	32,837
11.0901	Computer Systems Networking and Telecommunications	466	2,796	34,986
11.0201	Computer Programming/Programmer, General	464	3,854	48,517
11.1001	Network and System Administration/Administrator	372	3,027	37,250
11.0101	Computer and Information Sciences, General	338	2,726	36,558
11.1006	Computer Support Specialist	323	1,602	18,876
11.0801	Web Page, Digital/Multimedia & Information Resources Design	222	800	9,092
11.0501	Computer Systems Analysis/Analyst	183	2,796	34,986
11.1005	Information Technology Project Management	109	1,917	25,097
11.0104	Informatics	95	1,476	20,662
11.0802	Data Modeling/Warehousing and Database Administration	77	128	1,596
11.1004	Web/Multimedia Management and Webmaster	65	528	6,438
11.0202	Computer Programming, Specific Applications	58	1,703	22,999
11.0299	Computer Programming, Other	24	240	2,473
11.9999	Computer and Information Sciences and Support Services, Other	20	0	0
11.0899	Computer Software and Media Applications, Other	20	272	2,654
11.1002	System, Networking, and LAN/WAN Management/Manager	10	2,130	25,314
11.0803	Computer Graphics	7	494	4,952
11.0401	Information Science/Studies	5	1,522	20,580
11.0601	Data Entry/Microcomputer Applications, General	2	488	2,854
11.0804	Modeling, Virtual Environments and Simulation	0	1,175	15,655
11.0102	Artificial Intelligence	0	1,476	20,662

United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018

Conclusion

Because enrollment in the region's postsecondary education programs is far outpaced by demand for graduates, and because regional firms are desperate for qualified talent, and because the CTE system, while contributing mightily is not capable in their current forms of producing enough qualified workers to meet the demand, and because apprenticeships in these fields are lacking in Arizona, this report rates the information technology sector at a **CRITICAL IMBALANCE**.

Retail Trade, Accommodation, and Food Service

Introduction

This profile seeks to provide a combined perspective on three extremely broad industry sectors: retail, accommodation, and food services, and arts, entertainment, and recreation. While there are many strata and specifics within each of these, there is some similarity between the skills profiles of a large majority of their workforces. For that reason, this report considers them together to gain valuable perspective on the workforce-related challenges associated with this very large component of the Greater Phoenix region's labor market.

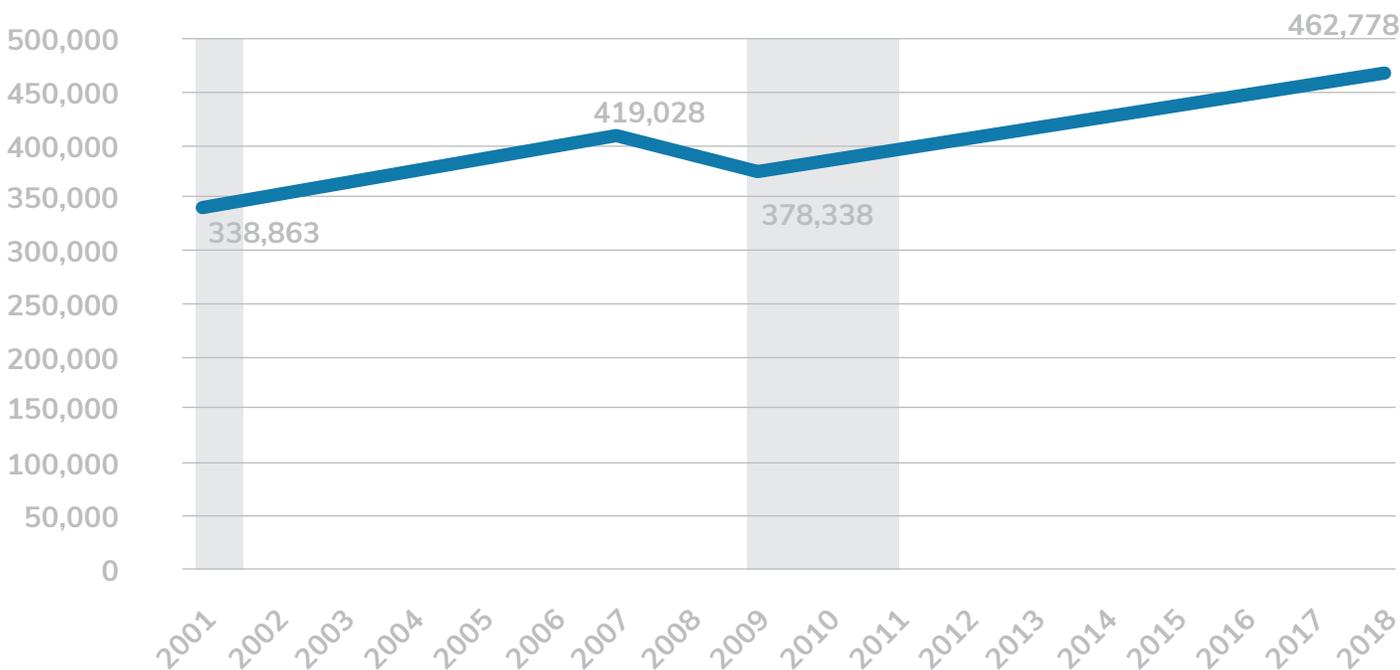
The retail sector alone in Phoenix provides almost 12% (235,000) of all jobs in the region. The sector contributed more than \$18 billion to the gross regional product (GRP) in 2018, which is comparable to the manufacturing, finance, or health care sectors.

Employment

Since 2001, employment in the industry has increased in 35 states. California's retail trade, accommodation, and tourism sector added 119,655 jobs, and Florida added just over 80,000. Arizona added 20,263 jobs, ranking ninth among the states with 3.2% growth.

There are 29,450 establishments in the Greater Phoenix region, and together they employ more than 652,000 people. During the Great Recession, employment declined by 40,000 jobs.

Retail Trade, Accommodation, and Food Services, Employment, Annual Averages, 2001-2018, Phoenix MSA



Retail Trade, Accommodation, and Food Service

The largest retail sectors in the Greater Phoenix region include grocery stores, supercenters/warehouse clubs, and automobile dealers.

NAICS	Industry	Establishments	Employees	Average Annual Wage
4451	Grocery Stores	671	36,770	\$29,588
4523	General Merchandise Stores, including Warehouse Clubs/ Supercenters	335	22,938	\$30,264
4411	Automobile Dealers	430	22,373	\$62,348
4441	Building Material and Supplies Dealers	419	16,079	\$36,764
4522	Department Stores	163	15,887	\$22,984
4461	Health and Personal Care Stores	1,296	14,286	\$46,020
4481	Clothing Stores	777	11,283	\$18,252
4413	Auto Parts, Accessories, and Tire Stores	603	9,343	\$35,672
4471	Gasoline Stations	738	9,308	\$29,952
4431	Electronics and Appliance Stores	391	7,961	\$53,456

United States Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2018

Accommodation and food services employs 193,600 people at 7,400 establishments in the Greater Phoenix region and contributed just under \$8 billion to the regional economy.

NAICS	Industry	Establishments	Employees	Average Annual Wage
7225	Restaurants and Other Eating Places	6,095	152,622	\$20,696
7211	Traveler Accommodation	444	25,946	\$35,283
7223	Special Food Services	466	10,715	\$26,332
7224	Drinking Places, Alcoholic Beverages	335	3,837	\$21,008

United States Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2018

Arts, entertainment, and recreation employs another 34,000 and contributed \$3 billion.

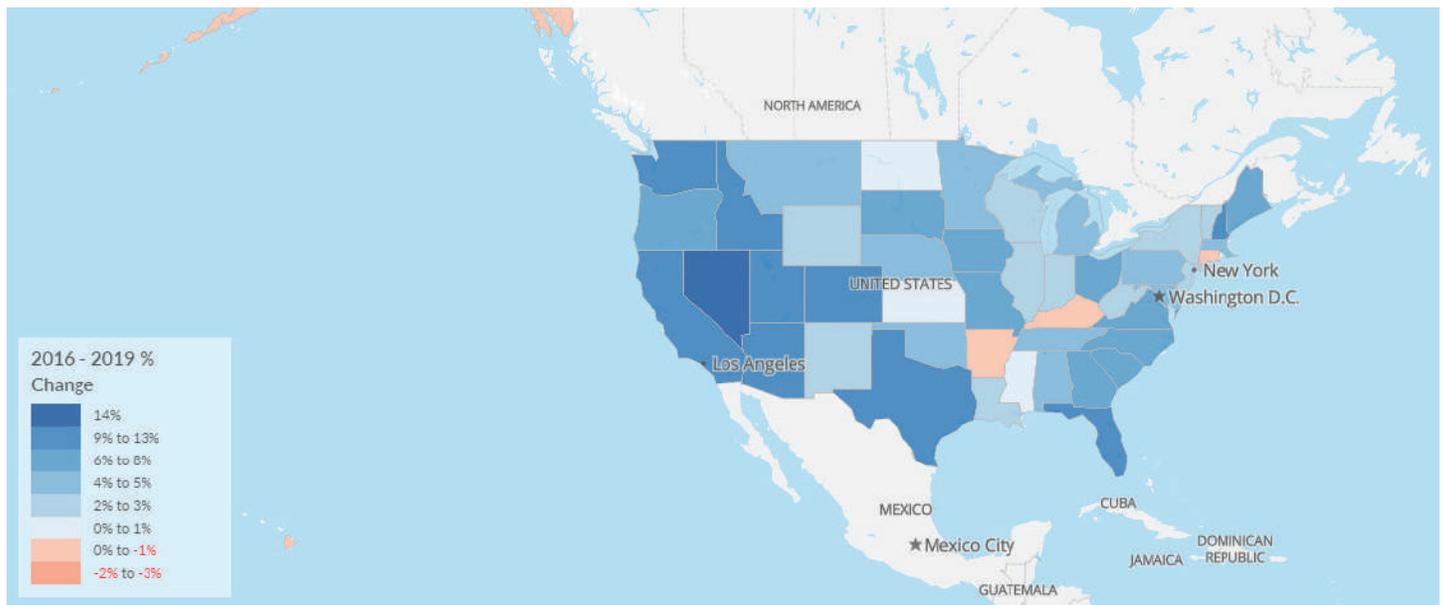
NAICS	Industry	Establishments	Employees	Average Annual Wage
7112	Spectator Sports	103	4,398	\$178,521
7113	Promoters of Performing Arts and Sports	117	2,429	\$29,424
7121	Museums, Historical Sites, Zoos, and Parks	39	1,921	\$32,997
7131	Amusement Parks and Arcades	39	1,281	N/A

United States Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2018

Retail Trade, Accommodation, and Food Service

Retail Trade, Accommodation, and Tourism Industry Occupations

Occupations are typically employed by a number of different industries, and in this profile of a combined mega-sector, that is particularly true. In order to better discuss this occupation family, custom grouping was created. This grouping includes food preparation, sales and arts, design, entertainment, sports, and media occupation families, and found that, as expected, more than two-thirds of them work in the retail, accommodation, and arts industries. However, another 5% work in the wholesale trade industry, 4% of them work in finance and insurance, and another 3% work in government. Across all industries, more than 440,000 workers are employed in these occupations in the Greater Phoenix region.



