



Lock Haven 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.<sup>1</sup> 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.”<sup>2</sup> 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

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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.

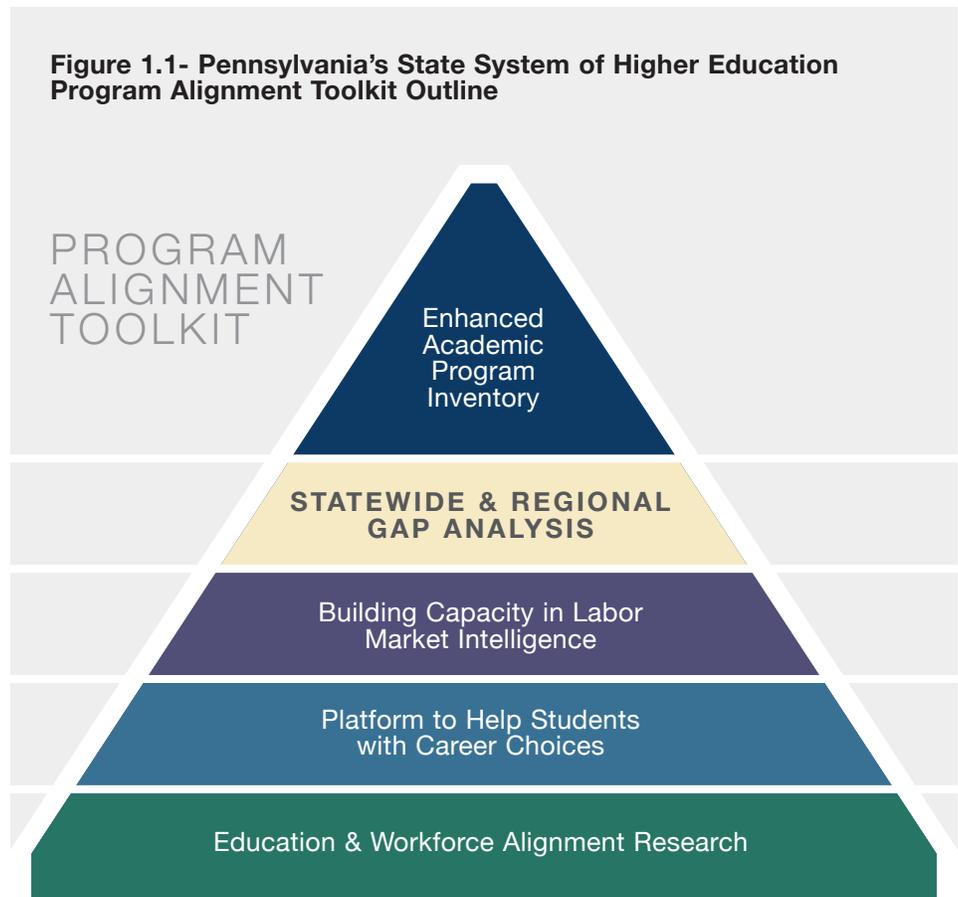
2 Source: The State System’s Economic and Employment Impact on the Commonwealth of Pennsylvania – released April 15, 2015.

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



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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.<sup>3</sup> 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

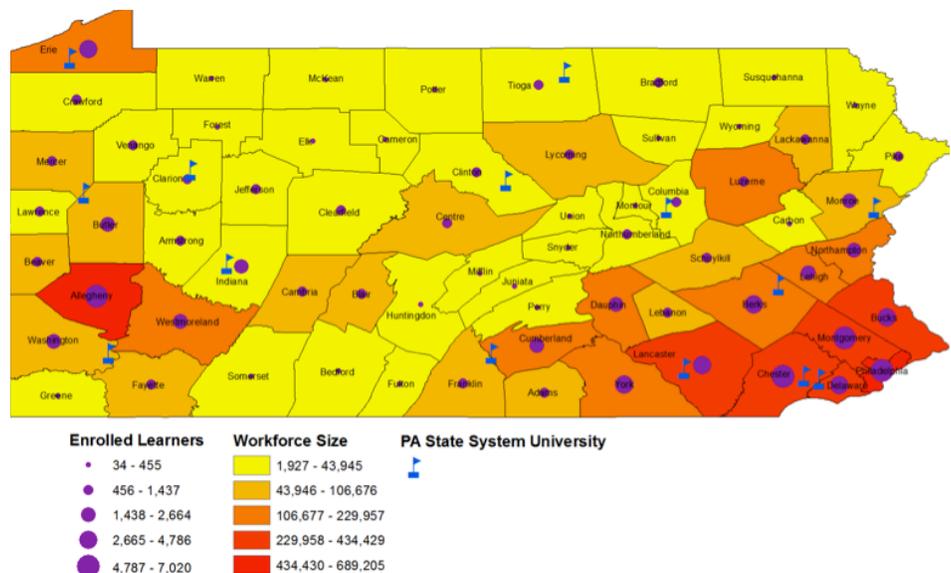
<sup>3</sup> Based on Fall 2013 enrollment.

**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**

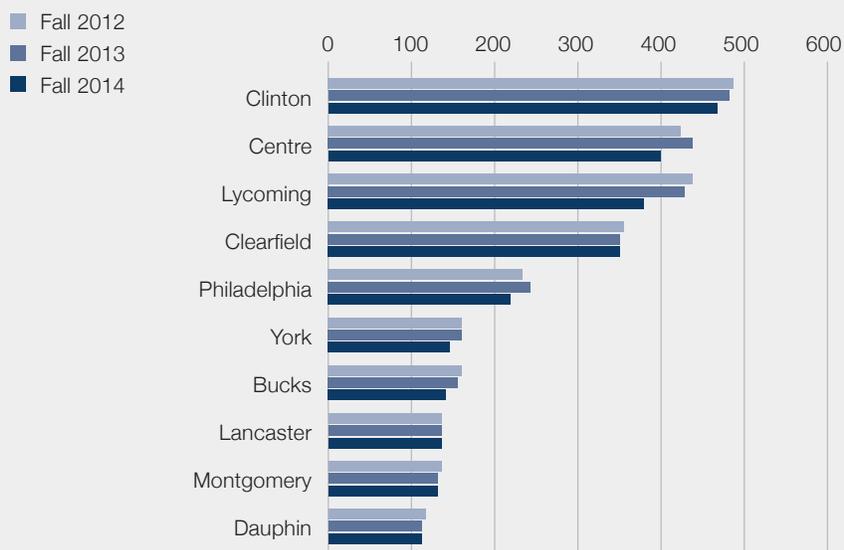


Source: Pennsylvania's State System of Higher Education, Oxford Economics mapping

## 2.1 Lock Haven University's Learner Origin

Lock Haven 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 southeast region. The top 10 learner enrollment counties account for about 55% of resident enrollment in Lock Haven 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 – Lock Haven University Learner Enrollment by County**



Source: Pennsylvania's State System of Higher Education

**Table 2.3 Lock Haven University Learner Enrollment by County**

County	Fall 2012	Fall 2013	Fall 2014
Clinton	489	483	469
Centre	426	443	403
Lycoming	439	430	384
Clearfield	357	355	354
Philadelphia	237	245	220
York	161	163	148
Bucks	160	156	140
Lancaster	136	139	139
Montgomery	136	133	131
Dauphin	117	115	113

Source: Pennsylvania's State System of Higher Education

### 3. SUMMARY OF LOCK HAVEN UNIVERSITY WORKFORCE REGION

Located in Clinton County, Pennsylvania, Lock Haven University (LHU) supports the central region of Pennsylvania’s State System of Higher Education. It provides a breadth of degree programs and serves a student population of about 5,200 learners, of which about 89% are Pennsylvania residents.<sup>4</sup>

The following sections outline the supporting data used to select LHU’s Pennsylvania workforce region—defined as Clinton, Lycoming, Centre, Clearfield, Cameron, Juniata, and Mifflin 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.

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<sup>4</sup> Based on Average Fall Enrollment 2012-2014.

### 3.1 Defining Lock Haven 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.<sup>5</sup>

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.<sup>6</sup>

When taken in the context of regional economic activity, about 52% 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, 85% 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- Lock Haven 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
Clinton, Lycoming, Centre	0.74	0.73	0.53	0.86	0.28
Clinton, Lycoming, Centre, Clearfield, Cameron, Juniata, Mifflin	0.76	0.75	0.52	0.85	0.38

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

The majority of LHU workforce region residents also work in the region (76%). This reflects a very strong centralized connection between workers and economic activity in a region that has 191,000 jobs. Additionally, learners

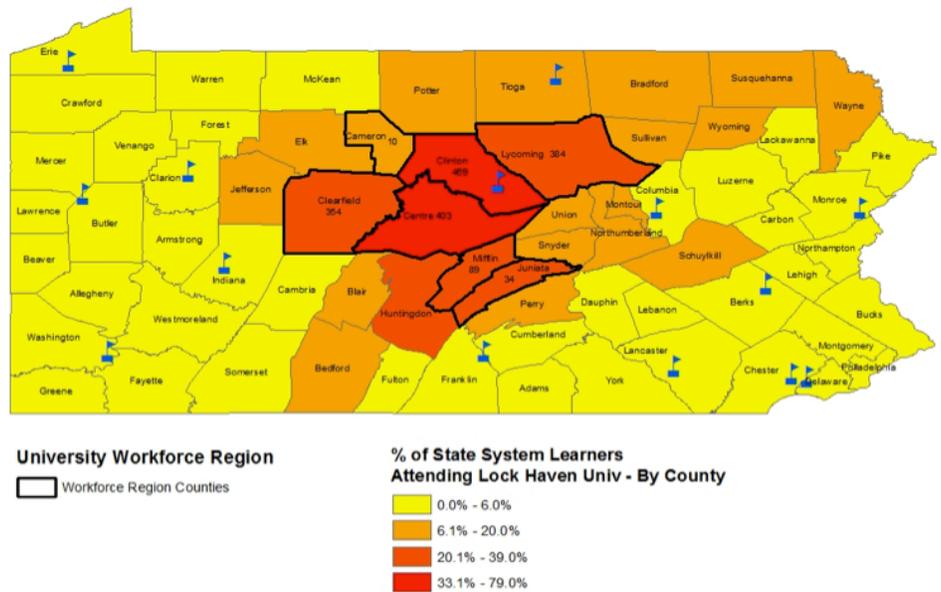
5 Bureau of Labor Statistics: Labor Market Area.

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.

at LHU originate from nearby surrounding counties. When looking at the percentage of learners attending State System universities, 38% (the capture rate) of State System learners in LHU’s workforce region attend LHU.

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

**Figure 3.1 – Lock Haven 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 LOCK HAVEN 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 Lock Haven 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 Lock Haven University's workforce region and Pennsylvania.

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

<b>Workforce Characteristic</b>	<b>LHU Workforce Region</b>	<b>Pennsylvania</b>	<b>Source</b>
Population	670,000	12.7 million	2009-2013 American Community Survey 5-Year Estimates
Employed	191,000	5.6 million	2014 BLS Quarterly Census of Employment and Wages
Unemployed	13,000	370,000	2014 BLS Local Area Unemployment Statistics
Unemployment Rate	5.7%	5.8%	2014 BLS Local Area Unemployment Statistics
Poverty Rate	15.8%	13.7%	2013 Census Small Area Income and Poverty Estimates
Business Establishments	11,400	347,000	2014 BLS Quarterly Census of Employment and Wages
Educational Attainment (25+ Population with Bachelor's or Higher)	20.7%	27.4%	2009-2013 American Community Survey 5-Year Estimates
Bachelor's or Higher Completions	15,700	137,000	Integrated Postsecondary Education Data System 3-Year Average AY2010-11 to AY2012-13
Projected Jobs 2024	209,000	6.2 million	Oxford Economics Projections 2024

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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 Lock Haven 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.

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

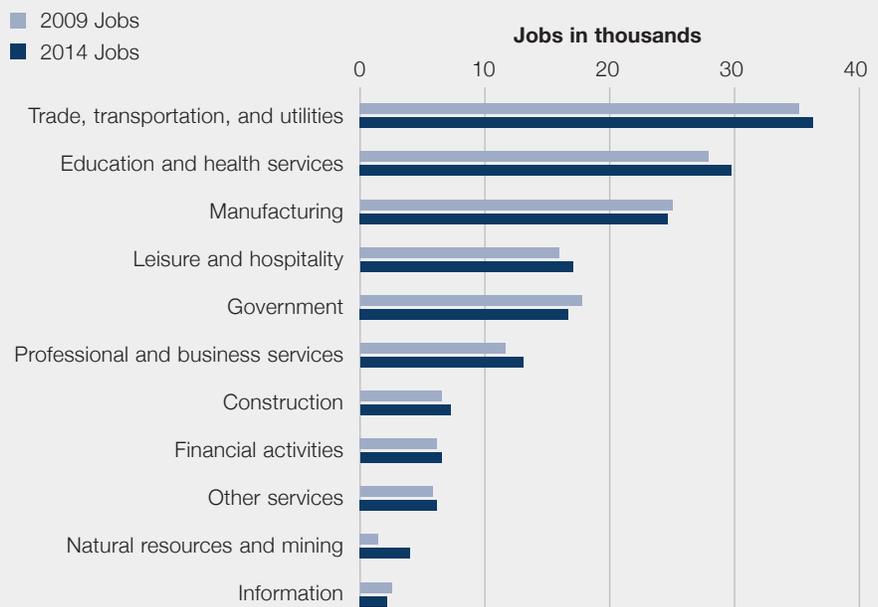
Oxford Economics, a premier economic modeling and consulting firm, produced the projections. By updating projections, Oxford Economics provided insight into new job growth which better measures occupational demand over the next 10 years.

The next section provides an analysis of industries in Lock Haven 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 LOCK HAVEN UNIVERSITY'S WORKFORCE REGION

Over the five years of 2009 to 2014, Lock Haven University's (LHU) workforce region experienced job growth in many service-based sectors. Sectors such as education and health services; professional and business services; trade, transportation, and utilities added a combined 4,000 new jobs between 2009 and 2014. Natural resources and mining experienced 168% growth, adding nearly 2,400 new jobs during this time period. Government experienced the largest nominal employment loss, while other job losses occurred within information and manufacturing. Overall, the economy added about 6,600 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 – Lock Haven University's Workforce Region Industry Employment, 2009-2014**



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

**Table 5.1 – Lock Haven University’s Workforce Region Industry Employment, 2009-2014**

Industry Employment	2009 Jobs	2014 Jobs	Absolute Change 09-14	% Change 09-14
<b>Total, all industries</b>	<b>180,420</b>	<b>187,030</b>	<b>6,610</b>	<b>3.7%</b>
Trade, transportation, and utilities	35,167	36,180	1,013	2.9%
Education and health services	27,953	29,789	1,836	6.6%
Manufacturing	25,153	24,544	-609	-2.4%
Leisure and hospitality	16,081	16,845	764	4.8%
Government	17,657	16,589	-1,068	-6.0%
Professional and business services	11,670	12,855	1,185	10.2%
Construction	6,693	7,380	687	10.3%
Financial activities	6,330	6,477	147	2.3%
Other services	5,835	6,278	443	7.6%
Natural resources and mining	1,426	3,803	2,377	166.7%
Information	2,497	2,126	-371	-14.9%

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

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

## 5.1 Top Employers in Lock Haven University’s Workforce Region

Amongst the top employers within LHU’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 as several manufacturing and mining establishments.

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

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

**Table 5.2: Top Employers in Lock Haven University's Workforce Region**

<b>Establishment Name</b>
AC Products Inc.
Cameron County School District
DuBois Area School District
DuBois Regional Medical Center
Empire Kosher Poultry
Emporium Hardwoods
First Quality Products
Geisinger-Lewistown Hospital
GKN Sinter Metals
Glenn O. Hawbaker
Juniata County School District
Keystone Central School District
Mifflin County School District
Mount Nittany Medical Center
Pennsylvania State System of Higher Education
Pennsylvania College of Technology
Pennsylvania State University
Standard Steel
State College Area School District
State Government
Susquehanna Health System
Trinity Plastics
Truck-Lite
Wal-Mart
Williamsport Area School District

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

## 6. OCCUPATIONS IN LOCK HAVEN 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 LHU'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.<sup>7</sup>

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.<sup>8</sup>

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

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

<sup>8</sup> <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 Lock Haven 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 LHU'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.<sup>9</sup>

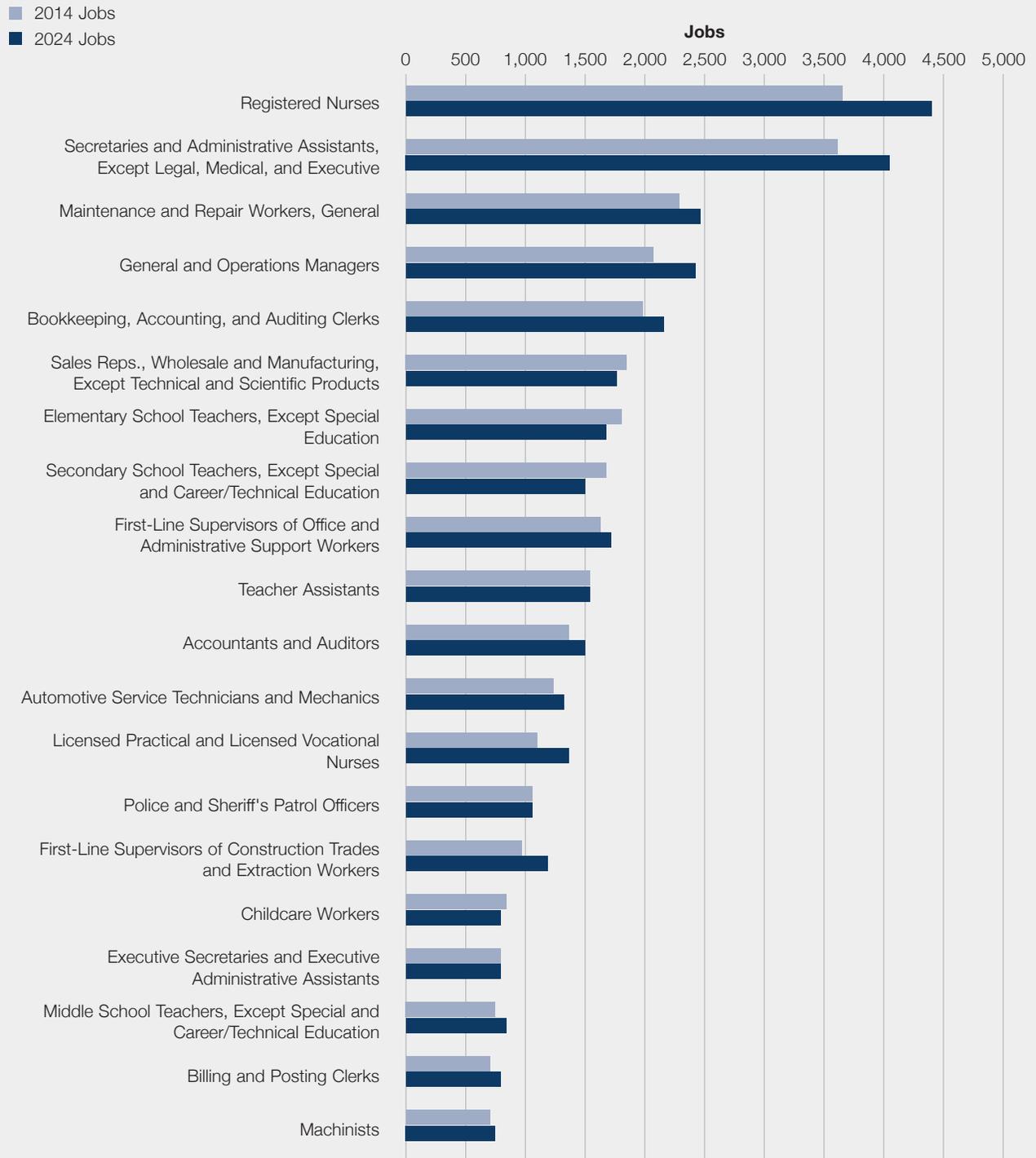
An important aspect to distinguish skilled occupations, in this sub-section, is that post-secondary education is not necessarily a pre-requisite for employment. However, a high percentage of those employed in the skilled occupation have a post-secondary education.

