

PENNSYLVANIA'S STATE SYSTEM OF HIGHER EDUCATION



Clarion University's
**WORKFORCE
CHARACTERISTICS
TECHNICAL REPORT**

A report for Pennsylvania's
State System of Higher Education

2016



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GLOSSARY OF TERMS

The following descriptions provide a point of reference to understand terminology as well as the types of data and analysis undertaken in this study, reflecting historic and contemporary narratives.

Industry Change: A measure of the change in employment within an industry, used to identify whether an industry is growing or declining, as well as the rate of change. Projected changes lay out expectations of growth/decline for specific industries.

Job Postings: The number of unique (de-duplicated) online postings for a job in a given occupation.

Location Quotient: A comparative statistic used to calculate the relative employment concentration of a given industry or occupation against the average employment of the industry in a larger geography (for example, countrywide). Industries with a higher location quotient (usually greater than 1.2) indicate that the region has a comparative advantage or specialization in the production of that good or service or has a high degree of specialization within its workforce. For example, in Silicon Valley, we would expect the concentration of computer programming occupations to be greater than the rest of the US, giving rise to the conclusion that Silicon Valley has a comparative advantage in the computer programming workforce.

New and Replacement Jobs: A demand-side estimate of the number of job openings in an occupation that result from new job growth as well as replacement demand. Replacement demand comprises occupation job leavers based on separations, retirement, and death.

Occupation Jobs: A measure of employment within an occupation category, used to identify which occupations have been growing or declining, as well as the rate of change. Projected changes lay out expectations of growth/decline for specific occupation categories.

State System Learner Capture Rate: The percentage of State System enrolled learners from a specific county that are attending a given Pennsylvania State System university. State System universities typically capture a higher proportion of State System enrolled learners from counties in proximity to the institution.

State System Learner Share: Represents the contribution of learners from a defined geographic area that are enrolled in a State System university.

Sub-regions: A geographic area within Pennsylvania defined for more focused workforce and education gap analyses. Sub-regions were determined primarily on Partnerships for Regional Economic Performance (PREP) boundaries. PREP is Pennsylvania's network of business assistance partners designed to help companies start, grow, and prosper. Please refer to Appendix A for mapping of the Sub-regions and PREP boundaries.

ACRONYMS USED

ACS: American Community Survey

BLS: Bureau of Labor Statistics

EMSI: Economic Modeling Specialists International

CEW: Center on Education and the Workforce (Georgetown University)

IPEDS: Integrated Postsecondary Education Data System

LAUS: Local Area Unemployment Statistics

LEHD: Longitudinal Employment and Housing Dynamics

NCES: National Center for Education Statistics

OES: Occupational Employment Statistics

O*NET: Occupational Network

PUMS: Public Use Microdata Sample

QCEW: Quarterly Census of Employment and Wages

SAIPE: Small Area Income and Poverty Estimates

USDOE: US Department of Education

USDOL: US Department of Labor

1. INTRODUCTION

Pennsylvania’s State System of Higher Education (State System) comprises 14 universities, four branch campuses, multiple regional centers and the McKeever Environmental Learning Center.¹ The universities are located in rural, suburban, and small-town settings around Pennsylvania. The State System’s two educational hubs (with locations in Harrisburg, the Dixon University Center, and Philadelphia, State System @ Center City) offer academic programs through a consortium of public and private colleges and universities. Per Act 188 of 1982, the State System’s mission “is the provision of instruction for undergraduate and graduate students to and beyond the master’s degree in the liberal arts and sciences, and in the applied fields, including the teaching profession.” In doing so, the State System’s purpose is “to provide high quality education at the lowest possible cost to students.”² Analysis and understanding of the economy and workforce the State System supports, as well as future demands for talent advances the State System’s mission and philosophy—a key component of this report. Further, it enables effective and targeted strategies and decision-making, grounded in data-driven evidence.

Like all institutions of higher education, the State System’s universities face challenges in their effort to identify and quantify program needs for Pennsylvania residents and businesses that demand talent. They must account for the changing economic and workforce dynamics within the region they support, such as industry and occupation growth/decline, as well as the changing quality of the area’s workforce. Furthermore, as technology progresses, a growing need to address increasingly complex and specialized occupational tasks requires additional customization to education. As a result, education institutions are increasingly called upon to incorporate relevant courses that meet the needs of students and businesses in their service area—a departure from traditional supply-based education towards a more employer demand-driven model.

A fundamental challenge for any higher education system is to first understand the characteristics of the economy and workforce it supports. This study and

1 One of the State System’s entities, System-wide Functions and Services, is primarily located at the Dixon University Center in Harrisburg and includes: System-wide shared administrative services; System leadership functions of the Chancellor and Board of Governors; some System-wide initiatives and grants managed on behalf of the universities; and the academic, student, and facilities support for the multi-university sites in Harrisburg and Philadelphia.

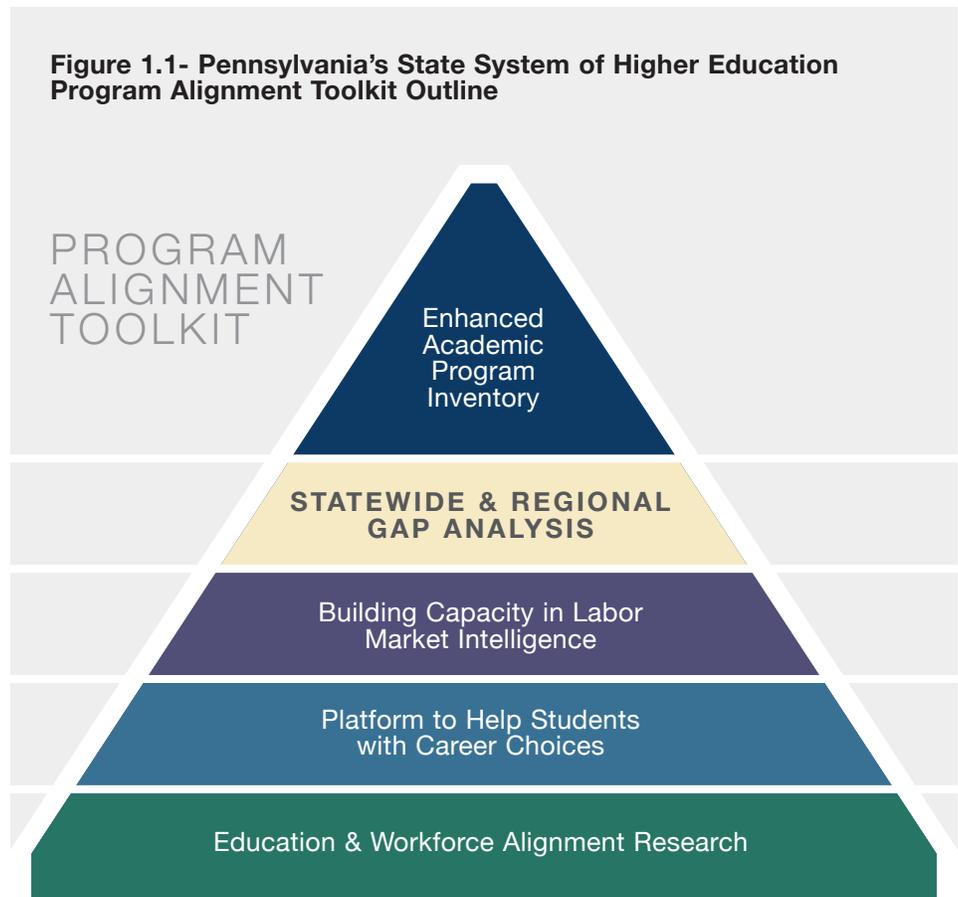
2 Source: The State System’s Economic and Employment Impact on the Commonwealth of Pennsylvania – released April 15, 2015.

the broader set of deliverables under the State System’s Supply/Demand Gap Analysis Project—hereinafter, Gap Analysis Project—will assist universities and education planners by providing an infrastructure of resources for internal planning, as well as external engagement. Understanding key economic aspects of the geography helps to better align policy and strategic direction in order to continue supporting the talent needs of Pennsylvania.

1.1 Pennsylvania’s State System of Higher Education Gap Analysis Project

In a fast-changing economic and social environment that is also experiencing rising costs for higher education, institutions are increasingly called upon to align their programs to the changing needs of the economy.

In response to improving career outcomes for its learners, Pennsylvania’s State System of Higher Education (State System) has produced a Program Alignment Toolkit—a central clearinghouse for key academic planning



information, developed in response to the State System's Strategic Plan "Rising to the Challenge 2020." The Program Alignment Toolkit helps provide multiple perspectives of how higher education can connect to the state's economy and lead to career success for students. A key component of this toolkit is the development of a statewide and regional gap analysis. Other high impact strategies that are a part of the State System's Program Alignment Toolkit are presented in Figure 1.1. The ultimate goal of this plan is to assist the State System's fourteen universities to increase their individual and collective impact on Pennsylvania's economy.

1.2 Goal of the Workforce Characteristics Report

The State System's Gap Analysis Project produced both a Workforce Characteristics Report and a Supply/Demand Gap Analysis Report for both the state and five sub-regions. The Workforce Characteristics Report contains a set of economic, workforce, demographic, and socio-economic information to contextualize the supply/demand gap analysis. The Supply/Demand Gap Analysis Report for Pennsylvania and its sub-regions provides a data-driven perspective of employer demand (new and replacement jobs by occupation in the state) and higher education supply (degree production by major program). The data sources utilized for the State System's Gap Analysis Project are diverse including Bureau of Labor Statistics (BLS), U.S. Census Bureau, American Community Survey (ACS), System Research Office, National Center for Education Statistics (NCES, Integrated Postsecondary Education Data System), IMPLAN (Input/Output Model), and Economic Modeling Specialists International (EMSI). Ultimately, the reports generated from this project will assist the State System universities with strategic engagement, program development and evaluation, student engagement, and marketing.

The intentions of this Workforce Characteristics Report are fourfold.

- First, it provides a baseline reporting structure to evaluate workforce characteristics at the state level and sub-region level within Pennsylvania, which can be repeated in the future.
- Second, it identifies sub-regions within Pennsylvania that will be used to conduct regionally specific analysis in subsequent reports.
- Third, it builds on CEW's State System degree production report. The Workforce Characteristics Report is a data-driven analysis and discussion of trends in Pennsylvania's economy, including projections of industry and occupational employment, key skilled high demand occupations, and changes in socio-economic characteristics.

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- Finally, this report creates the foundation to construct the State System's Gap Analysis reports for the state and its regions and complements the content of the supply/demand gap analysis reports.

While the main body of this report provides a high level summary, the Appendices provide an abundance of information for those seeking additional detail. Appendix A provides a map of the state sub-region boundaries along with PREP and WIA boundaries. Appendix B provides detail on the employment and enrollment by each county in Pennsylvania. Appendix C provides nearly 300 detailed industry employment projections for the region along with a measure of competitiveness for each industry. Lastly, Appendix D provides a description of occupation levels and employment projections for over 400 detailed occupations.

2. PENNSYLVANIA'S STATE SYSTEM LEARNER ORIGIN

This section provides an overview of where State System learners come from within Pennsylvania. It is then compared to where Pennsylvania's workforce is employed. This information is combined with other relevant economic data to define sub-regions as well as university workforce regions—adding valuable geographic granularity to the State System's program alignment toolkit.

Pennsylvania's total four year institution enrollment in 2013 was approximately 618,700 learners. Of this, the Pennsylvania State System of Higher Education comprised 112,225 enrolled learners—of which almost 90% were Pennsylvania residents.³ Based on analysis of the workforce size and the origin of learners, some counties within the Commonwealth appear to provide a higher or lower share of learners to the State System compared to other counties—indicating that learners in some counties are more prone to attending a State System university, compared to other counties. The map below (Figure 2.1) illustrates workforce size and the origin of Pennsylvania resident learners enrolled in Pennsylvania's State System of Higher Education. Counties that exceeded +/-1% difference of learners to workforce are found in Table 2.1 and Table 2.2. For example, Chester County provides a higher percentage of State System learners, compared to its workforce size, whereas Philadelphia County provides a low percentage of learners.

Table 2.1 – Counties with Higher Share of State System Learners vs. Workforce

County	State System Students from County	% of State System Students from PA	County Workforce	% of PA Workforce	Difference in Share
Chester	5,996	6.2%	272,270	4.3%	1.9%
Erie	3,469	3.6%	134,343	2.1%	1.5%
Monroe	2,532	2.6%	79,673	1.2%	1.4%

Source: Pennsylvania's State System of Higher Education Research Office, Bureau of Labor Statistics

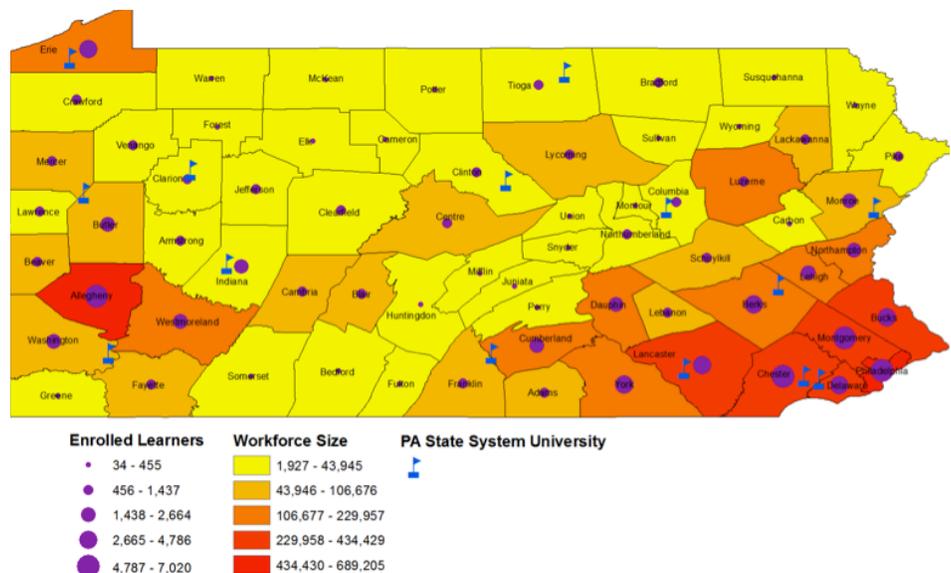
³ Based on Fall 2013 enrollment.

Table 2.2 – Counties with Lower Share of State System Learners vs. Workforce

County	State System Students from County	% of State System Students from PA	County Workforce	% of PA Workforce	Difference in Share
Montgomery	5,401	5.6%	434,429	6.8%	-1.2%
Allegheny	7,020	7.3%	644,822	10.1%	-2.8%
Philadelphia	5,263	5.5%	689,205	10.8%	-5.3%

Source: Pennsylvania's State System of Higher Education Research Office, Bureau of Labor Statistics

Figure 2.1 – State System Learner Origin and Workforce Size County

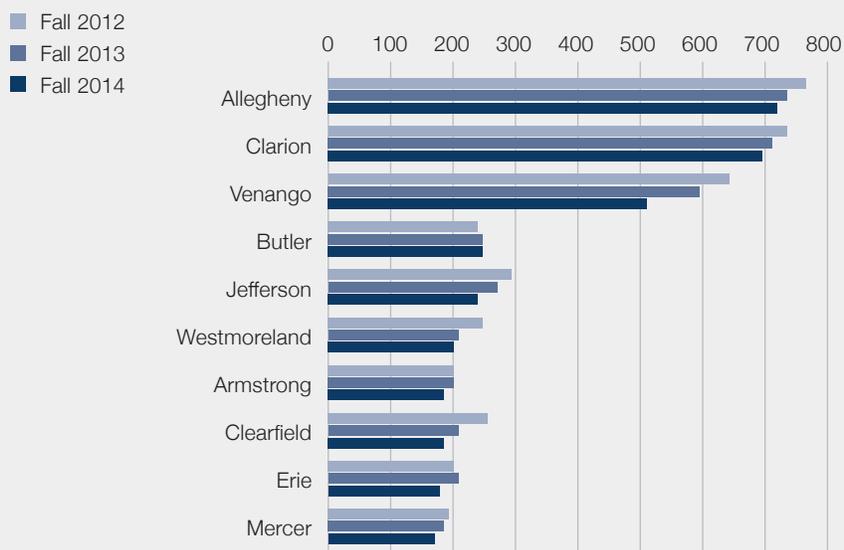


Source: Pennsylvania's State System of Higher Education, Oxford Economics mapping

2.1 Clarion University's Learner Origin

Clarion University learners, originally from Pennsylvania, come from nearly every county in the state. The vast majority of learners, however, come from counties that are in the western region. The top 10 learner enrollment counties account for about 66% of resident enrollment in Clarion University. Figure 2.2 shows the Pennsylvania resident fall enrollment numbers between 2012 and 2014 for the top 10 counties. Table 2.3 provides enrollment detail for the top 10 counties.

Figure 2.2 – Clarion University Learner Enrollment by County



Source: Pennsylvania's State System of Higher Education

Table 2.3 Clarion University Learner Enrollment by County

County	Fall 2012	Fall 2013	Fall 2014
Allegheny	766	732	715
Clarion	734	710	690
Venango	642	591	512
Butler	242	245	245
Jefferson	296	271	241
Westmoreland	250	211	200
Armstrong	203	200	185
Clearfield	255	208	182
Erie	204	206	176
Mercer	189	188	171

Source: Pennsylvania's State System of Higher Education

3. SUMMARY OF CLARION UNIVERSITY WORKFORCE REGION

Located in Clarion County, Pennsylvania, Clarion University (Clarion) supports the northwestern region of Pennsylvania's State System of Higher Education. It provides a breadth of degree programs and serves a student population of about 6,100 learners, of which about 82% are Pennsylvania residents.⁴

The following sections outline the supporting data used to select Clarion's workforce region—defined as Clarion, Armstrong, Butler, Venango, Jefferson, Elk, Forest, and Allegheny counties. Subsequent sections provide a brief analysis of economic, workforce, demographic and socio-economic information. The purpose of providing this analysis is to gain better insight into how the workforce region has changed over the past several years, as well as projections of how the area will continue to change over the next several years.

A BRIEF NOTE ON DEVELOPING THE WORKFORCE REGION

Part of the geographic research and analysis involves central place theory—a geographical theory that seeks to explain the location and connectedness of economic activity. More specifically, this research seeks to quantify the interconnectedness of local economies surrounding the State System universities. This is measured by workforce commuting and economic activity (i.e. industry production, supply chains, sales, etc.). An additional aspect involves the geographic connection between the university's learners. The university's ability to draw learners from the surrounding region helps contextualize the geographic footprint of the institution.

The full details of this process are described in Appendix A.

⁴ Based on Average Fall Enrollment 2012-2014.

3.1 Defining Clarion University’s Workforce Region

The main factors used to identify the university-specific workforce region involved evaluation of commuting patterns, learner capture rate, and economic activity (business demand and household demand). The aim is to identify the workforce region that surrounds the university and is consequently supported by the university, while also being inclusive of less populated rural counties. A workforce region is defined as: a labor market area or an economically integrated region within which residents can find jobs within a reasonable commuting distance or can change their employment without changing their place of residence.⁵

The counties in the region were identified using a multi-step process. Table 3.1 provides a shortened snapshot of two iterations, with the final selection of counties highlighted in green.⁶

When taken in the context of regional economic activity, about 67% of regional demand for goods and services are produced by businesses located within the region. This indicates that regional business activity is locally contained. Similarly, 91% of household demand is satisfied by local production, meaning that households are not traveling outside the region to purchase goods or services to consume.

Table 3.1 - Clarion Workforce Region Commuting Patterns, Learner Capture Rate, and Economic Activity

County Combination	Job Share of People Living in the Region	Job Share of People Employed in the Region	Business Demand	Household Demand	Learner Capture Rate
Clarion, Armstrong	0.42	0.56	0.48	0.80	0.17
Clarion, Armstrong, Butler, Venango	0.57	0.65	0.51	0.79	0.32
Clarion, Armstrong, Butler, Venango, Jefferson, Elk, Forest, Allegheny	0.69	0.76	0.67	0.91	0.54

Sources: US Census - LEHD, Minnesota IMPLAN Group, Pennsylvania’s State System of Higher Education

The majority of Clarion workforce region residents also work in the region (69%). This reflects a very strong centralized connection between workers and

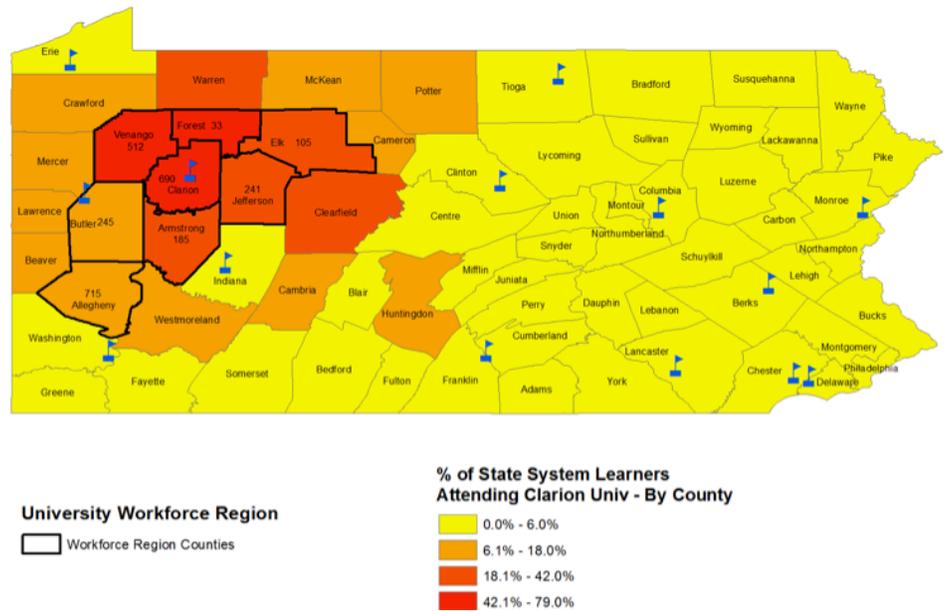
5 Bureau of Labor Statistics: Labor Market Area.

6 As mentioned in the methodology, no threshold values were explicitly set for each region. Rather the iterations sought to reasonably optimize each factor to meet the criteria for defining an economic area—recognizing the primary driving factor is workforce commuting.

economic activity in a region that has more than 875,000 jobs. Additionally, learners at Clarion originate from nearby surrounding counties. When looking at the percentage of learners attending State System universities, 54% (the capture rate) of State System learners in Clarion’s workforce region attend Clarion.

Figure 3.1 illustrates learner capture rates for Clarion’s workforce region. This provides a strong indication of whether State System learners within the region ultimately attend Clarion. Counties highlighted in yellow indicate that learners enrolled in a State System University are not generally going to Clarion, whereas counties highlighted in dark orange or red indicate that Clarion has a relatively high capture rate of State System enrolled learners.

Figure 3.1 – Clarion Workforce Region Learner Origin by Percent of Total State System Student Population



Source: Pennsylvania’s State System of Higher Education and Oxford Economics tabulations

4. LABOR MARKET OF CLARION UNIVERSITY'S WORKFORCE REGION

The following sections provide a brief analysis of economic, workforce, demographic and socio-economic information. The purpose of providing this analysis is to gain better insight into how Clarion University's workforce region has changed over the past several years, as well as projections of how the region will continue to change over the next several years. Table 4.1 provides a high level comparative summary of key workforce and economic indicators between Clarion University's workforce region and Pennsylvania.