**Across all industries,
more than 440,000
workers are employed in
these occupations in the
Greater Phoenix region.**



Retail Trade, Accommodation, and Food Service

Wage Profiles, Retail Trade, Accommodation, and Tourism

The table below was manually constructed, and includes occupations most relevant to this mega-sector and returned data on employment levels and wages for each.

Occupation	Employment	Median Annual Wage
Retail Salespersons	67,760	\$24,150
Combined Food Preparation and Serving Workers, Including Fast Food	44,180	\$22,940
Cashiers	43,640	\$23,640
Personal Care Aides	36,440	\$23,830
Waiters and Waitresses	33,260	\$23,720
First-Line Supervisors of Retail Sales Workers	17,590	\$38,170
Sales Representatives, Services, All Other	17,220	\$48,260
Cooks, Restaurant	15,970	\$28,290
First-Line Supervisors of Food Preparation and Serving Workers	15,140	\$30,850
Cooks, Fast Food	13,790	\$22,390
Food Preparation Workers	10,850	\$24,070
Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	9,940	\$24,600
Bartenders	7,910	\$23,100
Telemarketers	7,570	\$28,810
Childcare Workers	7,570	\$24,250
Hairdressers, Hairstylists, and Cosmetologists	7,350	\$23,900
Dishwashers	7,230	\$23,690
Dining Room and Cafeteria Attendants and Bartender Helpers	6,500	\$22,930
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	6,450	\$23,480
Counter and Rental Clerks	6,280	\$24,420
Insurance Sales Agents	6,010	\$46,510
Recreation Workers	4,910	\$24,540
Food Servers, Nonrestaurant	4,440	\$22,660
Property, Real Estate, and Community Association Managers	4,330	\$58,720
First-Line Supervisors of Personal Service Workers	4,090	\$35,800
Food Service Managers	4,020	\$54,840
Amusement and Recreation Attendants	3,860	\$23,580
Cooks, Institution and Cafeteria	3,830	\$26,620
First-Line Supervisors of Non-Retail Sales Workers	3,770	\$62,690
Parts Salespersons	3,720	\$28,420

Retail Trade, Accommodation, and Food Service

Wage Profiles, Relevant Occupations

Occupation	Jobs	10th	25th	Median	75th	90th
Retail Salespersons	67,760	\$21,850	\$22,540	\$24,150	\$28,180	\$36,380
Fast Food Workers	44,180	\$21,850	\$21,860	\$22,940	\$24,430	\$27,610
Cashiers	43,640	\$21,850	\$22,130	\$23,640	\$25,480	\$30,500
Waiters and Waitresses	33,260	\$21,850	\$21,850	\$23,720	\$37,630	\$49,380
First-Line Supervisors of Retail Sales	17,590	\$26,320	\$31,180	\$38,170	\$50,110	\$62,270
Cooks, Restaurant	15,970	\$22,900	\$24,700	\$28,290	\$32,770	\$38,240
First-Line Supervisors-Fast Food	15,140	\$22,890	\$25,490	\$30,850	\$43,270	\$57,370
Cooks, Fast Food	13,790	\$21,850	\$21,850	\$22,390	\$24,530	\$27,450
Food Preparation Workers	10,850	\$21,900	\$22,710	\$24,070	\$25,930	\$30,080
Counter Attendants	9,940	\$21,860	\$22,800	\$24,600	\$27,750	\$30,590
Bartenders	7,910	\$21,850	\$21,850	\$23,100	\$41,300	\$58,240
Dishwashers	7,230	\$21,850	\$22,380	\$23,690	\$25,280	\$28,710
Dining/Cafeteria Attendants & Bar Helpers	6,500	\$21,850	\$21,850	\$22,930	\$27,630	\$35,720
Hosts and Hostesses	6,450	\$21,850	\$22,010	\$23,480	\$25,260	\$32,210
Recreation Workers	4,910	\$21,860	\$22,760	\$24,540	\$29,910	\$38,040
Food Servers, Nonrestaurant	4,440	\$21,850	\$21,850	\$22,660	\$27,360	\$37,490
Food Service Managers	4,020	\$32,300	\$40,430	\$54,840	\$66,290	\$101,930
Amusement/Recreation Attendants	3,860	\$21,850	\$21,860	\$23,580	\$27,120	\$32,080
Cooks, Institution and Cafeteria	3,830	\$22,170	\$23,660	\$26,620	\$30,680	\$35,920
Parts Salespersons	3,720	\$22,240	\$23,950	\$28,420	\$38,320	\$56,050
Cooks, Short Order	2,930	\$22,080	\$22,910	\$24,280	\$28,810	\$34,770
Nonfarm Animal Caretakers	2,740	\$21,860	\$22,700	\$24,350	\$29,290	\$38,460
Chefs and Head Cooks	2,670	\$23,410	\$25,710	\$38,400	\$55,430	\$70,110
Ushers, Attendants, and Ticket Takers	2,530	\$21,850	\$21,860	\$23,490	\$25,900	\$30,280
Travel Agents	2,330	\$33,460	\$39,340	\$48,560	\$60,540	\$71,680
Gaming Dealers	1,980	\$21,840	\$21,850	\$21,860	\$23,950	\$25,760
Demonstrators and Product Promoters	1,730	\$22,620	\$24,220	\$37,090	\$51,550	\$59,390

United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018



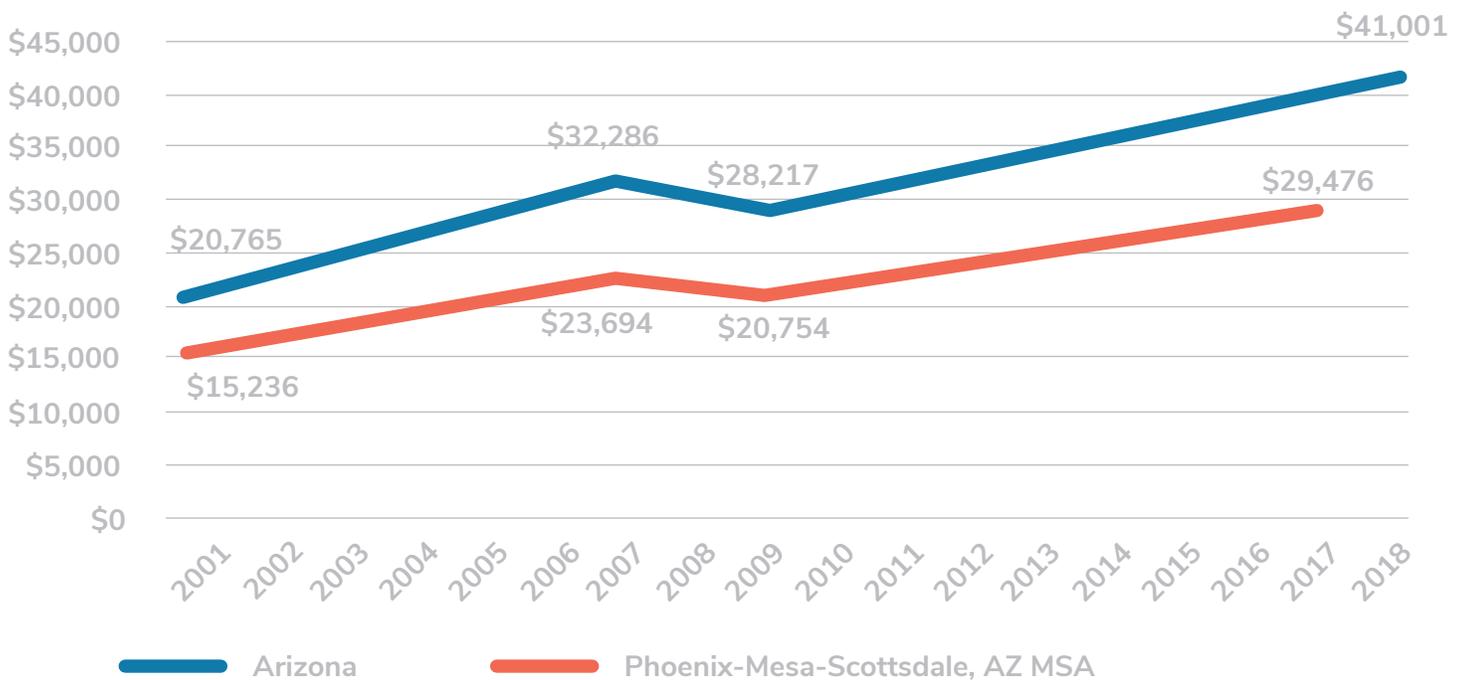
Retail Trade, Accommodation, and Food Service

Economic Impact

The contribution of the retail trade, accommodation, and food services sector is vital to Arizona's economy. In 2017, it ranked fifth among private industry sectors in terms of contribution to the gross regional product (GRP), accounting for 8.4% of all the areas economic activity.

The relative position of the retail trade, accommodation, and food services sector in Arizona's economy has not changed over the years. In 2007, just prior to the Great Recession, it ranked 6th for contribution to the GRP.

Retail Trade; Arts, Entertainment, & Receptions; and Accommodation & Food Services, Gross Regional Product, 2001-2018



Inventory of Workforce-Related Assets

Workforce Initiatives and Organizations

Center for the Future of Arizona – The RetailWorks Initiative

RetailWorks AZ supports the important role the retail sector plays in Arizona's economy and in the lives of many Arizonans, whose first job experience and skills

are often acquired in retail. This initiative is the first of its kind for the Greater Phoenix region and has great potential to be a model nationally for a how a region can tap into the economic development opportunities that come from leveraging the retail industry.²³

Chicanos Por La Causa

CPLC, in partnership with the Center for the Future of Arizona, conducts free retail industry training classes.

23 <https://www.arizonafuture.org/retailworks-az/overview/>

Retail Trade, Accommodation, and Food Service

This training includes Free RISE UP Retail Industry Fundamentals and opportunities to earn the Retail Industry Fundamentals credential from the National Retail Federation.²⁴

The Western Association of Food Chains (WAFC)

WAFC is pleased to announce the WAFC Retail Management Certificate Program, an eight-course college-level program that has been fully endorsed by the Western Association of Food Chains and its member companies. The certificate's curriculum was developed out of a collaborative effort between several food industry and college professionals, and encompasses several business essentials, including the "soft skills" of management and communication required for career success in the retail food industry.

