

PENNSYLVANIA'S STATE SYSTEM OF HIGHER EDUCATION



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

A report for Pennsylvania's
State System of Higher Education

2016



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GLOSSARY OF TERMS

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

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

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

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

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

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

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

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

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

ACRONYMS USED

ACS: American Community Survey

BLS: Bureau of Labor Statistics

EMSI: Economic Modeling Specialists International

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

IPEDS: Integrated Postsecondary Education Data System

LAUS: Local Area Unemployment Statistics

LEHD: Longitudinal Employment and Housing Dynamics

NCES: National Center for Education Statistics

OES: Occupational Employment Statistics

O*NET: Occupational Network

PUMS: Public Use Microdata Sample

QCEW: Quarterly Census of Employment and Wages

SAIPE: Small Area Income and Poverty Estimates

USDOE: US Department of Education

USDOL: US Department of Labor

1. INTRODUCTION

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

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

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

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

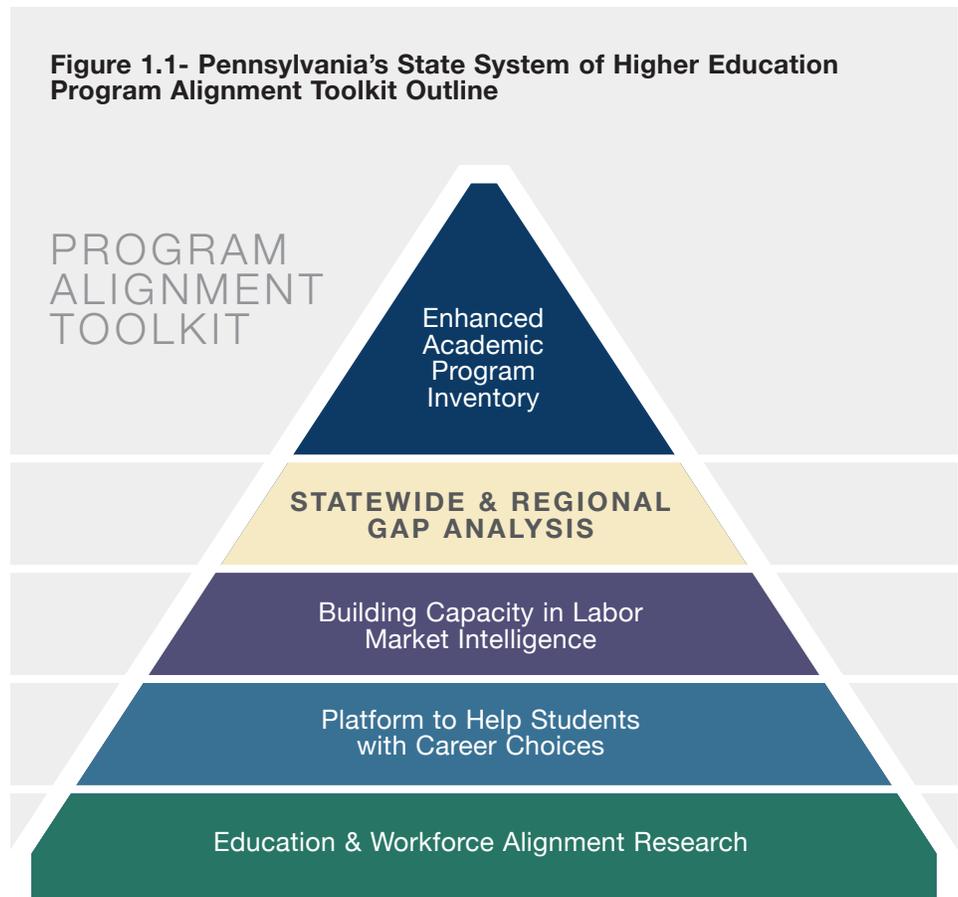
2 Source: The State System’s Economic and Employment Impact on the Commonwealth of Pennsylvania – released April 15, 2015.

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

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

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

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



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

1.2 Goal of the Workforce Characteristics Report

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

The intentions of this Workforce Characteristics Report are fourfold.

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

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

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

2. PENNSYLVANIA'S STATE SYSTEM LEARNER ORIGIN

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

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

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

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

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

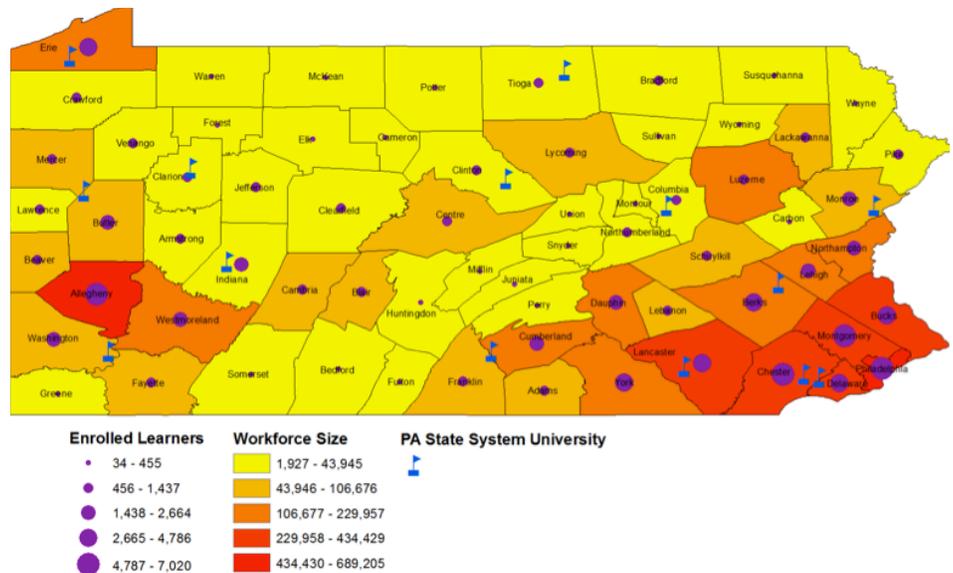
³ Based on Fall 2013 enrollment.

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

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

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

Figure 2.1 – State System Learner Origin and Workforce Size County

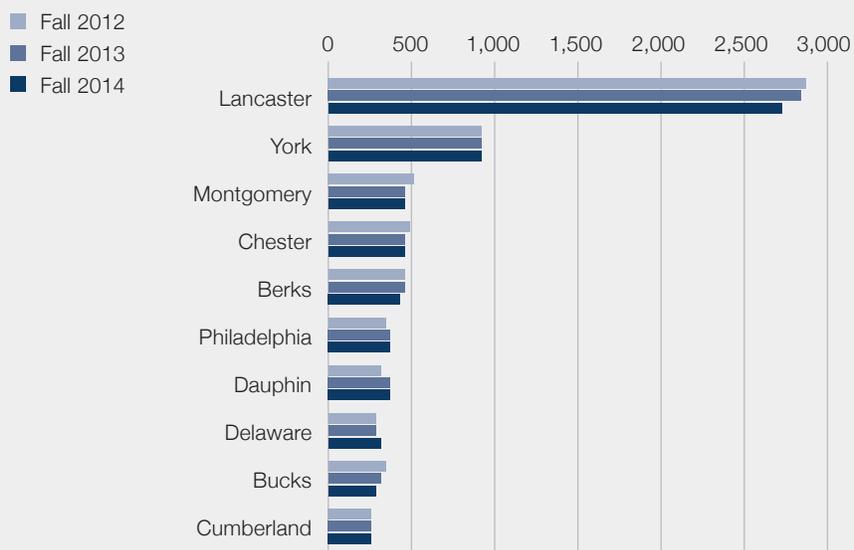


Source: Pennsylvania's State System of Higher Education, Oxford Economics mapping

2.1 Millersville University's Learner Origin

Millersville 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 central and southeast regions. The top 10 learner enrollment counties account for about 85% of resident enrollment in Millersville 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 – Millersville University Learner Enrollment by County



Source: Pennsylvania's State System of Higher Education

Table 2.3 – Millersville University Learner Enrollment by County

County	Fall 2012	Fall 2013	Fall 2014
Lancaster	2,894	2,876	2,752
York	931	922	924
Montgomery	533	467	469
Chester	485	467	452
Berks	460	463	426
Philadelphia	356	377	380
Dauphin	328	367	364
Delaware	283	300	314
Bucks	344	325	299
Cumberland	269	272	262

Source: Pennsylvania's State System of Higher Education

3. SUMMARY OF MILLERSVILLE UNIVERSITY WORKFORCE REGION

Located in Lancaster County, Pennsylvania, Millersville University (MU) supports the central and southeastern regions of Pennsylvania’s State System of Higher Education. It provides a breadth of degree programs and serves a student population of about 8,200 learners, of which about 93% are Pennsylvania residents.⁴

The following sections outline the supporting data used to select MU’s Pennsylvania workforce region—defined as Lancaster, Dauphin, Chester, York, and Lebanon counties. Subsequent sections provide a brief analysis of economic, workforce, demographic and socio-economic information. The purpose of providing this analysis is to gain better insight into how the workforce region has changed over the past several years, as well as projections of how the area will continue to change over the next several years.

A BRIEF NOTE ON DEVELOPING THE WORKFORCE REGION

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

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

⁴ Based on Average Fall Enrollment 2012-2014

3.1 Defining Millersville University’s Workforce Region

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

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

When taken in the context of regional economic activity, about 61% 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, 84% 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 – Millersville 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
Lancaster, York	0.70	0.75	0.54	0.83	0.48
Lancaster, Dauphin, York	0.75	0.78	0.57	0.85	0.53
Lancaster, Dauphin, Chester, York, Lebanon	0.82	0.83	0.61	0.84	0.61

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

The majority of MU workforce region residents also work in the region (82%). This reflects a very strong centralized connection between workers and economic activity in a region that has 886,000 jobs. Additionally, learners at MU

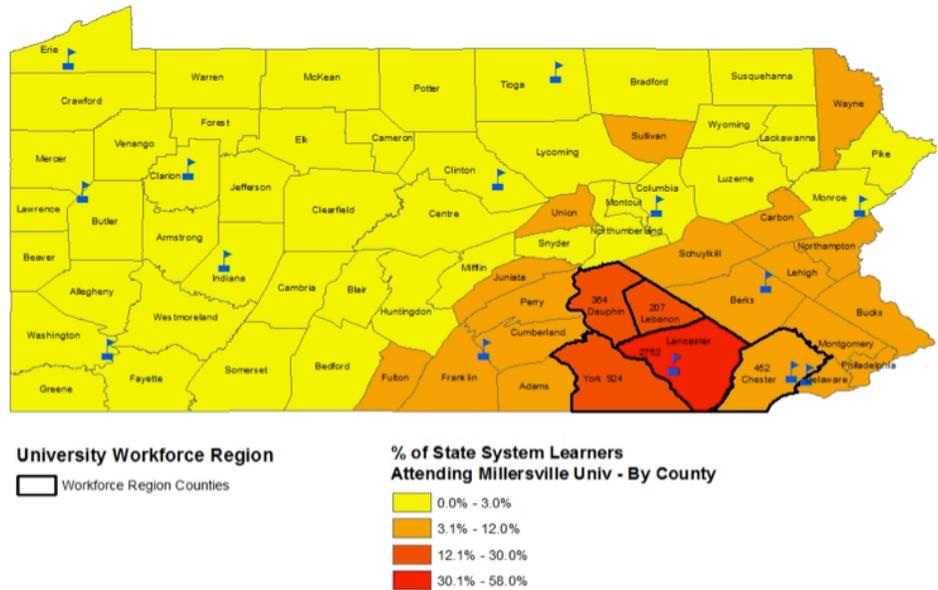
5 Bureau of Labor Statistics: Labor Market Area.

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.

originate from nearby surrounding counties. When looking at the percentage of learners attending State System universities, 61% (the capture rate) of State System learners in MU's workforce region attend MU.

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

Figure 3.1 – Millersville 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 MILLERSVILLE 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 Millersville 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 Millersville University's workforce region and Pennsylvania.

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

Workforce Characteristic	MU Workforce Region	Pennsylvania	Source
Population	1.9 million	12.7 million	2009-2013 American Community Survey 5-Year Estimates
Employed	886,000	5.6 million	2014 BLS Quarterly Census of Employment and Wages
Unemployed	46,700	370,000	2014 BLS Local Area Unemployment Statistics
Unemployment Rate	4.8%	5.8%	2014 BLS Local Area Unemployment Statistics
Poverty Rate	10.1%	13.7%	2013 Census Small Area Income and Poverty Estimates
Business Establishments	46,800	347,000	2014 BLS Quarterly Census of Employment and Wages
Educational Attainment (25+ Population with Bachelor's or Higher)	30.1%	27.4%	2009-2013 American Community Survey 5-Year Estimates
Bachelor's or Higher Completions	11,600	137,000	Integrated Postsecondary Education Data System 3-Year Average AY2010-11 to AY2012-13
Projected Jobs 2024	982,000	6.2 million	Oxford Economics Projections 2024

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

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

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

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

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

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

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

The next section provides an analysis of industries in Millersville 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 MILLERSVILLE UNIVERSITY'S WORKFORCE REGION

Over the five years of 2009 to 2014, Millersville University's (MU) workforce region experienced job growth in many service-based sectors. Sectors such as education and health services; professional and business services; and other services added a combined 29,000 new jobs between 2009 and 2014. Government experienced the largest nominal employment loss, while other job losses occurred within manufacturing, financial activities, and information. Overall, the economy added about 14,900 jobs during the recovery period, 2009 to 2014. This growth reflects the recovery period for Pennsylvania from one of the worst recessions since the Great Depression—the Great Recession which lasted from 2007 to 2009.

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

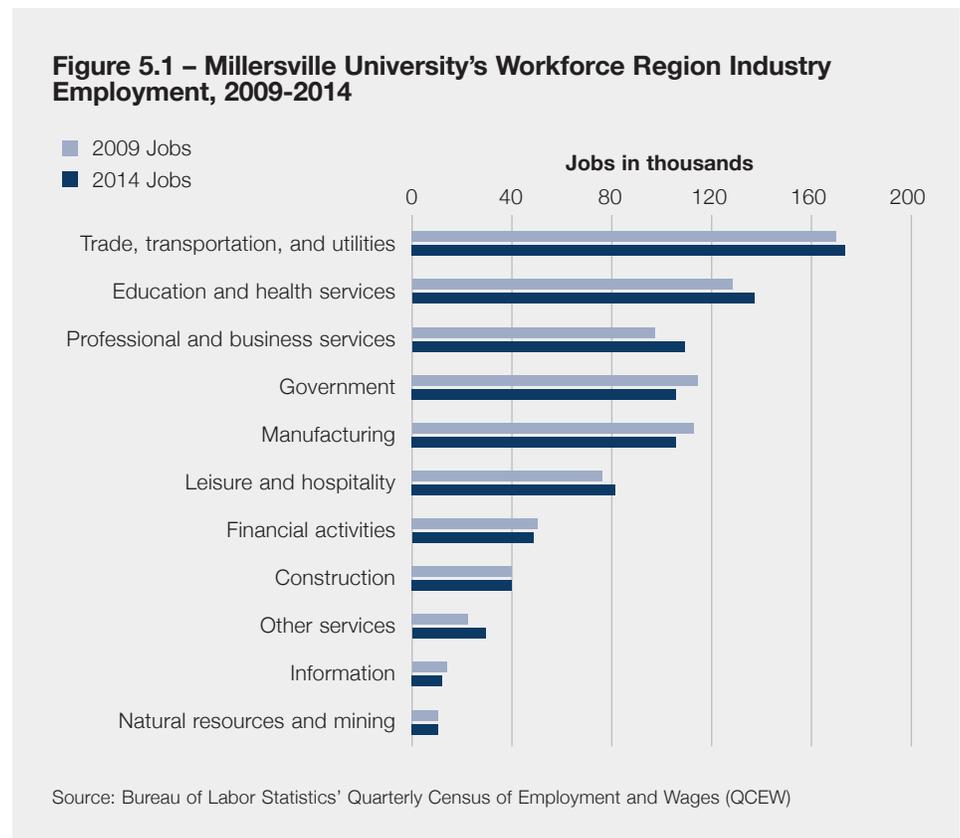


Table 5.1 – Millersville University’s Workforce Region Industry Employment, 2009-2014

Industry Employment	2009 Jobs	2014 Jobs	Absolute Change 09-14	% Change 09-14
Total, all industries	848,276	863,160	14,884	1.8%
Trade, transportation, and utilities	172,260	174,918	2,658	1.5%
Education and health services	129,133	139,043	9,910	7.7%
Professional and business services	98,679	109,828	11,149	11.3%
Government	114,743	107,538	-7,205	-6.3%
Manufacturing	113,205	107,292	-5,913	-5.2%
Leisure and hospitality	76,209	81,730	5,521	7.2%
Financial activities	50,897	49,199	-1,698	-3.3%
Construction	40,611	40,615	4	0.0%
Other services	22,021	29,955	7,934	36.0%
Information	13,988	12,388	-1,600	-11.4%
Natural resources and mining	10,591	10,655	64	0.6%

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

5.1 Top Employers in Millersville University’s Workforce Region

Amongst the top employers within MU’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 financial, manufacturing, and retail establishments.