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.

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<sup>9</sup> 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 LHU’s Workforce Region and Projections, 2014-2024**



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

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

<b>SOC Code</b>	<b>Occupation Title</b>	<b>2014 Jobs</b>	<b>2024 Jobs</b>	<b>10-year New and Replacement Demand</b>
29-1141	Registered Nurses	3,640	4,406	1,504
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	3,622	4,078	927
49-9071	Maintenance and Repair Workers, General	2,292	2,465	677
11-1021	General and Operations Managers	2,080	2,410	700
43-3031	Bookkeeping, Accounting, and Auditing Clerks	2,001	2,169	366
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	1,845	1,782	366
25-2021	Elementary School Teachers, Except Special Education	1,811	1,684	328
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	1,662	1,517	421
43-1011	First-Line Supervisors of Office and Administrative Support Workers	1,648	1,741	488
25-9041	Teacher Assistants	1,544	1,532	371
13-2011	Accountants and Auditors	1,357	1,483	578
49-3023	Automotive Service Technicians and Mechanics	1,218	1,324	460
29-2061	Licensed Practical and Licensed Vocational Nurses	1,082	1,354	558
33-3051	Police and Sheriff’s Patrol Officers	1,044	1,062	393
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	989	1,209	341
39-9011	Childcare Workers	854	802	203
43-6011	Executive Secretaries and Executive Administrative Assistants	778	793	141
25-2022	Middle School Teachers, Except Special and Career/Technical Education	767	819	245
43-3021	Billing and Posting Clerks	703	790	230
51-4041	Machinists	685	749	265

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.<sup>10</sup>

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 LHU’s workforce region.

### 6.3.1 New and Replacement Demand for Key Skilled High Demand Occupations

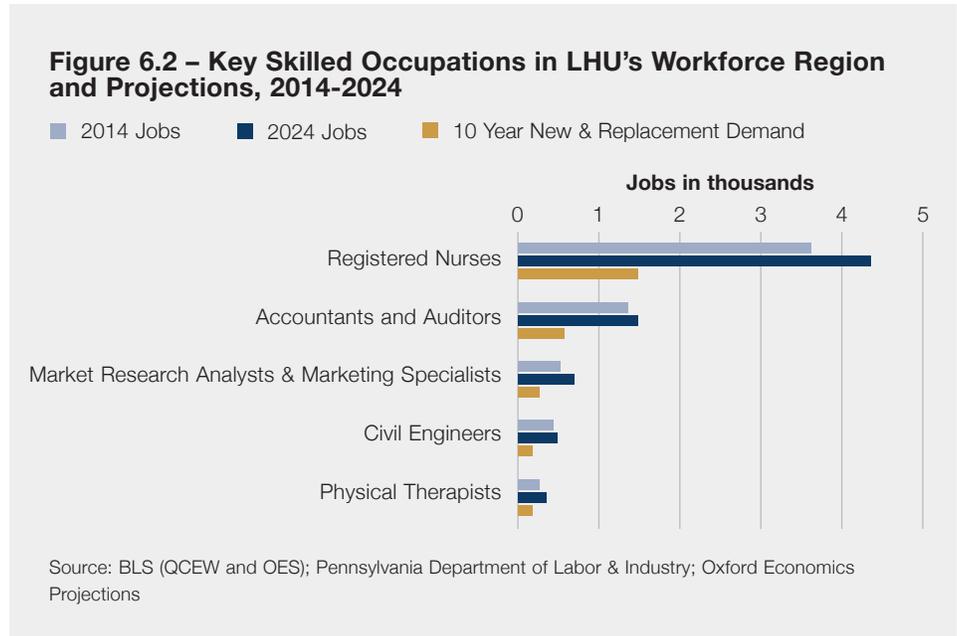
Many skilled occupations exist in Pennsylvania. Demand for new and replacement jobs for key skilled high demand occupations that tie more closely to university-level programs are typically determined by the sheer size of the employment within the occupation and the demographic characteristics of those 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

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<sup>10</sup> 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.<sup>11</sup>

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, market research analysts and marketing specialists, civil engineers, and physical therapists.<sup>12</sup>



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

SOC Code	Occupation Title	2014 Jobs	2024 Jobs	10 Year New & Replacement Demand
29-1141	Registered Nurses	3,640	4,406	1,504
13-2011	Accountants and Auditors	1,357	1,483	578
13-1161	Market Research Analysts and Marketing Specialists	537	693	242
17-2051	Civil Engineers	425	489	180
29-1123	Physical Therapists	276	355	157

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 400 unique (de-duplicated) job postings appeared in LHU's Workforce Region for the top five key skilled high demand occupations (registered nurses, accountants and auditors, market research analysts and marketing specialists, civil engineers, and physical therapists). Sizable job postings include: registered nurses (257 unique postings per month), and physical therapists (84 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**

<b>Occupation</b>	<b>Average Monthly Postings (Jul 2014 - Jul 2015)</b>	<b>Estimated Average Monthly Hires (Jul 2014 - Jul 2015)</b>	<b>Ratio of Postings to Hires</b>
Registered Nurses	257	150	1.7
Physical Therapists	84	16	5.3
Accountants and Auditors	30	67	0.4
Civil Engineers	16	19	0.8
Market Research Analysts and Marketing Specialists	7	26	0.3

Source: Economic Modeling Specialists International (EMSI)

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### **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)

### **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)

### **Civil Engineers**

*Unique skills:* structural engineering, design, construction management, structural analysis

*Certifications:* Professional Engineer (PE), Abet accredited, Chartered Engineer (C.Eng)

### **Physical Therapists**

*Unique skills:* physical therapy, rehabilitation services, injuries, plan of care

*Certifications:* accreditation, licenses to practice, current CPR certification

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 Lock Haven 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 1,893 registered nurses);
- The percent of the occupation's employment in the region that is employed in the industry (e.g. the 1,893 registered nurses employed in general medical and surgical hospitals represent nearly 52% 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 1,893 registered nurses make up about 27% of employment within general medical and surgical hospitals).

### Staffing Patterns for Registered Nurses Employed in LHU'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	1,893	52.0%	27.2%
Offices of Physicians	273	7.5%	9.4%
Home Health Care Services	267	7.3%	21.0%
Nursing Care Facilities (Skilled Nursing Facilities)	253	7.0%	9.9%
Outpatient Care Centers	243	6.7%	15.9%

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

### Staffing Patterns for Accountants and Auditors Employed in LHU'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	266	19.6%	38.6%
Management of Companies and Enterprises	71	5.2%	5.0%
Colleges, Universities, and Professional Schools	68	5.0%	0.5%
Depository Credit Intermediation	32	2.4%	1.3%
Executive, Legislative, and Other General Government Support	32	2.4%	0.8%

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

### Staffing Patterns for Physical Therapists Employed in LHU's Workforce Region

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Offices of Other Health Practitioners	120	43.4%	10.4%
General Medical and Surgical Hospitals	61	22.2%	0.9%
Home Health Care Services	37	13.4%	2.9%
Nursing Care Facilities (Skilled Nursing Facilities)	19	6.9%	0.7%
Offices of Physicians	11	4.0%	0.4%

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

### Staffing Patterns for Market Research Analysts and Marketing Specialists Employed in LHU's Workforce Region

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Other Professional, Scientific, and Technical Services	53	9.9%	4.8%
Colleges, Universities, and Professional Schools	41	7.6%	0.3%
Management, Scientific, and Technical Consulting Services	40	7.4%	6.0%
Management of Companies and Enterprises	28	5.2%	2.0%
Architectural, Engineering, and Related Services	22	4.2%	1.2%

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

## Staffing Patterns for Civil Engineers Employed in LHU's Workforce Region

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Architectural, Engineering, and Related Services	275	64.8%	14.4%
Highway, Street, and Bridge Construction	44	10.4%	1.3%
Executive, Legislative, and Other General Government Support	25	5.8%	0.6%
Nonresidential Building Construction	24	5.6%	2.5%
Justice, Public Order, and Safety Activities	19	4.4%	0.6%

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

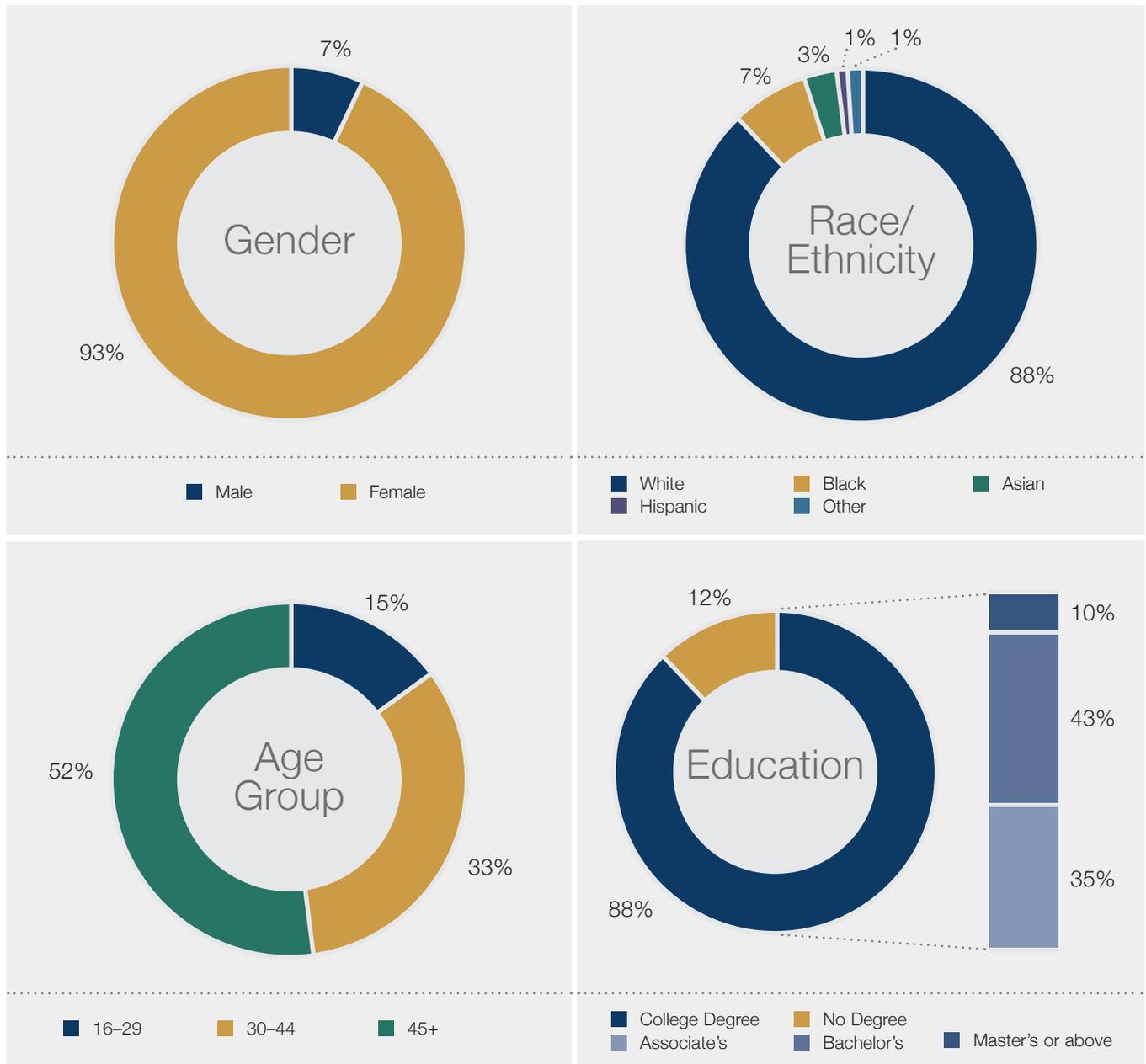
In addition to understanding the industries that employ key skilled high demand occupations, another lens to view key skilled high demand occupations focuses on the characteristics of those employed. The following section outlines the demographics for people from Pennsylvania who work in these key skilled 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 LHU's workforce region is further described in Section 7 of the report.

## REGISTERED NURSES IN PENNSYLVANIA

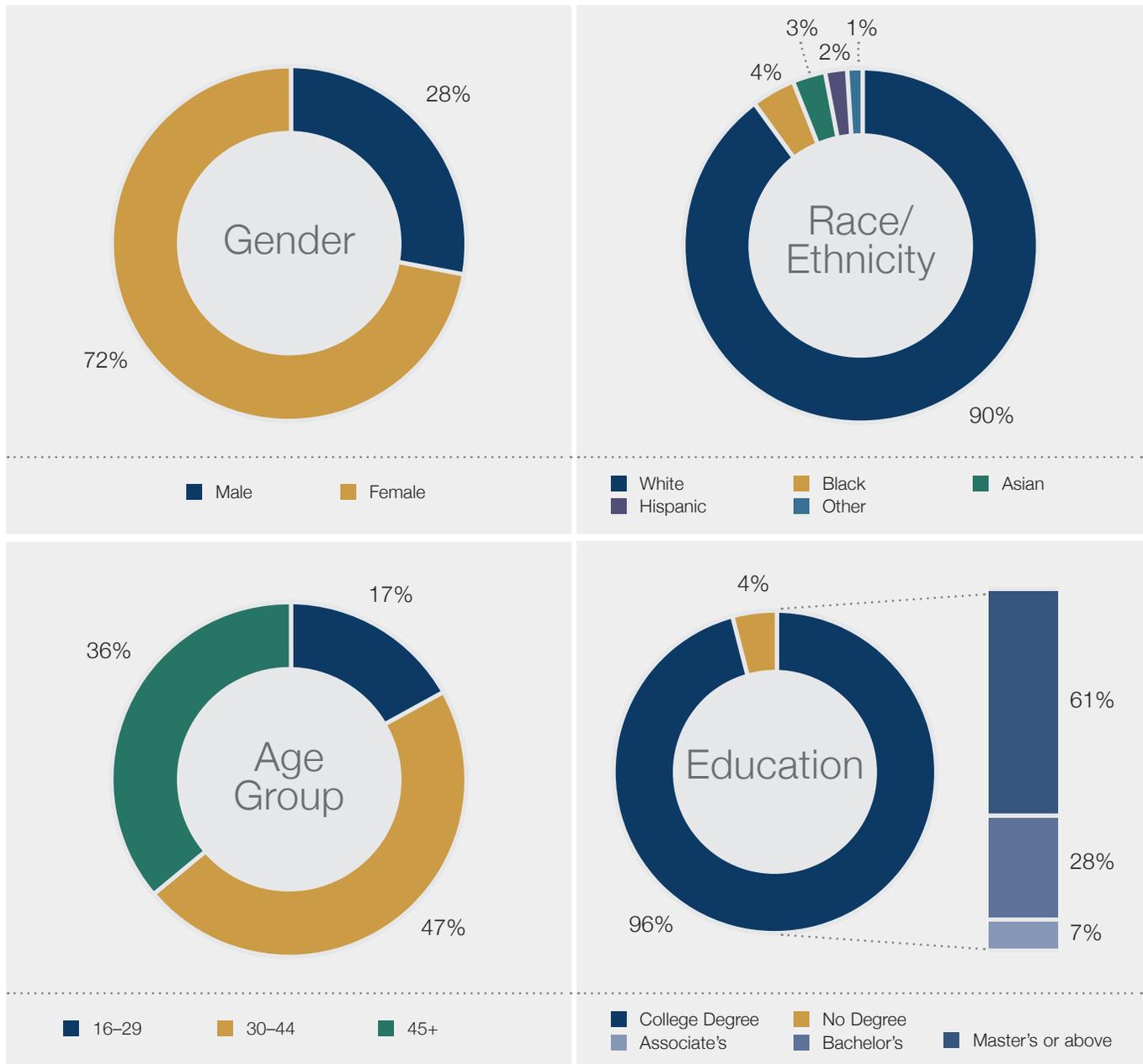
The demographic profile of registered nurses is largely dominated by white females. Age distribution indicates that registered nurses are a more mature cohort of workers (45 years and older), which can put increasing pressure on replacement jobs due to retirements over the next 10 years. Nearly 90% of 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