Table 4.1 – Summary of Clarion's Workforce Region and Pennsylvania Workforce Characteristics

Workforce Characteristic	Clarion Workforce Region	Pennsylvania	Source
Population	1.7 million	12.7 million	2009-2013 American Community Survey 5-Year Estimates
Employed	875,000	5.6 million	2014 BLS Quarterly Census of Employment and Wages
Unemployed	46,200	370,000	2014 BLS Local Area Unemployment Statistics
Unemployment Rate	5.4	5.8%	2014 BLS Local Area Unemployment Statistics
Poverty Rate	13.3%	13.7%	2013 Census Small Area Income and Poverty Estimates
Business Establishments	46,200	347,000	2014 BLS Quarterly Census of Employment and Wages
Educational Attainment (25+ Population with Bachelor's or Higher)	32.4%	27.4%	2009-2013 American Community Survey 5-Year Estimates
Bachelor's or Higher Completions	22,400	137,000	Integrated Postsecondary Education Data System 3-Year Average AY2010-11 to AY2012-13
Projected Jobs 2024	940,000	6.2 million	Oxford Economics Projections 2024

The analysis in the following sections is broken into three key sections, namely:

1. Industries – an evaluation of historic and current changes in sector employment, as well as top employers in the state.

2. Occupations – an evaluation of historic and projected changes in occupations, as well as more detailed analysis of key skilled occupations that align to university education.

- Top Skilled Occupations: largest skilled employed occupations and new & replacement job demand.
- Key Skilled High Demand Occupations: five key skilled occupations and new & replacement job demand.
- Job Posting Analytics: analysis of job postings vs. hires for five key skilled high demand occupations.
- Industry Staffing Patterns: industry employment breakdown for five key skilled high demand occupations.
- Key Occupational Profiles: regional demographic profile for five key skilled high demand occupations.

3. Demographics and Socio-economic Indicators – an evaluation of the demographic profile of the population of Clarion University's workforce region. Also, a brief analysis of three key socio-economic indicators— educational attainment, unemployment, and poverty.

Each section is designed to provide additional context to the economic environment for the universities to consider broader aspects of strategic vision and program planning. Each section also provides the data-driven preparation for the next phase of research—namely the Supply/Demand Gap Analysis Report.

4.1 Employment Projections

Currently, the industry and occupation employment projections available from Pennsylvania's Department of Labor and Industry reflect the time period from 2012–2022 and therefore do not incorporate much of the post-recession recovery that has taken place between 2012 and 2014. In order to capture recovery and reflect current employment data, the State System used 4-digit NAICS (industry) and 5-digit SOC (occupation) projections to 2024 at the county level for Pennsylvania. The projections incorporate Quarterly Census of Employment and Wages (QCEW) data through 2014, and therefore contain the most recent employment data that further reflects the economic recovery.

See Appendix C for 4-digit industry projections and Appendix D for 5-digit occupation projections.

Oxford Economics, a premier economic modeling and consulting firm, produced the projections. By updating projections, Oxford Economics provided insight into new job growth which better measures occupational demand over the next 10 years.

The next section provides an analysis of industries in Clarion University's workforce region with a focus on the post-recession recovery period 2009 to 2014, as well as top employers in the region.

5. INDUSTRIES IN CLARION UNIVERSITY'S WORKFORCE REGION

Over the five years of 2009 to 2014, Clarion University's (Clarion) workforce region experienced job growth in many service-based sectors. Sectors such as education and health services; professional and business services; and leisure and hospitality added a combined 27,000 new jobs between 2009 and 2014. Government experienced the largest nominal employment loss, while other job losses occurred within information and trade, transportation, and utilities. Overall, the economy added about 20,500 jobs during the recovery period, 2009 to 2014. This growth reflects the recovery period for Pennsylvania from one of the worst recessions since the Great Depression—the Great Recession which lasted from 2007 to 2009.

Figure 5.1 illustrates historic and current employment, while Table 5.1 provides data on broad industry categories by employment, growth, and percent change.

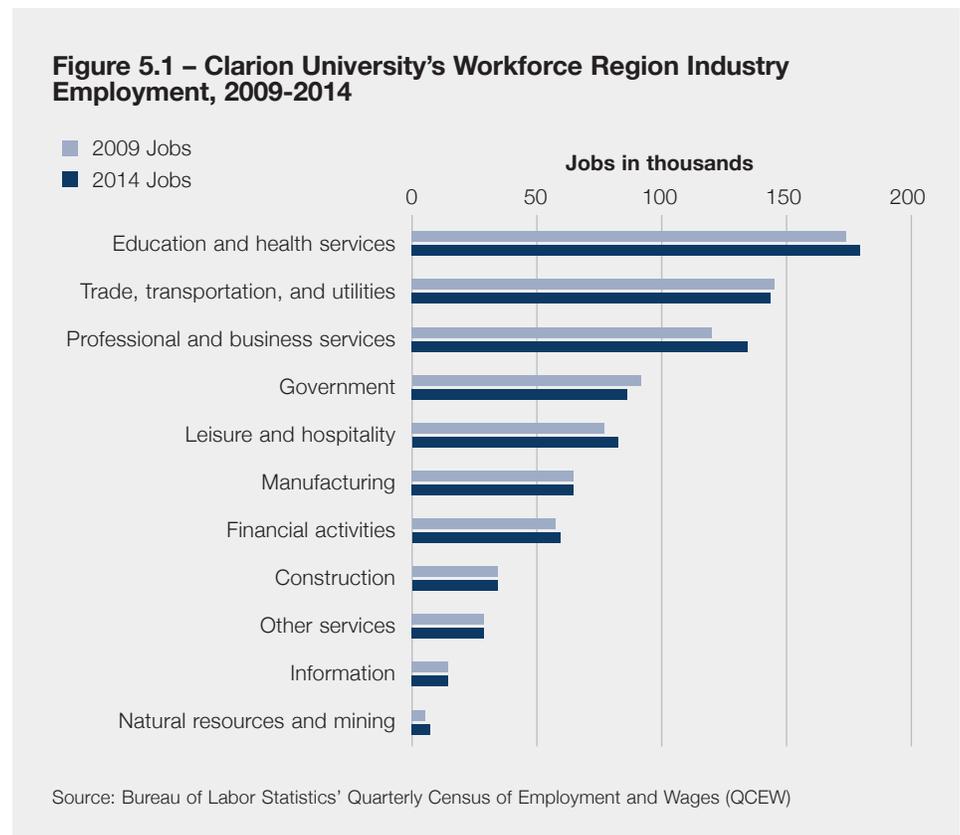


Table 5.1 – Clarion University’s Workforce Region Industry Employment, 2009-2014

Industry Employment	2009 Jobs	2014 Jobs	Absolute Change 09-14	% Change 09-14
Total, all industries	829,940	850,484	20,544	2.5%
Education and health services	177,038	183,181	6,143	3.5%
Trade, transportation, and utilities	148,361	147,012	-1,349	-0.9%
Professional and business services	122,118	136,579	14,461	11.8%
Government	93,505	87,087	-6,418	-6.9%
Leisure and hospitality	78,102	84,472	6,370	8.2%
Manufacturing	66,043	66,461	418	0.6%
Financial activities	58,344	59,599	1,255	2.2%
Construction	35,663	34,702	-961	-2.7%
Other services	29,916	29,923	7	0.0%
Information	15,474	14,389	-1,085	-7.0%
Natural resources and mining	5,361	6,514	1,153	21.5%

Source: Bureau of Labor Statistics’ Quarterly Census of Employment and Wages (QCEW)

5.1 Top Employers in Clarion University’s Workforce Region

Amongst the top employers within Clarion’s workforce region, education and health service establishments comprise a majority of the list. Other top employers in the region include federal, state, and local government as well several mining and manufacturing establishments.

Major employers in Clarion’s workforce region are listed in Table 5.2 on the next page.

While this section focused on the places where people in Clarion’s workforce region work, the next section builds a perspective of occupational employment. This perspective describes the types of jobs people have in Clarion’s workforce region and identifies the skills and characteristics of those people.

Table 5.2: Top Employers in Clarion University's Workforce Region

Establishment Name
Armstrong County Memorial Hospital
Armstrong School District
Butler Healthcare Providers
Clarion Hospital
Cornell Abraxas Group
Elk Regional Health Center
Federal Government
Giant Eagle
Industrial Timber & Land Company
Joy Global Underground Mining
Keystone Powdered Metal Company
Metaldyne Sintered Ridgway
Miller Welding & Machine Company
Owens-Brockway Glass Container
Pennsylvania State System of Higher Education
PNC Bank
Punxsutawney Area School District
Rosebud Mining Company
State Government
Training Toward Self Reliance
University of Pittsburgh
UPMC Northwest
UPMC Presbyterian Shadyside
Western Penn Allegheny Health
Westinghouse Electric

Source: Pennsylvania Department of Labor and Industry Quarterly Census of Employment and Wages (QCEW)

6. OCCUPATIONS IN CLARION UNIVERSITY'S WORKFORCE REGION

The workforce within the region can be evaluated from many different angles in order to build a deeper profile of the qualities and attributes of workers. The next five sub-sections provide insight into the qualities of Clarion's workforce region, answering questions such as:

- What are the largest skilled occupations employed within the region?
- What are the key skilled high demand occupations that typically align to university-level education?
- Within the key skilled high demand occupations what is the current market demand in terms of jobs postings and hires?
- What sectors typically employ the key skilled high demand occupations?
- What type of demographic is typically found in key skilled high demand occupations?

Each perspective provides data-driven content for the universities to consider when engaging businesses, learners and program planners.

6.1 Skilled Occupations

The O*NET program is the nation's primary source of occupational information. Essential to the project is the O*NET database, containing information on hundreds of standardized and occupation-specific descriptors.⁷

For this analysis a "skilled" occupation is defined as an occupation in O*NET Job Zones Three, Four, or Five. A Job Zone is a group of occupations that are similar in how much education people need to do the work, how much related experience people need to do the work, and how much on-the-job training people need to do the work.⁸

Most occupations in Job Zone Three require training in vocational schools, related on-the-job experience, or an associate's degree. Most occupations in

⁷ <http://www.onetcenter.org/overview.html>

⁸ <https://www.onetonline.org/help/online/zones>

Job Zone Four require a four-year bachelor's degree, but some do not. Most occupations in Job Zone Five require graduate school. For example, they may require a master's degree, and some require a Ph.D., M.D., or J.D. (law degree). For a more detailed description of O*NET Job Zones and training requirements see Appendix D.

For the five key skilled high demand occupations, over 50% of those employed have attained an associate's degree or higher and are generally associated with university-level education.

6.2 Top Skilled Occupations in Clarion University's Workforce Region

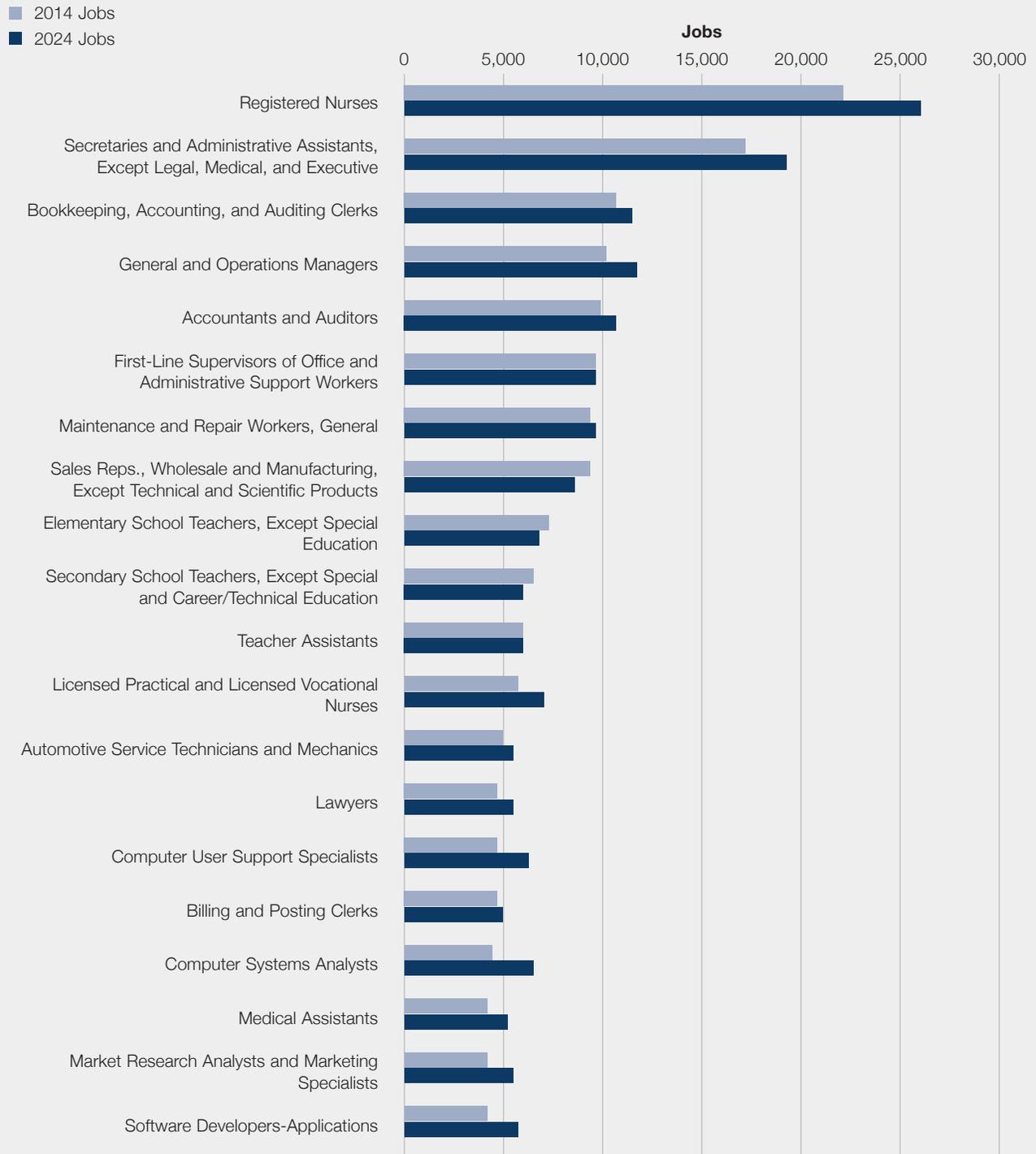
Top skilled occupations in the region are driven by industry composition. Medical centers employ a cadre of health professionals, while enterprise management companies employ a range of business professionals. Given the dominating presence of trade, transportation and utilities; education and health services; and manufacturing establishments in Clarion's workforce region, top skilled occupations include: teachers, nurses, sales representatives, managers, and assistants. Figure 6.1 and Table 6.1 highlight the top 20 skilled occupations in the region, 10-year job growth projections, and new and replacement jobs.⁹

An important aspect to distinguish skilled occupations, in this sub-section, is that post-secondary education is not necessarily a pre-requisite for employment. However, a high percentage of those employed in the skilled occupation have a post-secondary education.

The next section provides a more narrow view of skilled occupations, focusing specifically on occupations that align to university-level education and have high demand for new and replacement jobs.

⁹ New and replacement job change takes into account demand for occupations based on: industry growth (new jobs), occupation productivity, workforce ageing, migration and other factors that would contribute to new and replacement job openings.

Figure 6.1 – Largest Skilled Occupations in Clarion’s Workforce Region & Projections, 2014-2024



Source: BLS (QCEW and OES); Pennsylvania Department of Labor & Industry; Oxford Economics Projections

Table 6.1 – Largest Skilled Occupations in Clarion’s Workforce Region and Projections, 2014-2024

SOC Code	Occupation Title	2014 Jobs	2024 Jobs	10-year New and Replacement Demand
29-1141	Registered Nurses	22,246	26,064	8,323
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	17,342	19,213	4,124
43-3031	Bookkeeping, Accounting, and Auditing Clerks	10,797	11,479	1,750
11-1021	General and Operations Managers	10,284	11,858	3,405
13-2011	Accountants and Auditors	9,873	10,825	4,238
43-1011	First-Line Supervisors of Office and Administrative Support Workers	9,677	9,733	2,373
49-9071	Maintenance and Repair Workers, General	9,490	9,573	2,173
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	9,459	8,644	1,383
25-2021	Elementary School Teachers, Except Special Education	7,198	6,826	1,439
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	6,632	6,009	1,636
25-9041	Teacher Assistants	5,896	5,896	1,465
29-2061	Licensed Practical and Licensed Vocational Nurses	5,660	6,993	2,828
49-3023	Automotive Service Technicians and Mechanics	4,886	5,411	1,945
23-1011	Lawyers	4,821	5,518	1,520
15-1151	Computer User Support Specialists	4,669	6,287	2,454
43-3021	Billing and Posting Clerks	4,636	4,936	1,238
15-1121	Computer Systems Analysts	4,533	6,415	2,684
31-9092	Medical Assistants	4,282	5,158	1,736
13-1161	Market Research Analysts and Marketing Specialists	4,242	5,598	2,035
15-1132	Software Developers-Applications	4,168	5,747	2,173

Source: BLS (QCEW and OES); Pennsylvania Department of Labor & Industry; Oxford Economics Projections

6.3 Key Skilled High Demand Occupations Aligning to University-level Education

Occupation demand can represent different perspectives of employment need. One perspective evaluates demand due to growth of new jobs. It also represents the need for replacement jobs. When combined, new and replacement job projections provide a more realistic perspective of labor demand.

To support the occupational demand for new and replacement jobs, this analysis also evaluates real-time job posting data. By measuring the number of unique job postings for a specific job title, which is then translated into an occupation classification, it is possible to gauge real-time demand—another perspective of employment need. The number of unique postings provides guidance on real-time changes in occupations that companies may be seeking to hire. As with all datasets, job posting data have caveats. Discrepancies between postings and actual hires can be challenging to measure—wherein a job posting may not result in a hire for one occupation, but another job posting for a different occupation may result in multiple hires.¹⁰

This section looks at both perspectives—occupation demand using projections of new and replacement jobs as well as real-time job postings—in order to draw specific insight into occupation demand within Clarion’s workforce region.

6.3.1 New and Replacement Demand for Key Skilled High Demand Occupations

Many skilled occupations exist in Pennsylvania. Demand for new and replacement jobs for key skilled high demand occupations that tie more closely to university-level programs are typically determined by the sheer size of the employment within the occupation and the demographic characteristics of those who are currently employed—specifically age. For example, Pennsylvania businesses employ approximately 54,400 accountants and auditors. Projections indicate that new employment for accountants and auditors will increase to about 60,000 by 2024—5,600 new jobs in 10 years. However, 47% of the employed accountants and auditors are over the age of 45, meaning that many of the currently employed accountants and auditors will likely retire over the next 10 years. This retirement will drive up the need to replace outgoing

¹⁰ When evaluating jobs postings, a specific caveat focuses on net openings and jobs filled (i.e. openings that result in an opportunity for a new entrant, rather than normal job turn wherein a worker moves to a different company in the region and their vacant job is filled by yet another incumbent worker at another company).

accountants and auditors with new workers—hence the reason we see nearly 23,700 new and replacement jobs (5,600 new and 18,100 replacement) for the occupation over the next 10 years.¹¹

Figure 6.2 and Table 6.2 outline the five key skilled high demand occupations for new and replacement jobs over the next 10 years, specifically: registered nurses, accountants and auditors, software developers- applications, computer system analysts, and market research analysts and marketing specialists.¹²

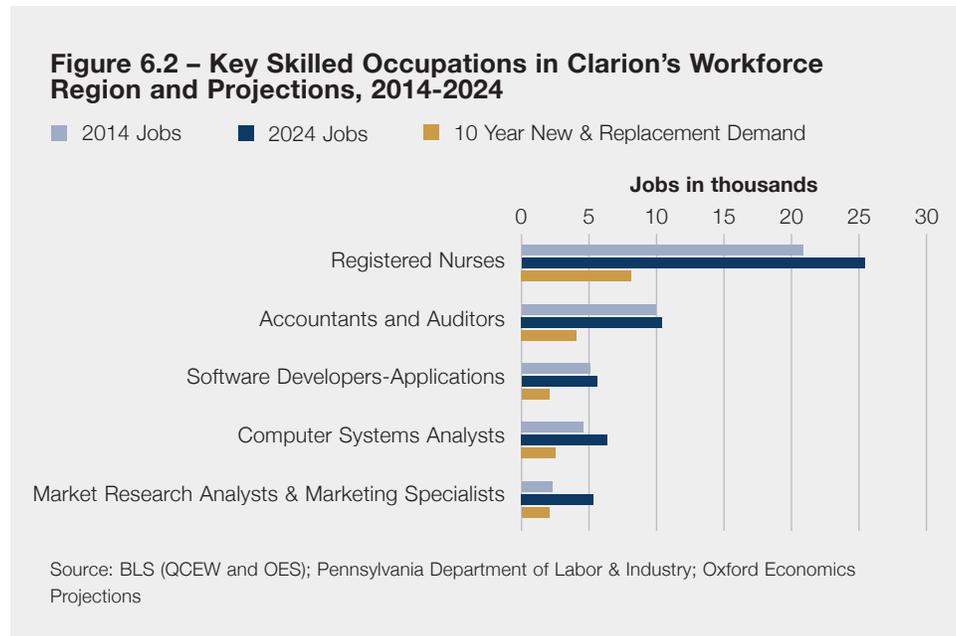


Table 6.2 – Key Skilled Occupations in Clarion’s Workforce Region and Projections, 2014-2024

SOC Code	Occupation Title	2014 Jobs	2024 Jobs	10 Year New & Replacement Demand
29-1141	Registered Nurses	22,246	26,064	8,323
13-2011	Accountants and Auditors	9,873	10,825	4,238
15-1132	Software Developers-Applications	4,168	5,747	2,173
15-1121	Computer Systems Analysts	4,533	6,415	2,684
13-1161	Market Research Analysts and Marketing Specialists	4,242	5,598	2,035

Source: BLS (QCEW and OES); Pennsylvania Department of Labor & Industry; Oxford Economics Projections

11 Retirement is only one of the metrics factored into new and replacement jobs. Other metrics include out-migration and death.
 12 Teachers (elementary and secondary) were found in the top skilled high demand occupations. However, the analysis focuses on private sector jobs and opportunities.

While this section focused on 10-year new and replacement demand, the next section highlights the importance of current demand using real-time job posting analytics.

6.3.2 Real-Time Job Postings for Key Skilled High Demand Occupations

Analysis of job postings for key skilled high demand occupations generally supports the findings from Section 6.3.1. Between July 2014 and July 2015 approximately 3,000 unique (de-duplicated) job postings appeared in Clarion’s Workforce Region for the top five key skilled high demand occupations (registered nurses, accountants and auditors, software developers-applications, computer system analysts, and market research analysts and marketing specialists). Sizable job postings include: registered nurses (894 unique postings per month), and software developers-applications (749 unique postings per month).

Table 6.3 provides details on the average monthly job postings and the estimated average monthly hires between July 2014 and July 2015 for the key skilled occupations.

Job posting analytics also provide insight into the skills and certifications that employers seek from qualified job candidates. Individuals seeking jobs in the key skilled high demand occupations would increase their competitiveness by demonstrating skill proficiency and/or certifications. The following lists specific unique skills or certifications for each occupation that employers demand.

Table 6.3 – Job Postings and Hires for Key Skilled High Demand Occupations in Pennsylvania

Occupation	Average Monthly Postings (Jul 2014 - Jul 2015)	Estimated Average Monthly Hires (Jul 2014 - Jul 2015)	Ratio of Postings to Hires
Registered Nurses	894	772	1.2
Software Developers-Applications	749	168	4.5
Accountants and Auditors	664	445	1.5
Computer Systems Analysts	501	165	3.0
Market Research Analysts and Marketing Specialists	250	153	1.6

Source: Economic Modeling Specialists International (EMSI)

Registered Nurses

Unique skills: acute care, surgery, schedule/record keeping

Certifications: Cardiopulmonary Resuscitation (CPR), Basic Life Support (BLS), Advanced Life Support (ALS), Registered Nurse (RN) license

Accountants and Auditors

Unique skills: audits, finance, Generally Accepted Accounting Principles (GAAP)

Certifications: Certified Public Accountant (CPA)

Computer Systems Analysts

Unique skills: information systems, SAP software, SQL programming, Oracle databases

Certifications: security clearance, Certified Information Systems Security Professional (CISSP), Microsoft certified professional, Certified Information Systems Auditor (CISA)

Market Research Analysts and Marketing Specialists

Unique skills: product marketing, product management, marketing concepts, market analysis, social media, product development, presentations

Certifications: Six Sigma, Project Management Professional (PMP)

Software Developers-Applications

Unique skills: software engineering, C++ programming language, API's, Java programming language

Certifications: security clearance, Microsoft certified professional, Certified Information Systems Security Professional (CISSP)

This list of skills and certifications do not encompass the entirety of skills and certifications that may be required for different industry sectors and job functions. However, these skills reflect the general online job posting minimum qualifications for those seeking to apply to one of the occupations.

