OKLAHOMA'S TALENT PIPELINE

MAY 2019

OKLAHOMA WORKS

Oklahoma Works: Building Oklahoma's Future Workforce
www.oklahomaworks.gov

ACKNOWLEDGEMENTS

The Oklahoma Office of Workforce Development and Oklahoma Works would like to thank the Research and Economic Analysis Services Division at the Oklahoma Department of Commerce for compiling the data and analysis contained in this report. We would also like to acknowledge the Career Pathways Committee of the Governor's Council for Workforce and Economic Development for their vision and thoughtful recommendations for ways to build and strengthen an efficient, sustainable talent pipeline for the State of Oklahoma.

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EXECUTIVE SUMMARY

Oklahoma boasts a business-friendly environment and is currently among the states with the lowest rates of unemployment. As thriving industries like aerospace and defense, advanced manufacturing, health care, and information technology look to locate and expand in Oklahoma, the need for a highly skilled workforce is growing rapidly. This means strategic attention must be placed on developing the right kinds of talent to meet the demands of regional economies and employers to allow the state to continue diversifying its economy.

Changes in Oklahoma's economy are inevitable. Some of these changes will result from demographics and an aging population, and some of these changes will result from increasing levels of productivity in the economy. Some of these changes will even be unpredictable as technological innovations occur quickly and alter the skills needed to perform a job and, in some cases, the types of jobs that exist.

Over the next ten years, Oklahoma's economy is projected to grow by 135,500 jobs. This economic expansion will present challenges to meeting labor demands. Our state has an aging population and many people are leaving rural communities for better career opportunities or higher wages in larger cities. Based on the age distribution of Oklahoma's current population and the replacement of retiring workers, the state is on track to experience a gap of approximately 20,000 workers.

While Oklahoma employers struggle to find talent to fill open jobs, we have a strong pool of untapped talent available. Data reveal more than 70 percent of jobs in Oklahoma will require some kind of education or training beyond high school in the next ten years, but only 42 percent of our current workforce meet that demand. That means nearly 930,000 Oklahomans with only a high school diploma, and those with some college or technical training but no degree/credential, represent a large opportunity for upskilling through training in high-demand skills.

The Talent Pipeline Report is intended to provide information to our policymakers, institutions, educators and labor force about the occupations, skills, and educational demands of our future economy. It should provide guidance for planning and to address current and expected gaps in our workforce. It also highlights the need to build and strengthen career pathways that allow Oklahomans to enter and advance in high-demand, high-wage jobs, and promote life-long learning as disruptive technological innovations change the way business is done.

The Oklahoma Talent Pipeline Report presents information about the projected growth in the supply of and the demand for talent in Oklahoma over the next ten years. The report explores high-demand, high-growth jobs that provide family sustaining wages. These jobs are divided into two income categories:

TIER 1: Median Earnings that are 200% of the federal 2017 poverty threshold for a family of three. Tier 1 occupations have earnings greater than $18.97/hour.

TIER 2: Median earnings that are 200% of the federal 2017 poverty threshold for a household of one person. Tier 2 occupations have earnings between $12.01/hour and $18.97/hour.

Recommendations

Based on an analysis of data included in this report, the following are recommended as statewide solutions for building and strengthening an efficient, sustainable talent pipeline for the State of Oklahoma.

GROW AND DEEPEN

PARTNERSHIPS

AMONG BUSINESS AND INDUSTRY, EDUCATION, AND TALENT PIPELINE PARTNERS

- Develop and support a statewide, industry-driven, Sector Strategies Network
- Expand work-based learning opportunities
- Implement skills-based hiring practices

INCREASE CREDENTIAL

ATTAINMENT

AMONG OKLAHOMA'S WORKFORCE TO ELIMINATE SKILL GAPS

- Increase the number of Oklahomans with a high school diploma or equivalency
- Invest in targeted strategies to improve retention, persistence and completion of education and training programs by select populations

DEVELOP STATE- AND LOCAL-LEVEL

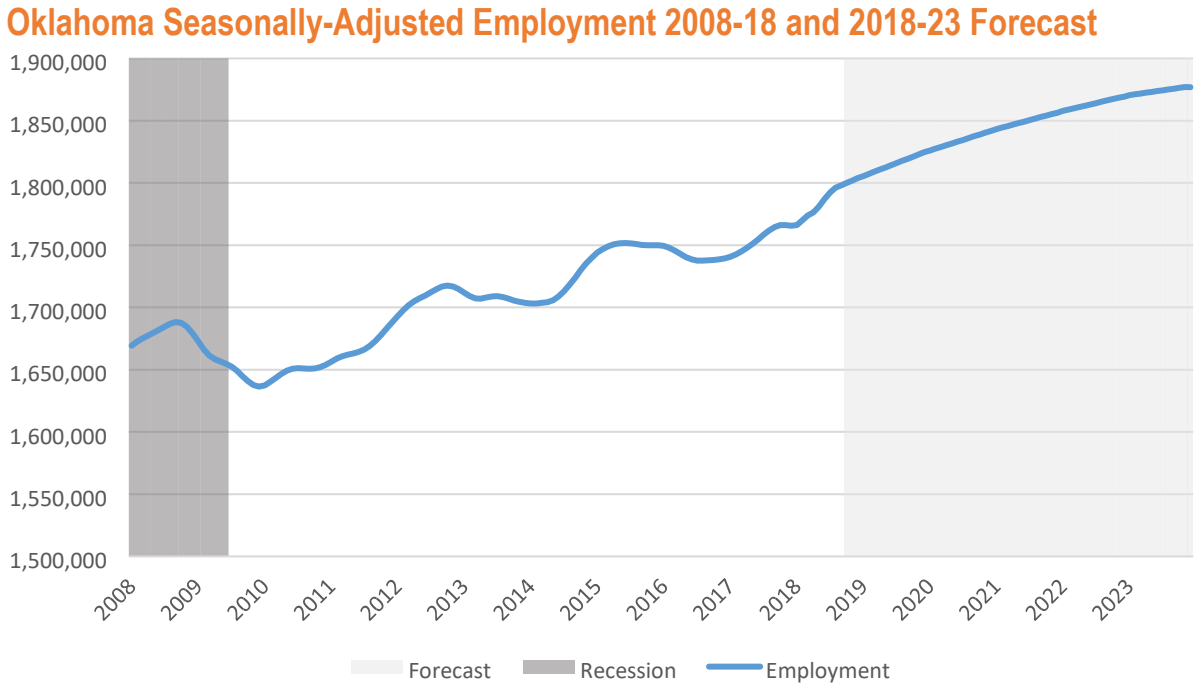
POLICIES AND INFRASTRUCTURE

TO SUPPORT MEANINGFUL CAREER PATHWAYS

- Expand information sharing among workforce system partners to increase data-informed decision-making
- Create a tax credit for work-based learning sponsors
- Increase collaboration between state and local workforce and economic development efforts

INTRODUCTION

Oklahoma's economy is growing. In September 2018, the state's non-agricultural payroll employment, not counting sole proprietors, topped 1.7 million jobs for the first time in our state's history. (Source: BLS CES data) And, as a broader measure of employment including agricultural workers and sole proprietors, our LAUS employment is at its highest level as well, approaching 1.8 million people employed. By 2028, employment is projected to increase 135,500 jobs for a total of 1,933,512 jobs in the state.



Oklahoma's economy is also diversifying. In decades past, the Oil and Gas sector represented as much as 7-9 percent of non-farm employment in the state. Now it represents only 3 percent. Over the past thirty years, new service and technology-focused industries have grown. Healthcare and professional and business services have added approximately 200,000 jobs over that period.

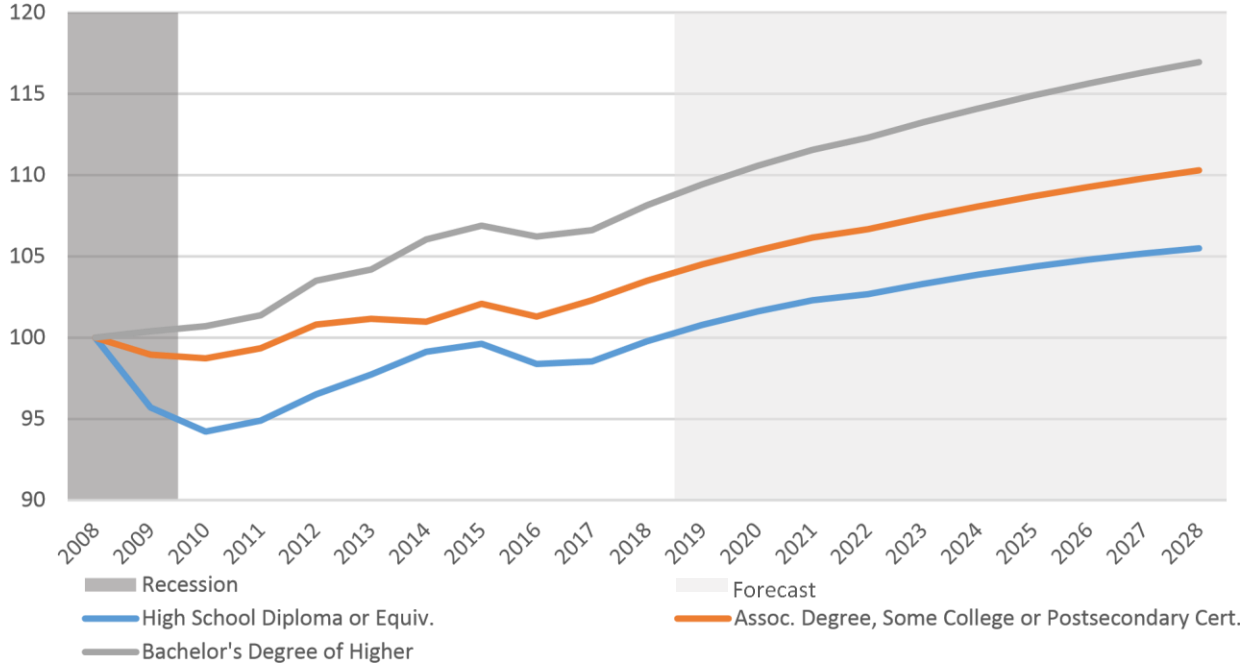
With an unemployment rate lower than 4% and an expanding economy, Oklahoma must identify and prioritize those occupations projected to grow at rates greater than the state's employment growth rate over the next ten years in order to reduce workforce gaps. We must also think more broadly about our workforce supply, shifting greater emphasis to adults, to keep up with demand for talent.

This report identifies pathways, including the additional education, training and experience needed, to enter and advance in targeted careers. These pathways represent possible sources of labor (supply) to fill high growth occupations, including the training of existing workers to progress in these careers. The report also includes sample career pathways, the typical education programs required, as well as a selection of Oklahoma schools that offer such programs.

DEMAND

The Great Recession (2007-09) significantly impacted jobs with entry level requirements of only a high school diploma and these occupations did not fully recover to their 2008 level until 2018. These jobs are also expected to grow at lower rates than those that require education and training beyond high school. The new minimum for workforce success now increasingly requires a credential, degree, or certification. Developing clear career pathways with on- and off-ramps throughout, that are conducive to lifelong learning, is key to meeting workforce demands.

Oklahoma Employment 2008-18 by Educational Attainment and 2018-28 Forecast



High-Growth Occupations

There are 106 Tier 1 High-Growth occupations in Oklahoma. The demand for these occupations over the next 10 years is projected to total 42,778 annual job openings through 2028. These occupations accounted for over 23% of the total jobs in Oklahoma in 2018, with an average annual earnings of $29.87/hour, or $62,129 per year.

There were also 62 Tier 2 High-Growth occupations identified. These occupations are projected to have 37,791 annual openings between 2018-28. These occupations accounted for 16% of the total jobs in Oklahoma in 2018, with an average annual earnings of $14.74/hour, or $30,659 per year.

Aggregate details may be seen in the accompanying tables. The figure in parentheses next to the occupational category represents the number of occupations meeting the criteria for the occupation.

