

PENNSYLVANIA'S STATE SYSTEM OF HIGHER EDUCATION



CALU



CLARION
UNIVERSITY



MANSFIELD
UNIVERSITY

Millersville
University



SlipperyRock
University

WCU
WEST CHESTER
UNIVERSITY

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

A report for Pennsylvania's
State System of Higher Education

2016



Pennsylvania's
STATE SYSTEM
of Higher Education

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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.

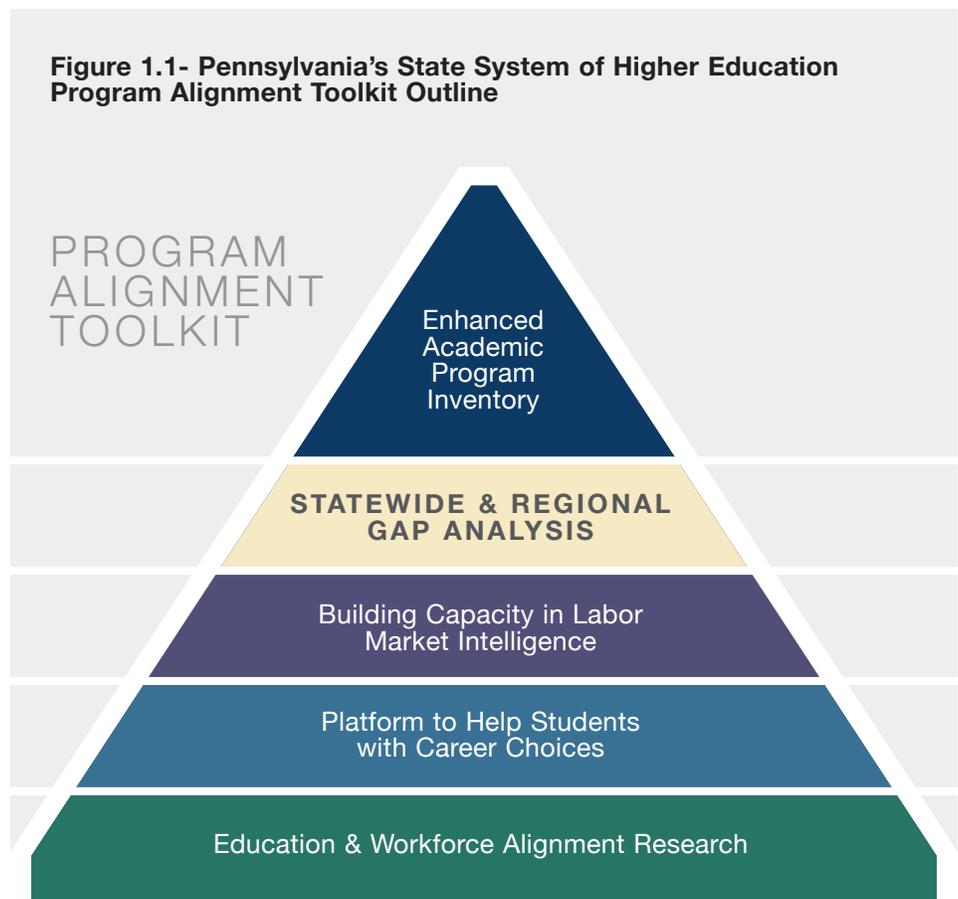
2 Source: The State System’s Economic and Employment Impact on the Commonwealth of Pennsylvania – released April 15, 2015.

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.

-
- 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

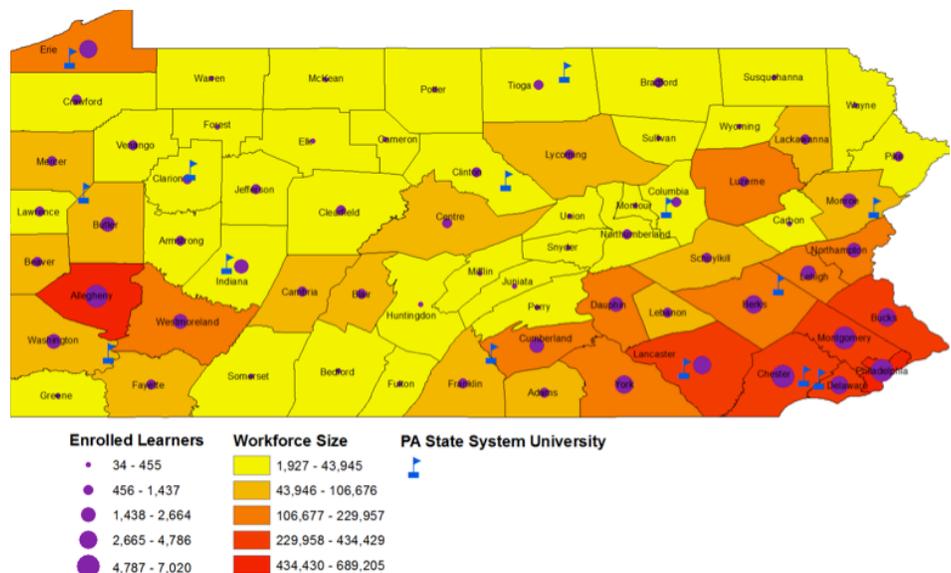
³ Based on Fall 2013 enrollment.

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

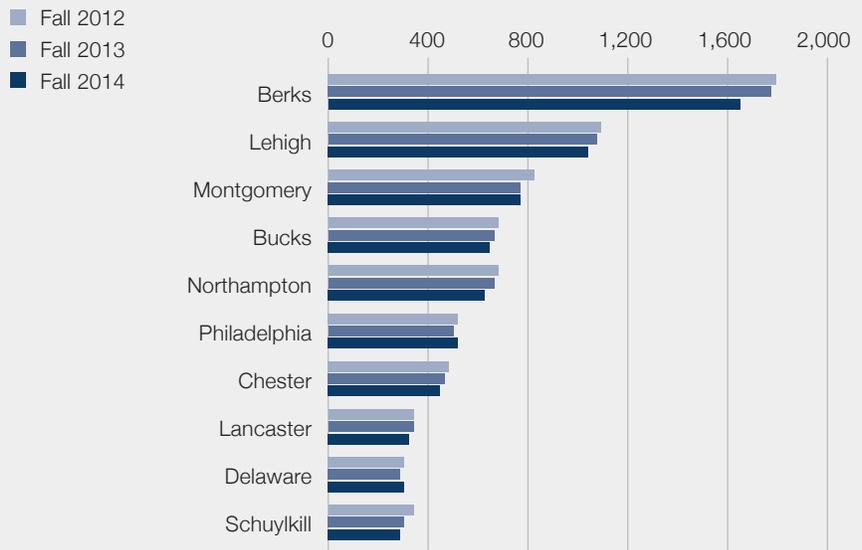


Source: Pennsylvania's State System of Higher Education, Oxford Economics mapping

2.1 Kutztown University's Learner Origin

Kutztown University learners, originally from Pennsylvania, come from nearly every county in the state. The vast majority of learners, however, come from counties that are in the southeast region. The top 10 learner enrollment counties account for about 80% of resident enrollment in Kutztown 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 – Kutztown University Learner Enrollment by County



Source: Pennsylvania's State System of Higher Education

Table 2.3 Kutztown University Learner Enrollment by County

County	Fall 2012	Fall 2013	Fall 2014
Berks	1,807	1,780	1,663
Lehigh	1,096	1,084	1,044
Montgomery	820	771	781
Bucks	689	668	643
Northampton	685	671	632
Philadelphia	524	498	517
Chester	478	468	446
Lancaster	333	346	329
Delaware	299	292	303
Schuylkill	350	298	283

Source: Pennsylvania's State System of Higher Education

3. SUMMARY OF KUTZTOWN UNIVERSITY WORKFORCE REGION

Located in Berks County, Pennsylvania, Kutztown University (KU) supports the southeastern region of Pennsylvania’s State System of Higher Education. It provides a breadth of degree programs and serves a student population of about 9,500 learners, of which about 86% are Pennsylvania residents.⁴

The following sections outline the supporting data used to select KU’s Pennsylvania workforce region—defined as Berks, Lehigh, Montgomery, Bucks, Chester, Northampton, and Schuylkill 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 Kutztown 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 three iterations, with the final selection of counties highlighted in green.⁶

When taken in the context of regional economic activity, about 66% 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, 86% 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- Kutztown 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
Berks, Lehigh	0.63	0.68	0.55	0.87	0.33
Berks, Lehigh, Montgomery	0.72	0.73	0.65	0.89	0.43
Berks, Lehigh, Montgomery, Bucks, Chester, Northampton, Schuylkill	0.79	0.80	0.66	0.86	0.68

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

The majority of KU workforce region residents also work in the region (79%). This reflects a very strong centralized connection between workers and economic activity in a region that has more than 1.5 million jobs. Additionally,

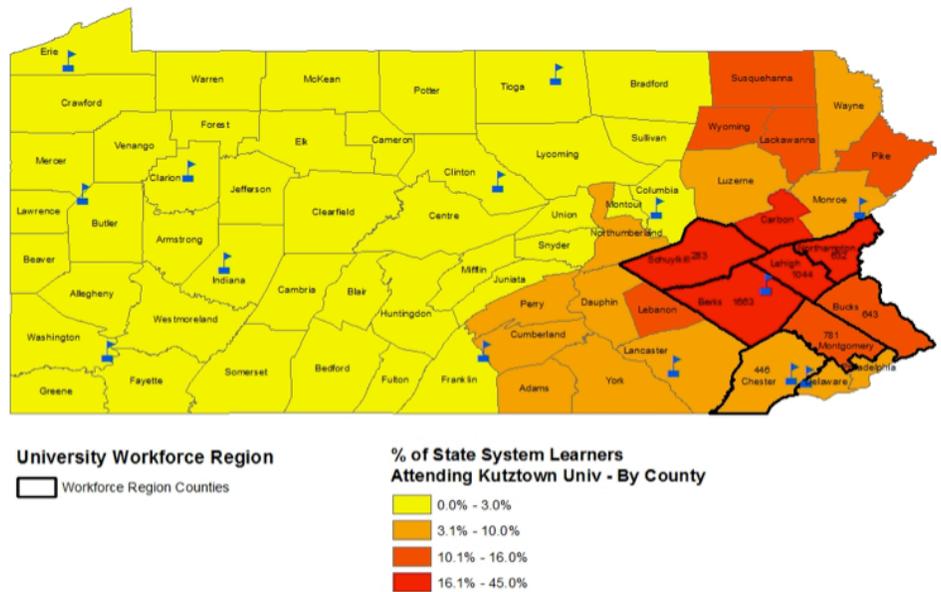
5 Bureau of Labor Statistics: Labor Market Area.

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.

learners at KU originate from nearby surrounding counties. When looking at the percentage of learners attending State System universities, 68% (the capture rate) of State System learners in KU's workforce region attend KU.

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

Figure 3.1 – Kutztown 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 KUTZTOWN 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 Kutztown 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 Kutztown University's workforce region and Pennsylvania.

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

Workforce Characteristic	KU Workforce Region	Pennsylvania	Source
Population	3.1 million	12.7 million	2009-2013 American Community Survey 5-Year Estimates
Employed	1.5 million	5.6 million	2014 BLS Quarterly Census of Employment and Wages
Unemployed	85,200	370,000	2014 BLS Local Area Unemployment Statistics
Unemployment Rate	5.1%	5.8%	2014 BLS Local Area Unemployment Statistics
Poverty Rate	9.2%	13.7%	2013 Census Small Area Income and Poverty Estimates
Business Establishments	88,600	347,000	2014 BLS Quarterly Census of Employment and Wages
Educational Attainment (25+ Population with Bachelor's or Higher)	35.3%	27.4%	2009-2013 American Community Survey 5-Year Estimates
Bachelor's or Higher Completions	19,600	137,000	Integrated Postsecondary Education Data System 3-Year Average AY2010-11 to AY2012-13
Projected Jobs 2024	1.7 million	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 Kutztown University’s workforce region. Also, a brief analysis of three key socio-economic indicators— educational attainment, unemployment, and poverty.

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

4.1 Employment Projections

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

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

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

The next section provides an analysis of industries in Kutztown 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 KUTZTOWN UNIVERSITY'S WORKFORCE REGION

Over the five years of 2009 to 2014, Kutztown University's (KU) workforce region experienced job growth in many service-based sectors. Sectors such as education and health services; professional and business services; and leisure and hospitality added a combined 47,400 new jobs between 2009 and 2014. Government experienced the largest nominal employment loss, while other job losses occurred within information and financial activities. Overall, the economy added about 36,200 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.

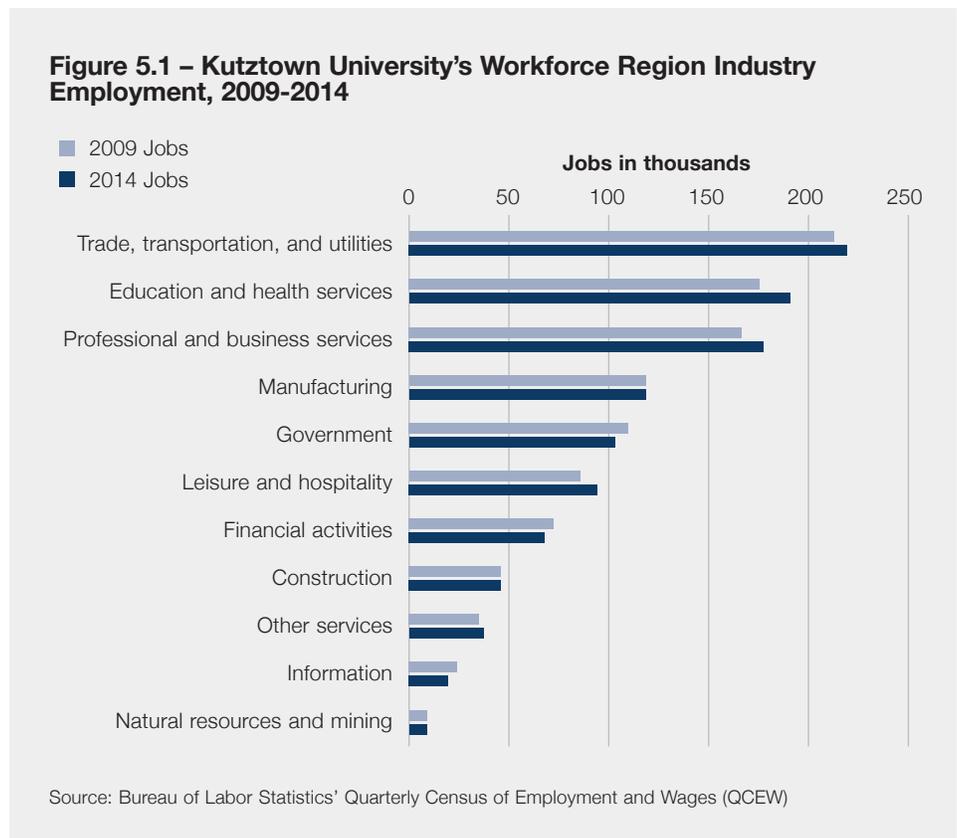


Table 5.1 – Kutztown University’s Workforce Region Industry Employment, 2009-2014

Industry Employment	2009 Jobs	2014 Jobs	Absolute Change 09-14	% Change 09-14
Total, all industries	1,431,238	1,467,436	36,198	2.5%
Trade, transportation, and utilities	288,975	296,752	7,777	2.7%
Education and health services	238,478	258,366	19,888	8.3%
Professional and business services	225,778	241,660	15,882	7.0%
Manufacturing	160,843	161,169	326	0.2%
Government	147,372	139,030	-8,342	-5.7%
Leisure and hospitality	116,280	127,982	11,702	10.1%
Financial activities	99,176	92,563	-6,613	-6.7%
Construction	63,083	62,745	-338	-0.5%
Other services	47,985	49,568	1,583	3.3%
Information	31,331	25,520	-5,811	-18.5%
Natural resources and mining	11,932	12,082	150	1.3%

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

5.1 Top Employers in Kutztown University’s Workforce Region

Amongst the top employers within KU’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 and retail establishments.