The next section builds a broader sense of which industry sectors typically employ each of the top five skilled high demand occupations.

6.4 Industry Staffing Patterns for Key Skilled High Demand Occupations in Clarion University's Workforce Region

Understanding which industries employ key skilled occupations is helpful when engaging businesses as well as communicating programs and potential career opportunities to learners. Also knowing the industries that predominately employ certain occupations can help align program planning.

The following tables show the staffing patterns for the key skilled high demand occupations by identifying the top five industries that employ each respective key skilled high demand occupation within the region. For each occupation, the table contains:

- The number of the occupation jobs in each respective industry in 2014 (e.g. general medical and surgical hospitals employ 12,772 registered nurses);
- The percent of the occupation's employment in the region that is employed in the industry (e.g. the 12,772 registered nurses employed in general medical and surgical hospitals represent nearly 57% of the total registered nurse workforce in the region);
- The percent of the industry sector's employment that is made up of the occupation (e.g. the 12,772 registered nurses make up about 27% of employment within general medical and surgical hospitals).

Staffing Patterns for Registered Nurses Employed in Clarion's Workforce Region

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
General Medical and Surgical Hospitals	12,772	57.4%	27.2%
Offices of Physicians	1,923	8.6%	9.4%
Home Health Care Services	1,609	7.2%	21.0%
Nursing Care Facilities (Skilled Nursing Facilities)	1,277	5.7%	9.9%
Specialty (except Psychiatric and Substance Abuse) Hospitals	1,093	4.9%	27.6%

Source: Bureau of Labor Statistics – OES & QCEW Annual Data

Staffing Patterns for Accountants and Auditors Employed in Clarion's Workforce Region

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Accounting, Tax Preparation, Bookkeeping, and Payroll Services	2,668	27.0%	38.6%
Management of Companies and Enterprises	1,723	17.5%	5.0%
Other Financial Investment Activities	384	3.9%	8.9%
Insurance Carriers	329	3.3%	2.4%
Depository Credit Intermediation	299	3.0%	1.3%

Source: Bureau of Labor Statistics – OES & QCEW Annual Data

Staffing Patterns for Market Research Analysts Employed in Clarion's Workforce Region

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Management of Companies and Enterprises	689	16.2%	2.0%
Management, Scientific, and Technical Consulting Services	540	12.7%	6.0%
Computer Systems Design and Related Services	258	6.1%	2.0%
Insurance Carriers	208	4.9%	1.5%
Architectural, Engineering, and Related Services	187	4.4%	1.2%

Source: Bureau of Labor Statistics – OES & QCEW Annual Data

Staffing Patterns for Computer Systems Analysts Employed in Clarion's Workforce Region

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Computer Systems Design and Related Services	1,689	37.3%	12.8%
Management of Companies and Enterprises	817	18.0%	2.4%
Insurance Carriers	387	8.5%	2.8%
Wholesale Electronic Markets and Agents and Brokers	230	5.1%	2.7%
Depository Credit Intermediation	209	4.6%	0.9%

Source: Bureau of Labor Statistics – OES & QCEW Annual Data

Staffing Patterns for Software Developers-Applications Employed in Clarion's Workforce Region

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Computer Systems Design and Related Services	1,321	31.7%	10.0%
Insurance Carriers	587	14.1%	4.2%
Management of Companies and Enterprises	468	11.2%	1.4%
Software Publishers	237	5.7%	18.7%
Employment Services	178	4.3%	1.2%

Source: Bureau of Labor Statistics – OES & QCEW Annual Data

The above data establishes the top sectors where the key skilled high demand occupations are employed. However, to further place the perspective of these occupation profiles, it is important to consider the types of people who generally fill these roles. The next section contains a demographic profile for people from Pennsylvania who work in these key skilled occupations.

6.5 Key Skilled High Demand Occupational Profiles

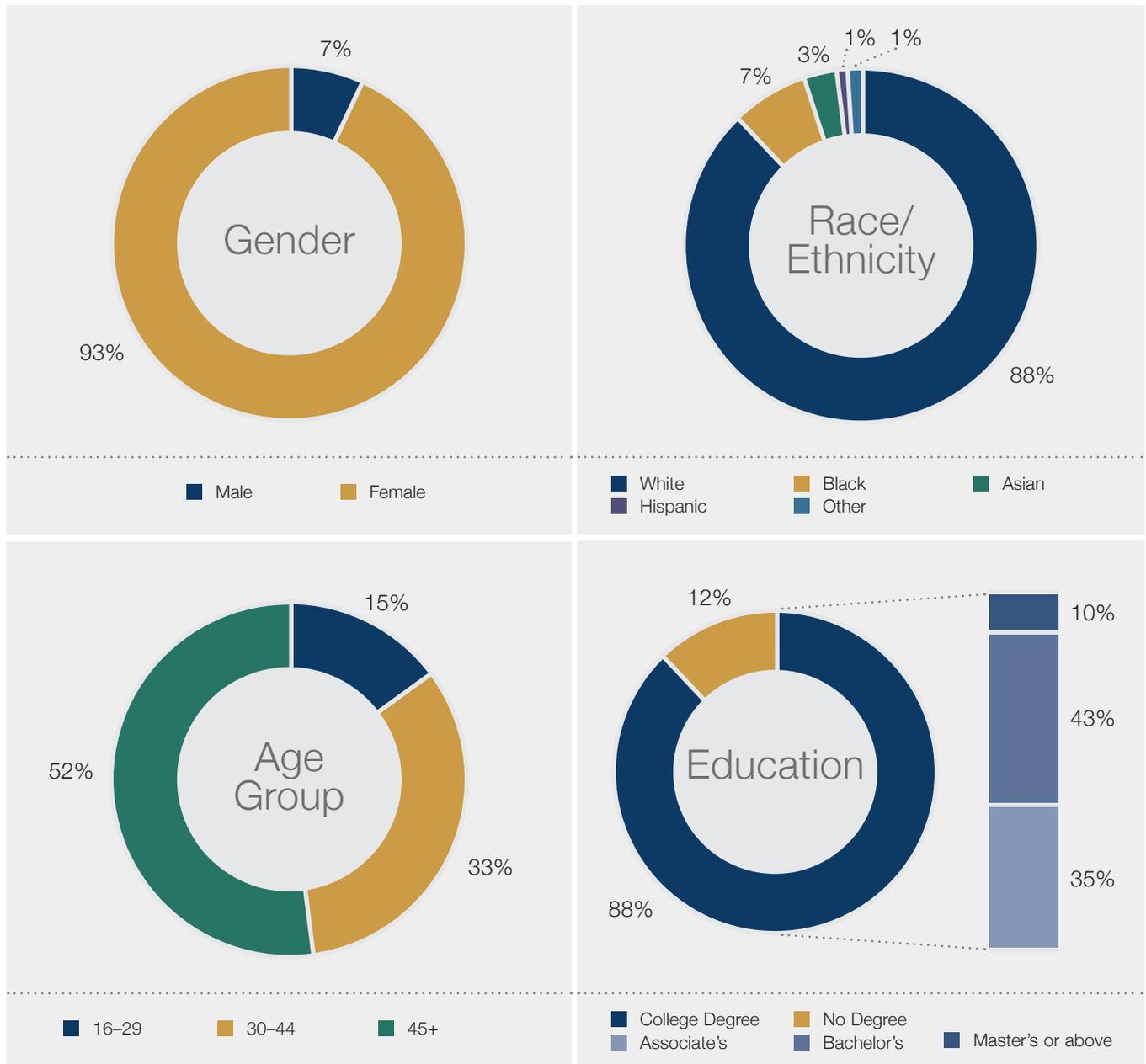
In addition to understanding the industries that employ key skilled high demand occupations, another lens to view key skilled high demand occupations focuses on the characteristics of those employed. The following section outlines the demographics for people from Pennsylvania who work in these key skilled occupations by showing each occupation's composition by gender, race/ethnicity, age, and education. This lends further insight into who generally works in the career and answers questions such as:

- Are women or men typically found in the occupation?
- Do certain races/ethnicities occupy larger shares of the occupation?
- What is the age distribution of the occupation?
- What is the educational attainment of workers in the occupation?

For comparative purposes, the demographic composition for the entire population of Clarion's workforce region is further described in Section 7 of the report.

REGISTERED NURSES IN PENNSYLVANIA

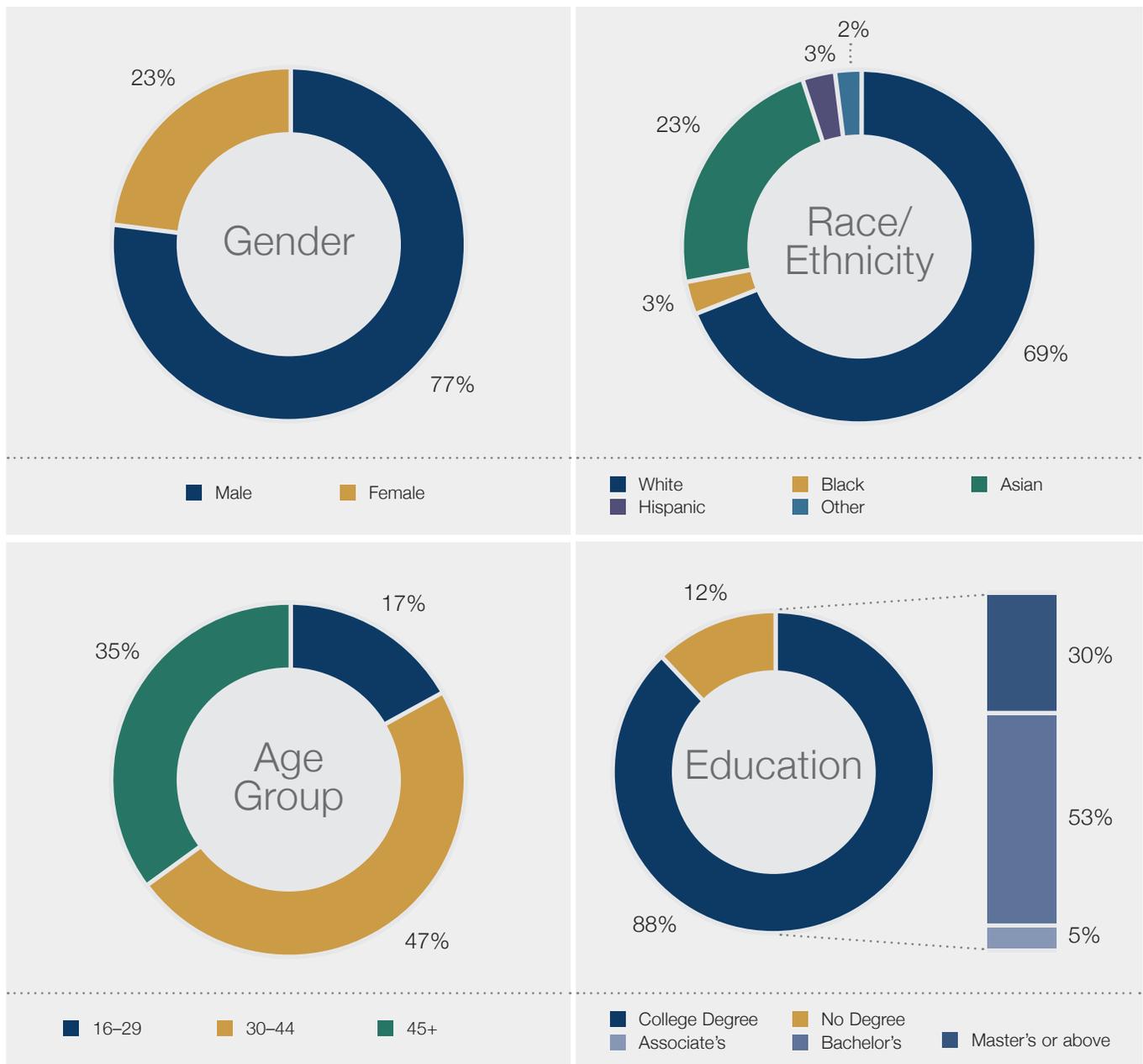
The demographic profile of registered nurses is largely dominated by white females. Age distribution indicates that registered nurses are a more mature cohort of workers (45 years and older), which can put increasing pressure on replacement jobs due to retirements over the next 10 years. Nearly 90% of registered nurses have an associate's degree or higher indicating that this is a highly educated occupation.



Source: U.S. Census - American Community Survey (ACS) 2009-2013 5-year file

SOFTWARE DEVELOPERS-APPLICATIONS IN PENNSYLVANIA

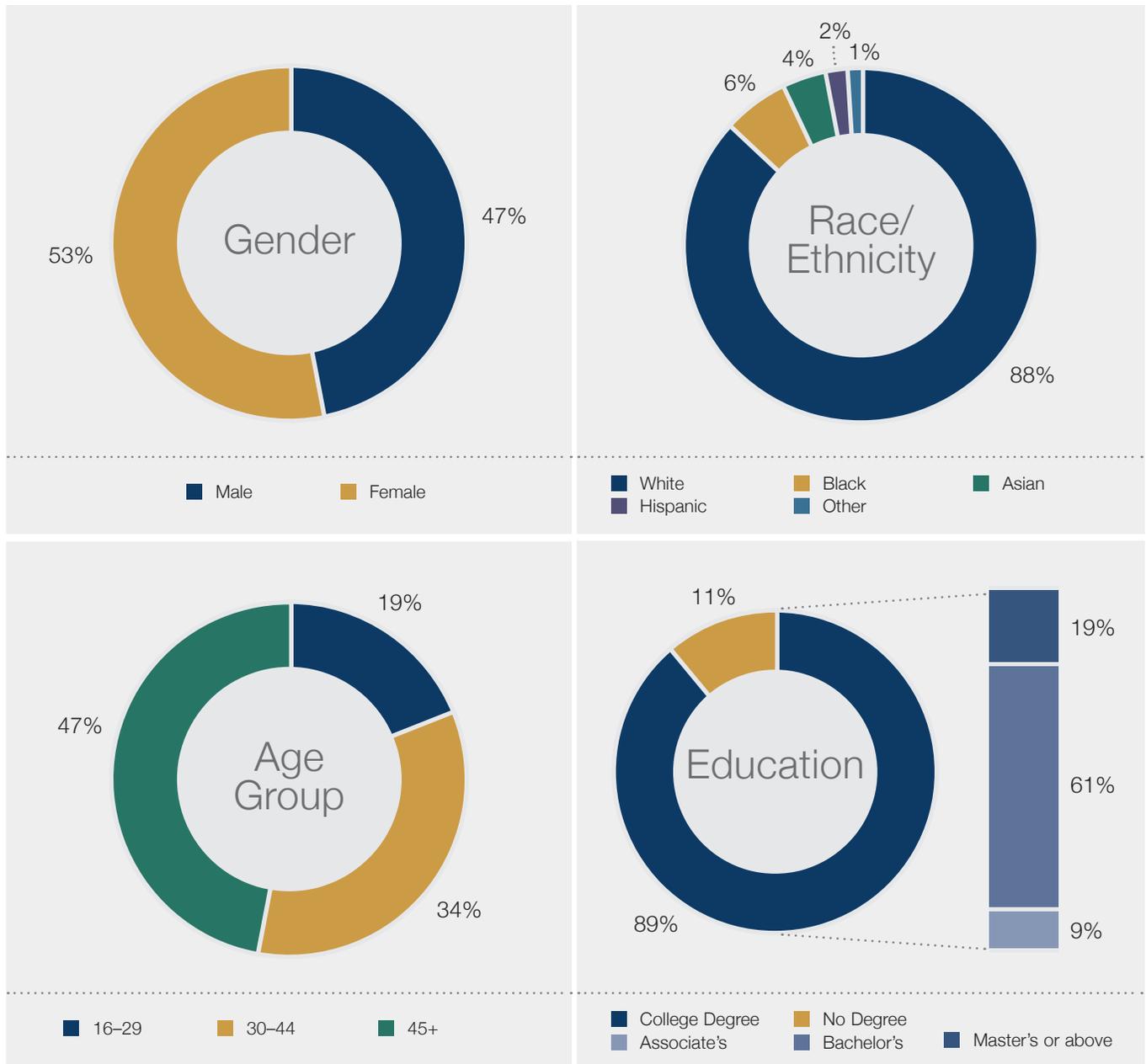
Software developers-applications show a larger proportion of males in the occupation compared to females. While still represented by a larger share of white workers, a significant number of Asian workers are found in the occupation, making this occupation more diverse than the average Pennsylvania demographic makeup. The age composition of this occupation indicates that a high proportion of mid-career (30-44) workers make up the workforce. Nearly 90% of software developers-applications have an associate's degree or higher indicating that this is a highly educated occupation.



Source: U.S. Census - American Community Survey (ACS) 2009-2013 5-year file

ACCOUNTANTS AND AUDITORS IN PENNSYLVANIA

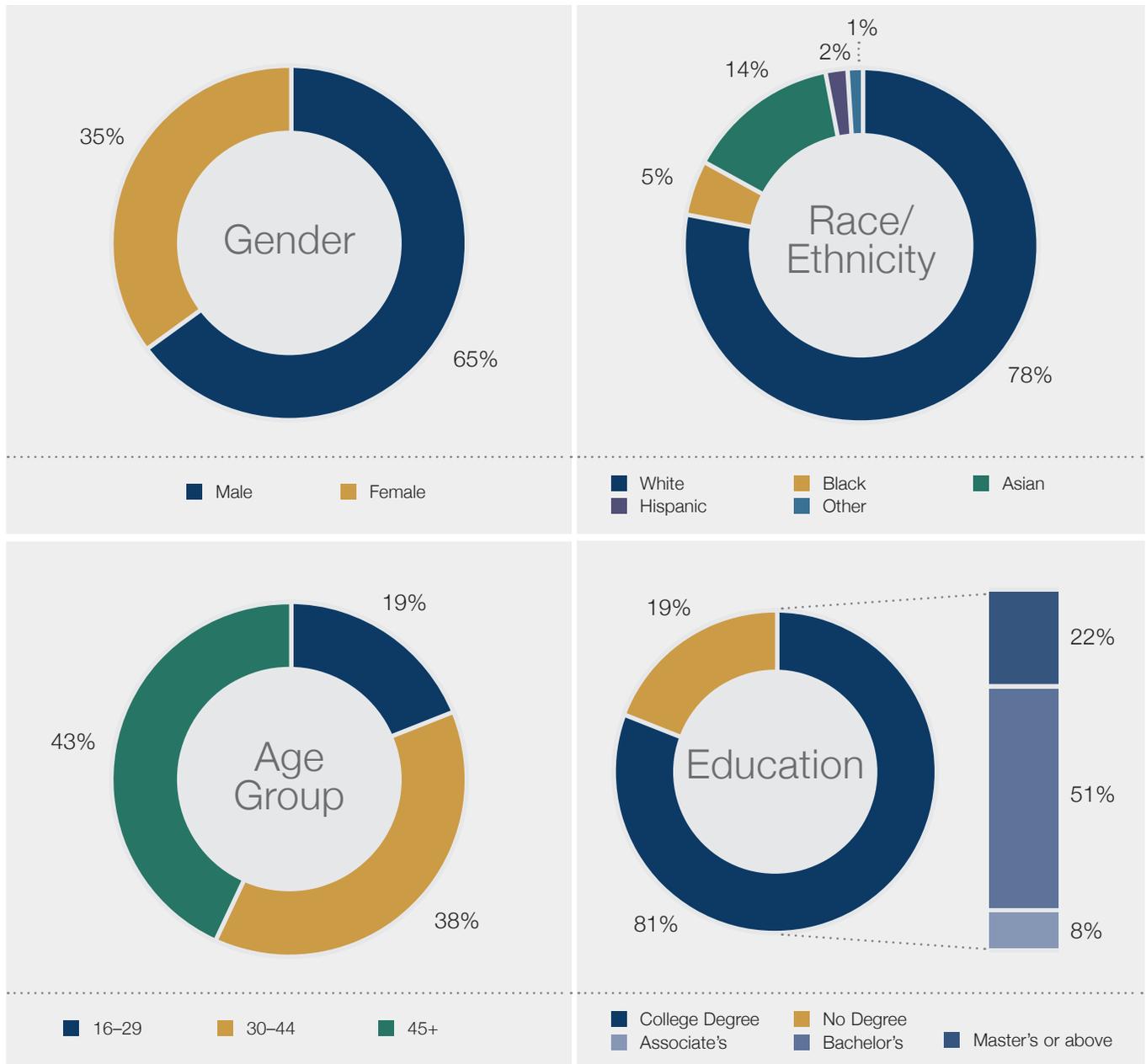
Accountants and auditors are fairly equally split between male and female, though a slightly higher percent of employed accountants and auditors are female. A high proportion of white individuals are found in the occupation. Additionally, the age distribution is fairly even between entry-level and mature workers, indicating that the occupation provides good opportunities for first destinations of recent college graduates. Nearly 90% of accountants and auditors have an associate's degree or higher indicating that this is a highly educated occupation.



Source: U.S. Census - American Community Survey (ACS) 2009-2013 5-year file

COMPUTER SYSTEMS ANALYSTS IN PENNSYLVANIA

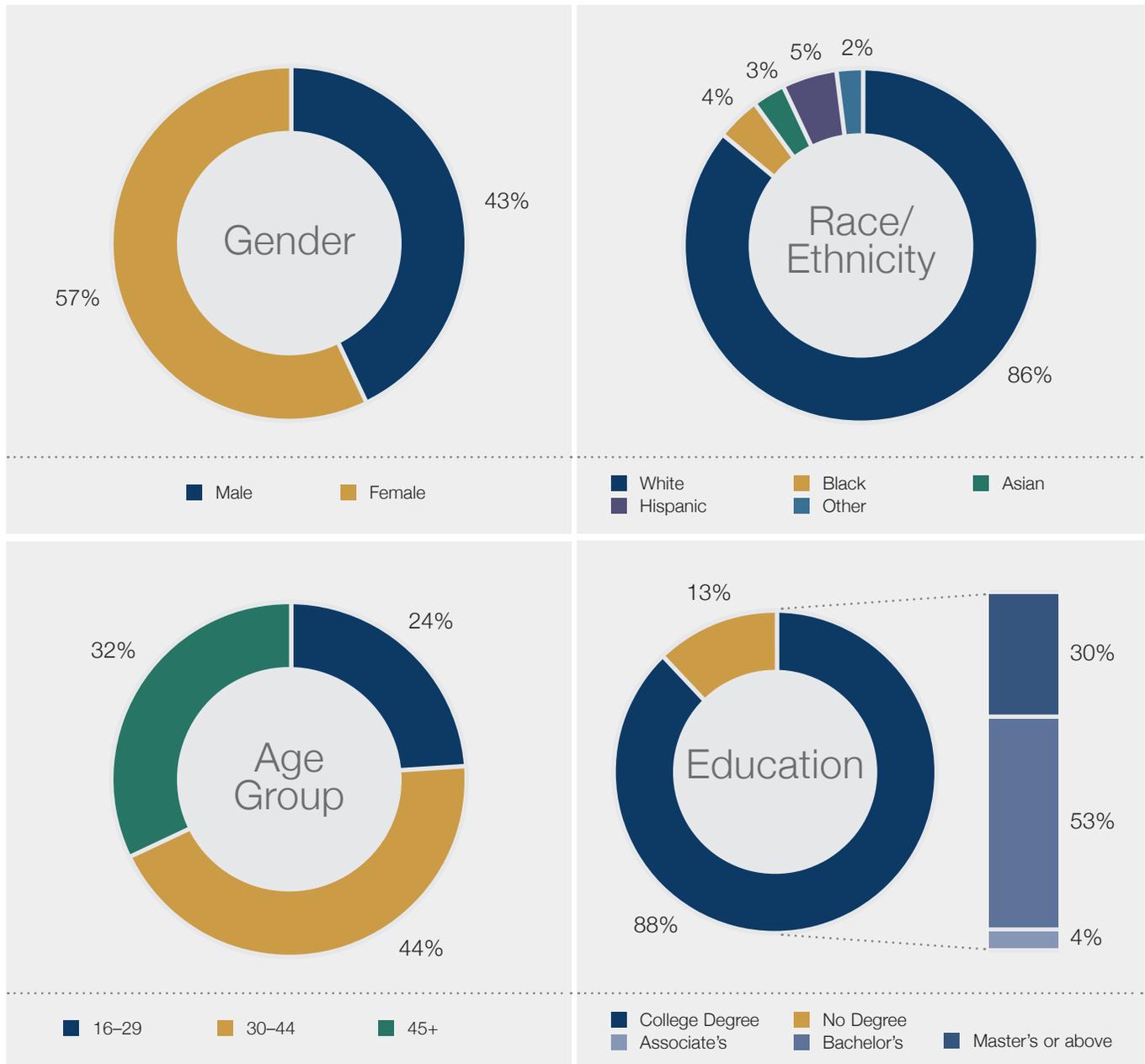
Computer systems analysts show a larger proportion of males in the occupation compared to females. While still represented by a larger share of white workers, a significant number of Asian workers are found in the occupation, making this occupation more diverse than the average Pennsylvania demographic makeup. The age composition of this occupation indicates that a higher proportion of younger (16-29) and mid-career (30-44) workers make up the workforce. Over 80% of computer systems analysts have an associate's degree or higher indicating that this is a highly educated occupation.