Tier 1 High-Growth Occupations

SOC	Occupational Category	Annual Openings	2018 jobs	Median Hourly Earnings
11-0000	Management Occ. (16)	7,548	79,709	$36.86
13-0000	Business & Financial Operations Occ. (14)	6,288	57,905	$28.39
15-0000	Computer & Mathematical Occ. (8)	2,336	26,869	$30.53
17-0000	Architecture & Engineering Occ. (6)	1,122	11,760	$43.25
19-0000	Life, Physical, & Social Science Occ. (2)	297	2,634	$24.81
21-0000	Community & Social Service Occ. (6)	2,066	16,369	$21.11
23-0000	Legal Occ. (3)	1,076	13,845	$33.15
25-0000	Education, Training, & Library Occ. (2)	571	4,383	$21.97
27-0000	Arts, Design, Entertainment, Sports, & Media (1)	89	830	$25.69
29-0000	Healthcare Practitioners & Technical Occ. (17)	4,234	63,114	$39.33
31-0000	Healthcare Support Occ. (2)	281	1,928	$29.67
33-0000	Protective Service Occ. (5)	1,514	17,732	$24.17
39-0000	Personal Care & Service Occ. (1)	553	2,959	$19.49
41-0000	Sales & Related Occ. (3)	2,708	21,375	$22.16
43-0000	Office & Administrative Support Occ. (2)	730	6,585	$21.97
47-0000	Construction & Extraction Occ. (4)	2,781	19,807	$21.53
49-0000	Installation, Maintenance, & Repair Occ. (8)	2,805	25,099	$24.48
51-0000	Production Occ. (3)	1,443	10,998	$19.92
53-0000	Transportation & Material Moving Occ. (3)	4,336	34,512	$20.21
	Total:	**42,778**	**418,412**	**$29.87**

Tier 2 High-Growth Occupations

SOC	Occupational Category	Annual Openings	2018 jobs	Median Hourly Earnings
11-0000	Management Occ. (1)	95	787	$17.64
21-0000	Community & Social Service Occ. (4)	1,652	12,548	$16.67
25-0000	Education, Training, & Library Occ. (1)	424	3,109	$17.07
27-0000	Arts, Design, Entertain., Sports, & Media (7)	1,293	10,210	$15.89
29-0000	Healthcare Practitioners & Technical Occ. (4)	1,168	13,115	$14.18
31-0000	Healthcare Support Occ. (5)	2,183	16,687	$15.19
33-0000	Protective Service Occ. (3)	490	2,815	$14.93
35-0000	Food Preparation & Serving Related Occ. (2)	2,457	16,165	$12.62
37-0000	Building, Grounds Cleaning & Maintenance (2)	342	2,256	$13.17
39-0000	Personal Care & Service Occ. (3)	919	5,924	$12.75
41-0000	Sales & Related Occ. (2)	697	4,884	$13.62
43-0000	Office & Administrative Support Occ. (8)	10,178	83,423	$14.55
45-0000	Farming, Fishing, & Forestry Occ. (3)	1,747	9,885	$13.23
47-0000	Construction & Extraction Occ. (8)	4,159	31,359	$15.28
49-0000	Installation, Maintenance, & Repair Occ. (2)	2,122	19,370	$15.59
51-0000	Production Occ. (4)	2,087	16,544	$17.52
53-0000	Transportation & Material Moving Occ. (3)	5,776	39,554	$13.75
	Totals:	**37,791**	**288,635**	**$14.74**

The occupational categories contained in the previous table are an aggregation of specific occupations based on their 2-digit Standard Occupational Classification (SOC) code. Examples of a few of the specific Tier 1 and Tier 2 occupations within the occupational categories are below. A full listing of the specific occupations are contained in Appendix A, and some of these occupations have also been identified as "Critical Occupations" by Oklahoma Works.

Tier 1 Occupation Examples

Management Occupations		Installation, Maintenance & Repair Occupations	
11-1021	General & Operations Managers	49-1011	First-Line Super. of Mechanics & Installers
11-9041	Architectural and Engineering Managers	49-9012	Control & Valve Installers & Repairers
11-3031	Financial Managers	49-9021	Heating, A/C & Refrig. Mechanics & Installers
11-3071	Transportation, Storage, & Distribution Man.	49-9041	Industrial Machinery Mechanics
11-9151	Social & Community Service Managers	49-9043	Maintenance Workers, Machinery
Business & Financial Operations Occupations		**Healthcare Practitioners & Technical Occupations**	
13-1081	Logisticians	29-1051	Pharmacists
13-1111	Management Analysts	29-1062	Family & General Practitioners
13-1121	Meeting, Convention & Event Planners	29-1127	Speech-Language Pathologists
13-1161	Market Research Analysts & Specialists	29-1131	Veterinarians
13-2011	Accountants & Auditors	29-1141	Registered Nurses

Tier 2 Occupation Examples

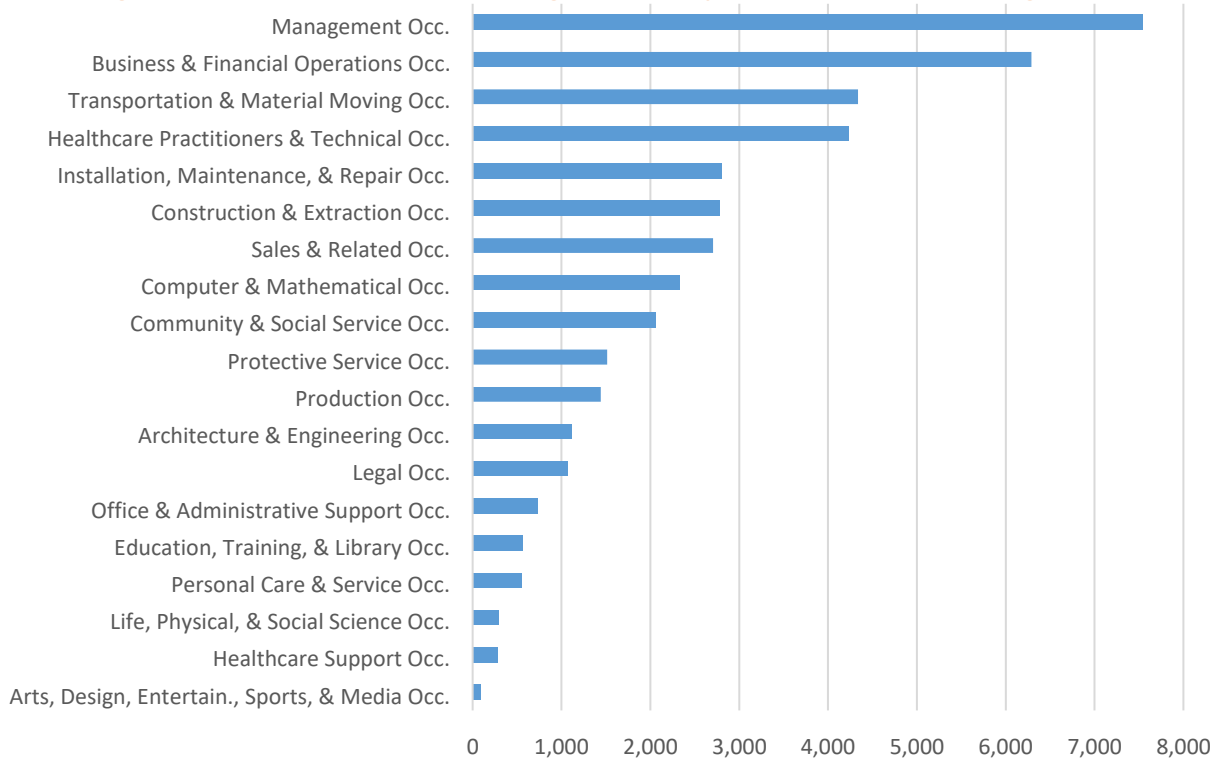
Arts, Design, Entertain., Sports, & Media Occ.		Office & Administrative Support Occ.	
27-2022	Coaches & Scouts	43-4031	Court, Municipal, & License Clerks
27-4011	Audio and Video Equipment Technician	43-4051	Customer Service Representatives
27-2042	Musicians & Singers	43-4131	Loan Interviewers & Clerks
27-3041	Editors	43-5111	Weighers, Measurers, Checkers, & Samplers
27-3043	Writers & Authors	43-6013	Medical Secretaries
Healthcare Support Occ.		**Construction & Extraction Occ.**	
31-9011	Massage Therapists	47-2051	Cement Masons & Concrete Finishers
31-9091	Dental Assistants	47-2061	Construction Laborers
31-9092	Medical Assistants	47-2073	Construction Equipment Operators
31-9093	Medical Equipment Preparers	47-2221	Structural Iron & Steel Workers
31-9097	Phlebotomists	47-4051	Operating Engineers & Equipment Operators

The Tier 1 occupational categories with the largest projected annual openings are professional services occupations associated with management, business and financial operations. Management occupations are somewhat unique since much of the expertise associated with many of the specific occupations is dependent on exposure to education or experience within specific industries. For example, Transportation, Storage & Distributions Managers will likely have education and/or hands-on experience obtained from years of exposure to supply chain or logistics responsibilities. This presents opportunities to build and strengthen career pathways that incorporate education, training, and work-based learning.

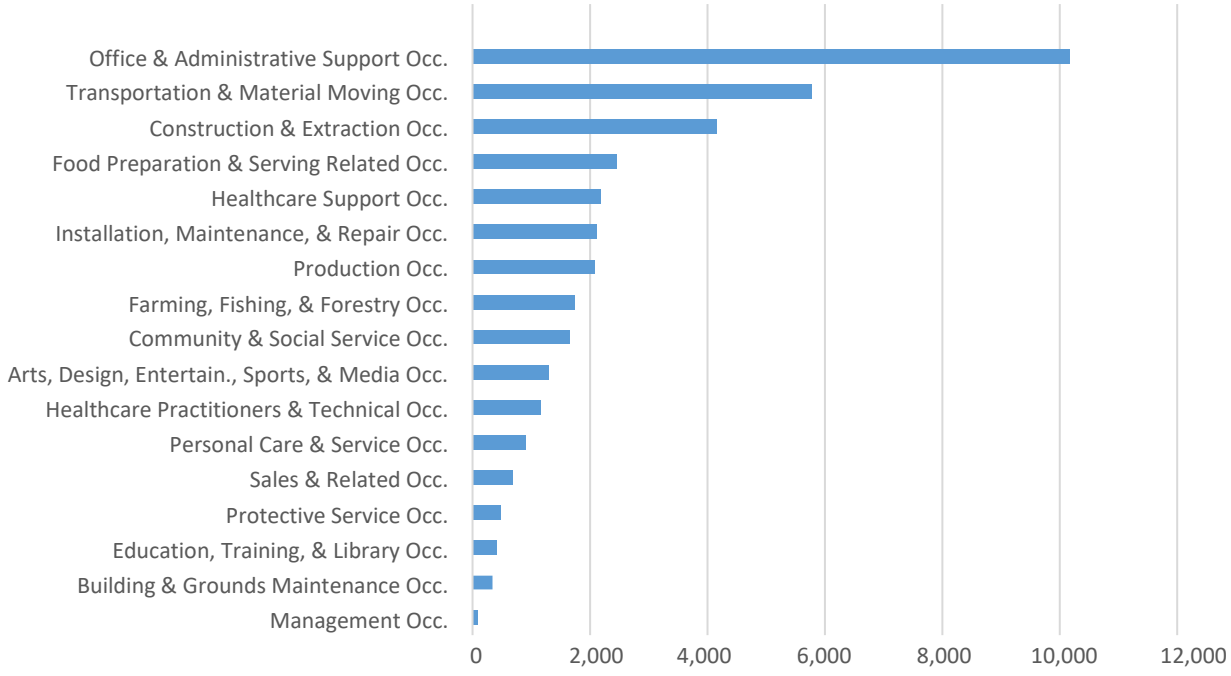
Transportation, Installation, Construction, Protective Service and Manufacturing/Production occupational categories are well represented in the Tier 1 High-Growth Occupations. Many of the specific occupations in these categories do not necessarily require a bachelor's degree and many of the people successful in these occupations have vocational, apprenticeship or years of hand-on experience to train them in these occupations. Combined, these 23 occupations account for 12,879 projected annual openings through 2028. Of the 62 occupations identified as a Tier 2 High-Growth Occupation, eight (8) in the Office and Administrative Support category account for about one-quarter of the total projected annual openings between 2018-28. The majority are associated with Secretaries and Customer Service Representatives.

Combined, these 23 occupations account for 16,382 projected annual openings in Oklahoma between 2018-28. They also indicate opportunities for our workforce to progress from Tier 2 Occupations to Tier 1 Occupations with additional skills, training and education.