## PHYSICAL THERAPISTS IN PENNSYLVANIA

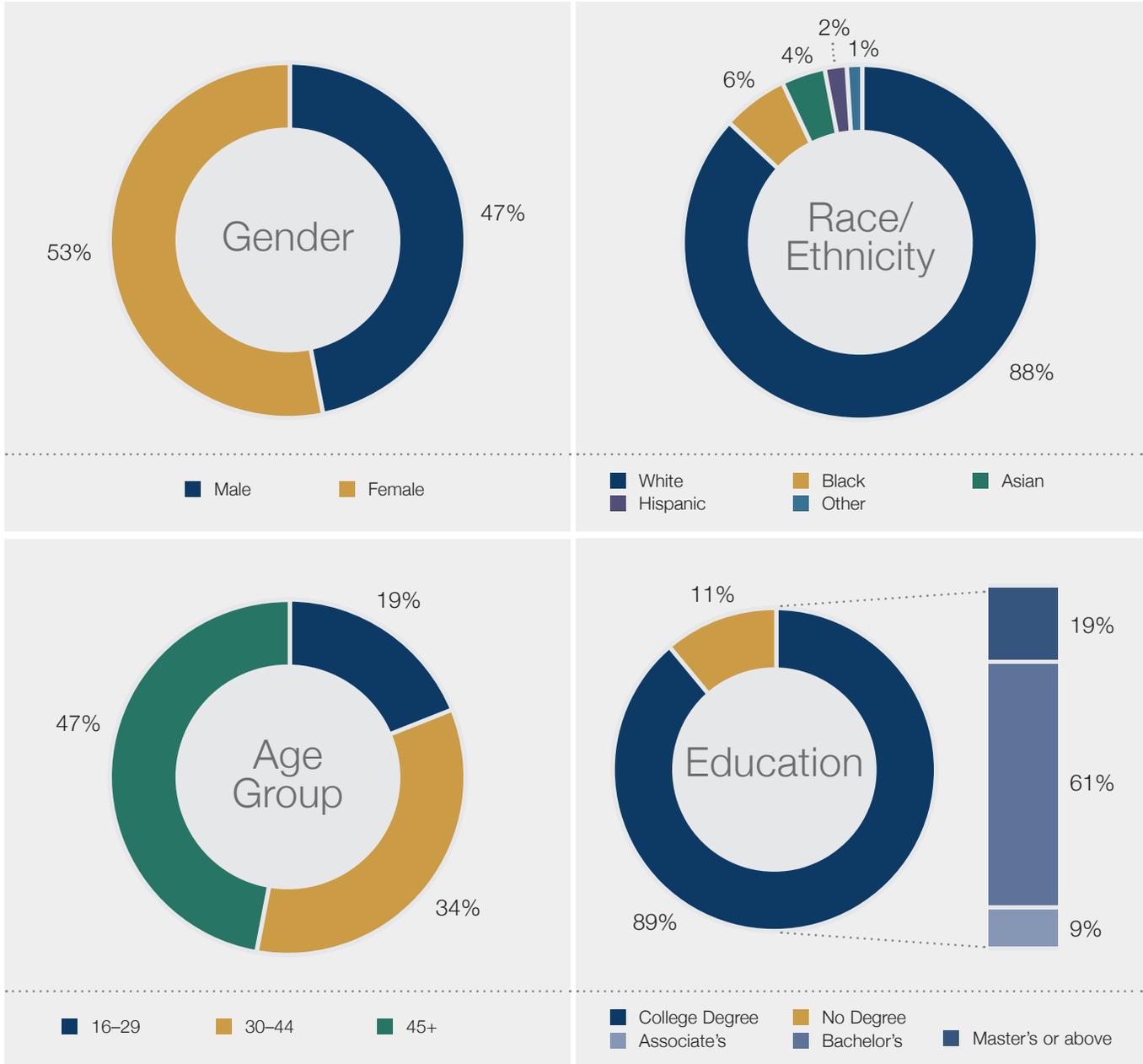
Physical therapists are typically female, though males make up almost 30% of the employed population. The majority of those in this occupation are white. The age distribution of this occupation is represented by mostly mid-career workers (ages 30-44), though older workers also make up a large portion of the occupation. Over 95% of physical therapists 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

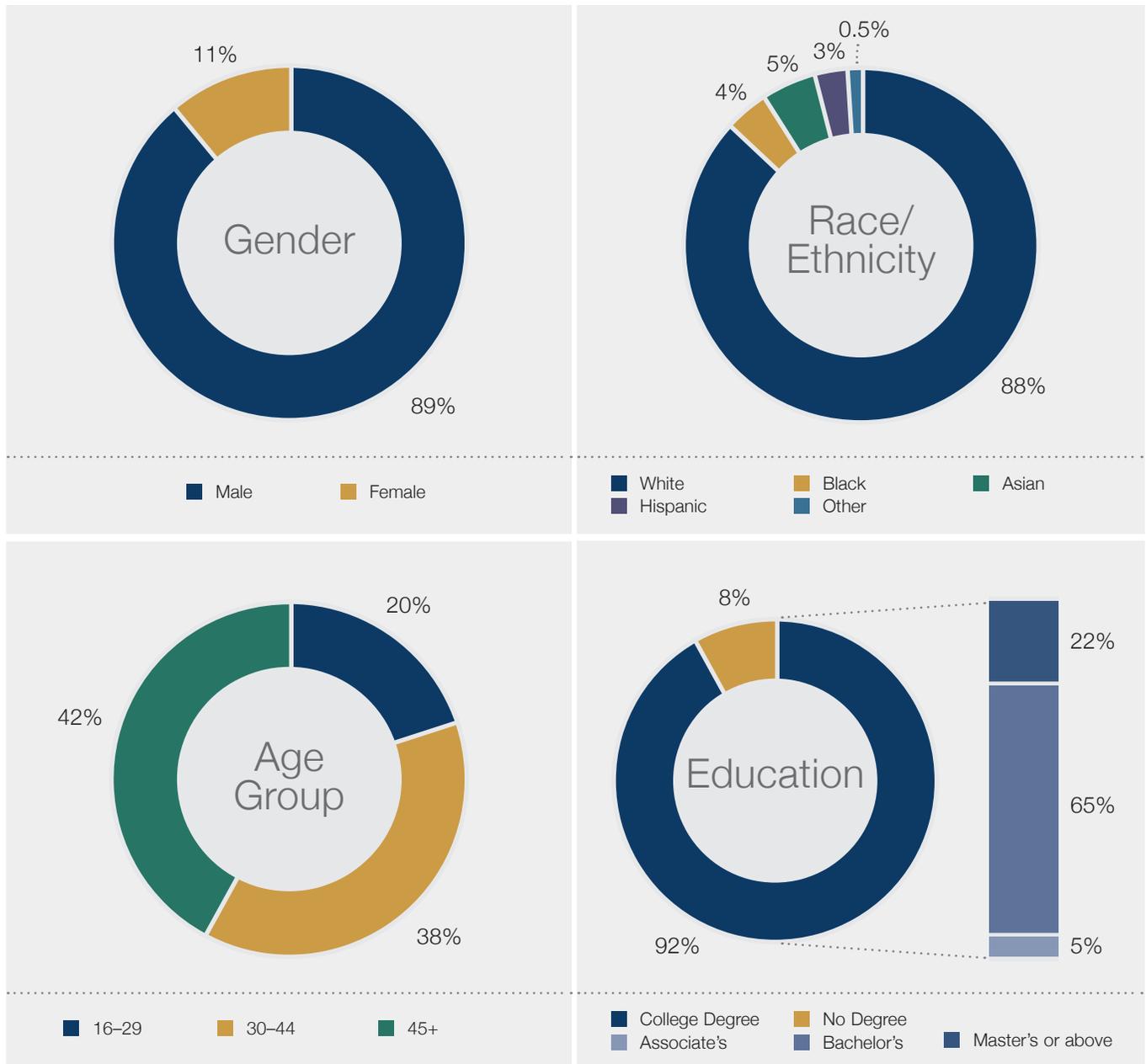
Accountants and auditors are fairly equally split between male and female, though a slightly higher percent of employed accountants and auditors are female. A high proportion of white individuals are found in the occupation. Additionally, the age distribution is fairly even between entry-level and mature 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

## CIVIL ENGINEERS IN PENNSYLVANIA

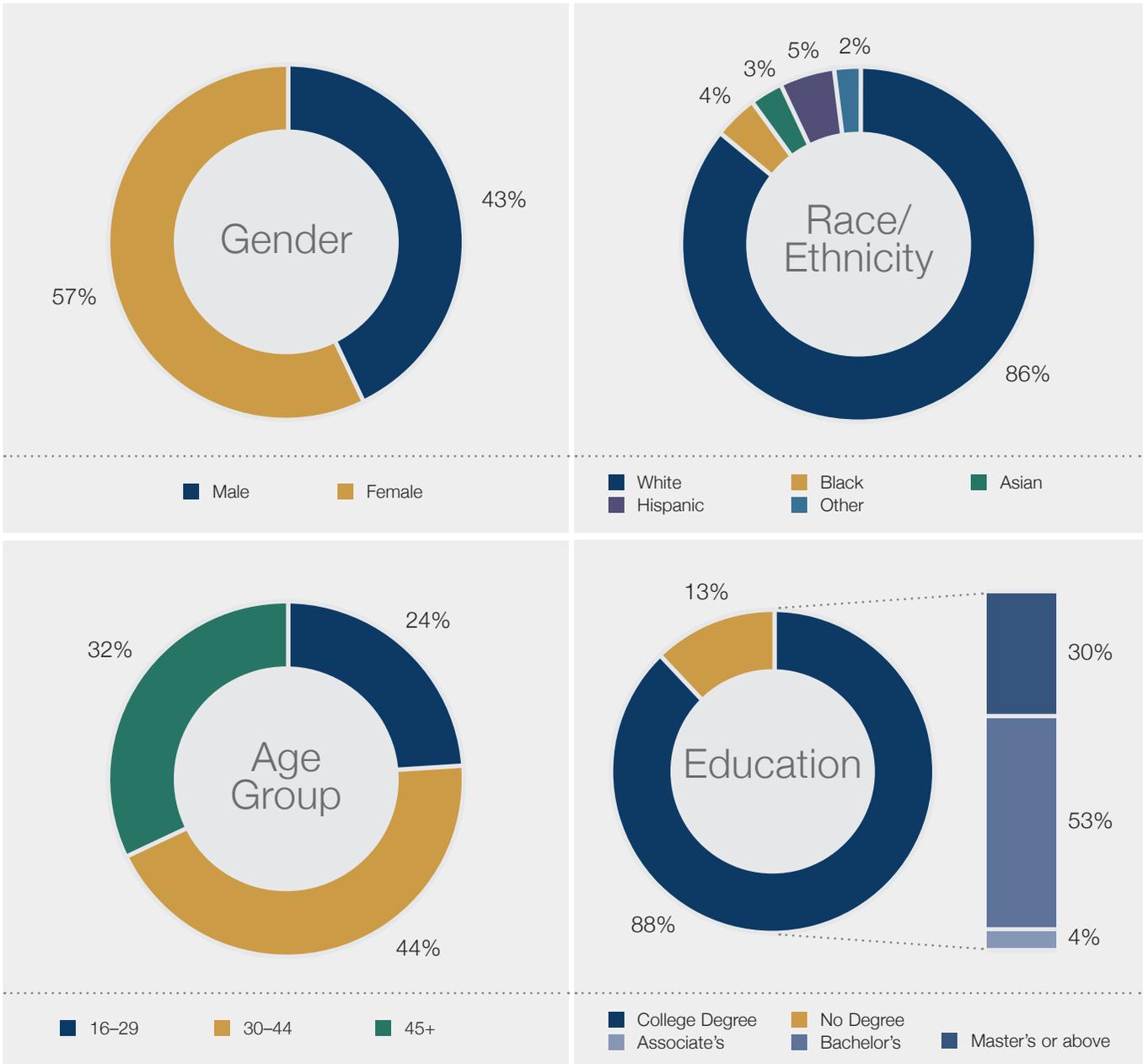
Civil engineers show a larger proportion of males in the occupation compared to females. A high proportion of white individuals are found in the occupation. Additionally, the age distribution is fairly even between entry-level and mature workers, indicating that the occupation provides good opportunities for first destinations of recent college graduates. Over 90% of civil engineers 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

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The final section of this report explores LHU'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.

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## **7. DEMOGRAPHIC AND SOCIO-ECONOMIC INDICATORS OF LOCK HAVEN UNIVERSITY'S WORKFORCE REGION**

This section provides further information about the demographic and socio-economic composition of LHU'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.

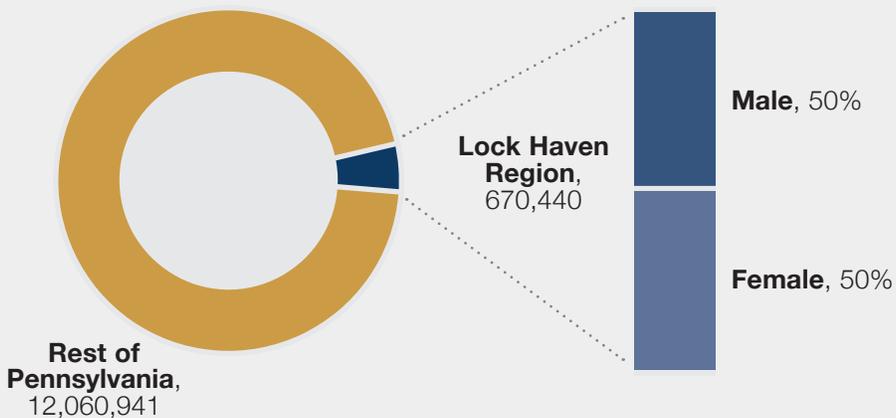
Analysis of three socio-economic indicators—education, unemployment, and poverty—also provides insight into the segment of the population that may be considered economically disadvantaged. Areas with high proportions of economically disadvantaged learners may require additional considerations in education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

### **7.1 Demographics of Lock Haven University's Workforce Region**

The LHU workforce region has a population of about 670,000 people. As shown in Figure 7.1, females and males make up an equal share of the population. 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.

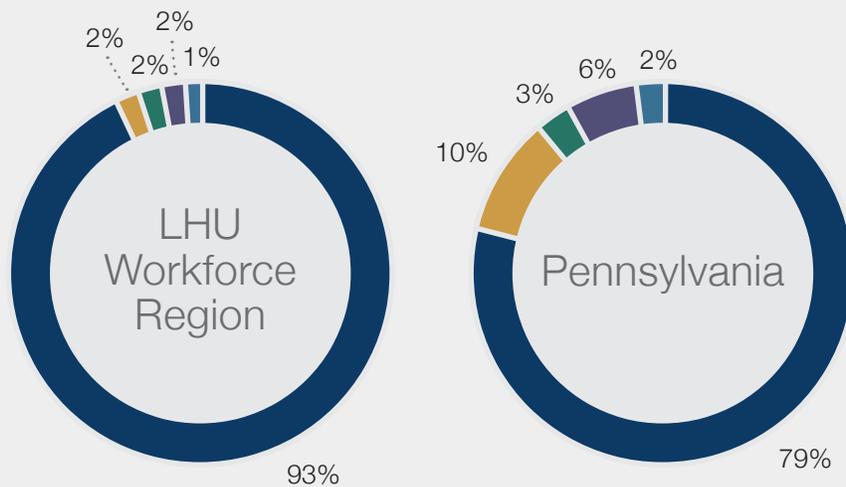
Fall 2014 data from the State System Research Office indicates that approximately 83% (90,966) of learners within the State System are traditional students—ages 18- to 22-year-old high school graduates—and 17% (18,640) are adult learners. A view of the change in population by age demographic indicates a diminishing growth rate 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 increased by only 1,700 people between 2010 and 2014—a 3% increase. Conversely, the 25-34 year old cohort increased over 5%, or 2,700 people, over the same time period. This demographic shift presents an opportunity to incorporate a broader university recruitment strategy.