Source: U.S. Census - American Community Survey (ACS) 2009-2013 5-year file

MARKET RESEARCH ANALYSTS AND MARKETING SPECIALISTS IN PENNSYLVANIA

Market research analysts and marketing specialists indicate a larger proportion of females within the occupation compared to males. The race/ethnicity distribution within the occupation is predominately white. Additionally, the age distribution of the occupation, tends to favor a younger demographic. More than two thirds of the employed market research analysts and marketing specialists are under 45 years old. Nearly 90% of market research analysts and marketing specialists have an associate's degree or higher indicating that this is a highly educated occupation.



Source: U.S. Census - American Community Survey (ACS) 2009-2013 5-year file

The final section of this report explores Clarion's workforce region demographic and socio-economic characteristics. While not tied to a specific occupation, the analysis further contextualizes the region's population and workforce.

7. DEMOGRAPHIC AND SOCIO-ECONOMIC INDICATORS OF CLARION UNIVERSITY'S WORKFORCE REGION

This section provides further information about the demographic and socio-economic composition of Clarion's Workforce Region in order to better understand the characteristics of the population. An additional focus evaluates changes in age cohorts for university-age residents.

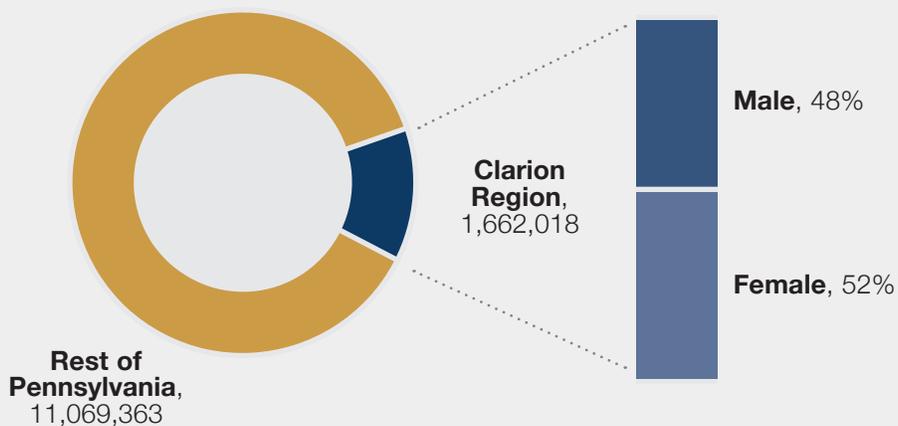
Analysis of three socio-economic indicators—education, unemployment, and poverty—also provides insight into the segment of the population that may be considered economically disadvantaged. Areas with high proportions of economically disadvantaged learners may require additional considerations in education and financial support.

7.1 Demographics of Clarion University's Workforce Region

The Clarion workforce region has a population of about 1.7 million people. As shown in Figure 7.1, females make up a slightly larger share of the population compared to males. Figure 7.2 illustrates that the majority of the region is represented by a White demographic, with Blacks representing the next largest group, followed by Asians.

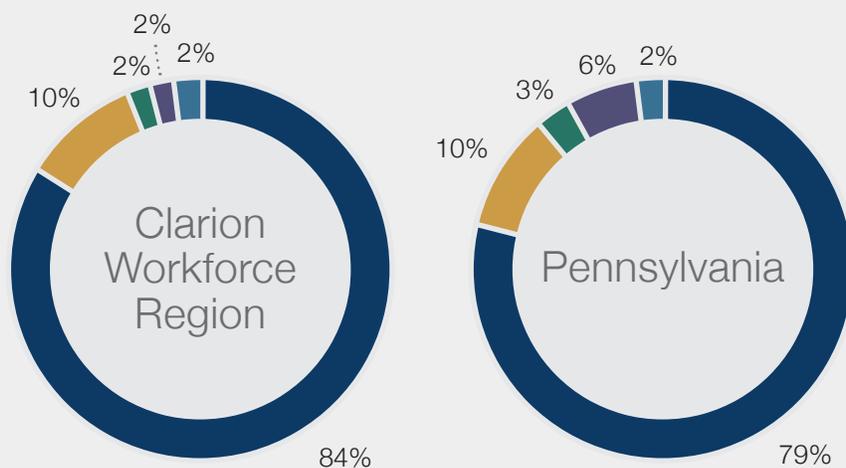
Fall 2014 data from the State System Research Office indicates that approximately 83% (90,966) of learners within the State System are traditional students—ages 18- to 22-year-old high school graduates—and 17% (18,640) are adult learners. A view of the change in population by age demographic indicates a diminishing number in the traditional age cohort and a growing rate of adults aged 25 to 34 years old. As illustrated in figure 7.3, the 10 to 19 year old cohort population declined by nearly 13,000 people between 2010 and 2014—a 6% decline. Conversely, the 25-34 year old cohort increased nearly 11%, or 22,000 people, over the same time period. This demographic shift presents an opportunity to incorporate a broader university recruitment strategy.

Figure 7.1 – Clarion University’s Workforce Region Population and Gender Distribution



Source: U.S. Census - ACS

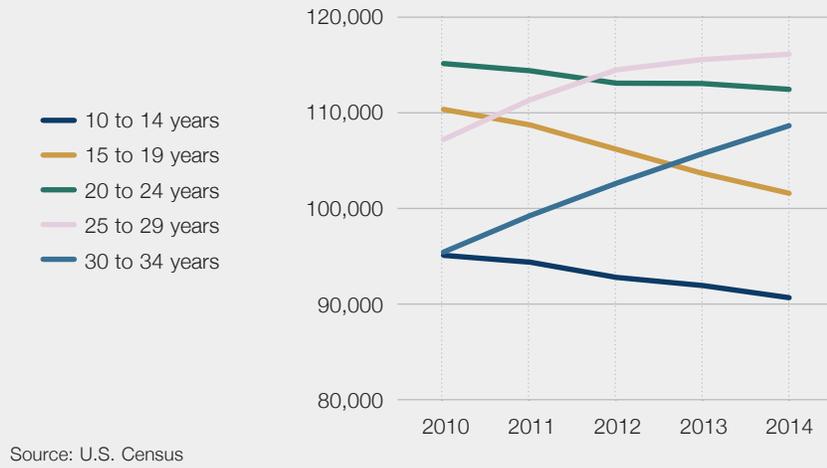
Figure 7.2 – Clarion University’s Workforce Region Race/Ethnicity Composition



■ White
 ■ Black
 ■ Asian
 ■ Hispanic
 ■ Other

Source: U.S. Census - American Community Survey (ACS) 2009-2013 5-year file

Figure 7.3 – Clarion University’s Workforce Region Changes in Population of Age Cohorts



The next sub-section further explores the shifting socio-economic characteristics in Clarion’s workforce region by identifying three inter-related variables.

7.2 Socio-economic Indicators of Clarion University’s Workforce Region

This final section outlines three key socio-economic variables—educational attainment, poverty, and unemployment. Poverty data provides understanding on relative income inequality within an area. If poverty rates decline, then the standard of living, social inclusion, and equality of opportunity are typically considered to be increasing. Economic opportunities are often linked with access to jobs and training. Regions with high unemployment indicate the population is unable to find work or is not adequately trained to perform work in the jobs available within the region.

7.2.1 Educational Attainment in Clarion University’s Workforce Region

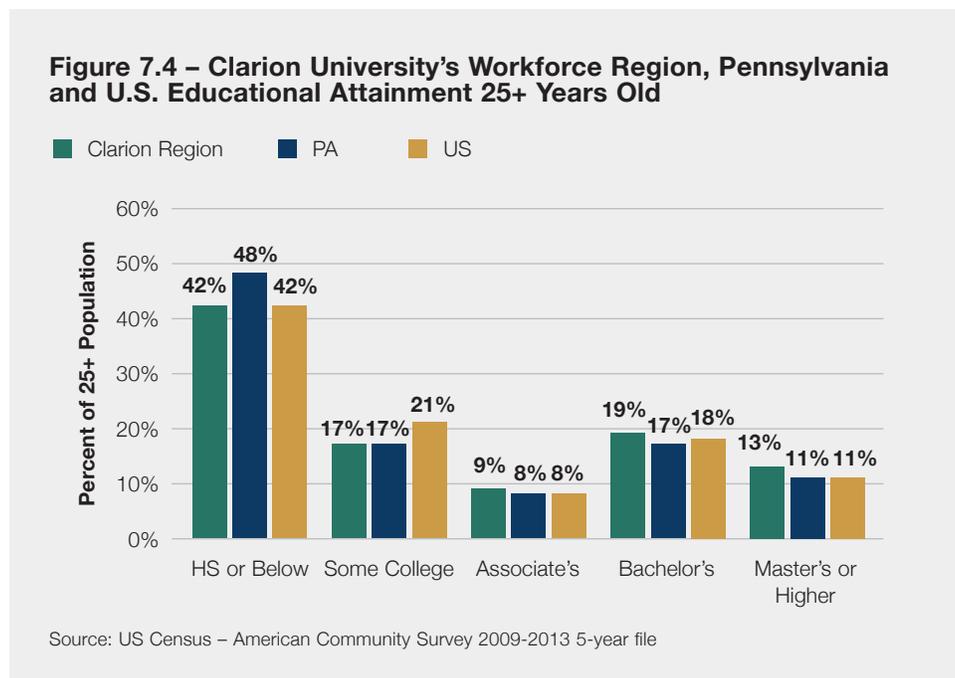
The levels of educational attainment of a population indicate several characteristics in an economy. Areas with better educated workers earn higher wages, are more productive and can typically adjust more quickly to changing economic conditions. Additionally, an educated workforce is less likely to be

unemployed, require social assistance, and more likely to lead a healthier lifestyle—aspects that bolster value in an economy.^{13, 14}

A view of educational attainment in Clarion’s workforce region indicates that more than half (58%) of those over 25 years old have had some post-secondary education or higher. Some college is defined by ACS as having some college, but less than one year or one or more years of college credit, but no degree. This is the same as the national average of 58% of the population having had at least some post-secondary education or higher.

When comparing degree completion, Clarion’s workforce region is above the national average for the proportion of the population with an associate’s degree, bachelor’s degree, and master’s degrees or higher.

Figure 7.4 compares the educational attainment of the 25 years and older population in the U.S., Pennsylvania, and Clarion’s workforce region.



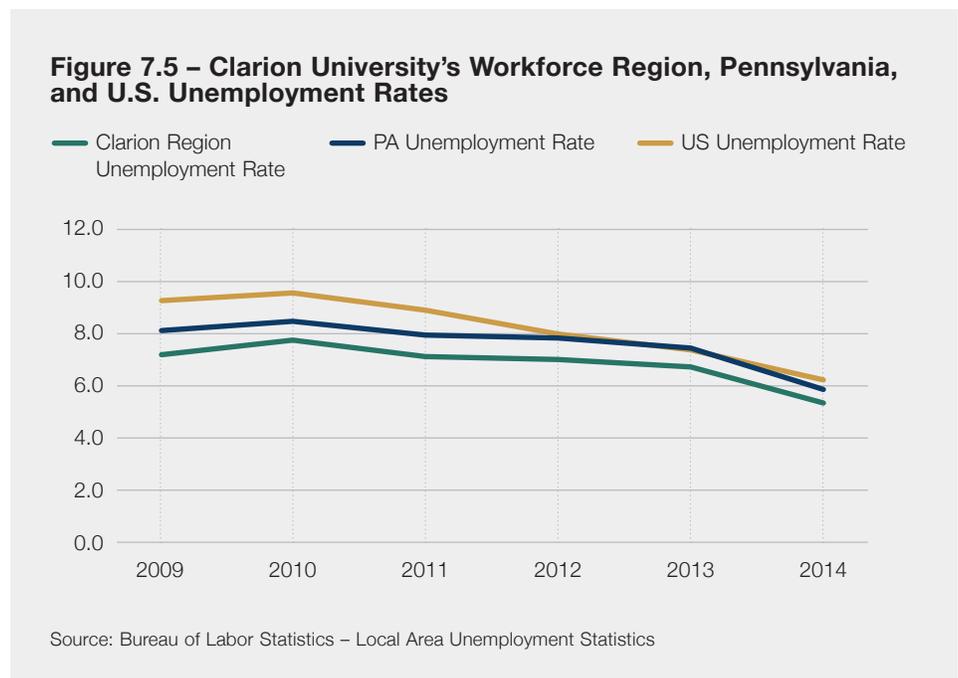
13 Feinstein et. al. (2006), “The effects of education on health: Concepts, evidence and policy implications: A review for the OECD Center for Educational Research and Innovation (CERI)”, unpublished manuscript, OECD, Paris.

14 Mitra, Dana (2011), “Pennsylvania’s Best Investment: The Social and Economic Benefits of Public Education.” Report published for the Education Law Center.

7.2.2 Unemployment and Poverty in Clarion University's Workforce Region

Clarion's workforce region unemployment rate—5.4% in 2014—has trended closely with the state and national unemployment rate since 2012 but has remained below both the state and national average. This suggests that opportunities for dislocated workers on average are roughly better in the region compared to the rest of the nation.

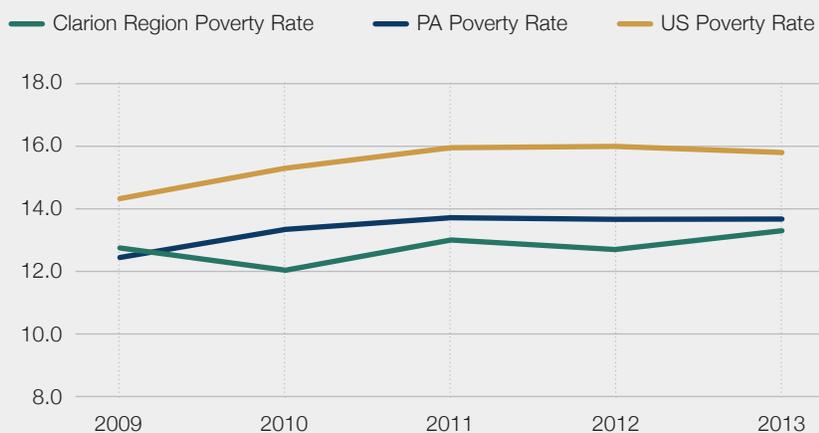
Figure 7.5 shows the convergence of the unemployment rates of Clarion's workforce region, Pennsylvania, and the U.S. from 2009 to 2014.



In Clarion's workforce region, the poverty rate trended upward since 2009 but declined slightly from 2011 to 2012. The region's poverty rate is below both the state poverty rate and the U.S. average.¹⁵ Given the lower poverty rate compared with the nation, there is an underlying assumption that the compensation associated with the jobs in Clarion's workforce region may be higher than the national average.

¹⁵ Poverty estimates are based on U.S. Census Bureau's Small Area Income and Poverty Estimates data series. Calculations comprise the total number of individuals (all ages) in the geography, divided by the number of individuals (all ages) that are classified as being in poverty.

Figure 7.6 – Clarion University's Workforce Region, Pennsylvania, and U.S. Poverty Rates



Source: U.S. Census – Small Area Income & Poverty Estimates (SAIPE)

Figure 7.6 compares the poverty rates of Clarion's workforce region, Pennsylvania, and the U.S. from 2009 to 2013.

When unemployment and poverty are evaluated together, a significant decline in unemployment to pre-recession levels, coupled with a small uptick in the poverty rate, suggests an underlying cause that is contributing to marginally increased poverty rates. This cause may be associated with the quality of new jobs that have emerged since the recession, which have done little to abate poverty rates, despite decreasing unemployment.

Although the poverty rate indicates an overall small increasing trend, the unemployment rate shows a decreasing trend, meaning a larger proportion of the workforce is either employed or is no longer seeking employment.

8. NEXT STEPS

This report sets the foundation for program planning by accomplishing three key tasks:

- Defining the university's workforce region.
- Describing key economic, workforce, and demographic attributes in the regional economy.
- Forecasting the demand for skilled occupations.

The next steps for research to support Pennsylvania's State System of Higher Education Program Alignment Toolkit are the development of an education supply and workforce demand gap analysis. Key data-driven aspects in the gap analysis research include:

- Development of an education program to occupation crosswalk.
- Analysis of completion data from the State System institutions as well as other institutions in the university's workforce region.
- Comparison of the occupation forecasts against the recent completions of education programs.
- Identification of programs that may require expansion or development, as well as programs that indicate a potential surplus of talent within the region.

DATA SOURCES

Bureau of Labor Statistics (BLS):

- QCEW - Quarterly Census of Employment & Wages (Bureau of Labor Statistics) - <http://www.bls.gov/cew/>
- OES – Occupational Employment Statistics (Bureau of Labor Statistics) - <http://www.bls.gov/oes/>
- LAUS – Local Area Unemployment Statistics (Bureau of Labor Statistics) - <http://www.bls.gov/lau/>

U.S. Census Bureau (Census):

- LEHD – Longitudinal Employer-Household Dynamics - <http://lehd.census.gov/>
- ACS – American Community Survey - <http://www.census.gov/acs/www/>
- SAIPE – Small Area Income and Poverty Estimates - <http://www.census.gov/did/www/saipe/>

National Center for Education Statistics (NCES):

- IPEDS – Integrated Postsecondary Education Data System (National Center for Education Statistics) - <https://nces.ed.gov/ipeds/>

Pennsylvania Department of Labor and Industry (PADLI):

- CWIA – Center for Workforce Information & Analysis (PA Department of Labor & Industry) – www.paworkstats.pa.gov

O*NET Resource Center (O*NET)

- Job Zones www.onetonline.org/help/online/zones

Economic Modeling Specialists International (EMSI)

APPENDIX A: METHODOLOGY FOR IDENTIFYING STATE SYSTEM UNIVERSITY WORKFORCE REGIONS

Introduction

Economic and workforce analysis is best undertaken at a geographic level that reflects how the economic market operates. In order to effectively analyze a relevant market area, a systematic approach to define the geography should be completed. This report provides a university-specific workforce characteristics analysis based on a defined workforce region. The following outlines the methodology for identifying university workforce regions.

A workforce region is defined as: a labor market area or an economically integrated region within which residents can find jobs within a reasonable commuting distance or can change their employment without changing their place of residence.¹⁶ When determining a workforce region, there is no universal approach.¹⁷ Given the target audience for the workforce region—State System universities—the context used to define the region should reflect multiple regional characteristics that the universities are tasked to support, while still conforming to the broader definition of what is often called a functional economic market area (FEMA). A FEMA is best described as an area that contains key economic markets. These economic markets best reflect drivers of the local economy such as the workforce and inter-industry business activity. For the purposes of this analysis, three drivers are measured in order to best define workforce regions, specifically:

- 1. Workforce flows** (primary input) - measured through commuting patterns.
- 2. Learner origin** (secondary input) - measured by the proportion of state system learners from a given county who are attending the university.
- 3. Economic activity** (secondary input) - measured through inter-industry

¹⁶ Bureau of Labor Statistics: Labor Market Area.

¹⁷ *Functional Economic Market Areas: An economic note*. Communities and Local Government. February 2010. <http://webarchive.nationalarchives.gov.uk/20120919132719/http://www.communities.gov.uk/documents/localgovernment/pdf/1469713.pdf>

exchange within the region and consumer purchasing activity within the region using an input-output model.

Further information on each of the measurements is detailed later.

Geographic Consideration

In order to define regions for State System universities, county-level data provide the best units of economic and workforce information. As such, county groupings serve as the best structure for describing the regions.

However, no one county is identical. Each county has different industry and workforce structures, as well as different learner populations. Additionally, some universities are located in areas that are near large metropolitan areas, while other universities are not. Therefore, a blanket approach of setting threshold primary driver values when defining a workforce region for each university would ultimately favor universities located near large metropolitan areas. In order to allow for broader geographic coverage, three specific considerations were taken into account:

1. Percent of commuters working and/or living in the workforce region.

Specifically, small population counties that contain a State System university do not contain a large workforce. Furthermore, the commuting flows of the workforce may seemingly favor the county containing the State System University. However, if a reasonable proportion of in commuters and out commuters (generally 10% or more) are traveling to work in contiguous counties, then these counties were included in the workforce region of the university.¹⁸

2. Inclusiveness of counties in Pennsylvania. The State System seeks to include all counties as part of the Rising to the Challenge Strategy. However, given the small population and workforce counties that exist across Pennsylvania, combined with many State System universities located within geographic proximity of these small counties, a second criterion of learner “capture rate” is used. The capture rate is simply the proportion of State System enrolled learners within a county that are attending a given

¹⁸ The contiguous region approach employs the U.S. Department of Labor, Bureau of Labor Statistics’ (BLS) Small Labor Market Areas’ criteria to designating a labor market area. However, the 25% threshold set by the BLS was relaxed in order to adhere to an additional criterion of inclusiveness, wherein every county in Pennsylvania is assigned to at least one university. To meet this criteria, the proportion of county-level State System learner enrollment within PA attending the university was also included to identify a contiguous geographic area that captures both labor shed and county-level learner enrollment density (i.e. a percentage of State System learners from within the county and nearby counties that are attending the university—a “capture rate”).

State System university. For example, about 75% of State System enrolled learners from Erie County attend Edinboro University. Therefore Edinboro's capture rate for Erie County is 75%.

3. Level of inter-industry exchange and ability to satisfy household demand for goods and services. To provide additional context to regional economic activity and ensure that a final regional description can be considered a functional economic market area (FEMA), input-output modeling is used. In short, an input-output model is an inter-industry accounting framework, wherein a proportion of demand for inputs by one industry is satisfied through the production of an output by another industry within a supply chain. Regions with well-developed supply chains and integrated markets typically retain a higher proportion inter-industry trade, thus reducing the level of economic leakage. Similarly, the ability for a region's businesses to satisfy the demand for household consumption reduces economic leakage. This analysis considers both inter-industry exchange (called "output supply/demand") and household consumption (called "household supply/demand").