Tier 1 High-Growth Occupational Categories: Projected Annual Openings



Tier 2 High-Growth Occupational Categories: Projected Annual Openings



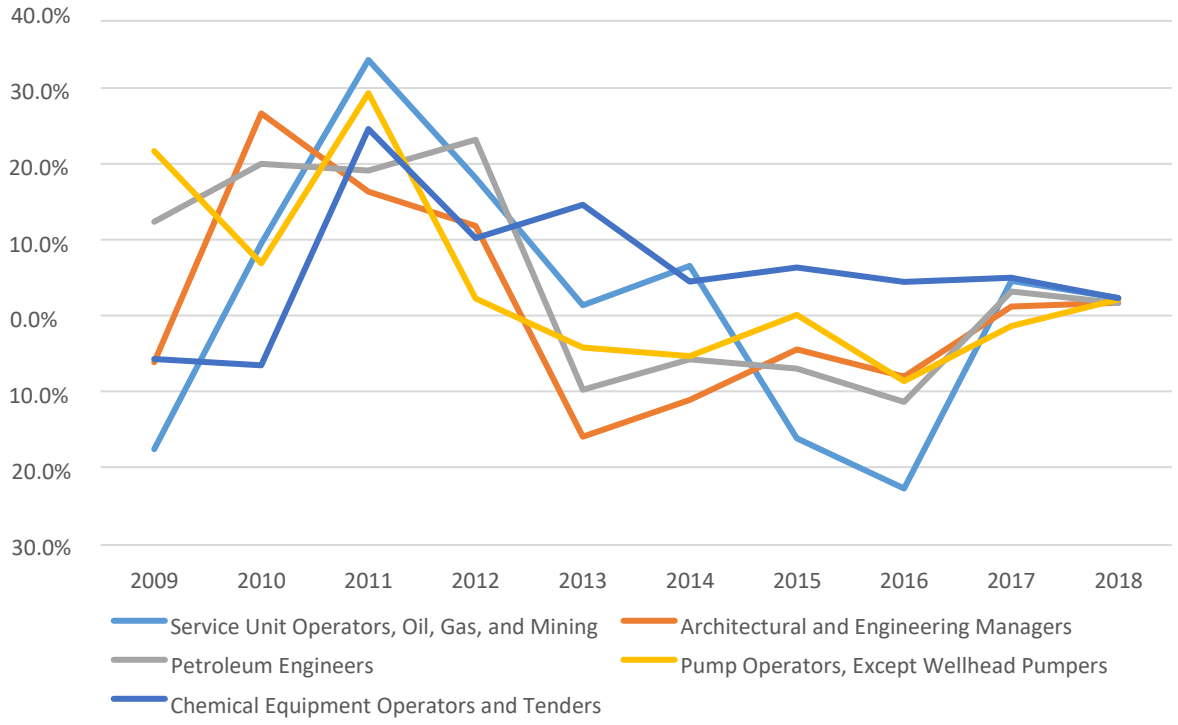
Most Volatile & Stable Occupations 2009-2018

While many of the top jobs are currently growing at a rapid rate, they have not always had such a promising outlook. Some of the volatile occupations are associated with commodity prices, and others are associated with their industry's performance in the national or state economies. The following charts show occupations with the highest volatility over the past decade and the highest standard deviation of each occupation's annual growth rate between 2009-18. These occupations have had periods of high employment growth and periods of painful contraction.

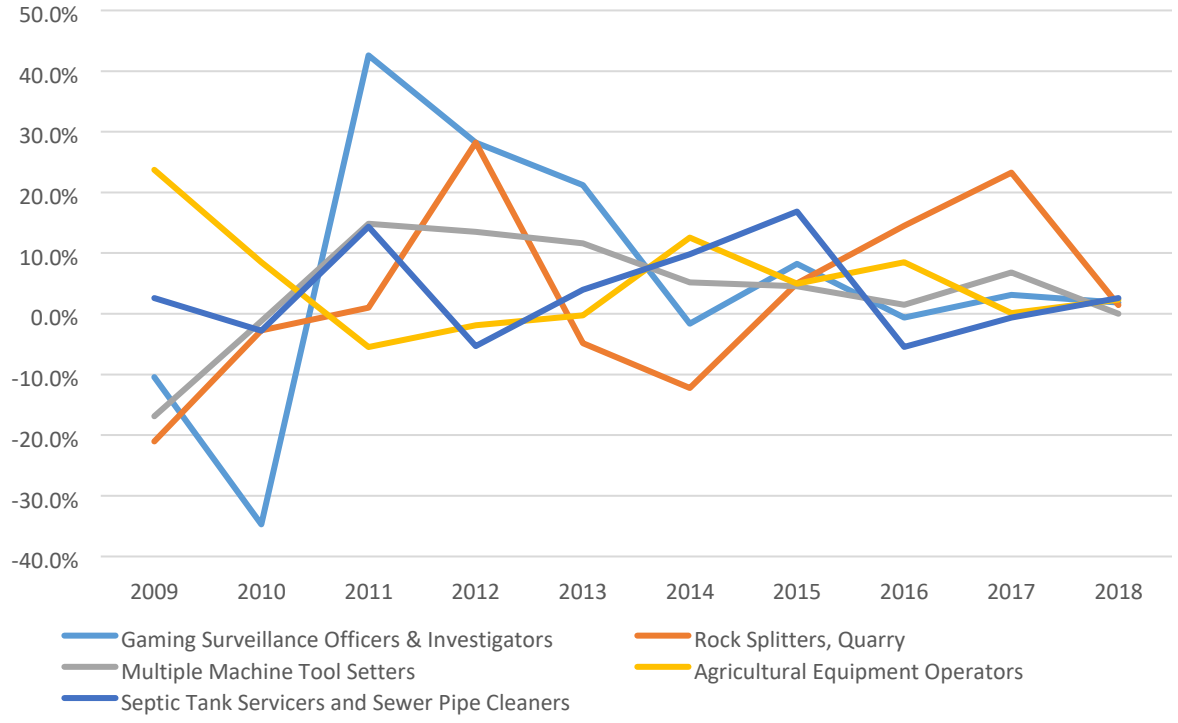
In 2008 these Tier 1 occupations employed 7,298 Oklahomans and grew to 8,819 jobs in 2018. While this appears to represent a healthy 20% growth, in 2012 these occupations employed 11,500 Oklahomans. Looking forward, these occupations are projected to employ 10,300 people by 2028, which is a 16% growth rate over the 2018-28 time frame.

The median earnings of these occupations is $39.23/hour, or $81,598 per year. The additional risk associated with these occupations is compensated for by an earnings premium when compared with the stable occupations identified on the next page.

Tier 1 High-Growth Occupations: Most Volatile 2009-2018



Tier 2 High-Growth Occupations: Most Volatile 2009-2018

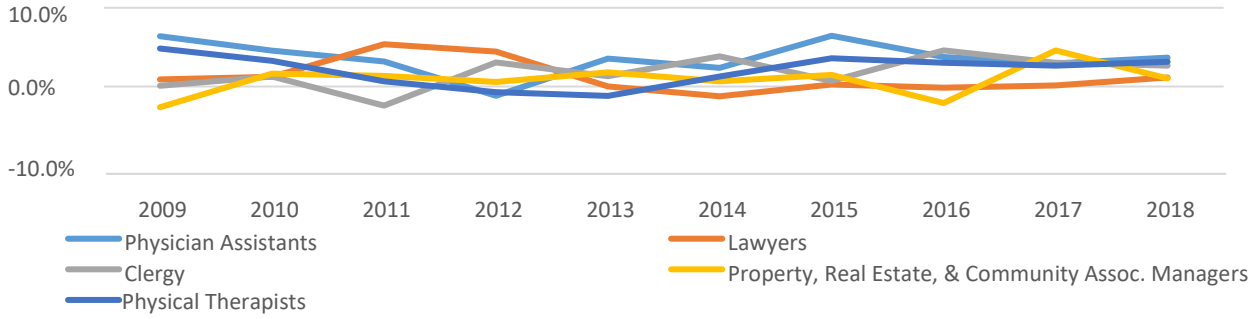


The five most volatile Tier 2 occupations were typically in hospitality, mining, agriculture, professional services and manufacturing. These occupations do not have the same commonality as many of the Tier 1 volatile occupations.

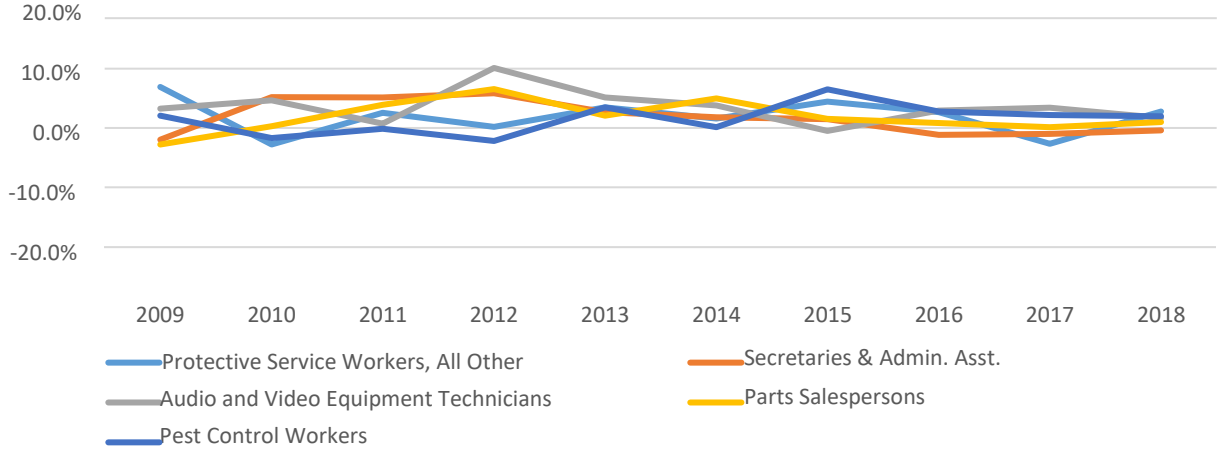
In 2008 these occupations employed 4,399 Oklahomans, growing to 6,311 jobs in 2018, but several of the occupations contracted early in the time period. Looking forward, these five occupations are projected to employ 6,516 people by 2028, which is only a 3% growth rate over the 2018-28 time frame. However, these occupations are projected to have 927 annual openings in the future time period.

The median earnings of these occupations is $14.65/hour, or $30,491 per year. While this group of occupations has higher earnings than the more stable occupations, the difference is not as pronounced as the difference between Tier 1 volatile and stable occupations.

Tier 1 High-Growth Occupations: Most Stable 2009-2018



Tier 2 High-Growth Occupations: Most Stable 2009-2018



To contrast with the most volatile occupations, the most stable occupations have a history of modest growth that is expected to continue into the future.

In 2008 Tier 1 Stable Occupations employed 17,835 Oklahomans, growing to 20,695 jobs in 2018. These five occupations posted modest growth in each of the past ten years and by 2018 had a total employment gain of 16%. Looking forward, these are projected to employ 23,300 people by 2028, which is a 12% growth rate over the 2018-28 time frame. The median earnings of these occupations is $33.89/hour, or $70,505 per year.

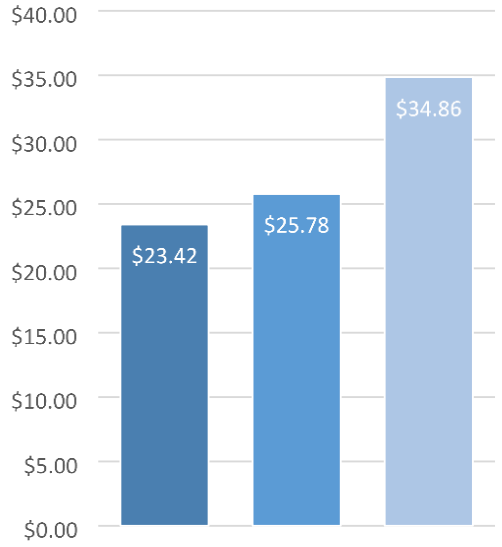
Tier 2 Stable Occupations, employed 34,858 Oklahomans in 2008 growing to 41,497 jobs in 2018. Eighty-five percent (85%) of the occupational composition in this grouping is accounted for by Secretaries and Administrative Assistants (except medical, legal and executive.) Looking forward, the five occupations are projected to employ 40,496 people by 2028, which is a slight decline.

As a reminder, the occupations in these categories have a history of growth between 2008-18 and also have a sizeable number of openings looking forward. Some of these openings are may be the result of demographics within the occupation with higher percentages of people employed in them projected to retire in the next ten years, as with Secretaries and Administrative Assistants. In the next 10 years 34% of people in this occupation will be eligible to retire compared to 22% in the workforce as a whole. The median earnings of these occupations is $14.38/hour, or $29,942 per year.

Entry-Level Education

The educational requirements for Tier 1 High-Growth Occupations span from a High School diploma to a doctoral or professional degree. This means there are opportunities for all Oklahomans to enter and exit career pathways at various education, skill, or training levels as they enter and advance in these occupations.

Tier 1: Typical Entry Level Education & Median Earnings by Education



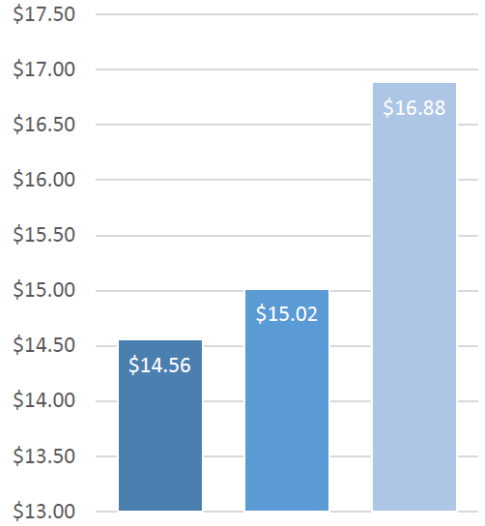
While many of the Tier 1 occupations require only a high school diploma, it is important to note the data report *entry-level* educational requirements. Often times, certifications, credentials, and even degrees are required to advance along these career paths. Oklahoma has quality educational, apprenticeship and postsecondary training opportunities associated with these occupations that would make the labor force more competitive when competing for jobs.