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

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

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

Establishment Name
Abington Memorial Hospital
Air Products and Chemicals
Amazon.com
Carpenter Technology Corporation
Central Bucks School District
County of Berks
Doylestown Hospital
East Penn Manufacturing
Federal Government
Giant Food Stores
Lehigh University
Lehigh Valley Hospital Center
Main Line Hospitals
Merck Sharp & Dohme Corporation
Northampton County
QVC Network
Saint Luke’s Hospital
Sands Bethworks Gaming
Sapa Extrusions
Siemens Medical Solutions
St. Mary Medical Center
State Government
The Reading Hospital & Medical Center
Vanguard Group
Wal-Mart

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

6. OCCUPATIONS IN KUTZTOWN 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 KU'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 Kutztown University's Workforce Region

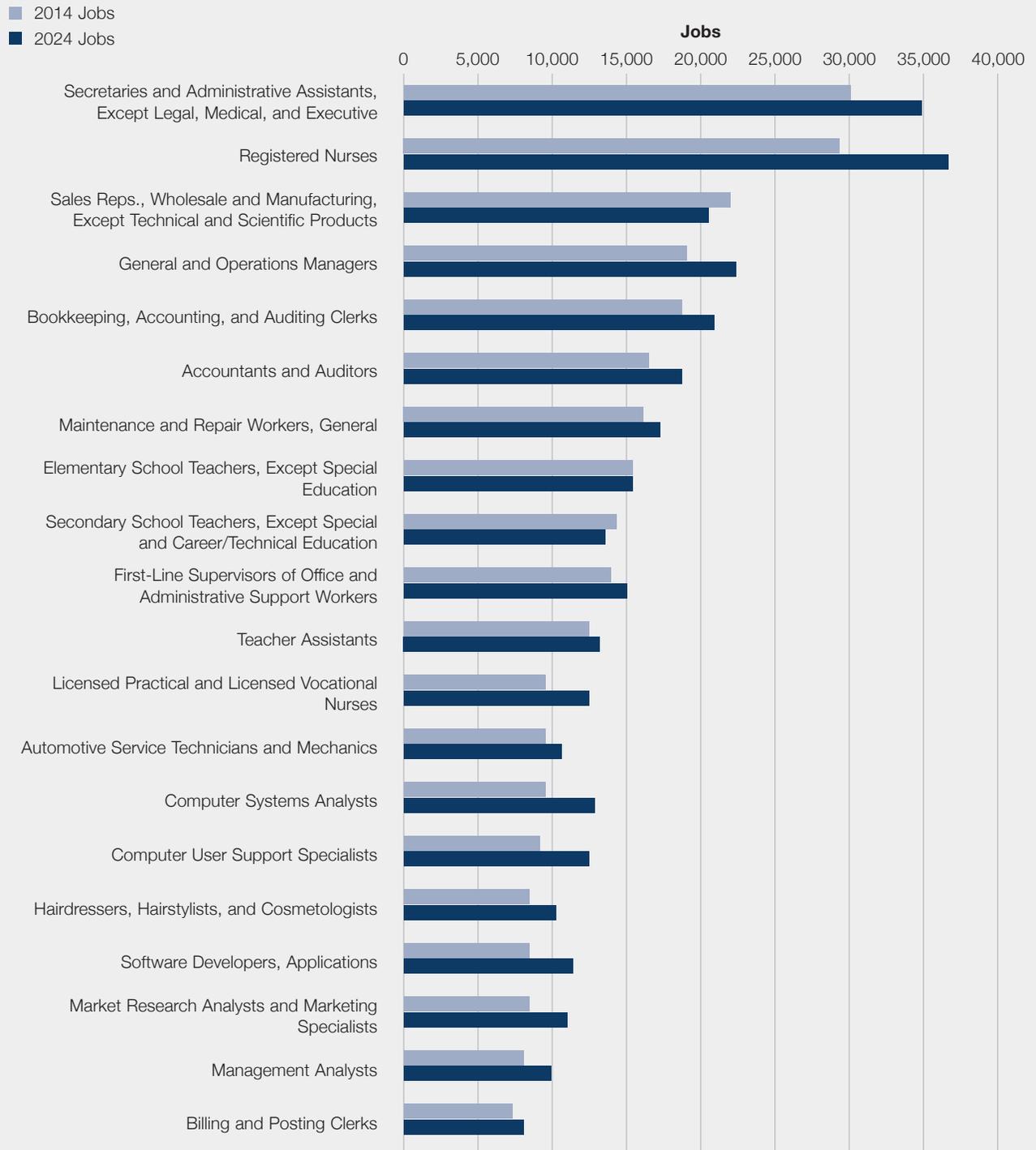
Top skilled occupations in the region are driven by industry composition. Medical centers employ a cadre of health professionals, while enterprise management companies employ a range of business professionals. Given the dominating presence of trade, transportation and utilities; education and health services; and professional and business services establishments in KU'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 KU’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 KU’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	29,920	34,720	8,688
29-1141	Registered Nurses	29,289	36,396	13,038
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	21,682	20,370	3,725
11-1021	General and Operations Managers	18,765	22,084	6,659
43-3031	Bookkeeping, Accounting, and Auditing Clerks	18,738	20,653	3,768
13-2011	Accountants and Auditors	16,523	18,414	7,391
49-9071	Maintenance and Repair Workers, General	15,839	17,198	4,849
25-2021	Elementary School Teachers, Except Special Education	15,346	15,268	3,783
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	14,147	13,630	4,302
43-1011	First-Line Supervisors of Office and Administrative Support Workers	13,988	14,784	4,146
25-9041	Teacher Assistants	12,452	13,214	3,856
29-2061	Licensed Practical and Licensed Vocational Nurses	9,523	12,333	5,325
49-3023	Automotive Service Technicians and Mechanics	9,445	10,659	3,960
15-1121	Computer Systems Analysts	9,290	12,720	5,074
15-1151	Computer User Support Specialists	9,137	12,229	4,728
39-5012	Hairdressers, Hairstylists, and Cosmetologists	8,482	10,201	4,118
15-1132	Software Developers, Applications	8,377	11,431	4,248
13-1161	Market Research Analysts and Marketing Specialists	8,256	10,969	4,035
13-1111	Management Analysts	7,958	9,975	3,341
43-3021	Billing and Posting Clerks	7,289	7,934	2,119

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 KU'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, computer system analysts, market research analysts and marketing specialists, and personal financial advisors.¹²

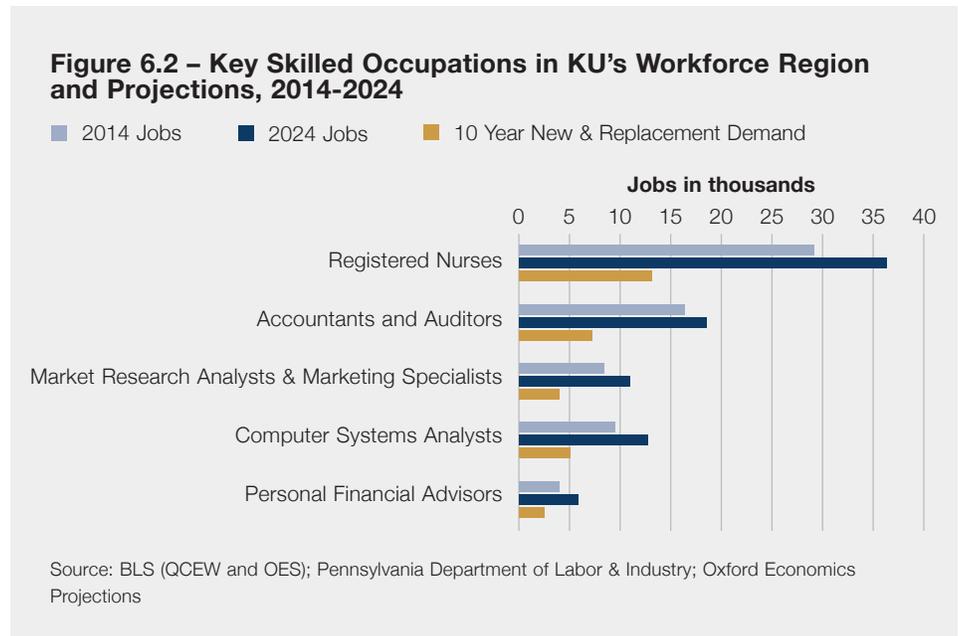


Table 6.2 – Key Skilled Occupations in KU’s Workforce Region and Projections, 2014-2024

SOC Code	Occupation Title	2014 Jobs	2024 Jobs	10 Year New & Replacement Demand
29-1141	Registered Nurses	29,289	36,396	13,038
13-2011	Accountants and Auditors	16,523	18,414	7,391
13-1161	Market Research Analysts and Marketing Specialists	8,256	10,969	4,035
15-1121	Computer Systems Analysts	9,290	12,720	5,074
13-2052	Personal Financial Advisors	3,843	5,645	2,517

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 4,200 unique (de-duplicated) job postings appeared in KU’s Workforce Region for the top five key skilled high demand occupations (registered nurses, accountants and auditors, computer system analysts, market research analysts and marketing specialists, and personal financial advisors). Sizable job postings include: registered nurses (2,040 unique postings per month), and accountants and auditors (977 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	2,040	1,019	2.0
Accountants and Auditors	977	684	1.4
Computer Systems Analysts	713	305	2.3
Market Research Analysts and Marketing Specialists	359	351	1.0
Personal Financial Advisors	114	74	1.5

Source: Economic Modeling Specialists International (EMSI)

Registered Nurses

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

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

Accountants and Auditors

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

Certifications: Certified Public Accountant (CPA)

Computer Systems Analysts

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

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

Market Research Analysts and Marketing Specialists

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

Certifications: Six Sigma, Project Management Professional (PMP)

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 Kutztown 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 14,195 registered nurses);
- The percent of the occupation's employment in the region that is employed in the industry (e.g. the 14,195 registered nurses employed in general medical and surgical hospitals represent nearly 49% 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 14,195 registered nurses make up about 27% of employment within general medical and surgical hospitals).

Staffing Patterns for Registered Nurses Employed in KU'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	14,195	48.5%	27.2%
Home Health Care Services	2,929	10.0%	21.0%
Offices of Physicians	2,829	9.7%	9.4%
Nursing Care Facilities (Skilled Nursing Facilities)	2,157	7.4%	9.9%
Outpatient Care Centers	1,307	4.5%	15.9%

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

Staffing Patterns for Accountants and Auditors Employed in KU'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	3,843	23.3%	38.6%
Management of Companies and Enterprises	2,115	12.8%	5.0%
Other Financial Investment Activities	1,649	10.0%	8.9%
Management, Scientific, and Technical Consulting Services	542	3.3%	3.0%
Insurance Carriers	464	2.8%	2.4%

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

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

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Management, Scientific, and Technical Consulting Services	1,094	13.3%	6.0%
Management of Companies and Enterprises	846	10.2%	2.0%
Computer Systems Design and Related Services	667	8.1%	2.0%
Other Professional, Scientific, and Technical Services	514	6.2%	4.8%
Other Financial Investment Activities	416	5.0%	2.2%

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

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

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Computer Systems Design and Related Services	4,360	46.9%	12.8%
Management of Companies and Enterprises	1,002	10.8%	2.4%
Wholesale Electronic Markets and Agents and Brokers	569	6.1%	2.7%
Insurance Carriers	546	5.9%	2.8%
Data Processing, Hosting, and Related Services	392	4.2%	7.6%

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

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

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Other Financial Investment Activities	2,505	65.2%	13.6%
Securities and Commodity Contracts Intermediation and Brokerage	668	17.4%	17.7%
Depository Credit Intermediation	199	5.2%	1.3%
Activities Related to Credit Intermediation	106	2.7%	5.9%
Agencies, Brokerages, and Other Insurance Related Activities	102	2.6%	0.7%

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

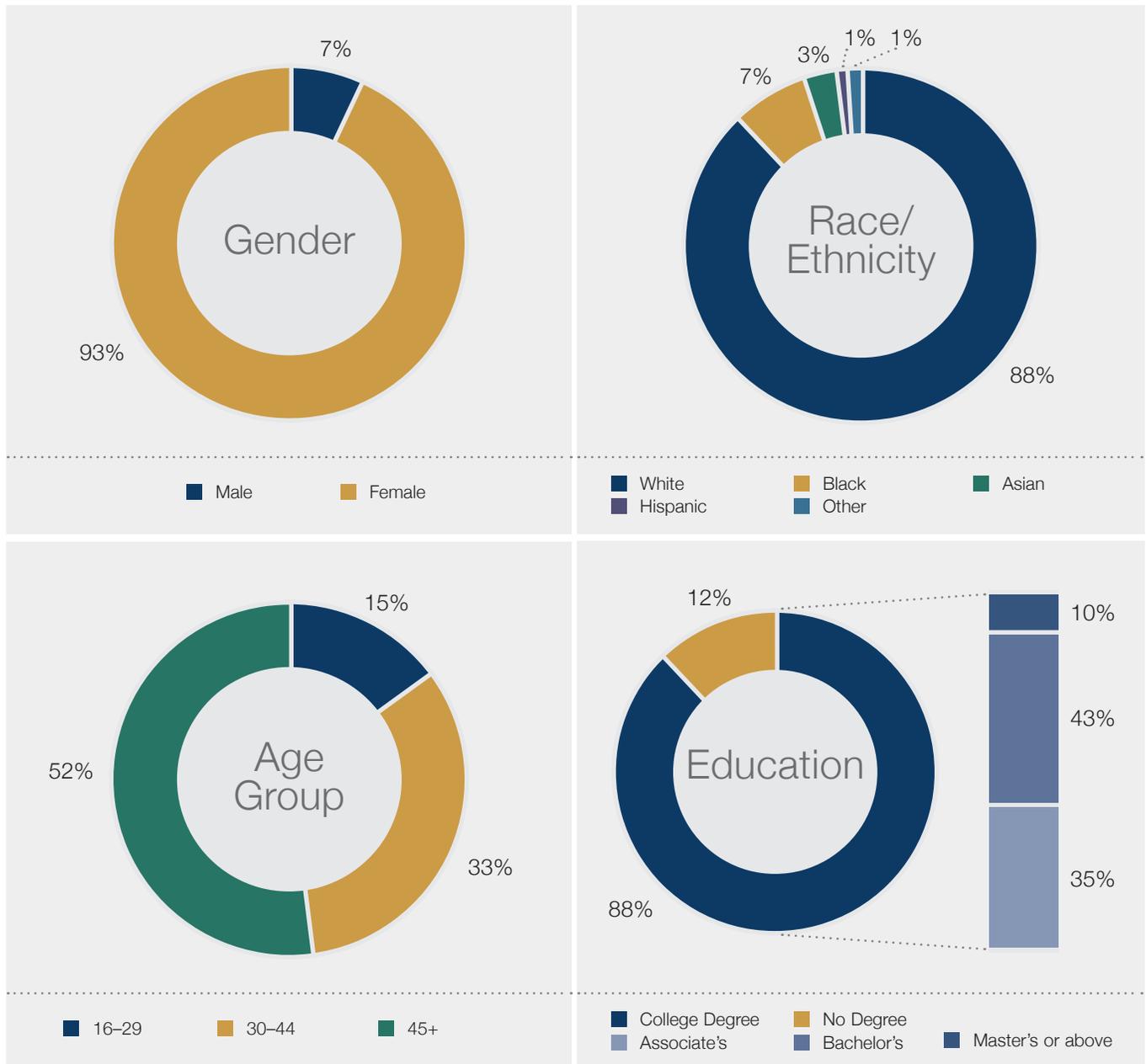
In addition to understanding the industries that employ key skilled high demand occupations, another lens to view key skilled high demand occupations focuses on the characteristics of those employed. The following section outlines the demographics for people from Pennsylvania who work in these key skilled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