Process

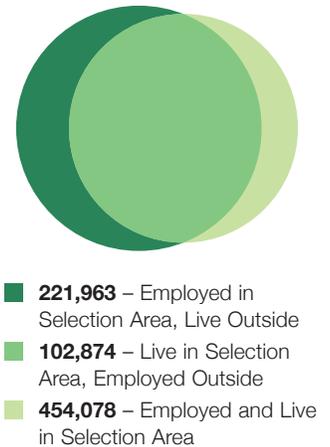
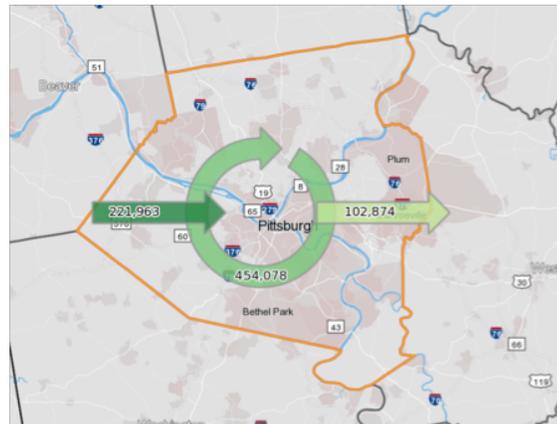
Given the workforce/commute, learner and economic variances that exist within the different geographies across Pennsylvania, an iterative process is used to define the workforce region. This multiple step, iterative process seeks to maximize the primary driver value (workforce flows), while adhering to the guiding principles of a functional economic area. It also ensures that each county in Pennsylvania is assigned to at least one university workforce region— from which the secondary driver values (learner capture rate and economic activity) were used. The process can be broken into the following steps for each driver:

Workforce Flows:

Defined by commuting patterns, workforce flows represent the flow of workers into and out of the region. The following two illustrations for Allegheny County provide better understanding of commuting flows. The map indicates the commuting flow of workers. In short, 454,000 people who live in the county also work in the county. Additionally, almost 222,000 workers commute into Allegheny County for work, while nearly 103,000 county residents commute outside of Allegheny for their jobs.

When these numbers are converted into percentages, we find that

Inflow/Outflow Job Counts in 2013



Source: U.S. Census Bureau – Longitudinal Employment and Housing Dynamics 2013

67% of people who work in Allegheny county live in Allegheny County $((454,078+221,963)/454,078 = 67.2\%)$. This is represented by the darker green circle and center shaded area of the Venn diagram. Another way to describe this is that more than 30% of the jobs in Allegheny County are filled by workers outside of the county (i.e. in commuters).

Additionally, we find that 81.5% of people who live in Allegheny County work in the county $((454,078+102,874)/454,078 = 81.5\%)$. This is represented by the lighter green circle and center shaded area of the Venn diagram. Another way to describe this is less than 20% of Allegheny County's employed residents commute outside of the county for their job (i.e. out commuters).

When defining the workforce region for a University, the analysis begins with the county that the University is located, followed by:

- Identification of the top counties (by percent) of in commuters, using a cut-off of 10%.
- Identification of the top counties (by percent) of out commuters, using a cut-off of 10%.

The counties identified in these initial steps were carried forward to the next set of criterion (i.e. inclusiveness and proportion of learner capture rates).

Learner Capture Rates and Inclusiveness:

Characterized by the proportion of State System enrolled learners from a given Pennsylvania county who are attending a given State System university, the learner capture rate indicates how well the university is providing education to learners within a geographic proximity. This second set of criteria helps to shape the regional backdrop of learners supported within a contiguous area around the university. Not to be confused with the headcount of where a University's learners are coming from, this analysis is specifically designed to broaden the contiguous region to help ensure inclusiveness of other counties (many of which are often low population areas).

Counties were selected based on two criteria for learner origin. First, to evaluate each county, we consider the total number of State System learners who come from each respective county. We sum all students enrolled in the State System for each county and then calculate the share of students going to each State System university. Although a particular county may not contribute a large proportion of total State System students, this method ensured inclusiveness based upon each respective county's relative contribution. Second, to consider the university perspective, we calculate where the majority of learners come from within Pennsylvania for each respective university. This ensured that Chester County, for example, was included as part of Millersville's workforce region even though a majority of learners in Chester County do not attend Millersville University. Greater weight was given to the first criteria to ensure inclusiveness of all counties. Note that counties must be contiguous in order to conform to the definition of a workforce region.

Economic Activity and Concentration:

Concurrently, we measured the economic activity of the region using supply/demand ratios for businesses and households. After each workforce region was defined using the criteria for commuting and learner origin, the gross commodity demand was calculated for that region using IMPLAN. Gross commodity demand is the total demand for supply chain products and services by businesses in the region. The Output Supply/Demand ratio represents the percent of industry demand for supply chain products and services that are satisfied by businesses in the region. The Household Supply/Demand ratio represents the percent of household demand for goods and services that are satisfied by businesses in the region. For example, when defining Bloomsburg University's workforce region several county combinations were evaluated. The fourth iteration included Columbia, Montour, Luzerne, and Northumberland. The supply/demand ratios for businesses and households were 54% and

84% respectively. In the fifth iteration, Northampton was added to the region. Although this did increase the learner origin measure (marginally), it actually reduced the supply/demand ratios for businesses and households to 53% and 79% respectively. This indicated that Northampton was not as connected to the region economically as the other counties and it was not included in the workforce region as a result.

Table A.1 – State System Workforce Region by University

University	Counties
Bloomsburg University	Columbia, Montour, Luzerne, Northumberland, Union, Sullivan, Snyder, Schuylkill
California University	Washington, Allegheny, Fayette, Westmoreland, Greene
Cheyney University	Chester, Delaware, Philadelphia, Montgomery
Clarion University	Clarion, Armstrong, Butler, Venango, Jefferson, Forest, Elk, Allegheny
East Stroudsburg University	Monroe, Northampton, Lackawanna, Pike, Wayne, Carbon, Lehigh
Edinboro University	Erie, Crawford, Warren, McKean
Indiana University	Indiana, Allegheny, Westmoreland, Cambria, Armstrong, Blair, Bedford, Somerset, Jefferson
Kutztown University	Berks, Lehigh, Montgomery, Northampton, Schuylkill, Chester, Bucks
Lock Haven University	Clinton, Lycoming, Centre, Clearfield, Cameron, Mifflin, Juniata
Mansfield University	Tioga, Bradford, Potter, Susquehanna, Wyoming
Millersville University	Lancaster, Dauphin, Chester, York, Lebanon
Shippensburg University	Cumberland, Franklin, Dauphin, York, Perry, Huntingdon, Fulton, Adams
Slippery Rock University	Butler, Allegheny, Mercer, Lawrence, Beaver, Westmoreland
West Chester University	Chester, Delaware, Philadelphia, Montgomery, Bucks

Source: Oxford Economics modeling and tabulations

APPENDIX B: PENNSYLVANIA STATE AND COUNTY ENROLLMENT AND EMPLOYMENT

County	Fall 2014 Enrollment in Clarion University	2014 QCEW Employment
Adams	11	34,139
Allegheny	715	683,111
Armstrong	185	17,582
Beaver	148	52,811
Bedford	13	15,397
Berks	36	166,792
Blair	41	58,233
Bradford	13	24,568
Bucks	22	250,889
Butler	245	84,472
Cambria	68	53,915
Cameron	12	2,015
Carbon	6	16,974
Centre	36	67,147
Chester	24	240,469
Clarion	690	13,586
Clearfield	182	29,938
Clinton	9	13,043
Columbia	15	24,974
Crawford	119	31,113
Cumberland	39	126,939
Dauphin	48	176,004
Delaware	24	216,261
Elk	105	14,994
Erie	176	124,095
Fayette	8	39,979
Forest	33	2,053
Franklin	18	56,715
Fulton	2	4,807
Greene	5	14,844
Huntingdon	17	12,343

County	Fall 2014 Enrollment in Clarion University	2014 QCEW Employment
Indiana	36	32,653
Jefferson	241	15,435
Juniata	1	6,146
Lackawanna	16	97,259
Lancaster	38	225,673
Lawrence	91	29,500
Lebanon	5	48,869
Lehigh	25	180,757
Luzerne	23	140,329
Lycoming	22	53,197
McKean	53	15,770
Mercer	171	48,028
Mifflin	2	15,544
Monroe	22	52,933
Montgomery	37	472,655
Montour	6	15,578
Northampton	11	105,825
Northumberland	20	27,985
Perry	12	7,661
Philadelphia	82	640,987
Pike	11	10,748
Potter	11	5,291
Schuylkill	15	50,049
Snyder	9	15,522
Somerset	19	24,398
Sullivan	2	1,772
Susquehanna	1	9,281
Tioga	17	12,973
Union	8	16,597
Venango	512	19,251
Warren	70	15,031
Washington	97	86,961
Wayne	8	14,651
Westmoreland	200	132,312
Wyoming	1	10,181
York	44	172,145
Total Pennsylvania	5,004	5,643,676

Source: Enrollment- Pennsylvania State System of Higher Education, Employment- BLS QCEW

APPENDIX C: INDUSTRY PROJECTIONS 2014-2024 FOR CLARION UNIVERSITY'S WORKFORCE REGION

A common measure of industry competitiveness is through the use of a location quotient statistic. Location quotients (LQ) provide a relative perspective on local comparative advantages in specific industry classifications by comparing employment within a local or state economy to a larger geographic area (e.g. nation). On its own, the analysis achieves little. However, when evaluated jointly with the employment data and growth, one gains a sense of the industry sectors that might benefit from efforts to align educational opportunities with economic development (i.e. industries that State System universities may consider engaging in larger conversations about aligning employer and educational needs).

To interpret results, LQs equal to 1 indicate that the area's industry concentration is equal the national concentration of the same industry. Industries with a higher location quotient (usually greater than 1.2) indicate that an area has a relatively higher concentration of jobs in the sector and therefore concludes that the area has a comparative advantage or specialization in the production of that good or service, compared to the national average. Note: High employment industries do not necessarily result in large location quotients, as this is a comparative statistic. The following table provides the industry LQs at the 4-digit NAICS level in Clarion's workforce region. Included in the table are the number of jobs in 2014 and the projected job growth/decline in 2024.

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
Total	All Industries	874,882	940,053	7.4%	1.0
1111	Oilseed and Grain Farming	36	43	19.4%	0.1
1112	Vegetable and Melon Farming	109	112	2.8%	0.2
1113	Fruit and Tree Nut Farming	12	11	-8.3%	0.0
1114	Greenhouse, Nursery, and Floriculture Production	246	263	6.9%	0.3
1119	Other Crop Farming	37	43	16.2%	0.1
1121	Cattle Ranching and Farming	59	61	3.4%	0.1
1122	Hog and Pig Farming	2	2	0.0%	0.0
1125	Aquaculture	7	6	-14.3%	0.2
1129	Other Animal Production	12	14	16.7%	0.1
1131	Timber Tract Operations	19	23	21.1%	0.4
1132	Forest Nurseries and Gathering of Forest Products	4	4	0.0%	0.3
1133	Logging	92	104	13.0%	0.3
1142	Hunting and Trapping	2	2	0.0%	0.2
1151	Support Activities for Crop Production	63	55	-12.7%	0.0
1152	Support Activities for Animal Production	33	25	-24.2%	0.2
1153	Support Activities for Forestry	9	10	11.1%	0.1
2111	Oil and Gas Extraction	2,436	3,261	33.9%	1.9
2121	Coal Mining	1,179	1,067	-9.5%	2.6
2122	Metal Ore Mining	21	24	14.3%	0.1
2123	Nonmetallic Mineral Mining and Quarrying	385	343	-10.9%	0.7
2131	Support Activities for Mining	2,275	2,264	-0.5%	0.8
2211	Electric Power Generation, Transmission and Distribution	1,410	1,332	-5.5%	0.5
2212	Natural Gas Distribution	1,413	1,435	1.6%	1.9
2213	Water, Sewage and Other Systems	2,189	2,437	11.3%	1.6
2361	Residential Building Construction	3,668	4,701	28.2%	0.9
2362	Nonresidential Building Construction	4,749	5,715	20.3%	1.1
2371	Utility System Construction	2,682	3,272	22.0%	0.9
2372	Land Subdivision	144	154	6.9%	0.5
2373	Highway, Street, and Bridge Construction	3,204	3,988	24.5%	1.3
2379	Other Heavy and Civil Engineering Construction	292	356	21.9%	0.4
2381	Foundation, Structure, and Building Exterior Contractors	3,939	4,188	6.3%	0.8
2382	Building Equipment Contractors	10,531	11,628	10.4%	0.9
2383	Building Finishing Contractors	3,893	4,117	5.8%	0.9
2389	Other Specialty Trade Contractors	4,065	5,280	29.9%	1.1
3112	Grain and Oilseed Milling	96	70	-27.1%	0.3
3113	Sugar and Confectionery Product Manufacturing	523	585	11.9%	1.2

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	980	1,101	12.3%	0.9
3115	Dairy Product Manufacturing	422	382	-9.5%	0.5
3116	Animal Slaughtering and Processing	350	317	-9.4%	0.1
3118	Bakeries and Tortilla Manufacturing	1,475	1,557	5.6%	0.8
3119	Other Food Manufacturing	318	354	11.3%	0.3
3121	Beverage Manufacturing	444	398	-10.4%	0.4
3122	Tobacco Manufacturing	93	109	17.2%	1.1
3131	Fiber, Yarn, and Thread Mills	5	4	-20.0%	0.0
3132	Fabric Mills	168	112	-33.3%	0.5
3133	Textile and Fabric Finishing and Fabric Coating Mills	8	7	-12.5%	0.0
3141	Textile Furnishings Mills	77	82	6.5%	0.2
3149	Other Textile Product Mills	399	404	1.3%	1.0
3152	Cut and Sew Apparel Manufacturing	71	68	-4.2%	0.1
3159	Apparel Accessories and Other Apparel Manufacturing	97	60	-38.1%	1.3
3162	Footwear Manufacturing	11	9	-18.2%	0.1
3169	Other Leather and Allied Product Manufacturing	16	19	18.8%	0.2
3211	Sawmills and Wood Preservation	642	850	32.4%	1.1
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	275	368	33.8%	0.6
3219	Other Wood Product Manufacturing	1,348	1,807	34.1%	1.0
3221	Pulp, Paper, and Paperboard Mills	266	251	-5.6%	0.4
3222	Converted Paper Product Manufacturing	387	332	-14.2%	0.2
3231	Printing and Related Support Activities	2,612	2,190	-16.2%	0.9
3241	Petroleum and Coal Products Manufacturing	2,211	2,098	-5.1%	3.1
3251	Basic Chemical Manufacturing	872	792	-9.2%	0.9
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	405	347	-14.3%	0.7
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	7	6	-14.3%	0.0
3254	Pharmaceutical and Medicine Manufacturing	289	234	-19.0%	0.2
3255	Paint, Coating, and Adhesive Manufacturing	638	558	-12.5%	1.7
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	360	353	-1.9%	0.5
3259	Other Chemical Product and Preparation Manufacturing	422	384	-9.0%	0.8
3261	Plastics Product Manufacturing	1,959	2,069	5.6%	0.6
3262	Rubber Product Manufacturing	236	222	-5.9%	0.3
3271	Clay Product and Refractory Manufacturing	743	702	-5.5%	3.0
3272	Glass and Glass Product Manufacturing	1,590	1,736	9.2%	3.0
3273	Cement and Concrete Product Manufacturing	612	697	13.9%	0.5
3274	Lime and Gypsum Product Manufacturing	46	38	-17.4%	0.5

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3279	Other Nonmetallic Mineral Product Manufacturing	295	335	13.6%	0.6
3311	Iron and Steel Mills and Ferroalloy Manufacturing	4,841	4,489	-7.3%	8.3
3312	Steel Product Manufacturing from Purchased Steel	679	544	-19.9%	1.8
3313	Alumina and Aluminum Production and Processing	419	493	17.7%	1.1
3314	Nonferrous Metal (except Aluminum) Production and Processing	470	455	-3.2%	1.2
3315	Foundries	1,146	1,256	9.6%	1.4
3321	Forging and Stamping	3,872	4,117	6.3%	6.0
3322	Cutlery and Handtool Manufacturing	258	225	-12.8%	1.0
3323	Architectural and Structural Metals Manufacturing	2,999	3,289	9.7%	1.3
3324	Boiler, Tank, and Shipping Container Manufacturing	397	413	4.0%	0.6
3325	Hardware Manufacturing	35	45	28.6%	0.2
3326	Spring and Wire Product Manufacturing	241	250	3.7%	0.9
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	2,926	2,973	1.6%	1.2
3328	Coating, Engraving, Heat Treating, and Allied Activities	1,137	1,277	12.3%	1.3
3329	Other Fabricated Metal Product Manufacturing	875	902	3.1%	0.5
3331	Agriculture, Construction, and Mining Machinery Manufacturing	1,679	1,603	-4.5%	1.0
3332	Industrial Machinery Manufacturing	530	540	1.9%	0.8
3333	Commercial and Service Industry Machinery Manufacturing	645	480	-25.6%	1.2
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	465	442	-4.9%	0.6
3335	Metalworking Machinery Manufacturing	3,074	2,856	-7.1%	2.6
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	399	364	-8.8%	0.6
3339	Other General Purpose Machinery Manufacturing	1,509	1,682	11.5%	0.9
3341	Computer and Peripheral Equipment Manufacturing	447	418	-6.5%	0.4
3342	Communications Equipment Manufacturing	1,053	756	-28.2%	1.8
3343	Audio and Video Equipment Manufacturing	14	11	-21.4%	0.1
3344	Semiconductor and Other Electronic Component Manufacturing	1,552	1,410	-9.1%	0.7
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	3,312	3,605	8.8%	1.3
3346	Manufacturing and Reproducing Magnetic and Optical Media	117	134	14.5%	1.1
3351	Electric Lighting Equipment Manufacturing	193	194	0.5%	0.6
3353	Electrical Equipment Manufacturing	1,824	1,968	7.9%	2.0
3359	Other Electrical Equipment and Component Manufacturing	1,739	2,078	19.5%	2.1
3362	Motor Vehicle Body and Trailer Manufacturing	265	279	5.3%	0.3
3363	Motor Vehicle Parts Manufacturing	85	73	-14.1%	0.0
3364	Aerospace Product and Parts Manufacturing	120	107	-10.8%	0.0
3365	Railroad Rolling Stock Manufacturing	1,416	1,433	1.2%	8.1

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3366	Ship and Boat Building	15	12	-20.0%	0.0
3369	Other Transportation Equipment Manufacturing	30	37	23.3%	0.1
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	347	372	7.2%	0.2
3372	Office Furniture (including Fixtures) Manufacturing	262	275	5.0%	0.4
3379	Other Furniture Related Product Manufacturing	81	96	18.5%	0.4
3391	Medical Equipment and Supplies Manufacturing	2,172	2,039	-6.1%	1.1
3399	Other Miscellaneous Manufacturing	1,126	1,165	3.5%	0.6
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	2,269	2,467	8.7%	1.1
4232	Furniture and Home Furnishing Merchant Wholesalers	432	455	5.3%	0.7
4233	Lumber and Other Construction Materials Merchant Wholesalers	1,474	1,541	4.5%	1.1
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	3,610	3,620	0.3%	0.9
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	1,122	1,224	9.1%	1.4
4236	Household Appliances and Electrical and Electronic Goods Merchant Wholesalers	1,348	1,223	-9.3%	0.7
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	1,464	1,700	16.1%	1.0
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	3,768	4,009	6.4%	0.9
4239	Miscellaneous Durable Goods Merchant Wholesalers	1,554	1,677	7.9%	0.8
4241	Paper and Paper Product Merchant Wholesalers	505	486	-3.8%	0.6
4242	Drugs and Druggists' Sundries Merchant Wholesalers	209	151	-27.8%	0.2
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	172	194	12.8%	0.2
4244	Grocery and Related Product Merchant Wholesalers	3,138	3,331	6.2%	0.7
4245	Farm Product Raw Material Merchant Wholesalers	7	9	28.6%	0.0
4246	Chemical and Allied Products Merchant Wholesalers	926	919	-0.8%	1.1
4247	Petroleum and Petroleum Products Merchant Wholesalers	549	569	3.6%	0.9
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	747	943	26.2%	0.6
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	1,247	1,187	-4.8%	0.6
4251	Wholesale Electronic Markets and Agents and Brokers	8,426	8,457	0.4%	1.5
4411	Automobile Dealers	7,979	8,975	12.5%	1.1
4412	Other Motor Vehicle Dealers	371	396	6.7%	0.4
4413	Automotive Parts, Accessories, and Tire Stores	2,676	2,828	5.7%	0.8
4421	Furniture Stores	1,283	1,374	7.1%	0.9
4422	Home Furnishings Stores	1,375	1,440	4.7%	0.9
4431	Electronics and Appliance Stores	2,637	2,311	-12.4%	0.8
4441	Building Material and Supplies Dealers	5,637	5,869	4.1%	0.8
4442	Lawn and Garden Equipment and Supplies Stores	715	707	-1.1%	0.8

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
4451	Grocery Stores	16,209	14,643	-9.7%	1.0
4452	Specialty Food Stores	1,034	917	-11.3%	0.7
4453	Beer, Wine, and Liquor Stores	1,077	1,257	16.7%	1.1
4461	Health and Personal Care Stores	7,047	6,771	-3.9%	1.1
4471	Gasoline Stations	5,379	5,811	8.0%	1.0
4481	Clothing Stores	6,900	6,469	-6.2%	1.0
4482	Shoe Stores	1,117	1,171	4.8%	0.9
4483	Jewelry, Luggage, and Leather Goods Stores	864	805	-6.8%	1.0
4511	Sporting Goods, Hobby, and Musical Instrument Stores	3,698	4,052	9.6%	1.1
4512	Book Stores and News Dealers	617	593	-3.9%	1.1
4521	Department Stores	8,425	7,673	-8.9%	1.0
4529	Other General Merchandise Stores	8,257	8,680	5.1%	0.7
4531	Florists	535	363	-32.1%	1.3
4532	Office Supplies, Stationery, and Gift Stores	1,602	1,444	-9.9%	0.9
4533	Used Merchandise Stores	1,318	1,710	29.7%	1.3
4539	Other Miscellaneous Store Retailers	1,991	2,050	3.0%	1.0
4541	Electronic Shopping and Mail-Order Houses	4,145	5,172	24.8%	2.0
4542	Vending Machine Operators	193	199	3.1%	0.8
4543	Direct Selling Establishments	392	384	-2.0%	0.5
4811	Scheduled Air Transportation	2,202	2,329	5.8%	0.8
4812	Nonscheduled Air Transportation	222	245	10.4%	0.9
4832	Inland Water Transportation	76	68	-10.5%	0.4
4841	General Freight Trucking	4,272	4,613	8.0%	0.7
4842	Specialized Freight Trucking	2,581	2,985	15.7%	0.9
4851	Urban Transit Systems	2,247	2,477	10.2%	1.5
4852	Interurban and Rural Bus Transportation	151	145	-4.0%	1.1
4853	Taxi and Limousine Service	290	297	2.4%	0.6
4854	School and Employee Bus Transportation	4,157	4,576	10.1%	2.6
4855	Charter Bus Industry	698	741	6.2%	3.6
4859	Other Transit and Ground Passenger Transportation	681	818	20.1%	1.1
4862	Pipeline Transportation of Natural Gas	88	110	25.0%	0.5
4869	Other Pipeline Transportation	42	53	26.2%	0.8
4871	Scenic and Sightseeing Transportation, Land	201	254	26.4%	2.3
4872	Scenic and Sightseeing Transportation, Water	82	71	-13.4%	0.9
4881	Support Activities for Air Transportation	983	1,020	3.8%	0.7
4882	Support Activities for Rail Transportation	317	380	19.9%	1.6
4883	Support Activities for Water Transportation	127	112	-11.8%	0.2