Education and Apprenticeships

Arizona Department of Education – Career and Technical Education Unit (CTE Unit)

The Arizona Department of Education (ADE) provides career and technical education resources at the high school level. The CTE Unit is exploring ways to market to parents and students about career paths in CTE fields. They are also exploring other issues and opportunities to assist in recruiting and retaining a skilled workforce. Only one of the programs offered by ADE is directly related to retail trade, accommodation, and food services sector: culinary arts.²⁵

Registered Apprenticeships, Arizona Department of Economic Security

In a registered apprenticeship, a worker earns a salary while receiving on-the-job training and related technical instruction. A skilled mentor oversees and trains the apprentice. It is a voluntary, industry-driven system for occupations requiring a range of high-level skills. It is full-time, paid employment, and training with built-in career placement. Across Arizona, there are only 19 active apprentices in hospitality-related programs and 78 in retail.²⁶

Colleges, Universities, and Trade Schools

A number of postsecondary schools offer programs in this very broad sector, ranging from the University of Arizona to the Arizona Culinary Institute. Of particular note is the relatively new business degree in food industry management at the W.P. Carey School of Business at ASU.

Risks and Stressors on the Emerging Labor Supply

High turnover rates make talent a constant concern.

Across all industries, the average "quits rate" in September 2019 was 2.3%. The industry with the highest quits rate was accommodation and food service at 4.7%. Retail trade was second at 3.4%.²⁷



The industry with the highest quits rate was accommodation and food service at 4.7%. Retail trade was second at 3.4%

24 www.startinretail.com

25 <https://www.azed.gov/cte/programs>

26 <https://des.az.gov/services/employment/registered-apprenticeship/apprenticeship-employers>

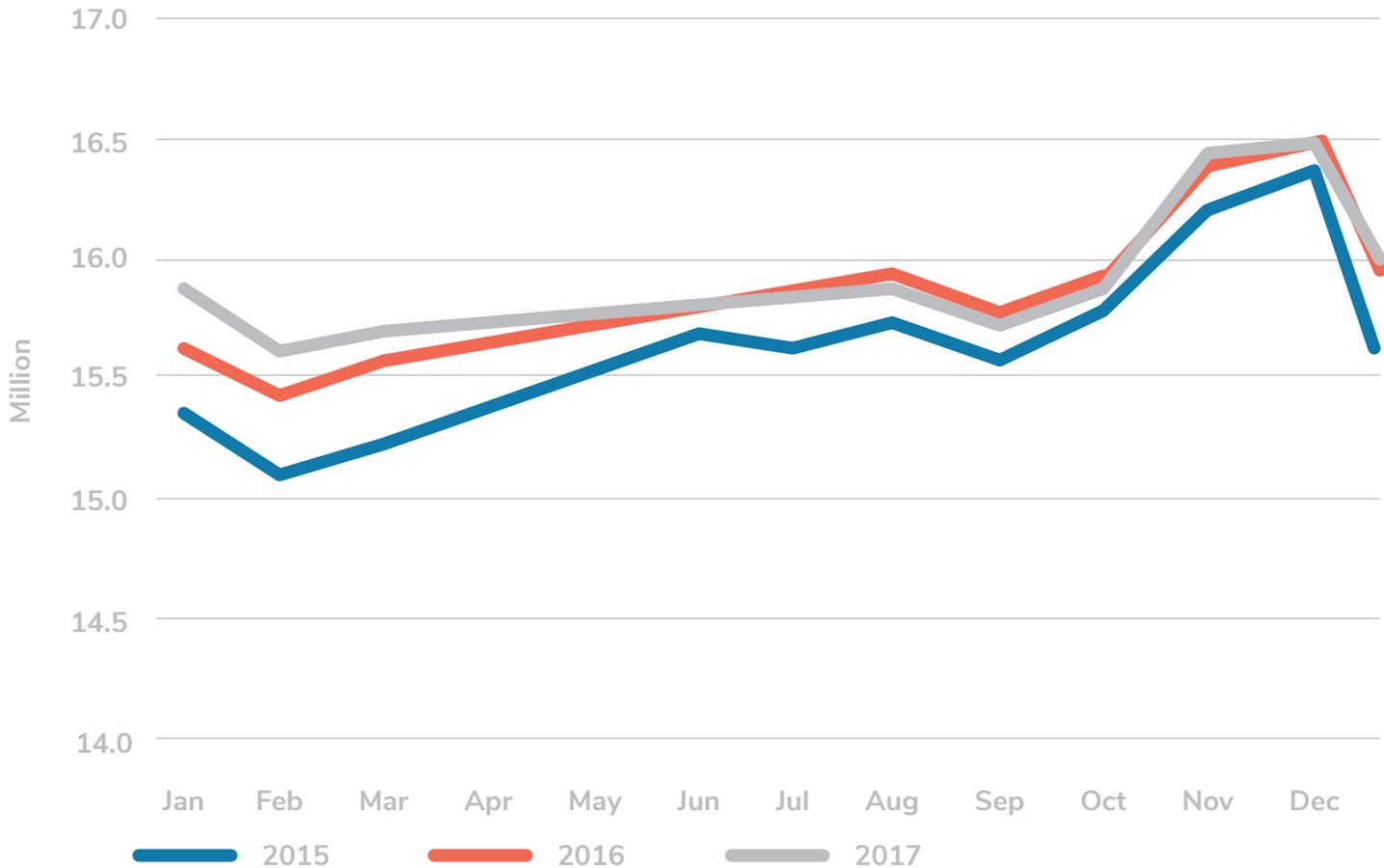
27 <https://www.bls.gov/news.release/jolts.t04.htm>

Retail Trade, Accommodation, and Food Service

Seasonal demand patterns make recruiting difficult.

The retail trade sector, in particular, sees a predictable surge in employment during each year's holiday season and has maintained a fairly steady employment base, despite the online retail movement.

Average Employment, Retail Trade, United States, 2015-2018, Phoenix, MSA



United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018

The industry is perceived as a stepping stone, not a career destination.

While the reality is that careers in the retail, hospitality, and accommodation space develop valuable skills and are often the first steps to long-term careers in these fields, many of the best and brightest currently entering the workforce do not consider these fields as a long-term career opportunity.

The rise of ecommerce and online retail threaten to redefine the skill sets associated with the traditional brick and mortar model.

The emergence of 'retailtainment' – not just engaging with customers in-store, but using tools like brand ambassadors to get customers interested and in the mood to buy is impacting the way front-line employees are recruited and trained. The name of the game is to create a customer experience, which goes beyond the hard sell.

Retail Trade, Accommodation, and Food Service

Workforce Stability and Sufficiency for the Sector

The number of individuals graduating from related postsecondary programs of study pales in comparison to the numbers of annual openings and projected growth in retail, accommodation, and food service occupations. The industry is difficult to analyze in these terms because an abnormally small percentage of its workforce holds a college degree, so alignment between that emerging supply and projected demand provides a fairly limited perspective.

This analysis, however, opens an additional dimension to be explored: is it possible that formal postsecondary education could be a more significant factor in the industry's talent development ecosystem if relevant programs were offered at more postsecondary institutions, and were more generally available?

CIP Code	Description	Completions	Annual Openings	2019 Jobs
52.1803	Retailing and Retail Operations	0	28,444	188,249
52.1804	Selling Skills and Sales Operations	0	20,519	139,809
52.1801	Sales, Distribution, and Marketing Operations, General	0	14,724	96,063
12.0507	Food Service, Waiter/Waitress, and Dining Room Management/Manager	0	11,339	61,045
12.0500	Cooking and Related Culinary Arts, General	31	10,885	87,037
52.0411	Customer Service Support/Call Center/Teleservice	796	9,198	78,178
52.0212	Retail Management	16	6,794	70,830
52.0205	Operations Management and Supervision	391	4,144	43,133
52.0207	Customer Service Management	61	2,780	27,240
52.1902	Fashion Merchandising	29	2,579	22,203
12.0504	Restaurant, Culinary, and Catering Management/Manager	9	2,430	19,319
12.0503	Culinary Arts/Chef Training	166	2,420	19,001
52.0213	Organizational Leadership	467	2,271	23,820
52.0909	Hotel, Motel, and Restaurant Management	0	1,904	18,917
52.0907	Meeting and Event Planning	0	1,598	16,115
12.0502	Bartending/Bartender	0	1,208	8,001
12.0510	Wine Steward/Sommelier	0	979	9,272



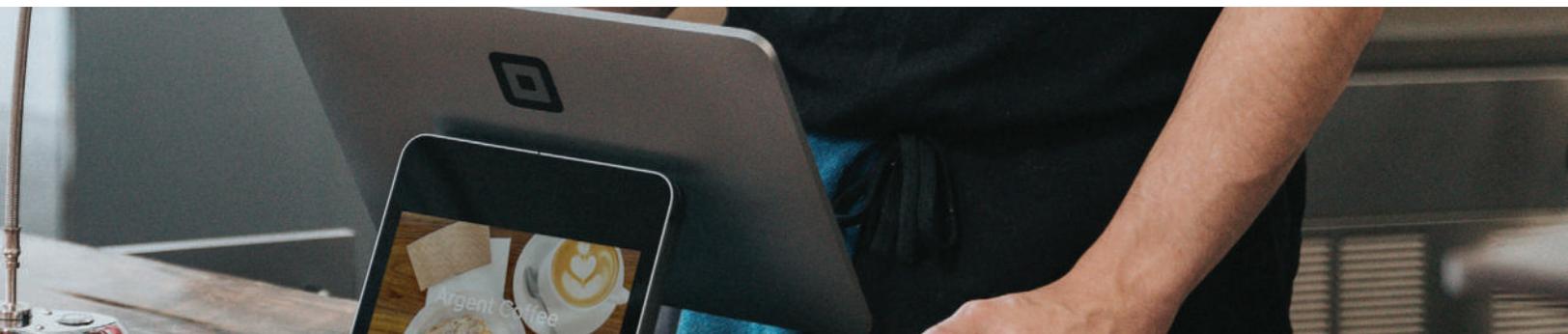
Retail Trade, Accommodation, and Food Service

CIP Code	Description	Completions	Annual Openings	2019 Jobs
52.0904	Hotel/Motel Administration/Management	18	621	5,218
52.1802	Merchandising and Buying Operations	24	553	5,204
52.0903	Tourism and Travel Services Management	121	538	6,479
52.1906	Tourism Promotion Operations	0	531	3,550
52.0901	Hospitality Administration/Management, General	131	470	4,444
52.0703	Small Business Administration/Management	59	439	5,869
52.0702	Franchising and Franchise Operations	0	439	5,869
52.0999	Hospitality Administration/Management, Other	0	439	5,869
52.0905	Restaurant/Food Services Management	2	425	4,068
12.0506	Meat Cutting/Meat Cutter	15	313	2,285
12.0501	Baking and Pastry Arts/Baker/Pastry Chef	44	264	1,982
52.0908	Casino Management	0	123	541
50.0101	Visual and Performing Arts, General	53	122	1,065
52.0906	Resort Management	0	44	375
50.0301	Dance, General	30	27	55

National Center for Education Statistics, Integrated Post Secondary Educational Data System, 2018-2019 and Arizona Office of Economic Opportunity Employment Projections

Conclusion

Because enrollment in the region's postsecondary education programs is far outpaced by demand for graduates, and because regional firms are desperate for qualified talent, and because the CTE system is not currently capable of producing enough qualified workers to meet the demand, and because apprenticeships in these fields is practically non-existent in Arizona, this report rates the retail trade, accommodation, and food services sector at a **CRITICAL IMBALANCE**.