**Figure 7.1 – Lock Haven University's Workforce Region Population and Gender Distribution**



Source: U.S. Census - ACS

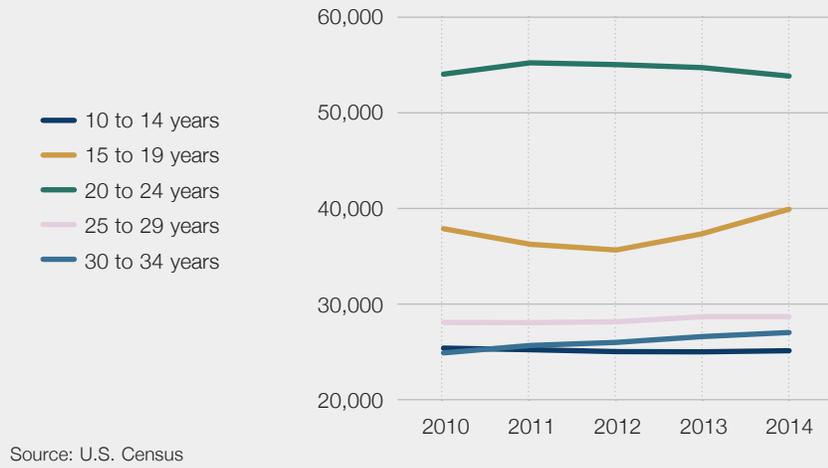
**Figure 7.2 – Lock Haven University's Workforce Region Race/Ethnicity Composition**



■ White   ■ Black   ■ Asian   ■ Hispanic   ■ Other

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

**Figure 7.3 – Lock Haven University’s Workforce Region Changes in Population of Age Cohorts**



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

## **7.2 Socio-economic Indicators of Lock Haven 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 Lock Haven University’s Workforce Region**

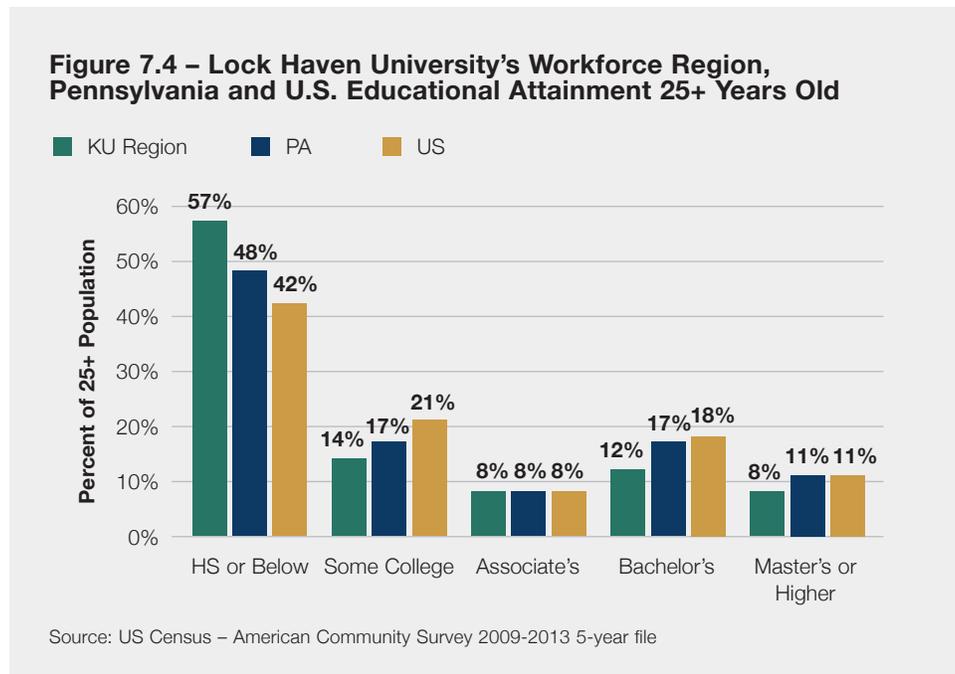
The levels of educational attainment of a population indicate several characteristics in an economy. Areas with better educated workers earn higher wages, are more productive and can typically adjust more quickly to changing economic conditions. Additionally, an educated workforce is less likely to be

unemployed, require social assistance, and more likely to lead a healthier lifestyle—aspects that bolster value in an economy.<sup>13, 14</sup>

A view of educational attainment in LHU’s workforce region indicates that less than half (43%) 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 below the national average of 58% of the population having had at least some post-secondary education or higher.

When comparing degree completion, LHU’s workforce region is near the national average for the proportion of the population with an associate’s degree but below the national average for the proportion of the population with a 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 LHU’s workforce region.



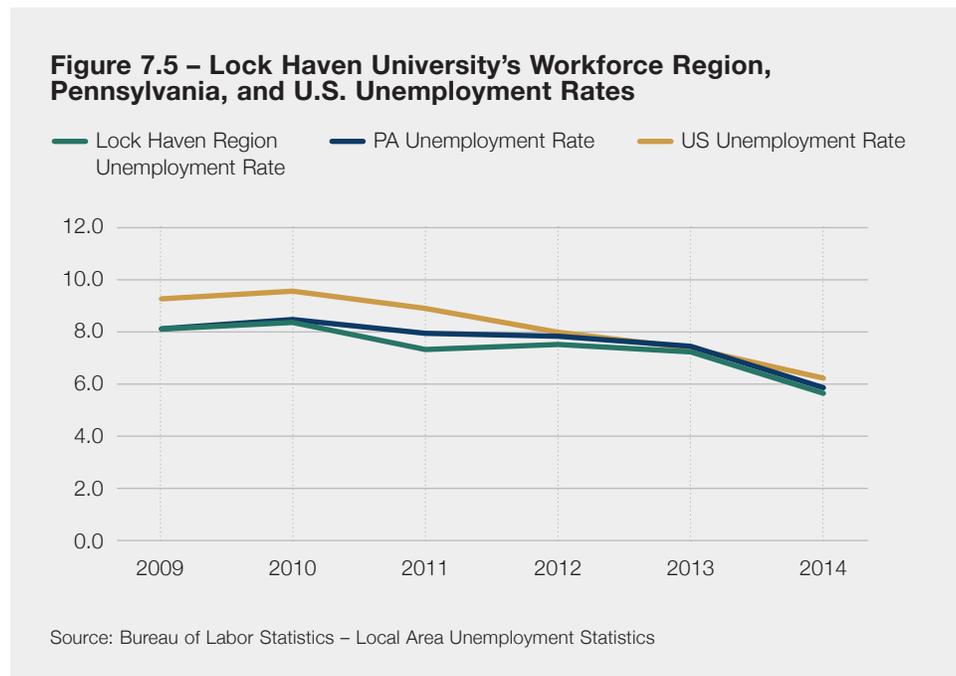
13 Feinstein et. al. (2006), “The effects of education on health: Concepts, evidence and policy implications: A review for the OECD Center for Educational Research and Innovation (CERI)”, unpublished manuscript, OECD, Paris.

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 Lock Haven University's Workforce Region

LHU's workforce region unemployment rate—5.7% in 2014—has trended closely with the state and national unemployment rate since 2012. This suggests that opportunities for dislocated workers on average are roughly the same compared to the rest of the nation.

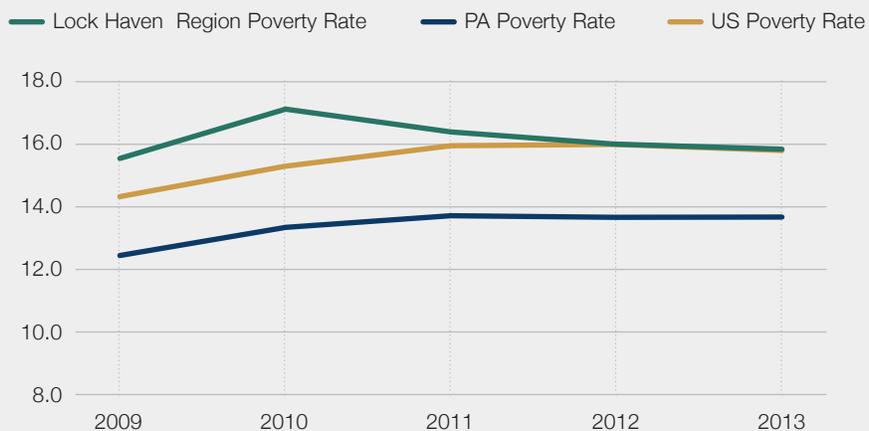
Figure 7.5 shows the convergence of the unemployment rates of LHU's workforce region, Pennsylvania, and the U.S. from 2009 to 2014.



In LHU's workforce region, the poverty rate trended upward since 2009 but declined between 2010 and 2013. The region's poverty rate is above the state poverty rate; however, it has trended near the U.S. average.<sup>15</sup> Given the similar poverty rate compared with the nation, there is an underlying assumption that the compensation associated with the jobs in LHU's workforce region may be near the national average.

<sup>15</sup> 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 – Lock Haven 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 LHU’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.

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## 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.

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# 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](http://www.paworkstats.pa.gov)

O\*NET Resource Center (O\*NET)

- Job Zones [www.onetonline.org/help/online/zones](http://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.<sup>16</sup> When determining a workforce region, there is no universal approach.<sup>17</sup> 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

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<sup>16</sup> Bureau of Labor Statistics: Labor Market Area.

<sup>17</sup> *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.<sup>18</sup>

**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

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<sup>18</sup> 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”).

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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

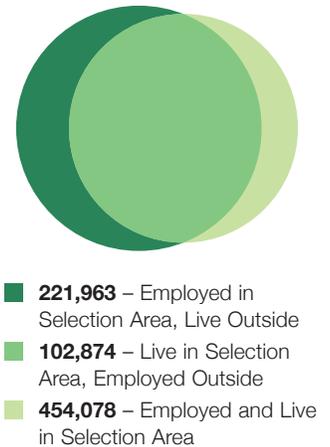
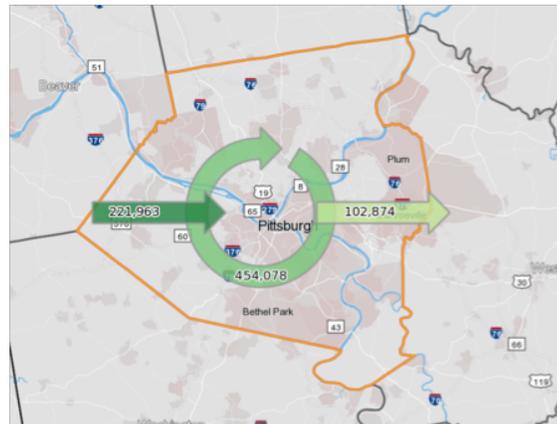
Given the workforce/commute, learner and economic variances that exist within the different geographies across Pennsylvania, an iterative process is used to define the workforce region. This multiple step, iterative process seeks to maximize the primary driver value (workforce flows), while adhering 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).

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### **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**

<b>University</b>	<b>Counties</b>
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 Lock Haven University	2014 QCEW Employment
Adams	45	34,139
Allegheny	48	683,111
Armstrong	4	17,582
Beaver	11	52,811
Bedford	14	15,397
Berks	108	166,792
Blair	100	58,233
Bradford	83	24,568
Bucks	140	250,889
Butler	19	84,472
Cambria	42	53,915
Cameron	10	2,015
Carbon	25	16,974
Centre	403	67,147
Chester	87	240,469
Clarion	11	13,586
Clearfield	354	29,938
Clinton	469	13,043
Columbia	34	24,974
Crawford	15	31,113
Cumberland	95	126,939
Dauphin	113	176,004
Delaware	61	216,261
Elk	39	14,994
Erie	19	124,095
Fayette	2	39,979
Forest	2	2,053
Franklin	34	56,715
Fulton	4	4,807
Greene	0	14,844
Huntingdon	46	12,343

<b>County</b>	<b>Fall 2014 Enrollment in Lock Haven University</b>	<b>2014 QCEW Employment</b>
Indiana	8	32,653
Jefferson	53	15,435
Juniata	34	6,146
Lackawanna	36	97,259
Lancaster	139	225,673
Lawrence	2	29,500
Lebanon	39	48,869
Lehigh	99	180,757
Luzerne	103	140,329
Lycoming	384	53,197
McKean	11	15,770
Mercer	11	48,028
Mifflin	89	15,544
Monroe	54	52,933
Montgomery	131	472,655
Montour	21	15,578
Northampton	79	105,825
Northumberland	88	27,985
Perry	30	7,661
Philadelphia	220	640,987
Pike	28	10,748
Potter	26	5,291
Schuylkill	73	50,049
Snyder	32	15,522
Somerset	11	24,398
Sullivan	6	1,772
Susquehanna	22	9,281
Tioga	41	12,973
Union	48	16,597
Venango	4	19,251
Warren	6	15,031
Washington	12	86,961
Wayne	22	14,651
Westmoreland	27	132,312
Wyoming	16	10,181
York	148	172,145
<b>Total Pennsylvania</b>	<b>4,590</b>	<b>5,643,676</b>

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

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# **APPENDIX C: INDUSTRY PROJECTIONS 2014-2024 FOR LOCK HAVEN 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 LHU'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
<b>Total</b>	<b>All Industries</b>	<b>190,808</b>	<b>209,378</b>	<b>9.7%</b>	<b>1.0</b>
1111	Oilseed and Grain Farming	52	61	17.3%	0.7
1112	Vegetable and Melon Farming	13	13	0.0%	0.1
1113	Fruit and Tree Nut Farming	40	33	-17.5%	0.1
1114	Greenhouse, Nursery, and Floriculture Production	71	64	-9.9%	0.4
1119	Other Crop Farming	6	7	16.7%	0.1
1121	Cattle Ranching and Farming	169	193	14.2%	0.8
1122	Hog and Pig Farming	21	20	-4.8%	0.5
1123	Poultry and Egg Production	51	62	21.6%	0.9
1125	Aquaculture	23	28	21.7%	2.6
1129	Other Animal Production	28	28	0.0%	1.0
1132	Forest Nurseries and Gathering of Forest Products	5	4	-20.0%	1.4
1133	Logging	61	70	14.8%	0.9
1151	Support Activities for Crop Production	9	8	-11.1%	0.0
1152	Support Activities for Animal Production	73	88	20.5%	1.9
1153	Support Activities for Forestry	14	14	0.0%	0.6
2111	Oil and Gas Extraction	176	188	6.8%	0.6
2121	Coal Mining	413	344	-16.7%	4.1
2123	Nonmetallic Mineral Mining and Quarrying	87	100	14.9%	0.7
2131	Support Activities for Mining	2,823	3,073	8.9%	4.6
2211	Electric Power Generation, Transmission and Distribution	280	240	-14.3%	0.4
2212	Natural Gas Distribution	145	147	1.4%	0.9
2213	Water, Sewage and Other Systems	840	1,017	21.1%	2.9
2361	Residential Building Construction	1,100	1,385	25.9%	1.2
2362	Nonresidential Building Construction	948	1,099	15.9%	1.0
2371	Utility System Construction	763	946	24.0%	1.2
2372	Land Subdivision	11	12	9.1%	0.2
2373	Highway, Street, and Bridge Construction	3,401	4,655	36.9%	6.2
2379	Other Heavy and Civil Engineering Construction	15	18	20.0%	0.1
2381	Foundation, Structure, and Building Exterior Contractors	688	805	17.0%	0.7
2382	Building Equipment Contractors	1,560	1,876	20.3%	0.6
2383	Building Finishing Contractors	307	350	14.0%	0.3
2389	Other Specialty Trade Contractors	1,209	1,215	0.5%	1.5
3111	Animal Food Manufacturing	121	112	-7.4%	1.6
3112	Grain and Oilseed Milling	53	53	0.0%	0.6
3113	Sugar and Confectionery Product Manufacturing	275	288	4.7%	2.8
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	74	58	-21.6%	0.3

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3115	Dairy Product Manufacturing	120	121	0.8%	0.6
3116	Animal Slaughtering and Processing	520	492	-5.4%	0.8
3118	Bakeries and Tortilla Manufacturing	236	207	-12.3%	0.6
3119	Other Food Manufacturing	396	453	14.4%	1.5
3121	Beverage Manufacturing	282	296	5.0%	1.0
3132	Fabric Mills	98	54	-44.9%	1.3
3149	Other Textile Product Mills	56	37	-33.9%	0.6
3152	Cut and Sew Apparel Manufacturing	180	148	-17.8%	1.1
3161	Leather and Hide Tanning and Finishing	12	13	8.3%	1.9
3169	Other Leather and Allied Product Manufacturing	54	65	20.4%	3.4
3211	Sawmills and Wood Preservation	650	768	18.2%	5.1
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	155	172	11.0%	1.6
3219	Other Wood Product Manufacturing	1,513	1,753	15.9%	5.2
3222	Converted Paper Product Manufacturing	2,743	2,891	5.4%	7.3
3231	Printing and Related Support Activities	524	431	-17.7%	0.8
3241	Petroleum and Coal Products Manufacturing	111	133	19.8%	0.7
3251	Basic Chemical Manufacturing	101	97	-4.0%	0.5
3254	Pharmaceutical and Medicine Manufacturing	166	118	-28.9%	0.4
3255	Paint, Coating, and Adhesive Manufacturing	198	137	-30.8%	2.4
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	136	97	-28.7%	0.9
3259	Other Chemical Product and Preparation Manufacturing	191	156	-18.3%	1.7
3261	Plastics Product Manufacturing	1,998	1,970	-1.4%	2.6
3262	Rubber Product Manufacturing	427	507	18.7%	2.3
3271	Clay Product and Refractory Manufacturing	147	183	24.5%	2.7
3272	Glass and Glass Product Manufacturing	122	114	-6.6%	1.1
3273	Cement and Concrete Product Manufacturing	303	361	19.1%	1.2
3274	Lime and Gypsum Product Manufacturing	171	189	10.5%	8.5
3279	Other Nonmetallic Mineral Product Manufacturing	140	159	13.6%	1.4
3311	Iron and Steel Mills and Ferroalloy Manufacturing	261	258	-1.1%	2.0
3312	Steel Product Manufacturing from Purchased Steel	469	495	5.5%	5.6
3313	Alumina and Aluminum Production and Processing	421	446	5.9%	5.2
3314	Nonferrous Metal (except Aluminum) Production and Processing	97	117	20.6%	1.1
3315	Foundries	157	128	-18.5%	0.9
3321	Forging and Stamping	1,179	1,249	5.9%	8.4
3322	Cutlery and Handtool Manufacturing	43	51	18.6%	0.8
3323	Architectural and Structural Metals Manufacturing	771	876	13.6%	1.5
3324	Boiler, Tank, and Shipping Container Manufacturing	147	170	15.6%	1.1