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
4884	Support Activities for Road Transportation	483	734	52.0%	0.7
4885	Freight Transportation Arrangement	700	840	20.0%	0.6
4889	Other Support Activities for Transportation	191	264	38.2%	0.9
4911	Postal Service	5,220	3,614	-30.8%	1.4
4921	Couriers and Express Delivery Services	2,952	3,282	11.2%	0.9
4922	Local Messengers and Local Delivery	132	105	-20.5%	0.4
4931	Warehousing and Storage	3,054	3,751	22.8%	0.6
5111	Newspaper, Periodical, Book, and Directory Publishers	2,494	2,204	-11.6%	0.9
5112	Software Publishers	1,271	1,479	16.4%	0.6
5121	Motion Picture and Video Industries	1,544	1,572	1.8%	0.7
5122	Sound Recording Industries	72	69	-4.2%	0.7
5151	Radio and Television Broadcasting	1,558	1,807	16.0%	1.1
5152	Cable and Other Subscription Programming	60	54	-10.0%	0.1
5171	Wired Telecommunications Carriers	4,861	4,302	-11.5%	1.3
5172	Wireless Telecommunications Carriers (except Satellite)	452	298	-34.1%	0.5
5174	Satellite Telecommunications	17	15	-11.8%	0.3
5179	Other Telecommunications	284	205	-27.8%	0.5
5182	Data Processing, Hosting, and Related Services	788	598	-24.1%	0.4
5191	Other Information Services	2,172	2,827	30.2%	1.0
5211	Monetary Authorities-Central Bank	5	4	-20.0%	0.0
5221	Depository Credit Intermediation	22,317	20,659	-7.4%	2.0
5222	Nondepository Credit Intermediation	2,287	1,882	-17.7%	0.6
5223	Activities Related to Credit Intermediation	931	722	-22.4%	0.5
5231	Securities and Commodity Contracts Intermediation and Brokerage	1,471	1,556	5.8%	0.5
5232	Securities and Commodity Exchanges	4	6	50.0%	0.1
5239	Other Financial Investment Activities	4,310	6,720	55.9%	1.6
5241	Insurance Carriers	13,821	14,608	5.7%	1.8
5242	Agencies, Brokerages, and Other Insurance Related Activities	6,630	7,562	14.1%	1.0
5251	Insurance and Employee Benefit Funds	5	4	-20.0%	0.4
5311	Lessors of Real Estate	3,796	4,056	6.8%	1.0
5312	Offices of Real Estate Agents and Brokers	1,148	1,172	2.1%	0.6
5313	Activities Related to Real Estate	2,595	2,499	-3.7%	0.6
5321	Automotive Equipment Rental and Leasing	1,246	1,468	17.8%	1.0
5322	Consumer Goods Rental	697	778	11.6%	0.7
5323	General Rental Centers	119	108	-9.2%	0.5
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	880	1,002	13.9%	1.0

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	64	55	-14.1%	0.4
5411	Legal Services	10,038	11,190	11.5%	1.4
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	6,908	7,479	8.3%	1.1
5413	Architectural, Engineering, and Related Services	16,002	17,596	10.0%	1.7
5414	Specialized Design Services	832	1,158	39.2%	1.0
5415	Computer Systems Design and Related Services	13,152	19,316	46.9%	1.1
5416	Management, Scientific, and Technical Consulting Services	8,956	10,849	21.1%	1.1
5417	Scientific Research and Development Services	6,965	9,012	29.4%	1.7
5418	Advertising, Public Relations, and Related Services	2,809	3,116	10.9%	0.9
5419	Other Professional, Scientific, and Technical Services	3,581	4,028	12.5%	0.9
5511	Management of Companies and Enterprises	34,349	37,836	10.2%	2.5
5611	Office Administrative Services	743	628	-15.5%	0.2
5612	Facilities Support Services	740	1,078	45.7%	0.8
5613	Employment Services	15,043	16,704	11.0%	0.7
5614	Business Support Services	5,353	4,774	-10.8%	0.9
5615	Travel Arrangement and Reservation Services	836	721	-13.8%	0.7
5616	Investigation and Security Services	8,490	8,672	2.1%	1.5
5617	Services to Buildings and Dwellings	9,970	10,252	2.8%	0.8
5619	Other Support Services	1,938	2,425	25.1%	1.0
5621	Waste Collection	1,039	1,358	30.7%	1.0
5622	Waste Treatment and Disposal	317	341	7.6%	0.4
5629	Remediation and Other Waste Management Services	948	991	4.5%	1.1
6111	Elementary and Secondary Schools	38,081	36,150	-5.1%	0.8
6112	Junior Colleges	3,225	2,857	-11.4%	0.7
6113	Colleges, Universities, and Professional Schools	28,277	28,831	2.0%	1.5
6114	Business Schools and Computer and Management Training	165	190	15.2%	0.4
6115	Technical and Trade Schools	870	944	8.5%	0.9
6116	Other Schools and Instruction	1,587	1,730	9.0%	0.7
6117	Educational Support Services	339	376	10.9%	0.4
6211	Offices of Physicians	20,355	22,143	8.8%	1.3
6212	Offices of Dentists	4,654	5,057	8.7%	0.8
6213	Offices of Other Health Practitioners	7,903	10,084	27.6%	1.6
6214	Outpatient Care Centers	5,363	7,227	34.8%	1.1
6215	Medical and Diagnostic Laboratories	1,921	2,044	6.4%	1.2
6216	Home Health Care Services	7,676	11,287	47.0%	0.9
6219	Other Ambulatory Health Care Services	3,877	4,143	6.9%	2.1

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
6221	General Medical and Surgical Hospitals	46,966	51,198	9.0%	1.3
6222	Psychiatric and Substance Abuse Hospitals	1,437	1,271	-11.6%	1.0
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	3,953	5,061	28.0%	2.5
6231	Nursing Care Facilities (Skilled Nursing Facilities)	12,868	14,150	10.0%	1.2
6232	Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	7,427	7,485	0.8%	1.6
6233	Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	7,362	9,066	23.1%	1.3
6239	Other Residential Care Facilities	1,496	1,829	22.3%	1.4
6241	Individual and Family Services	16,201	21,698	33.9%	1.2
6242	Community Food and Housing, and Emergency and Other Relief Services	783	849	8.4%	0.8
6243	Vocational Rehabilitation Services	1,642	1,996	21.6%	0.7
6244	Child Day Care Services	5,023	5,696	13.4%	1.0
7111	Performing Arts Companies	798	831	4.1%	1.1
7112	Spectator Sports	1,374	1,566	14.0%	1.6
7113	Promoters of Performing Arts, Sports, and Similar Events	1,424	1,557	9.3%	1.7
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	62	75	21.0%	0.4
7115	Independent Artists, Writers, and Performers	94	123	30.9%	0.3
7121	Museums, Historical Sites, and Similar Institutions	2,019	2,290	13.4%	1.3
7131	Amusement Parks and Arcades	1,972	2,467	25.1%	1.6
7132	Gambling Industries	739	625	-15.4%	0.4
7139	Other Amusement and Recreation Industries	6,673	7,293	9.3%	0.8
7211	Traveler Accommodation	6,112	6,278	2.7%	0.5
7212	RV (Recreational Vehicle) Parks and Recreational Camps	163	188	15.3%	0.4
7213	Rooming and Boarding Houses	26	32	23.1%	0.3
7223	Special Food Services	5,670	6,527	15.1%	1.4
7224	Drinking Places (Alcoholic Beverages)	3,150	3,240	2.9%	1.4
7225	Restaurants and Other Eating Places	54,808	58,937	7.5%	0.9
8111	Automotive Repair and Maintenance	5,313	5,851	10.1%	0.9
8112	Electronic and Precision Equipment Repair and Maintenance	674	678	0.6%	1.0
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	1,198	1,329	10.9%	0.9
8114	Personal and Household Goods Repair and Maintenance	391	442	13.0%	0.8
8121	Personal Care Services	5,806	6,404	10.3%	1.4
8122	Death Care Services	1,184	1,142	-3.5%	1.3
8123	Drycleaning and Laundry Services	1,564	1,527	-2.4%	0.8
8129	Other Personal Services	1,900	2,264	19.2%	1.0

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
8131	Religious Organizations	1,469	1,515	3.1%	1.2
8132	Grantmaking and Giving Services	985	931	-5.5%	1.1
8133	Social Advocacy Organizations	1,401	1,438	2.6%	1.0
8134	Civic and Social Organizations	4,659	4,891	5.0%	1.8
8139	Business, Professional, Labor, Political, and Similar Organizations	3,223	3,257	1.1%	1.2
8141	Private Households	750	629	-16.1%	0.4
9211	Executive, Legislative, and Other General Government Support	20,046	19,153	-4.5%	1.0
9221	Justice, Public Order, and Safety Activities	3,360	2,969	-11.6%	0.3
9231	Administration of Human Resource Programs	1,115	1,060	-4.9%	0.2
9241	Administration of Environmental Quality Programs	884	849	-4.0%	0.4
9251	Administration of Housing Programs, Urban Planning, and Community Development	775	700	-9.7%	1.5
9261	Administration of Economic Programs	1,572	1,426	-9.3%	0.4
9281	National Security and International Affairs	830	780	-6.0%	0.2

Source: Bureau of Labor Statistics, Occupational Employment Statistics (OES), Pennsylvania Department of Labor & Industry, Oxford Economics Projections

APPENDIX D: OCCUPATION PROJECTIONS 2014-2024 FOR CLARION UNIVERSITY'S WORKFORCE REGION

For this analysis a “skilled” occupation is defined as an occupation in O*NET Job Zones¹⁹ Three, Four or Five. Most occupations in Job Zone Three require training in vocational schools, related on-the-job experience, or an associate’s degree.

The O*NET program is the nation’s primary source of occupational information. Central to the project is the O*NET database, containing information on hundreds of standardized and occupation-specific descriptors. The database, which is available to the public at no cost, is continually updated by surveying a broad range of workers from each occupation.²⁰

JOB ZONE ONE: Little or No Preparation Needed

- *Education* – Some of these occupations may require a high school diploma or GED certificate.
- *Related Experience* – Little or no previous work-related skill, knowledge, or experience is needed for these occupations. For example, a person can become a waiter or waitress even if he/she has never worked before.
- *Job Training* – Employees in these occupations need anywhere from a few days to a few months of training. Usually, an experienced worker could show you how to do the job.
- *Job Zone Examples* – These occupations involve following instructions and helping others. Examples include taxi drivers, amusement and recreation attendants, counter and rental clerks, nonfarm animal caretakers, continuous mining machine operators, and waiters/waitresses.

JOB ZONE TWO: Some Preparation Needed

- *Education* – These occupations usually require a high school diploma.

¹⁹ <https://www.onetonline.org/help/online/zones>

²⁰ <http://www.onetcenter.org/overview.html>

- *Related Experience* – Some previous work-related skill, knowledge, or experience is usually needed. For example, a teller would benefit from experience working directly with the public.
- *Job Training* – Employees in these occupations need anywhere from a few months to one year of working with experienced employees. A recognized apprenticeship program may be associated with these occupations.
- *Job Zone Examples* – These occupations often involve using your knowledge and skills to help others. Examples include sheet metal workers, forest fire fighters, customer service representatives, physical therapist aides, salespersons (retail), and tellers.

JOB ZONE THREE: Medium Preparation Needed

- *Education* – Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree.
- *Related Experience* – Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.
- *Job Training* – Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers. A recognized apprenticeship program may be associated with these occupations.
- *Job Zone Examples* – These occupations usually involve using communication and organizational skills to coordinate, supervise, manage, or train others to accomplish goals. Examples include food service managers, electricians, agricultural technicians, legal secretaries, occupational therapy assistants, and medical assistants.

JOB ZONE FOUR: Considerable Preparation Needed

- *Education* – Most of these occupations require a four-year bachelor's degree, but some do not.
- *Related Experience* – A considerable amount of work-related skill, knowledge, or experience is needed for these occupations. For example, an accountant must complete four years of college and work for several years in accounting to be considered qualified.

- *Job Training* – Employees in these occupations usually need several years of work-related experience, on-the-job training, and/or vocational training.
- *Job Zone Examples* – Many of these occupations involve coordinating, supervising, managing, or training others. Examples include accountants, sales managers, database administrators, teachers, chemists, art directors, and cost estimators.

JOB ZONE FIVE: Extensive Preparation Needed

- *Education* – Most of these occupations require graduate school. For example, they may require a master's degree, and some require a Ph.D., M.D., or J.D. (law degree).
- *Related Experience* – Extensive skill, knowledge, and experience are needed for these occupations. Many require more than five years of experience. For example, surgeons must complete four years of college and an additional five to seven years of specialized medical training to be able to do their job.
- *Job Training* – Employees may need some on-the-job training, but most of these occupations assume that the person will already have the required skills, knowledge, work-related experience, and/or training.
- *Job Zone Examples* – These occupations often involve coordinating, training, supervising, or managing the activities of others to accomplish goals. Very advanced communication and organizational skills are required. Examples include librarians, lawyers, sports medicine physicians, wildlife biologists, school psychologists, surgeons, treasurers, and controllers.

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
Total	All Occupations	NA	874,882	940,053	7.4%	310,025
11-1011	Chief Executives	5	1,824	1,743	-4.4%	352
11-1021	General and Operations Managers	4	10,284	11,858	15.3%	3,405
11-1031	Legislators	4	250	187	-25.2%	4
11-2011	Advertising and Promotions Managers	4	112	97	-13.4%	22
11-2021	Marketing Managers	4	1,046	1,177	12.5%	358
11-2022	Sales Managers	4	1,659	1,668	0.5%	367
11-2031	Public Relations and Fundraising Managers	4	327	302	-7.6%	45
11-3011	Administrative Services Managers	3	1,420	1,388	-2.3%	185
11-3021	Computer and Information Systems Managers	4	2,188	2,873	31.3%	1,005
11-3031	Financial Managers	4	3,041	2,960	-2.7%	481
11-3051	Industrial Production Managers	4	910	894	-1.8%	194
11-3061	Purchasing Managers	4	408	373	-8.6%	58
11-3071	Transportation, Storage, and Distribution Managers	4	421	473	12.4%	156
11-3111	Compensation and Benefits Managers	4	171	148	-13.5%	30
11-3121	Human Resources Managers	4	693	853	23.1%	341
11-3131	Training and Development Managers	4	183	230	25.7%	96
11-9021	Construction Managers	4	1,028	1,311	27.5%	433
11-9031	Education Administrators, Preschool and Childcare Center/Program	4	264	272	3.0%	79
11-9032	Education Administrators, Elementary and Secondary School	5	1,001	911	-9.0%	240
11-9033	Education Administrators, Postsecondary	5	978	915	-6.4%	215
11-9039	Education Administrators, All Other	5	119	145	21.8%	58
11-9041	Architectural and Engineering Managers	5	1,094	1,183	8.1%	372
11-9051	Food Service Managers	3	947	1,043	10.1%	288
11-9061	Funeral Service Managers	3	88	81	-8.0%	19
11-9071	Gaming Managers	3	12	10	-16.7%	1
11-9081	Lodging Managers	3	113	130	15.0%	66
11-9111	Medical and Health Services Managers	5	2,302	2,439	6.0%	696
11-9121	Natural Sciences Managers	5	326	412	26.4%	167
11-9131	Postmasters and Mail Superintendents	3	202	133	-34.2%	16
11-9141	Property, Real Estate, and Community Association Managers	4	582	665	14.3%	233
11-9151	Social and Community Service Managers	4	870	987	13.4%	317
11-9161	Emergency Management Directors	4	57	47	-17.5%	1
11-9199	Managers, All Other	4	1,475	1,627	10.3%	473

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
13-1011	Agents and Business Managers of Artists, Performers, and Athletes	4	42	46	9.5%	18
13-1021	Buyers and Purchasing Agents, Farm Products	4	46	45	-2.2%	11
13-1022	Wholesale and Retail Buyers, Except Farm Products	3	675	629	-6.8%	138
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	4	2,285	2,327	1.8%	531
13-1031	Claims Adjusters, Examiners, and Investigators	4	2,351	2,471	5.1%	817
13-1032	Insurance Appraisers, Auto Damage	3	135	164	21.5%	78
13-1041	Compliance Officers	4	1,823	2,129	16.8%	684
13-1051	Cost Estimators	4	1,537	1,708	11.1%	693
13-1071	Human Resources Specialists	4	3,328	3,970	19.3%	1,352
13-1075	Labor Relations Specialists	4	951	715	-24.8%	47
13-1081	Logisticians	4	781	961	23.0%	284
13-1111	Management Analysts	4	3,888	4,778	22.9%	1,536
13-1121	Meeting, Convention, and Event Planners	4	510	677	32.7%	245
13-1131	Fundraisers	4	505	595	17.8%	203
13-1141	Compensation, Benefits, and Job Analysis Specialists	4	726	665	-8.4%	101
13-1151	Training and Development Specialists	4	1,927	2,190	13.6%	646
13-1161	Market Research Analysts and Marketing Specialists	4	4,242	5,598	32.0%	2,035
13-1199	Business Operations Specialists, All Other	4	2,966	2,960	-0.2%	345
13-2011	Accountants and Auditors	4	9,873	10,825	9.6%	4,238
13-2021	Appraisers and Assessors of Real Estate	4	231	203	-12.1%	7
13-2031	Budget Analysts	4	286	317	10.8%	151
13-2041	Credit Analysts	4	506	550	8.7%	195
13-2051	Financial Analysts	4	2,315	2,730	17.9%	1,022
13-2052	Personal Financial Advisors	4	1,361	1,925	41.4%	817
13-2053	Insurance Underwriters	4	952	1,007	5.8%	426
13-2061	Financial Examiners	4	297	327	10.1%	126
13-2071	Credit Counselors	4	363	435	19.8%	150
13-2072	Loan Officers	3	2,933	3,188	8.7%	1,067
13-2081	Tax Examiners and Collectors, and Revenue Agents	3	490	405	-17.3%	114
13-2082	Tax Preparers	3	421	372	-11.6%	79
13-2099	Financial Specialists, All Other	4	770	722	-6.2%	54
15-1111	Computer and Information Research Scientists	5	54	58	7.4%	11
15-1121	Computer Systems Analysts	4	4,533	6,415	41.5%	2,684
15-1122	Information Security Analysts	4	486	763	57.0%	352
15-1131	Computer Programmers	4	2,766	3,698	33.7%	1,838

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
15-1132	Software Developers, Applications	4	4,168	5,747	37.9%	2,173
15-1133	Software Developers, Systems Software	4	2,070	2,110	1.9%	291
15-1134	Web Developers	3	767	1,043	36.0%	401
15-1141	Database Administrators	4	1,019	1,334	30.9%	527
15-1142	Network and Computer Systems Administrators	4	2,690	2,590	-3.7%	362
15-1143	Computer Network Architects	4	741	871	17.5%	248
15-1151	Computer User Support Specialists	3	4,669	6,287	34.7%	2,454
15-1152	Computer Network Support Specialists	4	1,050	1,133	7.9%	283
15-1199	Computer Occupations, All Other	4	1,206	1,453	20.5%	459
15-2011	Actuaries	4	275	366	33.1%	180
15-2031	Operations Research Analysts	5	508	614	20.9%	226
15-2041	Statisticians	5	365	496	35.9%	257
17-1011	Architects, Except Landscape and Naval	4	749	873	16.6%	390
17-1012	Landscape Architects	4	196	253	29.1%	119
17-1021	Cartographers and Photogrammetrists	4	51	53	3.9%	13
17-1022	Surveyors	4	385	431	11.9%	147
17-2011	Aerospace Engineers	4	307	430	40.1%	202
17-2021	Agricultural Engineers	4	19	25	31.6%	12
17-2031	Biomedical Engineers	4	218	212	-2.8%	54
17-2041	Chemical Engineers	4	259	251	-3.1%	67
17-2051	Civil Engineers	4	2,859	3,184	11.4%	1,105
17-2061	Computer Hardware Engineers	4	240	225	-6.3%	35
17-2071	Electrical Engineers	4	1,338	1,553	16.1%	548
17-2072	Electronics Engineers, Except Computer	4	736	645	-12.4%	91
17-2081	Environmental Engineers	5	713	853	19.6%	347
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	4	226	233	3.1%	80
17-2112	Industrial Engineers	4	1,439	1,443	0.3%	492
17-2131	Materials Engineers	4	282	353	25.2%	178
17-2141	Mechanical Engineers	4	1,914	1,908	-0.3%	716
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	4	59	51	-13.6%	15
17-2161	Nuclear Engineers	4	233	275	18.0%	122
17-2171	Petroleum Engineers	4	235	349	48.5%	198
17-2199	Engineers, All Other	4	632	814	28.8%	310
17-3011	Architectural and Civil Drafters	4	1,097	1,156	5.4%	323
17-3012	Electrical and Electronics Drafters	3	250	217	-13.2%	7
17-3013	Mechanical Drafters	3	640	559	-12.7%	59

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
17-3019	Drafters, All Other	3	64	78	21.9%	23
17-3021	Aerospace Engineering and Operations Technicians	4	1	1	0.0%	0
17-3022	Civil Engineering Technicians	3	577	667	15.6%	235
17-3023	Electrical and Electronics Engineering Technicians	3	774	642	-17.1%	60
17-3024	Electro-Mechanical Technicians	3	139	124	-10.8%	27
17-3025	Environmental Engineering Technicians	4	275	329	19.6%	126
17-3026	Industrial Engineering Technicians	3	261	263	0.8%	67
17-3027	Mechanical Engineering Technicians	3	368	416	13.0%	137
17-3029	Engineering Technicians, Except Drafters, All Other	3	467	593	27.0%	243
17-3031	Surveying and Mapping Technicians	3	372	466	25.3%	176
19-1012	Food Scientists and Technologists	4	25	27	8.0%	11
19-1013	Soil and Plant Scientists	5	31	40	29.0%	22
19-1021	Biochemists and Biophysicists	5	439	702	59.9%	396
19-1022	Microbiologists	5	251	365	45.4%	198
19-1023	Zoologists and Wildlife Biologists	5	47	41	-12.8%	7
19-1029	Biological Scientists, All Other	5	70	71	1.4%	24
19-1031	Conservation Scientists	4	79	90	13.9%	37
19-1032	Foresters	4	50	53	6.0%	18
19-1041	Epidemiologists	5	19	16	-15.8%	1
19-1042	Medical Scientists, Except Epidemiologists	5	1,056	1,447	37.0%	645
19-1099	Life Scientists, All Other	5	19	22	15.8%	7
19-2012	Physicists	5	35	28	-20.0%	0
19-2021	Atmospheric and Space Scientists	4	17	15	-11.8%	2
19-2031	Chemists	4	1,014	1,273	25.5%	586
19-2032	Materials Scientists	5	68	73	7.4%	26
19-2041	Environmental Scientists and Specialists, Including Health	4	649	818	26.0%	377
19-2042	Geoscientists, Except Hydrologists and Geographers	4	277	329	18.8%	150
19-2043	Hydrologists	4	32	29	-9.4%	7
19-2099	Physical Scientists, All Other	5	38	30	-21.1%	1
19-3011	Economists	5	103	120	16.5%	52
19-3022	Survey Researchers	5	379	367	-3.2%	109
19-3031	Clinical, Counseling, and School Psychologists	5	815	831	2.0%	263
19-3039	Psychologists, All Other	5	59	74	25.4%	33
19-3041	Sociologists	5	27	29	7.4%	17
19-3051	Urban and Regional Planners	5	255	271	6.3%	138