Also as expected, median earnings increase as education level increases. The weighted average median earnings for Tier 1 High-Growth Occupations is $23.42/hour, or $48,711 per year. This increases to $25.78, or $53,621 per year, for postsecondary certificate, some college or Associate's degree, and further increases to $34.86, or $72,505 per year, for Bachelor's degrees or higher.

Forty-seven (47) of the sixty-two (62) Tier 2-occupations have a typical entry-level education requirement of a high school education or equivalent, and these 47 occupations account for 86.5% of the projected annual openings, and 85.5% of the total 2018 jobs in the Tier 2 High-Growth Occupations.

Median earnings for high school diploma or equivalent in this category equals $14.56/hour, or $30,281 per year. All Tier 2 occupations in the next highest education level typically require a postsecondary certificate and their median earnings equal $15.02/hour, or $31,285 per year. At the highest level of educational attainment, all eight (8) of the occupations typically require a Bachelor's degree. These occupations have median earnings of $16.88/hour, or $35,119 per year. There are not any Master's, Doctoral or Professional Degrees among the Tier 2 Occupations.

Tier 2: Typical Entry Level Education and Median Earnings by Education



SUPPLY

Population

Oklahoma's population has grown 179,500 people since 2010, currently totaling 3.93 million people, and will surpass 4 million people within the next few years. Many of these new residents, along with our existing population, represent our state's pool of workforce talent. Oklahomans currently in the fifth and sixth grades will have either already entered the workforce by 2028 or will be completing a bachelor's degree to soon enter the workforce by 2028. This presents an opportunity to align career pathways with the state's most in-demand occupations.

Like many states in the union, Oklahoma is facing a demographic shift; albeit not to the degree that other states will experience over the next 10 years. Oklahoma will also have a sizeable number of our existing workforce retire in that timeframe, though not to the same degree as other states.

The accompanying chart portrays our population by selected age categories from 2008-28. The two inner rings are 2008 and 2013; the middle, hatch-patterned ring is 2018; and the outer, lighter rings are 2023 and 2028.

Oklahoma Age Demographics 2008-2028

Oklahomans currently in the 10-19 years-old age category represent a source of labor that in 10 years will either be in the workforce, a potential workforce, or people in a college, apprenticeship, or vocational program gaining skills to enter the workforce. In 2018, this age category totaled 536,699 people, or 13.6% of our state's population.

Conversely, Oklahomans currently between 55-64 years-old represent the population eligible to retire in 10 years. Assuming they are currently in the workforce, this accounts for 492,225 people, or 12.4% of our population.

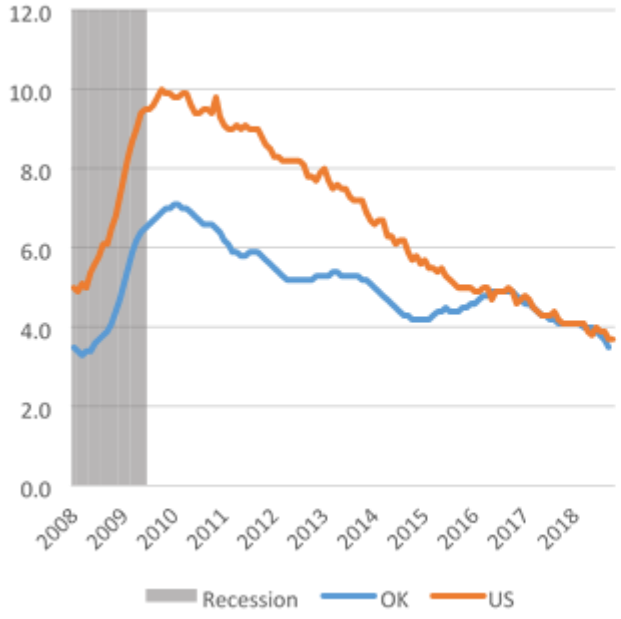
Focusing on these two age groups, Oklahoma's Labor Force Participation Rate, or the percentage of people 16 years and older that are in the workforce, ranges from 60-65%. The Bureau of Labor Statistics projects populations between 20-34 years of age to have labor force participation rates of 69-82% by 2026.

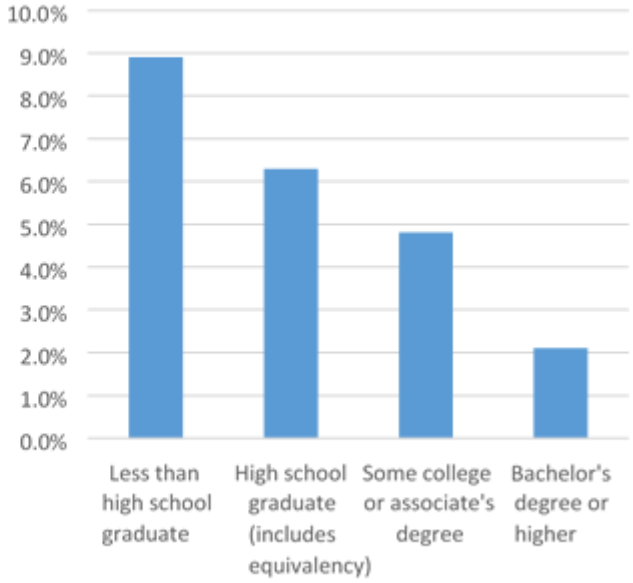
Assuming 75.3% of the 536,699 people currently 10-19 years of age will be in the labor force in 10 years, then approximately 404,100 of this current 10-19 year age category will be in the labor force in 10 years. This would appear to easily cover the 288,000 people that are 55-64 years old presently in the workforce, who in ten years will be eligible to retire. In this situation, there would be an additional 116,100 people to cover the projected retirements. However, this does not account for the projected job growth by 2028.

Oklahoma's economy is projected to add 135,500 jobs by 2028. If this occurs, there will be a shortfall of 19,400 jobs associated with these two age demographics. Normally this would allow the unemployment rate to fall, but Oklahoma's unemployment rate is already very low. Additionally, the national unemployment rate is very low, which means attracting talent from out-of-state will be challenging.

Unemployment

Oklahoma's seasonally-adjusted unemployment rate is 3.5% (Sept 2018) and the national seasonally adjusted rate is 3.7% (October 2018). Both of these rates indicate a very tight labor market. Full employment is generally considered to be about 5% - with both the state and national rates well below the full-employment rate, it is placing upward pressure on wages and inflation.





The most recent unemployment statistics by educational attainment for the state of Oklahoma indicate higher levels of educational attainment can insulate people from unemployment. Oklahoma's unemployment rate for Some College or Associate's Degree was four percentage points lower than the unemployment rate for the population with less than a high school diploma and about one-and-a-half percentage points lower than the population with a high school diploma. (Source: US Census Bureau)

Aging Talent

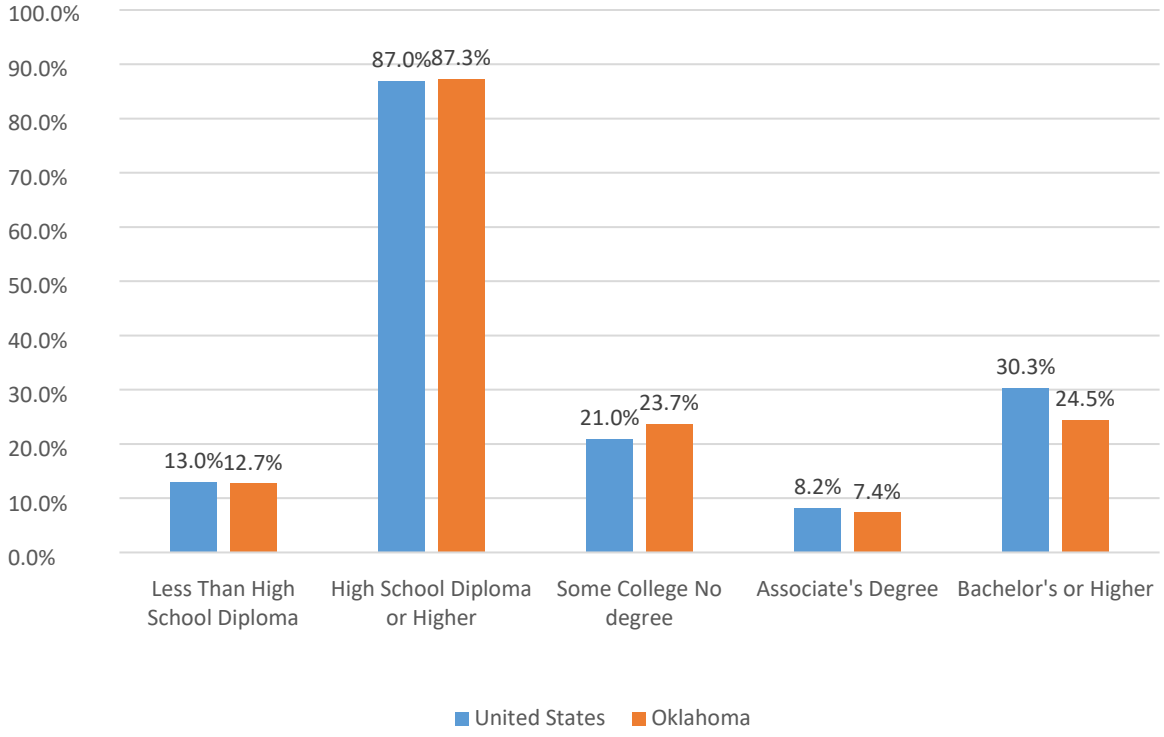
Many older, experienced workers have knowledge, skills and experience that are valuable to our economy. In the next ten years many baby boomers will retire and leave the workforce. The table below presents a sample of occupations in Oklahoma where at least one-in-five workers are 55 years or older and either could retire or be eligible to retire in the next ten years. There are other occupations that also have sizeable, experienced workforces.

Occupations	Percent of Occupations with Workers 55+	Annual Openings	Median Hourly Earnings
Financial Managers	24.6%	661	$44.11
Education Administrators, Postsecondary	32.8%	155	$37.39
Cost Estimators	37.4%	237	$28.18
Management Analysts	29.5%	579	$33.24
Electrical Engineers	27.2%	119	$41.88
Industrial Engineers	27.0%	151	$39.85
Clinical, Counseling, & School Psychologists	33.9%	123	$24.64
Clergy	49.0%	607	$21.90
Directors, Religious Activities/Education	43.0%	372	$18.65
Lawyers	34.0%	512	$39.97
Paralegals and Legal Assistants	24.2%	350	$22.77
Self-Enrichment Education Teachers	29.7%	424	$17.07
Instructional Coordinators	30.5%	144	$25.26
Editors	32.0%	143	$17.33
Music Directors & Composers	45.2%	124	$17.22
Registered Nurses	23.1%	1879	$29.12
Nurse Practitioners	24.8%	137	$47.52
Medical Secretaries	28.3%	1148	$14.33
Insurance Claims & Policy Processing Clerks	23.2%	314	$17.83
Operating Engineers & Other Construction Equipment Operators	24.5%	872	$18.27
Construction and Building Inspectors	41.0%	233	$24.28
Industrial Machinery Mechanics	26.5%	507	$23.94
Maintenance Workers, Machinery	25.1%	394	$20.86
Heavy and Tractor-Trailer Truck Drivers	30.1%	3638	$19.42

Developing Educational Attainment Talent

Overall, education attainment levels among Oklahoma's workforce are low; however, there is a large population available for targeted re-skilling or up-skilling. Our state has a high percentage of people with a high school diploma or higher (87.3%) and a large population with "Some College, No Degree" (23.7%). Where Oklahoma falls behind, are those that have completed a higher education degree. Bachelor's or Higher account for 24.5% of Oklahoma's population, which is much lower than the 30.3% national average.