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3325	Hardware Manufacturing	4	4	0.0%	0.1
3326	Spring and Wire Product Manufacturing	77	94	22.1%	1.3
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	692	704	1.7%	1.3
3328	Coating, Engraving, Heat Treating, and Allied Activities	150	187	24.7%	0.8
3329	Other Fabricated Metal Product Manufacturing	326	317	-2.8%	0.8
3331	Agriculture, Construction, and Mining Machinery Manufacturing	398	443	11.3%	1.1
3332	Industrial Machinery Manufacturing	337	336	-0.3%	2.2
3333	Commercial and Service Industry Machinery Manufacturing	270	279	3.3%	2.2
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	404	387	-4.2%	2.2
3335	Metalworking Machinery Manufacturing	265	256	-3.4%	1.0
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	33	40	21.2%	0.2
3339	Other General Purpose Machinery Manufacturing	128	102	-20.3%	0.3
3342	Communications Equipment Manufacturing	223	163	-26.9%	1.7
3343	Audio and Video Equipment Manufacturing	65	74	13.8%	2.4
3344	Semiconductor and Other Electronic Component Manufacturing	845	824	-2.5%	1.6
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	1,460	1,535	5.1%	2.7
3351	Electric Lighting Equipment Manufacturing	15	16	6.7%	0.2
3353	Electrical Equipment Manufacturing	136	108	-20.6%	0.7
3359	Other Electrical Equipment and Component Manufacturing	238	200	-16.0%	1.3
3362	Motor Vehicle Body and Trailer Manufacturing	327	355	8.6%	1.7
3363	Motor Vehicle Parts Manufacturing	126	110	-12.7%	0.2
3364	Aerospace Product and Parts Manufacturing	166	156	-6.0%	0.2
3365	Railroad Rolling Stock Manufacturing	73	63	-13.7%	1.9
3369	Other Transportation Equipment Manufacturing	165	231	40.0%	3.7
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	1,123	1,222	8.8%	3.5
3372	Office Furniture (including Fixtures) Manufacturing	167	129	-22.8%	1.2
3379	Other Furniture Related Product Manufacturing	28	22	-21.4%	0.6
3391	Medical Equipment and Supplies Manufacturing	145	147	1.4%	0.3
3399	Other Miscellaneous Manufacturing	314	328	4.5%	0.8
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	549	649	18.2%	1.2
4232	Furniture and Home Furnishing Merchant Wholesalers	141	176	24.8%	1.0
4233	Lumber and Other Construction Materials Merchant Wholesalers	313	315	0.6%	1.1
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	325	293	-9.8%	0.4
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	62	77	24.2%	0.4

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
4236	Household Appliances and Electrical and Electronic Goods Merchant Wholesalers	217	210	-3.2%	0.5
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	276	313	13.4%	0.8
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	909	896	-1.4%	1.0
4239	Miscellaneous Durable Goods Merchant Wholesalers	360	387	7.5%	0.9
4241	Paper and Paper Product Merchant Wholesalers	106	103	-2.8%	0.6
4242	Drugs and Druggists' Sundries Merchant Wholesalers	86	90	4.7%	0.3
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	51	40	-21.6%	0.2
4244	Grocery and Related Product Merchant Wholesalers	426	476	11.7%	0.4
4245	Farm Product Raw Material Merchant Wholesalers	47	57	21.3%	0.5
4246	Chemical and Allied Products Merchant Wholesalers	211	228	8.1%	1.2
4247	Petroleum and Petroleum Products Merchant Wholesalers	183	158	-13.7%	1.3
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	87	97	11.5%	0.3
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	516	450	-12.8%	1.1
4251	Wholesale Electronic Markets and Agents and Brokers	663	747	12.7%	0.5
4411	Automobile Dealers	2,196	2,343	6.7%	1.3
4412	Other Motor Vehicle Dealers	219	247	12.8%	1.1
4413	Automotive Parts, Accessories, and Tire Stores	677	706	4.3%	0.9
4421	Furniture Stores	277	249	-10.1%	0.9
4422	Home Furnishings Stores	282	275	-2.5%	0.8
4431	Electronics and Appliance Stores	475	440	-7.4%	0.7
4441	Building Material and Supplies Dealers	1,718	1,813	5.5%	1.1
4442	Lawn and Garden Equipment and Supplies Stores	231	265	14.7%	1.1
4451	Grocery Stores	4,372	4,376	0.1%	1.2
4452	Specialty Food Stores	256	245	-4.3%	0.8
4453	Beer, Wine, and Liquor Stores	1,724	2,074	20.3%	7.8
4461	Health and Personal Care Stores	1,167	1,183	1.4%	0.8
4471	Gasoline Stations	2,219	2,390	7.7%	1.8
4481	Clothing Stores	1,106	970	-12.3%	0.8
4482	Shoe Stores	175	159	-9.1%	0.6
4483	Jewelry, Luggage, and Leather Goods Stores	166	144	-13.3%	0.9
4511	Sporting Goods, Hobby, and Musical Instrument Stores	859	793	-7.7%	1.2
4512	Book Stores and News Dealers	247	221	-10.5%	2.0
4521	Department Stores	1,830	1,540	-15.8%	0.9
4529	Other General Merchandise Stores	2,913	3,062	5.1%	1.2
4531	Florists	115	126	9.6%	1.3
4532	Office Supplies, Stationery, and Gift Stores	327	328	0.3%	0.8

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
4533	Used Merchandise Stores	161	195	21.1%	0.7
4539	Other Miscellaneous Store Retailers	481	503	4.6%	1.1
4541	Electronic Shopping and Mail-Order Houses	92	94	2.2%	0.2
4542	Vending Machine Operators	38	43	13.2%	0.7
4543	Direct Selling Establishments	540	593	9.8%	2.9
4811	Scheduled Air Transportation	10	9	-10.0%	0.0
4812	Nonscheduled Air Transportation	12	13	8.3%	0.2
4841	General Freight Trucking	1,748	2,180	24.7%	1.3
4842	Specialized Freight Trucking	1,320	1,601	21.3%	2.1
4851	Urban Transit Systems	82	107	30.5%	0.3
4852	Interurban and Rural Bus Transportation	31	33	6.5%	1.0
4853	Taxi and Limousine Service	55	70	27.3%	0.5
4854	School and Employee Bus Transportation	1,045	1,176	12.5%	3.0
4855	Charter Bus Industry	92	98	6.5%	2.2
4859	Other Transit and Ground Passenger Transportation	153	193	26.1%	1.1
4862	Pipeline Transportation of Natural Gas	84	122	45.2%	2.1
4869	Other Pipeline Transportation	6	9	50.0%	0.5
4872	Scenic and Sightseeing Transportation, Water	19	18	-5.3%	0.9
4881	Support Activities for Air Transportation	85	111	30.6%	0.3
4882	Support Activities for Rail Transportation	124	184	48.4%	2.8
4883	Support Activities for Water Transportation	45	66	46.7%	0.3
4884	Support Activities for Road Transportation	62	77	24.2%	0.4
4885	Freight Transportation Arrangement	80	109	36.3%	0.3
4889	Other Support Activities for Transportation	1	1	0.0%	0.0
4911	Postal Service	760	577	-24.1%	0.9
4921	Couriers and Express Delivery Services	635	702	10.6%	0.9
4922	Local Messengers and Local Delivery	41	35	-14.6%	0.5
4931	Warehousing and Storage	1,783	1,899	6.5%	1.7
5111	Newspaper, Periodical, Book, and Directory Publishers	608	501	-17.6%	1.1
5112	Software Publishers	446	445	-0.2%	1.0
5121	Motion Picture and Video Industries	194	223	14.9%	0.4
5151	Radio and Television Broadcasting	222	218	-1.8%	0.7
5152	Cable and Other Subscription Programming	10	8	-20.0%	0.1
5171	Wired Telecommunications Carriers	487	511	4.9%	0.6
5172	Wireless Telecommunications Carriers (except Satellite)	3	4	33.3%	0.0
5179	Other Telecommunications	12	10	-16.7%	0.1
5182	Data Processing, Hosting, and Related Services	153	183	19.6%	0.4

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
5191	Other Information Services	196	199	1.5%	0.4
5221	Depository Credit Intermediation	2,427	2,309	-4.9%	1.0
5222	Nondepository Credit Intermediation	97	107	10.3%	0.1
5223	Activities Related to Credit Intermediation	32	36	12.5%	0.1
5231	Securities and Commodity Contracts Intermediation and Brokerage	150	167	11.3%	0.2
5232	Securities and Commodity Exchanges	3	3	0.0%	0.3
5239	Other Financial Investment Activities	260	300	15.4%	0.4
5241	Insurance Carriers	436	417	-4.4%	0.3
5242	Agencies, Brokerages, and Other Insurance Related Activities	1,094	1,257	14.9%	0.8
5311	Lessors of Real Estate	646	743	15.0%	0.8
5312	Offices of Real Estate Agents and Brokers	158	160	1.3%	0.4
5313	Activities Related to Real Estate	629	744	18.3%	0.7
5321	Automotive Equipment Rental and Leasing	239	284	18.8%	0.9
5322	Consumer Goods Rental	359	393	9.5%	1.6
5323	General Rental Centers	116	141	21.6%	2.1
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	85	100	17.6%	0.4
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	7	6	-14.3%	0.2
5411	Legal Services	739	719	-2.7%	0.5
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	689	729	5.8%	0.5
5413	Architectural, Engineering, and Related Services	1,911	2,125	11.2%	1.0
5414	Specialized Design Services	43	57	32.6%	0.2
5415	Computer Systems Design and Related Services	875	1,215	38.9%	0.3
5416	Management, Scientific, and Technical Consulting Services	662	760	14.8%	0.4
5417	Scientific Research and Development Services	269	247	-8.2%	0.3
5418	Advertising, Public Relations, and Related Services	266	292	9.8%	0.4
5419	Other Professional, Scientific, and Technical Services	1,102	1,282	16.3%	1.2
5511	Management of Companies and Enterprises	1,405	1,651	17.5%	0.5
5611	Office Administrative Services	96	93	-3.1%	0.1
5612	Facilities Support Services	480	602	25.4%	2.5
5613	Employment Services	2,052	2,497	21.7%	0.4
5614	Business Support Services	2,322	2,644	13.9%	1.9
5615	Travel Arrangement and Reservation Services	175	160	-8.6%	0.6
5616	Investigation and Security Services	457	520	13.8%	0.4
5617	Services to Buildings and Dwellings	2,009	2,332	16.1%	0.7
5619	Other Support Services	258	351	36.0%	0.6
5621	Waste Collection	243	308	26.7%	1.1

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
5622	Waste Treatment and Disposal	60	81	35.0%	0.4
5629	Remediation and Other Waste Management Services	170	206	21.2%	0.9
6111	Elementary and Secondary Schools	9,754	9,187	-5.8%	0.9
6112	Junior Colleges	148	171	15.5%	0.1
6113	Colleges, Universities, and Professional Schools	14,820	17,578	18.6%	3.7
6114	Business Schools and Computer and Management Training	11	12	9.1%	0.1
6115	Technical and Trade Schools	163	226	38.7%	0.8
6116	Other Schools and Instruction	366	405	10.7%	0.7
6117	Educational Support Services	16	16	0.0%	0.1
6211	Offices of Physicians	2,895	3,378	16.7%	0.8
6212	Offices of Dentists	1,064	1,169	9.9%	0.9
6213	Offices of Other Health Practitioners	1,149	1,458	26.9%	1.1
6214	Outpatient Care Centers	1,529	1,808	18.2%	1.4
6215	Medical and Diagnostic Laboratories	54	63	16.7%	0.2
6216	Home Health Care Services	1,272	1,959	54.0%	0.7
6219	Other Ambulatory Health Care Services	692	882	27.5%	1.7
6221	General Medical and Surgical Hospitals	6,960	7,809	12.2%	0.9
6222	Psychiatric and Substance Abuse Hospitals	853	1,034	21.2%	2.6
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	137	175	27.7%	0.4
6231	Nursing Care Facilities (Skilled Nursing Facilities)	2,552	2,929	14.8%	1.1
6232	Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	1,102	1,260	14.3%	1.1
6233	Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	2,454	3,133	27.7%	2.1
6239	Other Residential Care Facilities	394	536	36.0%	1.6
6241	Individual and Family Services	4,035	5,690	41.0%	1.3
6242	Community Food and Housing, and Emergency and Other Relief Services	165	202	22.4%	0.8
6243	Vocational Rehabilitation Services	627	687	9.6%	1.3
6244	Child Day Care Services	1,531	1,616	5.6%	1.3
7111	Performing Arts Companies	95	99	4.2%	0.6
7112	Spectator Sports	79	83	5.1%	0.4
7113	Promoters of Performing Arts, Sports, and Similar Events	67	75	11.9%	0.4
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	2	3	50.0%	0.1
7115	Independent Artists, Writers, and Performers	22	18	-18.2%	0.3
7121	Museums, Historical Sites, and Similar Institutions	205	257	25.4%	0.6
7131	Amusement Parks and Arcades	59	69	16.9%	0.2
7132	Gambling Industries	4	5	25.0%	0.0

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
7139	Other Amusement and Recreation Industries	834	881	5.6%	0.4
7211	Traveler Accommodation	1,836	1,839	0.2%	0.7
7212	RV (Recreational Vehicle) Parks and Recreational Camps	70	70	0.0%	0.8
7213	Rooming and Boarding Houses	34	29	-14.7%	1.8
7223	Special Food Services	589	649	10.2%	0.7
7224	Drinking Places (Alcoholic Beverages)	845	793	-6.2%	1.7
7225	Restaurants and Other Eating Places	12,559	13,434	7.0%	0.9
8111	Automotive Repair and Maintenance	1,102	1,227	11.3%	0.9
8112	Electronic and Precision Equipment Repair and Maintenance	84	87	3.6%	0.6
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	368	434	17.9%	1.3
8114	Personal and Household Goods Repair and Maintenance	26	31	19.2%	0.3
8121	Personal Care Services	873	1,045	19.7%	1.0
8122	Death Care Services	319	370	16.0%	1.7
8123	Drycleaning and Laundry Services	607	596	-1.8%	1.5
8129	Other Personal Services	212	245	15.6%	0.5
8131	Religious Organizations	176	174	-1.1%	0.7
8132	Grantmaking and Giving Services	98	97	-1.0%	0.5
8133	Social Advocacy Organizations	135	148	9.6%	0.5
8134	Civic and Social Organizations	1,791	1,902	6.2%	3.2
8139	Business, Professional, Labor, Political, and Similar Organizations	543	586	7.9%	0.9
8141	Private Households	56	46	-17.9%	0.1
9211	Executive, Legislative, and Other General Government Support	4,038	3,744	-7.3%	1.0
9221	Justice, Public Order, and Safety Activities	3,057	3,290	7.6%	1.2
9231	Administration of Human Resource Programs	212	243	14.6%	0.2
9241	Administration of Environmental Quality Programs	796	793	-0.4%	1.8
9251	Administration of Housing Programs, Urban Planning, and Community Development	49	50	2.0%	0.4
9261	Administration of Economic Programs	168	168	0.0%	0.2
9281	National Security and International Affairs	120	131	9.2%	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 LOCK HAVEN UNIVERSITY'S WORKFORCE REGION

For this analysis a “skilled” occupation is defined as an occupation in O\*NET Job Zones<sup>19</sup> 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.<sup>20</sup>

## **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.

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

<sup>20</sup> <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
<b>Total</b>	<b>All Occupations</b>	<b>NA</b>	<b>190,807</b>	<b>209,376</b>	<b>9.7%</b>	<b>72,851</b>
11-1011	Chief Executives	5	367	368	0.3%	88
11-1021	General and Operations Managers	4	2,080	2,410	15.9%	700
11-1031	Legislators	4	74	64	-13.5%	9
11-2011	Advertising and Promotions Managers	4	14	12	-14.3%	2
11-2021	Marketing Managers	4	109	117	7.3%	32
11-2022	Sales Managers	4	274	268	-2.2%	53
11-2031	Public Relations and Fundraising Managers	4	57	64	12.3%	18
11-3011	Administrative Services Managers	3	263	288	9.5%	66
11-3021	Computer and Information Systems Managers	4	243	315	29.6%	108
11-3031	Financial Managers	4	361	365	1.1%	71
11-3051	Industrial Production Managers	4	297	288	-3.0%	59
11-3061	Purchasing Managers	4	48	45	-6.3%	8
11-3071	Transportation, Storage, and Distribution Managers	4	92	101	9.8%	31
11-3111	Compensation and Benefits Managers	4	14	13	-7.1%	3
11-3121	Human Resources Managers	4	78	93	19.2%	35
11-3131	Training and Development Managers	4	22	25	13.6%	8
11-9021	Construction Managers	4	276	350	26.8%	114
11-9031	Education Administrators, Preschool and Childcare Center/Program	4	74	71	-4.1%	17
11-9032	Education Administrators, Elementary and Secondary School	5	256	230	-10.2%	58
11-9033	Education Administrators, Postsecondary	5	458	551	20.3%	224
11-9039	Education Administrators, All Other	5	23	26	13.0%	10
11-9041	Architectural and Engineering Managers	5	174	180	3.4%	52
11-9051	Food Service Managers	3	191	204	6.8%	51
11-9061	Funeral Service Managers	3	23	25	8.7%	9
11-9081	Lodging Managers	3	34	38	11.8%	19
11-9111	Medical and Health Services Managers	5	378	423	11.9%	137
11-9121	Natural Sciences Managers	5	26	30	15.4%	10
11-9131	Postmasters and Mail Superintendents	3	29	17	-41.4%	0
11-9141	Property, Real Estate, and Community Association Managers	4	113	136	20.4%	52
11-9151	Social and Community Service Managers	4	194	243	25.3%	94
11-9161	Emergency Management Directors	4	13	11	-15.4%	0
11-9199	Managers, All Other	4	271	293	8.1%	82
13-1011	Agents and Business Managers of Artists, Performers, and Athletes	4	2	2	0.0%	1