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
19-3091	Anthropologists and Archeologists	5	13	17	30.8%	6
19-3093	Historians	5	11	8	-27.3%	0
19-3099	Social Scientists and Related Workers, All Other	4	60	58	-3.3%	10
19-4011	Agricultural and Food Science Technicians	3	12	8	-33.3%	1
19-4021	Biological Technicians	4	701	924	31.8%	454
19-4031	Chemical Technicians	3	807	1,007	24.8%	456
19-4041	Geological and Petroleum Technicians	4	139	196	41.0%	127
19-4051	Nuclear Technicians	3	106	120	13.2%	60
19-4061	Social Science Research Assistants	4	149	207	38.9%	126
19-4091	Environmental Science and Protection Technicians, Including Health	4	353	453	28.3%	259
19-4092	Forensic Science Technicians	4	18	18	0.0%	8
19-4093	Forest and Conservation Technicians	3	47	52	10.6%	28
19-4099	Life, Physical, and Social Science Technicians, All Other	3	350	367	4.9%	163
21-1011	Substance Abuse and Behavioral Disorder Counselors	5	1,101	1,083	-1.6%	296
21-1012	Educational, Guidance, School, and Vocational Counselors	5	1,616	1,595	-1.3%	359
21-1013	Marriage and Family Therapists	5	174	221	27.0%	86
21-1014	Mental Health Counselors	5	1,632	1,736	6.4%	549
21-1015	Rehabilitation Counselors	5	1,029	1,336	29.8%	596
21-1019	Counselors, All Other	5	128	125	-2.3%	25
21-1021	Child, Family, and School Social Workers	4	2,297	2,592	12.8%	832
21-1022	Healthcare Social Workers	5	1,234	1,512	22.5%	565
21-1023	Mental Health and Substance Abuse Social Workers	5	1,450	1,676	15.6%	634
21-1029	Social Workers, All Other	5	134	134	0.0%	31
21-1091	Health Educators	4	444	487	9.7%	165
21-1092	Probation Officers and Correctional Treatment Specialists	4	494	463	-6.3%	129
21-1093	Social and Human Service Assistants	4	3,271	3,510	7.3%	1,215
21-1094	Community Health Workers	4	178	167	-6.2%	35
21-1099	Community and Social Service Specialists, All Other	4	215	227	5.6%	64
21-2011	Clergy	5	317	376	18.6%	137
21-2021	Directors, Religious Activities and Education	4	268	315	17.5%	166
21-2099	Religious Workers, All Other	4	71	56	-21.1%	9
23-1011	Lawyers	5	4,821	5,518	14.5%	1,520
23-1012	Judicial Law Clerks	5	142	151	6.3%	39

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	5	87	75	-13.8%	5
23-1022	Arbitrators, Mediators, and Conciliators	5	53	67	26.4%	23
23-1023	Judges, Magistrate Judges, and Magistrates	5	33	28	-15.2%	2
23-2011	Paralegals and Legal Assistants	3	1,980	2,570	29.8%	925
23-2091	Court Reporters	3	131	125	-4.6%	28
23-2093	Title Examiners, Abstractors, and Searchers	3	544	601	10.5%	180
23-2099	Legal Support Workers, All Other	3	86	80	-7.0%	9
25-1011	Business Teachers, Postsecondary	5	922	1,064	15.4%	281
25-1021	Computer Science Teachers, Postsecondary	5	405	482	19.0%	138
25-1022	Mathematical Science Teachers, Postsecondary	5	560	584	4.3%	109
25-1031	Architecture Teachers, Postsecondary	5	97	119	22.7%	36
25-1032	Engineering Teachers, Postsecondary	5	556	681	22.5%	208
25-1041	Agricultural Sciences Teachers, Postsecondary	5	72	61	-15.3%	0
25-1042	Biological Science Teachers, Postsecondary	5	741	775	4.6%	146
25-1043	Forestry and Conservation Science Teachers, Postsecondary	5	27	23	-14.8%	0
25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	5	169	191	13.0%	48
25-1052	Chemistry Teachers, Postsecondary	5	305	347	13.8%	89
25-1053	Environmental Science Teachers, Postsecondary	5	62	60	-3.2%	8
25-1054	Physics Teachers, Postsecondary	5	212	256	20.8%	76
25-1061	Anthropology and Archeology Teachers, Postsecondary	5	67	63	-6.0%	6
25-1062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	5	94	105	11.7%	25
25-1063	Economics Teachers, Postsecondary	5	224	262	17.0%	72
25-1064	Geography Teachers, Postsecondary	5	69	77	11.6%	19
25-1065	Political Science Teachers, Postsecondary	5	231	251	8.7%	56
25-1066	Psychology Teachers, Postsecondary	5	464	502	8.2%	109
25-1067	Sociology Teachers, Postsecondary	5	308	369	19.8%	108
25-1069	Social Sciences Teachers, Postsecondary, All Other	5	96	120	25.0%	38
25-1071	Health Specialties Teachers, Postsecondary	5	1,356	1,351	-0.4%	200
25-1072	Nursing Instructors and Teachers, Postsecondary	5	598	595	-0.5%	86
25-1081	Education Teachers, Postsecondary	5	709	715	0.8%	114
25-1082	Library Science Teachers, Postsecondary	5	69	82	18.8%	23
25-1111	Criminal Justice and Law Enforcement Teachers, Postsecondary	5	105	102	-2.9%	13
25-1112	Law Teachers, Postsecondary	5	108	119	10.2%	28

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
25-1113	Social Work Teachers, Postsecondary	5	124	114	-8.1%	10
25-1121	Art, Drama, and Music Teachers, Postsecondary	5	964	1,176	22.0%	356
25-1122	Communications Teachers, Postsecondary	5	312	358	14.7%	94
25-1123	English Language and Literature Teachers, Postsecondary	5	856	848	-0.9%	122
25-1124	Foreign Language and Literature Teachers, Postsecondary	5	356	403	13.2%	102
25-1125	History Teachers, Postsecondary	5	289	317	9.7%	73
25-1126	Philosophy and Religion Teachers, Postsecondary	5	303	333	9.9%	76
25-1191	Graduate Teaching Assistants	5	302	357	18.2%	101
25-1192	Home Economics Teachers, Postsecondary	5	23	20	-13.0%	0
25-1193	Recreation and Fitness Studies Teachers, Postsecondary	5	194	193	-0.5%	28
25-1194	Vocational Education Teachers, Postsecondary	3	806	701	-13.0%	16
25-1199	Postsecondary Teachers, All Other	5	852	1,037	21.7%	313
25-2011	Preschool Teachers, Except Special Education	3	1,831	2,234	22.0%	929
25-2012	Kindergarten Teachers, Except Special Education	4	758	710	-6.3%	185
25-2021	Elementary School Teachers, Except Special Education	4	7,198	6,826	-5.2%	1,439
25-2022	Middle School Teachers, Except Special and Career/Technical Education	4	3,145	3,420	8.7%	1,065
25-2023	Career/Technical Education Teachers, Middle School	4	80	93	16.3%	37
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	4	6,632	6,009	-9.4%	1,636
25-2032	Career/Technical Education Teachers, Secondary School	4	582	508	-12.7%	117
25-2051	Special Education Teachers, Preschool	4	85	100	17.6%	31
25-2052	Special Education Teachers, Kindergarten and Elementary School	4	1,382	1,382	0.0%	313
25-2053	Special Education Teachers, Middle School	4	483	468	-3.1%	95
25-2054	Special Education Teachers, Secondary School	4	1,021	1,024	0.3%	251
25-2059	Special Education Teachers, All Other	4	32	38	18.8%	9
25-3011	Adult Basic and Secondary Education and Literacy Teachers and Instructors	4	206	181	-12.1%	18
25-3021	Self-Enrichment Education Teachers	3	1,155	1,098	-4.9%	190
25-3097	Teachers and Instructors, All Other, Except Substitute Teachers	3	719	815	13.4%	219
25-3098	Substitute Teachers	3	2,085	1,782	-14.5%	131
25-4011	Archivists	5	70	83	18.6%	30
25-4012	Curators	5	117	140	19.7%	52

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
25-4013	Museum Technicians and Conservators	4	121	154	27.3%	64
25-4021	Librarians	5	929	981	5.6%	282
25-4031	Library Technicians	4	556	610	9.7%	367
25-9011	Audio-Visual and Multimedia Collections Specialists	4	37	39	5.4%	9
25-9021	Farm and Home Management Advisors	5	10	8	-20.0%	0
25-9031	Instructional Coordinators	5	657	663	0.9%	62
25-9041	Teacher Assistants	3	5,896	5,896	0.0%	1,465
25-9099	Education, Training, and Library Workers, All Other	4	133	125	-6.0%	4
27-1011	Art Directors	4	213	250	17.4%	98
27-1012	Craft Artists	2	13	11	-15.4%	1
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	3	32	36	12.5%	15
27-1014	Multimedia Artists and Animators	4	97	119	22.7%	48
27-1019	Artists and Related Workers, All Other	4	13	10	-23.1%	0
27-1021	Commercial and Industrial Designers	4	128	110	-14.1%	21
27-1022	Fashion Designers	3	17	18	5.9%	6
27-1023	Floral Designers	2	333	199	-40.2%	39
27-1024	Graphic Designers	4	1,380	1,589	15.1%	646
27-1025	Interior Designers	4	293	377	28.7%	201
27-1026	Merchandise Displayers and Window Trimmers	3	442	538	21.7%	225
27-1027	Set and Exhibit Designers	5	54	64	18.5%	26
27-1029	Designers, All Other	4	1	1	0.0%	0
27-2011	Actors	2	302	259	-14.2%	73
27-2012	Producers and Directors	4	542	612	12.9%	307
27-2021	Athletes and Sports Competitors	2	194	231	19.1%	112
27-2022	Coaches and Scouts	4	1,178	1,048	-11.0%	243
27-2023	Umpires, Referees, and Other Sports Officials	3	59	53	-10.2%	12
27-2031	Dancers	3	27	21	-22.2%	4
27-2032	Choreographers	4	27	29	7.4%	12
27-2041	Music Directors and Composers	3	140	111	-20.7%	20
27-2042	Musicians and Singers	3	184	160	-13.0%	47
27-2099	Entertainers and Performers, Sports and Related Workers, All Other	3	17	17	0.0%	0
27-3011	Radio and Television Announcers	3	269	294	9.3%	151
27-3012	Public Address System and Other Announcers	2	19	26	36.8%	12
27-3022	Reporters and Correspondents	4	200	165	-17.5%	70
27-3031	Public Relations Specialists	4	1,729	1,631	-5.7%	167

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
27-3041	Editors	4	475	454	-4.4%	132
27-3042	Technical Writers	4	220	221	0.5%	70
27-3043	Writers and Authors	4	249	257	3.2%	71
27-3091	Interpreters and Translators	4	133	132	-0.8%	16
27-3099	Media and Communication Workers, All Other	4	61	50	-18.0%	0
27-4011	Audio and Video Equipment Technicians	3	385	396	2.9%	95
27-4012	Broadcast Technicians	3	129	146	13.2%	52
27-4014	Sound Engineering Technicians	3	65	62	-4.6%	14
27-4021	Photographers	3	284	238	-16.2%	38
27-4031	Camera Operators, Television, Video, and Motion Picture	3	101	93	-7.9%	4
27-4032	Film and Video Editors	3	65	55	-15.4%	0
27-4099	Media and Communication Equipment Workers, All Other	3	34	26	-23.5%	0
29-1011	Chiropractors	5	248	341	37.5%	148
29-1021	Dentists, General	5	518	568	9.7%	180
29-1022	Oral and Maxillofacial Surgeons	5	19	19	0.0%	5
29-1023	Orthodontists	5	14	17	21.4%	6
29-1029	Dentists, All Other Specialists	5	13	12	-7.7%	3
29-1031	Dietitians and Nutritionists	5	503	515	2.4%	77
29-1041	Optometrists	5	254	326	28.3%	157
29-1051	Pharmacists	5	2,059	2,183	6.0%	668
29-1061	Anesthesiologists	5	284	299	5.3%	94
29-1062	Family and General Practitioners	5	1,197	1,297	8.4%	434
29-1063	Internists, General	5	185	179	-3.2%	40
29-1064	Obstetricians and Gynecologists	5	63	82	30.2%	33
29-1065	Pediatricians, General	5	69	89	29.0%	34
29-1066	Psychiatrists	5	153	146	-4.6%	36
29-1067	Surgeons	5	387	502	29.7%	218
29-1069	Physicians and Surgeons, All Other	5	2,720	2,972	9.3%	966
29-1071	Physician Assistants	5	892	986	10.5%	270
29-1081	Podiatrists	5	94	127	35.1%	71
29-1122	Occupational Therapists	5	1,072	1,446	34.9%	542
29-1123	Physical Therapists	5	1,880	2,498	32.9%	1,150
29-1124	Radiation Therapists	3	143	139	-2.8%	24
29-1125	Recreational Therapists	4	201	207	3.0%	55
29-1126	Respiratory Therapists	3	946	1,080	14.2%	271
29-1127	Speech-Language Pathologists	5	750	1,014	35.2%	374

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
29-1128	Exercise Physiologists	5	62	82	32.3%	28
29-1129	Therapists, All Other	4	68	100	47.1%	39
29-1131	Veterinarians	5	366	475	29.8%	240
29-1141	Registered Nurses	3	22,246	26,064	17.2%	8,323
29-1151	Nurse Anesthetists	5	378	417	10.3%	118
29-1161	Nurse Midwives	5	26	34	30.8%	13
29-1171	Nurse Practitioners	5	697	878	26.0%	308
29-1181	Audiologists	5	99	123	24.2%	46
29-1199	Health Diagnosing and Treating Practitioners, All Other	5	81	67	-17.3%	4
29-2011	Medical and Clinical Laboratory Technologists	4	1,557	1,662	6.7%	577
29-2012	Medical and Clinical Laboratory Technicians	3	1,719	1,896	10.3%	667
29-2021	Dental Hygienists	3	1,275	1,530	20.0%	600
29-2031	Cardiovascular Technologists and Technicians	3	547	681	24.5%	216
29-2032	Diagnostic Medical Sonographers	3	452	554	22.6%	166
29-2033	Nuclear Medicine Technologists	3	193	207	7.3%	42
29-2034	Radiologic Technologists	3	1,794	2,034	13.4%	518
29-2035	Magnetic Resonance Imaging Technologists	3	252	316	25.4%	105
29-2041	Emergency Medical Technicians and Paramedics	3	2,386	2,394	0.3%	795
29-2051	Dietetic Technicians	2	424	612	44.3%	238
29-2052	Pharmacy Technicians	3	2,358	2,501	6.1%	415
29-2053	Psychiatric Technicians	3	209	194	-7.2%	28
29-2054	Respiratory Therapy Technicians	3	93	87	-6.5%	3
29-2055	Surgical Technologists	3	617	782	26.7%	224
29-2056	Veterinary Technologists and Technicians	3	579	703	21.4%	185
29-2057	Ophthalmic Medical Technicians	3	208	276	32.7%	94
29-2061	Licensed Practical and Licensed Vocational Nurses	3	5,660	6,993	23.6%	2,828
29-2071	Medical Records and Health Information Technicians	3	1,407	1,690	20.1%	663
29-2081	Opticians, Dispensing	3	546	729	33.5%	370
29-2091	Orthotists and Prosthetists	5	49	56	14.3%	12
29-2092	Hearing Aid Specialists	3	23	24	4.3%	3
29-2099	Health Technologists and Technicians, All Other	3	376	444	18.1%	98
29-9011	Occupational Health and Safety Specialists	4	405	438	8.1%	152
29-9012	Occupational Health and Safety Technicians	3	86	88	2.3%	26
29-9091	Athletic Trainers	5	234	313	33.8%	147
29-9099	Healthcare Practitioners and Technical Workers, All Other	4	162	138	-14.8%	17

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
31-1011	Home Health Aides	2	7,856	10,441	32.9%	4,745
31-1013	Psychiatric Aides	2	233	206	-11.6%	32
31-1014	Nursing Assistants	2	11,727	13,253	13.0%	3,894
31-1015	Orderlies	2	424	450	6.1%	108
31-2011	Occupational Therapy Assistants	3	432	585	35.4%	286
31-2012	Occupational Therapy Aides	3	104	159	52.9%	84
31-2021	Physical Therapist Assistants	3	835	1,186	42.0%	576
31-2022	Physical Therapist Aides	2	405	564	39.3%	255
31-9011	Massage Therapists	3	381	525	37.8%	182
31-9091	Dental Assistants	3	1,772	1,928	8.8%	544
31-9092	Medical Assistants	3	4,282	5,158	20.5%	1,736
31-9093	Medical Equipment Preparers	2	346	415	19.9%	135
31-9094	Medical Transcriptionists	3	711	586	-17.6%	68
31-9095	Pharmacy Aides	2	232	191	-17.7%	14
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	3	350	326	-6.9%	49
31-9097	Phlebotomists	3	973	1,143	17.5%	395
31-9099	Healthcare Support Workers, All Other	3	240	206	-14.2%	9
33-1011	First-Line Supervisors of Correctional Officers	3	160	165	3.1%	66
33-1012	First-Line Supervisors of Police and Detectives	3	368	406	10.3%	161
33-1021	First-Line Supervisors of Fire Fighting and Prevention Workers	3	96	107	11.5%	55
33-1099	First-Line Supervisors of Protective Service Workers, All Other	3	449	547	21.8%	236
33-2011	Firefighters	3	593	591	-0.3%	178
33-2021	Fire Inspectors and Investigators	3	29	24	-17.2%	5
33-3011	Bailiffs	2	25	19	-24.0%	2
33-3012	Correctional Officers and Jailers	3	1,964	1,753	-10.7%	397
33-3021	Detectives and Criminal Investigators	3	327	316	-3.4%	73
33-3041	Parking Enforcement Workers	2	58	64	10.3%	29
33-3051	Police and Sheriff's Patrol Officers	3	3,408	3,215	-5.7%	1,030
33-3052	Transit and Railroad Police	3	10	7	-30.0%	1
33-9011	Animal Control Workers	2	41	40	-2.4%	10
33-9021	Private Detectives and Investigators	3	346	298	-13.9%	84
33-9031	Gaming Surveillance Officers and Gaming Investigators	2	40	34	-15.0%	12
33-9032	Security Guards	2	9,118	9,731	6.7%	3,166
33-9091	Crossing Guards	1	518	384	-25.9%	9

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	2	811	907	11.8%	684
33-9093	Transportation Security Screeners	2	154	134	-13.0%	23
33-9099	Protective Service Workers, All Other	2	439	507	15.5%	382
35-1011	Chefs and Head Cooks	3	721	771	6.9%	193
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	2	4,711	5,202	10.4%	1,938
35-2011	Cooks, Fast Food	1	1,397	1,204	-13.8%	112
35-2012	Cooks, Institution and Cafeteria	2	2,664	2,704	1.5%	593
35-2014	Cooks, Restaurant	2	6,499	8,293	27.6%	3,305
35-2015	Cooks, Short Order	1	1,185	1,438	21.4%	546
35-2021	Food Preparation Workers	1	5,159	4,617	-10.5%	1,089
35-3011	Bartenders	2	5,021	5,310	5.8%	2,406
35-3021	Combined Food Preparation and Serving Workers, Including Fast Food	1	21,261	24,022	13.0%	11,894
35-3022	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	1	1,947	1,800	-7.6%	1,108
35-3031	Waiters and Waitresses	1	15,407	16,837	9.3%	9,583
35-3041	Food Servers, Nonrestaurant	1	1,873	2,101	12.2%	832
35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers	1	2,235	2,284	2.2%	1,131
35-9021	Dishwashers	1	3,354	3,107	-7.4%	1,380
35-9031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	1	2,359	2,453	4.0%	1,999
35-9099	Food Preparation and Serving Related Workers, All Other	1	182	238	30.8%	161
37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	2	854	871	2.0%	253
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	3	383	373	-2.6%	36
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	2	12,371	12,259	-0.9%	2,724
37-2012	Maids and Housekeeping Cleaners	2	4,835	5,173	7.0%	1,571
37-2019	Building Cleaning Workers, All Other	2	48	41	-14.6%	3
37-2021	Pest Control Workers	2	222	255	14.9%	102
37-3011	Landscaping and Groundskeeping Workers	1	4,581	4,804	4.9%	1,558
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	2	66	56	-15.2%	8
37-3013	Tree Trimmers and Pruners	2	381	481	26.2%	231
37-3019	Grounds Maintenance Workers, All Other	2	14	12	-14.3%	1
39-1011	Gaming Supervisors	2	85	73	-14.1%	33
39-1012	Slot Supervisors	2	5	4	-20.0%	0

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
39-1021	First-Line Supervisors of Personal Service Workers	3	1,102	1,360	23.4%	477
39-2011	Animal Trainers	2	50	48	-4.0%	22
39-2021	Nonfarm Animal Caretakers	1	1,000	1,162	16.2%	317
39-3011	Gaming Dealers	2	386	336	-13.0%	144
39-3012	Gaming and Sports Book Writers and Runners	2	14	15	7.1%	7
39-3019	Gaming Service Workers, All Other	2	5	5	0.0%	0
39-3021	Motion Picture Projectionists	2	62	57	-8.1%	32
39-3031	Ushers, Lobby Attendants, and Ticket Takers	2	1,053	1,184	12.4%	783
39-3091	Amusement and Recreation Attendants	1	2,344	2,757	17.6%	1,745
39-3092	Costume Attendants	2	26	23	-11.5%	12
39-3093	Locker Room, Coatroom, and Dressing Room Attendants	2	110	93	-15.5%	43
39-3099	Entertainment Attendants and Related Workers, All Other	2	129	129	0.0%	76
39-4021	Funeral Attendants	2	327	326	-0.3%	105
39-4031	Morticians, Undertakers, and Funeral Directors	3	198	230	16.2%	91
39-5011	Barbers	3	110	111	0.9%	36
39-5012	Hairdressers, Hairstylists, and Cosmetologists	3	3,863	4,257	10.2%	1,486
39-5092	Manicurists and Pedicurists	2	529	564	6.6%	89
39-5093	Shampooers	2	226	217	-4.0%	30
39-5094	Skincare Specialists	3	179	163	-8.9%	3
39-6011	Baggage Porters and Bellhops	2	220	224	1.8%	88
39-6012	Concierges	3	105	130	23.8%	52
39-7011	Tour Guides and Escorts	3	352	373	6.0%	209
39-7012	Travel Guides	3	10	8	-20.0%	4
39-9011	Childcare Workers	3	2,942	2,674	-9.1%	611
39-9021	Personal Care Aides	2	8,452	12,763	51.0%	5,440
39-9031	Fitness Trainers and Aerobics Instructors	3	1,520	1,723	13.4%	469
39-9032	Recreation Workers	4	1,679	2,093	24.7%	614
39-9041	Residential Advisors	3	1,125	1,385	23.1%	825
39-9099	Personal Care and Service Workers, All Other	3	190	170	-10.5%	33
41-1011	First-Line Supervisors of Retail Sales Workers	2	6,245	6,296	0.8%	1,458
41-1012	First-Line Supervisors of Non-Retail Sales Workers	4	1,459	1,330	-8.8%	89
41-2011	Cashiers	1	20,699	18,933	-8.5%	7,968
41-2012	Gaming Change Persons and Booth Cashiers	2	23	18	-21.7%	15
41-2021	Counter and Rental Clerks	1	2,220	2,327	4.8%	762
41-2022	Parts Salespersons	2	1,375	1,578	14.8%	614
41-2031	Retail Salespersons	2	29,880	31,473	5.3%	12,441

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
41-3011	Advertising Sales Agents	3	944	932	-1.3%	373
41-3021	Insurance Sales Agents	4	2,654	2,719	2.4%	869
41-3031	Securities, Commodities, and Financial Services Sales Agents	4	2,145	2,206	2.8%	659
41-3041	Travel Agents	3	288	223	-22.6%	85
41-3099	Sales Representatives, Services, All Other	4	5,376	6,651	23.7%	2,817
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	4	1,657	1,472	-11.2%	182
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	4	9,459	8,644	-8.6%	1,383
41-9011	Demonstrators and Product Promoters	2	283	271	-4.2%	75
41-9012	Models	1	23	27	17.4%	11
41-9021	Real Estate Brokers	4	168	131	-22.0%	0
41-9022	Real Estate Sales Agents	3	1,302	1,363	4.7%	279
41-9031	Sales Engineers	4	538	568	5.6%	146
41-9041	Telemarketers	2	1,278	890	-30.4%	223
41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	2	13	12	-7.7%	1
41-9099	Sales and Related Workers, All Other	3	340	290	-14.7%	10
43-1011	First-Line Supervisors of Office and Administrative Support Workers	3	9,677	9,733	0.6%	2,373
43-2011	Switchboard Operators, Including Answering Service	2	902	690	-23.5%	108
43-2021	Telephone Operators	2	61	35	-42.6%	0
43-3011	Bill and Account Collectors	2	2,282	1,951	-14.5%	437
43-3021	Billing and Posting Clerks	2	4,636	4,936	6.5%	1,238
43-3031	Bookkeeping, Accounting, and Auditing Clerks	3	10,797	11,479	6.3%	1,750
43-3041	Gaming Cage Workers	2	59	66	11.9%	37
43-3051	Payroll and Timekeeping Clerks	2	1,306	1,256	-3.8%	264
43-3061	Procurement Clerks	3	417	368	-11.8%	113
43-3071	Tellers	2	6,748	5,573	-17.4%	2,782
43-3099	Financial Clerks, All Other	2	315	350	11.1%	144
43-4011	Brokerage Clerks	3	444	402	-9.5%	128
43-4021	Correspondence Clerks	2	118	118	0.0%	40
43-4031	Court, Municipal, and License Clerks	3	291	290	-0.3%	49
43-4041	Credit Authorizers, Checkers, and Clerks	3	272	188	-30.9%	0
43-4051	Customer Service Representatives	2	18,569	19,871	7.0%	6,912
43-4061	Eligibility Interviewers, Government Programs	3	1,042	945	-9.3%	130
43-4071	File Clerks	2	982	789	-19.7%	95