REGISTERED NURSES IN PENNSYLVANIA

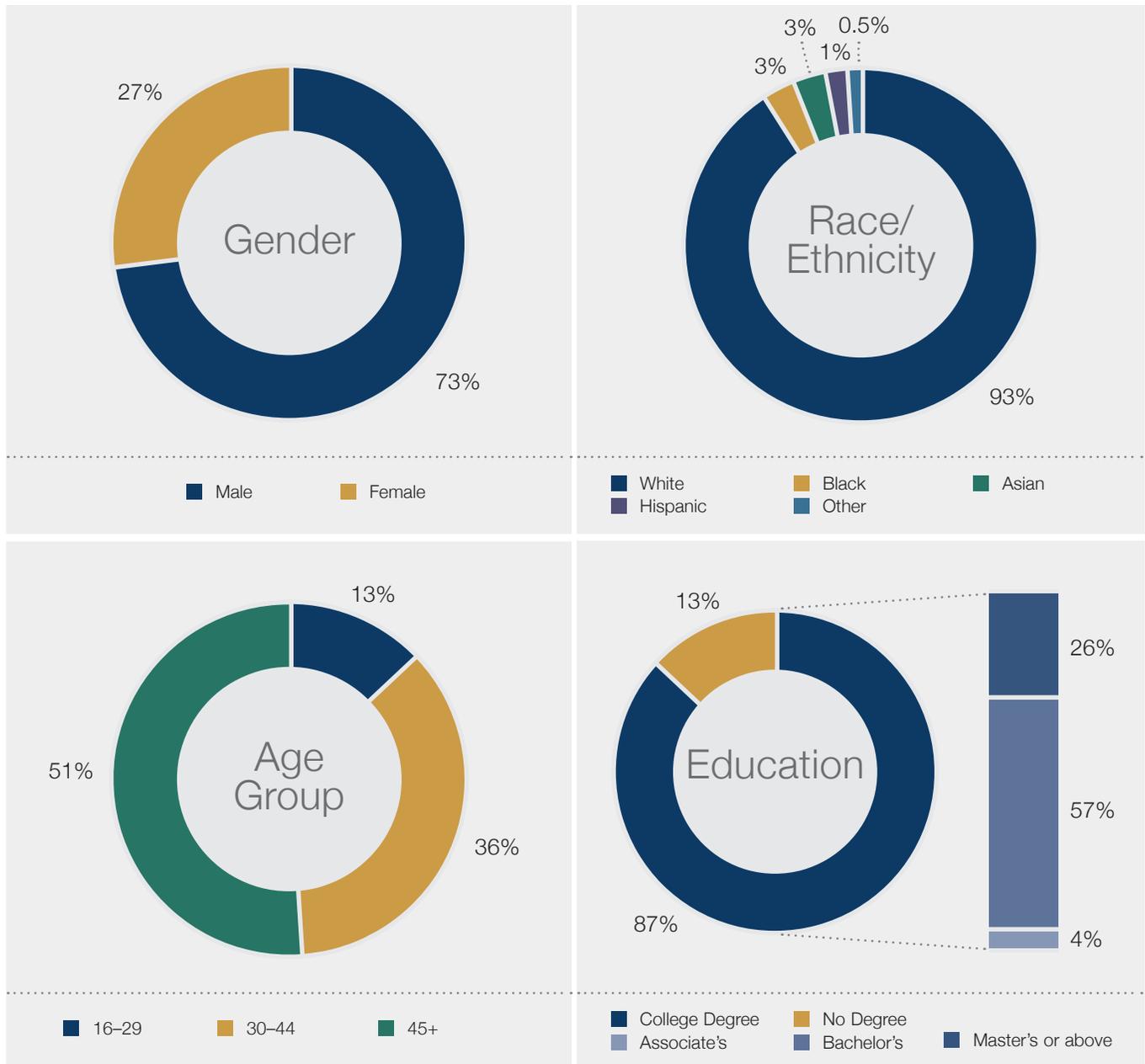
The demographic profile of registered nurses is largely dominated by white females. Age distribution indicates that registered nurses are a more mature cohort of workers (45 years and older), which can put increasing pressure on replacement jobs due to retirements over the next 10 years. Nearly 90% of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

PERSONAL FINANCIAL ADVISORS IN PENNSYLVANIA

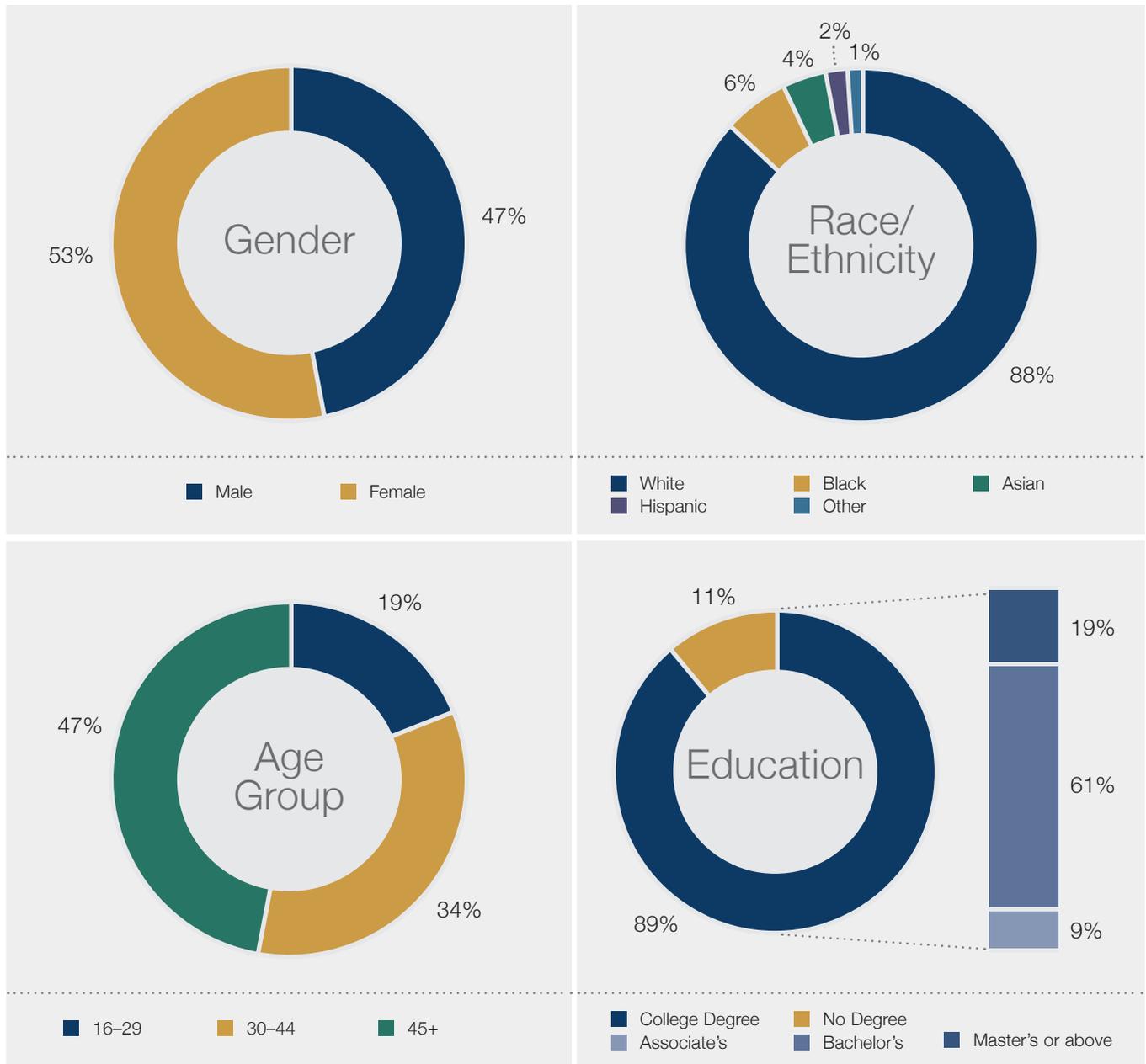
Personal financial advisors are typically male, though females occupy almost 30% of the employed population. The majority of those in this occupation are white. This occupation is represented by a majority of older workers (45 years and older), though mid-career workers also occupy a significant proportion 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

ACCOUNTANTS AND AUDITORS IN PENNSYLVANIA

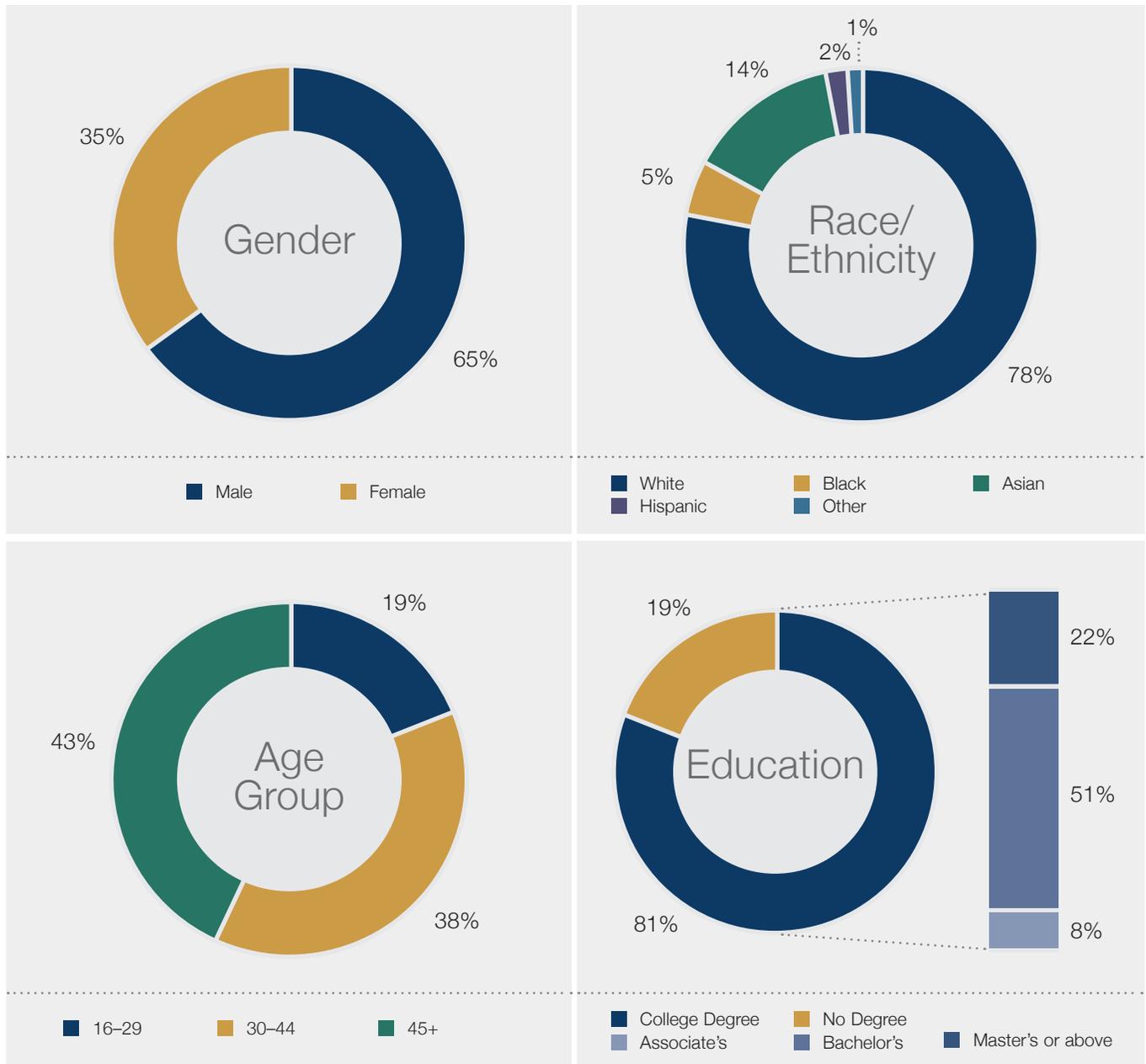
Accountants and auditors are fairly equally split between male and female, though a slightly higher percent of employed accountants and auditors are female. A high proportion of white individuals are found in the occupation. Additionally, the age distribution is fairly even between entry-level and mature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



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

COMPUTER SYSTEMS ANALYSTS IN PENNSYLVANIA

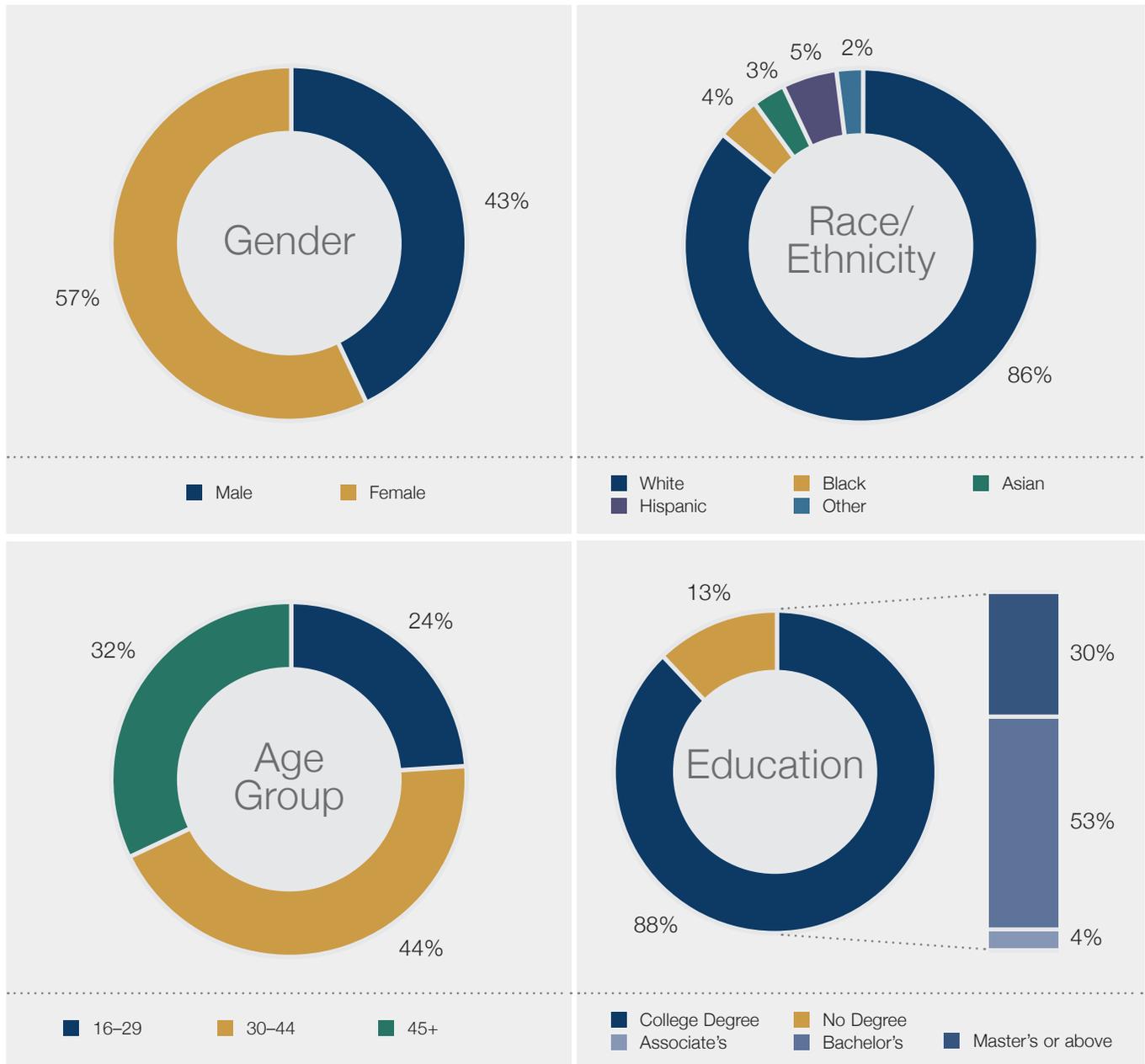
Computer systems analysts show a larger proportion of males in the occupation compared to females. While still represented by a larger share of white workers, a significant number of Asian workers are found in the occupation, making this occupation more diverse than the average Pennsylvania demographic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



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

MARKET RESEARCH ANALYSTS AND MARKETING SPECIALISTS IN PENNSYLVANIA

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



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

The final section of this report explores KU'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 KUTZTOWN UNIVERSITY'S WORKFORCE REGION

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

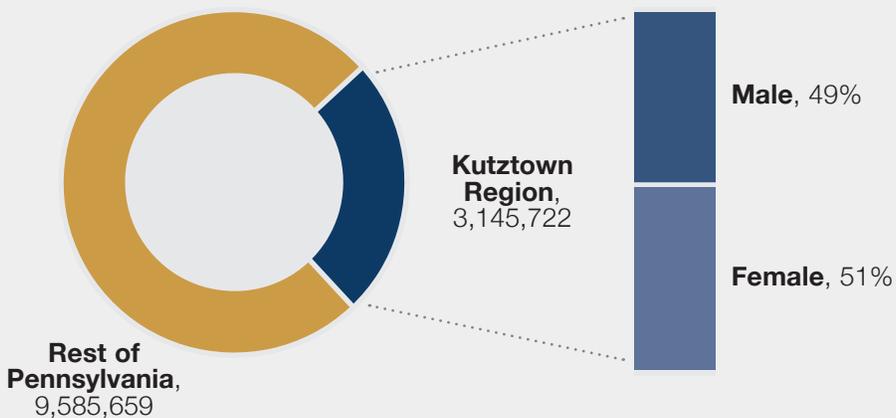
Analysis of three socio-economic indicators—education, unemployment, and poverty—also provides insight into the segment of the population that may be considered economically disadvantaged. Areas with high proportions of economically disadvantaged learners may require additional considerations in education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

7.1 Demographics of Kutztown University's Workforce Region

The KU workforce region has a population of about 3.1 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.

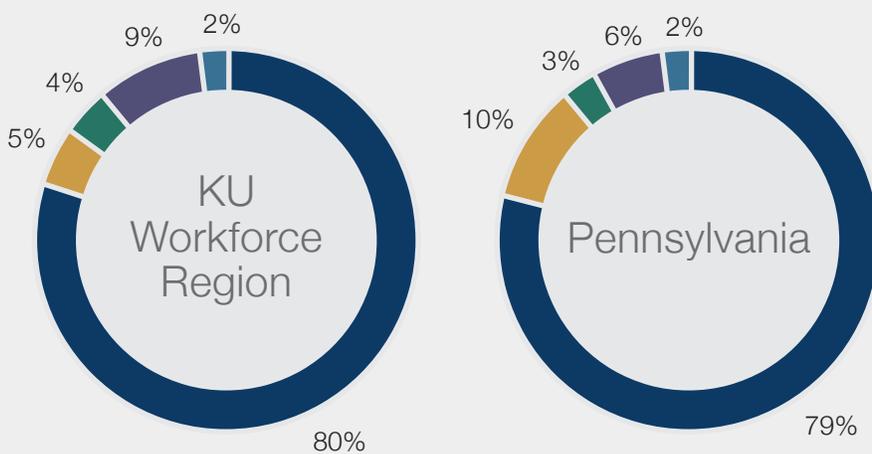
Fall 2014 data from the State System Research Office indicates that approximately 83% (90,966) of learners within the State System are traditional students—ages 18- to 22-year-old high school graduates—and 17% (18,640) are adult learners. A view of the change in population by age demographic indicates 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 8,700 people between 2010 and 2014—a 2% decline. Conversely, the 25-34 year old cohort increased over 6%, or 22,600 people, over the same time period. This demographic shift presents an opportunity to incorporate a broader university recruitment strategy.