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

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

Table 5.2: Top Employers in Millersville University’s Workforce Region

Establishment Name
Barnes-Kasson County Hospital
Bradford County Commissioners
Cargill Meat Solutions
Charles Cole Memorial Hospital
Cole Care
Elk Lake School District
Empereon Marketing
Endless Mountains Health Systems
GTP Corp
Guthrie Medical Group
Hitachi Metals Automotive
Lackawanna Trail School District
Montrose Area School District
Morris Compressors
Mountain View School District
Northern Tioga School District
Pennsylvania State System of Higher Education
Procter & Gamble Paper Products
Robert Packer Hospital
Somerset Regional Water Resources
State Government
Susquehanna Health System
Tunkhannock Area School District
Wal-Mart
Ward Manufacturing

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

6. OCCUPATIONS IN MILLERSVILLE 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 MU's workforce region, answering questions such as:

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

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

6.1 Skilled Occupations

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

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

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

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

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

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

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

6.2 Top Skilled Occupations in Millersville University's Workforce Region

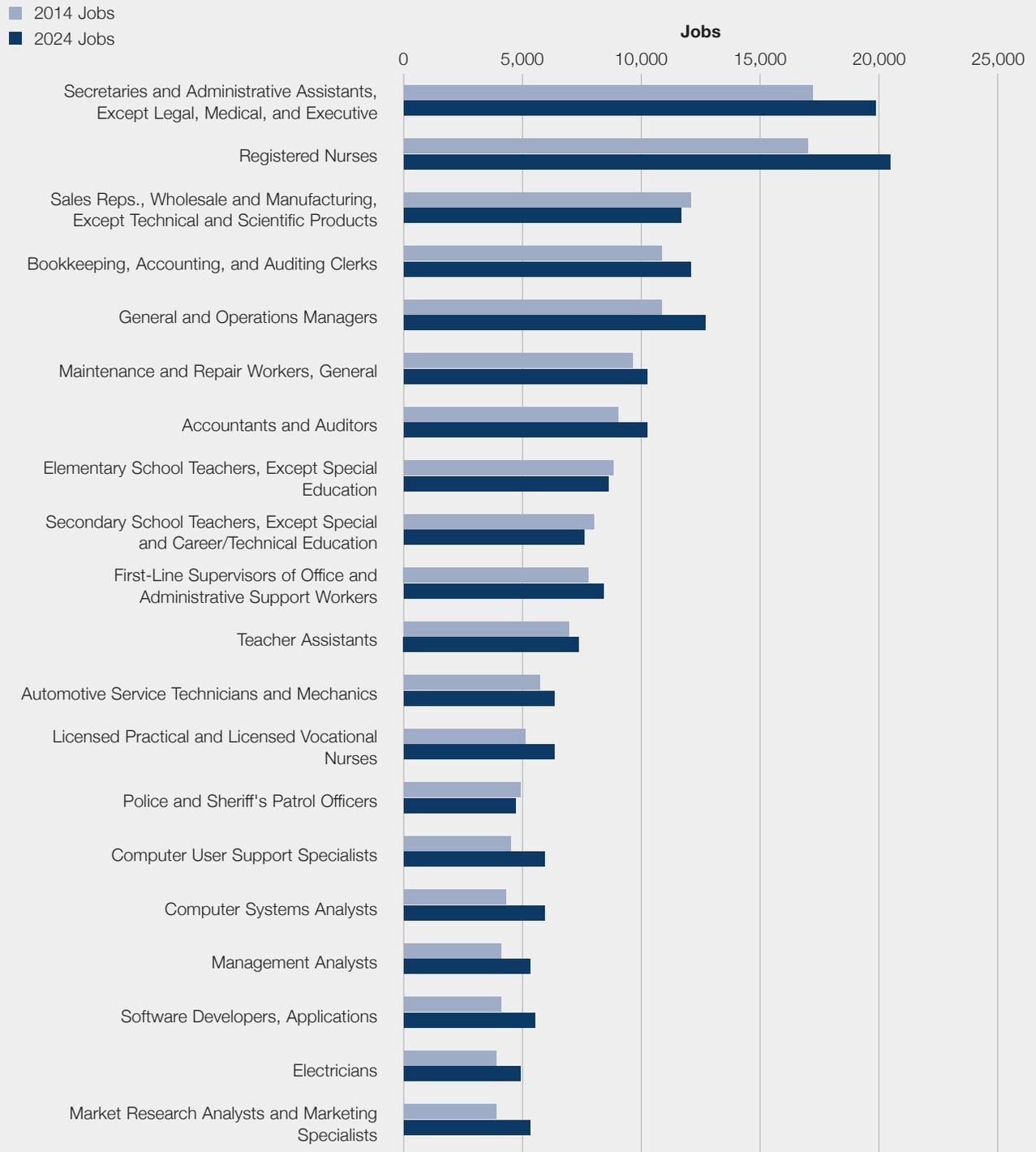
Top skilled occupations in the region are driven by industry composition. Medical centers employ a cadre of health professionals, while enterprise management companies employ a range of business professionals. Given the dominating presence of trade, transportation and utilities; education and health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

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

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

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

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

SOC Code	Occupation Title	2014 Jobs	2024 Jobs	10-year New and Replacement Demand
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	17,080	19,858	4,997
29-1141	Registered Nurses	16,997	20,372	6,817
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	12,016	11,692	2,467
43-3031	Bookkeeping, Accounting, and Auditing Clerks	10,803	12,000	2,265
11-1021	General and Operations Managers	10,736	12,676	3,850
49-9071	Maintenance and Repair Workers, General	9,506	10,227	2,815
13-2011	Accountants and Auditors	8,950	10,147	4,176
25-2021	Elementary School Teachers, Except Special Education	8,727	8,536	2,004
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	8,056	7,553	2,240
43-1011	First-Line Supervisors of Office and Administrative Support Workers	7,783	8,273	2,354
25-9041	Teacher Assistants	6,980	7,317	2,071
49-3023	Automotive Service Technicians and Mechanics	5,647	6,288	2,283
29-2061	Licensed Practical and Licensed Vocational Nurses	5,141	6,387	2,603
33-3051	Police and Sheriff’s Patrol Officers	4,943	4,772	1,603
15-1151	Computer User Support Specialists	4,457	5,979	2,320
15-1121	Computer Systems Analysts	4,230	5,860	2,379
13-1111	Management Analysts	4,136	5,354	1,906
15-1132	Software Developers, Applications	3,990	5,448	2,027
47-2111	Electricians	3,933	4,896	2,034
13-1161	Market Research Analysts and Marketing Specialists	3,927	5,385	2,087

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

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

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

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

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

6.3.1 New and Replacement Demand for Key Skilled High Demand Occupations

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

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

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

Figure 6.2 and Table 6.2 outline the five key skilled high demand occupations for new and replacement jobs over the next 10 years, specifically: registered nurses, accountants and auditors, general and operations managers, personal financial advisors, and financial analysts.¹²

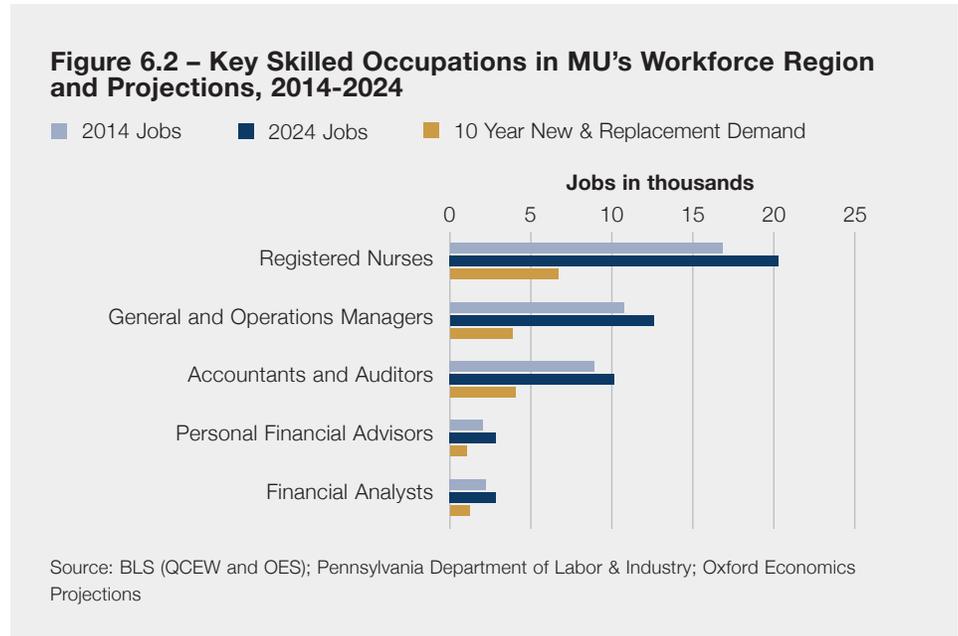


Table 6.2 – Key Skilled Occupations in MU’s Workforce Region and Projections, 2014-2024

SOC Code	Occupation Title	2014 Jobs	2024 Jobs	10 Year New & Replacement Demand
29-1141	Registered Nurses	16,997	20,372	6,817
11-1021	General and Operations Managers	10,736	12,676	3,850
13-2011	Accountants and Auditors	8,950	10,147	4,176
13-2052	Personal Financial Advisors	2,139	2,830	1,090
13-2051	Financial Analysts	2,206	2,763	1,135

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 2,400 unique (de-duplicated) job postings appeared in MU’s Workforce Region for the top five key skilled high demand occupations (registered nurses, accountants and auditors, general and operations managers, personal financial advisors, and financial analysts). Sizable job postings include: registered nurses (1,187 unique postings per month), and accountants and auditors (550 unique postings per month).

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

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

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

Occupation	Average Monthly Postings (Jul 2014 - Jul 2015)	Estimated Average Monthly Hires (Jul 2014 - Jul 2015)	Ratio of Postings to Hires
Registered Nurses	1,187	480	2.5
Accountants and Auditors	550	414	1.3
General and Operations Managers	423	542	0.8
Financial Analysts	172	64	2.7
Personal Financial Advisors	61	50	1.2

Source: Economic Modeling Specialists International (EMSI)

Registered Nurses

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

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

Accountants and Auditors

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

Certifications: Certified Public Accountant (CPA)

General and Operations Managers

Unique skills: inventory management, payroll, recruiting/staffing, budgeting, meetings/presentations

Certifications: Six Sigma, Project Management Professional (PMP)

Financial Analysts

Unique skills: financial modeling, financial analysis, economics, investments

Certifications: Certified Public Accountant (CPA), Chartered Financial Analyst (CFA), Series 7, Series 63

Personal Financial Advisors

Unique skills: investment advisory, wealth management, financial planning, retirement funds

Certifications: Series 7, Series 63, Certified Financial Planner (CFP), chartered financial consultant

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 Millersville 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 9,171 registered nurses);
- The percent of the occupation's employment in the region that is employed in the industry (e.g. the 9,171 registered nurses employed in general medical and surgical hospitals represent nearly 54% 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 9,171 registered nurses make up about 27% of employment within general medical and surgical hospitals).

Staffing Patterns for Registered Nurses Employed in MU'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	9,171	54.0%	27.2%
Offices of Physicians	1,476	8.7%	9.4%
Home Health Care Services	1,109	6.5%	21.0%
Nursing Care Facilities (Skilled Nursing Facilities)	914	5.4%	9.9%
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	726	4.3%	4.7%

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

Staffing Patterns for General and Operations Managers Employed in MU's Workforce Region

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Management of Companies and Enterprises	557	5.2%	2.7%
Other Financial Investment Activities	340	3.2%	2.7%
Wholesale Electronic Markets and Agents and Brokers	309	2.9%	3.5%
Computer Systems Design and Related Services	245	2.3%	1.7%
Restaurants and Other Eating Places	230	2.1%	0.5%

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

Staffing Patterns for Accountants and Auditors Employed in MU'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	1,807	20.2%	38.6%
Other Financial Investment Activities	1,104	12.3%	8.9%
Management of Companies and Enterprises	1,047	11.7%	5.0%
Management, Scientific, and Technical Consulting Services	256	2.9%	3.0%
Insurance Carriers	235	2.6%	2.4%

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

Staffing Patterns for Personal Financial Advisors Employed in MU's Workforce Region

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Other Financial Investment Activities	1,677	78.4%	13.6%
Securities and Commodity Contracts Intermediation and Brokerage	166	7.8%	17.7%
Depository Credit Intermediation	125	5.9%	1.3%
Agencies, Brokerages, and Other Insurance Related Activities	54	2.5%	0.7%
Activities Related to Credit Intermediation	26	1.2%	5.9%

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

Staffing Patterns for Financial Analysts Employed in MU's Workforce Region

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Other Financial Investment Activities	796	36.1%	6.4%
Management of Companies and Enterprises	430	19.5%	2.1%
Insurance Carriers	185	8.4%	1.9%
Management, Scientific, and Technical Consulting Services	121	5.5%	1.4%
Depository Credit Intermediation	117	5.3%	1.2%

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

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

6.5 Key Skilled High Demand Occupational Profiles

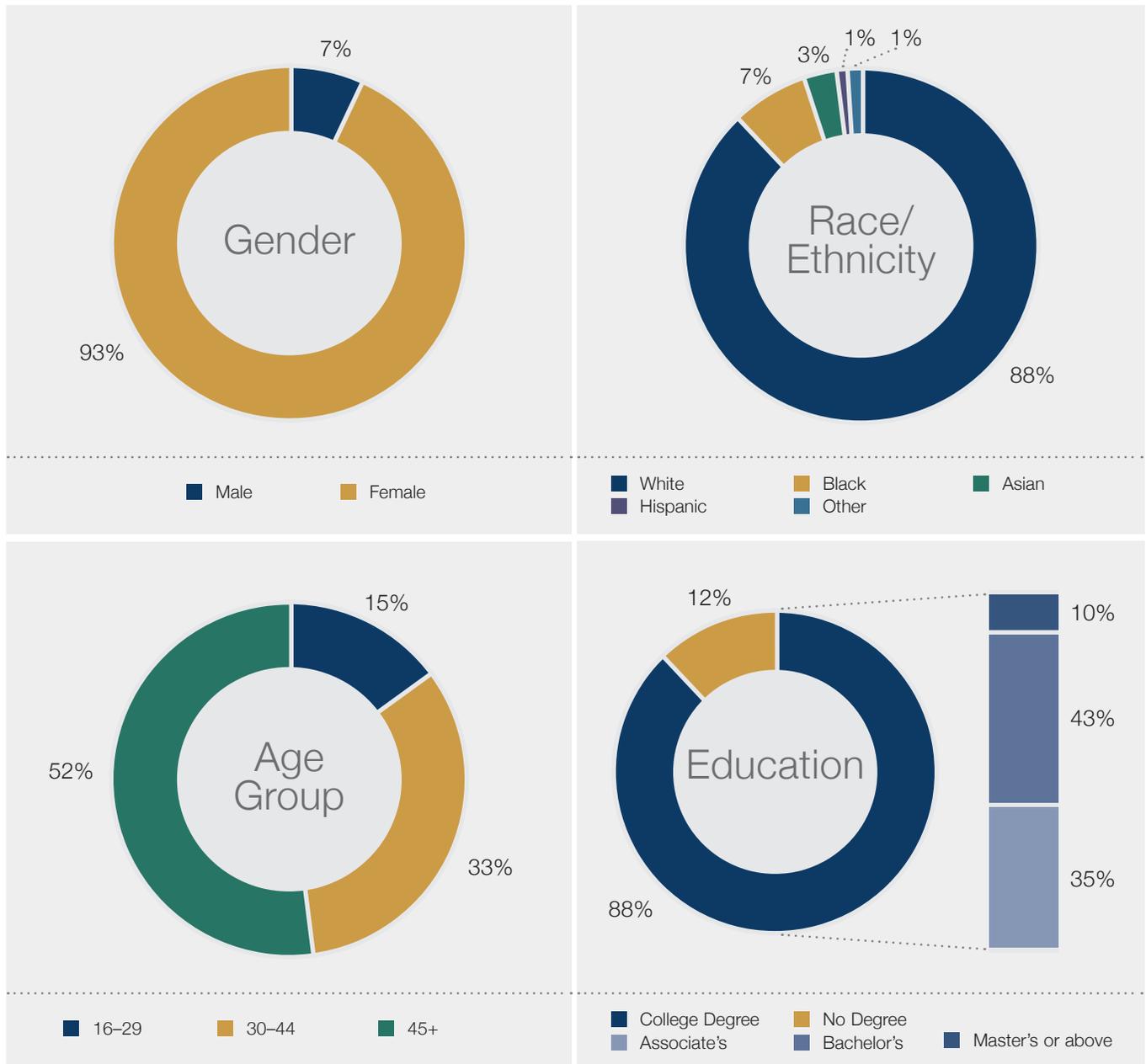
In addition to understanding the industries that employ key skilled high demand occupations, another lens to view key skilled high demand occupations focuses on the characteristics of those employed. The following section outlines the demographics for people from Pennsylvania who work in these key skilled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

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

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

REGISTERED NURSES IN PENNSYLVANIA

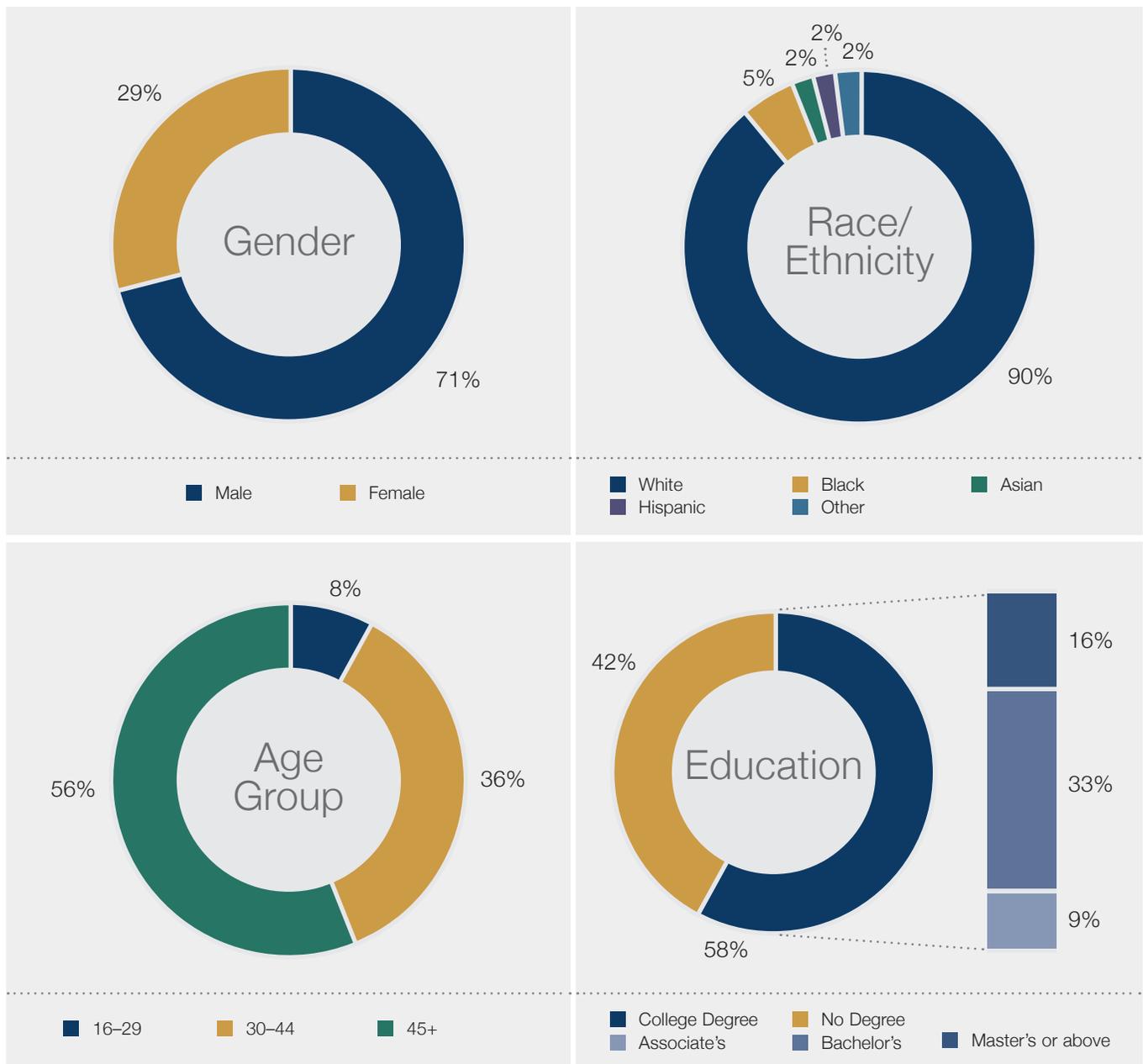
The demographic profile of registered nurses is largely dominated by white females. Age distribution indicates that registered nurses are a more mature cohort of workers (45 years and older), which can put increasing pressure on replacement jobs due to retirements over the next 10 years. Nearly 90% of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