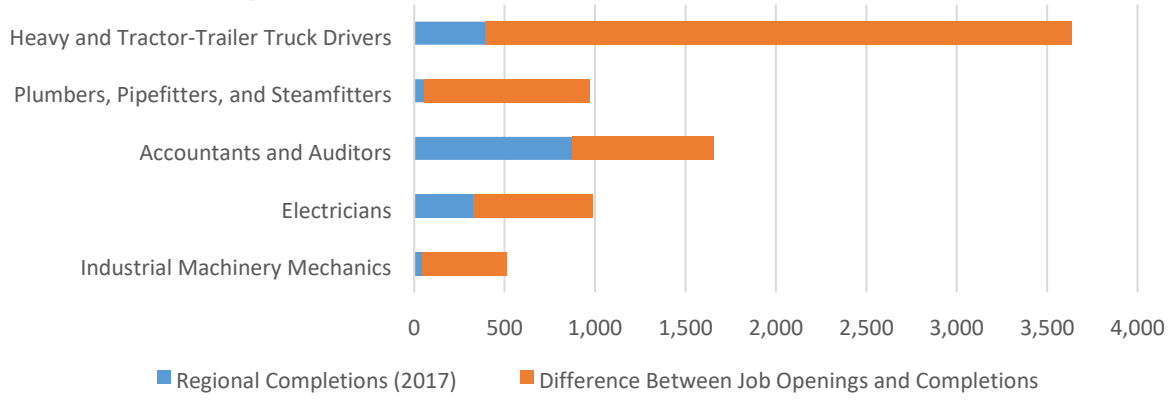
Educational Attainment of Adults 25 and Older



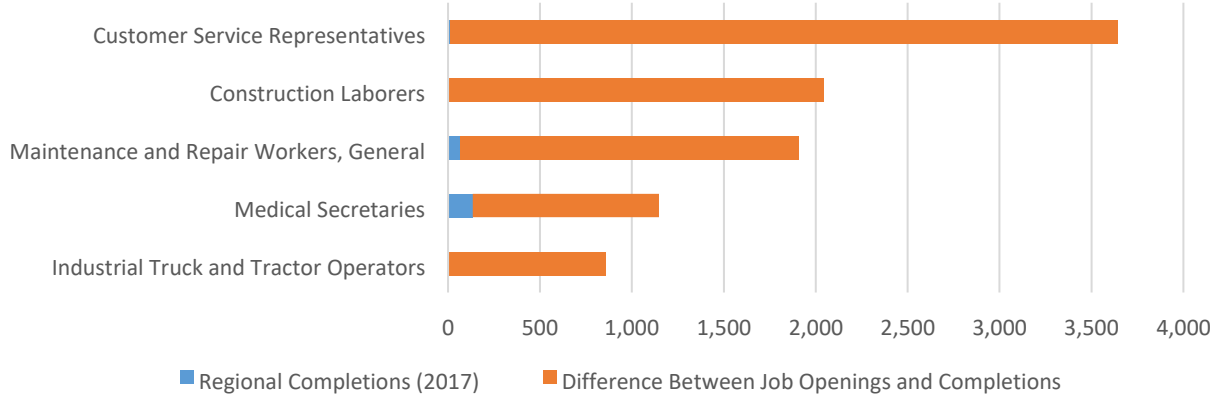
WORKFORCE GAPS

Significant gaps exist between the level of education many Oklahomans have achieved and what is typically required for the state's high-growth or critical occupations. These gaps are evident when reviewing the number of completions for higher education and vocational training and comparing the number of annual openings for these occupations. Oklahoma is not producing enough talent with the minimum skill requirements needed to enter several of the Tier 1 and Tier 2 occupations. As a result, many of these job openings will go unfilled due to the lack of available workforce.

Examples of Largest Education Gaps for Tier 1 Occupations



Examples of Largest Education Gaps for Tier 2 Occupations



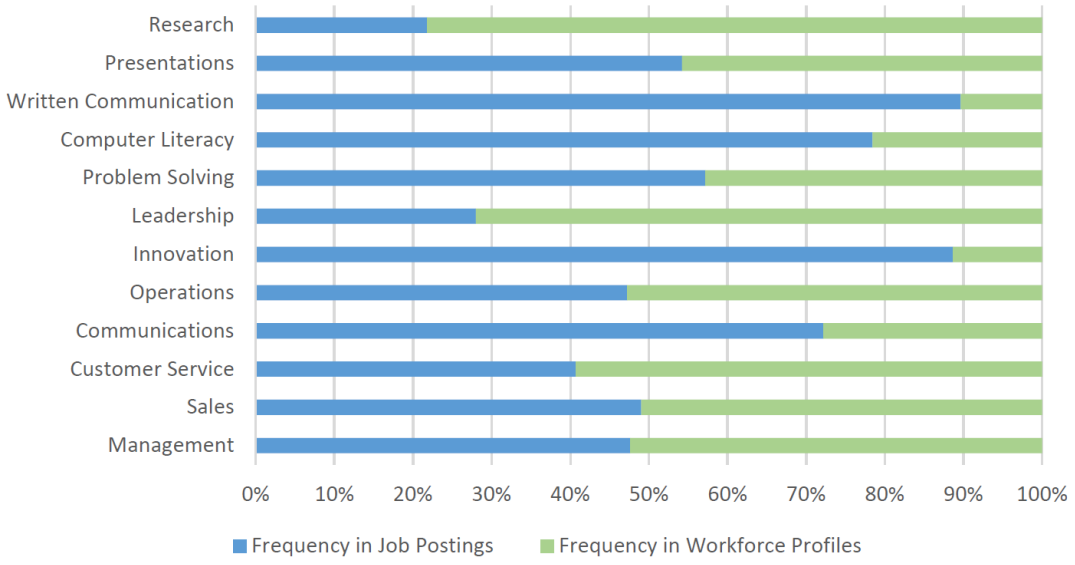
Skills Mismatch in the Labor Market

Research shows a skills mismatch in the labor market, meaning there is a misallocation between jobseeker attributes and what employers require to fill positions (Faberman & Mazumder, 2012). Consequently, job seekers search for positions longer, which causes vacant positions to remain open longer. Workers in occupations requiring moderate skills have not experienced employment gains, despite the fact data from online ads suggest their skills are in high demand.

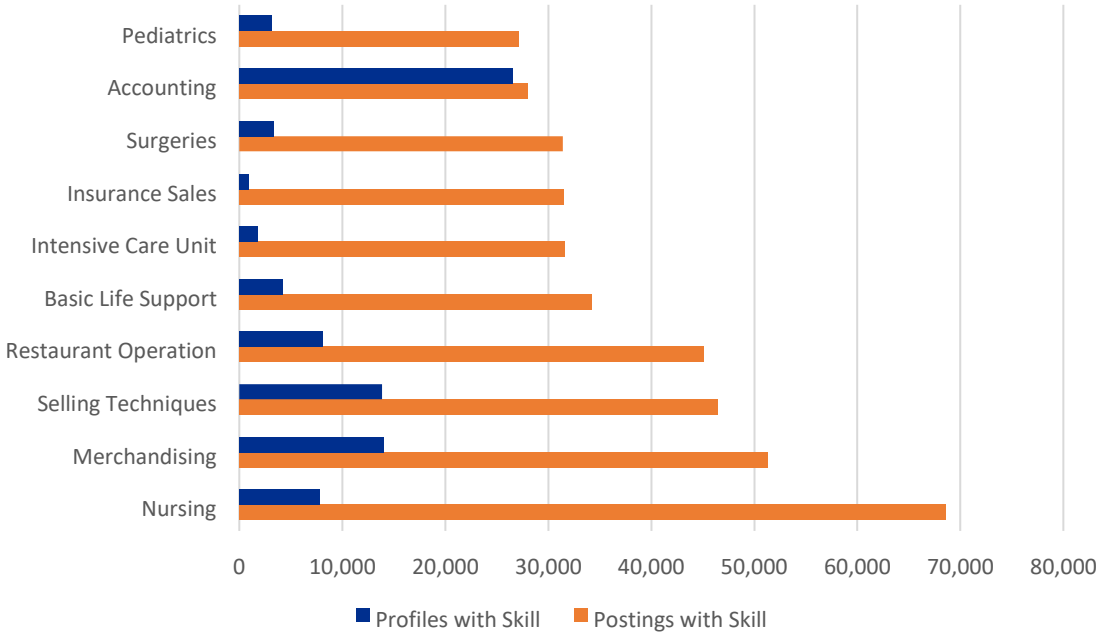
Skills in Demand

Many hiring managers claim that soft skills are more important than hard skills in determining the success of potential employees. As many processes become increasingly automated, having highly developed soft skills, which machines cannot replicate, can help increase job security. According to EMSI's statewide job posting analytics, the most in-demand hard skills and qualifications are related to healthcare and business/financial services.

Soft Skills in Demand



Hard Skills in Demand



Qualifications in Demand	Postings with Qualification
Critical Care Registered Nurse (CCRN)	14,600
CNOR Certification	14,023
Associate Of Science In Nursing	10,651
Licensed Practical Nurse	9,805
Associates Degree In Nursing	6,129
Nurse Practitioner	4,670
Certified Nursing Assistant	4,065
Transportation Worker Identification Credential (TWIC) Card	2,487
Licensed Vocational Nurses	2,449
American Registry Of Radiologic Technologists (ARRT) Certified	1,636

RECOMMENDATIONS

Oklahoma Works partners have been actively engaged in progressing a statewide agenda to close Oklahoma's skills gap and generate wealth among the state's citizens and employers. The following recommendations focus on the key priorities of the Oklahoma Works initiative: increasing credential attainment and employability skills, strengthening career pathways, establishing industry-driven sector partnerships, expanding work-based learning, and implementing innovative approaches that are responsive to the needs of employers. These strategies are meant to address many of the challenges identified through the data offered in this report.

Recommendation: Grow and deepen partnerships among business and industry, education, and talent pipeline partners.

Challenge:

We currently lack a cohesive system for consistently engaging business and industry in meaningful discussions about their workforce needs. When connecting with business and industry regarding workforce solutions, ineffective processes and bureaucracy often discourage full participation or implementation of programs. As a result, many Oklahomans continue to leave the education system with skills and competencies mismatched to the state's most in-demand occupations.

Solution:

Develop and support a statewide, industry-driven, Sector Strategies Network. A regional approach to developing expanded, collaborative relationships between business and industry, education and training providers, workforce development, and supportive services is needed to align the state's talent pipeline and close the skills gap. Oklahoma must invest in regional sector strategies that are industry-driven, address

local economic needs, leverage existing sector efforts, and build local capacity to implement targeted workforce development strategies effectively.

Expand work-based learning opportunities. Business and industry need education and support to understand and adopt work-based learning as a viable solution to workforce gaps. Oklahoma's work-based learning program must develop the infrastructure and capacity to support industry in adopting work-based learning, including apprenticeships, internships, and on-the-job training, in non-traditional occupations as a way to quickly create a uniquely skilled workforce.

Implement skills-based hiring practices. We must work with employers to make data-informed decisions about traditional recruiting, screening, and hiring methods that result in limiting a hiring pool. Implementing skills-based practices focused on the skills needed to perform job duties expands the number of qualified applicants and results in less time to hire and increased retention. Pilot projects focused on the implementation of skills-based hiring practices should be explored and executed.

Desired Outcomes:

- Talent pipeline skills development is more aligned with industry requirements
- Quality and focus of programs across the state is consistent with economic development
- Training programs are better equipped to responsively adapt to changing skill requirements of industry
- Increased employer ownership in building a competitive talent pool
- Talent pool is better equipped for immediate employment upon completion of hard and soft skills training

Recommendation: Develop state- and local-level policies and infrastructure to support meaningful career pathways.

Challenge:

Oklahoma's workforce system is very complex. It is comprised of multiple government agencies, dozens of state and federal funding streams, several economic systems driving the state's economy, countless businesses, and state and local partners. Strengthened collaboration and alignment is necessary to improve the efficiency of strategy implementation to support meaningful career pathways that meet projected workforce demands. Adding to these challenges, talent pipeline partners lack the ability to share needed information across organizations. As a result, the effectiveness and value of workforce development and training programs are not fully understood because data on program outcomes is isolated, inconsistent, or nonexistent. Further, a lack of investment in basic skills training like High School Equivalency credentials hinders the state's ability to increase the number of workers available for certain in-demand occupations.

Solution:

Expand information sharing among workforce system partners to increase data-informed decision-making. Oklahoma should invest in efforts to better understand workforce pathways by implementing the cross-agency infrastructure needed for stakeholders to access the information they need for policy decisions, while ensuring data privacy. Such efforts will improve capacity to use data to decrease duplication, improve efficiency and cost-effectiveness of investments, equip consumers of education with

information about the value of credentials, and inform policy. All of these things are needed for Oklahoma to be able to meet projected workforce demands.

Create a tax credit for work-based learning sponsors. Work-based learning programs are a key component to addressing the needs of Oklahoma's talent pipeline and building a stronger, more competitive economy. Several high-demand jobs identified in this report require specialized skills training, including several occupations with large proportions of aging workers eligible to retire in the next ten years. In a dozen other states, work-based learning tax credits have been an effective tool in assisting employers with costs associated with work-based learning and incentivizing employer participation. Oklahoma must develop a tax credit framework based off best practices and lessons learned from other states.

Increase collaboration between state and local workforce and economic development efforts. Oklahoma's economy is expanding and diversifying, which means more and more companies are growing or moving into our state. Our businesses need access to a skilled talent pool to continue to expand and develop within Oklahoma, however we know there is a shortage of skilled workers in several demand industries and occupations. Projections indicate Oklahoma will need to attract out-of-state or develop through growth of its labor pool through resources such as Adult Basic Education (ABE), nearly 20,000 workers just to meet workforce demands over the next decade. We must better connect the state's workforce development system with organizations focused on economic development to ensure the talent pipeline is ready to support Oklahoma companies' growth and new business settlement in Oklahoma.

Desired Outcomes:

- Increased participation by business and industry in work-based learning
- Increase skills development funding for ABE, vocational rehabilitation, and correctional systems training programs to meet Oklahoma's anticipated 20,000 skilled worker shortfall
- Increased number and diversity of work-based learning opportunities
- Increased credential attainment and associated wage growth to meet industry skills requirements
- Economic incentives for employers, industries and workforce participants (e.g. tax credits, tuition reimbursement, etc.) to close critical skills gaps in the talent pipeline through work-based learning
- Increased understanding of the value of credentials and degrees
- Talent pool in place to support current and new business growth in Oklahoma

Recommendation: Increase credential attainment among Oklahoma's workforce to eliminate skill gaps.