Skilled Construction Trades

Introduction

The shortage of qualified talent in these fields is no secret. While a significant portion of employers don't require a college degree to work in these occupations, there is a real opportunity to encourage more people to consider these careers, and to qualitatively improve the talent pool through trade schools, certificate programs, and associate's and bachelor's degrees. This report will look at both occupational and industry data to quantify demand, and will look at job postings to understand the skills and qualifications employers need.

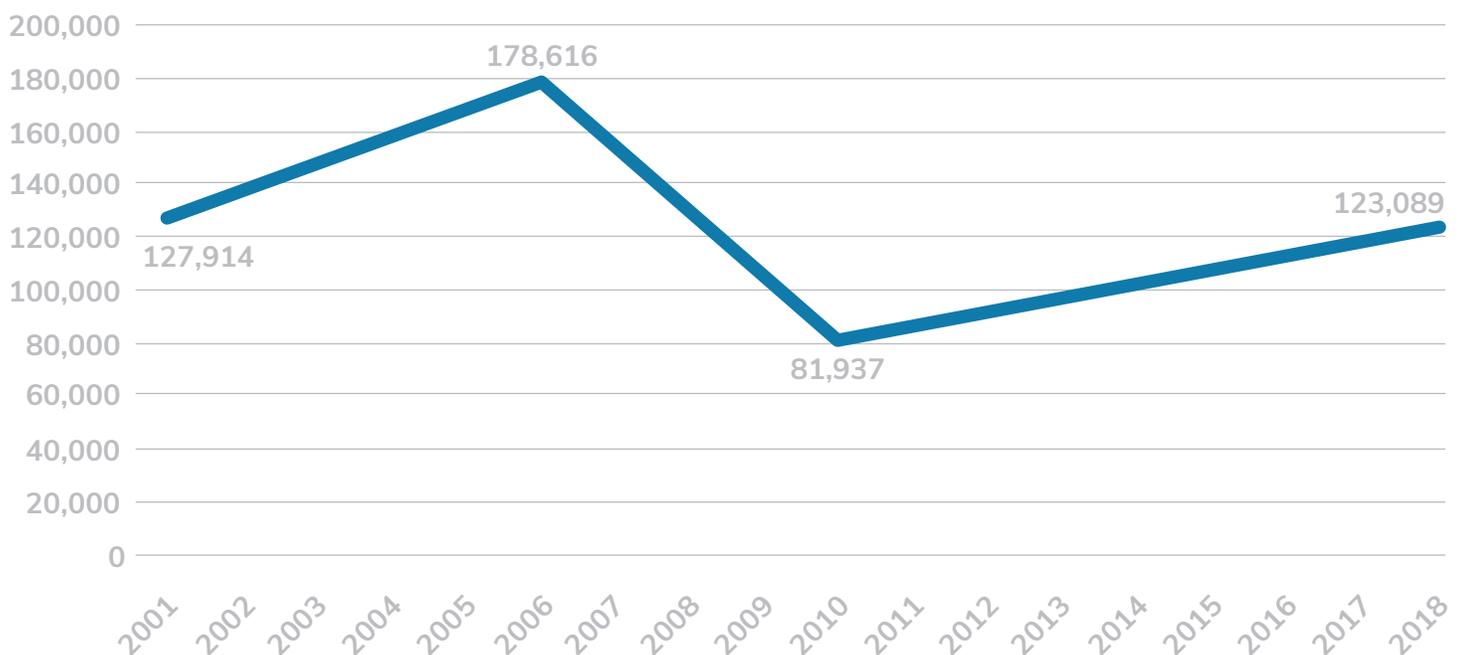
Employment

Since 2016, employment in the construction industry has increased in 42 states. California's construction sector has added just less than 96,000 jobs, and Florida has added 74,000. Arizona has added 27,600 construction jobs, ranking third among the states with 20% growth.

There are 8,156 construction firms in the Greater Phoenix region, and together they employ more than 123,000 people across the Valley.

The Great Recession devastated the construction industry in the Greater Phoenix region. Employment in the construction industry peaked in 2006 at 178,616 positions. By the end of 2009, however, the industry had shrunk precipitously, bottoming out at 82,000 people. Recovery has been slow and steady since, but the industry is still 30.0% smaller than its 2006 peak.

Construction Industry Employment, Annual Averages, 2001-2018, Phoenix MSA

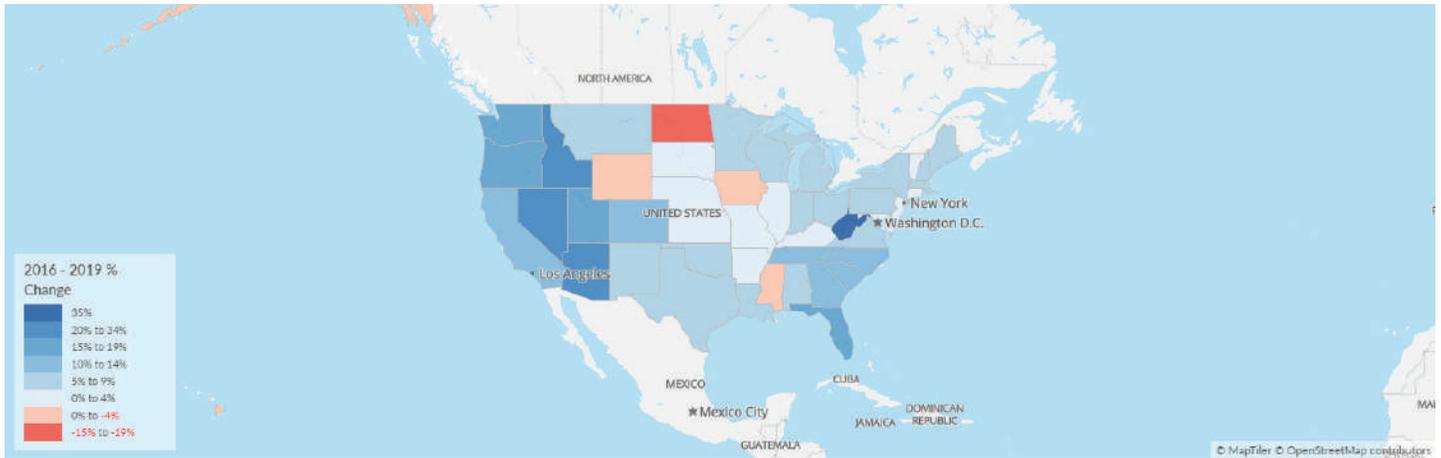


United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018

Skilled Construction Trades

The Skilled Trades

Individuals working in the skilled trades are typically employed across a variety of industries. For example, across Arizona, while 79.2% of electricians work in various construction industries, 5.5% work for government entities, 5.0% work in administrative and support, and waste management, and remediation, 3.0% work in manufacturing, 2.8% work in mining and quarrying, 1.1% work for utilities agencies and around one of every 100 work in transportation and warehousing.



Because employment among construction occupations is dispersed so widely across industries, it is instructive to look at the skilled construction trades as occupations, regardless of the industries that employ them. For this analysis, all occupations from the construction and extraction occupation family were considered, along with certain occupations from the installation, maintenance, and repair occupation family that are particularly relevant to construction work.

Occupation	Employment	Median Annual Wage
Construction Laborers	14,300	\$35,210
First-Line Supervisors of Construction Trades and Extraction Workers	11,680	\$61,640
Carpenters	9,800	\$42,910
Electricians	9,630	\$46,830
First-Line Supervisors of Mechanics, Installers, and Repairers	7,620	\$62,020
Plumbers, Pipefitters, and Steamfitters	6,840	\$46,510
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	6,220	\$43,520
Cement Masons and Concrete Finishers	5,230	\$41,640
Operating Engineers and Other Construction Equipment Operators	4,740	\$47,310
Painters, Construction and Maintenance	3,910	\$36,530
Drywall and Ceiling Tile Installers	3,250	\$40,600
Sheet Metal Workers	2,430	\$41,370
Telecommunications Equipment Installers and Repairers, Except Line Installers	2,300	\$60,210
Roofers	2,300	\$35,370
Structural Iron and Steel Workers	1,740	\$44,400

Skilled Construction Trades

Wage Profiles, Skilled Trades

There are three pathways within the construction career cluster: construction, pre-construction and design, and maintenance and operations. For this profile, the primary focus is on the construction career pathway, and the following table provides data on the wage distribution of some of the most critical occupations in Arizona.

Occupation	Jobs	10th	25th	Median	75th	90th
Firstline Supervisors- Trades & Extraction	11,680	\$18.73	\$23.90	\$29.64	\$37.31	\$45.92
Carpenters	9,800	\$28,830	\$34,670	\$42,910	\$53,670	\$62,260
Electricians	9,630	\$32,260	\$38,190	\$46,830	\$56,530	\$63,780
Plumbers, Pipefitters and Steamfitters	6,840	\$32,020	\$37,660	\$46,510	\$61,010	\$76,800
HVAC Mechanics and Installers	6,220	\$26,330	\$34,350	\$43,520	\$55,340	\$69,130
Cement Masons and Concrete Finishers	5,230	\$31,400	\$35,260	\$41,640	\$48,320	\$53,290
Operating Engineers & Equipment Operators	4,740	\$33,310	\$40,820	\$47,310	\$55,700	\$62,550
Painters, Construction and Maintenance	3,910	\$25,470	\$30,570	\$36,530	\$46,300	\$59,210
Drywall and Ceiling Tile Installers	3,250	\$27,900	\$34,570	\$40,600	\$48,520	\$57,340
Sheet Metal Workers	2,430	\$26,520	\$32,670	\$41,370	\$50,620	\$62,690
Roofers	2,300	\$21,860	\$24,090	\$35,370	\$45,980	\$55,650
Structural Iron and Steel Workers	1,740	\$28,460	\$34,330	\$44,400	\$58,690	\$77,130
Paving/Surfacing/Tamping Equip. Operators	1,690	\$28,090	\$33,320	\$39,450	\$48,030	\$57,220
Construction and Building Inspectors	1,380	\$38,030	\$46,320	\$59,330	\$71,800	\$79,530
Plasterers and Stucco Masons	1,300	\$31,950	\$35,800	\$41,890	\$50,650	\$60,830
Telecommunications Line Installers, Repairers	1,210	\$27,490	\$35,220	\$45,390	\$62,600	\$88,480
Electrical Power Line Installers and Repairers	940	\$56,220	\$72,340	\$87,150	\$97,080	\$103,140
Pipelayers	610	\$33,150	\$37,450	\$43,330	\$49,010	\$59,260
Tile and Marble Setters	540	\$30,110	\$36,440	\$44,340	\$53,500	\$68,350
Brickmasons/Blockmasons	320	\$36,130	\$41,730	\$48,990	\$58,890	\$64,170