GENERAL AND OPERATIONS MANAGERS IN PENNSYLVANIA

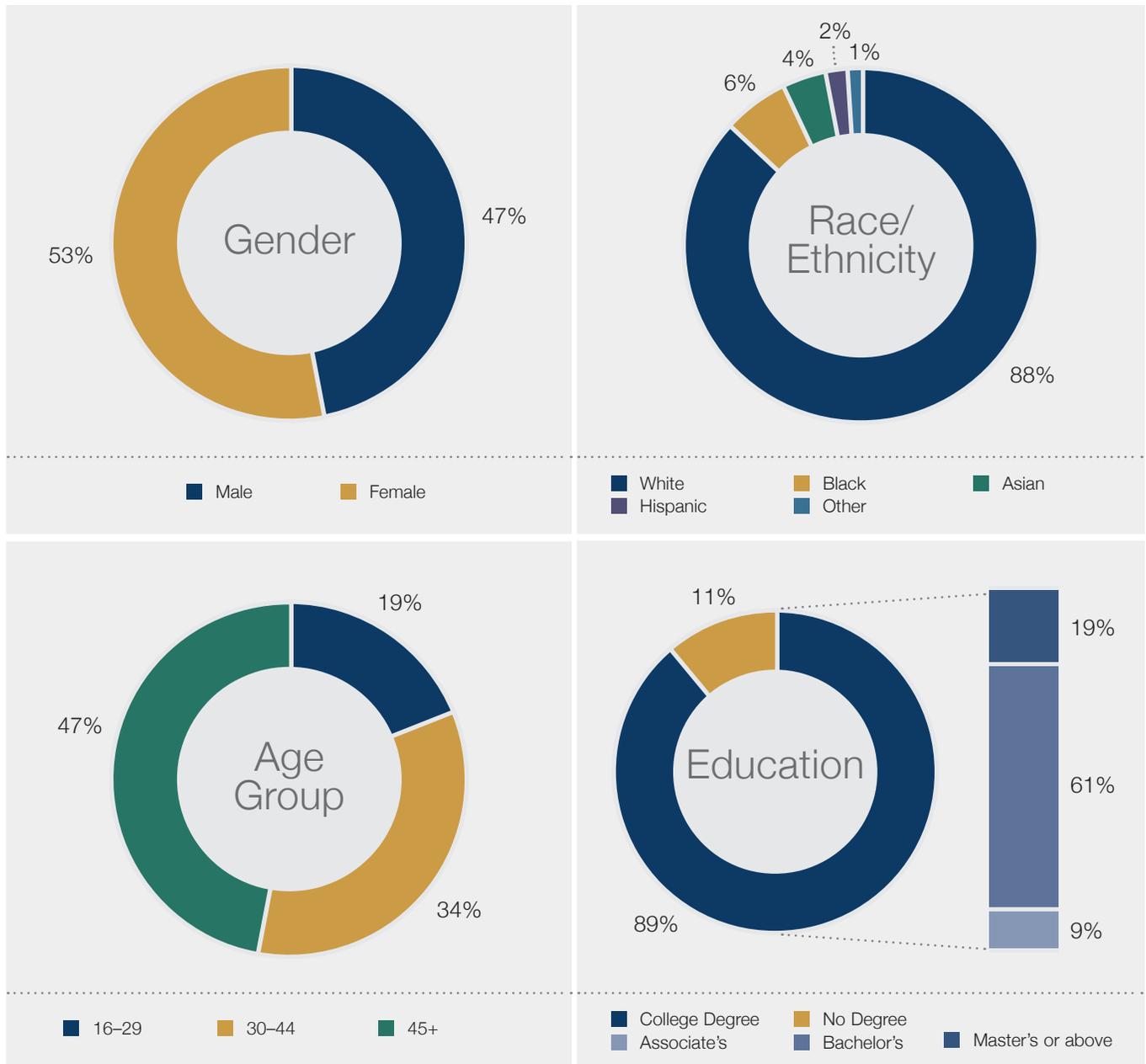
General and operations managers are typically male, though females occupy almost 30% of the employed population. The majority of those in this occupation are white. This occupation is represented by a more mature cohort of workers (45 years and older), though mid-career workers also occupy a significant proportion of the employment. Nearly 60% of general and operations managers have an associate's degree or higher.



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

ACCOUNTANTS AND AUDITORS IN PENNSYLVANIA

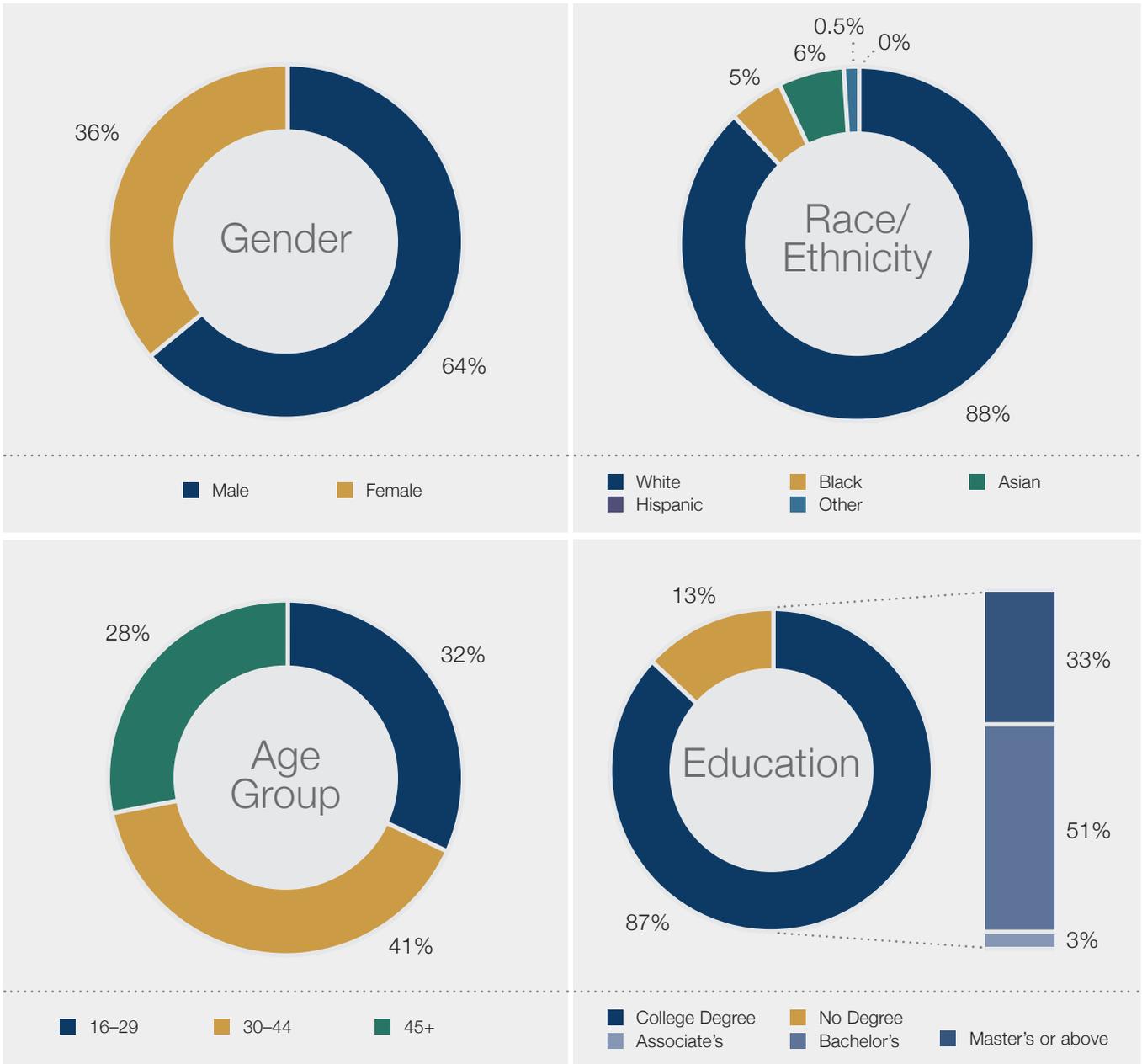
Accountants and auditors are fairly equally split between male and female, though a slightly higher percent of employed accountants and auditors are female. A high proportion of white individuals are found in the occupation. Additionally, the age distribution is fairly even between entry-level and mature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

FINANCIAL ANALYSTS IN PENNSYLVANIA

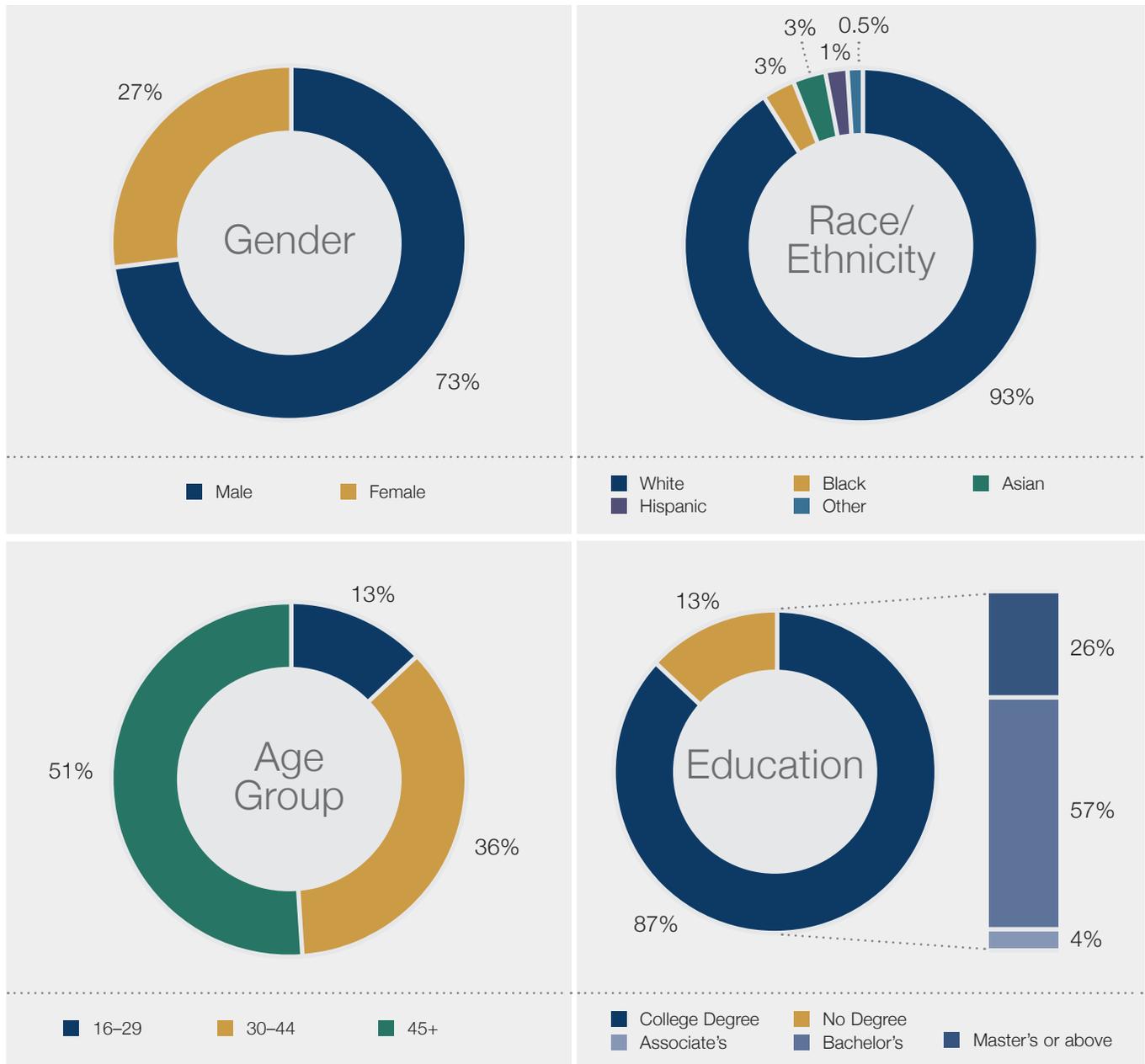
Financial analysts show a larger proportion of males in the occupation compared to females. A high proportion of white individuals are found in the occupation. The age distribution has a large proportion of entry-level (16-29) and mid-career (30-44) workers, indicating that the occupation provides good opportunities for first destinations of recent college graduates. Over 80% of financial analysts have an associate's degree or higher indicating that this is a highly educated occupation.



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

PERSONAL FINANCIAL ADVISORS IN PENNSYLVANIA

Personal financial advisors are typically male, though females occupy almost 30% of the employed population. The majority of those in this occupation are white. This occupation is represented by a majority of older workers (45 years and older), though mid-career workers also occupy a significant proportion of the employment. This will put increasing pressure on replacement jobs due to retirements over the next 10 years. Nearly 90% of personal financial advisors have an associate's degree or higher.



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

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

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

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

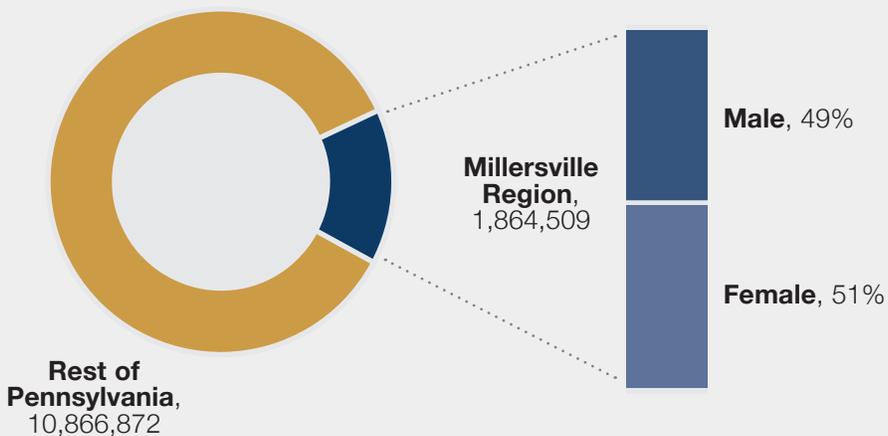
Analysis of three socio-economic indicators—education, unemployment, and poverty—also provides insight into the segment of the population that may be considered economically disadvantaged. Areas with high proportions of economically disadvantaged learners may require additional considerations in education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

7.1 Demographics of Millersville University's Workforce Region

The MU workforce region has a population of about 1.9 million people. As shown in Figure 7.1, females make up a slightly larger share of the population compared to males. Figure 7.2 illustrates that the majority of the region is represented by a White demographic, with Hispanics representing the next largest group, followed by Blacks.

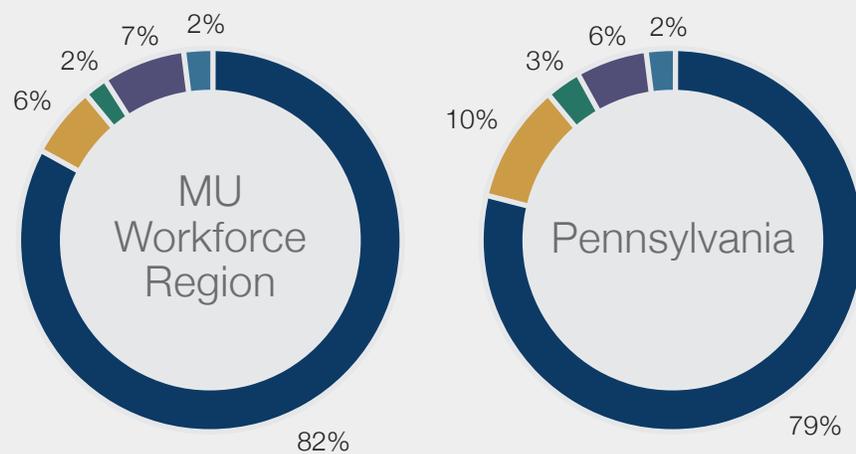
Fall 2014 data from the State System Research Office indicates that approximately 83% (90,966) of learners within the State System are traditional students—ages 18- to 22-year-old high school graduates—and 17% (18,640) are adult learners. A view of the change in population by age demographic indicates a diminishing number in the traditional age cohort and a growing rate of adults aged 25 to 34 years old. As illustrated in figure 7.3, the 10 to 19 year old cohort population declined by nearly 3,900 people between 2010 and 2014—a 2% decline. Conversely, the 25-34 year old cohort increased nearly 7%, or 15,100 people, over the same time period. This demographic shift presents an opportunity to incorporate a broader university recruitment strategy.