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



Source: U.S. Census - ACS

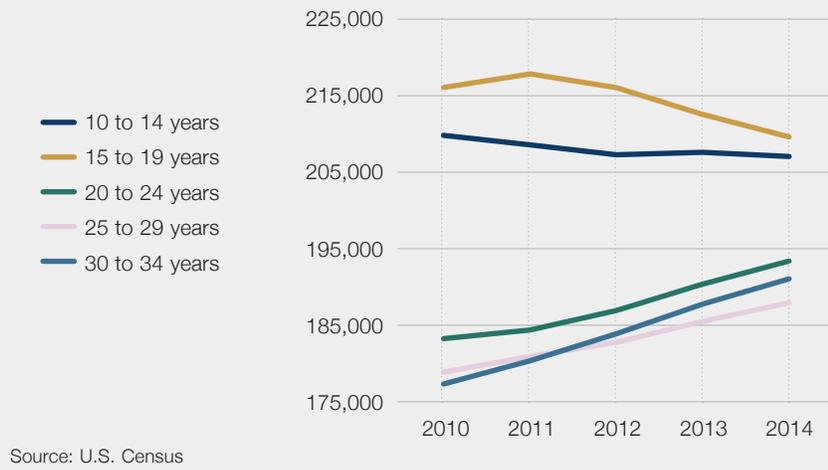
Figure 7.2 – Kutztown University's Workforce Region Race/Ethnicity Composition



■ White ■ Black ■ Asian ■ Hispanic ■ Other

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

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



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

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

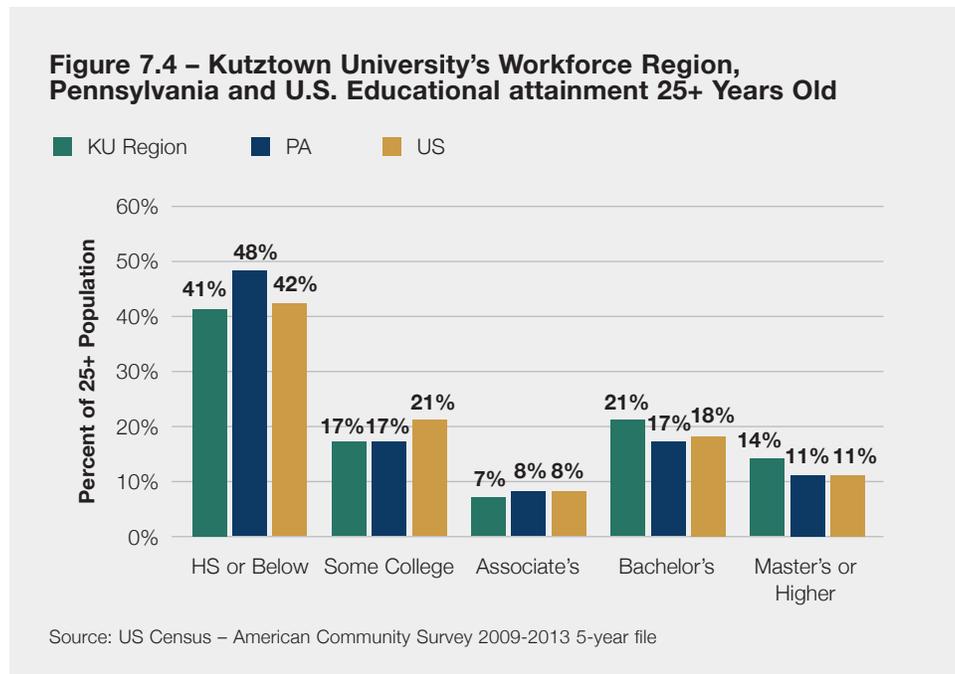
The levels of educational attainment of a population indicate several characteristics in an economy. Areas with better educated workers earn higher wages, are more productive and can typically adjust more quickly to changing economic conditions. Additionally, an educated workforce is less likely to be

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 KU's workforce region indicates that more than half (59%) 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 slightly above the national average of 58% of the population having had at least some post-secondary education or higher.

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

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



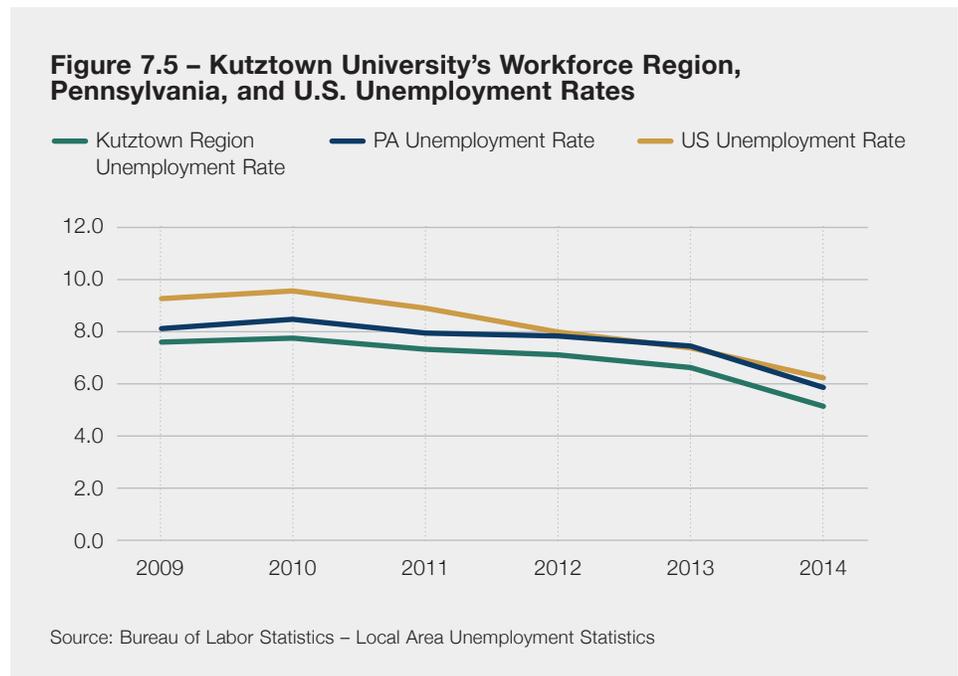
13 Feinstein et. al. (2006), "The effects of education on health: Concepts, evidence and policy implications: A review for the OECD Center for Educational Research and Innovation (CERI)", unpublished manuscript, OECD, Paris.

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 Kutztown University's Workforce Region

KU's workforce region unemployment rate—5.1% in 2014—has trended closely with the state and national unemployment rate since 2012 but remains below the state and national average. This suggests that opportunities for dislocated workers in the region on average are roughly better compared to the rest of the nation.

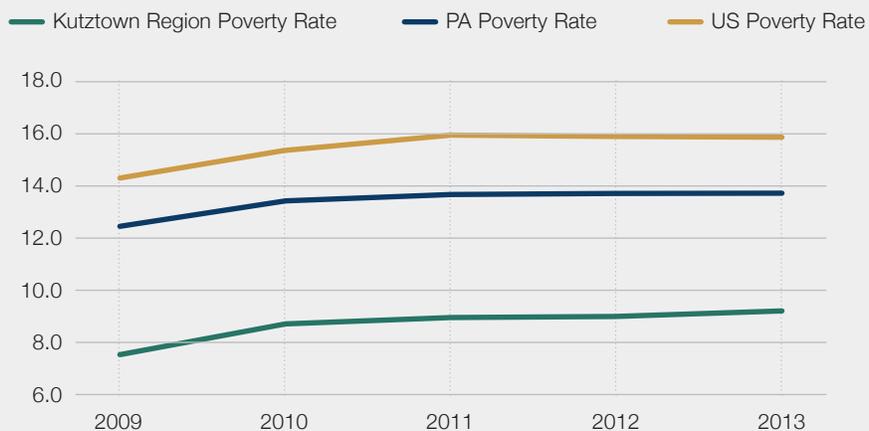
Figure 7.5 shows the convergence of the unemployment rates of KU's workforce region, Pennsylvania, and the U.S. from 2009 to 2014.



In KU's workforce region, the poverty rate trended upward since 2009. The region's poverty rate is well below 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 KU'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 – Kutztown 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 KU'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

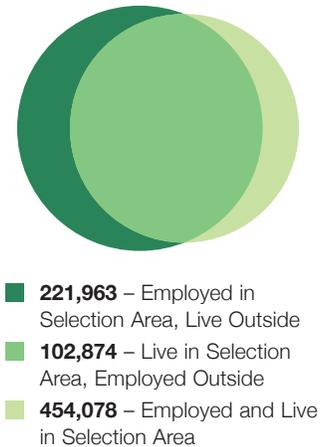
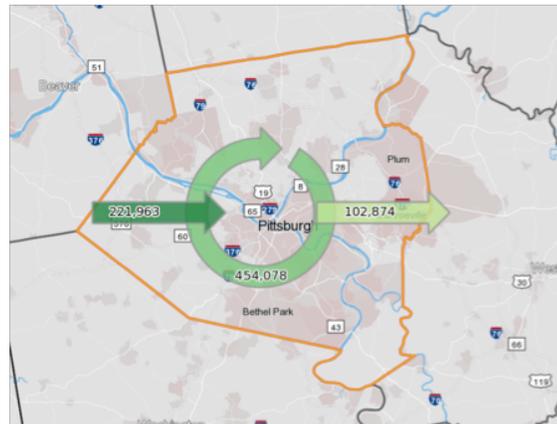
Given the workforce/commute, learner and economic variances that exist within the different geographies across Pennsylvania, an iterative process is used to define the workforce region. This multiple step, iterative process seeks to maximize the primary driver value (workforce flows), while adhering 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 Kutztown University	2014 QCEW Employment
Adams	33	34,139
Allegheny	5	683,111
Armstrong	2	17,582
Beaver	2	52,811
Bedford	1	15,397
Berks	1,663	166,792
Blair	6	58,233
Bradford	15	24,568
Bucks	643	250,889
Butler	1	84,472
Cambria	2	53,915
Cameron	1	2,015
Carbon	120	16,974
Centre	7	67,147
Chester	446	240,469
Clarion	0	13,586
Clearfield	4	29,938
Clinton	5	13,043
Columbia	21	24,974
Crawford	1	31,113
Cumberland	131	126,939
Dauphin	122	176,004
Delaware	303	216,261
Elk	0	14,994
Erie	1	124,095
Fayette	1	39,979
Forest	0	2,053
Franklin	22	56,715
Fulton	0	4,807
Greene	0	14,844
Huntingdon	1	12,343

County	Fall 2014 Enrollment in Kutztown University	2014 QCEW Employment
Indiana	1	32,653
Jefferson	0	15,435
Juniata	1	6,146
Lackawanna	125	97,259
Lancaster	329	225,673
Lawrence	0	29,500
Lebanon	123	48,869
Lehigh	1,044	180,757
Luzerne	126	140,329
Lycoming	24	53,197
McKean	1	15,770
Mercer	1	48,028
Mifflin	3	15,544
Monroe	187	52,933
Montgomery	781	472,655
Montour	3	15,578
Northampton	632	105,825
Northumberland	41	27,985
Perry	24	7,661
Philadelphia	517	640,987
Pike	75	10,748
Potter	0	5,291
Schuylkill	283	50,049
Snyder	8	15,522
Somerset	1	24,398
Sullivan	1	1,772
Susquehanna	28	9,281
Tioga	9	12,973
Union	6	16,597
Venango	1	19,251
Warren	1	15,031
Washington	1	86,961
Wayne	32	14,651
Westmoreland	4	132,312
Wyoming	18	10,181
York	211	172,145
Total Pennsylvania	8,201	5,643,676

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

APPENDIX C: INDUSTRY PROJECTIONS 2014-2024 FOR KUTZTOWN 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 KU'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	1,518,797	1,686,060	11.0%	1.0
1111	Oilseed and Grain Farming	136	144	5.9%	0.2
1112	Vegetable and Melon Farming	446	525	17.7%	0.4
1113	Fruit and Tree Nut Farming	317	357	12.6%	0.1
1114	Greenhouse, Nursery, and Floriculture Production	7,089	7,343	3.6%	4.4
1119	Other Crop Farming	152	179	17.8%	0.2
1121	Cattle Ranching and Farming	445	484	8.8%	0.3
1122	Hog and Pig Farming	45	46	2.2%	0.1
1123	Poultry and Egg Production	387	383	-1.0%	0.9
1124	Sheep and Goat Farming	9	10	11.1%	0.6
1125	Aquaculture	21	21	0.0%	0.3
1129	Other Animal Production	201	220	9.5%	0.9
1131	Timber Tract Operations	5	6	20.0%	0.1
1132	Forest Nurseries and Gathering of Forest Products	18	21	16.7%	0.7
1133	Logging	26	29	11.5%	0.0
1142	Hunting and Trapping	13	13	0.0%	0.6
1151	Support Activities for Crop Production	1,041	1,206	15.9%	0.3
1152	Support Activities for Animal Production	213	203	-4.7%	0.7
1153	Support Activities for Forestry	4	4	0.0%	0.0
2111	Oil and Gas Extraction	61	68	11.5%	0.0
2121	Coal Mining	431	354	-17.9%	0.5
2123	Nonmetallic Mineral Mining and Quarrying	923	899	-2.6%	0.9
2131	Support Activities for Mining	188	222	18.1%	0.0
2211	Electric Power Generation, Transmission and Distribution	3,439	3,280	-4.6%	0.6
2212	Natural Gas Distribution	809	861	6.4%	0.6
2213	Water, Sewage and Other Systems	2,465	2,528	2.6%	1.1
2361	Residential Building Construction	7,015	8,887	26.7%	1.0
2362	Nonresidential Building Construction	5,840	7,028	20.3%	0.8
2371	Utility System Construction	5,343	6,980	30.6%	1.0
2372	Land Subdivision	279	336	20.4%	0.6
2373	Highway, Street, and Bridge Construction	3,601	4,349	20.8%	0.8
2379	Other Heavy and Civil Engineering Construction	357	421	17.9%	0.3
2381	Foundation, Structure, and Building Exterior Contractors	8,016	9,660	20.5%	1.0
2382	Building Equipment Contractors	21,231	25,826	21.6%	1.0
2383	Building Finishing Contractors	7,616	8,904	16.9%	1.0
2389	Other Specialty Trade Contractors	7,787	9,846	26.4%	1.2
3111	Animal Food Manufacturing	736	741	0.7%	1.2

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3112	Grain and Oilseed Milling	175	195	11.4%	0.3
3113	Sugar and Confectionery Product Manufacturing	2,305	2,215	-3.9%	3.0
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	1,223	1,106	-9.6%	0.6
3115	Dairy Product Manufacturing	1,089	1,011	-7.2%	0.7
3116	Animal Slaughtering and Processing	4,833	5,356	10.8%	0.9
3117	Seafood Product Preparation and Packaging	86	98	14.0%	0.2
3118	Bakeries and Tortilla Manufacturing	3,770	3,996	6.0%	1.2
3119	Other Food Manufacturing	2,115	2,336	10.4%	1.0
3121	Beverage Manufacturing	2,953	3,608	22.2%	1.3
3122	Tobacco Manufacturing	288	238	-17.4%	1.9
3131	Fiber, Yarn, and Thread Mills	122	95	-22.1%	0.4
3132	Fabric Mills	1,085	964	-11.2%	1.8
3133	Textile and Fabric Finishing and Fabric Coating Mills	321	223	-30.5%	0.9
3141	Textile Furnishings Mills	297	270	-9.1%	0.5
3149	Other Textile Product Mills	675	602	-10.8%	1.0
3151	Apparel Knitting Mills	107	81	-24.3%	0.7
3152	Cut and Sew Apparel Manufacturing	2,338	1,622	-30.6%	1.8
3159	Apparel Accessories and Other Apparel Manufacturing	27	27	0.0%	0.2
3161	Leather and Hide Tanning and Finishing	6	7	16.7%	0.1
3162	Footwear Manufacturing	59	70	18.6%	0.4
3169	Other Leather and Allied Product Manufacturing	28	32	14.3%	0.2
3211	Sawmills and Wood Preservation	182	244	34.1%	0.2
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	431	556	29.0%	0.5
3219	Other Wood Product Manufacturing	2,573	3,345	30.0%	1.1
3221	Pulp, Paper, and Paperboard Mills	438	470	7.3%	0.4
3222	Converted Paper Product Manufacturing	5,521	5,417	-1.9%	1.9
3231	Printing and Related Support Activities	6,629	6,404	-3.4%	1.3
3241	Petroleum and Coal Products Manufacturing	541	492	-9.1%	0.4
3251	Basic Chemical Manufacturing	2,676	2,557	-4.4%	1.7
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	1,054	1,132	7.4%	1.0
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	293	294	0.3%	0.7
3254	Pharmaceutical and Medicine Manufacturing	12,655	11,607	-8.3%	4.1
3255	Paint, Coating, and Adhesive Manufacturing	717	695	-3.1%	1.1
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	3,350	3,286	-1.9%	2.9
3259	Other Chemical Product and Preparation Manufacturing	1,623	1,768	8.9%	1.8
3261	Plastics Product Manufacturing	8,388	8,765	4.5%	1.4