United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018



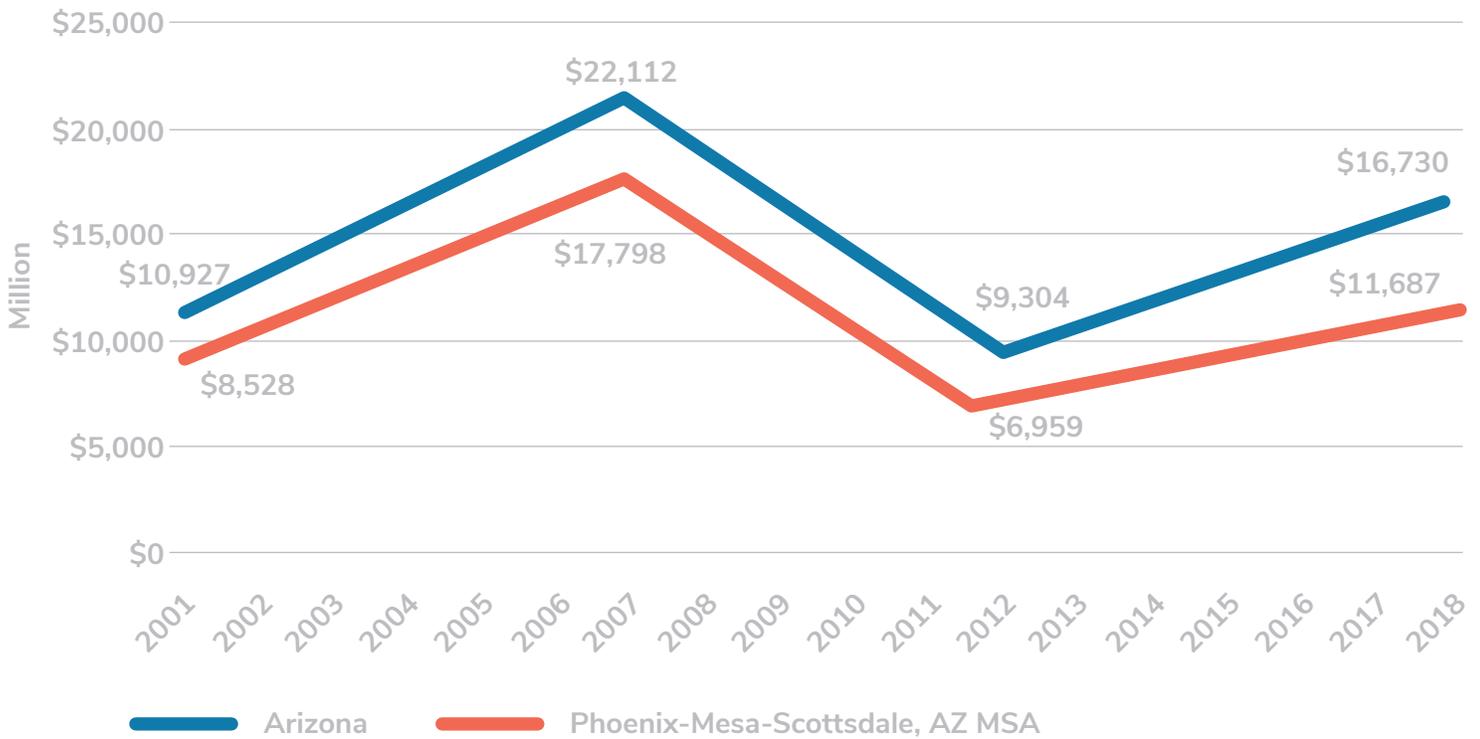
Skilled Construction Trades

Economic Impact

The contribution of the construction sector to Arizona’s economy is at the foundation of the region’s growth. In 2018, construction contributed \$16.7 billion and ranked 9th among private industry sectors in terms of contribution to the gross regional product (GRP). Construction accounted for 5% of all the state’s economic activity. Just less than \$12 billion of the total came from the Greater Phoenix region.

The construction industry experienced historic growth both in the Greater Phoenix region and the state as a whole before the Great Recession.

Construction Industry, Gross Regional Product, 2001-2018, Phoenix MSA



United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018



The construction industry experienced historic growth both in the Greater Phoenix region and the state as a whole before the Great Recession.

Skilled Construction Trades

Inventory of Workforce-Related Assets

Workforce Initiatives and Organizations

Arizona Highway Construction Workforce Pilot (HCWP)

The HCWP involves a one-week industry readiness training along with site visits, interview sessions, and eight-weeks of paid work experience with a partner employer – provided free of charge to employers. Employers can elect to retain or release participants after the completion of the eight-week work experience.

Arizona Department of Transportation (ADOT) Construction Academy

ADOT's On-the-Job Training Supportive Services Construction Academy (OJTSS) provides opportunities to assist contractors who are working on federal-aid highway projects. The Construction Academy's primary objective is to increase the overall effectiveness of ADOT's On-the-Job Training program by recruiting, introducing, training, and placing women, minorities, veterans, and economically disadvantaged individuals in highway construction jobs. The Construction Academy's customized construction trainings are held at employer sites, training centers, or through area community colleges. This program also offers supportive services to

participants such as equipment, tools, OSHA training, flagger certification, NCCER certifications, transportation, and childcare assistance.²⁸

Build Your Future Arizona

Build Your Future Arizona's mission is to create a sustainable and skilled craft workforce by creating awareness about high paying construction careers, training opportunities, and mapping career paths to employment in these high demand occupations.²⁹

Build Your Future Arizona has three primary goals:

1. Increase awareness of craft professional occupations
2. Improve education and training outcomes through business partnerships
3. Increase the number and tenure of craft professionals

Arizona Construction Career Days

Presented by the Association for Construction Career Development (ACCD), Phoenix, and the state's largest such event, provides construction experience for high school students to learn about the increasingly diverse and high-demand careers in the construction industry.

In 2018, construction contributed \$16.7 billion and ranked 9th among private industry sectors in terms of contribution to the gross regional product (GRP).



28 <https://azdot.gov/business/business-engagement-and-compliance/job-trainingsupportive-services/construction-academy-pre>

29 <https://arizona.byf.org/who-we-are/about/>

Skilled Construction Trades

Arizona SkillBridge Program

The Arizona SkillBridge Career Skills Program is a partnership between the Arizona Office of Economic Opportunity, Arizona Coalition for Military Families, and Arizona Corporate Council on Veteran Careers. The partnership connects transitioning Arizona service members to civilian employers. It allows service members within 180 days of separation from military (with command approval) to complete internships and pre-apprenticeships (with approved employers) while receiving military pay and benefits.³⁰

Helmets to Hardhats

Helmets to Hardhats is a national, nonprofit program that connects National Guard, Reserve, retired, and transitioning active-duty military service members with skilled training and quality career opportunities in the construction industry. The program is designed to help military service members successfully transition back into civilian life by offering them the means to secure a quality career in the construction industry.³¹

Education and Apprenticeships

Arizona Department of Education – Career and Technical Education Unit (CTE Unit)

The Arizona Department of Education plays a key role in connecting the construction industry with career and technical education resources at the high school level. Through their Construction and Related

Programs Advisory Council, the CTE Unit is exploring ways to market to parents and students about career paths in CTE fields. They are also exploring other issues and opportunities to assist in recruiting and retaining a skilled workforce.

Arizona Chapter of the Associated General Contractors-Heavy Equipment Operator Apprenticeship Program³²

Apprentices complete 5,000-6,000 hours of on-the-job training and 450 hours of classroom instruction in this three-year program. Scholarships and grants are available through the National AGC Education and Research Foundation and ARIZONA@WORK.

Arizona Builders Alliance (ABA)

Funded by member-companies and supported by the ABA / AZAGC Education Fund, employers can participate in apprenticeship programs in areas such as heavy equipment operation, electrical, pipe-fitting, plumbing, sheet metal, and HVAC. Current programs are NCCER certified.³³

Skills USA

SkillsUSA is a partnership of students, teachers, and industry working together to ensure America has a skilled workforce. SkillsUSA helps each student excel. They provide educational programs, events, and competitions that support career and technical education (CTE) in the nation's classrooms.³⁴



30 <http://azveterancareers.org/about/>

31 <https://helmetstohardhats.org/>

32 https://www.azagc.org/uploads/sites/1/AZAGC_HEO_Apprnticship_Documents.pdf

33 <https://www.azbuilders.org/>

34 <https://www.skillsusa.org/>

Skilled Construction Trades

Risks and Stressors on the Emerging Labor Supply

Perception of the Industry and the Trades Crimp the Talent Supply

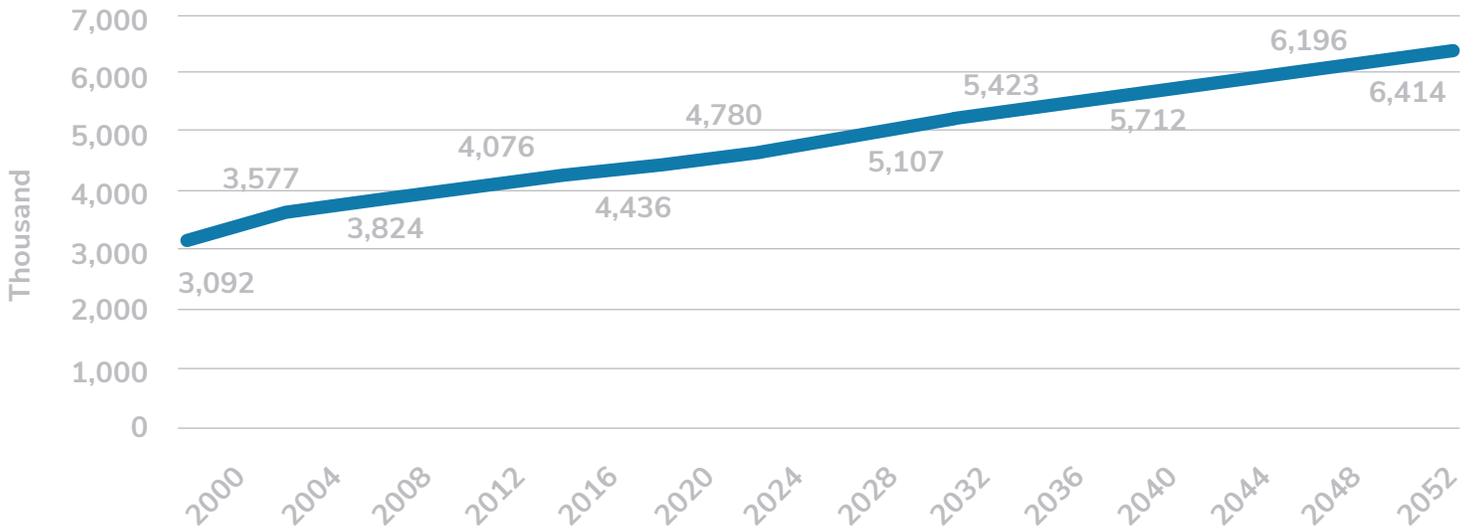
The skilled construction trades offer well-compensated, high-demand careers, often without the burden of college loan debt or years dedicated to learning instead of earning. However, reality does not cause people to make career decisions. Perception does. The author contributed to a 2010 project in Alabama which surveyed high school students about careers in the construction trades and found that few students or parents considered the trades a viable career choice. It was seen as a “fallback,” a second option in case the pursuit of a “viable” career did not pan out.