Figure 7.1 – Millersville University's Workforce Region Population and Gender Distribution



Source: U.S. Census - ACS

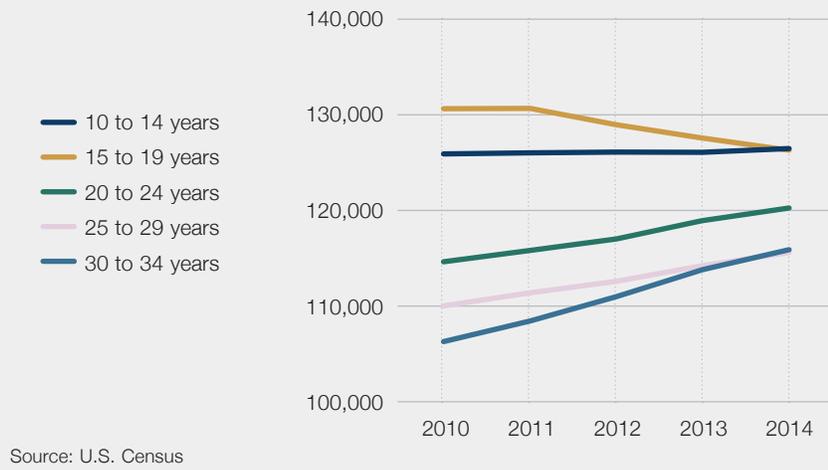
Figure 7.2 – Millersville University's Workforce Region Race/Ethnicity Composition



■ White ■ Black ■ Asian ■ Hispanic ■ Other

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

Figure 7.3 – Millersville University's Workforce Region Changes in Population of Age Cohorts



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

7.2 Socio-economic Indicators of Millersville 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 Millersville University's Workforce Region

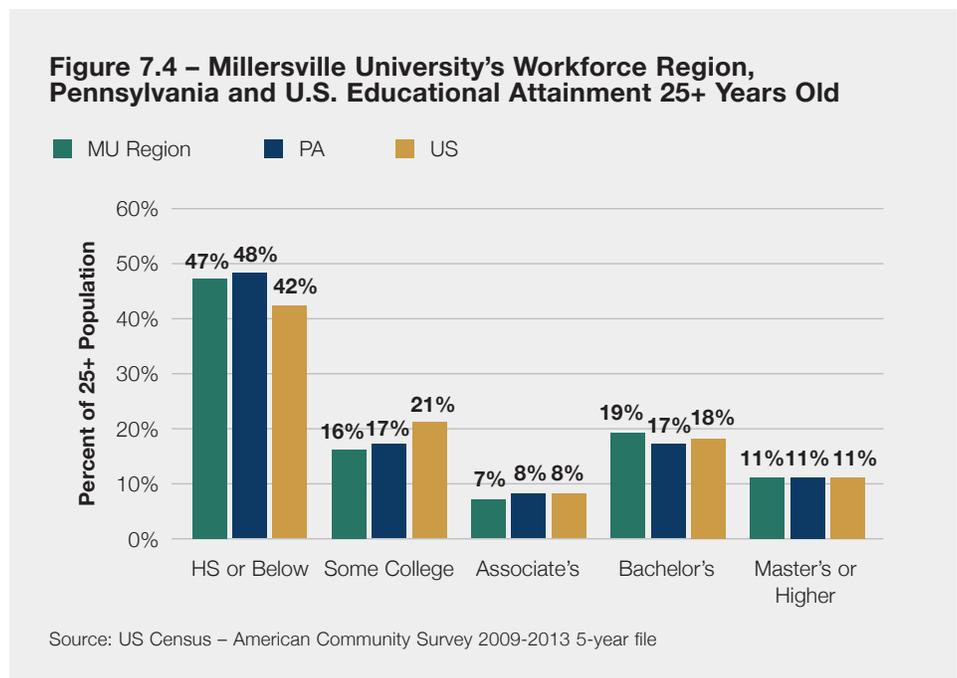
The levels of educational attainment of a population indicate several characteristics in an economy. Areas with better educated workers earn higher wages, are more productive and can typically adjust more quickly to changing economic conditions. Additionally, an educated workforce is less likely to be

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

A view of educational attainment in MU’s workforce region indicates that more than half (53%) 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, MU’s workforce region is near the national average for the proportion of the population with an associate’s degree, bachelor’s degree, and master’s degrees or higher.

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



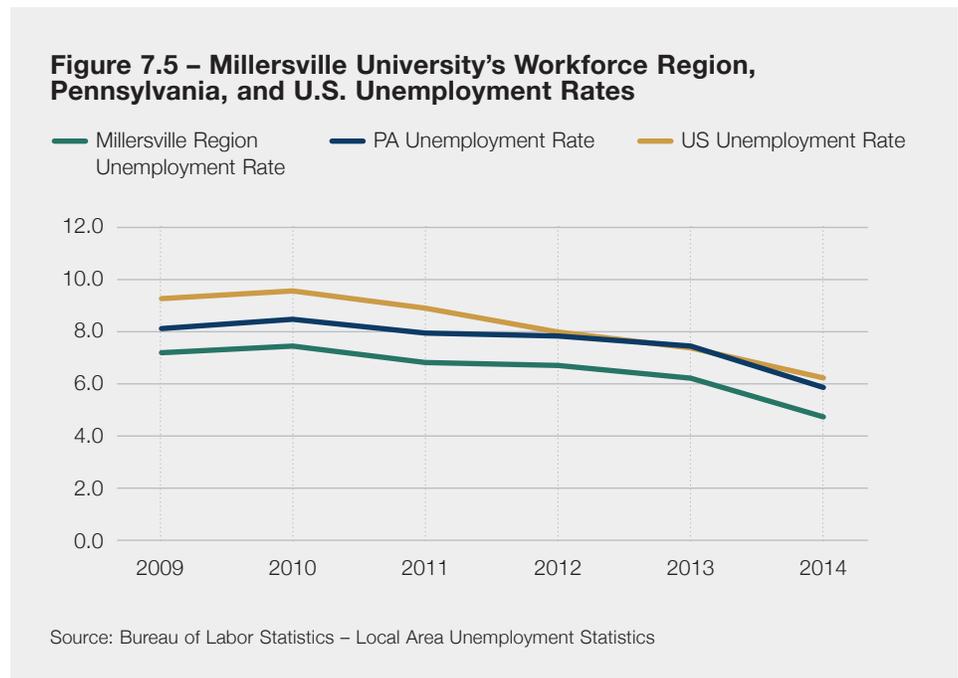
13 Feinstein et. al. (2006), “The effects of education on health: Concepts, evidence and policy implications: A review for the OECD Center for Educational Research and Innovation (CERI)”, unpublished manuscript, OECD, Paris.

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 Millersville University's Workforce Region

MU's workforce region unemployment rate—4.8% in 2014—has trended closely with the state and national unemployment rate since 2009, but has remained below both the state and national average. This suggests that opportunities for dislocated workers on average are roughly better in the region compared to the rest of the nation.

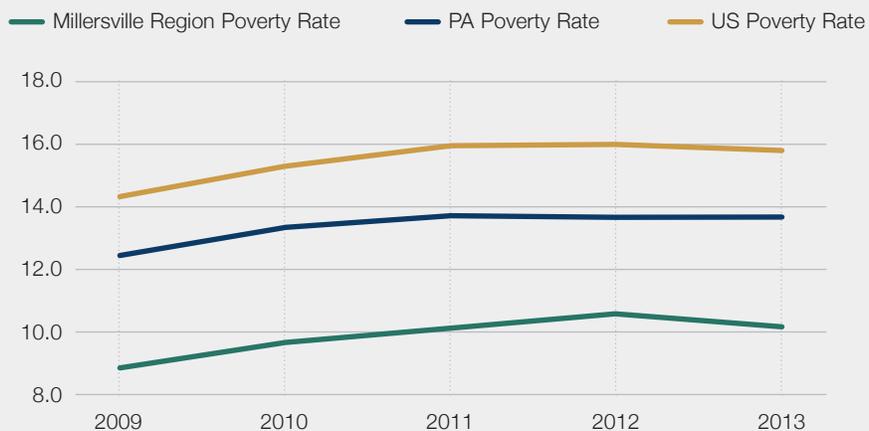
Figure 7.5 shows the convergence of the unemployment rates of MU's workforce region, Pennsylvania, and the U.S. from 2009 to 2014.



In MU's workforce region, the poverty rate trended upward since 2009 but declined slightly from 2012 to 2013. The region's poverty rate is below both the state poverty rate and the U.S. average.¹⁵ Given the lower poverty rate compared with the nation, there is an underlying assumption that the compensation associated with the jobs in MU's workforce region may be higher than the national average.

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

Figure 7.6 – Millersville 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 MU’s workforce region, Pennsylvania, and the U.S. from 2009 to 2013.

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

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

8. NEXT STEPS

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

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

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

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

DATA SOURCES

Bureau of Labor Statistics (BLS):

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

U.S. Census Bureau (Census):

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

National Center for Education Statistics (NCES):

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

Pennsylvania Department of Labor and Industry (PADLI):

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

O*NET Resource Center (O*NET)

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

Economic Modeling Specialists International (EMSI)

APPENDIX A: METHODOLOGY FOR IDENTIFYING STATE SYSTEM UNIVERSITY WORKFORCE REGIONS

Introduction

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

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

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

¹⁶ Bureau of Labor Statistics: Labor Market Area.

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

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

Further information on each of the measurements is detailed later.

Geographic Consideration

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

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

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

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

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

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

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

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

Process

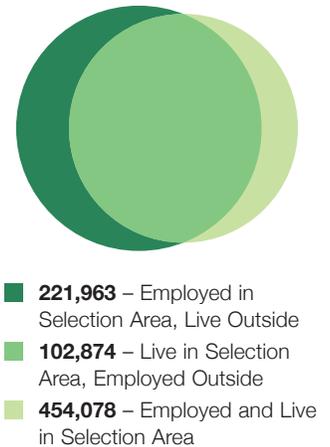
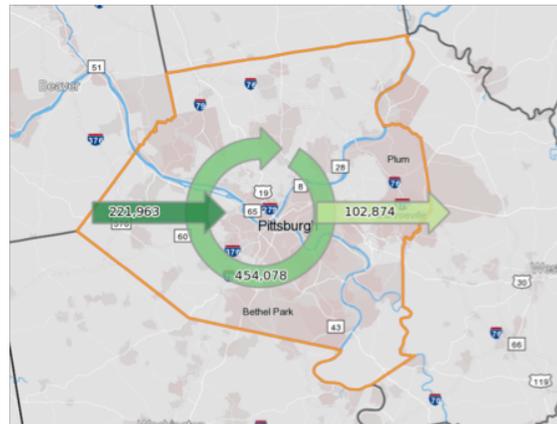
Given the workforce/commute, learner and economic variances that exist within the different geographies across Pennsylvania, an iterative process is used to define the workforce region. This multiple step, iterative process seeks to maximize the primary driver value (workforce flows), while adhering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

Workforce Flows:

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

When these numbers are converted into percentages, we find that

Inflow/Outflow Job Counts in 2013



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

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

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

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

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

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

Learner Capture Rates and Inclusiveness:

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

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

Economic Activity and Concentration:

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

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

Table A.1 – State System Workforce Region by University

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

Source: Oxford Economics modeling and tabulations

APPENDIX B: PENNSYLVANIA STATE AND COUNTY ENROLLMENT AND EMPLOYMENT

County	Fall 2014 Enrollment in Millersville University	2014 QCEW Employment
Adams	102	34,139
Allegheny	14	683,111
Armstrong	0	17,582
Beaver	3	52,811
Bedford	2	15,397
Berks	426	166,792
Blair	4	58,233
Bradford	5	24,568
Bucks	299	250,889
Butler	3	84,472
Cambria	10	53,915
Cameron	1	2,015
Carbon	15	16,974
Centre	10	67,147
Chester	452	240,469
Clarion	1	13,586
Clearfield	2	29,938
Clinton	10	13,043
Columbia	13	24,974
Crawford	3	31,113
Cumberland	262	126,939
Dauphin	364	176,004
Delaware	314	216,261
Elk	1	14,994
Erie	2	124,095
Fayette	5	39,979
Forest	0	2,053
Franklin	55	56,715
Fulton	6	4,807
Greene	0	14,844
Huntingdon	1	12,343

County	Fall 2014 Enrollment in Millersville University	2014 QCEW Employment
Indiana	2	32,653
Jefferson	0	15,435
Juniata	6	6,146
Lackawanna	22	97,259
Lancaster	2,752	225,673
Lawrence	0	29,500
Lebanon	207	48,869
Lehigh	111	180,757
Luzerne	31	140,329
Lycoming	30	53,197
McKean	1	15,770
Mercer	1	48,028
Mifflin	11	15,544
Monroe	26	52,933
Montgomery	469	472,655
Montour	7	15,578
Northampton	103	105,825
Northumberland	13	27,985
Perry	31	7,661
Philadelphia	380	640,987
Pike	7	10,748
Potter	0	5,291
Schuylkill	61	50,049
Snyder	6	15,522
Somerset	0	24,398
Sullivan	2	1,772
Susquehanna	5	9,281
Tioga	7	12,973
Union	13	16,597
Venango	2	19,251
Warren	1	15,031
Washington	3	86,961
Wayne	11	14,651
Westmoreland	7	132,312
Wyoming	3	10,181
York	924	172,145
Total Pennsylvania	7,640	5,643,676

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

APPENDIX C: INDUSTRY PROJECTIONS 2014-2024 FOR MILLERSVILLE 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 MU's workforce region. Included in the table are the number of jobs in 2014 and the projected job growth/decline in 2024.

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
Total	All Industries	886,152	982,484	10.9%	1.0
1111	Oilseed and Grain Farming	224	257	14.7%	0.6
1112	Vegetable and Melon Farming	151	147	-2.6%	0.2
1113	Fruit and Tree Nut Farming	266	295	10.9%	0.2
1114	Greenhouse, Nursery, and Floriculture Production	5,246	5,165	-1.5%	5.6
1119	Other Crop Farming	95	105	10.5%	0.2
1121	Cattle Ranching and Farming	714	754	5.6%	0.7
1122	Hog and Pig Farming	121	118	-2.5%	0.6
1123	Poultry and Egg Production	741	802	8.2%	2.9
1124	Sheep and Goat Farming	5	6	20.0%	0.5
1125	Aquaculture	29	32	10.3%	0.7
1129	Other Animal Production	313	338	8.0%	2.5
1131	Timber Tract Operations	9	11	22.2%	0.2
1133	Logging	56	52	-7.1%	0.2
1142	Hunting and Trapping	6	0	-100.0%	0.5
1151	Support Activities for Crop Production	1,361	1,731	27.2%	0.7
1152	Support Activities for Animal Production	496	547	10.3%	2.7
1153	Support Activities for Forestry	28	37	32.1%	0.3
2111	Oil and Gas Extraction	7	7	0.0%	0.0
2121	Coal Mining	33	29	-12.1%	0.1
2123	Nonmetallic Mineral Mining and Quarrying	745	818	9.8%	1.3
2131	Support Activities for Mining	137	160	16.8%	0.0
2211	Electric Power Generation, Transmission and Distribution	2,042	1,837	-10.0%	0.7
2212	Natural Gas Distribution	409	413	1.0%	0.5
2213	Water, Sewage and Other Systems	1,344	1,271	-5.4%	1.0
2361	Residential Building Construction	5,464	6,661	21.9%	1.3
2362	Nonresidential Building Construction	5,548	6,578	18.6%	1.2
2371	Utility System Construction	3,189	4,259	33.6%	1.1
2372	Land Subdivision	89	124	39.3%	0.3
2373	Highway, Street, and Bridge Construction	1,569	1,942	23.8%	0.6
2379	Other Heavy and Civil Engineering Construction	249	292	17.3%	0.4
2381	Foundation, Structure, and Building Exterior Contractors	5,677	6,861	20.9%	1.2
2382	Building Equipment Contractors	12,552	14,823	18.1%	1.1
2383	Building Finishing Contractors	4,218	5,079	20.4%	0.9
2389	Other Specialty Trade Contractors	4,842	5,877	21.4%	1.3
3111	Animal Food Manufacturing	847	818	-3.4%	2.4
3112	Grain and Oilseed Milling	395	398	0.8%	1.0

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3113	Sugar and Confectionery Product Manufacturing	3,224	3,261	1.1%	7.1
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	1,533	1,540	0.5%	1.4
3115	Dairy Product Manufacturing	1,951	1,862	-4.6%	2.2
3116	Animal Slaughtering and Processing	4,162	4,423	6.3%	1.3
3117	Seafood Product Preparation and Packaging	47	53	12.8%	0.2
3118	Bakeries and Tortilla Manufacturing	3,443	3,320	-3.6%	1.8
3119	Other Food Manufacturing	4,806	4,929	2.6%	3.9
3121	Beverage Manufacturing	794	925	16.5%	0.6
3122	Tobacco Manufacturing	87	83	-4.6%	1.0
3131	Fiber, Yarn, and Thread Mills	36	20	-44.4%	0.2
3132	Fabric Mills	136	98	-27.9%	0.4
3133	Textile and Fabric Finishing and Fabric Coating Mills	100	86	-14.0%	0.5
3141	Textile Furnishings Mills	144	146	1.4%	0.4
3149	Other Textile Product Mills	204	153	-25.0%	0.5
3151	Apparel Knitting Mills	61	34	-44.3%	0.7
3152	Cut and Sew Apparel Manufacturing	420	226	-46.2%	0.6
3159	Apparel Accessories and Other Apparel Manufacturing	160	145	-9.4%	2.1
3161	Leather and Hide Tanning and Finishing	153	185	20.9%	5.3
3162	Footwear Manufacturing	15	18	20.0%	0.2
3169	Other Leather and Allied Product Manufacturing	103	96	-6.8%	1.4
3211	Sawmills and Wood Preservation	273	359	31.5%	0.5
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	824	1,056	28.2%	1.8
3219	Other Wood Product Manufacturing	2,711	3,214	18.6%	2.0
3221	Pulp, Paper, and Paperboard Mills	740	628	-15.1%	1.1
3222	Converted Paper Product Manufacturing	3,658	4,012	9.7%	2.1
3231	Printing and Related Support Activities	7,665	6,531	-14.8%	2.6
3241	Petroleum and Coal Products Manufacturing	625	597	-4.5%	0.9
3251	Basic Chemical Manufacturing	252	215	-14.7%	0.3
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	535	629	17.6%	0.9
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	258	277	7.4%	1.1
3254	Pharmaceutical and Medicine Manufacturing	2,533	2,539	0.2%	1.4
3255	Paint, Coating, and Adhesive Manufacturing	327	353	8.0%	0.8
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	830	841	1.3%	1.2
3259	Other Chemical Product and Preparation Manufacturing	501	552	10.2%	0.9
3261	Plastics Product Manufacturing	5,680	5,878	3.5%	1.6
3262	Rubber Product Manufacturing	342	373	9.1%	0.4