Challenge:

Less people are completing degrees and vocational training than the annual number of job openings. This means more Oklahomans must finish high school and go on to complete education and training beyond high school to meet workforce demands. We must also address inequities in education and training attainment to increase the number of high skilled workers. This is at the core of the Workforce Innovation and Opportunity Act (WIOA) – serving individuals with barriers to employment. Inequities exist among racial/ethnic groups, gender, income categories, geography and other characteristics. Things like lack of access to culturally inclusive environments and curricula, or financial aid and other supports, keep more Oklahomans from seeking and completing education and training beyond high school.

Solution:

Increase the number of Oklahomans with a high school diploma or equivalency. Nearly 13 percent of Oklahoma's workforce aged population has not obtained a high school diploma or equivalency. To meet workforce demands, we must increase the size of the skilled labor pool by helping more Oklahomans complete adult basic education and obtain in-demand skills through higher education or career technical education.

Invest in targeted strategies to improve retention, persistence and completion of education and training programs by select populations. Pilot efforts by institutions to improve access to culturally inclusive environments and curricula, financial aid, and other needed supports like housing, job placement, and child care. We must also work to diversify work-based learning opportunities, like apprenticeships, so that more Oklahomans have the opportunity to obtain high quality credentials while also earning a paycheck.

Desired Outcomes:

- Increase the percentage of Oklahoman's with high school diplomas from 87.3 to 90%, and the number of apprenticeship credentials from 17,000 to 20,000 or more by 2028
- Increase the percentage of Oklahomans with Associate and Bachelor's degrees by 10% from 2018 through public and private partnerships
- Degree and work-based learning credential attainment is more equitable across racial/ethnic groups, gender, income and geography
- Collaborate with common education on the incorporation of credentialing goals into ICAP
- Students are more supported in their efforts to obtain high-quality credentials

DEFINITIONS AND DATA

High-Growth Occupations Definition

For the purposes of this report, high-growth occupations are those projected to have a relatively high number of annual openings between 2018 and 2028 as well as have growth rates that exceed the state average annual growth rate. These are occupations that are anticipated to be in demand in the next ten years. Specifically, a high-growth occupation is defined as any occupation that meets both of the following criteria:

1. Projected annual openings >82 openings per year, which is the median number of annual openings for all 784 total occupations in Oklahoma between 2018 and 2028; and
2. Historical annual occupational growth rates > 0.4%, which represents the annual growth rate of employment in the state between 2008 and 2018.

Additionally, to meet the Oklahoma Works goal of generating wealth for all Oklahomans, family supporting wages were also factored into the selection. Higher earnings not only is our citizenry better off, but also more revenue is generated to our state and local governments. This ensures that any spending on training will have a return on investment for our educational institutions. If an occupation is not on the list, it does not mean training should be discontinued as there are many high earning occupations that are not on the high-growth list. Rather the combination of demand and quality measures ensures that the identified occupations are expected to have sufficient demand in Oklahoma's economy and are options for our existing and future workforce to consider.

As it relates to earnings there are two earnings levels that are incorporated in this report. They are divided into two tiers of high-growth occupations.

> **Tier 1:** Median Earnings that are 200% of the federal 2017 poverty threshold for a family of three. Tier 1 occupations have earnings greater than $18.97/hour.
> **Tier 2:** Median earnings that are 200% of the federal 2017 poverty threshold for a household of one person. Tier 2 occupations have earnings between $12.01/hour and $18.97/hour.

Our labor force is in a constant state of fluctuation, and demographics play a role in this. The median earnings thresholds ensure that the occupations identified can support our citizenry at different stages in their life. Tier 2 occupations generally do not require as much training or education as Tier 1 occupations, but they are a step in a career ladder that can progress to a Tier 1 occupation.

In summary, Tier 1 High-Growth occupations have earnings greater than $18.97/hour with annual openings greater than 82 jobs and annual growth rates greater than 0.4%. Tier 2 High-Growth occupations have an earnings range between $12.01/hour and $18.97/hour with annual openings greater than 82 jobs and annual growth rates greater than 0.4%.

There are 776 occupations in total covering a wide array of responsibilities, including maintenance occupations, education occupations, management occupations, etc. Of these occupations, 168 were identified as high-growth occupations with 106 Tier 1 occupations earning more than $18.97/hour and 62 Tier 2 occupations earning between $12.01 and $18.97/hour. Between the two tiers, every major civilian occupational grouping is represented.

High-Growth Occupations Data Sources and Tools

Data Tool: Employment and occupational projections were compiled utilizing EMSI, a labor market analytics company that aggregates public data from government sources. These sources include the U.S. Department of Commerce, U.S. Department of Education, U.S. Railroad Retirement Board, U.S. Department of Health and Human Services, Oklahoma Employment Security Commission, and the U.S. Department of Labor.

Additional Data Source: Poverty thresholds are used for statistical purposes by the Census Bureau to determine the number of households, and the composition of those households, in poverty the previous year. To determine the poverty threshold at 200%, multiply the poverty-threshold income by 2. For instance, 100% of Federal Poverty Level for one person (unrelated individual) is $12,488 as of 2017. As a result, 200% of Federal Poverty Level for a one-person household would be $24,976. Similarly, 200% of the Federal Poverty Level for three people (one a related child under 18) is $19,730 x 2, which equals $39,460.

Utilizing 2,080 hours per year as a full-time job, the hourly rates of $12.01/hour and $18.97/hour were calculated from 200% poverty figure.

APPENDIX A: HIGH-GROWTH OCCUPATIONS

Tier 1 and Tier 2 Occupations

SOC	Occupation Title	Median Hourly	2018 Jobs	2028 Jobs	Annual Openings	Typical Education for Entry	Job Training	Tier
Management Occupations (17)			**80,496**	**88,062**	**7,643**			
11-1021	General and Operations Managers	$38.13	27,422	29,974	2,644	Bachelor's degree	None	1
11-2021	Marketing Managers	$41.50	1,626	1,811	164	Bachelor's degree	None	1
11-2022	Sales Managers	$39.96	3,718	4,054	369	Bachelor's degree	None	1
11-3011	Administrative Services Managers	$35.79	5,693	5,996	521	Bachelor's degree	None	1
11-3021	Computer and Information Systems Managers	$48.62	3,590	3,844	313	Bachelor's degree	None	1
11-3031	Financial Managers	$44.11	7,269	8,371	661	Bachelor's degree	None	1
11-3071	Transportation, Storage, and Distribution Managers	$36.10	1,695	1,839	161	High school diploma or equivalent	None	1
11-3121	Human Resources Managers	$40.10	2,090	2,230	212	Bachelor's degree	None	1
11-3131	Training and Development Managers	$38.30	734	752	85	Bachelor's degree	None	1
11-9032	Education Administrators, Elementary and Secondary School	$33.76	3,122	3,226	269	Master's degree	None	1
11-9033	Education Administrators, Postsecondary	$37.39	1,717	1,629	155	Master's degree	None	1
11-9041	Architectural and Engineering Managers	$58.10	2,069	2,237	232	Bachelor's degree	None	1
11-9081	Lodging Managers	$17.64	787	834	95	High school diploma or equivalent	None	2
11-9111	Medical and Health Services Managers	$37.62	6,573	7,256	611	Bachelor's degree	None	1
11-9141	Property, Real Estate, and Community Association Managers	$23.57	3,356	3,546	308	High school diploma or equivalent	None	1
11-9151	Social and Community Service Managers	$26.24	1,371	1,695	156	Bachelor's degree	None	1
11-9199	Managers, All Other	$19.90	7,664	8,766	689	Bachelor's degree	None	1
Business and Financial Operations Occupations (14)			**57,905**	**63,922**	**6,288**			
13-1041	Compliance Officers	$24.35	4,430	4,752	411	Bachelor's degree	Moderate OJT	1
13-1051	Cost Estimators	$28.18	1,927	2,199	237	Bachelor's degree	Moderate OJT	1
13-1071	Human Resources Specialists	$24.38	6,759	7,073	739	Bachelor's degree	None	1
13-1081	Logisticians	$35.81	2,978	3,147	330	Bachelor's degree	None	1
13-1111	Management Analysts	$33.24	5,516	6,211	579	Bachelor's degree	None	1
3-1121	Meeting, Convention, and Event Planners	$19.92	1,294	1,507	181	Bachelor's degree	None	1
13-1131	Fundraisers	$24.73	951	1,123	118	Bachelor's degree	None	1

13-1151	Training and Development Specialists	$26.19	4,248	4,471	458	Bachelor's degree	None	1
13-1161	Market Research Analysts and Marketing Specialists	$25.59	4,617	5,542	577	Bachelor's degree	None	1
13-2011	Accountants and Auditors	$30.14	15,683	17,531	1,655	Bachelor's degree	None	1
13-2051	Financial Analysts	$32.32	1,805	2,028	186	Bachelor's degree	None	1
13-2052	Personal Financial Advisors	$38.41	1,566	1,667	157	Bachelor's degree	Long-term OJT	1
13-2072	Loan Officers	$27.89	4,316	4,725	415	Bachelor's degree	Moderate OJT	1
13-2082	Tax Preparers	$20.22	1,815	1,946	245	High school diploma or equivalent	Moderate OJT	1
Computer and Mathematical Occupations (8)			**26,869**	**29,073**	**2,336**			
15-1121	Computer Systems Analysts	$37.52	3,290	3,591	270	Bachelor's degree	None	1
15-1122	Information Security Analysts	$34.87	941	1,100	90	Bachelor's degree	None	1
15-1132	Software Developers, Applications	$40.14	4,417	5,326	403	Bachelor's degree	None	1
15-1134	Web Developers	$25.99	1,165	1,302	113	Associate's degree	None	1
15-1142	Network and Computer Systems Administrators	$32.52	3,135	3,261	237	Bachelor's degree	None	1
15-1151	Computer User Support Specialists	$20.35	8,189	8,557	725	Some college, no degree	None	1
15-1152	Computer Network Support Specialists	$29.23	2,920	2,896	262	Associate's degree	None	1
15-1199	Computer Occupations, All Other	$36.42	2,813	3,040	235	Bachelor's degree	None	1
Architecture and Engineering Occupations (6)			**11,760**	**13,089**	**1,122**			
17-2011	Aerospace Engineers	$42.32	1,022	1,119	87	Bachelor's degree	None	1
17-2051	Civil Engineers	$38.59	2,515	2,791	234	Bachelor's degree	None	1
17-2071	Electrical Engineers	$41.88	1,424	1,557	119	Bachelor's degree	None	1
17-2112	Industrial Engineers	$39.85	1,554	1,804	151	Bachelor's degree	None	1
17-2141	Mechanical Engineers	$39.39	2,786	2,972	236	Bachelor's degree	None	1
17-2171	Petroleum Engineers	$55.71	2,460	2,846	295	Bachelor's degree	None	1
Life, Physical, and Social Science Occupations (2)			**2,634**	**2,715**	**297**			
19-3031	Clinical, Counseling, and School Psychologists	$24.64	1,379	1,458	123	Doctoral or professional degree	Internship/ residency	1
19-4099	Life, Physical, and Social Science Technicians, All Other	$25.00	1,255	1,256	174	Associate's degree	None	1
Community and Social Service Occupations (9)			**26,980**	**31,002**	**3,486**			
21-1012	Educational, Guidance, School, and Vocational Counselors	$19.77	3,784	3,905	431	Master's degree	None	1
21-1018	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	$21.17	3,996	4,765	519	Bachelor's degree	Internship/ residency	1
21-1021	Child, Family, and School Social Workers	$17.34	7,307	8,088	864	Bachelor's degree	None	2
21-1091	Health Educators	$23.38	820	924	114	Bachelor's degree	None	1