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
13-1021	Buyers and Purchasing Agents, Farm Products	4	10	9	-10.0%	2
13-1022	Wholesale and Retail Buyers, Except Farm Products	3	119	110	-7.6%	24
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	4	487	507	4.1%	124
13-1031	Claims Adjusters, Examiners, and Investigators	4	222	227	2.3%	71
13-1032	Insurance Appraisers, Auto Damage	3	6	7	16.7%	3
13-1041	Compliance Officers	4	297	332	11.8%	96
13-1051	Cost Estimators	4	381	455	19.4%	204
13-1071	Human Resources Specialists	4	510	606	18.8%	205
13-1075	Labor Relations Specialists	4	153	138	-9.8%	30
13-1081	Logisticians	4	133	156	17.3%	40
13-1111	Management Analysts	4	372	439	18.0%	129
13-1121	Meeting, Convention, and Event Planners	4	108	137	26.9%	46
13-1131	Fundraisers	4	127	148	16.5%	49
13-1141	Compensation, Benefits, and Job Analysis Specialists	4	88	85	-3.4%	16
13-1151	Training and Development Specialists	4	267	305	14.2%	91
13-1161	Market Research Analysts and Marketing Specialists	4	537	693	29.1%	242
13-1199	Business Operations Specialists, All Other	4	459	469	2.2%	67
13-2011	Accountants and Auditors	4	1,357	1,483	9.3%	578
13-2021	Appraisers and Assessors of Real Estate	4	55	57	3.6%	11
13-2031	Budget Analysts	4	49	58	18.4%	30
13-2041	Credit Analysts	4	53	70	32.1%	33
13-2051	Financial Analysts	4	198	234	18.2%	88
13-2052	Personal Financial Advisors	4	112	136	21.4%	44
13-2053	Insurance Underwriters	4	56	62	10.7%	28
13-2061	Financial Examiners	4	26	27	3.8%	10
13-2071	Credit Counselors	4	88	110	25.0%	41
13-2072	Loan Officers	3	270	300	11.1%	104
13-2081	Tax Examiners and Collectors, and Revenue Agents	3	145	131	-9.7%	45
13-2082	Tax Preparers	3	42	37	-11.9%	8
13-2099	Financial Specialists, All Other	4	92	93	1.1%	14
15-1111	Computer and Information Research Scientists	5	5	5	0.0%	1
15-1121	Computer Systems Analysts	4	398	533	33.9%	205
15-1122	Information Security Analysts	4	42	59	40.5%	23
15-1131	Computer Programmers	4	283	344	21.6%	154
15-1132	Software Developers, Applications	4	443	608	37.2%	228
15-1133	Software Developers, Systems Software	4	207	212	2.4%	29

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
15-1134	Web Developers	3	96	123	28.1%	43
15-1141	Database Administrators	4	181	219	21.0%	77
15-1142	Network and Computer Systems Administrators	4	377	366	-2.9%	53
15-1143	Computer Network Architects	4	68	78	14.7%	20
15-1151	Computer User Support Specialists	3	657	833	26.8%	294
15-1152	Computer Network Support Specialists	4	115	125	8.7%	33
15-1199	Computer Occupations, All Other	4	223	272	22.0%	88
15-2011	Actuaries	4	18	22	22.2%	10
15-2031	Operations Research Analysts	5	37	45	21.6%	17
15-2041	Statisticians	5	47	55	17.0%	24
17-1011	Architects, Except Landscape and Naval	4	90	107	18.9%	49
17-1012	Landscape Architects	4	25	33	32.0%	15
17-1021	Cartographers and Photogrammetrists	4	8	9	12.5%	3
17-1022	Surveyors	4	62	75	21.0%	29
17-2011	Aerospace Engineers	4	21	24	14.3%	9
17-2021	Agricultural Engineers	4	1	2	100.0%	1
17-2031	Biomedical Engineers	4	17	16	-5.9%	3
17-2041	Chemical Engineers	4	45	41	-8.9%	9
17-2051	Civil Engineers	4	425	489	15.1%	180
17-2061	Computer Hardware Engineers	4	20	20	0.0%	4
17-2071	Electrical Engineers	4	208	221	6.3%	64
17-2072	Electronics Engineers, Except Computer	4	132	117	-11.4%	18
17-2081	Environmental Engineers	5	85	99	16.5%	38
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	4	50	54	8.0%	20
17-2112	Industrial Engineers	4	301	312	3.7%	114
17-2131	Materials Engineers	4	40	55	37.5%	30
17-2141	Mechanical Engineers	4	379	393	3.7%	157
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	4	11	10	-9.1%	3
17-2161	Nuclear Engineers	4	38	43	13.2%	18
17-2171	Petroleum Engineers	4	58	72	24.1%	35
17-2199	Engineers, All Other	4	141	177	25.5%	64
17-3011	Architectural and Civil Drafters	4	159	183	15.1%	63
17-3012	Electrical and Electronics Drafters	3	41	35	-14.6%	1
17-3013	Mechanical Drafters	3	150	136	-9.3%	19
17-3019	Drafters, All Other	3	7	8	14.3%	3
17-3021	Aerospace Engineering and Operations Technicians	4	2	2	0.0%	1

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
17-3022	Civil Engineering Technicians	3	82	94	14.6%	33
17-3023	Electrical and Electronics Engineering Technicians	3	166	148	-10.8%	23
17-3024	Electro-Mechanical Technicians	3	41	32	-22.0%	3
17-3025	Environmental Engineering Technicians	4	34	40	17.6%	15
17-3026	Industrial Engineering Technicians	3	66	67	1.5%	18
17-3027	Mechanical Engineering Technicians	3	59	66	11.9%	21
17-3029	Engineering Technicians, Except Drafters, All Other	3	67	85	26.9%	34
17-3031	Surveying and Mapping Technicians	3	55	67	21.8%	24
19-1012	Food Scientists and Technologists	4	10	12	20.0%	6
19-1013	Soil and Plant Scientists	5	4	5	25.0%	2
19-1021	Biochemists and Biophysicists	5	18	17	-5.6%	5
19-1022	Microbiologists	5	29	34	17.2%	14
19-1023	Zoologists and Wildlife Biologists	5	8	9	12.5%	3
19-1029	Biological Scientists, All Other	5	12	11	-8.3%	3
19-1031	Conservation Scientists	4	17	19	11.8%	7
19-1032	Foresters	4	36	36	0.0%	11
19-1041	Epidemiologists	5	4	3	-25.0%	0
19-1042	Medical Scientists, Except Epidemiologists	5	156	176	12.8%	58
19-1099	Life Scientists, All Other	5	6	6	0.0%	2
19-2012	Physicists	5	15	16	6.7%	5
19-2021	Atmospheric and Space Scientists	4	3	2	-33.3%	0
19-2031	Chemists	4	117	112	-4.3%	33
19-2032	Materials Scientists	5	10	9	-10.0%	2
19-2041	Environmental Scientists and Specialists, Including Health	4	67	84	25.4%	39
19-2042	Geoscientists, Except Hydrologists and Geographers	4	44	52	18.2%	23
19-2043	Hydrologists	4	4	4	0.0%	1
19-2099	Physical Scientists, All Other	5	11	9	-18.2%	0
19-3011	Economists	5	13	20	53.8%	12
19-3022	Survey Researchers	5	101	97	-4.0%	28
19-3031	Clinical, Counseling, and School Psychologists	5	179	178	-0.6%	53
19-3039	Psychologists, All Other	5	17	20	17.6%	8
19-3041	Sociologists	5	10	11	10.0%	7
19-3051	Urban and Regional Planners	5	55	60	9.1%	32
19-3093	Historians	5	3	3	0.0%	0
19-3099	Social Scientists and Related Workers, All Other	4	20	21	5.0%	5

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
19-4011	Agricultural and Food Science Technicians	3	14	13	-7.1%	5
19-4021	Biological Technicians	4	134	142	6.0%	52
19-4031	Chemical Technicians	3	91	93	2.2%	31
19-4041	Geological and Petroleum Technicians	4	74	86	16.2%	49
19-4051	Nuclear Technicians	3	21	22	4.8%	10
19-4061	Social Science Research Assistants	4	49	56	14.3%	30
19-4091	Environmental Science and Protection Technicians, Including Health	4	44	53	20.5%	29
19-4092	Forensic Science Technicians	4	5	5	0.0%	2
19-4093	Forest and Conservation Technicians	3	13	12	-7.7%	5
19-4099	Life, Physical, and Social Science Technicians, All Other	3	138	153	10.9%	73
21-1011	Substance Abuse and Behavioral Disorder Counselors	5	237	257	8.4%	87
21-1012	Educational, Guidance, School, and Vocational Counselors	5	478	510	6.7%	144
21-1013	Marriage and Family Therapists	5	43	53	23.3%	20
21-1014	Mental Health Counselors	5	382	430	12.6%	152
21-1015	Rehabilitation Counselors	5	261	318	21.8%	130
21-1019	Counselors, All Other	5	34	38	11.8%	11
21-1021	Child, Family, and School Social Workers	4	565	678	20.0%	246
21-1022	Healthcare Social Workers	5	245	329	34.3%	141
21-1023	Mental Health and Substance Abuse Social Workers	5	326	400	22.7%	166
21-1029	Social Workers, All Other	5	36	43	19.4%	15
21-1091	Health Educators	4	80	96	20.0%	38
21-1092	Probation Officers and Correctional Treatment Specialists	4	146	148	1.4%	50
21-1093	Social and Human Service Assistants	4	666	763	14.6%	296
21-1094	Community Health Workers	4	31	34	9.7%	11
21-1099	Community and Social Service Specialists, All Other	4	52	57	9.6%	17
21-2011	Clergy	5	52	62	19.2%	22
21-2021	Directors, Religious Activities and Education	4	37	43	16.2%	22
21-2099	Religious Workers, All Other	4	9	7	-22.2%	1
23-1011	Lawyers	5	435	449	3.2%	88
23-1012	Judicial Law Clerks	5	42	42	0.0%	9
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	5	26	24	-7.7%	4
23-1022	Arbitrators, Mediators, and Conciliators	5	8	9	12.5%	3
23-1023	Judges, Magistrate Judges, and Magistrates	5	10	9	-10.0%	1

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
23-2011	Paralegals and Legal Assistants	3	172	196	14.0%	53
23-2091	Court Reporters	3	49	52	6.1%	16
23-2093	Title Examiners, Abstractors, and Searchers	3	37	38	2.7%	9
23-2099	Legal Support Workers, All Other	3	25	23	-8.0%	2
25-1011	Business Teachers, Postsecondary	5	427	524	22.7%	162
25-1021	Computer Science Teachers, Postsecondary	5	167	202	21.0%	61
25-1022	Mathematical Science Teachers, Postsecondary	5	234	287	22.6%	88
25-1031	Architecture Teachers, Postsecondary	5	43	54	25.6%	17
25-1032	Engineering Teachers, Postsecondary	5	285	354	24.2%	111
25-1041	Agricultural Sciences Teachers, Postsecondary	5	35	42	20.0%	12
25-1042	Biological Science Teachers, Postsecondary	5	352	439	24.7%	140
25-1043	Forestry and Conservation Science Teachers, Postsecondary	5	14	17	21.4%	5
25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	5	89	107	20.2%	32
25-1052	Chemistry Teachers, Postsecondary	5	145	179	23.4%	56
25-1053	Environmental Science Teachers, Postsecondary	5	32	39	21.9%	11
25-1054	Physics Teachers, Postsecondary	5	105	134	27.6%	44
25-1061	Anthropology and Archeology Teachers, Postsecondary	5	35	39	11.4%	10
25-1062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	5	49	60	22.4%	18
25-1063	Economics Teachers, Postsecondary	5	109	133	22.0%	41
25-1064	Geography Teachers, Postsecondary	5	36	41	13.9%	10
25-1065	Political Science Teachers, Postsecondary	5	121	146	20.7%	43
25-1066	Psychology Teachers, Postsecondary	5	210	250	19.0%	71
25-1067	Sociology Teachers, Postsecondary	5	139	179	28.8%	60
25-1069	Social Sciences Teachers, Postsecondary, All Other	5	50	63	26.0%	20
25-1071	Health Specialties Teachers, Postsecondary	5	631	754	19.5%	218
25-1072	Nursing Instructors and Teachers, Postsecondary	5	222	257	15.8%	68
25-1081	Education Teachers, Postsecondary	5	345	415	20.3%	122
25-1082	Library Science Teachers, Postsecondary	5	36	44	22.2%	14
25-1111	Criminal Justice and Law Enforcement Teachers, Postsecondary	5	43	48	11.6%	12
25-1112	Law Teachers, Postsecondary	5	51	62	21.6%	19
25-1113	Social Work Teachers, Postsecondary	5	61	73	19.7%	22
25-1121	Art, Drama, and Music Teachers, Postsecondary	5	449	561	24.9%	179
25-1122	Communications Teachers, Postsecondary	5	153	185	20.9%	55

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
25-1123	English Language and Literature Teachers, Postsecondary	5	352	423	20.2%	124
25-1124	Foreign Language and Literature Teachers, Postsecondary	5	164	200	22.0%	61
25-1125	History Teachers, Postsecondary	5	132	162	22.7%	50
25-1126	Philosophy and Religion Teachers, Postsecondary	5	156	186	19.2%	54
25-1191	Graduate Teaching Assistants	5	158	194	22.8%	59
25-1192	Home Economics Teachers, Postsecondary	5	12	15	25.0%	4
25-1193	Recreation and Fitness Studies Teachers, Postsecondary	5	90	107	18.9%	31
25-1194	Vocational Education Teachers, Postsecondary	3	155	192	23.9%	60
25-1199	Postsecondary Teachers, All Other	5	412	510	23.8%	160
25-2011	Preschool Teachers, Except Special Education	3	550	624	13.5%	232
25-2012	Kindergarten Teachers, Except Special Education	4	196	179	-8.7%	43
25-2021	Elementary School Teachers, Except Special Education	4	1,811	1,684	-7.0%	328
25-2022	Middle School Teachers, Except Special and Career/Technical Education	4	767	819	6.8%	245
25-2023	Career/Technical Education Teachers, Middle School	4	21	24	14.3%	9
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	4	1,662	1,517	-8.7%	421
25-2032	Career/Technical Education Teachers, Secondary School	4	149	124	-16.8%	24
25-2051	Special Education Teachers, Preschool	4	23	26	13.0%	7
25-2052	Special Education Teachers, Kindergarten and Elementary School	4	354	351	-0.8%	78
25-2053	Special Education Teachers, Middle School	4	124	120	-3.2%	25
25-2054	Special Education Teachers, Secondary School	4	255	249	-2.4%	56
25-2059	Special Education Teachers, All Other	4	8	9	12.5%	2
25-3011	Adult Basic and Secondary Education and Literacy Teachers and Instructors	4	55	61	10.9%	18
25-3021	Self-Enrichment Education Teachers	3	276	273	-1.1%	56
25-3097	Teachers and Instructors, All Other, Except Substitute Teachers	3	186	222	19.4%	68
25-3098	Substitute Teachers	3	512	423	-17.4%	17
25-4011	Archivists	5	16	18	12.5%	6
25-4012	Curators	5	17	20	17.6%	7
25-4013	Museum Technicians and Conservators	4	16	20	25.0%	8
25-4021	Librarians	5	226	230	1.8%	60
25-4031	Library Technicians	4	124	131	5.6%	77

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
25-9011	Audio-Visual and Multimedia Collections Specialists	4	16	18	12.5%	5
25-9021	Farm and Home Management Advisors	5	5	4	-20.0%	0
25-9031	Instructional Coordinators	5	151	169	11.9%	32
25-9041	Teacher Assistants	3	1,544	1,532	-0.8%	371
25-9099	Education, Training, and Library Workers, All Other	4	42	46	9.5%	8
27-1011	Art Directors	4	28	32	14.3%	12
27-1012	Craft Artists	2	3	2	-33.3%	0
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	3	7	6	-14.3%	1
27-1014	Multimedia Artists and Animators	4	12	15	25.0%	6
27-1019	Artists and Related Workers, All Other	4	4	3	-25.0%	0
27-1021	Commercial and Industrial Designers	4	31	24	-22.6%	2
27-1022	Fashion Designers	3	11	11	0.0%	3
27-1023	Floral Designers	2	75	70	-6.7%	33
27-1024	Graphic Designers	4	223	229	2.7%	77
27-1025	Interior Designers	4	31	34	9.7%	16
27-1026	Merchandise Displayers and Window Trimmers	3	86	95	10.5%	34
27-1027	Set and Exhibit Designers	5	11	12	9.1%	5
27-1029	Designers, All Other	4	1	1	0.0%	0
27-2011	Actors	2	36	32	-11.1%	10
27-2012	Producers and Directors	4	75	83	10.7%	41
27-2021	Athletes and Sports Competitors	2	13	13	0.0%	6
27-2022	Coaches and Scouts	4	400	437	9.3%	164
27-2023	Umpires, Referees, and Other Sports Officials	3	5	5	0.0%	1
27-2031	Dancers	3	2	2	0.0%	0
27-2032	Choreographers	4	6	7	16.7%	3
27-2041	Music Directors and Composers	3	28	21	-25.0%	3
27-2042	Musicians and Singers	3	28	26	-7.1%	10
27-2099	Entertainers and Performers, Sports and Related Workers, All Other	3	9	10	11.1%	2
27-3011	Radio and Television Announcers	3	38	36	-5.3%	16
27-3012	Public Address System and Other Announcers	2	4	3	-25.0%	0
27-3022	Reporters and Correspondents	4	42	26	-38.1%	6
27-3031	Public Relations Specialists	4	271	287	5.9%	57
27-3041	Editors	4	106	97	-8.5%	25
27-3042	Technical Writers	4	34	29	-14.7%	6
27-3043	Writers and Authors	4	43	43	0.0%	11