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3262	Rubber Product Manufacturing	640	694	8.4%	0.4
3271	Clay Product and Refractory Manufacturing	110	118	7.3%	0.3
3272	Glass and Glass Product Manufacturing	593	673	13.5%	0.6
3273	Cement and Concrete Product Manufacturing	2,702	3,022	11.8%	1.4
3274	Lime and Gypsum Product Manufacturing	22	27	22.7%	0.1
3279	Other Nonmetallic Mineral Product Manufacturing	1,171	1,199	2.4%	1.5
3311	Iron and Steel Mills and Ferroalloy Manufacturing	3,219	3,364	4.5%	3.2
3312	Steel Product Manufacturing from Purchased Steel	2,077	2,222	7.0%	3.1
3313	Alumina and Aluminum Production and Processing	801	768	-4.1%	1.2
3314	Nonferrous Metal (except Aluminum) Production and Processing	1,850	1,956	5.7%	2.7
3315	Foundries	1,737	1,798	3.5%	1.2
3321	Forging and Stamping	793	800	0.9%	0.7
3322	Cutlery and Handtool Manufacturing	406	458	12.8%	0.9
3323	Architectural and Structural Metals Manufacturing	4,285	4,995	16.6%	1.1
3324	Boiler, Tank, and Shipping Container Manufacturing	1,199	1,185	-1.2%	1.1
3325	Hardware Manufacturing	140	142	1.4%	0.5
3326	Spring and Wire Product Manufacturing	513	578	12.7%	1.1
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	6,045	6,105	1.0%	1.5
3328	Coating, Engraving, Heat Treating, and Allied Activities	1,213	1,295	6.8%	0.8
3329	Other Fabricated Metal Product Manufacturing	3,134	3,424	9.3%	1.0
3331	Agriculture, Construction, and Mining Machinery Manufacturing	811	786	-3.1%	0.3
3332	Industrial Machinery Manufacturing	1,665	1,802	8.2%	1.4
3333	Commercial and Service Industry Machinery Manufacturing	1,068	935	-12.5%	1.1
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	1,033	1,075	4.1%	0.7
3335	Metalworking Machinery Manufacturing	1,255	1,174	-6.5%	0.6
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	457	496	8.5%	0.4
3339	Other General Purpose Machinery Manufacturing	3,504	3,364	-4.0%	1.2
3341	Computer and Peripheral Equipment Manufacturing	820	758	-7.6%	0.5
3342	Communications Equipment Manufacturing	1,360	1,250	-8.1%	1.3
3343	Audio and Video Equipment Manufacturing	172	129	-25.0%	0.8
3344	Semiconductor and Other Electronic Component Manufacturing	3,716	3,677	-1.0%	0.9
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	4,479	4,317	-3.6%	1.0
3346	Manufacturing and Reproducing Magnetic and Optical Media	638	641	0.5%	3.4
3351	Electric Lighting Equipment Manufacturing	1,026	1,072	4.5%	2.0
3352	Household Appliance Manufacturing	393	419	6.6%	0.6

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3353	Electrical Equipment Manufacturing	2,224	2,166	-2.6%	1.4
3359	Other Electrical Equipment and Component Manufacturing	7,908	9,128	15.4%	5.6
3361	Motor Vehicle Manufacturing	1,424	1,380	-3.1%	0.6
3362	Motor Vehicle Body and Trailer Manufacturing	1,818	1,741	-4.2%	1.2
3363	Motor Vehicle Parts Manufacturing	1,941	1,976	1.8%	0.3
3364	Aerospace Product and Parts Manufacturing	2,477	2,302	-7.1%	0.5
3365	Railroad Rolling Stock Manufacturing	641	779	21.5%	2.1
3369	Other Transportation Equipment Manufacturing	419	500	19.3%	1.2
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	2,724	2,961	8.7%	1.1
3372	Office Furniture (including Fixtures) Manufacturing	2,217	2,488	12.2%	1.9
3379	Other Furniture Related Product Manufacturing	255	303	18.8%	0.7
3391	Medical Equipment and Supplies Manufacturing	5,560	5,555	-0.1%	1.6
3399	Other Miscellaneous Manufacturing	4,822	4,579	-5.0%	1.6
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	5,999	6,519	8.7%	1.6
4232	Furniture and Home Furnishing Merchant Wholesalers	1,008	1,123	11.4%	0.9
4233	Lumber and Other Construction Materials Merchant Wholesalers	2,998	3,252	8.5%	1.3
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	9,050	8,708	-3.8%	1.3
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	1,432	1,577	10.1%	1.0
4236	Household Appliances and Electrical and Electronic Goods Merchant Wholesalers	3,977	3,616	-9.1%	1.1
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	3,043	3,506	15.2%	1.2
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	7,396	8,419	13.8%	1.0
4239	Miscellaneous Durable Goods Merchant Wholesalers	2,388	2,818	18.0%	0.7
4241	Paper and Paper Product Merchant Wholesalers	1,837	1,885	2.6%	1.3
4242	Drugs and Druggists' Sundries Merchant Wholesalers	4,774	4,452	-6.7%	2.2
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	1,220	1,144	-6.2%	0.8
4244	Grocery and Related Product Merchant Wholesalers	7,754	8,440	8.8%	1.0
4245	Farm Product Raw Material Merchant Wholesalers	111	109	-1.8%	0.1
4246	Chemical and Allied Products Merchant Wholesalers	1,780	1,926	8.2%	1.2
4247	Petroleum and Petroleum Products Merchant Wholesalers	722	767	6.2%	0.7
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	1,014	1,166	15.0%	0.5
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	2,296	2,192	-4.5%	0.6
4251	Wholesale Electronic Markets and Agents and Brokers	20,871	22,252	6.6%	2.1
4411	Automobile Dealers	16,983	19,597	15.4%	1.3
4412	Other Motor Vehicle Dealers	1,038	1,152	11.0%	0.7

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
4413	Automotive Parts, Accessories, and Tire Stores	3,964	4,391	10.8%	0.7
4421	Furniture Stores	2,238	2,199	-1.7%	0.9
4422	Home Furnishings Stores	2,405	2,456	2.1%	0.9
4431	Electronics and Appliance Stores	4,945	5,077	2.7%	0.9
4441	Building Material and Supplies Dealers	10,333	10,667	3.2%	0.9
4442	Lawn and Garden Equipment and Supplies Stores	1,735	1,653	-4.7%	1.1
4451	Grocery Stores	36,699	37,231	1.4%	1.3
4452	Specialty Food Stores	3,112	3,138	0.8%	1.2
4453	Beer, Wine, and Liquor Stores	1,351	1,553	15.0%	0.8
4461	Health and Personal Care Stores	11,358	11,504	1.3%	1.0
4471	Gasoline Stations	7,792	8,404	7.9%	0.8
4481	Clothing Stores	12,977	12,307	-5.2%	1.1
4482	Shoe Stores	2,335	2,331	-0.2%	1.0
4483	Jewelry, Luggage, and Leather Goods Stores	1,852	1,820	-1.7%	1.2
4511	Sporting Goods, Hobby, and Musical Instrument Stores	6,539	6,846	4.7%	1.1
4512	Book Stores and News Dealers	982	837	-14.8%	1.0
4521	Department Stores	16,468	13,818	-16.1%	1.1
4529	Other General Merchandise Stores	11,470	13,548	18.1%	0.6
4531	Florists	1,025	761	-25.8%	1.5
4532	Office Supplies, Stationery, and Gift Stores	3,350	3,042	-9.2%	1.0
4533	Used Merchandise Stores	1,659	1,959	18.1%	0.9
4539	Other Miscellaneous Store Retailers	3,792	4,196	10.7%	1.1
4541	Electronic Shopping and Mail-Order Houses	7,333	8,549	16.6%	2.0
4542	Vending Machine Operators	531	437	-17.7%	1.3
4543	Direct Selling Establishments	3,339	3,502	4.9%	2.3
4811	Scheduled Air Transportation	125	119	-4.8%	0.0
4812	Nonscheduled Air Transportation	194	214	10.3%	0.5
4831	Deep Sea, Coastal, and Great Lakes Water Transportation	83	80	-3.6%	0.2
4832	Inland Water Transportation	11	14	27.3%	0.0
4841	General Freight Trucking	10,173	12,994	27.7%	0.9
4842	Specialized Freight Trucking	4,022	5,035	25.2%	0.8
4851	Urban Transit Systems	1,125	1,292	14.8%	0.4
4852	Interurban and Rural Bus Transportation	123	137	11.4%	0.5
4853	Taxi and Limousine Service	1,078	1,142	5.9%	1.2
4854	School and Employee Bus Transportation	5,896	6,166	4.6%	2.1
4855	Charter Bus Industry	591	691	16.9%	1.8
4859	Other Transit and Ground Passenger Transportation	781	880	12.7%	0.7

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
4862	Pipeline Transportation of Natural Gas	182	221	21.4%	0.6
4869	Other Pipeline Transportation	350	421	20.3%	4.0
4871	Scenic and Sightseeing Transportation, Land	56	66	17.9%	0.4
4872	Scenic and Sightseeing Transportation, Water	9	8	-11.1%	0.1
4879	Scenic and Sightseeing Transportation, Other	2	1	-50.0%	0.0
4881	Support Activities for Air Transportation	440	527	19.8%	0.2
4882	Support Activities for Rail Transportation	132	175	32.6%	0.4
4883	Support Activities for Water Transportation	28	27	-3.6%	0.0
4884	Support Activities for Road Transportation	1,661	2,310	39.1%	1.3
4885	Freight Transportation Arrangement	571	670	17.3%	0.3
4889	Other Support Activities for Transportation	196	203	3.6%	0.6
4911	Postal Service	5,509	3,765	-31.7%	0.8
4921	Couriers and Express Delivery Services	6,191	6,814	10.1%	1.1
4922	Local Messengers and Local Delivery	339	393	15.9%	0.6
4931	Warehousing and Storage	17,789	21,470	20.7%	2.1
5111	Newspaper, Periodical, Book, and Directory Publishers	5,467	4,226	-22.7%	1.2
5112	Software Publishers	2,251	2,479	10.1%	0.7
5121	Motion Picture and Video Industries	1,958	1,973	0.8%	0.5
5122	Sound Recording Industries	112	103	-8.0%	0.6
5151	Radio and Television Broadcasting	2,012	2,204	9.5%	0.8
5152	Cable and Other Subscription Programming	28	29	3.6%	0.0
5171	Wired Telecommunications Carriers	6,291	5,688	-9.6%	0.9
5172	Wireless Telecommunications Carriers (except Satellite)	1,202	1,033	-14.1%	0.7
5174	Satellite Telecommunications	69	59	-14.5%	0.7
5179	Other Telecommunications	834	758	-9.1%	0.9
5182	Data Processing, Hosting, and Related Services	5,185	5,118	-1.3%	1.7
5191	Other Information Services	2,451	2,979	21.5%	0.6
5221	Depository Credit Intermediation	15,271	14,256	-6.6%	0.8
5222	Nondepository Credit Intermediation	5,166	4,801	-7.1%	0.8
5223	Activities Related to Credit Intermediation	1,802	2,107	16.9%	0.6
5231	Securities and Commodity Contracts Intermediation and Brokerage	3,770	4,542	20.5%	0.8
5232	Securities and Commodity Exchanges	10	13	30.0%	0.1
5239	Other Financial Investment Activities	18,486	24,723	33.7%	3.8
5241	Insurance Carriers	19,526	18,820	-3.6%	1.5
5242	Agencies, Brokerages, and Other Insurance Related Activities	15,219	18,023	18.4%	1.4
5259	Other Investment Pools and Funds	857	1,090	27.2%	21.9
5311	Lessors of Real Estate	5,402	6,044	11.9%	0.8

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
5312	Offices of Real Estate Agents and Brokers	2,430	2,646	8.9%	0.8
5313	Activities Related to Real Estate	4,410	5,283	19.8%	0.6
5321	Automotive Equipment Rental and Leasing	2,105	2,288	8.7%	1.0
5322	Consumer Goods Rental	1,334	1,637	22.7%	0.8
5323	General Rental Centers	421	494	17.3%	1.0
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	1,667	2,118	27.1%	1.1
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	285	315	10.5%	1.1
5411	Legal Services	9,491	10,528	10.9%	0.8
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	9,951	10,564	6.2%	0.9
5413	Architectural, Engineering, and Related Services	17,050	19,216	12.7%	1.1
5414	Specialized Design Services	1,410	1,958	38.9%	1.0
5415	Computer Systems Design and Related Services	33,954	44,653	31.5%	1.7
5416	Management, Scientific, and Technical Consulting Services	18,150	21,756	19.9%	1.3
5417	Scientific Research and Development Services	15,655	17,733	13.3%	2.1
5418	Advertising, Public Relations, and Related Services	6,855	7,655	11.7%	1.3
5419	Other Professional, Scientific, and Technical Services	10,694	13,136	22.8%	1.5
5511	Management of Companies and Enterprises	42,162	48,031	13.9%	1.8
5611	Office Administrative Services	1,218	1,234	1.3%	0.2
5612	Facilities Support Services	1,743	2,371	36.0%	1.1
5613	Employment Services	36,320	49,944	37.5%	1.0
5614	Business Support Services	8,615	8,555	-0.7%	0.9
5615	Travel Arrangement and Reservation Services	2,978	3,186	7.0%	1.3
5616	Investigation and Security Services	8,820	10,133	14.9%	0.9
5617	Services to Buildings and Dwellings	28,805	32,342	12.3%	1.3
5619	Other Support Services	7,837	10,776	37.5%	2.3
5621	Waste Collection	2,682	2,810	4.8%	1.5
5622	Waste Treatment and Disposal	1,108	1,274	15.0%	0.8
5629	Remediation and Other Waste Management Services	1,604	1,948	21.4%	1.1
6111	Elementary and Secondary Schools	80,773	79,875	-1.1%	0.9
6112	Junior Colleges	5,750	6,097	6.0%	0.7
6113	Colleges, Universities, and Professional Schools	16,808	16,236	-3.4%	0.5
6114	Business Schools and Computer and Management Training	570	599	5.1%	0.7
6115	Technical and Trade Schools	818	909	11.1%	0.5
6116	Other Schools and Instruction	3,949	4,353	10.2%	0.9
6117	Educational Support Services	1,515	1,500	-1.0%	0.9
6211	Offices of Physicians	29,951	32,045	7.0%	1.1

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
6212	Offices of Dentists	10,746	11,955	11.3%	1.1
6213	Offices of Other Health Practitioners	10,086	13,030	29.2%	1.2
6214	Outpatient Care Centers	8,206	10,993	34.0%	1.0
6215	Medical and Diagnostic Laboratories	5,230	6,342	21.3%	1.9
6216	Home Health Care Services	13,971	21,661	55.0%	1.0
6219	Other Ambulatory Health Care Services	4,837	6,274	29.7%	1.5
6221	General Medical and Surgical Hospitals	52,199	59,037	13.1%	0.8
6222	Psychiatric and Substance Abuse Hospitals	4,810	5,925	23.2%	1.9
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	2,048	2,869	40.1%	0.7
6231	Nursing Care Facilities (Skilled Nursing Facilities)	21,731	25,346	16.6%	1.1
6232	Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	11,384	13,476	18.4%	1.4
6233	Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	22,853	27,864	21.9%	2.4
6239	Other Residential Care Facilities	1,703	1,806	6.0%	0.9
6241	Individual and Family Services	23,710	31,692	33.7%	1.0
6242	Community Food and Housing, and Emergency and Other Relief Services	1,415	1,736	22.7%	0.8
6243	Vocational Rehabilitation Services	1,817	2,065	13.6%	0.5
6244	Child Day Care Services	11,577	13,895	20.0%	1.3
7111	Performing Arts Companies	530	626	18.1%	0.4
7112	Spectator Sports	848	883	4.1%	0.6
7113	Promoters of Performing Arts, Sports, and Similar Events	684	827	20.9%	0.5
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	24	25	4.2%	0.1
7115	Independent Artists, Writers, and Performers	328	387	18.0%	0.6
7121	Museums, Historical Sites, and Similar Institutions	1,262	1,501	18.9%	0.5
7131	Amusement Parks and Arcades	1,756	1,567	-10.8%	0.8
7132	Gambling Industries	1,807	2,245	24.2%	0.6
7139	Other Amusement and Recreation Industries	16,896	19,128	13.2%	1.1
7211	Traveler Accommodation	10,515	12,047	14.6%	0.5
7212	RV (Recreational Vehicle) Parks and Recreational Camps	454	466	2.6%	0.7
7213	Rooming and Boarding Houses	49	52	6.1%	0.3
7223	Special Food Services	9,988	10,722	7.3%	1.4
7224	Drinking Places (Alcoholic Beverages)	2,967	2,854	-3.8%	0.7
7225	Restaurants and Other Eating Places	81,123	89,750	10.6%	0.8
8111	Automotive Repair and Maintenance	10,331	11,516	11.5%	1.1
8112	Electronic and Precision Equipment Repair and Maintenance	1,205	1,238	2.7%	1.1