Their concerns were broadly arranged into three categories. The careers were perceived as low-wage, dangerous, and devoid of opportunities for advancement. However, statistically, each of these is untrue; these perceptions among those high school students (and their parents) was a barrier to be overcome.

According to the 2017 AGC Workforce Shortage Survey³⁵, which collected input from more than 1,600 industry professionals:

- Most firms are having trouble finding enough hourly craft construction professionals to hire.
- Carpenters, bricklayers, electricians, concrete workers, and plumbers are particularly hard to find.
- Only 3% of young adults (ages 18-25) are interested in construction careers.

Population (historical and projected), Maricopa County, 2000-2018:



United States Bureau, Annual Population Estimates

35 <https://www.agc.org/sites/default/files/Files/Communications/2017%20Worker%20Shortage%20Survey%20Analysis.pdf>

Skilled Construction Trades

Impact of population trends on residential construction

Much of construction activity is driven by population. Residential construction is most directly tied to population trends. Civil construction is indirectly responsive to population changes. A large portion of commercial construction, including retail space, can be tracked directly to population changes.

The growth of Maricopa County since the turn of the century has been truly remarkable. The county has averaged an additional 67,000 people every year.

Impact of emerging technologies

Though it may have been slower to embrace the digital revolution, the advent of new technologies is changing the face of the construction industry. Construction Executive Magazine listed eight technologies that are changing the construction industry.³⁶

- Mobile devices and apps
- Building Information Modeling (BIM)
- Laser scanning
- Drones
- GPS tracking
- 3D printers and robotic constructors
- Wearables
- Big data and the internet of things (IOT)

It remains true that technology requires qualified humans to develop, maintain and use that technology. In the absence of significant and regular training and professional development, shifting technical skills standards threaten to leave the incumbent workforce behind.

Workforce Stability and Sufficiency for the Sector

In Arizona, skilled construction tradespersons are greying. Almost four out of ten tradespersons are 45 years or older. More than 13% are past 55 years. One of the challenges of estimating workforce equilibrium for the construction industry is the fact that most workers don't have a college degree. The majority of workers in the skilled construction trades began their career journeys through on-the-job training. However, the postsecondary educational institutions in the Valley, particularly the Maricopa County Community College District, offer some high-quality programs in the skilled construction trades.

Apprenticeship programs are another traditional pathway for construction talent. Arizona's robust apprenticeship system contributes to the emerging talent supply in significant ways. There are more than 4,000 apprentices in the state, in more than 180 programs, and approximately two-thirds of them are in construction-related fields. Across Arizona, there are currently 3,553 active apprentices in construction-related programs.

The growth of Maricopa County since the turn of the century has been truly remarkable. The county has averaged an additional 67,000 people every year.

36 <http://constructionexec.com/article/how-technology-is-changing-the-construction-industry>

Skilled Construction Trades

Postsecondary programs related to construction trades:

CIP Code	Description	Completions	Annual Openings	2019 Jobs
46.0302	Electrician	99	3,741	26,200
46.0201	Carpentry/Carpenter	73	2,990	23,298
46.0401	Building/Property Maintenance	37	4,450	35,430
46.0599	Plumbing and Related Water Supply Services, Other	31	1,100	7,318
46.0303	Lineworker	23	1,716	13,194
46.0412	Building/Construction Site Management/Manager	5	1,605	12,235
46.0399	Electrical and Power Transmission Installers, Other	2	1,762	13,594
46.0000	Construction Trades, General	0	10,977	83,735
46.0101	Mason/Masonry	0	1,823	14,076
46.0301	Electrical & Power Transmission Installation	0	1,762	13,594
46.0402	Concrete Finishing/Concrete Finisher	0	2,557	18,881
46.0403	Building/Home/Construction Inspection/Inspector	0	1,790	13,619
46.0404	Drywall Installation/Drywaller	0	2,064	16,326
46.0406	Glazier	0	1,884	14,146
46.0408	Painting/Painter and Wall Coverer	0	2,060	16,520
46.0410	Roofer	0	1,998	15,224
46.0411	Metal Building Assembly/Assembler	0	241	1,831
46.0413	Carpet, Floor, and Tile Worker	0	1,730	13,293
46.0414	Insulator	0	1,661	12,675
46.0415	Building Construction Technology	0	1,683	13,020
46.0502	Pipefitting/Pipefitter and Sprinkler Fitter	0	1,100	7,318
46.0503	Plumbing Technology/Plumber	0	2,894	20,694
46.0504	Well Drilling/Driller	0	1,705	12,903
46.0505	Blasting/Blaster	0	1,630	12,396

National Center for Education Statistics, Integrated Post Secondary Educational Data System, 2018-2019 and Arizona Office of Economic Opportunity Employment Projections

Conclusion

Because enrollment in the Valley's postsecondary education programs is far outpaced by demand for graduates, and because regional construction firms are desperate for qualified talent, and because the apprenticeship and CTE systems, while contributing are not currently capable of producing enough qualified workers to meet the demand, this report rates the Skilled Construction Trades as being at a **CRITICAL IMBALANCE**.

Transportation and Warehousing

Introduction

Transportation and warehousing is an industry with a uniquely broad value proposition. It is immensely valuable in its own right, with a significant scope that includes more than 3,000 establishments and 78,000 employees in the Greater Phoenix region. However, this is also an industry on which many other industries depend. Manufacturing, construction, tourism, education, and others will grind to a halt when transportation services are insufficient.

Steve Burks, Associate Editor of AZRE Magazine said in a recent AZ Big Media article, “around 35 million consumers in the Western United States are within range of a one-day trucking haul from Phoenix. Phoenix is well-positioned not just because of its location, but also because it has a robust freeway system. New freeways like the Loop 303 and the South Mountain Freeway have created new areas of development that will put more square footage within close proximity to major freeways.”³⁷

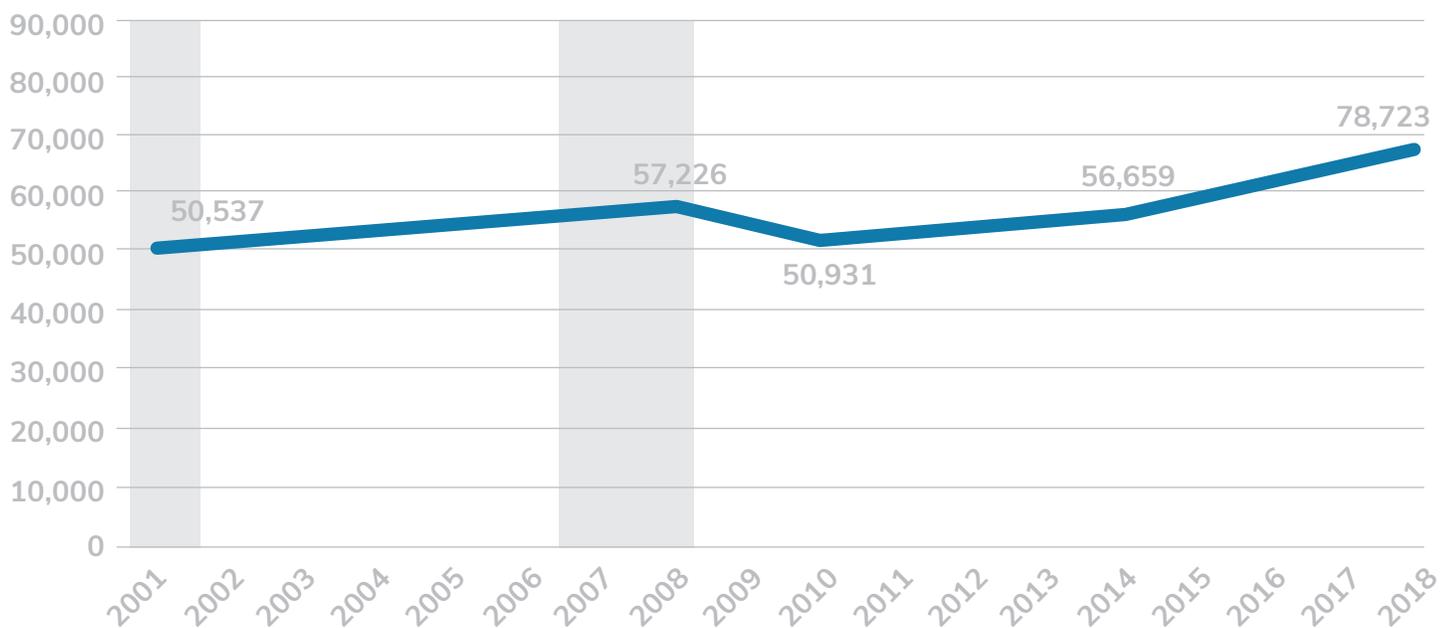
The region's largest employers include UPS, American Airlines, Southwest Airlines, FedEx, Boeing, Knight-Swift Transportation, and BNSF Railway.

Employment

Since 2016, employment in the transportation and warehousing industry has increased in 48 states. California has added just over 79,000 of these jobs, and Florida has added just over 25,000. Arizona has added just over 17,000 transportation and warehousing jobs, ranking third among the states with 21.8% growth.

There are 3,464 transportation and warehousing establishments in the Greater Phoenix region, and together they employ more than 96,000 people. During the Great Recession, the level of employment in the sector plateaued, but did not actually decline until the recession was technically over. Since then, it has resumed and accelerated its previous growth patterns.