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3271	Clay Product and Refractory Manufacturing	321	373	16.2%	1.3
3272	Glass and Glass Product Manufacturing	208	198	-4.8%	0.4
3273	Cement and Concrete Product Manufacturing	1,952	2,126	8.9%	1.7
3274	Lime and Gypsum Product Manufacturing	103	122	18.4%	1.1
3279	Other Nonmetallic Mineral Product Manufacturing	388	501	29.1%	0.8
3311	Iron and Steel Mills and Ferroalloy Manufacturing	959	922	-3.9%	1.6
3312	Steel Product Manufacturing from Purchased Steel	962	1,020	6.0%	2.5
3313	Alumina and Aluminum Production and Processing	1,348	1,613	19.7%	3.6
3314	Nonferrous Metal (except Aluminum) Production and Processing	769	757	-1.6%	1.9
3315	Foundries	1,988	1,920	-3.4%	2.4
3321	Forging and Stamping	851	780	-8.3%	1.3
3322	Cutlery and Handtool Manufacturing	178	190	6.7%	0.7
3323	Architectural and Structural Metals Manufacturing	4,846	5,263	8.6%	2.1
3324	Boiler, Tank, and Shipping Container Manufacturing	1,330	1,479	11.2%	2.1
3325	Hardware Manufacturing	298	347	16.4%	1.9
3326	Spring and Wire Product Manufacturing	726	779	7.3%	2.6
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	2,554	2,583	1.1%	1.1
3328	Coating, Engraving, Heat Treating, and Allied Activities	772	886	14.8%	0.9
3329	Other Fabricated Metal Product Manufacturing	1,843	2,026	9.9%	1.0
3331	Agriculture, Construction, and Mining Machinery Manufacturing	1,720	1,602	-6.9%	1.1
3332	Industrial Machinery Manufacturing	815	771	-5.4%	1.2
3333	Commercial and Service Industry Machinery Manufacturing	267	218	-18.4%	0.5
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	1,801	1,816	0.8%	2.2
3335	Metalworking Machinery Manufacturing	1,397	1,404	0.5%	1.2
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	1,010	880	-12.9%	1.6
3339	Other General Purpose Machinery Manufacturing	2,101	2,274	8.2%	1.2
3341	Computer and Peripheral Equipment Manufacturing	234	178	-23.9%	0.2
3342	Communications Equipment Manufacturing	895	725	-19.0%	1.5
3343	Audio and Video Equipment Manufacturing	186	164	-11.8%	1.4
3344	Semiconductor and Other Electronic Component Manufacturing	2,504	2,278	-9.0%	1.0
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	1,271	1,272	0.1%	0.5
3346	Manufacturing and Reproducing Magnetic and Optical Media	583	614	5.3%	5.3
3351	Electric Lighting Equipment Manufacturing	106	109	2.8%	0.3
3352	Household Appliance Manufacturing	393	419	6.6%	1.0
3353	Electrical Equipment Manufacturing	665	675	1.5%	0.7

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3359	Other Electrical Equipment and Component Manufacturing	3,222	2,973	-7.7%	3.9
3362	Motor Vehicle Body and Trailer Manufacturing	977	1,139	16.6%	1.1
3363	Motor Vehicle Parts Manufacturing	1,745	1,776	1.8%	0.5
3364	Aerospace Product and Parts Manufacturing	2,134	2,455	15.0%	0.7
3365	Railroad Rolling Stock Manufacturing	357	444	24.4%	2.0
3369	Other Transportation Equipment Manufacturing	1,215	1,166	-4.0%	5.8
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	2,901	2,774	-4.4%	1.9
3372	Office Furniture (including Fixtures) Manufacturing	532	556	4.5%	0.8
3379	Other Furniture Related Product Manufacturing	33	27	-18.2%	0.2
3391	Medical Equipment and Supplies Manufacturing	3,066	2,765	-9.8%	1.5
3399	Other Miscellaneous Manufacturing	2,181	2,276	4.4%	1.2
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	4,942	5,374	8.7%	2.3
4232	Furniture and Home Furnishing Merchant Wholesalers	249	258	3.6%	0.4
4233	Lumber and Other Construction Materials Merchant Wholesalers	1,404	1,547	10.2%	1.1
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	5,112	4,991	-2.4%	1.3
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	738	758	2.7%	0.9
4236	Household Appliances and Electrical and Electronic Goods Merchant Wholesalers	2,241	2,109	-5.9%	1.1
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	1,373	1,590	15.8%	0.9
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	5,179	5,763	11.3%	1.2
4239	Miscellaneous Durable Goods Merchant Wholesalers	1,502	1,803	20.0%	0.8
4241	Paper and Paper Product Merchant Wholesalers	721	831	15.3%	0.9
4242	Drugs and Druggists' Sundries Merchant Wholesalers	1,763	2,155	22.2%	1.4
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	420	375	-10.7%	0.4
4244	Grocery and Related Product Merchant Wholesalers	6,133	7,149	16.6%	1.3
4245	Farm Product Raw Material Merchant Wholesalers	225	233	3.6%	0.5
4246	Chemical and Allied Products Merchant Wholesalers	432	481	11.3%	0.5
4247	Petroleum and Petroleum Products Merchant Wholesalers	657	613	-6.7%	1.0
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	373	399	7.0%	0.3
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	1,861	1,707	-8.3%	0.9
4251	Wholesale Electronic Markets and Agents and Brokers	8,897	10,114	13.7%	1.5
4411	Automobile Dealers	8,889	10,476	17.9%	1.2
4412	Other Motor Vehicle Dealers	646	696	7.7%	0.7
4413	Automotive Parts, Accessories, and Tire Stores	2,513	2,754	9.6%	0.7
4421	Furniture Stores	1,202	1,150	-4.3%	0.9

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
4422	Home Furnishings Stores	1,606	1,650	2.7%	1.0
4431	Electronics and Appliance Stores	2,492	2,503	0.4%	0.8
4441	Building Material and Supplies Dealers	6,522	7,201	10.4%	0.9
4442	Lawn and Garden Equipment and Supplies Stores	1,238	1,197	-3.3%	1.3
4451	Grocery Stores	20,404	21,045	3.1%	1.2
4452	Specialty Food Stores	1,958	2,007	2.5%	1.3
4453	Beer, Wine, and Liquor Stores	956	1,092	14.2%	0.9
4461	Health and Personal Care Stores	5,585	5,551	-0.6%	0.8
4471	Gasoline Stations	6,353	6,445	1.4%	1.1
4481	Clothing Stores	5,584	5,326	-4.6%	0.8
4482	Shoe Stores	1,171	1,216	3.8%	0.9
4483	Jewelry, Luggage, and Leather Goods Stores	713	688	-3.5%	0.8
4511	Sporting Goods, Hobby, and Musical Instrument Stores	3,645	3,940	8.1%	1.1
4512	Book Stores and News Dealers	521	396	-24.0%	0.9
4521	Department Stores	7,075	6,267	-11.4%	0.8
4529	Other General Merchandise Stores	7,841	8,209	4.7%	0.7
4531	Florists	553	510	-7.8%	1.4
4532	Office Supplies, Stationery, and Gift Stores	1,951	1,546	-20.8%	1.0
4533	Used Merchandise Stores	1,172	1,479	26.2%	1.1
4539	Other Miscellaneous Store Retailers	2,314	2,565	10.8%	1.2
4541	Electronic Shopping and Mail-Order Houses	3,703	4,180	12.9%	1.8
4542	Vending Machine Operators	231	229	-0.9%	1.0
4543	Direct Selling Establishments	1,710	1,789	4.6%	2.0
4811	Scheduled Air Transportation	343	320	-6.7%	0.1
4812	Nonscheduled Air Transportation	31	38	22.6%	0.1
4832	Inland Water Transportation	31	40	29.0%	0.2
4841	General Freight Trucking	8,321	10,485	26.0%	1.3
4842	Specialized Freight Trucking	2,982	3,752	25.8%	1.0
4851	Urban Transit Systems	278	273	-1.8%	0.2
4853	Taxi and Limousine Service	281	321	14.2%	0.5
4854	School and Employee Bus Transportation	4,147	4,447	7.2%	2.6
4855	Charter Bus Industry	321	351	9.3%	1.7
4859	Other Transit and Ground Passenger Transportation	501	595	18.8%	0.8
4862	Pipeline Transportation of Natural Gas	181	224	23.8%	1.0
4869	Other Pipeline Transportation	18	15	-16.7%	0.3
4871	Scenic and Sightseeing Transportation, Land	69	82	18.8%	0.8
4872	Scenic and Sightseeing Transportation, Water	28	36	28.6%	0.3

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
4881	Support Activities for Air Transportation	357	399	11.8%	0.2
4882	Support Activities for Rail Transportation	148	162	9.5%	0.7
4883	Support Activities for Water Transportation	26	33	26.9%	0.0
4884	Support Activities for Road Transportation	929	1,402	50.9%	1.3
4885	Freight Transportation Arrangement	587	724	23.3%	0.5
4889	Other Support Activities for Transportation	428	501	17.1%	2.1
4911	Postal Service	4,126	3,098	-24.9%	1.1
4921	Couriers and Express Delivery Services	5,263	5,562	5.7%	1.6
4922	Local Messengers and Local Delivery	195	233	19.5%	0.6
4931	Warehousing and Storage	11,463	14,196	23.8%	2.4
5111	Newspaper, Periodical, Book, and Directory Publishers	2,949	2,711	-8.1%	1.1
5112	Software Publishers	1,174	1,413	20.4%	0.6
5121	Motion Picture and Video Industries	820	848	3.4%	0.3
5122	Sound Recording Industries	63	63	0.0%	0.6
5151	Radio and Television Broadcasting	1,268	1,233	-2.8%	0.9
5171	Wired Telecommunications Carriers	3,558	3,282	-7.8%	0.9
5172	Wireless Telecommunications Carriers (except Satellite)	556	470	-15.5%	0.5
5174	Satellite Telecommunications	18	19	5.6%	0.3
5179	Other Telecommunications	179	129	-27.9%	0.3
5182	Data Processing, Hosting, and Related Services	1,820	1,823	0.2%	1.0
5191	Other Information Services	1,305	1,493	14.4%	0.6
5221	Depository Credit Intermediation	9,588	9,401	-2.0%	0.9
5222	Nondepository Credit Intermediation	1,506	1,450	-3.7%	0.4
5223	Activities Related to Credit Intermediation	439	432	-1.6%	0.2
5231	Securities and Commodity Contracts Intermediation and Brokerage	938	1,007	7.4%	0.3
5232	Securities and Commodity Exchanges	3	4	33.3%	0.1
5239	Other Financial Investment Activities	12,375	15,939	28.8%	4.4
5241	Insurance Carriers	9,894	10,600	7.1%	1.3
5242	Agencies, Brokerages, and Other Insurance Related Activities	8,096	9,130	12.8%	1.2
5311	Lessors of Real Estate	2,562	2,981	16.4%	0.6
5312	Offices of Real Estate Agents and Brokers	1,320	1,515	14.8%	0.7
5313	Activities Related to Real Estate	1,715	1,893	10.4%	0.4
5321	Automotive Equipment Rental and Leasing	1,094	1,293	18.2%	0.9
5322	Consumer Goods Rental	639	713	11.6%	0.6
5323	General Rental Centers	266	317	19.2%	1.0
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	1,593	2,040	28.1%	1.7

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	42	53	26.2%	0.3
5411	Legal Services	5,246	5,402	3.0%	0.7
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	4,680	5,167	10.4%	0.7
5413	Architectural, Engineering, and Related Services	8,209	9,476	15.4%	0.9
5414	Specialized Design Services	492	697	41.7%	0.6
5415	Computer Systems Design and Related Services	14,559	18,951	30.2%	1.2
5416	Management, Scientific, and Technical Consulting Services	8,579	11,142	29.9%	1.1
5417	Scientific Research and Development Services	4,267	5,897	38.2%	1.0
5418	Advertising, Public Relations, and Related Services	2,442	2,740	12.2%	0.8
5419	Other Professional, Scientific, and Technical Services	4,409	5,204	18.0%	1.1
5511	Management of Companies and Enterprises	20,867	25,009	19.8%	1.5
5611	Office Administrative Services	220	222	0.9%	0.1
5612	Facilities Support Services	696	981	40.9%	0.8
5613	Employment Services	21,965	29,551	34.5%	1.0
5614	Business Support Services	2,687	2,936	9.3%	0.5
5615	Travel Arrangement and Reservation Services	1,018	1,130	11.0%	0.8
5616	Investigation and Security Services	3,168	3,892	22.9%	0.6
5617	Services to Buildings and Dwellings	12,551	14,973	19.3%	1.0
5619	Other Support Services	1,728	2,235	29.3%	0.9
5621	Waste Collection	1,076	1,258	16.9%	1.0
5622	Waste Treatment and Disposal	1,142	1,297	13.6%	1.4
5629	Remediation and Other Waste Management Services	997	1,189	19.3%	1.1
6111	Elementary and Secondary Schools	45,803	44,488	-2.9%	0.9
6112	Junior Colleges	2,718	2,968	9.2%	0.6
6113	Colleges, Universities, and Professional Schools	10,573	10,290	-2.7%	0.6
6114	Business Schools and Computer and Management Training	348	379	8.9%	0.7
6115	Technical and Trade Schools	698	812	16.3%	0.7
6116	Other Schools and Instruction	1,806	2,330	29.0%	0.7
6117	Educational Support Services	449	559	24.5%	0.5
6211	Offices of Physicians	15,630	17,556	12.3%	1.0
6212	Offices of Dentists	5,345	6,098	14.1%	0.9
6213	Offices of Other Health Practitioners	6,268	7,930	26.5%	1.2
6214	Outpatient Care Centers	4,357	5,748	31.9%	0.9
6215	Medical and Diagnostic Laboratories	1,058	1,224	15.7%	0.6
6216	Home Health Care Services	5,288	7,679	45.2%	0.6
6219	Other Ambulatory Health Care Services	1,793	2,318	29.3%	0.9

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
6221	General Medical and Surgical Hospitals	33,726	37,336	10.7%	0.9
6222	Psychiatric and Substance Abuse Hospitals	1,259	1,487	18.1%	0.8
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	2,213	3,079	39.1%	1.4
6231	Nursing Care Facilities (Skilled Nursing Facilities)	9,211	10,127	9.9%	0.8
6232	Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	6,802	7,735	13.7%	1.5
6233	Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	15,553	19,086	22.7%	2.8
6239	Other Residential Care Facilities	953	1,152	20.9%	0.9
6241	Individual and Family Services	13,435	17,978	33.8%	0.9
6242	Community Food and Housing, and Emergency and Other Relief Services	836	1,115	33.4%	0.8
6243	Vocational Rehabilitation Services	1,274	1,682	32.0%	0.6
6244	Child Day Care Services	6,295	7,791	23.8%	1.2
7111	Performing Arts Companies	1,186	1,299	9.5%	1.6
7112	Spectator Sports	560	569	1.6%	0.6
7113	Promoters of Performing Arts, Sports, and Similar Events	200	234	17.0%	0.2
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	15	16	6.7%	0.1
7115	Independent Artists, Writers, and Performers	219	270	23.3%	0.6
7121	Museums, Historical Sites, and Similar Institutions	1,237	1,472	19.0%	0.8
7131	Amusement Parks and Arcades	1,306	1,344	2.9%	1.0
7132	Gambling Industries	3,214	4,043	25.8%	1.9
7139	Other Amusement and Recreation Industries	9,158	10,764	17.5%	1.1
7211	Traveler Accommodation	8,547	8,871	3.8%	0.7
7212	RV (Recreational Vehicle) Parks and Recreational Camps	684	747	9.2%	1.8
7213	Rooming and Boarding Houses	45	52	15.6%	0.5
7223	Special Food Services	4,487	5,304	18.2%	1.1
7224	Drinking Places (Alcoholic Beverages)	1,508	1,592	5.6%	0.6
7225	Restaurants and Other Eating Places	50,044	56,459	12.8%	0.8
8111	Automotive Repair and Maintenance	6,330	6,859	8.4%	1.1
8112	Electronic and Precision Equipment Repair and Maintenance	1,274	1,510	18.5%	1.9
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	1,313	1,522	15.9%	1.0
8114	Personal and Household Goods Repair and Maintenance	478	484	1.3%	1.0
8121	Personal Care Services	5,544	6,437	16.1%	1.3
8122	Death Care Services	954	1,096	14.9%	1.1
8123	Drycleaning and Laundry Services	1,289	1,294	0.4%	0.7
8129	Other Personal Services	1,155	1,465	26.8%	0.6
8131	Religious Organizations	1,206	1,258	4.3%	1.0

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
8132	Grantmaking and Giving Services	1,030	944	-8.3%	1.2
8133	Social Advocacy Organizations	743	811	9.2%	0.5
8134	Civic and Social Organizations	6,162	6,490	5.3%	2.4
8139	Business, Professional, Labor, Political, and Similar Organizations	2,872	2,931	2.1%	1.0
8141	Private Households	702	657	-6.4%	0.4
9211	Executive, Legislative, and Other General Government Support	20,178	19,091	-5.4%	1.0
9221	Justice, Public Order, and Safety Activities	5,721	5,676	-0.8%	0.5
9231	Administration of Human Resource Programs	5,105	4,937	-3.3%	1.0
9241	Administration of Environmental Quality Programs	2,434	2,576	5.8%	1.2
9251	Administration of Housing Programs, Urban Planning, and Community Development	519	520	0.2%	1.0
9261	Administration of Economic Programs	4,549	4,487	-1.4%	1.2
9281	National Security and International Affairs	4,632	4,284	-7.5%	1.3

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

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

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

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

JOB ZONE ONE: Little or No Preparation Needed

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

JOB ZONE TWO: Some Preparation Needed

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

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

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

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

JOB ZONE THREE: Medium Preparation Needed

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

JOB ZONE FOUR: Considerable Preparation Needed

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

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

JOB ZONE FIVE: Extensive Preparation Needed

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

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
Total	All Occupations	NA	886,152	982,485	10.9%	345,632
11-1011	Chief Executives	5	1,852	1,827	-1.3%	414
11-1021	General and Operations Managers	4	10,736	12,676	18.1%	3,850
11-1031	Legislators	4	377	305	-19.1%	26
11-2011	Advertising and Promotions Managers	4	98	86	-12.2%	20
11-2021	Marketing Managers	4	940	1,066	13.4%	329
11-2022	Sales Managers	4	1,823	1,892	3.8%	463
11-2031	Public Relations and Fundraising Managers	4	239	234	-2.1%	46
11-3011	Administrative Services Managers	3	1,191	1,239	4.0%	231
11-3021	Computer and Information Systems Managers	4	1,892	2,527	33.6%	911
11-3031	Financial Managers	4	2,403	2,508	4.4%	549
11-3051	Industrial Production Managers	4	1,148	1,103	-3.9%	220
11-3061	Purchasing Managers	4	342	335	-2.0%	71
11-3071	Transportation, Storage, and Distribution Managers	4	578	666	15.2%	230
11-3111	Compensation and Benefits Managers	4	115	96	-16.5%	17
11-3121	Human Resources Managers	4	526	679	29.1%	290
11-3131	Training and Development Managers	4	135	173	28.1%	74
11-9021	Construction Managers	4	1,001	1,319	31.8%	464
11-9031	Education Administrators, Preschool and Childcare Center/Program	4	309	359	16.2%	133
11-9032	Education Administrators, Elementary and Secondary School	5	1,205	1,116	-7.4%	310
11-9033	Education Administrators, Postsecondary	5	429	412	-4.0%	105
11-9039	Education Administrators, All Other	5	96	115	19.8%	46
11-9041	Architectural and Engineering Managers	5	853	904	6.0%	271
11-9051	Food Service Managers	3	847	970	14.5%	295
11-9061	Funeral Service Managers	3	71	74	4.2%	25
11-9071	Gaming Managers	3	54	64	18.5%	22
11-9081	Lodging Managers	3	165	190	15.2%	97
11-9111	Medical and Health Services Managers	5	1,771	1,907	7.7%	567
11-9121	Natural Sciences Managers	5	238	292	22.7%	113
11-9131	Postmasters and Mail Superintendents	3	160	91	-43.1%	2
11-9141	Property, Real Estate, and Community Association Managers	4	413	499	20.8%	192
11-9151	Social and Community Service Managers	4	797	947	18.8%	333
11-9161	Emergency Management Directors	4	64	53	-17.2%	0
11-9199	Managers, All Other	4	1,151	1,293	12.3%	393