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
43-4081	Hotel, Motel, and Resort Desk Clerks	2	909	881	-3.1%	524
43-4111	Interviewers, Except Eligibility and Loan	2	1,536	1,673	8.9%	474
43-4121	Library Assistants, Clerical	2	857	947	10.5%	485
43-4131	Loan Interviewers and Clerks	3	1,657	1,813	9.4%	398
43-4141	New Accounts Clerks	2	315	313	-0.6%	122
43-4151	Order Clerks	2	1,809	1,763	-2.5%	600
43-4161	Human Resources Assistants, Except Payroll and Timekeeping	3	1,135	986	-13.1%	191
43-4171	Receptionists and Information Clerks	2	6,720	6,365	-5.3%	1,505
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	2	465	417	-10.3%	89
43-4199	Information and Record Clerks, All Other	2	573	440	-23.2%	33
43-5011	Cargo and Freight Agents	2	240	208	-13.3%	52
43-5021	Couriers and Messengers	2	473	390	-17.5%	25
43-5031	Police, Fire, and Ambulance Dispatchers	2	425	414	-2.6%	125
43-5032	Dispatchers, Except Police, Fire, and Ambulance	2	963	1,064	10.5%	403
43-5041	Meter Readers, Utilities	2	253	224	-11.5%	75
43-5051	Postal Service Clerks	2	650	440	-32.3%	72
43-5052	Postal Service Mail Carriers	2	2,570	1,819	-29.2%	730
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	2	1,195	699	-41.5%	70
43-5061	Production, Planning, and Expediting Clerks	3	2,088	2,176	4.2%	675
43-5071	Shipping, Receiving, and Traffic Clerks	2	3,388	3,234	-4.5%	857
43-5081	Stock Clerks and Order Fillers	2	10,623	10,049	-5.4%	3,137
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	2	309	342	10.7%	112
43-6011	Executive Secretaries and Executive Administrative Assistants	3	4,022	3,673	-8.7%	302
43-6012	Legal Secretaries	3	2,375	2,771	16.7%	871
43-6013	Medical Secretaries	3	3,782	4,880	29.0%	1,540
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	3	17,342	19,213	10.8%	4,124
43-9011	Computer Operators	3	542	488	-10.0%	91
43-9021	Data Entry Keyers	2	1,824	1,464	-19.7%	278
43-9022	Word Processors and Typists	2	910	625	-31.3%	4
43-9031	Desktop Publishers	3	132	135	2.3%	40
43-9041	Insurance Claims and Policy Processing Clerks	3	2,119	2,148	1.4%	719
43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	2	989	799	-19.2%	191
43-9061	Office Clerks, General	2	20,507	19,298	-5.9%	3,513

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43-9071	Office Machine Operators, Except Computer	2	472	324	-31.4%	40
43-9081	Proofreaders and Copy Markers	4	79	71	-10.1%	15
43-9111	Statistical Assistants	4	105	116	10.5%	43
43-9199	Office and Administrative Support Workers, All Other	3	915	1,101	20.3%	452
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	3	15	14	-6.7%	3
45-2011	Agricultural Inspectors	2	43	37	-14.0%	11
45-2041	Graders and Sorters, Agricultural Products	1	28	31	10.7%	10
45-2091	Agricultural Equipment Operators	2	11	13	18.2%	5
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	1	79	63	-20.3%	16
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals	1	37	34	-8.1%	12
45-2099	Agricultural Workers, All Other	1	2	2	0.0%	0
45-4011	Forest and Conservation Workers	3	21	22	4.8%	5
45-4021	Fallers	1	3	2	-33.3%	0
45-4022	Logging Equipment Operators	1	26	29	11.5%	13
45-4023	Log Graders and Scalers	3	14	17	21.4%	5
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	3	2,902	3,416	17.7%	870
47-2011	Boilermakers	3	105	128	21.9%	79
47-2021	Brickmasons and Blockmasons	2	461	536	16.3%	123
47-2022	Stonemasons	3	63	57	-9.5%	0
47-2031	Carpenters	2	5,253	6,026	14.7%	1,546
47-2041	Carpet Installers	2	318	382	20.1%	144
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	2	77	67	-13.0%	7
47-2044	Tile and Marble Setters	2	144	180	25.0%	61
47-2051	Cement Masons and Concrete Finishers	2	824	920	11.7%	194
47-2053	Terrazzo Workers and Finishers	2	16	14	-12.5%	0
47-2061	Construction Laborers	2	4,986	6,391	28.2%	2,612
47-2071	Paving, Surfacing, and Tamping Equipment Operators	2	364	410	12.6%	122
47-2072	Pile-Driver Operators	2	8	8	0.0%	1
47-2073	Operating Engineers and Other Construction Equipment Operators	2	2,767	3,034	9.6%	1,068
47-2081	Drywall and Ceiling Tile Installers	2	302	263	-12.9%	24
47-2082	Tapers	2	92	101	9.8%	24
47-2111	Electricians	3	3,408	3,923	15.1%	1,443
47-2121	Glaziers	2	229	249	8.7%	95

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
47-2131	Insulation Workers, Floor, Ceiling, and Wall	2	111	129	16.2%	40
47-2132	Insulation Workers, Mechanical	2	66	103	56.1%	46
47-2141	Painters, Construction and Maintenance	2	964	1,037	7.6%	276
47-2142	Paperhangers	2	28	25	-10.7%	1
47-2151	Pipelayers	2	189	186	-1.6%	45
47-2152	Plumbers, Pipefitters, and Steamfitters	3	2,459	2,490	1.3%	479
47-2161	Plasterers and Stucco Masons	1	70	80	14.3%	10
47-2171	Reinforcing Iron and Rebar Workers	2	45	45	0.0%	8
47-2181	Roofers	2	642	601	-6.4%	207
47-2211	Sheet Metal Workers	2	683	670	-1.9%	133
47-2221	Structural Iron and Steel Workers	2	279	289	3.6%	116
47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	2	157	138	-12.1%	2
47-3012	Helpers--Carpenters	2	153	186	21.6%	54
47-3013	Helpers--Electricians	2	231	298	29.0%	111
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	1	34	31	-8.8%	4
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	2	182	163	-10.4%	10
47-3016	Helpers--Roofers	2	60	76	26.7%	30
47-3019	Helpers, Construction Trades, All Other	2	50	51	2.0%	6
47-4011	Construction and Building Inspectors	3	1,197	1,488	24.3%	621
47-4021	Elevator Installers and Repairers	3	61	53	-13.1%	13
47-4031	Fence Erectors	2	131	145	10.7%	50
47-4041	Hazardous Materials Removal Workers	3	279	295	5.7%	115
47-4051	Highway Maintenance Workers	2	1,406	1,390	-1.1%	255
47-4061	Rail-Track Laying and Maintenance Equipment Operators	2	62	74	19.4%	24
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	1	198	188	-5.1%	53
47-4099	Construction and Related Workers, All Other	3	67	59	-11.9%	2
47-5011	Derrick Operators, Oil and Gas	1	90	88	-2.2%	47
47-5012	Rotary Drill Operators, Oil and Gas	2	406	448	10.3%	342
47-5013	Service Unit Operators, Oil, Gas, and Mining	2	199	206	3.5%	135
47-5021	Earth Drillers, Except Oil and Gas	2	157	177	12.7%	90
47-5031	Explosives Workers, Ordnance Handling Experts, and Blasters	2	17	17	0.0%	4
47-5041	Continuous Mining Machine Operators	1	92	87	-5.4%	37
47-5042	Mine Cutting and Channeling Machine Operators	2	75	63	-16.0%	19
47-5049	Mining Machine Operators, All Other	2	25	28	12.0%	10
47-5051	Rock Splitters, Quarry	1	39	36	-7.7%	12

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
47-5061	Roof Bolters, Mining	2	108	110	1.9%	56
47-5071	Roustabouts, Oil and Gas	1	350	424	21.1%	237
47-5081	Helpers--Extraction Workers	2	237	242	2.1%	124
47-5099	Extraction Workers, All Other	2	26	23	-11.5%	5
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	3	2,382	2,643	11.0%	938
49-2011	Computer, Automated Teller, and Office Machine Repairers	3	741	803	8.4%	296
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairers	3	38	31	-18.4%	2
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	3	962	931	-3.2%	215
49-2091	Avionics Technicians	3	54	61	13.0%	25
49-2092	Electric Motor, Power Tool, and Related Repairers	3	107	106	-0.9%	30
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	3	20	18	-10.0%	3
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	3	511	434	-15.1%	67
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	3	105	112	6.7%	36
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	3	22	24	9.1%	7
49-2097	Electronic Home Entertainment Equipment Installers and Repairers	3	92	74	-19.6%	27
49-2098	Security and Fire Alarm Systems Installers	3	646	609	-5.7%	122
49-3011	Aircraft Mechanics and Service Technicians	3	525	445	-15.2%	143
49-3021	Automotive Body and Related Repairers	2	1,001	1,173	17.2%	435
49-3022	Automotive Glass Installers and Repairers	2	138	159	15.2%	65
49-3023	Automotive Service Technicians and Mechanics	3	4,886	5,411	10.7%	1,945
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	3	1,566	1,887	20.5%	719
49-3041	Farm Equipment Mechanics and Service Technicians	3	86	73	-15.1%	21
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	3	563	602	6.9%	233
49-3043	Rail Car Repairers	2	130	133	2.3%	58
49-3051	Motorboat Mechanics and Service Technicians	3	26	10	-61.5%	2
49-3052	Motorcycle Mechanics	3	80	103	28.8%	51
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	2	167	182	9.0%	58
49-3091	Bicycle Repairers	2	72	59	-18.1%	20
49-3092	Recreational Vehicle Service Technicians	2	28	26	-7.1%	10
49-3093	Tire Repairers and Changers	2	369	333	-9.8%	111
49-9011	Mechanical Door Repairers	2	90	86	-4.4%	30

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	3	182	214	17.6%	99
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	3	1,750	1,985	13.4%	769
49-9031	Home Appliance Repairers	3	258	257	-0.4%	112
49-9041	Industrial Machinery Mechanics	3	2,019	2,195	8.7%	835
49-9043	Maintenance Workers, Machinery	3	658	697	5.9%	157
49-9044	Millwrights	3	201	265	31.8%	114
49-9045	Refractory Materials Repairers, Except Brickmasons	2	53	43	-18.9%	12
49-9051	Electrical Power-Line Installers and Repairers	3	447	541	21.0%	286
49-9052	Telecommunications Line Installers and Repairers	2	1,310	1,267	-3.3%	480
49-9062	Medical Equipment Repairers	3	444	560	26.1%	271
49-9063	Musical Instrument Repairers and Tuners	3	80	80	0.0%	32
49-9064	Watch Repairers	3	13	13	0.0%	3
49-9069	Precision Instrument and Equipment Repairers, All Other	3	40	31	-22.5%	4
49-9071	Maintenance and Repair Workers, General	3	9,490	9,573	0.9%	2,173
49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	2	176	158	-10.2%	30
49-9092	Commercial Divers	3	53	54	1.9%	22
49-9094	Locksmiths and Safe Repairers	2	82	79	-3.7%	21
49-9095	Manufactured Building and Mobile Home Installers	2	26	33	26.9%	18
49-9096	Riggers	2	50	63	26.0%	26
49-9098	Helpers--Installation, Maintenance, and Repair Workers	2	627	651	3.8%	223
49-9099	Installation, Maintenance, and Repair Workers, All Other	2	419	513	22.4%	160
51-1011	First-Line Supervisors of Production and Operating Workers	2	3,448	3,506	1.7%	752
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	2	15	12	-20.0%	2
51-2021	Coil Winders, Tapers, and Finishers	2	105	99	-5.7%	18
51-2022	Electrical and Electronic Equipment Assemblers	2	1,626	1,482	-8.9%	244
51-2023	Electromechanical Equipment Assemblers	2	485	370	-23.7%	8
51-2031	Engine and Other Machine Assemblers	2	265	216	-18.5%	51
51-2041	Structural Metal Fabricators and Fitters	3	603	620	2.8%	315
51-2091	Fiberglass Laminators and Fabricators	2	26	27	3.8%	9
51-2092	Team Assemblers	2	3,846	3,667	-4.7%	713
51-2099	Assemblers and Fabricators, All Other	2	657	827	25.9%	290
51-3011	Bakers	2	1,177	1,124	-4.5%	321
51-3021	Butchers and Meat Cutters	2	671	543	-19.1%	70

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-3022	Meat, Poultry, and Fish Cutters and Trimmers	1	154	123	-20.1%	14
51-3023	Slaughterers and Meat Packers	1	67	58	-13.4%	17
51-3091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	2	25	27	8.0%	11
51-3092	Food Batchmakers	2	463	475	2.6%	208
51-3093	Food Cooking Machine Operators and Tenders	2	124	134	8.1%	51
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	3	1,214	1,500	23.6%	709
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	3	160	158	-1.3%	48
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	2	572	571	-0.2%	206
51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	2	450	451	0.2%	161
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	2	629	511	-18.8%	87
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	2	1,429	1,367	-4.3%	214
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	226	148	-34.5%	10
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	779	804	3.2%	328
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	440	415	-5.7%	135
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	3	222	219	-1.4%	75
51-4041	Machinists	3	2,857	3,000	5.0%	985
51-4051	Metal-Refining Furnace Operators and Tenders	2	260	228	-12.3%	46
51-4052	Pourers and Casters, Metal	2	231	224	-3.0%	83
51-4061	Model Makers, Metal and Plastic	3	95	76	-20.0%	6
51-4062	Patternmakers, Metal and Plastic	3	40	47	17.5%	24
51-4071	Foundry Mold and Coremakers	2	82	76	-7.3%	20
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	2	735	716	-2.6%	168
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	1,051	1,152	9.6%	472
51-4111	Tool and Die Makers	3	809	839	3.7%	181
51-4121	Welders, Cutters, Solderers, and Brazers	3	2,339	2,713	16.0%	1,135
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	2	287	296	3.1%	121
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	2	287	241	-16.0%	42
51-4192	Layout Workers, Metal and Plastic	2	45	44	-2.2%	10

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	2	354	354	0.0%	123
51-4194	Tool Grinders, Filers, and Sharpeners	2	102	85	-16.7%	14
51-4199	Metal Workers and Plastic Workers, All Other	2	194	208	7.2%	56
51-5111	Prepress Technicians and Workers	3	201	118	-41.3%	8
51-5112	Printing Press Operators	3	1,022	814	-20.4%	126
51-5113	Print Binding and Finishing Workers	2	333	276	-17.1%	59
51-6011	Laundry and Dry-Cleaning Workers	1	1,119	1,184	5.8%	465
51-6021	Pressers, Textile, Garment, and Related Materials	1	191	194	1.6%	45
51-6031	Sewing Machine Operators	1	416	415	-0.2%	197
51-6041	Shoe and Leather Workers and Repairers	2	10	14	40.0%	12
51-6042	Shoe Machine Operators and Tenders	2	11	9	-18.2%	10
51-6051	Sewers, Hand	2	321	380	18.4%	94
51-6052	Tailors, Dressmakers, and Custom Sewers	3	146	171	17.1%	63
51-6061	Textile Bleaching and Dyeing Machine Operators and Tenders	2	7	5	-28.6%	4
51-6062	Textile Cutting Machine Setters, Operators, and Tenders	2	104	106	1.9%	65
51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	2	60	49	-18.3%	33
51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	2	22	12	-45.5%	4
51-6091	Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	2	34	24	-29.4%	3
51-6092	Fabric and Apparel Patternmakers	3	11	12	9.1%	3
51-6093	Upholsterers	2	105	117	11.4%	65
51-6099	Textile, Apparel, and Furnishings Workers, All Other	2	25	26	4.0%	6
51-7011	Cabinetmakers and Bench Carpenters	2	235	268	14.0%	130
51-7021	Furniture Finishers	1	64	78	21.9%	51
51-7031	Model Makers, Wood	3	9	10	11.1%	2
51-7032	Patternmakers, Wood	3	9	12	33.3%	4
51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	2	325	514	58.2%	336
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	2	377	555	47.2%	264
51-7099	Woodworkers, All Other	2	6	6	0.0%	0
51-8011	Nuclear Power Reactor Operators	3	33	35	6.1%	16
51-8012	Power Distributors and Dispatchers	3	79	88	11.4%	40
51-8013	Power Plant Operators	2	202	203	0.5%	95
51-8021	Stationary Engineers and Boiler Operators	3	1,011	1,133	12.1%	559

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-8031	Water and Wastewater Treatment Plant and System Operators	3	987	1,046	6.0%	475
51-8091	Chemical Plant and System Operators	2	242	207	-14.5%	112
51-8092	Gas Plant Operators	3	266	303	13.9%	183
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	2	331	367	10.9%	212
51-8099	Plant and System Operators, All Other	2	88	84	-4.5%	34
51-9011	Chemical Equipment Operators and Tenders	2	470	454	-3.4%	238
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	2	130	126	-3.1%	56
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	2	172	174	1.2%	72
51-9022	Grinding and Polishing Workers, Hand	1	143	157	9.8%	67
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	2	676	700	3.6%	287
51-9031	Cutters and Trimmers, Hand	2	22	19	-13.6%	3
51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders	2	206	162	-21.4%	18
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	2	390	381	-2.3%	146
51-9051	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	2	158	127	-19.6%	36
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	2	2,595	2,588	-0.3%	667
51-9071	Jewelers and Precious Stone and Metal Workers	3	73	56	-23.3%	3
51-9081	Dental Laboratory Technicians	2	200	218	9.0%	127
51-9082	Medical Appliance Technicians	3	188	162	-13.8%	68
51-9083	Ophthalmic Laboratory Technicians	2	205	191	-6.8%	77
51-9111	Packaging and Filling Machine Operators and Tenders	2	1,487	1,422	-4.4%	390
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	2	476	601	26.3%	251
51-9122	Painters, Transportation Equipment	2	277	270	-2.5%	74
51-9123	Painting, Coating, and Decorating Workers	2	94	95	1.1%	28
51-9141	Semiconductor Processors	2	73	70	-4.1%	30
51-9151	Photographic Process Workers and Processing Machine Operators	2	176	125	-29.0%	19
51-9191	Adhesive Bonding Machine Operators and Tenders	2	20	21	5.0%	7
51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	2	46	53	15.2%	20
51-9193	Cooling and Freezing Equipment Operators and Tenders	2	40	41	2.5%	15
51-9194	Etchers and Engravers	2	49	53	8.2%	20

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	2	315	329	4.4%	158
51-9196	Paper Goods Machine Setters, Operators, and Tenders	2	259	243	-6.2%	44
51-9197	Tire Builders	2	22	21	-4.5%	8
51-9198	Helpers--Production Workers	2	2,659	2,701	1.6%	720
51-9199	Production Workers, All Other	2	364	384	5.5%	112
53-1011	Aircraft Cargo Handling Supervisors	2	30	31	3.3%	9
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	2	728	822	12.9%	323
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	2	975	1,074	10.2%	389
53-2012	Commercial Pilots	3	288	335	16.3%	158
53-2021	Air Traffic Controllers	3	52	47	-9.6%	21
53-2022	Airfield Operations Specialists	3	61	57	-6.6%	29
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	2	340	438	28.8%	170
53-3021	Bus Drivers, Transit and Intercity	2	2,248	2,478	10.2%	855
53-3022	Bus Drivers, School or Special Client	2	4,512	5,101	13.1%	1,730
53-3031	Driver/Sales Workers	2	2,357	2,444	3.7%	537
53-3032	Heavy and Tractor-Trailer Truck Drivers	2	7,761	8,962	15.5%	2,835
53-3033	Light Truck or Delivery Services Drivers	2	4,599	4,454	-3.2%	727
53-3041	Taxi Drivers and Chauffeurs	1	1,142	1,217	6.6%	305
53-3099	Motor Vehicle Operators, All Other	2	141	172	22.0%	67
53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers	2	52	43	-17.3%	6
53-5011	Sailors and Marine Oilers	2	76	68	-10.5%	40
53-5021	Captains, Mates, and Pilots of Water Vessels	3	82	71	-13.4%	40
53-6011	Bridge and Lock Tenders	1	15	12	-20.0%	4
53-6021	Parking Lot Attendants	2	958	1,235	28.9%	835
53-6031	Automotive and Watercraft Service Attendants	1	349	392	12.3%	155
53-6041	Traffic Technicians	3	7	8	14.3%	3
53-6051	Transportation Inspectors	3	74	67	-9.5%	20
53-6061	Transportation Attendants, Except Flight Attendants	2	146	132	-9.6%	23
53-6099	Transportation Workers, All Other	2	33	36	9.1%	17
53-7011	Conveyor Operators and Tenders	2	123	115	-6.5%	37
53-7021	Crane and Tower Operators	3	294	329	11.9%	151
53-7032	Excavating and Loading Machine and Dragline Operators	2	215	214	-0.5%	34
53-7033	Loading Machine Operators, Underground Mining	2	29	25	-13.8%	3
53-7051	Industrial Truck and Tractor Operators	2	2,297	2,615	13.8%	1,071

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
53-7061	Cleaners of Vehicles and Equipment	2	1,701	1,871	10.0%	722
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	2	12,769	14,935	17.0%	6,768
53-7063	Machine Feeders and Offbearers	2	505	480	-5.0%	105
53-7064	Packers and Packagers, Hand	2	3,154	3,503	11.1%	1,342
53-7071	Gas Compressor and Gas Pumping Station Operators	2	107	123	15.0%	80
53-7072	Pump Operators, Except Wellhead Pumpers	2	144	138	-4.2%	76
53-7073	Wellhead Pumpers	2	234	273	16.7%	213
53-7081	Refuse and Recyclable Material Collectors	2	583	689	18.2%	293
53-7111	Mine Shuttle Car Operators	2	49	50	2.0%	25
53-7121	Tank Car, Truck, and Ship Loaders	2	113	103	-8.8%	34
53-7199	Material Moving Workers, All Other	2	26	32	23.1%	14

Source: Bureau of Labor Statistics, Occupational Employment Statistics (OES), O*NET OnLine, Pennsylvania Department of Labor & Industry, Oxford Economics Projections

ABOUT THE STATE SYSTEM'S GAP ANALYSIS PROJECT

The Workforce Characteristics Report was produced through a multi-organization collaboration that consisted of Pennsylvania's State System of Higher Education Office of the Chancellor, Oxford Economics USA Inc., and Georgetown University's Center on Education and the Workforce. Oxford Economics completed the analysis and research work for this report, under the guidance of The State System's Office of the Chancellor, the team sought feedback and insight from senior administration and representatives from each of the 14 State System Universities. The team also drew on insight and feedback from subject matter experts involved in labor market intelligence and education program alignment.

The modeling and results presented here are based on information provided by third parties, upon which Oxford Economics has relied in producing its report and forecasts in good faith. Any subsequent revision or update of those data will affect the assessments and projections shown.

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