Transportation and Warehousing Industry Employment, Annual Averages, 2001-2018, Phoenix MSA



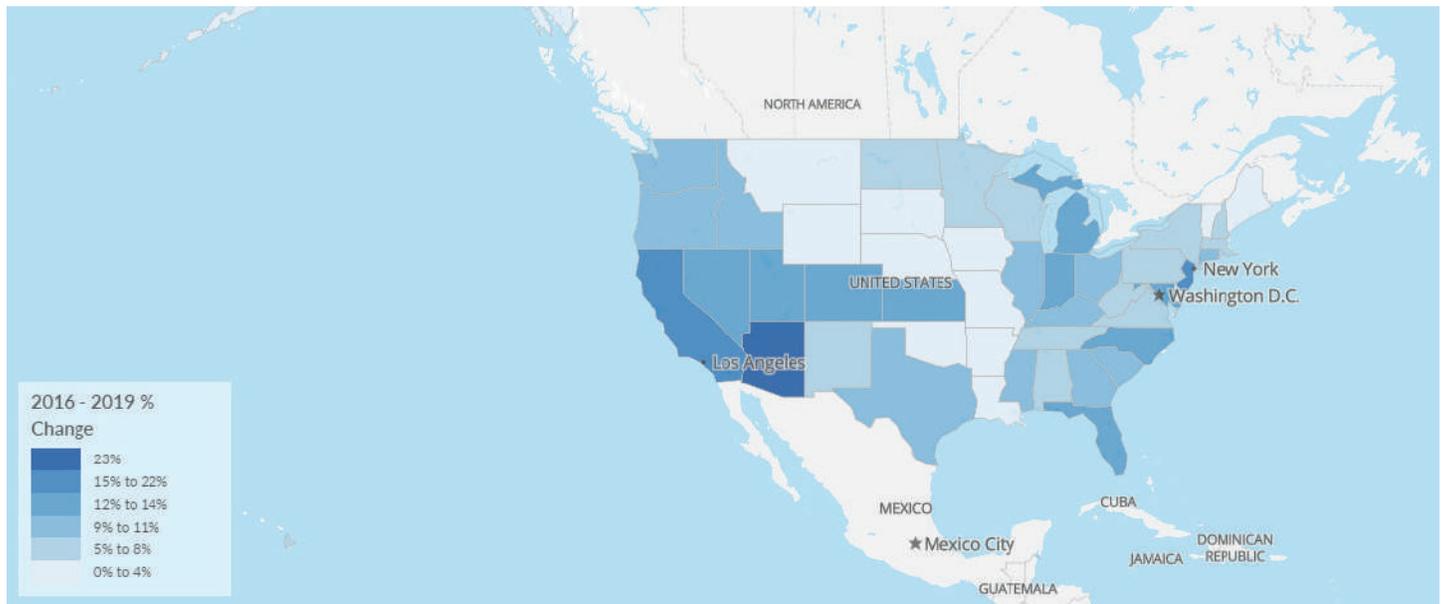
³⁷ <https://azbigmedia.com/real-estate/big-deals/industrial/phoenix-becomes-a-magnet-for-distribution-and-warehouse-facilities/>

Transportation and Warehousing

Transportation and Warehousing Occupations

Individuals working in transportation and material moving occupations are typically employed by a variety of industries. For example, across the U.S., while 34.1% of these workers are employed by businesses primarily engaged in transportation and/or warehousing activities, another 13% work in administrative or waste management services. Another 11% work for retail trade companies and 6% work in manufacturing.

As a specific example, slightly more than half (55%) of truck drivers work in the transportation and warehousing industry; however, 11% work for wholesale trade companies, and construction and manufacturing companies employ 6% each.



There are 3,464 transportation and warehousing establishments in the Greater Phoenix region, and together they employ more than 96,000 people.

Transportation and Warehousing

Occupation	Employment	Median Annual Wage
Laborers and Freight, Stock, and Material Movers, Hand	35,790	\$28,430
Stock Clerks and Order Fillers	31,410	\$26,450
Heavy and Tractor-Trailer Truck Drivers	18,900	\$43,250
Light Truck or Delivery Services Drivers	11,550	\$34,900
Automotive Service Technicians and Mechanics	9,360	\$41,700
Industrial Truck and Tractor Operators	8,730	\$35,340
Packers and Packagers, Hand	8,110	\$24,240
Shipping, Receiving, and Traffic Clerks	7,810	\$31,840
Driver/Sales Workers	7,640	\$28,270
First-Line Supervisors of Mechanics, Installers, and Repairers	7,620	\$62,020
Production, Planning, and Expediting Clerks	6,350	\$45,610
Cleaners of Vehicles and Equipment	5,740	\$23,750
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	5,460	\$53,360
Taxi Drivers and Chauffeurs	4,070	\$24,910
Postal Service Mail Carriers	3,890	\$59,360
Aircraft Mechanics and Service Technicians	3,670	\$64,230
Reservation and Transportation Ticket Agents and Travel Clerks	3,500	\$49,430
Civil Engineers	3,480	\$79,850
Bus and Truck Mechanics and Diesel Engine Specialists	3,250	\$45,110
Airline Pilots, Copilots, and Flight Engineers	2,940	\$95,980
Dispatchers, Except Police, Fire, and Ambulance	2,340	\$38,310
Transportation, Storage, and Distribution Managers	2,140	\$80,320
Commercial Pilots	960	\$76,780
Civil Engineering Technicians	740	\$56,060
Cargo and Freight Agents	670	\$46,180
Transportation Inspectors	590	\$41,310
Transportation Workers, All Other	400	\$28,270
Aircraft Cargo Handling Supervisors	170	\$58,070

United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018

Transportation and Warehousing

Wage Profiles, Transportation, and Warehousing

There are five pathways in the transportation, distribution, and logistics occupation family: facility and mobile equipment maintenance; logistics planning and management; sales and service; transportation operations; and transportation systems/infrastructure planning, management, and regulation. This report considers each pathway, as each has particular relevance to the industry, and the following table provides data on the wage distributions of some of the most critical occupations in Arizona.

Occupation	Jobs	10th	25th	Median	75th	90th
Transportation Operations Pathway						
Laborers and Material Movers, Hand	35,790	\$22,540	\$24,120	\$28,430	\$37,290	\$48,570
Heavy and Tractor-Trailer Truck Drivers	18,900	\$31,470	\$36,200	\$43,250	\$52,820	\$66,260
Light Truck or Delivery Services Drivers	11,550	\$23,350	\$27,100	\$34,900	\$47,770	\$70,490
Industrial Truck and Tractor Operators	8,730	\$24,510	\$28,600	\$35,340	\$43,830	\$50,800
Packers and Packagers, Hand	8,110	\$21,850	\$22,480	\$24,240	\$29,580	\$38,470
Driver/Sales Workers	7,640	\$21,950	\$23,550	\$28,270	\$34,520	\$41,430
Cleaners of Vehicles and Equipment	5,740	\$21,850	\$21,900	\$23,750	\$27,230	\$32,080
Transportation/Material Moving Supervisors	5,460	\$30,970	\$38,440	\$53,360	\$64,090	\$79,490
Taxi Drivers and Chauffeurs	4,070	\$21,850	\$22,660	\$24,910	\$29,430	\$38,280
Postal Service Mail Carriers	3,890	\$36,990	\$37,000	\$59,360	\$62,500	\$65,580
Bus & Truck Mechanics/Diesel Specialists	3,250	\$32,280	\$37,100	\$45,110	\$54,850	\$67,640
Airline Pilots, Copilots, and Flight Engineers	2,940	\$60,320	\$68,710	\$95,980	\$170,990	*
Dispatchers, Except Emergency	2,340	\$25,630	\$31,380	\$38,310	\$47,730	\$59,050
Logistics Planning and Management Services Pathway						
Logistician*	2,600	\$47,240	\$56,620	\$70,890	\$90,770	\$109,840
Transportation/Storage/Distribution Managers	2,140	\$45,230	\$58,510	\$80,320	\$106,750	\$138,540
Sales and Service Pathway						
Billing and Posting Clerk*	10,970	\$28,510	\$32,900	\$37,070	\$42,270	\$50,570
Shipping, Receiving, and Traffic Clerks	7,810	\$23,660	\$26,860	\$31,840	\$39,930	\$49,750
Production, Planning, and Expediting Clerks	6,350	\$28,810	\$35,310	\$45,610	\$60,440	\$75,850
Cargo and Freight Agent*	1,040	\$25,060	\$33,050	\$41,990	\$55,760	\$62,100
Facility and Mobile Equipment Maintenance Pathway						
Automotive Service Technicians, Mechanics	9,360	\$23,220	\$30,410	\$41,700	\$54,640	\$68,550
Mechanics, Installers, Repairers Supervisors	7,620	\$39,220	\$48,180	\$62,020	\$78,350	\$100,260
Aircraft Mechanics and Service Technicians	3,670	\$31,160	\$51,840	\$64,230	\$85,890	\$97,040
Transportation Systems/Infrastructure Planning, Management and Regulation Pathway						
Civil Engineers	3,480	\$55,080	\$66,770	\$79,850	\$98,050	\$120,200
Air Traffic Controller*	380	\$69,730	\$85,440	\$103,350	\$136,460	\$157,000
Traffic Technician*	130	\$32,760	\$38,060	\$46,720	\$60,920	\$74,130

United States Bureau of Labor Statistics, Occupational Employment Statistics

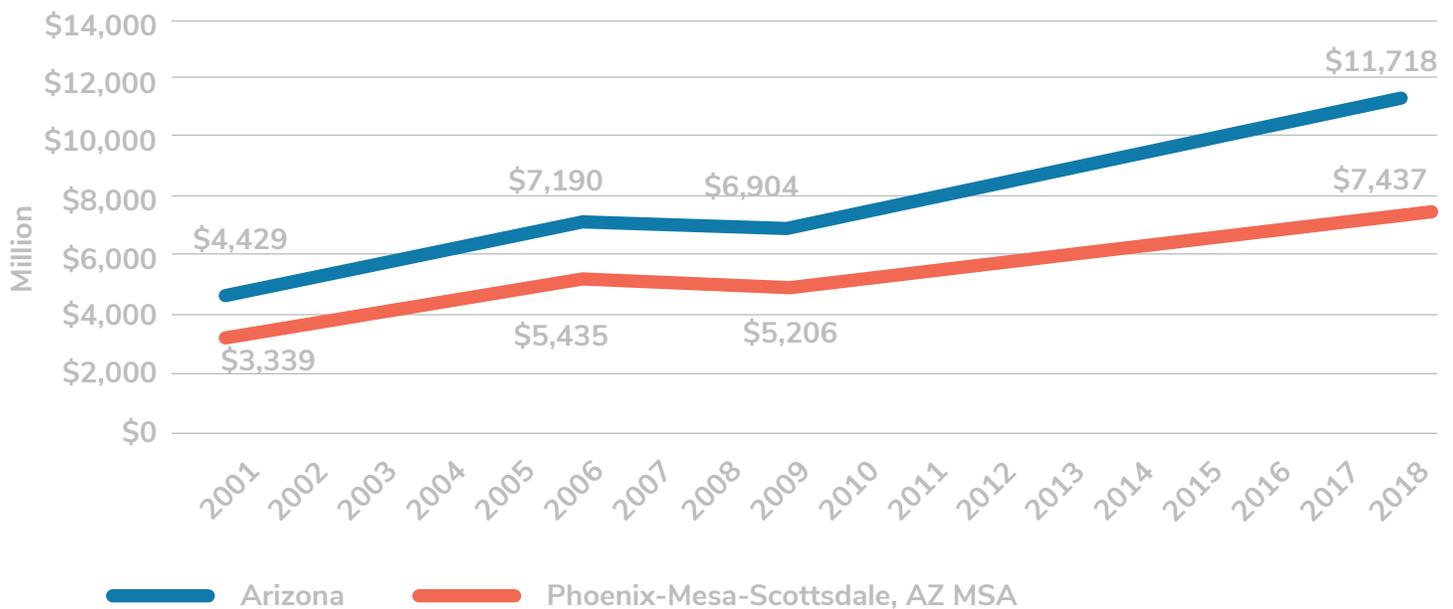
*Wages above \$178,500 are not disclosed.