21-1093	Social and Human Service Assistants	$13.00	1,466	2,033	242	High school diploma or equivalent	Short-term OJT	2
21-1094	Community Health Workers	$19.79	1,156	1,308	163	High school diploma or equivalent	Short-term OJT	1
21-2011	Clergy	$21.90	4,676	5,576	607	Bachelor's degree	Moderate OJT	1
21-2021	Directors, Religious Activities and Education	$18.65	2,657	3,090	372	Bachelor's degree	None	2
21-2099	Religious Workers, All Other	$12.41	1,118	1,315	174	Bachelor's degree	None	2
Legal Occupations (3)			**13,845**	**15,015**	**1,076**			
23-1011	Lawyers	$39.97	8,781	9,468	512	Doctoral or professional degree	None	1
23-2011	Paralegals and Legal Assistants	$22.77	2,921	3,349	350	Associate's degree	None	1
23-2093	Title Examiners, Abstractors, and Searchers	$19.36	2,143	2,199	214	High school diploma or equivalent	Moderate OJT	1
Education, Training, and Library Occupations (3)			**7,492**	**8,380**	**995**			
25-3021	Self-Enrichment Education Teachers	$17.07	3,109	3,658	424	High school diploma or equivalent	None	2
25-3097	Teachers and Instructors, All Other	$20.52	3,040	3,312	426	Bachelor's degree	None	1
25-9031	Instructional Coordinators	$25.26	1,343	1,411	144	Master's degree	None	1
Arts, Design, Entertainment, Sports, and Media Occupations (8)			**11,041**	**12,399**	**1,381**			
27-2022	Coaches and Scouts	$16.39	2,556	2,851	386	Bachelor's degree	None	2
27-2041	Music Directors and Composers	$17.22	987	1,130	124	Bachelor's degree	None	2
27-2042	Musicians and Singers	$14.35	2,471	2,799	292	No formal educational credential	Long-term OJT	2
27-3041	Editors	$17.33	1,159	1,280	143	Bachelor's degree	None	2
27-3042	Technical Writers	$25.69	830	867	89	Bachelor's degree	Short-term OJT	1
27-3043	Writers and Authors	$13.93	1,311	1,549	147	Bachelor's degree	Long-term OJT	2
27-3091	Interpreters and Translators	$18.36	836	949	100	Bachelor's degree	None	2
27-4011	Audio and Video Equipment Technicians	$16.01	889	973	100	Postsecondary nondegree award	Short-term OJT	2
Healthcare Practitioners and Technical Occupations (21)			**74,732**	**82,776**	**5,293**			
29-1021	Dentists, General	$59.44	1,432	1,584	84	Doctoral or professional degree	None	1
29-1051	Pharmacists	$56.56	3,760	3,899	212	Doctoral or professional degree	None	1
29-1062	Family and General Practitioners	$98.94	2,849	3,040	134	Doctoral or professional degree	Internship/ residency	1
29-1069	Physicians and Surgeons, All Other	$100.09	3,194	3,544	155	Doctoral or professional degree	Internship/ residency	1
29-1071	Physician Assistants	$48.40	1,321	1,644	111	Master's degree	None	1

29-1123	Physical Therapists	$41.04	2,560	3,036	171	Doctoral or professional degree	None	1
29-1126	Respiratory Therapists	$25.89	1,291	1,479	87	Associate's degree	None	1
29-1127	Speech-Language Pathologists	$30.17	1,673	1,871	124	Master's degree	Internship/ residency	1
29-1131	Veterinarians	$38.85	1,247	1,434	89	Doctoral or professional degree	None	1
29-1141	Registered Nurses	$29.12	28,876	31,434	1,879	Bachelor's degree	None	1
29-1171	Nurse Practitioners	$47.52	1,718	2,161	137	Master's degree	None	1
29-2018	Clinical Laboratory Technologists and Technicians	$26.83	3,916	4,418	311	Associate's degree	None	1
29-2021	Dental Hygienists	$35.98	2,453	2,853	202	Associate's degree	None	1
29-2034	Radiologic Technologists	$25.13	2,549	2,753	172	Associate's degree	None	1
29-2041	Emergency Medical Technicians and Paramedics	$13.15	3,602	4,235	341	Postsecondary nondegree award	None	2
29-2052	Pharmacy Technicians	$13.83	5,108	5,506	479	High school diploma or equivalent	Moderate OJT	2
29-2055	Surgical Technologists	$19.08	1,535	1,633	141	Postsecondary nondegree award	None	1
29-2071	Medical Records and Health Information Technicians	$15.66	3,500	3,733	259	Postsecondary nondegree award	None	2
29-2081	Opticians, Dispensing	$14.57	905	1,062	88	High school diploma or equivalent	Long-term OJT	2
29-2099	Health Technologists and Technicians, All Other	$19.02	1,243	1,455	115	Postsecondary nondegree award	None	1
29-9011	Occupational Health and Safety Specialists	$32.43	1,497	1,653	109	Bachelor's degree	None	1
Healthcare Support Occupations (7)			**18,615**	**22,099**	**2,465**			
31-2011	Occupational Therapy Assistants	$29.76	565	690	84	Associate's degree	None	1
31-2021	Physical Therapist Assistants	$29.63	1,363	1,640	197	Associate's degree	None	1
31-9011	Massage Therapists	$18.31	1,396	1,633	191	Postsecondary nondegree award	None	2
31-9091	Dental Assistants	$16.85	4,116	4,757	532	Postsecondary nondegree award	None	2
31-9092	Medical Assistants	$14.20	8,995	10,700	1,158	Postsecondary nondegree award	None	2
31-9093	Medical Equipment Preparers	$13.97	743	786	103	High school diploma or equivalent	Moderate OJT	2
31-9097	Phlebotomists	$14.22	1,437	1,893	200	Postsecondary nondegree award	None	2
Protective Service Occupations (8)			**20,547**	**23,631**	**2,004**			
33-1012	First-Line Supervisors of Police and Detectives	$35.09	2,701	2,988	215	High school diploma or equivalent	Moderate OJT	1
33-1021	First-Line Supervisors of Fire Fighting and Prevention Workers	$32.96	1,391	1,578	123	Postsecondary nondegree award	Moderate OJT	1
33-1099	First-Line Supervisors of Protective Service Workers, All Other	$17.62	952	994	113	High school diploma or equivalent	None	2
33-2011	Firefighters	$20.16	3,675	4,431	334	Postsecondary nondegree award	Long-term OJT	1

33-3021	Detectives and Criminal Investigators	$29.06	1,071	1,201	88	High school diploma or equivalent	Moderate OJT	1
33-3051	Police and Sheriff's Patrol Officers	$20.54	8,893	10,354	754	High school diploma or equivalent	Moderate OJT	1
33-9031	Gaming Surveillance Officers and Gaming Investigators	$13.48	1,151	1,260	187	High school diploma or equivalent	Moderate OJT	2
33-9099	Protective Service Workers, All Other	$13.66	712	824	191	High school diploma or equivalent	Short-term OJT	2
Food Preparation and Serving Related Occupations (2)			**16,165**	**17,503**	**2,457**			
35-1011	Chefs and Head Cooks	$17.23	1,348	1,483	190	High school diploma or equivalent	None	2
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	$12.20	14,817	16,019	2,267	High school diploma or equivalent	None	2
Building and Grounds Cleaning and Maintenance Occupations			**2,256**	**2,437**	**342**			
37-2021	Pest Control Workers	$14.32	940	996	154	High school diploma or equivalent	Moderate OJT	2
37-3013	Tree Trimmers and Pruners	$12.35	1,316	1,441	189	High school diploma or equivalent	Short-term OJT	2
Personal Care and Service Occupations (4)			**8,882**	**10,309**	**1,472**			
39-1021	First-Line Supervisors of Personal Service Workers	$13.17	2,030	2,205	234	High school diploma or equivalent	None	2
39-2021	Nonfarm Animal Caretakers	$12.17	3,016	3,629	530	High school diploma or equivalent	Short-term OJT	2
39-9031	Fitness Trainers and Aerobics Instructors	$19.49	2,959	3,442	553	High school diploma or equivalent	Short-term OJT	1
39-9099	Personal Care and Service Workers, All Other	$13.77	878	1,033	156	High school diploma or equivalent	Short-term OJT	2
Sales and Related Occupations (5)			**26,259**	**28,176**	**3,404**			
41-2022	Parts Salespersons	$13.60	3,523	3,651	478	No formal educational credential	Moderate OJT	2
41-3021	Insurance Sales Agents	$21.84	9,396	10,189	1,133	High school diploma or equivalent	Moderate OJT	1
41-3031	Securities, Commodities, and Financial Services Sales Agents	$30.20	1,986	2,143	233	Bachelor's degree	Moderate OJT	1
41-3099	Sales Representatives, Services, All Other	$20.87	9,993	10,680	1,342	High school diploma or equivalent	Moderate OJT	1
41-9099	Sales and Related Workers, All Other	$13.69	1,361	1,513	218	High school diploma or equivalent	None	2
Office and Administrative Support Occupations (10)			**90,008**	**91,951**	**10,908**			
43-4031	Court, Municipal, and License Clerks	$14.19	2,153	2,474	232	High school diploma or equivalent	Moderate OJT	2
43-4051	Customer Service Representatives	$14.37	27,220	27,744	3,642	High school diploma or equivalent	Short-term OJT	2
43-4061	Eligibility Interviewers, Government Programs	$19.82	921	1,080	102	High school diploma or equivalent	Moderate OJT	1

43-4131	Loan Interviewers and Clerks	$14.72	3,946	4,310	440	High school diploma or equivalent	Short-term OJT	2
43-5031	Police, Fire, and Ambulance Dispatchers	$14.31	1,764	2,032	200	High school diploma or equivalent	Moderate OJT	2
43-5061	Production, Planning, and Expediting Clerks	$22.32	5,664	5,896	627	High school diploma or equivalent	Moderate OJT	1
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	$17.06	856	933	108	High school diploma or equivalent	Short-term OJT	2
43-6013	Medical Secretaries	$14.33	9,237	10,486	1,148	High school diploma or equivalent	Moderate OJT	2
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	$14.44	35,434	34,051	4,095	High school diploma or equivalent	Short-term OJT	2
43-9041	Insurance Claims and Policy Processing Clerks	$17.83	2,813	2,945	314	High school diploma or equivalent	Moderate OJT	2
Farming, Fishing, and Forestry Occupations (4)			**10,466**	**11,354**	**1,843**			
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	$26.99	581	636	96	High school diploma or equivalent	None	2
45-2041	Graders and Sorters, Agricultural Products	$12.46	573	577	89	No formal educational credential	Short-term OJT	2
45-2091	Agricultural Equipment Operators	$13.58	1,085	1,188	196	No formal educational credential	Moderate OJT	2
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	$13.24	8,227	8,953	1,463	No formal educational credential	Short-term OJT	2
Construction and Extraction Occupations (12)			**51,166**	**58,894**	**6,940**			
47-2051	Cement Masons and Concrete Finishers	$15.80	2,883	3,440	410	No formal educational credential	Moderate OJT	2
47-2061	Construction Laborers	$13.84	15,955	18,329	2,045	No formal educational credential	Short-term OJT	2
47-2073	Operating Engineers and Other Construction Equipment Operators	$18.27	6,314	7,431	872	High school diploma or equivalent	Moderate OJT	2
47-2111	Electricians	$22.15	7,298	8,087	987	High school diploma or equivalent	Apprenticeship	1
47-2151	Pipelayers	$14.92	568	718	93	No formal educational credential	Short-term OJT	2
47-2152	Plumbers, Pipefitters, and Steamfitters	$20.77	7,648	8,739	972	High school diploma or equivalent	Apprenticeship	1
47-2221	Structural Iron and Steel Workers	$18.47	1,035	1,159	137	High school diploma or equivalent	Apprentice ship	2
47-4011	Construction and Building Inspectors	$24.28	1,871	2,082	233	High school diploma or equivalent	Moderate OJT	1
47-4051	Highway Maintenance Workers	$15.47	3,317	3,723	402	High school diploma or equivalent	Moderate OJT	2
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	$15.04	688	785	109	High school diploma or equivalent	Moderate OJT	2
47-5013	Service Unit Operators, Oil, Gas, and Mining	$20.22	2,990	3,800	589	No formal educational credential	Moderate OJT	1

47-5051	Rock Splitters, Quarry	$13.44	599	601	91	No formal educational credential	Short-term OJT	2
Installation, Maintenance, and Repair Occupations (10)			**44,469**	**48,553**	**4,927**			
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	$30.30	6,859	7,320	660	High school diploma or equivalent	None	1
49-2098	Security and Fire Alarm Systems Installers	$19.71	1,142	1,307	163	High school diploma or equivalent	Moderate OJT	1
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	$20.30	2,064	2,278	240	High school diploma or equivalent	Long-term OJT	1
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	$27.29	1,010	1,017	94	High school diploma or equivalent	Moderate OJT	1
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	$20.25	4,321	4,900	516	Postsecondary nondegree award	Long-term OJT	1
49-9041	Industrial Machinery Mechanics	$23.94	4,529	5,062	507	High school diploma or equivalent	Long-term OJT	1
49-9043	Maintenance Workers, Machinery	$20.86	3,181	3,293	394	High school diploma or equivalent	Long-term OJT	1
49-9051	Electrical Power-Line Installers and Repairers	$26.21	1,993	2,260	231	High school diploma or equivalent	Long-term OJT	1
49-9071	Maintenance and Repair Workers, General	$15.53	17,452	19,011	1,904	High school diploma or equivalent	Moderate OJT	2
49-9099	Installation, Maintenance, and Repair Workers, All Other	$16.05	1,918	2,105	218	High school diploma or equivalent	Moderate OJT	2
Production Occupations (4)			**7,005**	**7,108**	**884**			
51-3092	Food Batchmakers	$13.01	1,214	1,245	198	High school diploma or equivalent	Moderate OJT	2
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$15.73	2,789	2,683	345	High school diploma or equivalent	Moderate OJT	2
51-8031	Water and Wastewater Treatment Plant and System Operators	$15.73	2,227	2,383	234	High school diploma or equivalent	Long-term OJT	2
51-9011	Chemical Equipment Operators and Tenders	$21.32	776	797	109	High school diploma or equivalent	Moderate OJT	1
Transportation and Material Moving Occupations (6)			**74,066**	**80,370**	**10,113**			
53-1048	First-line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	$24.48	5,083	5,677	603	High school diploma or equivalent	None	1
53-3032	Heavy and Tractor-Trailer Truck Drivers	$19.42	28,905	31,048	3,638	Postsecondary nondegree award	Short-term OJT	1
53-7051	Industrial Truck and Tractor Operators	$16.01	6,566	7,482	856	No formal educational credential	Short-term OJT	2

APPENDIX B: DATA DESCRIPTORS

The following descriptions are provided by O*NET. These data descriptors are categories of occupational information collected and available for O*NET-SOC occupations. These represent high-demand Knowledge, Skills and Abilities required by employers.