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
13-1011	Agents and Business Managers of Artists, Performers, and Athletes	4	14	14	0.0%	5
13-1021	Buyers and Purchasing Agents, Farm Products	4	82	89	8.5%	29
13-1022	Wholesale and Retail Buyers, Except Farm Products	3	733	707	-3.5%	174
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	4	2,422	2,506	3.5%	602
13-1031	Claims Adjusters, Examiners, and Investigators	4	2,238	2,363	5.6%	788
13-1032	Insurance Appraisers, Auto Damage	3	104	130	25.0%	63
13-1041	Compliance Officers	4	1,747	2,060	17.9%	675
13-1051	Cost Estimators	4	1,835	2,104	14.7%	893
13-1071	Human Resources Specialists	4	3,236	4,211	30.1%	1,666
13-1075	Labor Relations Specialists	4	842	643	-23.6%	49
13-1081	Logisticians	4	1,086	1,365	25.7%	423
13-1111	Management Analysts	4	4,136	5,354	29.4%	1,906
13-1121	Meeting, Convention, and Event Planners	4	433	568	31.2%	201
13-1131	Fundraisers	4	365	447	22.5%	165
13-1141	Compensation, Benefits, and Job Analysis Specialists	4	571	549	-3.9%	105
13-1151	Training and Development Specialists	4	1,624	1,965	21.0%	662
13-1161	Market Research Analysts and Marketing Specialists	4	3,927	5,385	37.1%	2,087
13-1199	Business Operations Specialists, All Other	4	2,489	2,527	1.5%	333
13-2011	Accountants and Auditors	4	8,950	10,147	13.4%	4,176
13-2021	Appraisers and Assessors of Real Estate	4	203	195	-3.9%	23
13-2031	Budget Analysts	4	346	388	12.1%	188
13-2041	Credit Analysts	4	316	361	14.2%	139
13-2051	Financial Analysts	4	2,206	2,763	25.2%	1,135
13-2052	Personal Financial Advisors	4	2,139	2,830	32.3%	1,090
13-2053	Insurance Underwriters	4	770	831	7.9%	361
13-2061	Financial Examiners	4	277	303	9.4%	115
13-2071	Credit Counselors	4	194	278	43.3%	126
13-2072	Loan Officers	3	1,535	1,751	14.1%	641
13-2081	Tax Examiners and Collectors, and Revenue Agents	3	739	638	-13.7%	199
13-2082	Tax Preparers	3	297	263	-11.4%	57
13-2099	Financial Specialists, All Other	4	715	738	3.2%	118
15-1111	Computer and Information Research Scientists	5	62	63	1.6%	10
15-1121	Computer Systems Analysts	4	4,230	5,860	38.5%	2,379
15-1122	Information Security Analysts	4	418	606	45.0%	252
15-1131	Computer Programmers	4	2,800	3,686	31.6%	1,803

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
15-1132	Software Developers, Applications	4	3,990	5,448	36.5%	2,027
15-1133	Software Developers, Systems Software	4	1,974	1,983	0.5%	248
15-1134	Web Developers	3	671	892	32.9%	331
15-1141	Database Administrators	4	874	1,168	33.6%	475
15-1142	Network and Computer Systems Administrators	4	2,462	2,441	-0.9%	402
15-1143	Computer Network Architects	4	657	827	25.9%	274
15-1151	Computer User Support Specialists	3	4,457	5,979	34.1%	2,320
15-1152	Computer Network Support Specialists	4	945	1,044	10.5%	279
15-1199	Computer Occupations, All Other	4	1,180	1,395	18.2%	424
15-2011	Actuaries	4	237	332	40.1%	171
15-2031	Operations Research Analysts	5	505	642	27.1%	256
15-2041	Statisticians	5	335	478	42.7%	259
17-1011	Architects, Except Landscape and Naval	4	393	475	20.9%	221
17-1012	Landscape Architects	4	118	163	38.1%	82
17-1021	Cartographers and Photogrammetrists	4	36	38	5.6%	10
17-1022	Surveyors	4	211	239	13.3%	84
17-2011	Aerospace Engineers	4	205	290	41.5%	139
17-2021	Agricultural Engineers	4	18	25	38.9%	13
17-2031	Biomedical Engineers	4	149	189	26.8%	81
17-2041	Chemical Engineers	4	213	215	0.9%	64
17-2051	Civil Engineers	4	1,820	2,174	19.5%	851
17-2061	Computer Hardware Engineers	4	228	218	-4.4%	37
17-2071	Electrical Engineers	4	1,007	1,188	18.0%	432
17-2072	Electronics Engineers, Except Computer	4	623	548	-12.0%	79
17-2081	Environmental Engineers	5	495	638	28.9%	287
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	4	179	195	8.9%	74
17-2112	Industrial Engineers	4	1,550	1,532	-1.2%	507
17-2131	Materials Engineers	4	191	232	21.5%	114
17-2141	Mechanical Engineers	4	1,664	1,712	2.9%	676
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	4	36	36	0.0%	14
17-2161	Nuclear Engineers	4	232	278	19.8%	125
17-2171	Petroleum Engineers	4	8	10	25.0%	5
17-2199	Engineers, All Other	4	534	670	25.5%	244
17-3011	Architectural and Civil Drafters	4	669	761	13.8%	253
17-3012	Electrical and Electronics Drafters	3	197	164	-16.8%	1
17-3013	Mechanical Drafters	3	651	585	-10.1%	76

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
17-3019	Drafters, All Other	3	36	46	27.8%	15
17-3021	Aerospace Engineering and Operations Technicians	4	22	27	22.7%	9
17-3022	Civil Engineering Technicians	3	318	391	23.0%	152
17-3023	Electrical and Electronics Engineering Technicians	3	668	562	-15.9%	59
17-3024	Electro-Mechanical Technicians	3	103	89	-13.6%	17
17-3025	Environmental Engineering Technicians	4	189	233	23.3%	93
17-3026	Industrial Engineering Technicians	3	321	321	0.0%	80
17-3027	Mechanical Engineering Technicians	3	289	355	22.8%	135
17-3029	Engineering Technicians, Except Drafters, All Other	3	477	628	31.7%	270
17-3031	Surveying and Mapping Technicians	3	202	261	29.2%	103
19-1012	Food Scientists and Technologists	4	119	145	21.8%	67
19-1013	Soil and Plant Scientists	5	24	32	33.3%	18
19-1021	Biochemists and Biophysicists	5	268	441	64.6%	254
19-1022	Microbiologists	5	156	230	47.4%	127
19-1023	Zoologists and Wildlife Biologists	5	41	40	-2.4%	10
19-1029	Biological Scientists, All Other	5	75	75	0.0%	24
19-1031	Conservation Scientists	4	91	104	14.3%	42
19-1032	Foresters	4	43	42	-2.3%	12
19-1041	Epidemiologists	5	19	16	-15.8%	1
19-1042	Medical Scientists, Except Epidemiologists	5	787	1,122	42.6%	524
19-1099	Life Scientists, All Other	5	29	34	17.2%	10
19-2012	Physicists	5	19	16	-15.8%	1
19-2021	Atmospheric and Space Scientists	4	15	12	-20.0%	1
19-2031	Chemists	4	807	1,002	24.2%	456
19-2032	Materials Scientists	5	40	45	12.5%	17
19-2041	Environmental Scientists and Specialists, Including Health	4	433	584	34.9%	290
19-2042	Geoscientists, Except Hydrologists and Geographers	4	141	169	19.9%	78
19-2043	Hydrologists	4	29	31	6.9%	12
19-2099	Physical Scientists, All Other	5	57	45	-21.1%	1
19-3011	Economists	5	99	119	20.2%	54
19-3022	Survey Researchers	5	447	449	0.4%	145
19-3031	Clinical, Counseling, and School Psychologists	5	730	743	1.8%	234
19-3039	Psychologists, All Other	5	66	81	22.7%	34
19-3041	Sociologists	5	12	11	-8.3%	5
19-3051	Urban and Regional Planners	5	293	309	5.5%	157

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
19-3091	Anthropologists and Archeologists	5	8	11	37.5%	4
19-3093	Historians	5	16	13	-18.8%	0
19-3099	Social Scientists and Related Workers, All Other	4	81	75	-7.4%	11
19-4011	Agricultural and Food Science Technicians	3	153	129	-15.7%	35
19-4021	Biological Technicians	4	546	724	32.6%	358
19-4031	Chemical Technicians	3	546	692	26.7%	319
19-4041	Geological and Petroleum Technicians	4	29	37	27.6%	23
19-4051	Nuclear Technicians	3	154	169	9.7%	82
19-4061	Social Science Research Assistants	4	76	101	32.9%	60
19-4091	Environmental Science and Protection Technicians, Including Health	4	269	364	35.3%	216
19-4092	Forensic Science Technicians	4	27	26	-3.7%	10
19-4093	Forest and Conservation Technicians	3	65	69	6.2%	36
19-4099	Life, Physical, and Social Science Technicians, All Other	3	237	257	8.4%	119
21-1011	Substance Abuse and Behavioral Disorder Counselors	5	944	917	-2.9%	241
21-1012	Educational, Guidance, School, and Vocational Counselors	5	1,436	1,478	2.9%	379
21-1013	Marriage and Family Therapists	5	140	182	30.0%	73
21-1014	Mental Health Counselors	5	1,349	1,442	6.9%	462
21-1015	Rehabilitation Counselors	5	866	1,102	27.3%	480
21-1019	Counselors, All Other	5	138	136	-1.4%	28
21-1021	Child, Family, and School Social Workers	4	2,123	2,426	14.3%	799
21-1022	Healthcare Social Workers	5	1,036	1,314	26.8%	519
21-1023	Mental Health and Substance Abuse Social Workers	5	1,241	1,489	20.0%	597
21-1029	Social Workers, All Other	5	151	156	3.3%	40
21-1091	Health Educators	4	366	414	13.1%	147
21-1092	Probation Officers and Correctional Treatment Specialists	4	746	715	-4.2%	211
21-1093	Social and Human Service Assistants	4	2,836	3,179	12.1%	1,189
21-1094	Community Health Workers	4	148	144	-2.7%	33
21-1099	Community and Social Service Specialists, All Other	4	210	232	10.5%	72
21-2011	Clergy	5	273	321	17.6%	114
21-2021	Directors, Religious Activities and Education	4	220	260	18.2%	139
21-2099	Religious Workers, All Other	4	59	48	-18.6%	9
23-1011	Lawyers	5	3,038	3,311	9.0%	791
23-1012	Judicial Law Clerks	5	214	212	-0.9%	42

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	5	132	116	-12.1%	11
23-1022	Arbitrators, Mediators, and Conciliators	5	45	55	22.2%	17
23-1023	Judges, Magistrate Judges, and Magistrates	5	49	41	-16.3%	2
23-2011	Paralegals and Legal Assistants	3	1,259	1,520	20.7%	474
23-2091	Court Reporters	3	127	135	6.3%	41
23-2093	Title Examiners, Abstractors, and Searchers	3	333	367	10.2%	110
23-2099	Legal Support Workers, All Other	3	130	127	-2.3%	20
25-1011	Business Teachers, Postsecondary	5	401	450	12.2%	110
25-1021	Computer Science Teachers, Postsecondary	5	197	224	13.7%	56
25-1022	Mathematical Science Teachers, Postsecondary	5	268	284	6.0%	56
25-1031	Architecture Teachers, Postsecondary	5	44	52	18.2%	14
25-1032	Engineering Teachers, Postsecondary	5	214	255	19.2%	73
25-1041	Agricultural Sciences Teachers, Postsecondary	5	30	26	-13.3%	1
25-1042	Biological Science Teachers, Postsecondary	5	311	317	1.9%	53
25-1043	Forestry and Conservation Science Teachers, Postsecondary	5	10	8	-20.0%	0
25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	5	63	67	6.3%	13
25-1052	Chemistry Teachers, Postsecondary	5	128	146	14.1%	37
25-1053	Environmental Science Teachers, Postsecondary	5	23	21	-8.7%	2
25-1054	Physics Teachers, Postsecondary	5	85	88	3.5%	17
25-1061	Anthropology and Archeology Teachers, Postsecondary	5	25	30	20.0%	9
25-1062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	5	35	36	2.9%	6
25-1063	Economics Teachers, Postsecondary	5	92	102	10.9%	24
25-1064	Geography Teachers, Postsecondary	5	26	27	3.8%	5
25-1065	Political Science Teachers, Postsecondary	5	86	83	-3.5%	9
25-1066	Psychology Teachers, Postsecondary	5	206	221	7.3%	46
25-1067	Sociology Teachers, Postsecondary	5	137	158	15.3%	42
25-1069	Social Sciences Teachers, Postsecondary, All Other	5	36	44	22.2%	13
25-1071	Health Specialties Teachers, Postsecondary	5	600	583	-2.8%	77
25-1072	Nursing Instructors and Teachers, Postsecondary	5	314	322	2.5%	56
25-1081	Education Teachers, Postsecondary	5	290	280	-3.4%	33
25-1082	Library Science Teachers, Postsecondary	5	26	28	7.7%	6
25-1111	Criminal Justice and Law Enforcement Teachers, Postsecondary	5	51	57	11.8%	13
25-1112	Law Teachers, Postsecondary	5	46	48	4.3%	10

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
25-1113	Social Work Teachers, Postsecondary	5	50	47	-6.0%	5
25-1121	Art, Drama, and Music Teachers, Postsecondary	5	444	542	22.1%	164
25-1122	Communications Teachers, Postsecondary	5	127	135	6.3%	28
25-1123	English Language and Literature Teachers, Postsecondary	5	415	420	1.2%	68
25-1124	Foreign Language and Literature Teachers, Postsecondary	5	155	173	11.6%	41
25-1125	History Teachers, Postsecondary	5	127	134	5.5%	25
25-1126	Philosophy and Religion Teachers, Postsecondary	5	116	117	0.9%	20
25-1191	Graduate Teaching Assistants	5	113	121	7.1%	25
25-1192	Home Economics Teachers, Postsecondary	5	9	7	-22.2%	0
25-1193	Recreation and Fitness Studies Teachers, Postsecondary	5	84	80	-4.8%	9
25-1194	Vocational Education Teachers, Postsecondary	3	686	712	3.8%	129
25-1199	Postsecondary Teachers, All Other	5	352	403	14.5%	103
25-2011	Preschool Teachers, Except Special Education	3	2,205	3,033	37.6%	1,461
25-2012	Kindergarten Teachers, Except Special Education	4	914	877	-4.0%	245
25-2021	Elementary School Teachers, Except Special Education	4	8,727	8,536	-2.2%	2,004
25-2022	Middle School Teachers, Except Special and Career/Technical Education	4	3,865	4,352	12.6%	1,457
25-2023	Career/Technical Education Teachers, Middle School	4	97	112	15.5%	44
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	4	8,056	7,553	-6.2%	2,240
25-2032	Career/Technical Education Teachers, Secondary School	4	700	613	-12.4%	142
25-2051	Special Education Teachers, Preschool	4	100	118	18.0%	37
25-2052	Special Education Teachers, Kindergarten and Elementary School	4	1,659	1,686	1.6%	403
25-2053	Special Education Teachers, Middle School	4	581	571	-1.7%	123
25-2054	Special Education Teachers, Secondary School	4	1,202	1,227	2.1%	317
25-2059	Special Education Teachers, All Other	4	39	46	17.9%	12
25-3011	Adult Basic and Secondary Education and Literacy Teachers and Instructors	4	193	184	-4.7%	32
25-3021	Self-Enrichment Education Teachers	3	1,227	1,311	6.8%	347
25-3097	Teachers and Instructors, All Other, Except Substitute Teachers	3	703	903	28.4%	320
25-3098	Substitute Teachers	3	2,556	2,436	-4.7%	412
25-4011	Archivists	5	41	49	19.5%	18
25-4012	Curators	5	73	94	28.8%	39

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
25-4013	Museum Technicians and Conservators	4	85	115	35.3%	53
25-4021	Librarians	5	734	714	-2.7%	161
25-4031	Library Technicians	4	405	402	-0.7%	225
25-9011	Audio-Visual and Multimedia Collections Specialists	4	26	27	3.8%	6
25-9021	Farm and Home Management Advisors	5	4	3	-25.0%	0
25-9031	Instructional Coordinators	5	580	630	8.6%	99
25-9041	Teacher Assistants	3	6,980	7,317	4.8%	2,071
25-9099	Education, Training, and Library Workers, All Other	4	111	114	2.7%	14
27-1011	Art Directors	4	182	219	20.3%	90
27-1012	Craft Artists	2	12	10	-16.7%	2
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	3	54	58	7.4%	21
27-1014	Multimedia Artists and Animators	4	89	104	16.9%	38
27-1019	Artists and Related Workers, All Other	4	20	14	-30.0%	0
27-1021	Commercial and Industrial Designers	4	118	101	-14.4%	19
27-1022	Fashion Designers	3	33	30	-9.1%	7
27-1023	Floral Designers	2	355	298	-16.1%	126
27-1024	Graphic Designers	4	1,400	1,540	10.0%	584
27-1025	Interior Designers	4	182	239	31.3%	130
27-1026	Merchandise Displayers and Window Trimmers	3	434	540	24.4%	232
27-1027	Set and Exhibit Designers	5	53	72	35.8%	34
27-1029	Designers, All Other	4	1	0	-100.0%	0
27-2011	Actors	2	397	352	-11.3%	108
27-2012	Producers and Directors	4	414	460	11.1%	226
27-2021	Athletes and Sports Competitors	2	102	113	10.8%	51
27-2022	Coaches and Scouts	4	1,013	974	-3.8%	282
27-2023	Umpires, Referees, and Other Sports Officials	3	49	44	-10.2%	10
27-2031	Dancers	3	25	20	-20.0%	4
27-2032	Choreographers	4	30	39	30.0%	19
27-2041	Music Directors and Composers	3	154	127	-17.5%	28
27-2042	Musicians and Singers	3	203	191	-5.9%	67
27-2099	Entertainers and Performers, Sports and Related Workers, All Other	3	6	6	0.0%	0
27-3011	Radio and Television Announcers	3	208	188	-9.6%	78
27-3012	Public Address System and Other Announcers	2	44	56	27.3%	24
27-3022	Reporters and Correspondents	4	211	174	-17.5%	74
27-3031	Public Relations Specialists	4	1,362	1,348	-1.0%	194