Transportation and Warehousing

Economic Impact

The contribution of the transportation and warehousing sector to Arizona's economy is significant. In 2018, transportation and warehousing contributed \$11.7 billion and ranked 11th among private industry sectors in terms of contribution to the gross regional product (GRP). The sector accounted for 3.4% of all the state's economic activity. Just less than \$7.5 billion of the total came from the Greater Phoenix region.

Transportation and Warehousing Industry, Gross Regional Product, 2001-2018



United States Bureau of Labor Statistics, Occupational Employment Statistics, 2018

Inventory of Workforce-Related Assets

Workforce Initiatives and Organizations

Warehousing Education and Research Council (WERC)

WERC focuses on logistics management and its role in the supply chain. Since being founded in 1977, WERC has maintained a strategic vision to continuously offer resources that help distribution practitioners and suppliers stay on top of their field. These include national, regional, local, and

online educational events; performance metrics for benchmarking; practical research; expert insights; and multiple opportunities for peer-to-peer knowledge exchange.³⁸

American Production and Inventory Control Society-Phoenix (APICS)

Education of operations management concepts and certification preparation is at the core of the APICS mission statement. The Phoenix chapter offers certification review courses for both the Certified in Production and Inventory Management (CPIM),

38 <https://ojt.com/industries/transportation-and-warehousing/>

Transportation and Warehousing

Certified Supply Chain Professional (CSCP), and Certified in Logistics, Transportation and Distribution (CLTD) designations.

The Arizona Transportation Education Foundation (ATEF)

ATEF promotes and advances highway safety and a safe trucking industry through research, education, and promotional projects. ATEF fosters educational opportunities for individuals in the transportation industry in part through the awarding of scholarships, prepares and conducts educational activities and media programs about safety, and helps develop a better understanding of the transportation and trucking industry.³⁹

Global Business Travel Association-Arizona Chapter (GBTA)

GBTA is dedicated to promoting a successful business travel community in Arizona and to broadening the knowledge of travel management professionals through programs that educate and motivate. The GBTA Academy provides learning opportunities specific to the business travel management industry. In addition to other educational programs, the organization offers the Global Travel Professional® certification.⁴⁰

Education and Apprenticeships

Arizona Department of Education – Career and Technical Education Unit (CTE Unit)

The Arizona Department of Education plays a key role in connecting the transportation industry with career and technical education resources at the high school level. The CTE Unit is exploring ways to market to parents and students about career paths in CTE fields. They are also exploring other issues and opportunities to assist in recruiting and retaining a skilled workforce.⁴¹

- At the Western Maricopa Education Center, a suite of transportation, distribution, and logistics programs are preparing a new generation of transportation professionals. Programs include automotive technology, aviation maintenance, avionics/drone electronics, and diesel technology.⁴²
- At the East Valley Institute of Technology, programs in automotive technology and diesel technology are offered to both high school and adult students.⁴³

Registered Apprenticeships, Arizona Department of Economic Security

Across Arizona, there are only two active apprentices in programs related to transportation and warehousing.

University of Arizona (UArizona)

The UArizona's Transportation Research Institute, or TRI, is equipped with the interdisciplinary expertise necessary to address the challenges of an ever-evolving transportation ecosystem. As an internationally recognized leader in the field, TRI works with researchers across campus and around the country, and with public agencies and private industry to capitalize on and expand established expertise in emerging transportation systems and critical, enabling technologies.

In order to develop and deploy the next generation of transportation systems, TRI pursues the financial, legal, and governance support and resources for the development of complementary and integrated policy necessary to advance the transformation of transportation in a modern society.

College, Universities, and Trade Schools

A number of postsecondary schools offer programs in the very broad sector of transportation and warehouse, ranging from the UArizona to a truck driving school.

39 <http://aztef.com/>

40 https://azbta.org/Professional_Development

41 <https://www.azed.gov>

42 <https://west-mec.edu/career-programs/>

43 <https://www.evitec.com/programs>

Transportation and Warehousing

Risks and Stressors on the Emerging Labor Supply

The transportation sector is faced with an aging workforce that is rapidly retiring.

Currently, 53% of existing workers are 45 years or older, 9% more than the national average. The need to replace retiring workers creates significant workforce development challenges.⁴⁴

New international trade policy, national security threats, environmental concerns, and capacity constraints require incumbent workers to have an ability to internalize new industry and organization standards on a regular basis.

With the constant goal of making the transportation industry safer, legislation regularly undergoes improvements and reviews which companies often struggle to keep up with.

Not only can it be hard to access the relevant information and resources, it requires time, funds, and commitment to building workers skill and knowledge on the changes. By nature, the transportation industry has a largely distributed workforce, acting as an extra roadblock for businesses when trying to supply training.⁴⁵

Perception of the industry

Concerns about the quality of trucking careers and related fields are crimping the supply of emerging talent. Transportation and warehousing has the second-highest rate of fatal work injuries among America's 22 industries, and these concerns play into a reticence about the industry among the emerging workforce.⁴⁶

Emerging technologies are redefining the role of humans in the transportation sector

Autonomous vehicles, drone technology, big data, and mobile communications continue to redefine the transportation and warehousing sector. Many incumbent workers were not exposed to these technologies as they entered their careers, and now find their skill sets becoming dated.

Growth rate of the industry is outpacing the talent development ecosystem

Since the end of the Great Recession, the average number of new jobs per year is larger than the combined total of graduates from finance and insurance programs across every institution in the region combined.



Currently, 53% of existing workers are 45 years or older, 9% more than the national average. The need to replace retiring workers creates significant workforce development challenges.

44 <https://www.du.edu/transportation/media/documents/industry-insights/6-du--workforce.pdf>

45 <https://www.yarno.com.au/blog/top-5-issues-in-transportation/>

46 <https://www.bls.gov/charts/census-of-fatal-occupational-injuries/number-and-rate-of-fatal-work-injuries-by-industry.htm>

Transportation and Warehousing

Workforce Stability and Sufficiency for the Sector

The number of individuals graduating from related postsecondary programs of study pales in comparison to the numbers of annual openings and projected growth in transportation and warehousing occupations. The industry is difficult to analyze in these terms because an abnormally small percentage of its workforce holds a college degree, so alignment between that emerging supply and projected demand provides a fairly limited perspective.

This analysis, however, opens an additional dimension to be explored: is it possible that formal postsecondary education could be a more significant factor in the industry's talent development ecosystem if relevant programs were offered at more postsecondary institutions and were more generally available?

CIP Code	Description	Completions	Annual Openings	2019 Jobs
49.0205	Truck and Bus Driver/Commercial Vehicle Operator & Instructor	789	4,931	43,117
49.0101	Aeronautics/Aviation/Aerospace Science & Technology, General	103	181	2,239
49.0105	Air Traffic Controller	12	71	579
49.0102	Airline/Commercial/Professional Pilot and Flight Crew	11	474	4,355
49.0106	Airline Flight Attendant	2	370	3,189
49.0299	Ground Transportation, Other	0	1,285	10,389
49.0399	Marine Transportation, Other	0	132	884
49.0304	Diver, Professional and Instructor	0	3	8
49.0208	Railroad and Railway Transportation	0	627	5,890
49.0207	Flagging and Traffic Control	0	94	798
49.0199	Air Transportation, Other	0	0	0
49.0108	Flight Instructor	0	474	4,355
49.0104	Aviation/Airway Management and Operations	0	181	2,239
49.9999	Transportation and Materials Moving, Other	0	0	0

National Center for Education Statistics, Integrated Post Secondary Educational Data System, 2018-2019 and Arizona Office of Economic Opportunity Employment Projections

Conclusion

Because enrollment in the region's postsecondary education programs is far outpaced by demand for graduates, and because regional firms are desperate for qualified talent, and because the CTE system, while contributing mightily is not capable in their current forms of producing enough qualified workers to meet the demand, and because apprenticeships in this fields is practically non-existent in Arizona, this report rates the transportation and warehousing sector at a **CRITICAL IMBALANCE**.

Workforce Resources

Arizona Department of Education – Career and Technical Education Unit (CTE Unit)

The Arizona Department of Education plays a key role in connecting various industries with career and technical education resources at the high school level. Through advisory councils, the CTE Unit is exploring ways to market to parents and students about career paths in CTE fields. They are also exploring other issues and opportunities to assist in recruiting and retaining a skilled workforce.

Arizona SkillBridge Program

The Arizona SkillBridge Career Skills Program is a partnership between the Arizona Office of Economic Opportunity, Arizona Coalition for Military Families, and Arizona Corporate Council on Veteran Careers. The partnership connects transitioning Arizona service members to civilian employers. It allows service members within 180 days of separation from military (with command approval) to complete internships and pre-apprenticeships (with approved employers) while receiving military pay and benefits.⁴⁷

Greater Phoenix Chamber Foundation Workforce Development Collaboratives

Serving as a catalyst for partnership, the Foundation convenes four employer-led workforce collaboratives to address the growing skills gap facing our community. Drawing from the U.S Chamber of Commerce Foundation’s Talent Pipeline Management™ framework, employer-led collaboratives represent a pivotal shift where businesses play a much stronger role in outlining the skills needed to prepare talent. Our employer-led collaboratives drive the demands of our talent pipelines by:

1. Aligning educational training to necessary job skills
2. Providing workplace experiences to prepare talent for open positions
3. Promoting career awareness and exploration, broadening understanding of different career pathways

Registered Apprenticeships, AZ Department of Economic Security

In a registered apprenticeship, a worker earns a salary while receiving on-the-job training and related technical instruction. A skilled mentor oversees and trains the apprentice. It is a voluntary, industry-driven system for occupations requiring a range of high-level skills. It is full-time, paid employment and training with built-in career placement.⁴⁸

Workforce Innovation and Opportunity Act

In Arizona, the federal workforce development system is administered under the ARIZONA@WORK system. Qualifying individuals, generally including the unemployed, those with barriers to employment, and some incumbent workers receive assistance with career readiness, job searches, and targeted occupational training. Several Phoenix-area training providers offer programs that are eligible for these grants under WIOA and can apply for these grants at ARIZONA@WORK Career Centers.

⁴⁷ <http://azveterancareers.org/about/>

⁴⁸ <https://des.az.gov/services/employment/registered-apprenticeship/apprenticeship-employers>



GREATER PHOENIX CHAMBER

FOUNDATION

201 N. Central Ave., Ste. 2700, Phoenix, AZ 85004

P: 602.495.2195

foundation@phoenixchamber.com

phoenixchamberfoundation.com