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
27-3091	Interpreters and Translators	4	40	63	57.5%	29
27-3099	Media and Communication Workers, All Other	4	19	21	10.5%	4
27-4011	Audio and Video Equipment Technicians	3	55	65	18.2%	22
27-4012	Broadcast Technicians	3	23	23	0.0%	6
27-4014	Sound Engineering Technicians	3	8	7	-12.5%	1
27-4021	Photographers	3	79	68	-13.9%	12
27-4031	Camera Operators, Television, Video, and Motion Picture	3	16	15	-6.3%	1
27-4032	Film and Video Editors	3	9	7	-22.2%	0
27-4099	Media and Communication Equipment Workers, All Other	3	15	17	13.3%	3
29-1011	Chiropractors	5	36	50	38.9%	22
29-1021	Dentists, General	5	115	124	7.8%	37
29-1022	Oral and Maxillofacial Surgeons	5	4	4	0.0%	1
29-1023	Orthodontists	5	3	4	33.3%	1
29-1029	Dentists, All Other Specialists	5	3	3	0.0%	1
29-1031	Dietitians and Nutritionists	5	96	101	5.2%	17
29-1041	Optometrists	5	37	48	29.7%	24
29-1051	Pharmacists	5	315	331	5.1%	100
29-1061	Anesthesiologists	5	41	46	12.2%	17
29-1062	Family and General Practitioners	5	181	205	13.3%	74
29-1063	Internists, General	5	27	25	-7.4%	5
29-1064	Obstetricians and Gynecologists	5	9	11	22.2%	4
29-1065	Pediatricians, General	5	10	13	30.0%	5
29-1066	Psychiatrists	5	37	40	8.1%	13
29-1067	Surgeons	5	57	74	29.8%	32
29-1069	Physicians and Surgeons, All Other	5	430	486	13.0%	168
29-1071	Physician Assistants	5	138	162	17.4%	51
29-1081	Podiatrists	5	14	19	35.7%	10
29-1122	Occupational Therapists	5	163	203	24.5%	66
29-1123	Physical Therapists	5	276	355	28.6%	157
29-1124	Radiation Therapists	3	23	22	-4.3%	4
29-1125	Recreational Therapists	4	49	54	10.2%	18
29-1126	Respiratory Therapists	3	133	150	12.8%	36
29-1127	Speech-Language Pathologists	5	131	158	20.6%	47
29-1128	Exercise Physiologists	5	9	12	33.3%	4
29-1129	Therapists, All Other	4	12	16	33.3%	6
29-1131	Veterinarians	5	111	146	31.5%	75

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
29-1141	Registered Nurses	3	3,640	4,406	21.0%	1,504
29-1151	Nurse Anesthetists	5	55	65	18.2%	21
29-1161	Nurse Midwives	5	4	6	50.0%	2
29-1171	Nurse Practitioners	5	109	144	32.1%	55
29-1181	Audiologists	5	15	19	26.7%	7
29-1199	Health Diagnosing and Treating Practitioners, All Other	5	24	26	8.3%	8
29-2011	Medical and Clinical Laboratory Technologists	4	204	224	9.8%	81
29-2012	Medical and Clinical Laboratory Technicians	3	286	331	15.7%	127
29-2021	Dental Hygienists	3	290	352	21.4%	141
29-2031	Cardiovascular Technologists and Technicians	3	79	97	22.8%	30
29-2032	Diagnostic Medical Sonographers	3	65	80	23.1%	24
29-2033	Nuclear Medicine Technologists	3	28	32	14.3%	8
29-2034	Radiologic Technologists	3	248	301	21.4%	92
29-2035	Magnetic Resonance Imaging Technologists	3	32	39	21.9%	12
29-2041	Emergency Medical Technicians and Paramedics	3	424	516	21.7%	232
29-2051	Dietetic Technicians	2	91	125	37.4%	45
29-2052	Pharmacy Technicians	3	364	391	7.4%	69
29-2053	Psychiatric Technicians	3	83	100	20.5%	34
29-2054	Respiratory Therapy Technicians	3	14	13	-7.1%	0
29-2055	Surgical Technologists	3	101	134	32.7%	42
29-2056	Veterinary Technologists and Technicians	3	169	224	32.5%	73
29-2057	Ophthalmic Medical Technicians	3	30	39	30.0%	13
29-2061	Licensed Practical and Licensed Vocational Nurses	3	1,082	1,354	25.1%	558
29-2071	Medical Records and Health Information Technicians	3	215	266	23.7%	108
29-2081	Opticians, Dispensing	3	83	107	28.9%	53
29-2091	Orthotists and Prosthetists	5	4	5	25.0%	1
29-2092	Hearing Aid Specialists	3	4	4	0.0%	1
29-2099	Health Technologists and Technicians, All Other	3	69	82	18.8%	19
29-9011	Occupational Health and Safety Specialists	4	88	99	12.5%	37
29-9012	Occupational Health and Safety Technicians	3	45	52	15.6%	20
29-9091	Athletic Trainers	5	51	73	43.1%	38
29-9099	Healthcare Practitioners and Technical Workers, All Other	4	31	31	0.0%	8
31-1011	Home Health Aides	2	1,720	2,491	44.8%	1,244
31-1013	Psychiatric Aides	2	103	127	23.3%	50
31-1014	Nursing Assistants	2	2,231	2,639	18.3%	859

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
31-1015	Orderlies	2	67	80	19.4%	26
31-2011	Occupational Therapy Assistants	3	65	81	24.6%	36
31-2012	Occupational Therapy Aides	3	14	20	42.9%	10
31-2021	Physical Therapist Assistants	3	121	168	38.8%	80
31-2022	Physical Therapist Aides	2	57	72	26.3%	28
31-9011	Massage Therapists	3	58	83	43.1%	31
31-9091	Dental Assistants	3	391	435	11.3%	130
31-9092	Medical Assistants	3	666	819	23.0%	287
31-9093	Medical Equipment Preparers	2	56	70	25.0%	24
31-9094	Medical Transcriptionists	3	136	125	-8.1%	26
31-9095	Pharmacy Aides	2	42	34	-19.0%	2
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	3	116	112	-3.4%	20
31-9097	Phlebotomists	3	136	180	32.4%	76
31-9099	Healthcare Support Workers, All Other	3	41	37	-9.8%	3
33-1011	First-Line Supervisors of Correctional Officers	3	47	50	6.4%	21
33-1012	First-Line Supervisors of Police and Detectives	3	117	136	16.2%	58
33-1021	First-Line Supervisors of Fire Fighting and Prevention Workers	3	28	32	14.3%	16
33-1099	First-Line Supervisors of Protective Service Workers, All Other	3	54	62	14.8%	24
33-2011	Firefighters	3	175	176	0.6%	54
33-2021	Fire Inspectors and Investigators	3	9	7	-22.2%	2
33-3011	Bailiffs	2	8	6	-25.0%	1
33-3012	Correctional Officers and Jailers	3	580	547	-5.7%	146
33-3021	Detectives and Criminal Investigators	3	97	96	-1.0%	24
33-3041	Parking Enforcement Workers	2	19	21	10.5%	10
33-3051	Police and Sheriff's Patrol Officers	3	1,044	1,062	1.7%	393
33-3052	Transit and Railroad Police	3	3	2	-33.3%	0
33-9011	Animal Control Workers	2	7	7	0.0%	2
33-9021	Private Detectives and Investigators	3	33	32	-3.0%	12
33-9032	Security Guards	2	919	1,030	12.1%	369
33-9091	Crossing Guards	1	132	112	-15.2%	12
33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	2	196	214	9.2%	160
33-9093	Transportation Security Screeners	2	45	46	2.2%	13
33-9099	Protective Service Workers, All Other	2	124	143	15.3%	108
35-1011	Chefs and Head Cooks	3	161	165	2.5%	37
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	2	1,070	1,169	9.3%	427

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
35-2011	Cooks, Fast Food	1	317	270	-14.8%	23
35-2012	Cooks, Institution and Cafeteria	2	581	585	0.7%	125
35-2014	Cooks, Restaurant	2	1,510	1,905	26.2%	746
35-2015	Cooks, Short Order	1	289	337	16.6%	119
35-2021	Food Preparation Workers	1	1,172	1,086	-7.3%	284
35-3011	Bartenders	2	1,323	1,361	2.9%	596
35-3021	Combined Food Preparation and Serving Workers, Including Fast Food	1	4,782	5,368	12.3%	2,640
35-3022	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	1	332	308	-7.2%	190
35-3031	Waiters and Waitresses	1	3,535	3,822	8.1%	2,157
35-3041	Food Servers, Nonrestaurant	1	398	464	16.6%	195
35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers	1	514	506	-1.6%	241
35-9021	Dishwashers	1	750	696	-7.2%	310
35-9031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	1	544	561	3.1%	456
35-9099	Food Preparation and Serving Related Workers, All Other	1	45	54	20.0%	35
37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	2	221	248	12.2%	88
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	3	79	88	11.4%	19
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	2	3,069	3,307	7.8%	941
37-2012	Maids and Housekeeping Cleaners	2	1,234	1,350	9.4%	430
37-2019	Building Cleaning Workers, All Other	2	10	9	-10.0%	1
37-2021	Pest Control Workers	2	45	59	31.1%	28
37-3011	Landscaping and Groundskeeping Workers	1	933	1,076	15.3%	415
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	2	14	13	-7.1%	3
37-3013	Tree Trimmers and Pruners	2	77	106	37.7%	55
37-3019	Grounds Maintenance Workers, All Other	2	3	3	0.0%	0
39-1021	First-Line Supervisors of Personal Service Workers	3	228	297	30.3%	115
39-2011	Animal Trainers	2	5	5	0.0%	2
39-2021	Nonfarm Animal Caretakers	1	127	147	15.7%	40
39-3011	Gaming Dealers	2	3	4	33.3%	2
39-3012	Gaming and Sports Book Writers and Runners	2	1	1	0.0%	0
39-3021	Motion Picture Projectionists	2	8	8	0.0%	4
39-3031	Ushers, Lobby Attendants, and Ticket Takers	2	93	109	17.2%	73
39-3091	Amusement and Recreation Attendants	1	238	265	11.3%	162
39-3092	Costume Attendants	2	3	3	0.0%	2

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
39-3093	Locker Room, Coatroom, and Dressing Room Attendants	2	19	17	-10.5%	8
39-3099	Entertainment Attendants and Related Workers, All Other	2	68	79	16.2%	52
39-4021	Funeral Attendants	2	87	105	20.7%	47
39-4031	Morticians, Undertakers, and Funeral Directors	3	52	67	28.8%	31
39-5011	Barbers	3	16	18	12.5%	7
39-5012	Hairdressers, Hairstylists, and Cosmetologists	3	584	700	19.9%	282
39-5092	Manicurists and Pedicurists	2	79	91	15.2%	20
39-5093	Shampooers	2	34	37	8.8%	10
39-5094	Skincare Specialists	3	27	27	0.0%	2
39-6011	Baggage Porters and Bellhops	2	41	53	29.3%	28
39-6012	Concierges	3	25	33	32.0%	15
39-7011	Tour Guides and Escorts	3	27	32	18.5%	19
39-7012	Travel Guides	3	2	2	0.0%	1
39-9011	Childcare Workers	3	854	802	-6.1%	203
39-9021	Personal Care Aides	2	1,917	3,163	65.0%	1,501
39-9031	Fitness Trainers and Aerobics Instructors	3	313	349	11.5%	91
39-9032	Recreation Workers	4	447	573	28.2%	180
39-9041	Residential Advisors	3	282	381	35.1%	241
39-9099	Personal Care and Service Workers, All Other	3	71	77	8.5%	25
41-1011	First-Line Supervisors of Retail Sales Workers	2	1,687	1,749	3.7%	442
41-1012	First-Line Supervisors of Non-Retail Sales Workers	4	228	212	-7.0%	18
41-2011	Cashiers	1	6,468	6,363	-1.6%	2,937
41-2021	Counter and Rental Clerks	1	620	668	7.7%	231
41-2022	Parts Salespersons	2	354	394	11.3%	145
41-2031	Retail Salespersons	2	7,149	7,435	4.0%	2,882
41-3011	Advertising Sales Agents	3	142	121	-14.8%	37
41-3021	Insurance Sales Agents	4	305	328	7.5%	115
41-3031	Securities, Commodities, and Financial Services Sales Agents	4	196	186	-5.1%	45
41-3041	Travel Agents	3	60	49	-18.3%	20
41-3099	Sales Representatives, Services, All Other	4	746	962	29.0%	429
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	4	235	204	-13.2%	21
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	4	1,845	1,782	-3.4%	366
41-9011	Demonstrators and Product Promoters	2	38	34	-10.5%	8
41-9012	Models	1	12	14	16.7%	6

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
41-9021	Real Estate Brokers	4	27	23	-14.8%	1
41-9022	Real Estate Sales Agents	3	220	244	10.9%	62
41-9031	Sales Engineers	4	72	72	0.0%	16
41-9041	Telemarketers	2	415	407	-1.9%	191
41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	2	3	3	0.0%	0
41-9099	Sales and Related Workers, All Other	3	45	41	-8.9%	4
43-1011	First-Line Supervisors of Office and Administrative Support Workers	3	1,648	1,741	5.6%	488
43-2011	Switchboard Operators, Including Answering Service	2	192	166	-13.5%	42
43-2021	Telephone Operators	2	6	4	-33.3%	0
43-3011	Bill and Account Collectors	2	474	541	14.1%	227
43-3021	Billing and Posting Clerks	2	703	790	12.4%	230
43-3031	Bookkeeping, Accounting, and Auditing Clerks	3	2,001	2,169	8.4%	366
43-3041	Gaming Cage Workers	2	2	3	50.0%	2
43-3051	Payroll and Timekeeping Clerks	2	245	254	3.7%	68
43-3061	Procurement Clerks	3	90	86	-4.4%	31
43-3071	Tellers	2	727	620	-14.7%	319
43-3099	Financial Clerks, All Other	2	24	28	16.7%	12
43-4011	Brokerage Clerks	3	39	44	12.8%	20
43-4021	Correspondence Clerks	2	15	17	13.3%	7
43-4031	Court, Municipal, and License Clerks	3	86	93	8.1%	22
43-4041	Credit Authorizers, Checkers, and Clerks	3	31	24	-22.6%	0
43-4051	Customer Service Representatives	2	3,106	3,458	11.3%	1,290
43-4061	Eligibility Interviewers, Government Programs	3	307	301	-2.0%	60
43-4071	File Clerks	2	136	114	-16.2%	18
43-4081	Hotel, Motel, and Resort Desk Clerks	2	278	264	-5.0%	155
43-4111	Interviewers, Except Eligibility and Loan	2	305	358	17.4%	120
43-4121	Library Assistants, Clerical	2	159	159	0.0%	73
43-4131	Loan Interviewers and Clerks	3	132	148	12.1%	35
43-4141	New Accounts Clerks	2	34	35	2.9%	14
43-4151	Order Clerks	2	224	198	-11.6%	54
43-4161	Human Resources Assistants, Except Payroll and Timekeeping	3	194	170	-12.4%	34
43-4171	Receptionists and Information Clerks	2	1,191	1,203	1.0%	341
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	2	8	7	-12.5%	1
43-4199	Information and Record Clerks, All Other	2	96	71	-26.0%	6
43-5011	Cargo and Freight Agents	2	25	29	16.0%	13

<b>SOC Code</b>	<b>Occupation Title</b>	<b>Job Zone</b>	<b>2014</b>	<b>2024</b>	<b>% Change 2014-2024</b>	<b>New and Replacement Jobs</b>
43-5021	Couriers and Messengers	2	72	60	-16.7%	5
43-5031	Police, Fire, and Ambulance Dispatchers	2	117	122	4.3%	42
43-5032	Dispatchers, Except Police, Fire, and Ambulance	2	247	307	24.3%	137
43-5041	Meter Readers, Utilities	2	78	87	11.5%	41
43-5051	Postal Service Clerks	2	95	75	-21.1%	21
43-5052	Postal Service Mail Carriers	2	374	293	-21.7%	135
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	2	174	112	-35.6%	9
43-5061	Production, Planning, and Expediting Clerks	3	430	450	4.7%	142
43-5071	Shipping, Receiving, and Traffic Clerks	2	902	846	-6.2%	213
43-5081	Stock Clerks and Order Fillers	2	2,808	2,723	-3.0%	896
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	2	56	60	7.1%	19
43-6011	Executive Secretaries and Executive Administrative Assistants	3	778	793	1.9%	141
43-6012	Legal Secretaries	3	190	195	2.6%	43
43-6013	Medical Secretaries	3	607	793	30.6%	257
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	3	3,622	4,078	12.6%	927
43-9011	Computer Operators	3	80	69	-13.8%	12
43-9021	Data Entry Keyers	2	211	168	-20.4%	31
43-9022	Word Processors and Typists	2	244	186	-23.8%	10
43-9031	Desktop Publishers	3	16	14	-12.5%	3
43-9041	Insurance Claims and Policy Processing Clerks	3	142	163	14.8%	67
43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	2	190	168	-11.6%	53
43-9061	Office Clerks, General	2	4,237	4,295	1.4%	1,034
43-9071	Office Machine Operators, Except Computer	2	123	128	4.1%	54
43-9081	Proofreaders and Copy Markers	4	14	12	-14.3%	2
43-9111	Statistical Assistants	4	19	20	5.3%	7
43-9199	Office and Administrative Support Workers, All Other	3	351	406	15.7%	157
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	3	14	15	7.1%	5
45-2011	Agricultural Inspectors	2	13	12	-7.7%	4
45-2041	Graders and Sorters, Agricultural Products	1	3	4	33.3%	1
45-2091	Agricultural Equipment Operators	2	9	10	11.1%	4
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	1	48	41	-14.6%	13
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals	1	50	56	12.0%	27