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	1,572	1,733	10.2%	0.7
8114	Personal and Household Goods Repair and Maintenance	650	626	-3.7%	0.8
8121	Personal Care Services	12,774	15,265	19.5%	1.8
8122	Death Care Services	1,576	1,734	10.0%	1.0
8123	Drycleaning and Laundry Services	2,342	2,492	6.4%	0.7
8129	Other Personal Services	2,007	2,486	23.9%	0.6
8131	Religious Organizations	2,292	2,552	11.3%	1.1
8132	Grantmaking and Giving Services	1,304	1,405	7.7%	0.9
8133	Social Advocacy Organizations	1,620	2,008	24.0%	0.7
8134	Civic and Social Organizations	8,370	9,037	8.0%	1.9
8139	Business, Professional, Labor, Political, and Similar Organizations	2,764	2,997	8.4%	0.6
8141	Private Households	1,657	1,583	-4.5%	0.5
9211	Executive, Legislative, and Other General Government Support	26,624	25,467	-4.3%	0.8
9221	Justice, Public Order, and Safety Activities	5,744	5,834	1.6%	0.3
9231	Administration of Human Resource Programs	556	553	-0.5%	0.1
9241	Administration of Environmental Quality Programs	655	605	-7.6%	0.2
9251	Administration of Housing Programs, Urban Planning, and Community Development	507	463	-8.7%	0.6
9261	Administration of Economic Programs	978	942	-3.7%	0.1
9281	National Security and International Affairs	377	384	1.9%	0.1

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

APPENDIX D: OCCUPATION PROJECTIONS 2014-2024 FOR KUTZTOWN 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	1,518,797	1,686,060	11.0%	590,620
11-1011	Chief Executives	5	3,235	3,232	-0.1%	765
11-1021	General and Operations Managers	4	18,765	22,084	17.7%	6,659
11-1031	Legislators	4	310	244	-21.3%	15
11-2011	Advertising and Promotions Managers	4	197	171	-13.2%	40
11-2021	Marketing Managers	4	1,938	2,080	7.3%	561
11-2022	Sales Managers	4	3,470	3,506	1.0%	786
11-2031	Public Relations and Fundraising Managers	4	392	396	1.0%	88
11-3011	Administrative Services Managers	3	2,207	2,277	3.2%	408
11-3021	Computer and Information Systems Managers	4	3,895	5,159	32.5%	1,834
11-3031	Financial Managers	4	4,472	4,547	1.7%	902
11-3051	Industrial Production Managers	4	1,776	1,657	-6.7%	290
11-3061	Purchasing Managers	4	632	579	-8.4%	91
11-3071	Transportation, Storage, and Distribution Managers	4	830	950	14.5%	325
11-3111	Compensation and Benefits Managers	4	230	201	-12.6%	41
11-3121	Human Resources Managers	4	991	1,266	27.7%	532
11-3131	Training and Development Managers	4	266	334	25.6%	139
11-9021	Construction Managers	4	1,544	2,026	31.2%	706
11-9031	Education Administrators, Preschool and Childcare Center/Program	4	552	625	13.2%	222
11-9032	Education Administrators, Elementary and Secondary School	5	2,121	1,992	-6.1%	572
11-9033	Education Administrators, Postsecondary	5	718	665	-7.4%	151
11-9039	Education Administrators, All Other	5	163	196	20.2%	78
11-9041	Architectural and Engineering Managers	5	1,701	1,798	5.7%	538
11-9051	Food Service Managers	3	1,425	1,581	10.9%	444
11-9061	Funeral Service Managers	3	119	118	-0.8%	35
11-9071	Gaming Managers	3	30	38	26.7%	14
11-9081	Lodging Managers	3	197	236	19.8%	124
11-9111	Medical and Health Services Managers	5	3,304	3,683	11.5%	1,182
11-9121	Natural Sciences Managers	5	760	806	6.1%	234
11-9131	Postmasters and Mail Superintendents	3	213	117	-45.1%	4
11-9141	Property, Real Estate, and Community Association Managers	4	879	1,079	22.8%	426
11-9151	Social and Community Service Managers	4	1,305	1,540	18.0%	535
11-9161	Emergency Management Directors	4	68	56	-17.6%	0
11-9199	Managers, All Other	4	2,015	2,176	8.0%	600

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	17	16	-5.9%	5
13-1021	Buyers and Purchasing Agents, Farm Products	4	107	113	5.6%	34
13-1022	Wholesale and Retail Buyers, Except Farm Products	3	1,323	1,228	-7.2%	266
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	4	4,062	4,188	3.1%	994
13-1031	Claims Adjusters, Examiners, and Investigators	4	3,939	4,094	3.9%	1,323
13-1032	Insurance Appraisers, Auto Damage	3	203	243	19.7%	113
13-1041	Compliance Officers	4	3,015	3,532	17.1%	1,142
13-1051	Cost Estimators	4	2,765	3,141	13.6%	1,316
13-1071	Human Resources Specialists	4	5,881	7,544	28.3%	2,919
13-1075	Labor Relations Specialists	4	873	734	-15.9%	137
13-1081	Logisticians	4	1,793	2,129	18.7%	574
13-1111	Management Analysts	4	7,958	9,975	25.3%	3,341
13-1121	Meeting, Convention, and Event Planners	4	705	963	36.6%	367
13-1131	Fundraisers	4	550	719	30.7%	292
13-1141	Compensation, Benefits, and Job Analysis Specialists	4	1,062	1,030	-3.0%	205
13-1151	Training and Development Specialists	4	3,148	3,661	16.3%	1,137
13-1161	Market Research Analysts and Marketing Specialists	4	8,256	10,969	32.9%	4,035
13-1199	Business Operations Specialists, All Other	4	4,069	4,165	2.4%	577
13-2011	Accountants and Auditors	4	16,523	18,414	11.4%	7,391
13-2021	Appraisers and Assessors of Real Estate	4	413	484	17.2%	134
13-2031	Budget Analysts	4	524	550	5.0%	246
13-2041	Credit Analysts	4	662	749	13.1%	285
13-2051	Financial Analysts	4	4,261	5,335	25.2%	2,189
13-2052	Personal Financial Advisors	4	3,843	5,645	46.9%	2,517
13-2053	Insurance Underwriters	4	1,503	1,509	0.4%	591
13-2061	Financial Examiners	4	462	538	16.5%	225
13-2071	Credit Counselors	4	390	538	37.9%	231
13-2072	Loan Officers	3	3,249	3,622	11.5%	1,272
13-2081	Tax Examiners and Collectors, and Revenue Agents	3	607	569	-6.3%	208
13-2082	Tax Preparers	3	621	531	-14.5%	99
13-2099	Financial Specialists, All Other	4	1,154	1,206	4.5%	209
15-1111	Computer and Information Research Scientists	5	134	137	2.2%	20
15-1121	Computer Systems Analysts	4	9,290	12,720	36.9%	5,074
15-1122	Information Security Analysts	4	881	1,233	40.0%	488
15-1131	Computer Programmers	4	6,284	8,130	29.4%	3,904

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
15-1132	Software Developers, Applications	4	8,377	11,431	36.5%	4,248
15-1133	Software Developers, Systems Software	4	4,370	4,390	0.5%	551
15-1134	Web Developers	3	1,462	1,902	30.1%	679
15-1141	Database Administrators	4	1,767	2,283	29.2%	881
15-1142	Network and Computer Systems Administrators	4	4,919	4,792	-2.6%	718
15-1143	Computer Network Architects	4	1,344	1,633	21.5%	503
15-1151	Computer User Support Specialists	3	9,137	12,229	33.8%	4,728
15-1152	Computer Network Support Specialists	4	1,926	2,057	6.8%	498
15-1199	Computer Occupations, All Other	4	1,880	2,333	24.1%	784
15-2011	Actuaries	4	470	590	25.5%	272
15-2031	Operations Research Analysts	5	915	1,129	23.4%	430
15-2041	Statisticians	5	739	1,093	47.9%	609
17-1011	Architects, Except Landscape and Naval	4	801	951	18.7%	435
17-1012	Landscape Architects	4	246	319	29.7%	151
17-1021	Cartographers and Photogrammetrists	4	56	63	12.5%	19
17-1022	Surveyors	4	421	478	13.5%	167
17-2011	Aerospace Engineers	4	606	756	24.8%	308
17-2021	Agricultural Engineers	4	38	51	34.2%	25
17-2031	Biomedical Engineers	4	388	441	13.7%	159
17-2041	Chemical Engineers	4	692	665	-3.9%	176
17-2051	Civil Engineers	4	3,259	3,806	16.8%	1,436
17-2061	Computer Hardware Engineers	4	547	495	-9.5%	62
17-2071	Electrical Engineers	4	1,982	2,291	15.6%	801
17-2072	Electronics Engineers, Except Computer	4	1,338	1,135	-15.2%	133
17-2081	Environmental Engineers	5	946	1,149	21.5%	477
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	4	367	362	-1.4%	114
17-2112	Industrial Engineers	4	2,906	2,852	-1.9%	931
17-2131	Materials Engineers	4	414	550	32.9%	293
17-2141	Mechanical Engineers	4	2,899	2,930	1.1%	1,125
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	4	60	58	-3.3%	21
17-2161	Nuclear Engineers	4	410	501	22.2%	231
17-2171	Petroleum Engineers	4	13	17	30.8%	9
17-2199	Engineers, All Other	4	904	1,197	32.4%	476
17-3011	Architectural and Civil Drafters	4	1,276	1,388	8.8%	419
17-3012	Electrical and Electronics Drafters	3	404	354	-12.4%	14
17-3013	Mechanical Drafters	3	1,043	959	-8.1%	143

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
17-3019	Drafters, All Other	3	83	100	20.5%	29
17-3021	Aerospace Engineering and Operations Technicians	4	30	34	13.3%	11
17-3022	Civil Engineering Technicians	3	627	747	19.1%	277
17-3023	Electrical and Electronics Engineering Technicians	3	1,280	1,129	-11.8%	166
17-3024	Electro-Mechanical Technicians	3	200	178	-11.0%	38
17-3025	Environmental Engineering Technicians	4	354	431	21.8%	169
17-3026	Industrial Engineering Technicians	3	567	585	3.2%	159
17-3027	Mechanical Engineering Technicians	3	571	664	16.3%	231
17-3029	Engineering Technicians, Except Drafters, All Other	3	786	1,063	35.2%	473
17-3031	Surveying and Mapping Technicians	3	384	484	26.0%	184
19-1012	Food Scientists and Technologists	4	85	105	23.5%	50
19-1013	Soil and Plant Scientists	5	44	58	31.8%	33
19-1021	Biochemists and Biophysicists	5	978	1,312	34.2%	632
19-1022	Microbiologists	5	452	622	37.6%	321
19-1023	Zoologists and Wildlife Biologists	5	38	38	0.0%	11
19-1029	Biological Scientists, All Other	5	121	125	3.3%	43
19-1031	Conservation Scientists	4	96	112	16.7%	47
19-1032	Foresters	4	34	34	0.0%	10
19-1041	Epidemiologists	5	22	17	-22.7%	2
19-1042	Medical Scientists, Except Epidemiologists	5	2,870	3,560	24.0%	1,379
19-1099	Life Scientists, All Other	5	24	29	20.8%	10
19-2012	Physicists	5	27	24	-11.1%	3
19-2021	Atmospheric and Space Scientists	4	21	19	-9.5%	2
19-2031	Chemists	4	2,749	3,070	11.7%	1,208
19-2032	Materials Scientists	5	142	152	7.0%	53
19-2041	Environmental Scientists and Specialists, Including Health	4	849	1,104	30.0%	527
19-2042	Geoscientists, Except Hydrologists and Geographers	4	273	307	12.5%	131
19-2043	Hydrologists	4	48	51	6.3%	18
19-2099	Physical Scientists, All Other	5	47	38	-19.1%	2
19-3011	Economists	5	195	211	8.2%	82
19-3022	Survey Researchers	5	1,061	1,135	7.0%	414
19-3031	Clinical, Counseling, and School Psychologists	5	1,322	1,416	7.1%	495
19-3039	Psychologists, All Other	5	70	84	20.0%	35
19-3041	Sociologists	5	30	28	-6.7%	14
19-3051	Urban and Regional Planners	5	330	338	2.4%	167

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
19-3091	Anthropologists and Archeologists	5	28	31	10.7%	8
19-3093	Historians	5	14	11	-21.4%	0
19-3099	Social Scientists and Related Workers, All Other	4	69	71	2.9%	16
19-4011	Agricultural and Food Science Technicians	3	142	121	-14.8%	33
19-4021	Biological Technicians	4	1,936	2,199	13.6%	901
19-4031	Chemical Technicians	3	1,679	1,955	16.4%	810
19-4041	Geological and Petroleum Technicians	4	58	76	31.0%	47
19-4051	Nuclear Technicians	3	259	303	17.0%	158
19-4061	Social Science Research Assistants	4	180	243	35.0%	145
19-4091	Environmental Science and Protection Technicians, Including Health	4	497	624	25.6%	351
19-4092	Forensic Science Technicians	4	23	23	0.0%	10
19-4093	Forest and Conservation Technicians	3	58	66	13.8%	36
19-4099	Life, Physical, and Social Science Technicians, All Other	3	361	420	16.3%	210
21-1011	Substance Abuse and Behavioral Disorder Counselors	5	1,696	1,758	3.7%	544
21-1012	Educational, Guidance, School, and Vocational Counselors	5	2,489	2,536	1.9%	632
21-1013	Marriage and Family Therapists	5	248	302	21.8%	109
21-1014	Mental Health Counselors	5	2,502	2,699	7.9%	881
21-1015	Rehabilitation Counselors	5	1,399	1,748	24.9%	743
21-1019	Counselors, All Other	5	190	205	7.9%	57
21-1021	Child, Family, and School Social Workers	4	3,365	3,843	14.2%	1,265
21-1022	Healthcare Social Workers	5	1,834	2,444	33.3%	1,037
21-1023	Mental Health and Substance Abuse Social Workers	5	2,200	2,751	25.0%	1,169
21-1029	Social Workers, All Other	5	205	225	9.8%	67
21-1091	Health Educators	4	603	701	16.3%	262
21-1092	Probation Officers and Correctional Treatment Specialists	4	613	611	-0.3%	197
21-1093	Social and Human Service Assistants	4	4,840	5,552	14.7%	2,156
21-1094	Community Health Workers	4	248	274	10.5%	89
21-1099	Community and Social Service Specialists, All Other	4	294	324	10.2%	101
21-2011	Clergy	5	497	604	21.5%	228
21-2021	Directors, Religious Activities and Education	4	416	508	22.1%	279
21-2099	Religious Workers, All Other	4	113	95	-15.9%	19
23-1011	Lawyers	5	5,176	5,932	14.6%	1,639
23-1012	Judicial Law Clerks	5	176	184	4.5%	44