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
27-3041	Editors	4	466	448	-3.9%	132
27-3042	Technical Writers	4	249	257	3.2%	86
27-3043	Writers and Authors	4	239	248	3.8%	69
27-3091	Interpreters and Translators	4	149	152	2.0%	21
27-3099	Media and Communication Workers, All Other	4	30	25	-16.7%	0
27-4011	Audio and Video Equipment Technicians	3	284	305	7.4%	83
27-4012	Broadcast Technicians	3	96	95	-1.0%	25
27-4014	Sound Engineering Technicians	3	38	32	-15.8%	4
27-4021	Photographers	3	328	294	-10.4%	62
27-4031	Camera Operators, Television, Video, and Motion Picture	3	63	55	-12.7%	1
27-4032	Film and Video Editors	3	40	34	-15.0%	0
27-4099	Media and Communication Equipment Workers, All Other	3	25	16	-36.0%	0
29-1011	Chiropractors	5	197	268	36.0%	115
29-1021	Dentists, General	5	576	654	13.5%	223
29-1022	Oral and Maxillofacial Surgeons	5	21	23	9.5%	7
29-1023	Orthodontists	5	16	20	25.0%	8
29-1029	Dentists, All Other Specialists	5	17	14	-17.6%	3
29-1031	Dietitians and Nutritionists	5	416	427	2.6%	64
29-1041	Optometrists	5	200	265	32.5%	133
29-1051	Pharmacists	5	1,725	1,873	8.6%	603
29-1061	Anesthesiologists	5	215	234	8.8%	79
29-1062	Family and General Practitioners	5	896	968	8.0%	322
29-1063	Internists, General	5	138	133	-3.6%	30
29-1064	Obstetricians and Gynecologists	5	48	61	27.1%	24
29-1065	Pediatricians, General	5	51	67	31.4%	26
29-1066	Psychiatrists	5	115	108	-6.1%	25
29-1067	Surgeons	5	290	386	33.1%	173
29-1069	Physicians and Surgeons, All Other	5	2,029	2,254	11.1%	757
29-1071	Physician Assistants	5	675	778	15.3%	235
29-1081	Podiatrists	5	76	103	35.5%	57
29-1122	Occupational Therapists	5	833	1,089	30.7%	386
29-1123	Physical Therapists	5	1,440	1,900	31.9%	867
29-1124	Radiation Therapists	3	104	99	-4.8%	16
29-1125	Recreational Therapists	4	185	191	3.2%	51
29-1126	Respiratory Therapists	3	677	824	21.7%	245
29-1127	Speech-Language Pathologists	5	657	833	26.8%	273

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
29-1128	Exercise Physiologists	5	46	59	28.3%	18
29-1129	Therapists, All Other	4	53	74	39.6%	27
29-1131	Veterinarians	5	448	594	32.6%	306
29-1141	Registered Nurses	3	16,997	20,372	19.9%	6,817
29-1151	Nurse Anesthetists	5	287	325	13.2%	98
29-1161	Nurse Midwives	5	20	27	35.0%	11
29-1171	Nurse Practitioners	5	517	697	34.8%	274
29-1181	Audiologists	5	80	97	21.3%	35
29-1199	Health Diagnosing and Treating Practitioners, All Other	5	73	63	-13.7%	6
29-2011	Medical and Clinical Laboratory Technologists	4	1,051	1,161	10.5%	429
29-2012	Medical and Clinical Laboratory Technicians	3	1,130	1,294	14.5%	486
29-2021	Dental Hygienists	3	1,457	1,845	26.6%	783
29-2031	Cardiovascular Technologists and Technicians	3	394	508	28.9%	173
29-2032	Diagnostic Medical Sonographers	3	316	386	22.2%	114
29-2033	Nuclear Medicine Technologists	3	139	142	2.2%	23
29-2034	Radiologic Technologists	3	1,284	1,482	15.4%	397
29-2035	Magnetic Resonance Imaging Technologists	3	174	235	35.1%	88
29-2041	Emergency Medical Technicians and Paramedics	3	1,295	1,589	22.7%	721
29-2051	Dietetic Technicians	2	432	593	37.3%	213
29-2052	Pharmacy Technicians	3	1,985	2,179	9.8%	423
29-2053	Psychiatric Technicians	3	170	183	7.6%	47
29-2054	Respiratory Therapy Technicians	3	67	63	-6.0%	3
29-2055	Surgical Technologists	3	460	579	25.9%	163
29-2056	Veterinary Technologists and Technicians	3	687	929	35.2%	315
29-2057	Ophthalmic Medical Technicians	3	161	221	37.3%	80
29-2061	Licensed Practical and Licensed Vocational Nurses	3	5,141	6,387	24.2%	2,603
29-2071	Medical Records and Health Information Technicians	3	1,056	1,316	24.6%	545
29-2081	Opticians, Dispensing	3	430	577	34.2%	293
29-2091	Orthotists and Prosthetists	5	64	78	21.9%	21
29-2092	Hearing Aid Specialists	3	18	20	11.1%	3
29-2099	Health Technologists and Technicians, All Other	3	284	341	20.1%	79
29-9011	Occupational Health and Safety Specialists	4	351	406	15.7%	158
29-9012	Occupational Health and Safety Technicians	3	55	63	14.5%	24
29-9091	Athletic Trainers	5	171	218	27.5%	97
29-9099	Healthcare Practitioners and Technical Workers, All Other	4	116	124	6.9%	37

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
31-1011	Home Health Aides	2	7,105	9,242	30.1%	4,091
31-1013	Psychiatric Aides	2	200	220	10.0%	71
31-1014	Nursing Assistants	2	10,442	12,345	18.2%	4,012
31-1015	Orderlies	2	328	375	14.3%	110
31-2011	Occupational Therapy Assistants	3	335	439	31.0%	208
31-2012	Occupational Therapy Aides	3	78	125	60.3%	69
31-2021	Physical Therapist Assistants	3	639	868	35.8%	402
31-2022	Physical Therapist Aides	2	313	421	34.5%	182
31-9011	Massage Therapists	3	346	469	35.5%	158
31-9091	Dental Assistants	3	1,986	2,305	16.1%	754
31-9092	Medical Assistants	3	3,258	3,984	22.3%	1,380
31-9093	Medical Equipment Preparers	2	244	281	15.2%	82
31-9094	Medical Transcriptionists	3	497	439	-11.7%	76
31-9095	Pharmacy Aides	2	201	169	-15.9%	16
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	3	387	397	2.6%	91
31-9097	Phlebotomists	3	601	743	23.6%	281
31-9099	Healthcare Support Workers, All Other	3	194	170	-12.4%	7
33-1011	First-Line Supervisors of Correctional Officers	3	241	252	4.6%	103
33-1012	First-Line Supervisors of Police and Detectives	3	516	586	13.6%	242
33-1021	First-Line Supervisors of Fire Fighting and Prevention Workers	3	144	165	14.6%	86
33-1099	First-Line Supervisors of Protective Service Workers, All Other	3	248	307	23.8%	136
33-2011	Firefighters	3	894	926	3.6%	302
33-2021	Fire Inspectors and Investigators	3	44	37	-15.9%	8
33-3011	Bailiffs	2	38	29	-23.7%	3
33-3012	Correctional Officers and Jailers	3	2,965	2,721	-8.2%	675
33-3021	Detectives and Criminal Investigators	3	494	496	0.4%	129
33-3041	Parking Enforcement Workers	2	77	87	13.0%	39
33-3051	Police and Sheriff's Patrol Officers	3	4,943	4,772	-3.5%	1,603
33-3052	Transit and Railroad Police	3	15	11	-26.7%	1
33-9011	Animal Control Workers	2	37	40	8.1%	13
33-9021	Private Detectives and Investigators	3	176	168	-4.5%	60
33-9031	Gaming Surveillance Officers and Gaming Investigators	2	172	223	29.7%	129
33-9032	Security Guards	2	4,744	5,831	22.9%	2,416
33-9091	Crossing Guards	1	686	613	-10.6%	98
33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	2	980	1,103	12.6%	833

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
33-9093	Transportation Security Screeners	2	232	210	-9.5%	41
33-9099	Protective Service Workers, All Other	2	530	634	19.6%	484
35-1011	Chefs and Head Cooks	3	725	782	7.9%	201
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	2	4,423	5,104	15.4%	2,039
35-2011	Cooks, Fast Food	1	1,315	1,215	-7.6%	188
35-2012	Cooks, Institution and Cafeteria	2	2,718	2,746	1.0%	592
35-2014	Cooks, Restaurant	2	6,032	7,938	31.6%	3,309
35-2015	Cooks, Short Order	1	1,096	1,328	21.2%	502
35-2021	Food Preparation Workers	1	5,349	5,107	-4.5%	1,449
35-3011	Bartenders	2	4,554	5,031	10.5%	2,398
35-3021	Combined Food Preparation and Serving Workers, Including Fast Food	1	19,988	23,592	18.0%	12,190
35-3022	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	1	1,765	1,736	-1.6%	1,108
35-3031	Waiters and Waitresses	1	14,657	17,016	16.1%	10,116
35-3041	Food Servers, Nonrestaurant	1	2,177	2,484	14.1%	1,009
35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers	1	2,303	2,444	6.1%	1,255
35-9021	Dishwashers	1	3,274	3,273	0.0%	1,588
35-9031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	1	2,210	2,427	9.8%	2,001
35-9099	Food Preparation and Serving Related Workers, All Other	1	177	218	23.2%	144
37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	2	962	1,065	10.7%	370
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	3	465	511	9.9%	100
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	2	13,647	14,738	8.0%	4,220
37-2012	Maids and Housekeeping Cleaners	2	5,582	6,126	9.7%	1,968
37-2019	Building Cleaning Workers, All Other	2	60	55	-8.3%	7
37-2021	Pest Control Workers	2	281	370	31.7%	178
37-3011	Landscaping and Groundskeeping Workers	1	5,505	6,533	18.7%	2,632
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	2	84	77	-8.3%	15
37-3013	Tree Trimmers and Pruners	2	482	656	36.1%	339
37-3019	Grounds Maintenance Workers, All Other	2	15	13	-13.3%	1
39-1011	Gaming Supervisors	2	371	466	25.6%	294
39-1012	Slot Supervisors	2	20	25	25.0%	9
39-1021	First-Line Supervisors of Personal Service Workers	3	1,113	1,433	28.8%	542
39-2011	Animal Trainers	2	27	24	-11.1%	10

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
39-2021	Nonfarm Animal Caretakers	1	664	820	23.5%	259
39-3011	Gaming Dealers	2	1,611	2,045	26.9%	1,244
39-3012	Gaming and Sports Book Writers and Runners	2	28	35	25.0%	18
39-3019	Gaming Service Workers, All Other	2	24	29	20.8%	7
39-3021	Motion Picture Projectionists	2	33	25	-24.2%	11
39-3031	Ushers, Lobby Attendants, and Ticket Takers	2	442	483	9.3%	315
39-3091	Amusement and Recreation Attendants	1	2,327	2,661	14.4%	1,656
39-3092	Costume Attendants	2	39	38	-2.6%	21
39-3093	Locker Room, Coathroom, and Dressing Room Attendants	2	138	127	-8.0%	64
39-3099	Entertainment Attendants and Related Workers, All Other	2	48	45	-6.3%	25
39-4021	Funeral Attendants	2	264	318	20.5%	139
39-4031	Morticians, Undertakers, and Funeral Directors	3	160	206	28.8%	94
39-5011	Barbers	3	105	112	6.7%	40
39-5012	Hairdressers, Hairstylists, and Cosmetologists	3	3,691	4,289	16.2%	1,642
39-5092	Manicurists and Pedicurists	2	505	564	11.7%	110
39-5093	Shampooers	2	215	231	7.4%	52
39-5094	Skincare Specialists	3	169	173	2.4%	15
39-6011	Baggage Porters and Bellhops	2	129	129	0.0%	50
39-6012	Concierges	3	113	147	30.1%	64
39-7011	Tour Guides and Escorts	3	195	205	5.1%	115
39-7012	Travel Guides	3	12	11	-8.3%	7
39-9011	Childcare Workers	3	3,484	3,416	-2.0%	973
39-9021	Personal Care Aides	2	8,147	12,202	49.8%	5,142
39-9031	Fitness Trainers and Aerobics Instructors	3	1,959	2,368	20.9%	752
39-9032	Recreation Workers	4	2,083	2,655	27.5%	821
39-9041	Residential Advisors	3	931	1,199	28.8%	735
39-9099	Personal Care and Service Workers, All Other	3	168	142	-15.5%	21
41-1011	First-Line Supervisors of Retail Sales Workers	2	6,494	6,756	4.0%	1,725
41-1012	First-Line Supervisors of Non-Retail Sales Workers	4	1,530	1,443	-5.7%	141
41-2011	Cashiers	1	22,597	21,609	-4.4%	9,638
41-2012	Gaming Change Persons and Booth Cashiers	2	98	119	21.4%	107
41-2021	Counter and Rental Clerks	1	2,322	2,539	9.3%	902
41-2022	Parts Salespersons	2	1,711	1,996	16.7%	796
41-2031	Retail Salespersons	2	29,635	31,636	6.8%	12,759
41-3011	Advertising Sales Agents	3	866	831	-4.0%	319
41-3021	Insurance Sales Agents	4	2,719	2,774	2.0%	879

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
41-3031	Securities, Commodities, and Financial Services Sales Agents	4	2,103	2,399	14.1%	882
41-3041	Travel Agents	3	351	364	3.7%	197
41-3099	Sales Representatives, Services, All Other	4	5,055	6,646	31.5%	3,041
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	4	2,067	1,991	-3.7%	382
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	4	12,016	11,692	-2.7%	2,467
41-9011	Demonstrators and Product Promoters	2	275	287	4.4%	96
41-9012	Models	1	9	10	11.1%	4
41-9021	Real Estate Brokers	4	155	135	-12.9%	3
41-9022	Real Estate Sales Agents	3	1,012	1,166	15.2%	323
41-9031	Sales Engineers	4	593	631	6.4%	166
41-9041	Telemarketers	2	907	841	-7.3%	368
41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	2	16	15	-6.3%	2
41-9099	Sales and Related Workers, All Other	3	233	225	-3.4%	33
43-1011	First-Line Supervisors of Office and Administrative Support Workers	3	7,783	8,273	6.3%	2,354
43-2011	Switchboard Operators, Including Answering Service	2	753	645	-14.3%	158
43-2021	Telephone Operators	2	44	26	-40.9%	0
43-3011	Bill and Account Collectors	2	1,602	1,573	-1.8%	510
43-3021	Billing and Posting Clerks	2	3,898	4,328	11.0%	1,218
43-3031	Bookkeeping, Accounting, and Auditing Clerks	3	10,803	12,000	11.1%	2,265
43-3041	Gaming Cage Workers	2	94	116	23.4%	70
43-3051	Payroll and Timekeeping Clerks	2	1,219	1,258	3.2%	333
43-3061	Procurement Clerks	3	422	371	-12.1%	113
43-3071	Tellers	2	2,906	2,581	-11.2%	1,380
43-3099	Financial Clerks, All Other	2	178	209	17.4%	93
43-4011	Brokerage Clerks	3	353	388	9.9%	170
43-4021	Correspondence Clerks	2	103	111	7.8%	42
43-4031	Court, Municipal, and License Clerks	3	439	458	4.3%	94
43-4041	Credit Authorizers, Checkers, and Clerks	3	185	145	-21.6%	1
43-4051	Customer Service Representatives	2	17,113	19,443	13.6%	7,501
43-4061	Eligibility Interviewers, Government Programs	3	1,567	1,472	-6.1%	245
43-4071	File Clerks	2	775	674	-13.0%	126
43-4081	Hotel, Motel, and Resort Desk Clerks	2	1,289	1,273	-1.2%	766
43-4111	Interviewers, Except Eligibility and Loan	2	1,177	1,373	16.7%	454

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
43-4121	Library Assistants, Clerical	2	635	630	-0.8%	288
43-4131	Loan Interviewers and Clerks	3	935	1,080	15.5%	282
43-4141	New Accounts Clerks	2	135	129	-4.4%	47
43-4151	Order Clerks	2	1,862	1,751	-6.0%	554
43-4161	Human Resources Assistants, Except Payroll and Timekeeping	3	992	921	-7.2%	226
43-4171	Receptionists and Information Clerks	2	6,420	6,422	0.0%	1,779
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	2	82	64	-22.0%	6
43-4199	Information and Record Clerks, All Other	2	500	359	-28.2%	12
43-5011	Cargo and Freight Agents	2	162	147	-9.3%	42
43-5021	Couriers and Messengers	2	449	387	-13.8%	42
43-5031	Police, Fire, and Ambulance Dispatchers	2	523	494	-5.5%	138
43-5032	Dispatchers, Except Police, Fire, and Ambulance	2	1,216	1,500	23.4%	666
43-5041	Meter Readers, Utilities	2	184	153	-16.8%	45
43-5051	Postal Service Clerks	2	514	387	-24.7%	102
43-5052	Postal Service Mail Carriers	2	2,031	1,572	-22.6%	711
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	2	945	610	-35.4%	40
43-5061	Production, Planning, and Expediting Clerks	3	2,311	2,449	6.0%	788
43-5071	Shipping, Receiving, and Traffic Clerks	2	4,767	4,745	-0.5%	1,400
43-5081	Stock Clerks and Order Fillers	2	12,624	12,715	0.7%	4,501
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	2	401	453	13.0%	155
43-6011	Executive Secretaries and Executive Administrative Assistants	3	3,786	3,765	-0.6%	590
43-6012	Legal Secretaries	3	1,332	1,450	8.9%	385
43-6013	Medical Secretaries	3	3,040	3,977	30.8%	1,291
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	3	17,080	19,858	16.3%	4,997
43-9011	Computer Operators	3	542	490	-9.6%	92
43-9021	Data Entry Keyers	2	1,683	1,463	-13.1%	368
43-9022	Word Processors and Typists	2	1,145	839	-26.7%	12
43-9031	Desktop Publishers	3	147	125	-15.0%	19
43-9041	Insurance Claims and Policy Processing Clerks	3	1,761	1,845	4.8%	658
43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	2	991	826	-16.6%	216
43-9061	Office Clerks, General	2	20,167	20,332	0.8%	4,809
43-9071	Office Machine Operators, Except Computer	2	413	330	-20.1%	83
43-9081	Proofreaders and Copy Markers	4	83	71	-14.5%	12