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
45-2099	Agricultural Workers, All Other	1	1	1	0.0%	0
45-4011	Forest and Conservation Workers	3	6	6	0.0%	1
45-4021	Fallers	1	2	1	-50.0%	0
45-4022	Logging Equipment Operators	1	20	21	5.0%	9
45-4023	Log Graders and Scalers	3	15	17	13.3%	5
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	3	989	1,209	22.2%	341
47-2011	Boilermakers	3	24	30	25.0%	19
47-2021	Brickmasons and Blockmasons	2	89	112	25.8%	33
47-2022	Stonemasons	3	11	12	9.1%	1
47-2031	Carpenters	2	1,340	1,572	17.3%	429
47-2041	Carpet Installers	2	46	52	13.0%	18
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	2	6	6	0.0%	1
47-2044	Tile and Marble Setters	2	17	21	23.5%	7
47-2051	Cement Masons and Concrete Finishers	2	252	302	19.8%	80
47-2053	Terrazzo Workers and Finishers	2	1	1	0.0%	0
47-2061	Construction Laborers	2	1,929	2,488	29.0%	1,026
47-2071	Paving, Surfacing, and Tamping Equipment Operators	2	267	365	36.7%	154
47-2072	Pile-Driver Operators	2	8	11	37.5%	5
47-2073	Operating Engineers and Other Construction Equipment Operators	2	1,189	1,334	12.2%	489
47-2081	Drywall and Ceiling Tile Installers	2	25	26	4.0%	6
47-2082	Tapers	2	7	9	28.6%	3
47-2111	Electricians	3	621	765	23.2%	314
47-2121	Glaziers	2	36	38	5.6%	14
47-2131	Insulation Workers, Floor, Ceiling, and Wall	2	10	12	20.0%	4
47-2132	Insulation Workers, Mechanical	2	10	13	30.0%	5
47-2141	Painters, Construction and Maintenance	2	110	132	20.0%	45
47-2142	Paperhangers	2	2	2	0.0%	0
47-2151	Pipelayers	2	65	62	-4.6%	13
47-2152	Plumbers, Pipefitters, and Steamfitters	3	516	578	12.0%	156
47-2161	Plasterers and Stucco Masons	1	6	11	83.3%	5
47-2171	Reinforcing Iron and Rebar Workers	2	28	36	28.6%	14
47-2181	Roofers	2	115	122	6.1%	52
47-2211	Sheet Metal Workers	2	140	150	7.1%	40
47-2221	Structural Iron and Steel Workers	2	66	77	16.7%	36
47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	2	25	31	24.0%	9

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
47-3012	Helpers--Carpenters	2	31	60	93.5%	33
47-3013	Helpers--Electricians	2	36	52	44.4%	23
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	1	3	3	0.0%	1
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	2	30	32	6.7%	6
47-3016	Helpers--Roofers	2	11	15	36.4%	7
47-3019	Helpers, Construction Trades, All Other	2	9	10	11.1%	2
47-4011	Construction and Building Inspectors	3	190	237	24.7%	99
47-4021	Elevator Installers and Repairers	3	9	8	-11.1%	2
47-4031	Fence Erectors	2	39	34	-12.8%	5
47-4041	Hazardous Materials Removal Workers	3	61	78	27.9%	38
47-4051	Highway Maintenance Workers	2	586	663	13.1%	190
47-4061	Rail-Track Laying and Maintenance Equipment Operators	2	10	9	-10.0%	1
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	1	40	47	17.5%	20
47-4099	Construction and Related Workers, All Other	3	17	15	-11.8%	0
47-5011	Derrick Operators, Oil and Gas	1	89	76	-14.6%	36
47-5012	Rotary Drill Operators, Oil and Gas	2	303	312	3.0%	233
47-5013	Service Unit Operators, Oil, Gas, and Mining	2	185	196	5.9%	130
47-5021	Earth Drillers, Except Oil and Gas	2	73	86	17.8%	46
47-5031	Explosives Workers, Ordnance Handling Experts, and Blasters	2	4	5	25.0%	2
47-5041	Continuous Mining Machine Operators	1	31	25	-19.4%	8
47-5042	Mine Cutting and Channeling Machine Operators	2	25	20	-20.0%	5
47-5049	Mining Machine Operators, All Other	2	8	10	25.0%	4
47-5051	Rock Splitters, Quarry	1	9	10	11.1%	5
47-5061	Roof Bolters, Mining	2	37	30	-18.9%	12
47-5071	Roustabouts, Oil and Gas	1	182	211	15.9%	114
47-5081	Helpers--Extraction Workers	2	157	163	3.8%	85
47-5099	Extraction Workers, All Other	2	32	25	-21.9%	2
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	3	541	617	14.0%	230
49-2011	Computer, Automated Teller, and Office Machine Repairers	3	99	102	3.0%	34
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairers	3	6	7	16.7%	2
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	3	102	117	14.7%	41
49-2091	Avionics Technicians	3	8	10	25.0%	5
49-2092	Electric Motor, Power Tool, and Related Repairers	3	26	25	-3.8%	7

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	3	6	6	0.0%	1
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	3	127	116	-8.7%	25
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	3	20	26	30.0%	12
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	3	4	4	0.0%	1
49-2097	Electronic Home Entertainment Equipment Installers and Repairers	3	14	12	-14.3%	5
49-2098	Security and Fire Alarm Systems Installers	3	51	56	9.8%	18
49-3011	Aircraft Mechanics and Service Technicians	3	19	17	-10.5%	6
49-3021	Automotive Body and Related Repairers	2	228	269	18.0%	101
49-3022	Automotive Glass Installers and Repairers	2	28	33	17.9%	14
49-3023	Automotive Service Technicians and Mechanics	3	1,218	1,324	8.7%	460
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	3	481	617	28.3%	258
49-3041	Farm Equipment Mechanics and Service Technicians	3	29	27	-6.9%	10
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	3	193	218	13.0%	92
49-3043	Rail Car Repairers	2	51	73	43.1%	44
49-3051	Motorboat Mechanics and Service Technicians	3	8	8	0.0%	2
49-3052	Motorcycle Mechanics	3	47	63	34.0%	33
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	2	48	55	14.6%	20
49-3091	Bicycle Repairers	2	17	13	-23.5%	4
49-3092	Recreational Vehicle Service Technicians	2	16	16	0.0%	7
49-3093	Tire Repairers and Changers	2	102	99	-2.9%	38
49-9011	Mechanical Door Repairers	2	9	9	0.0%	4
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	3	43	50	16.3%	23
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	3	399	479	20.1%	202
49-9031	Home Appliance Repairers	3	34	30	-11.8%	12
49-9041	Industrial Machinery Mechanics	3	646	736	13.9%	301
49-9043	Maintenance Workers, Machinery	3	209	235	12.4%	64
49-9044	Millwrights	3	36	46	27.8%	18
49-9045	Refractory Materials Repairers, Except Brickmasons	2	5	6	20.0%	3
49-9051	Electrical Power-Line Installers and Repairers	3	101	111	9.9%	53
49-9052	Telecommunications Line Installers and Repairers	2	170	212	24.7%	109
49-9062	Medical Equipment Repairers	3	69	92	33.3%	47
49-9063	Musical Instrument Repairers and Tuners	3	16	14	-12.5%	4

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
49-9064	Watch Repairers	3	1	1	0.0%	0
49-9069	Precision Instrument and Equipment Repairers, All Other	3	6	5	-16.7%	1
49-9071	Maintenance and Repair Workers, General	3	2,292	2,465	7.5%	677
49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	2	35	35	0.0%	9
49-9092	Commercial Divers	3	16	13	-18.8%	4
49-9094	Locksmiths and Safe Repairers	2	12	13	8.3%	5
49-9095	Manufactured Building and Mobile Home Installers	2	6	8	33.3%	4
49-9096	Riggers	2	8	11	37.5%	5
49-9098	Helpers--Installation, Maintenance, and Repair Workers	2	166	180	8.4%	67
49-9099	Installation, Maintenance, and Repair Workers, All Other	2	84	102	21.4%	31
51-1011	First-Line Supervisors of Production and Operating Workers	2	1,182	1,232	4.2%	288
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	2	21	19	-9.5%	5
51-2021	Coil Winders, Tapers, and Finishers	2	21	16	-23.8%	0
51-2022	Electrical and Electronic Equipment Assemblers	2	542	489	-9.8%	77
51-2023	Electromechanical Equipment Assemblers	2	137	90	-34.3%	0
51-2031	Engine and Other Machine Assemblers	2	70	67	-4.3%	23
51-2041	Structural Metal Fabricators and Fitters	3	167	187	12.0%	103
51-2091	Fiberglass Laminators and Fabricators	2	26	26	0.0%	8
51-2092	Team Assemblers	2	1,482	1,432	-3.4%	293
51-2099	Assemblers and Fabricators, All Other	2	159	193	21.4%	63
51-3011	Bakers	2	263	250	-4.9%	71
51-3021	Butchers and Meat Cutters	2	219	189	-13.7%	35
51-3022	Meat, Poultry, and Fish Cutters and Trimmers	1	67	55	-17.9%	8
51-3023	Slaughterers and Meat Packers	1	95	80	-15.8%	20
51-3091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	2	13	14	7.7%	6
51-3092	Food Batchmakers	2	154	156	1.3%	67
51-3093	Food Cooking Machine Operators and Tenders	2	48	52	8.3%	20
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	3	303	381	25.7%	184
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	3	40	41	2.5%	13
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	2	296	302	2.0%	113
51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	2	116	122	5.2%	47

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	2	117	110	-6.0%	32
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	2	454	458	0.9%	92
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	40	26	-35.0%	2
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	152	157	3.3%	64
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	105	103	-1.9%	36
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	3	55	52	-5.5%	16
51-4041	Machinists	3	685	749	9.3%	265
51-4051	Metal-Refining Furnace Operators and Tenders	2	45	45	0.0%	13
51-4052	Pourers and Casters, Metal	2	39	35	-10.3%	11
51-4061	Model Makers, Metal and Plastic	3	18	15	-16.7%	2
51-4062	Patternmakers, Metal and Plastic	3	7	7	0.0%	2
51-4071	Foundry Mold and Coremakers	2	12	10	-16.7%	1
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	2	299	267	-10.7%	44
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	311	333	7.1%	131
51-4111	Tool and Die Makers	3	182	200	9.9%	51
51-4121	Welders, Cutters, Solderers, and Brazers	3	586	690	17.7%	294
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	2	84	94	11.9%	43
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	2	60	58	-3.3%	17
51-4192	Layout Workers, Metal and Plastic	2	13	13	0.0%	3
51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	2	67	71	6.0%	27
51-4194	Tool Grinders, Filers, and Sharpeners	2	24	23	-4.2%	6
51-4199	Metal Workers and Plastic Workers, All Other	2	29	34	17.2%	11
51-5111	Prepress Technicians and Workers	3	72	51	-29.2%	10
51-5112	Printing Press Operators	3	314	263	-16.2%	52
51-5113	Print Binding and Finishing Workers	2	65	48	-26.2%	6
51-6011	Laundry and Dry-Cleaning Workers	1	346	358	3.5%	136
51-6021	Pressers, Textile, Garment, and Related Materials	1	72	69	-4.2%	16
51-6031	Sewing Machine Operators	1	161	134	-16.8%	49
51-6041	Shoe and Leather Workers and Repairers	2	34	41	20.6%	36
51-6051	Sewers, Hand	2	206	215	4.4%	33
51-6052	Tailors, Dressmakers, and Custom Sewers	3	36	36	0.0%	10

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-6061	Textile Bleaching and Dyeing Machine Operators and Tenders	2	2	1	-50.0%	1
51-6062	Textile Cutting Machine Setters, Operators, and Tenders	2	19	14	-26.3%	7
51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	2	23	11	-52.2%	4
51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	2	5	2	-60.0%	0
51-6091	Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	2	30	18	-40.0%	1
51-6092	Fabric and Apparel Patternmakers	3	4	3	-25.0%	0
51-6093	Upholsterers	2	45	50	11.1%	27
51-6099	Textile, Apparel, and Furnishings Workers, All Other	2	6	6	0.0%	1
51-7011	Cabinetmakers and Bench Carpenters	2	447	479	7.2%	219
51-7021	Furniture Finishers	1	101	124	22.8%	80
51-7031	Model Makers, Wood	3	10	10	0.0%	1
51-7032	Patternmakers, Wood	3	2	2	0.0%	1
51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	2	340	464	36.5%	278
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	2	409	544	33.0%	228
51-7099	Woodworkers, All Other	2	5	4	-20.0%	0
51-8011	Nuclear Power Reactor Operators	3	6	7	16.7%	3
51-8012	Power Distributors and Dispatchers	3	12	13	8.3%	6
51-8013	Power Plant Operators	2	43	38	-11.6%	15
51-8021	Stationary Engineers and Boiler Operators	3	145	178	22.8%	96
51-8031	Water and Wastewater Treatment Plant and System Operators	3	359	429	19.5%	221
51-8091	Chemical Plant and System Operators	2	26	25	-3.8%	15
51-8092	Gas Plant Operators	3	43	53	23.3%	34
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	2	29	36	24.1%	23
51-8099	Plant and System Operators, All Other	2	20	21	5.0%	10
51-9011	Chemical Equipment Operators and Tenders	2	115	93	-19.1%	40
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	2	47	40	-14.9%	15
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	2	50	54	8.0%	24
51-9022	Grinding and Polishing Workers, Hand	1	51	55	7.8%	23
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	2	245	256	4.5%	106
51-9031	Cutters and Trimmers, Hand	2	18	17	-5.6%	4

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders	2	167	141	-15.6%	20
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	2	142	147	3.5%	61
51-9051	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	2	37	36	-2.7%	15
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	2	793	796	0.4%	209
51-9071	Jewelers and Precious Stone and Metal Workers	3	14	12	-14.3%	1
51-9081	Dental Laboratory Technicians	2	18	20	11.1%	11
51-9082	Medical Appliance Technicians	3	14	13	-7.1%	6
51-9083	Ophthalmic Laboratory Technicians	2	29	28	-3.4%	12
51-9111	Packaging and Filling Machine Operators and Tenders	2	430	381	-11.4%	83
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	2	181	212	17.1%	78
51-9122	Painters, Transportation Equipment	2	48	47	-2.1%	13
51-9123	Painting, Coating, and Decorating Workers	2	27	25	-7.4%	6
51-9141	Semiconductor Processors	2	37	35	-5.4%	14
51-9151	Photographic Process Workers and Processing Machine Operators	2	32	25	-21.9%	5
51-9191	Adhesive Bonding Machine Operators and Tenders	2	47	52	10.6%	20
51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	2	14	14	0.0%	5
51-9193	Cooling and Freezing Equipment Operators and Tenders	2	8	8	0.0%	3
51-9194	Etchers and Engravers	2	13	13	0.0%	5
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	2	81	88	8.6%	44
51-9196	Paper Goods Machine Setters, Operators, and Tenders	2	828	907	9.5%	272
51-9197	Tire Builders	2	40	46	15.0%	22
51-9198	Helpers--Production Workers	2	757	726	-4.1%	163
51-9199	Production Workers, All Other	2	85	81	-4.7%	18
53-1011	Aircraft Cargo Handling Supervisors	2	6	7	16.7%	2
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	2	205	228	11.2%	87
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	2	315	370	17.5%	149
53-2012	Commercial Pilots	3	14	17	21.4%	8
53-2021	Air Traffic Controllers	3	15	14	-6.7%	7
53-2022	Airfield Operations Specialists	3	1	1	0.0%	1
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	2	60	79	31.7%	31

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
53-3021	Bus Drivers, Transit and Intercity	2	82	107	30.5%	48
53-3022	Bus Drivers, School or Special Client	2	1,143	1,323	15.7%	469
53-3031	Driver/Sales Workers	2	600	615	2.5%	130
53-3032	Heavy and Tractor-Trailer Truck Drivers	2	3,165	3,912	23.6%	1,413
53-3033	Light Truck or Delivery Services Drivers	2	1,153	1,160	0.6%	226
53-3041	Taxi Drivers and Chauffeurs	1	252	293	16.3%	92
53-3099	Motor Vehicle Operators, All Other	2	44	54	22.7%	21
53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers	2	16	19	18.8%	8
53-5021	Captains, Mates, and Pilots of Water Vessels	3	19	18	-5.3%	11
53-6011	Bridge and Lock Tenders	1	4	4	0.0%	2
53-6021	Parking Lot Attendants	2	142	167	17.6%	108
53-6031	Automotive and Watercraft Service Attendants	1	98	109	11.2%	42
53-6041	Traffic Technicians	3	2	2	0.0%	1
53-6051	Transportation Inspectors	3	8	7	-12.5%	2
53-6061	Transportation Attendants, Except Flight Attendants	2	39	37	-5.1%	8
53-6099	Transportation Workers, All Other	2	10	11	10.0%	5
53-7011	Conveyor Operators and Tenders	2	68	67	-1.5%	24
53-7021	Crane and Tower Operators	3	83	103	24.1%	53
53-7032	Excavating and Loading Machine and Dragline Operators	2	78	88	12.8%	22
53-7033	Loading Machine Operators, Underground Mining	2	10	8	-20.0%	0
53-7051	Industrial Truck and Tractor Operators	2	898	1,001	11.5%	397
53-7061	Cleaners of Vehicles and Equipment	2	379	410	8.2%	154
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	2	3,641	4,153	14.1%	1,825
53-7063	Machine Feeders and Offbearers	2	243	226	-7.0%	45
53-7064	Packers and Packagers, Hand	2	1,023	1,044	2.1%	343
53-7071	Gas Compressor and Gas Pumping Station Operators	2	75	89	18.7%	59
53-7072	Pump Operators, Except Wellhead Pumpers	2	155	156	0.6%	90
53-7073	Wellhead Pumpers	2	72	75	4.2%	57
53-7081	Refuse and Recyclable Material Collectors	2	139	162	16.5%	68
53-7111	Mine Shuttle Car Operators	2	17	16	-5.9%	7
53-7121	Tank Car, Truck, and Ship Loaders	2	18	19	5.6%	8
53-7199	Material Moving Workers, All Other	2	6	7	16.7%	3

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

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# 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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