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	108	108	0.0%	22
23-1022	Arbitrators, Mediators, and Conciliators	5	55	70	27.3%	23
23-1023	Judges, Magistrate Judges, and Magistrates	5	41	34	-17.1%	3
23-2011	Paralegals and Legal Assistants	3	2,112	2,710	28.3%	956
23-2091	Court Reporters	3	189	207	9.5%	68
23-2093	Title Examiners, Abstractors, and Searchers	3	712	807	13.3%	256
23-2099	Legal Support Workers, All Other	3	107	109	1.9%	21
25-1011	Business Teachers, Postsecondary	5	685	776	13.3%	194
25-1021	Computer Science Teachers, Postsecondary	5	348	406	16.7%	110
25-1022	Mathematical Science Teachers, Postsecondary	5	481	499	3.7%	90
25-1031	Architecture Teachers, Postsecondary	5	77	95	23.4%	30
25-1032	Engineering Teachers, Postsecondary	5	346	411	18.8%	117
25-1041	Agricultural Sciences Teachers, Postsecondary	5	50	43	-14.0%	1
25-1042	Biological Science Teachers, Postsecondary	5	535	538	0.6%	84
25-1043	Forestry and Conservation Science Teachers, Postsecondary	5	16	14	-12.5%	0
25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	5	101	104	3.0%	18
25-1052	Chemistry Teachers, Postsecondary	5	218	236	8.3%	51
25-1053	Environmental Science Teachers, Postsecondary	5	37	33	-10.8%	2
25-1054	Physics Teachers, Postsecondary	5	139	156	12.2%	38
25-1061	Anthropology and Archeology Teachers, Postsecondary	5	40	35	-12.5%	2
25-1062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	5	56	56	0.0%	9
25-1063	Economics Teachers, Postsecondary	5	155	165	6.5%	34
25-1064	Geography Teachers, Postsecondary	5	41	42	2.4%	7
25-1065	Political Science Teachers, Postsecondary	5	137	137	0.0%	21
25-1066	Psychology Teachers, Postsecondary	5	357	375	5.0%	72
25-1067	Sociology Teachers, Postsecondary	5	238	266	11.8%	64
25-1069	Social Sciences Teachers, Postsecondary, All Other	5	57	71	24.6%	22
25-1071	Health Specialties Teachers, Postsecondary	5	991	980	-1.1%	142
25-1072	Nursing Instructors and Teachers, Postsecondary	5	535	542	1.3%	87
25-1081	Education Teachers, Postsecondary	5	486	473	-2.7%	61
25-1082	Library Science Teachers, Postsecondary	5	41	45	9.8%	10
25-1111	Criminal Justice and Law Enforcement Teachers, Postsecondary	5	92	100	8.7%	22
25-1112	Law Teachers, Postsecondary	5	78	83	6.4%	17

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
25-1113	Social Work Teachers, Postsecondary	5	83	75	-9.6%	5
25-1121	Art, Drama, and Music Teachers, Postsecondary	5	783	978	24.9%	313
25-1122	Communications Teachers, Postsecondary	5	211	224	6.2%	45
25-1123	English Language and Literature Teachers, Postsecondary	5	744	756	1.6%	125
25-1124	Foreign Language and Literature Teachers, Postsecondary	5	267	287	7.5%	59
25-1125	History Teachers, Postsecondary	5	221	244	10.4%	57
25-1126	Philosophy and Religion Teachers, Postsecondary	5	188	186	-1.1%	29
25-1191	Graduate Teaching Assistants	5	180	196	8.9%	44
25-1192	Home Economics Teachers, Postsecondary	5	14	12	-14.3%	0
25-1193	Recreation and Fitness Studies Teachers, Postsecondary	5	145	139	-4.1%	17
25-1194	Vocational Education Teachers, Postsecondary	3	1,020	983	-3.6%	118
25-1199	Postsecondary Teachers, All Other	5	592	701	18.4%	198
25-2011	Preschool Teachers, Except Special Education	3	3,980	5,344	34.3%	2,507
25-2012	Kindergarten Teachers, Except Special Education	4	1,616	1,594	-1.4%	475
25-2021	Elementary School Teachers, Except Special Education	4	15,346	15,268	-0.5%	3,783
25-2022	Middle School Teachers, Except Special and Career/Technical Education	4	6,765	7,876	16.4%	2,810
25-2023	Career/Technical Education Teachers, Middle School	4	171	202	18.1%	83
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	4	14,147	13,630	-3.7%	4,302
25-2032	Career/Technical Education Teachers, Secondary School	4	1,234	1,107	-10.3%	277
25-2051	Special Education Teachers, Preschool	4	174	207	19.0%	65
25-2052	Special Education Teachers, Kindergarten and Elementary School	4	2,926	3,032	3.6%	769
25-2053	Special Education Teachers, Middle School	4	1,024	1,016	-0.8%	226
25-2054	Special Education Teachers, Secondary School	4	2,109	2,181	3.4%	585
25-2059	Special Education Teachers, All Other	4	67	79	17.9%	21
25-3011	Adult Basic and Secondary Education and Literacy Teachers and Instructors	4	332	305	-8.1%	43
25-3021	Self-Enrichment Education Teachers	3	2,241	2,124	-5.2%	362
25-3097	Teachers and Instructors, All Other, Except Substitute Teachers	3	1,421	1,703	19.8%	525
25-3098	Substitute Teachers	3	4,477	4,280	-4.4%	735
25-4011	Archivists	5	53	63	18.9%	22
25-4012	Curators	5	75	94	25.3%	38

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
25-4013	Museum Technicians and Conservators	4	91	117	28.6%	50
25-4021	Librarians	5	1,198	1,201	0.3%	299
25-4031	Library Technicians	4	619	650	5.0%	380
25-9011	Audio-Visual and Multimedia Collections Specialists	4	44	46	4.5%	11
25-9021	Farm and Home Management Advisors	5	6	5	-16.7%	0
25-9031	Instructional Coordinators	5	1,088	1,132	4.0%	138
25-9041	Teacher Assistants	3	12,452	13,214	6.1%	3,856
25-9099	Education, Training, and Library Workers, All Other	4	210	208	-1.0%	17
27-1011	Art Directors	4	420	483	15.0%	184
27-1012	Craft Artists	2	12	11	-8.3%	2
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	3	86	89	3.5%	30
27-1014	Multimedia Artists and Animators	4	210	230	9.5%	75
27-1019	Artists and Related Workers, All Other	4	17	11	-35.3%	0
27-1021	Commercial and Industrial Designers	4	290	254	-12.4%	53
27-1022	Fashion Designers	3	84	64	-23.8%	11
27-1023	Floral Designers	2	647	438	-32.3%	125
27-1024	Graphic Designers	4	2,843	3,095	8.9%	1,152
27-1025	Interior Designers	4	454	607	33.7%	333
27-1026	Merchandise Displayers and Window Trimmers	3	858	1,011	17.8%	403
27-1027	Set and Exhibit Designers	5	55	68	23.6%	29
27-1029	Designers, All Other	4	1	1	0.0%	0
27-2011	Actors	2	217	226	4.1%	93
27-2012	Producers and Directors	4	644	719	11.6%	356
27-2021	Athletes and Sports Competitors	2	164	180	9.8%	79
27-2022	Coaches and Scouts	4	1,768	1,678	-5.1%	470
27-2023	Umpires, Referees, and Other Sports Officials	3	86	77	-10.5%	16
27-2031	Dancers	3	17	14	-17.6%	3
27-2032	Choreographers	4	66	72	9.1%	29
27-2041	Music Directors and Composers	3	255	202	-20.8%	38
27-2042	Musicians and Singers	3	207	195	-5.8%	69
27-2099	Entertainers and Performers, Sports and Related Workers, All Other	3	10	9	-10.0%	0
27-3011	Radio and Television Announcers	3	335	366	9.3%	189
27-3012	Public Address System and Other Announcers	2	66	78	18.2%	30
27-3022	Reporters and Correspondents	4	375	285	-24.0%	106
27-3031	Public Relations Specialists	4	2,495	2,473	-0.9%	360

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
27-3041	Editors	4	868	737	-15.1%	150
27-3042	Technical Writers	4	482	463	-3.9%	131
27-3043	Writers and Authors	4	491	476	-3.1%	109
27-3091	Interpreters and Translators	4	336	320	-4.8%	29
27-3099	Media and Communication Workers, All Other	4	58	49	-15.5%	1
27-4011	Audio and Video Equipment Technicians	3	493	536	8.7%	150
27-4012	Broadcast Technicians	3	155	173	11.6%	61
27-4014	Sound Engineering Technicians	3	75	70	-6.7%	15
27-4021	Photographers	3	738	669	-9.3%	148
27-4031	Camera Operators, Television, Video, and Motion Picture	3	125	118	-5.6%	11
27-4032	Film and Video Editors	3	82	75	-8.5%	4
27-4099	Media and Communication Equipment Workers, All Other	3	27	22	-18.5%	0
29-1011	Chiropractors	5	317	436	37.5%	191
29-1021	Dentists, General	5	1,144	1,302	13.8%	444
29-1022	Oral and Maxillofacial Surgeons	5	43	45	4.7%	13
29-1023	Orthodontists	5	32	40	25.0%	16
29-1029	Dentists, All Other Specialists	5	26	24	-7.7%	6
29-1031	Dietitians and Nutritionists	5	734	802	9.3%	164
29-1041	Optometrists	5	345	453	31.3%	224
29-1051	Pharmacists	5	3,282	3,603	9.8%	1,187
29-1061	Anesthesiologists	5	398	420	5.5%	133
29-1062	Family and General Practitioners	5	1,606	1,718	7.0%	560
29-1063	Internists, General	5	242	223	-7.9%	41
29-1064	Obstetricians and Gynecologists	5	87	109	25.3%	41
29-1065	Pediatricians, General	5	89	113	27.0%	42
29-1066	Psychiatrists	5	228	232	1.8%	68
29-1067	Surgeons	5	515	665	29.1%	287
29-1069	Physicians and Surgeons, All Other	5	3,638	3,891	7.0%	1,208
29-1071	Physician Assistants	5	1,221	1,344	10.1%	363
29-1081	Podiatrists	5	122	168	37.7%	95
29-1122	Occupational Therapists	5	1,406	1,915	36.2%	729
29-1123	Physical Therapists	5	2,476	3,424	38.3%	1,649
29-1124	Radiation Therapists	3	164	153	-6.7%	22
29-1125	Recreational Therapists	4	341	390	14.4%	132
29-1126	Respiratory Therapists	3	1,051	1,277	21.5%	378
29-1127	Speech-Language Pathologists	5	1,129	1,548	37.1%	586

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29-1128	Exercise Physiologists	5	74	102	37.8%	37
29-1129	Therapists, All Other	4	86	124	44.2%	47
29-1131	Veterinarians	5	1,071	1,434	33.9%	746
29-1141	Registered Nurses	3	29,289	36,396	24.3%	13,038
29-1151	Nurse Anesthetists	5	517	572	10.6%	163
29-1161	Nurse Midwives	5	36	49	36.1%	19
29-1171	Nurse Practitioners	5	939	1,204	28.2%	436
29-1181	Audiologists	5	141	174	23.4%	66
29-1199	Health Diagnosing and Treating Practitioners, All Other	5	89	80	-10.1%	10
29-2011	Medical and Clinical Laboratory Technologists	4	2,354	2,703	14.8%	1,062
29-2012	Medical and Clinical Laboratory Technicians	3	2,457	2,906	18.3%	1,149
29-2021	Dental Hygienists	3	2,915	3,596	23.4%	1,470
29-2031	Cardiovascular Technologists and Technicians	3	640	835	30.5%	291
29-2032	Diagnostic Medical Sonographers	3	592	742	25.3%	233
29-2033	Nuclear Medicine Technologists	3	219	244	11.4%	56
29-2034	Radiologic Technologists	3	2,374	2,809	18.3%	803
29-2035	Magnetic Resonance Imaging Technologists	3	342	458	33.9%	171
29-2041	Emergency Medical Technicians and Paramedics	3	2,920	3,791	29.8%	1,834
29-2051	Dietetic Technicians	2	780	1,060	35.9%	372
29-2052	Pharmacy Technicians	3	3,854	4,268	10.7%	860
29-2053	Psychiatric Technicians	3	499	623	24.8%	225
29-2054	Respiratory Therapy Technicians	3	103	98	-4.9%	5
29-2055	Surgical Technologists	3	756	995	31.6%	311
29-2056	Veterinary Technologists and Technicians	3	1,673	2,277	36.1%	782
29-2057	Ophthalmic Medical Technicians	3	294	380	29.3%	122
29-2061	Licensed Practical and Licensed Vocational Nurses	3	9,523	12,333	29.5%	5,325
29-2071	Medical Records and Health Information Technicians	3	1,946	2,455	26.2%	1,034
29-2081	Opticians, Dispensing	3	780	1,049	34.5%	536
29-2091	Orthotists and Prosthetists	5	114	136	19.3%	33
29-2092	Hearing Aid Specialists	3	36	41	13.9%	8
29-2099	Health Technologists and Technicians, All Other	3	481	588	22.2%	145
29-9011	Occupational Health and Safety Specialists	4	547	645	17.9%	259
29-9012	Occupational Health and Safety Technicians	3	77	93	20.8%	37
29-9091	Athletic Trainers	5	286	386	35.0%	184
29-9099	Healthcare Practitioners and Technical Workers, All Other	4	168	156	-7.1%	31

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
31-1011	Home Health Aides	2	13,427	18,428	37.2%	8,693
31-1013	Psychiatric Aides	2	615	629	2.3%	170
31-1014	Nursing Assistants	2	18,647	22,764	22.1%	7,882
31-1015	Orderlies	2	472	545	15.5%	165
31-2011	Occupational Therapy Assistants	3	565	796	40.9%	405
31-2012	Occupational Therapy Aides	3	121	185	52.9%	98
31-2021	Physical Therapist Assistants	3	1,058	1,520	43.7%	748
31-2022	Physical Therapist Aides	2	490	649	32.4%	274
31-9011	Massage Therapists	3	694	961	38.5%	337
31-9091	Dental Assistants	3	3,947	4,425	12.1%	1,343
31-9092	Medical Assistants	3	5,961	7,008	17.6%	2,244
31-9093	Medical Equipment Preparers	2	381	454	19.2%	145
31-9094	Medical Transcriptionists	3	955	796	-16.6%	100
31-9095	Pharmacy Aides	2	373	321	-13.9%	36
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	3	925	1,026	10.9%	295
31-9097	Phlebotomists	3	1,368	1,722	25.9%	671
31-9099	Healthcare Support Workers, All Other	3	317	317	0.0%	47
33-1011	First-Line Supervisors of Correctional Officers	3	198	207	4.5%	85
33-1012	First-Line Supervisors of Police and Detectives	3	434	504	16.1%	215
33-1021	First-Line Supervisors of Fire Fighting and Prevention Workers	3	119	135	13.4%	71
33-1099	First-Line Supervisors of Protective Service Workers, All Other	3	521	662	27.1%	302
33-2011	Firefighters	3	735	755	2.7%	243
33-2021	Fire Inspectors and Investigators	3	36	31	-13.9%	8
33-3011	Bailiffs	2	32	25	-21.9%	3
33-3012	Correctional Officers and Jailers	3	2,436	2,234	-8.3%	553
33-3021	Detectives and Criminal Investigators	3	406	407	0.2%	105
33-3041	Parking Enforcement Workers	2	66	70	6.1%	29
33-3051	Police and Sheriff's Patrol Officers	3	4,114	3,943	-4.2%	1,305
33-3052	Transit and Railroad Police	3	12	9	-25.0%	1
33-9011	Animal Control Workers	2	49	57	16.3%	21
33-9021	Private Detectives and Investigators	3	381	334	-12.3%	99
33-9031	Gaming Surveillance Officers and Gaming Investigators	2	97	124	27.8%	71
33-9032	Security Guards	2	10,560	12,360	17.0%	4,758
33-9091	Crossing Guards	1	1,033	907	-12.2%	124

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	2	1,374	1,556	13.2%	1,177
33-9093	Transportation Security Screeners	2	191	184	-3.7%	45
33-9099	Protective Service Workers, All Other	2	726	875	20.5%	670
35-1011	Chefs and Head Cooks	3	1,169	1,269	8.6%	333
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	2	7,249	8,215	13.3%	3,193
35-2011	Cooks, Fast Food	1	2,111	1,917	-9.2%	268
35-2012	Cooks, Institution and Cafeteria	2	4,863	4,910	1.0%	1,057
35-2014	Cooks, Restaurant	2	9,749	12,723	30.5%	5,240
35-2015	Cooks, Short Order	1	1,787	2,171	21.5%	824
35-2021	Food Preparation Workers	1	9,086	8,479	-6.7%	2,266
35-3011	Bartenders	2	7,226	7,817	8.2%	3,638
35-3021	Combined Food Preparation and Serving Workers, Including Fast Food	1	33,103	38,016	14.8%	19,133
35-3022	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	1	3,107	2,973	-4.3%	1,869
35-3031	Waiters and Waitresses	1	23,691	26,893	13.5%	15,740
35-3041	Food Servers, Nonrestaurant	1	3,524	4,013	13.9%	1,626
35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers	1	3,647	3,819	4.7%	1,936
35-9021	Dishwashers	1	5,434	5,310	-2.3%	2,513
35-9031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	1	3,535	3,835	8.5%	3,155
35-9099	Food Preparation and Serving Related Workers, All Other	1	283	354	25.1%	235
37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	2	1,797	1,993	10.9%	694
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	3	945	986	4.3%	152
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	2	26,002	27,971	7.6%	7,932
37-2012	Maids and Housekeeping Cleaners	2	9,028	10,432	15.6%	3,707
37-2019	Building Cleaning Workers, All Other	2	138	127	-8.0%	17
37-2021	Pest Control Workers	2	637	811	27.3%	375
37-3011	Landscaping and Groundskeeping Workers	1	11,216	12,849	14.6%	4,901
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	2	179	166	-7.3%	35
37-3013	Tree Trimmers and Pruners	2	1,091	1,463	34.1%	747
37-3019	Grounds Maintenance Workers, All Other	2	16	14	-12.5%	1
39-1011	Gaming Supervisors	2	209	265	26.8%	169
39-1012	Slot Supervisors	2	11	14	27.3%	5