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
43-9111	Statistical Assistants	4	84	94	11.9%	35
43-9199	Office and Administrative Support Workers, All Other	3	524	610	16.4%	238
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	3	179	182	1.7%	53
45-2011	Agricultural Inspectors	2	67	60	-10.4%	20
45-2041	Graders and Sorters, Agricultural Products	1	51	65	27.5%	26
45-2091	Agricultural Equipment Operators	2	177	203	14.7%	91
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	1	794	648	-18.4%	177
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals	1	544	548	0.7%	225
45-2099	Agricultural Workers, All Other	1	1	1	0.0%	0
45-4011	Forest and Conservation Workers	3	31	36	16.1%	10
45-4021	Fallers	1	20	14	-30.0%	0
45-4022	Logging Equipment Operators	1	174	190	9.2%	89
45-4023	Log Graders and Scalers	3	6	8	33.3%	3
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	3	2,963	3,645	23.0%	1,046
47-2011	Boilermakers	3	125	156	24.8%	97
47-2021	Brickmasons and Blockmasons	2	653	881	34.9%	296
47-2022	Stonemasons	3	91	87	-4.4%	1
47-2031	Carpenters	2	6,632	7,671	15.7%	2,015
47-2041	Carpet Installers	2	358	419	17.0%	151
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	2	84	79	-6.0%	15
47-2044	Tile and Marble Setters	2	159	210	32.1%	79
47-2051	Cement Masons and Concrete Finishers	2	1,083	1,264	16.7%	310
47-2053	Terrazzo Workers and Finishers	2	18	17	-5.6%	1
47-2061	Construction Laborers	2	5,557	7,092	27.6%	2,879
47-2071	Paving, Surfacing, and Tamping Equipment Operators	2	279	305	9.3%	85
47-2072	Pile-Driver Operators	2	4	4	0.0%	1
47-2073	Operating Engineers and Other Construction Equipment Operators	2	2,813	3,013	7.1%	1,014
47-2081	Drywall and Ceiling Tile Installers	2	328	324	-1.2%	64
47-2082	Tapers	2	99	124	25.3%	40
47-2111	Electricians	3	3,933	4,896	24.5%	2,034
47-2121	Glaziers	2	295	355	20.3%	157
47-2131	Insulation Workers, Floor, Ceiling, and Wall	2	122	159	30.3%	62
47-2132	Insulation Workers, Mechanical	2	79	100	26.6%	32

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
47-2141	Painters, Construction and Maintenance	2	1,030	1,292	25.4%	479
47-2142	Paperhangers	2	28	25	-10.7%	2
47-2151	Pipelayers	2	178	171	-3.9%	38
47-2152	Plumbers, Pipefitters, and Steamfitters	3	2,575	2,812	9.2%	706
47-2161	Plasterers and Stucco Masons	1	77	102	32.5%	25
47-2171	Reinforcing Iron and Rebar Workers	2	44	50	13.6%	14
47-2181	Roofers	2	922	1,018	10.4%	451
47-2211	Sheet Metal Workers	2	964	1,008	4.6%	251
47-2221	Structural Iron and Steel Workers	2	364	418	14.8%	193
47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	2	217	235	8.3%	43
47-3012	Helpers--Carpenters	2	200	265	32.5%	92
47-3013	Helpers--Electricians	2	275	402	46.2%	179
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	1	37	40	8.1%	11
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	2	216	213	-1.4%	30
47-3016	Helpers--Roofers	2	87	114	31.0%	48
47-3019	Helpers, Construction Trades, All Other	2	59	65	10.2%	11
47-4011	Construction and Building Inspectors	3	862	1,106	28.3%	482
47-4021	Elevator Installers and Repairers	3	73	66	-9.6%	18
47-4031	Fence Erectors	2	156	150	-3.8%	37
47-4041	Hazardous Materials Removal Workers	3	412	482	17.0%	217
47-4051	Highway Maintenance Workers	2	1,896	1,841	-2.9%	311
47-4061	Rail-Track Laying and Maintenance Equipment Operators	2	33	43	30.3%	16
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	1	225	245	8.9%	92
47-4099	Construction and Related Workers, All Other	3	77	70	-9.1%	3
47-5011	Derrick Operators, Oil and Gas	1	4	5	25.0%	3
47-5012	Rotary Drill Operators, Oil and Gas	2	15	19	26.7%	15
47-5013	Service Unit Operators, Oil, Gas, and Mining	2	41	53	29.3%	38
47-5021	Earth Drillers, Except Oil and Gas	2	140	187	33.6%	110
47-5031	Explosives Workers, Ordnance Handling Experts, and Blasters	2	29	34	17.2%	13
47-5041	Continuous Mining Machine Operators	1	15	18	20.0%	10
47-5042	Mine Cutting and Channeling Machine Operators	2	22	21	-4.5%	8
47-5049	Mining Machine Operators, All Other	2	1	1	0.0%	0
47-5051	Rock Splitters, Quarry	1	74	86	16.2%	41
47-5061	Roof Bolters, Mining	2	3	3	0.0%	1
47-5071	Roustabouts, Oil and Gas	1	66	91	37.9%	56

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
47-5081	Helpers--Extraction Workers	2	46	55	19.6%	32
47-5099	Extraction Workers, All Other	2	2	2	0.0%	1
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	3	2,554	2,950	15.5%	1,122
49-2011	Computer, Automated Teller, and Office Machine Repairers	3	940	1,030	9.6%	387
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairers	3	46	41	-10.9%	1
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	3	835	894	7.1%	272
49-2091	Avionics Technicians	3	62	75	21.0%	33
49-2092	Electric Motor, Power Tool, and Related Repairers	3	144	145	0.7%	42
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	3	30	28	-6.7%	5
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	3	693	624	-10.0%	125
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	3	119	116	-2.5%	31
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	3	25	30	20.0%	10
49-2097	Electronic Home Entertainment Equipment Installers and Repairers	3	133	137	3.0%	69
49-2098	Security and Fire Alarm Systems Installers	3	328	401	22.3%	154
49-3011	Aircraft Mechanics and Service Technicians	3	149	137	-8.1%	51
49-3021	Automotive Body and Related Repairers	2	1,183	1,389	17.4%	516
49-3022	Automotive Glass Installers and Repairers	2	164	186	13.4%	75
49-3023	Automotive Service Technicians and Mechanics	3	5,647	6,288	11.4%	2,283
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	3	2,083	2,689	29.1%	1,135
49-3041	Farm Equipment Mechanics and Service Technicians	3	236	201	-14.8%	56
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	3	655	747	14.0%	318
49-3043	Rail Car Repairers	2	56	55	-1.8%	23
49-3051	Motorboat Mechanics and Service Technicians	3	39	40	2.6%	10
49-3052	Motorcycle Mechanics	3	139	177	27.3%	87
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	2	257	290	12.8%	100
49-3091	Bicycle Repairers	2	71	61	-14.1%	23
49-3092	Recreational Vehicle Service Technicians	2	48	44	-8.3%	15
49-3093	Tire Repairers and Changers	2	398	388	-2.5%	149
49-9011	Mechanical Door Repairers	2	100	109	9.0%	47
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	3	108	122	13.0%	53

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49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	3	2,278	2,716	19.2%	1,134
49-9031	Home Appliance Repairers	3	291	273	-6.2%	109
49-9041	Industrial Machinery Mechanics	3	2,683	3,106	15.8%	1,299
49-9043	Maintenance Workers, Machinery	3	708	788	11.3%	207
49-9044	Millwrights	3	234	301	28.6%	124
49-9045	Refractory Materials Repairers, Except Brickmasons	2	15	15	0.0%	6
49-9051	Electrical Power-Line Installers and Repairers	3	576	686	19.1%	358
49-9052	Telecommunications Line Installers and Repairers	2	1,136	1,221	7.5%	538
49-9062	Medical Equipment Repairers	3	509	662	30.1%	331
49-9063	Musical Instrument Repairers and Tuners	3	83	79	-4.8%	30
49-9064	Watch Repairers	3	16	15	-6.3%	3
49-9069	Precision Instrument and Equipment Repairers, All Other	3	65	55	-15.4%	11
49-9071	Maintenance and Repair Workers, General	3	9,506	10,227	7.6%	2,815
49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	2	232	216	-6.9%	48
49-9092	Commercial Divers	3	64	58	-9.4%	21
49-9094	Locksmiths and Safe Repairers	2	35	32	-8.6%	7
49-9095	Manufactured Building and Mobile Home Installers	2	31	39	25.8%	21
49-9096	Riggers	2	62	80	29.0%	34
49-9098	Helpers--Installation, Maintenance, and Repair Workers	2	758	838	10.6%	320
49-9099	Installation, Maintenance, and Repair Workers, All Other	2	554	682	23.1%	216
51-1011	First-Line Supervisors of Production and Operating Workers	2	4,801	4,887	1.8%	1,052
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	2	264	298	12.9%	120
51-2021	Coil Winders, Tapers, and Finishers	2	96	80	-16.7%	4
51-2022	Electrical and Electronic Equipment Assemblers	2	1,802	1,561	-13.4%	190
51-2023	Electromechanical Equipment Assemblers	2	465	367	-21.1%	20
51-2031	Engine and Other Machine Assemblers	2	450	387	-14.0%	106
51-2041	Structural Metal Fabricators and Fitters	3	1,037	1,092	5.3%	567
51-2091	Fiberglass Laminators and Fabricators	2	75	92	22.7%	40
51-2092	Team Assemblers	2	6,845	6,635	-3.1%	1,377
51-2099	Assemblers and Fabricators, All Other	2	991	1,418	43.1%	609
51-3011	Bakers	2	1,794	1,780	-0.8%	558
51-3021	Butchers and Meat Cutters	2	1,291	1,177	-8.8%	268
51-3022	Meat, Poultry, and Fish Cutters and Trimmers	1	507	441	-13.0%	81

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51-3023	Slaughterers and Meat Packers	1	760	769	1.2%	292
51-3091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	2	161	169	5.0%	64
51-3092	Food Batchmakers	2	1,770	1,818	2.7%	795
51-3093	Food Cooking Machine Operators and Tenders	2	543	625	15.1%	260
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	3	1,391	1,784	28.3%	877
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	3	138	140	1.4%	45
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	2	1,099	1,159	5.5%	457
51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	2	167	161	-3.6%	53
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	2	401	383	-4.5%	113
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	2	1,602	1,578	-1.5%	286
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	144	97	-32.6%	9
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	925	980	5.9%	415
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	375	320	-14.7%	81
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	3	200	204	2.0%	75
51-4041	Machinists	3	3,150	3,494	10.9%	1,272
51-4051	Metal-Refining Furnace Operators and Tenders	2	257	226	-12.1%	46
51-4052	Pourers and Casters, Metal	2	199	211	6.0%	89
51-4061	Model Makers, Metal and Plastic	3	33	31	-6.1%	6
51-4062	Patternmakers, Metal and Plastic	3	72	80	11.1%	37
51-4071	Foundry Mold and Coremakers	2	143	114	-20.3%	15
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	2	1,130	1,018	-9.9%	175
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	1,598	1,708	6.9%	673
51-4111	Tool and Die Makers	3	655	676	3.2%	143
51-4121	Welders, Cutters, Solderers, and Brazers	3	2,838	3,356	18.3%	1,441
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	2	373	383	2.7%	157
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	2	200	170	-15.0%	32
51-4192	Layout Workers, Metal and Plastic	2	40	44	10.0%	15
51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	2	307	298	-2.9%	98

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-4194	Tool Grinders, Filers, and Sharpeners	2	66	52	-21.2%	6
51-4199	Metal Workers and Plastic Workers, All Other	2	200	262	31.0%	106
51-5111	Prepress Technicians and Workers	3	515	330	-35.9%	40
51-5112	Printing Press Operators	3	2,339	1,875	-19.8%	301
51-5113	Print Binding and Finishing Workers	2	910	761	-16.4%	169
51-6011	Laundry and Dry-Cleaning Workers	1	1,102	1,224	11.1%	516
51-6021	Pressers, Textile, Garment, and Related Materials	1	163	168	3.1%	47
51-6031	Sewing Machine Operators	1	728	599	-17.7%	218
51-6041	Shoe and Leather Workers and Repairers	2	65	74	13.8%	64
51-6042	Shoe Machine Operators and Tenders	2	15	18	20.0%	19
51-6051	Sewers, Hand	2	471	436	-7.4%	39
51-6052	Tailors, Dressmakers, and Custom Sewers	3	132	148	12.1%	50
51-6061	Textile Bleaching and Dyeing Machine Operators and Tenders	2	36	28	-22.2%	20
51-6062	Textile Cutting Machine Setters, Operators, and Tenders	2	105	80	-23.8%	39
51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	2	90	69	-23.3%	43
51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	2	54	35	-35.2%	14
51-6091	Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	2	75	57	-24.0%	10
51-6092	Fabric and Apparel Patternmakers	3	11	8	-27.3%	0
51-6093	Upholsterers	2	201	215	7.0%	116
51-6099	Textile, Apparel, and Furnishings Workers, All Other	2	73	72	-1.4%	12
51-7011	Cabinetmakers and Bench Carpenters	2	1,165	1,116	-4.2%	436
51-7021	Furniture Finishers	1	256	296	15.6%	187
51-7031	Model Makers, Wood	3	19	19	0.0%	4
51-7032	Patternmakers, Wood	3	16	19	18.8%	6
51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	2	497	614	23.5%	342
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	2	833	1,027	23.3%	384
51-7099	Woodworkers, All Other	2	11	10	-9.1%	1
51-8011	Nuclear Power Reactor Operators	3	47	50	6.4%	21
51-8012	Power Distributors and Dispatchers	3	97	105	8.2%	46
51-8013	Power Plant Operators	2	279	242	-13.3%	94
51-8021	Stationary Engineers and Boiler Operators	3	376	405	7.7%	191
51-8031	Water and Wastewater Treatment Plant and System Operators	3	823	777	-5.6%	300
51-8091	Chemical Plant and System Operators	2	140	138	-1.4%	84

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-8092	Gas Plant Operators	3	102	110	7.8%	64
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	2	105	112	6.7%	63
51-8099	Plant and System Operators, All Other	2	53	50	-5.7%	20
51-9011	Chemical Equipment Operators and Tenders	2	574	599	4.4%	334
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	2	307	322	4.9%	156
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	2	238	258	8.4%	117
51-9022	Grinding and Polishing Workers, Hand	1	177	177	0.0%	65
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	2	1,095	1,233	12.6%	563
51-9031	Cutters and Trimmers, Hand	2	41	37	-9.8%	7
51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders	2	523	437	-16.4%	61
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	2	458	436	-4.8%	159
51-9051	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	2	79	69	-12.7%	24
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	2	3,382	3,453	2.1%	949
51-9071	Jewelers and Precious Stone and Metal Workers	3	80	61	-23.8%	3
51-9081	Dental Laboratory Technicians	2	275	288	4.7%	162
51-9082	Medical Appliance Technicians	3	259	222	-14.3%	94
51-9083	Ophthalmic Laboratory Technicians	2	195	178	-8.7%	70
51-9111	Packaging and Filling Machine Operators and Tenders	2	3,434	3,012	-12.3%	628
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	2	675	771	14.2%	274
51-9122	Painters, Transportation Equipment	2	249	248	-0.4%	71
51-9123	Painting, Coating, and Decorating Workers	2	102	95	-6.9%	22
51-9141	Semiconductor Processors	2	102	92	-9.8%	36
51-9151	Photographic Process Workers and Processing Machine Operators	2	168	121	-28.0%	20
51-9191	Adhesive Bonding Machine Operators and Tenders	2	94	101	7.4%	37
51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	2	153	172	12.4%	63
51-9193	Cooling and Freezing Equipment Operators and Tenders	2	140	132	-5.7%	42
51-9194	Etchers and Engravers	2	68	72	5.9%	27
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	2	299	307	2.7%	144
51-9196	Paper Goods Machine Setters, Operators, and Tenders	2	1,489	1,547	3.9%	404

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-9197	Tire Builders	2	32	36	12.5%	17
51-9198	Helpers--Production Workers	2	4,595	4,864	5.9%	1,442
51-9199	Production Workers, All Other	2	695	788	13.4%	268
53-1011	Aircraft Cargo Handling Supervisors	2	49	51	4.1%	16
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	2	1,258	1,443	14.7%	581
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	2	1,360	1,610	18.4%	656
53-2012	Commercial Pilots	3	59	71	20.3%	35
53-2021	Air Traffic Controllers	3	79	74	-6.3%	35
53-2022	Airfield Operations Specialists	3	13	11	-15.4%	5
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	2	174	262	50.6%	125
53-3021	Bus Drivers, Transit and Intercity	2	278	274	-1.4%	73
53-3022	Bus Drivers, School or Special Client	2	4,553	5,024	10.3%	1,622
53-3031	Driver/Sales Workers	2	3,284	3,599	9.6%	942
53-3032	Heavy and Tractor-Trailer Truck Drivers	2	13,741	16,826	22.5%	5,978
53-3033	Light Truck or Delivery Services Drivers	2	6,925	6,714	-3.0%	1,104
53-3041	Taxi Drivers and Chauffeurs	1	1,132	1,280	13.1%	377
53-3099	Motor Vehicle Operators, All Other	2	155	191	23.2%	76
53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers	2	16	15	-6.3%	4
53-5011	Sailors and Marine Oilers	2	31	40	29.0%	29
53-5021	Captains, Mates, and Pilots of Water Vessels	3	28	36	28.6%	26
53-6011	Bridge and Lock Tenders	1	22	13	-40.9%	2
53-6021	Parking Lot Attendants	2	707	955	35.1%	660
53-6031	Automotive and Watercraft Service Attendants	1	388	430	10.8%	167
53-6041	Traffic Technicians	3	11	13	18.2%	6
53-6051	Transportation Inspectors	3	46	39	-15.2%	10
53-6061	Transportation Attendants, Except Flight Attendants	2	183	170	-7.1%	34
53-6099	Transportation Workers, All Other	2	49	56	14.3%	28
53-7011	Conveyor Operators and Tenders	2	216	196	-9.3%	60
53-7021	Crane and Tower Operators	3	271	326	20.3%	162
53-7032	Excavating and Loading Machine and Dragline Operators	2	190	241	26.8%	80
53-7033	Loading Machine Operators, Underground Mining	2	1	1	0.0%	0
53-7051	Industrial Truck and Tractor Operators	2	5,214	6,299	20.8%	2,796
53-7061	Cleaners of Vehicles and Equipment	2	1,914	2,168	13.3%	876
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	2	20,562	25,738	25.2%	12,586
53-7063	Machine Feeders and Offbearers	2	824	806	-2.2%	193

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
53-7064	Packers and Packagers, Hand	2	8,009	8,933	11.5%	3,448
53-7071	Gas Compressor and Gas Pumping Station Operators	2	55	67	21.8%	45
53-7072	Pump Operators, Except Wellhead Pumpers	2	16	16	0.0%	9
53-7073	Wellhead Pumpers	2	9	10	11.1%	8
53-7081	Refuse and Recyclable Material Collectors	2	859	920	7.1%	338
53-7111	Mine Shuttle Car Operators	2	1	1	0.0%	0
53-7121	Tank Car, Truck, and Ship Loaders	2	67	64	-4.5%	23
53-7199	Material Moving Workers, All Other	2	48	72	50.0%	39

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

ABOUT THE STATE SYSTEM'S GAP ANALYSIS PROJECT

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

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

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