Knowledge

Organized sets of principles and facts applying in general domains.

Administration and Management — Knowledge of business and management principles involved in strategic planning, resource allocation, human resources modeling, leadership technique, production methods, and coordination of people and resources.

Biology — Knowledge of plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.

Building and Construction — Knowledge of materials, methods, and the tools involved in the construction or repair of houses, buildings, or other structures such as highways and roads.

Chemistry — Knowledge of the chemical composition, structure, and properties of substances and of the chemical processes and transformations that they undergo. This includes uses of chemicals and their interactions, danger signs, production techniques, and disposal methods.

Clerical — Knowledge of administrative and clerical procedures and systems such as word processing, managing files and records, stenography and transcription, designing forms, and other office procedures and terminology.

Communications and Media — Knowledge of media production, communication, and dissemination techniques and methods. This includes alternative ways to inform and entertain via written, oral, and visual media.

Computers and Electronics — Knowledge of circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.

Customer and Personal Service — Knowledge of principles and processes for providing customer and personal services. This includes customer needs assessment, meeting quality standards for services, and evaluation of customer satisfaction.

Design — Knowledge of design techniques, tools, and principles involved in production of precision technical plans, blueprints, drawings, and models.

Economics and Accounting — Knowledge of economic and accounting principles and practices, the financial markets, banking and the analysis and reporting of financial data.

Education and Training — Knowledge of principles and methods for curriculum and training design, teaching and instruction for individuals and groups, and the measurement of training effects.

Engineering and Technology — Knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.

English Language — Knowledge of the structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.

Fine Arts — Knowledge of the theory and techniques required to compose, produce, and perform works of music, dance, visual arts, drama, and sculpture.

Food Production — Knowledge of techniques and equipment for planting, growing, and harvesting food products (both plant and animal) for consumption, including storage/handling techniques.

Foreign Language — Knowledge of the structure and content of a foreign (non-English) language including the meaning and spelling of words, rules of composition and grammar, and pronunciation.

Geography — Knowledge of principles and methods for describing the features of land, sea, and air masses, including their physical characteristics, locations, interrelationships, and distribution of plant, animal, and human life.

History and Archeology — Knowledge of historical events and their causes, indicators, and effects on civilizations and cultures.

Law and Government — Knowledge of laws, legal codes, court procedures, precedents, government regulations, executive orders, agency rules, and the democratic political process.

Mathematics — Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications.

Mechanical — Knowledge of machines and tools, including their designs, uses, repair, and maintenance.

Medicine and Dentistry — Knowledge of the information and techniques needed to diagnose and treat human injuries, diseases, and deformities. This includes symptoms, treatment alternatives, drug properties and interactions, and preventive health-care measures.

Personnel and Human Resources — Knowledge of principles and procedures for personnel recruitment, selection, training, compensation and benefits, labor relations and negotiation, and personnel information systems.

Philosophy and Theology — Knowledge of different philosophical systems and religions. This includes their basic principles, values, ethics, ways of thinking, customs, practices, and their impact on human culture.

Physics — Knowledge and prediction of physical principles, laws, their interrelationships, and applications to understanding fluid, material, and atmospheric dynamics, and mechanical, electrical, atomic and sub-atomic structures and processes.

Production and Processing — Knowledge of raw materials, production processes, quality control, costs, and other techniques for maximizing the effective manufacture and distribution of goods.

Psychology — Knowledge of human behavior and performance; individual differences in ability, personality, and interests; learning and motivation; psychological research methods; and the assessment and treatment of behavioral and affective disorders.

Public Safety and Security — Knowledge of relevant equipment, policies, procedures, and strategies to promote effective local, state, or national security operations for the protection of people, data, property, and institutions.

Sales and Marketing — Knowledge of principles and methods for showing, promoting, and selling products or services. This includes marketing strategy and tactics, product demonstration, sales techniques, and sales control systems.

Sociology and Anthropology — Knowledge of group behavior and dynamics, societal trends and influences, human migrations, ethnicity, cultures and their history and origins.

Telecommunications — Knowledge of transmission, broadcasting, switching, control, and operation of telecommunications systems.

Therapy and Counseling — Knowledge of principles, methods, and procedures for diagnosis, treatment, and rehabilitation of physical and mental dysfunctions, and for career counseling and guidance.

Transportation — Knowledge of principles and methods for moving people or goods by air, rail, sea, or road, including the relative costs and benefits.

Abilities

Enduring attributes of the individual that influence performance.

A) Abilities — Cognitive Abilities

Abilities that influence the acquisition and application of knowledge in problem solving

Category Flexibility — The ability to generate or use different sets of rules for combining or grouping things in different ways.

Deductive Reasoning — The ability to apply general rules to specific problems to produce answers that make sense.

Flexibility of Closure — The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.

Fluency of Ideas — The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).

Inductive Reasoning — The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).

Information Ordering — The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).

Mathematical Reasoning — The ability to choose the right mathematical methods or formulas to solve a problem.

Memorization — The ability to remember information such as words, numbers, pictures, and procedures.

Number Facility — The ability to add, subtract, multiply, or divide quickly and correctly.

Oral Comprehension — The ability to listen to and understand information and ideas presented through spoken words and sentences.

Oral Expression — The ability to communicate information and ideas in speaking so others will understand.

Originality — The ability to come up with unusual or clever ideas about a given topic or situation, or to develop creative ways to solve a problem.

Perceptual Speed — The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.

Problem Sensitivity — The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.

Selective Attention — The ability to concentrate on a task over a period of time without being distracted.

Spatial Orientation — The ability to know your location in relation to the environment or to know where other objects are in relation to you.

Speed of Closure — The ability to quickly make sense of, combine, and organize information into meaningful patterns.

Time Sharing — The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).

Visualization — The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.

Written Comprehension — The ability to read and understand information and ideas presented in writing.

Written Expression — The ability to communicate information and ideas in writing so others will understand.

B) Abilities — Physical Abilities

Abilities that influence strength, endurance, flexibility, balance and coordination

Dynamic Flexibility — The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.

Dynamic Strength — The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.

Explosive Strength — The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.

Extent Flexibility — The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.

Gross Body Coordination — The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.

Gross Body Equilibrium — The ability to keep or regain your body balance or stay upright when in an unstable position.

Stamina — The ability to exert yourself physically over long periods of time without getting winded or out of breath.

Static Strength — The ability to exert maximum muscle force to lift, push, pull, or carry objects.

Trunk Strength — The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing. ***C) Abilities — Psychomotor Abilities***

Abilities that influence the capacity to manipulate and control objects

Arm-Hand Steadiness — The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.

Control Precision — The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.

Finger Dexterity — The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.

Manual Dexterity — The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.

Multilimb Coordination — The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.

Rate Control — The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.

Reaction Time — The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.

Response Orientation — The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with which the correct response is started with the hand, foot, or other body part.

Speed of Limb Movement — The ability to quickly move the arms and legs.

Wrist-Finger Speed — The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.

D) Abilities — Sensory Abilities

Abilities that influence visual, auditory and speech perception

Auditory Attention — The ability to focus on a single source of sound in the presence of other distracting sounds.

Depth Perception — The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.

Far Vision — The ability to see details at a distance.

Glare Sensitivity — The ability to see objects in the presence of glare or bright lighting.

Hearing Sensitivity — The ability to detect or tell the differences between sounds that vary in pitch and loudness.

Near Vision — The ability to see details at close range (within a few feet of the observer).

Night Vision — The ability to see under low light conditions.

Peripheral Vision — The ability to see objects or movement of objects to one's side when the eyes are looking ahead.

Sound Localization — The ability to tell the direction from which a sound originated.

Speech Clarity — The ability to speak clearly so others can understand you.

Speech Recognition — The ability to identify and understand the speech of another person.

Visual Color Discrimination — The ability to match or detect differences between colors, including shades of color and brightness.

Skills

Developed capacities that facilitate learning or the more rapid acquisition of knowledge.

A) Skills — Basic Skills

Developed capacities that facilitate learning or the more rapid acquisition of knowledge

Active Learning — Understanding the implications of new information for both current and future problem-solving and decision-making.

Active Listening — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.

Critical Thinking — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.

Learning Strategies — Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.

Mathematics — Using mathematics to solve problems.

Monitoring — Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.

Reading Comprehension — Understanding written sentences and paragraphs in work related documents.

Science — Using scientific rules and methods to solve problems.

Speaking — Talking to others to convey information effectively.

Writing — Communicating effectively in writing as appropriate for the needs of the audience.

B) Skills — Complex Problem Solving Skills

Developed capacities used to solve novel, ill-defined problems in complex, real-world settings

Complex Problem Solving — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.

C) Skills — Resource Management Skills

Developed capacities used to allocate resources efficiently

Management of Financial Resources — Determining how money will be spent to get the work done, and accounting for these expenditures.

Management of Material Resources — Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.

Management of Personnel Resources — Motivating, developing, and directing people as they work, identifying the best people for the job.

Time Management — Managing one's own time and the time of others.

D) Skills — Social Skills

Developed capacities used to work with people to achieve goals

Coordination — Adjusting actions in relation to others' actions.

Instructing — Teaching others how to do something.

Negotiation — Bringing others together and trying to reconcile differences.

Persuasion — Persuading others to change their minds or behavior.

Service Orientation — Actively looking for ways to help people.

Social Perceptiveness — Being aware of others' reactions and understanding why they react as they do.

E) Skills — Systems Skills

Developed capacities used to understand, monitor, and improve socio-technical systems

Judgment and Decision Making — Considering the relative costs and benefits of potential actions to choose the most appropriate one.

Systems Analysis — Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.

Systems Evaluation — Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.

F) Skills — Technical Skills

Developed capacities used to design, set-up, operate, and correct malfunctions involving application of machines or technological systems

Equipment Maintenance — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.

Equipment Selection — Determining the kind of tools and equipment needed to do a job.

Installation — Installing equipment, machines, wiring, or programs to meet specifications.

Operation and Control — Controlling operations of equipment or systems.

Operation Monitoring — Watching gauges, dials, or other indicators to make sure a machine is working properly.

Operations Analysis — Analyzing needs and product requirements to create a design.

Programming — Writing computer programs for various purposes.

Quality Control Analysis — Conducting tests and inspections of products, services, or processes to evaluate quality or performance.

Repairing — Repairing machines or systems using the needed tools.

Technology Design — Generating or adapting equipment and technology to serve user needs.

Troubleshooting — Determining causes of operating errors and deciding what to do about it.

APPENDIX C: HIGH-GROWTH CAREER PATHS

Career Path for High-Growth Tier 1 and Tier 2 Occupations

The following section identifies each of the Tier 1 High-Growth Occupations and the Tier 2 High-Growth Occupations. Each Tier 1 and Tier 2 High-Growth Occupations National Profile contains three sections.

Section 1 of the Profile provides an occupational description, trends, wages, industries employing and demographics for the occupations. Section 2, identifies the educational programs that train for the High-Growth occupations as well as **sample** of some of the institutions that offer degrees or certificates for the High-Growth occupations in Oklahoma. Section 3, and more important for our existing workforce, provides a sample career ladder for the High-Growth Tier 1 and Tier 2 occupations.

For example, for Medical Secretaries, Section 3 identifies two lower-wage occupations that are compatible to Medical Secretaries. It then identifies the deficiencies in the Knowledge, Skills and Abilities generally associated with those lower wage occupations. These deficiencies would need to be addressed with education or skills training in order for someone to move up the career ladder from one of the lower wage positions (the upstream positions) in order to be hired as a Medical Secretary. It also identifies two sample occupations that typically earn higher wages than a Medical Secretary and further identifies the deficiencies generally associated with someone in a Medical Secretary position would need to be addressed in order to continue moving up the career ladder.

As a primer, the "Knowledge" category in the Knowledge, Skills and Abilities generally relates to book learning. It is the understanding of theoretical concepts that are needed in order to perform an occupation. The "Skills" category in the Knowledge, Skills and Abilities is generally associated with experience and can be obtained from on-the job training or hands-on experience performing tasks. And the "Abilities" category in Knowledge, Skills and Abilities is associated with traits or talents of people in the position. This is something that can be refined, but is more likely to be innate talents possessed by a person.

View Detailed High-Growth Career Paths.