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
39-1021	First-Line Supervisors of Personal Service Workers	3	1,935	2,495	28.9%	945
39-2011	Animal Trainers	2	46	46	0.0%	22
39-2021	Nonfarm Animal Caretakers	1	1,154	1,426	23.6%	452
39-3011	Gaming Dealers	2	913	1,141	25.0%	687
39-3012	Gaming and Sports Book Writers and Runners	2	19	24	26.3%	12
39-3019	Gaming Service Workers, All Other	2	13	17	30.8%	4
39-3021	Motion Picture Projectionists	2	78	73	-6.4%	41
39-3031	Ushers, Lobby Attendants, and Ticket Takers	2	807	903	11.9%	596
39-3091	Amusement and Recreation Attendants	1	3,773	4,133	9.5%	2,504
39-3092	Costume Attendants	2	17	20	17.6%	12
39-3093	Locker Room, Coatroom, and Dressing Room Attendants	2	214	193	-9.8%	95
39-3099	Entertainment Attendants and Related Workers, All Other	2	77	71	-7.8%	40
39-4021	Funeral Attendants	2	441	525	19.0%	226
39-4031	Morticians, Undertakers, and Funeral Directors	3	267	342	28.1%	155
39-5011	Barbers	3	241	268	11.2%	102
39-5012	Hairdressers, Hairstylists, and Cosmetologists	3	8,482	10,201	20.3%	4,118
39-5092	Manicurists and Pedicurists	2	1,165	1,333	14.4%	288
39-5093	Shampooers	2	497	516	3.8%	105
39-5094	Skincare Specialists	3	375	371	-1.1%	22
39-6011	Baggage Porters and Bellhops	2	161	189	17.4%	89
39-6012	Concierges	3	184	237	28.8%	102
39-7011	Tour Guides and Escorts	3	244	264	8.2%	150
39-7012	Travel Guides	3	36	32	-11.1%	18
39-9011	Childcare Workers	3	6,055	5,808	-4.1%	1,561
39-9021	Personal Care Aides	2	14,097	20,535	45.7%	8,320
39-9031	Fitness Trainers and Aerobics Instructors	3	3,375	3,978	17.9%	1,194
39-9032	Recreation Workers	4	3,032	3,889	28.3%	1,220
39-9041	Residential Advisors	3	1,536	2,053	33.7%	1,288
39-9099	Personal Care and Service Workers, All Other	3	255	221	-13.3%	37
41-1011	First-Line Supervisors of Retail Sales Workers	2	11,375	11,745	3.3%	2,932
41-1012	First-Line Supervisors of Non-Retail Sales Workers	4	3,030	2,823	-6.8%	245
41-2011	Cashiers	1	37,296	35,932	-3.7%	16,174
41-2012	Gaming Change Persons and Booth Cashiers	2	55	68	23.6%	61
41-2021	Counter and Rental Clerks	1	4,217	4,530	7.4%	1,556
41-2022	Parts Salespersons	2	2,714	3,179	17.1%	1,276
41-2031	Retail Salespersons	2	55,241	57,864	4.7%	22,677

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
41-3011	Advertising Sales Agents	3	1,889	1,807	-4.3%	689
41-3021	Insurance Sales Agents	4	5,210	5,401	3.7%	1,770
41-3031	Securities, Commodities, and Financial Services Sales Agents	4	4,344	4,946	13.9%	1,814
41-3041	Travel Agents	3	1,025	992	-3.2%	502
41-3099	Sales Representatives, Services, All Other	4	10,076	13,000	29.0%	5,814
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	4	4,576	3,894	-14.9%	354
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	4	21,682	20,370	-6.1%	3,725
41-9011	Demonstrators and Product Promoters	2	620	623	0.5%	191
41-9012	Models	1	14	16	14.3%	7
41-9021	Real Estate Brokers	4	318	269	-15.4%	3
41-9022	Real Estate Sales Agents	3	2,005	2,239	11.7%	569
41-9031	Sales Engineers	4	1,168	1,240	6.2%	324
41-9041	Telemarketers	2	2,310	1,908	-17.4%	702
41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	2	29	23	-20.7%	1
41-9099	Sales and Related Workers, All Other	3	590	589	-0.2%	104
43-1011	First-Line Supervisors of Office and Administrative Support Workers	3	13,988	14,784	5.7%	4,146
43-2011	Switchboard Operators, Including Answering Service	2	1,375	1,202	-12.6%	315
43-2021	Telephone Operators	2	78	51	-34.6%	4
43-3011	Bill and Account Collectors	2	3,471	3,207	-7.6%	906
43-3021	Billing and Posting Clerks	2	7,289	7,934	8.8%	2,119
43-3031	Bookkeeping, Accounting, and Auditing Clerks	3	18,738	20,653	10.2%	3,768
43-3041	Gaming Cage Workers	2	69	86	24.6%	53
43-3051	Payroll and Timekeeping Clerks	2	2,137	2,183	2.2%	561
43-3061	Procurement Clerks	3	645	571	-11.5%	178
43-3071	Tellers	2	4,733	3,985	-15.8%	2,028
43-3099	Financial Clerks, All Other	2	362	414	14.4%	177
43-4011	Brokerage Clerks	3	881	1,012	14.9%	467
43-4021	Correspondence Clerks	2	200	212	6.0%	79
43-4031	Court, Municipal, and License Clerks	3	361	369	2.2%	70
43-4041	Credit Authorizers, Checkers, and Clerks	3	373	279	-25.2%	4
43-4051	Customer Service Representatives	2	32,476	36,871	13.5%	14,208
43-4061	Eligibility Interviewers, Government Programs	3	1,294	1,234	-4.6%	221
43-4071	File Clerks	2	1,405	1,245	-11.4%	250

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43-4081	Hotel, Motel, and Resort Desk Clerks	2	1,571	1,752	11.5%	1,134
43-4111	Interviewers, Except Eligibility and Loan	2	2,172	2,546	17.2%	850
43-4121	Library Assistants, Clerical	2	1,020	1,064	4.3%	515
43-4131	Loan Interviewers and Clerks	3	2,058	2,313	12.4%	556
43-4141	New Accounts Clerks	2	215	209	-2.8%	78
43-4151	Order Clerks	2	3,481	3,310	-4.9%	1,071
43-4161	Human Resources Assistants, Except Payroll and Timekeeping	3	1,774	1,640	-7.6%	397
43-4171	Receptionists and Information Clerks	2	12,177	12,223	0.4%	3,416
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	2	67	61	-9.0%	14
43-4199	Information and Record Clerks, All Other	2	549	424	-22.8%	34
43-5011	Cargo and Freight Agents	2	196	172	-12.2%	45
43-5021	Couriers and Messengers	2	776	662	-14.7%	63
43-5031	Police, Fire, and Ambulance Dispatchers	2	519	550	6.0%	196
43-5032	Dispatchers, Except Police, Fire, and Ambulance	2	1,968	2,344	19.1%	993
43-5041	Meter Readers, Utilities	2	297	261	-12.1%	86
43-5051	Postal Service Clerks	2	686	460	-32.9%	78
43-5052	Postal Service Mail Carriers	2	2,712	1,850	-31.8%	700
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	2	1,261	781	-38.1%	45
43-5061	Production, Planning, and Expediting Clerks	3	4,176	4,384	5.0%	1,382
43-5071	Shipping, Receiving, and Traffic Clerks	2	8,094	7,908	-2.3%	2,229
43-5081	Stock Clerks and Order Fillers	2	22,037	22,040	0.0%	7,703
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	2	887	1,051	18.5%	391
43-6011	Executive Secretaries and Executive Administrative Assistants	3	6,861	6,699	-2.4%	947
43-6012	Legal Secretaries	3	2,302	2,639	14.6%	798
43-6013	Medical Secretaries	3	5,621	7,140	27.0%	2,175
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	3	29,920	34,720	16.0%	8,688
43-9011	Computer Operators	3	1,102	1,016	-7.8%	206
43-9021	Data Entry Keyers	2	3,472	3,006	-13.4%	746
43-9022	Word Processors and Typists	2	1,257	976	-22.4%	77
43-9031	Desktop Publishers	3	242	223	-7.9%	49
43-9041	Insurance Claims and Policy Processing Clerks	3	3,419	3,402	-0.5%	1,096
43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	2	1,975	1,702	-13.8%	487
43-9061	Office Clerks, General	2	35,134	35,310	0.5%	8,267

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43-9071	Office Machine Operators, Except Computer	2	927	765	-17.5%	208
43-9081	Proofreaders and Copy Markers	4	138	118	-14.5%	19
43-9111	Statistical Assistants	4	149	141	-5.4%	36
43-9199	Office and Administrative Support Workers, All Other	3	811	975	20.2%	399
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	3	181	180	-0.6%	49
45-2011	Agricultural Inspectors	2	54	47	-13.0%	15
45-2041	Graders and Sorters, Agricultural Products	1	59	69	16.9%	23
45-2091	Agricultural Equipment Operators	2	190	219	15.3%	98
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	1	868	707	-18.5%	193
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals	1	497	483	-2.8%	188
45-2099	Agricultural Workers, All Other	1	1	1	0.0%	0
45-4011	Forest and Conservation Workers	3	26	28	7.7%	6
45-4021	Fallers	1	24	18	-25.0%	0
45-4022	Logging Equipment Operators	1	200	230	15.0%	113
45-4023	Log Graders and Scalers	3	4	5	25.0%	2
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	3	4,279	5,343	24.9%	1,589
47-2011	Boilermakers	3	208	277	33.2%	179
47-2021	Brickmasons and Blockmasons	2	920	1,210	31.5%	386
47-2022	Stonemasons	3	129	131	1.6%	10
47-2031	Carpenters	2	9,016	10,632	17.9%	2,942
47-2041	Carpet Installers	2	587	740	26.1%	300
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	2	151	141	-6.6%	24
47-2044	Tile and Marble Setters	2	302	389	28.8%	140
47-2051	Cement Masons and Concrete Finishers	2	1,564	1,845	18.0%	468
47-2053	Terrazzo Workers and Finishers	2	32	29	-9.4%	2
47-2061	Construction Laborers	2	8,331	10,830	30.0%	4,515
47-2071	Paving, Surfacing, and Tamping Equipment Operators	2	508	562	10.6%	160
47-2072	Pile-Driver Operators	2	9	9	0.0%	2
47-2073	Operating Engineers and Other Construction Equipment Operators	2	4,067	4,549	11.9%	1,659
47-2081	Drywall and Ceiling Tile Installers	2	581	552	-5.0%	96
47-2082	Tapers	2	179	220	22.9%	70
47-2111	Electricians	3	6,476	8,286	27.9%	3,574
47-2121	Glaziers	2	434	528	21.7%	237

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
47-2131	Insulation Workers, Floor, Ceiling, and Wall	2	218	282	29.4%	108
47-2132	Insulation Workers, Mechanical	2	133	183	37.6%	68
47-2141	Painters, Construction and Maintenance	2	1,777	2,133	20.0%	729
47-2142	Paperhangers	2	60	55	-8.3%	5
47-2151	Pipelayers	2	290	298	2.8%	82
47-2152	Plumbers, Pipefitters, and Steamfitters	3	4,269	4,802	12.5%	1,311
47-2161	Plasterers and Stucco Masons	1	135	171	26.7%	37
47-2171	Reinforcing Iron and Rebar Workers	2	72	76	5.6%	16
47-2181	Roofers	2	1,294	1,447	11.8%	651
47-2211	Sheet Metal Workers	2	1,292	1,433	10.9%	418
47-2221	Structural Iron and Steel Workers	2	481	558	16.0%	261
47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	2	317	342	7.9%	62
47-3012	Helpers--Carpenters	2	274	373	36.1%	137
47-3013	Helpers--Electricians	2	465	658	41.5%	282
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	1	67	70	4.5%	17
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	2	348	348	0.0%	54
47-3016	Helpers--Roofers	2	123	165	34.1%	71
47-3019	Helpers, Construction Trades, All Other	2	75	82	9.3%	14
47-4011	Construction and Building Inspectors	3	1,479	1,890	27.8%	819
47-4021	Elevator Installers and Repairers	3	123	115	-6.5%	33
47-4031	Fence Erectors	2	251	260	3.6%	79
47-4041	Hazardous Materials Removal Workers	3	536	676	26.1%	330
47-4051	Highway Maintenance Workers	2	1,718	1,693	-1.5%	307
47-4061	Rail-Track Laying and Maintenance Equipment Operators	2	55	64	16.4%	19
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	1	318	364	14.5%	148
47-4099	Construction and Related Workers, All Other	3	127	115	-9.4%	6
47-5011	Derrick Operators, Oil and Gas	1	6	7	16.7%	4
47-5012	Rotary Drill Operators, Oil and Gas	2	24	27	12.5%	21
47-5013	Service Unit Operators, Oil, Gas, and Mining	2	47	62	31.9%	46
47-5021	Earth Drillers, Except Oil and Gas	2	229	288	25.8%	161
47-5031	Explosives Workers, Ordnance Handling Experts, and Blasters	2	31	37	19.4%	14
47-5041	Continuous Mining Machine Operators	1	47	43	-8.5%	18
47-5042	Mine Cutting and Channeling Machine Operators	2	48	40	-16.7%	11
47-5049	Mining Machine Operators, All Other	2	9	3	-66.7%	0
47-5051	Rock Splitters, Quarry	1	92	93	1.1%	37

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
47-5061	Roof Bolters, Mining	2	39	33	-15.4%	13
47-5071	Roustabouts, Oil and Gas	1	99	124	25.3%	72
47-5081	Helpers--Extraction Workers	2	99	114	15.2%	65
47-5099	Extraction Workers, All Other	2	2	2	0.0%	1
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	3	4,066	4,702	15.6%	1,792
49-2011	Computer, Automated Teller, and Office Machine Repairers	3	1,564	1,712	9.5%	642
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairers	3	88	78	-11.4%	4
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	3	1,477	1,469	-0.5%	370
49-2091	Avionics Technicians	3	81	95	17.3%	40
49-2092	Electric Motor, Power Tool, and Related Repairers	3	219	215	-1.8%	59
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	3	39	37	-5.1%	6
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	3	915	874	-4.5%	215
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	3	201	201	0.0%	57
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	3	41	48	17.1%	16
49-2097	Electronic Home Entertainment Equipment Installers and Repairers	3	174	140	-19.5%	52
49-2098	Security and Fire Alarm Systems Installers	3	764	858	12.3%	282
49-3011	Aircraft Mechanics and Service Technicians	3	143	130	-9.1%	48
49-3021	Automotive Body and Related Repairers	2	2,014	2,409	19.6%	922
49-3022	Automotive Glass Installers and Repairers	2	270	314	16.3%	131
49-3023	Automotive Service Technicians and Mechanics	3	9,445	10,659	12.9%	3,960
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	3	2,961	3,742	26.4%	1,533
49-3041	Farm Equipment Mechanics and Service Technicians	3	285	243	-14.7%	67
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	3	911	1,063	16.7%	467
49-3043	Rail Car Repairers	2	54	64	18.5%	33
49-3051	Motorboat Mechanics and Service Technicians	3	68	68	0.0%	14
49-3052	Motorcycle Mechanics	3	224	305	36.2%	161
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	2	395	416	5.3%	123
49-3091	Bicycle Repairers	2	127	108	-15.0%	39
49-3092	Recreational Vehicle Service Technicians	2	77	73	-5.2%	27
49-3093	Tire Repairers and Changers	2	605	583	-3.6%	220
49-9011	Mechanical Door Repairers	2	178	190	6.7%	80

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49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	3	181	210	16.0%	95
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	3	3,785	4,640	22.6%	2,011
49-9031	Home Appliance Repairers	3	474	443	-6.5%	176
49-9041	Industrial Machinery Mechanics	3	3,826	4,333	13.3%	1,756
49-9043	Maintenance Workers, Machinery	3	1,109	1,284	15.8%	373
49-9044	Millwrights	3	353	457	29.5%	190
49-9045	Refractory Materials Repairers, Except Brickmasons	2	26	24	-7.7%	9
49-9051	Electrical Power-Line Installers and Repairers	3	959	1,142	19.1%	596
49-9052	Telecommunications Line Installers and Repairers	2	2,053	2,184	6.4%	950
49-9062	Medical Equipment Repairers	3	768	957	24.6%	457
49-9063	Musical Instrument Repairers and Tuners	3	140	133	-5.0%	50
49-9064	Watch Repairers	3	22	16	-27.3%	2
49-9069	Precision Instrument and Equipment Repairers, All Other	3	77	64	-16.9%	11
49-9071	Maintenance and Repair Workers, General	3	15,839	17,198	8.6%	4,849
49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	2	478	404	-15.5%	61
49-9092	Commercial Divers	3	102	96	-5.9%	36
49-9094	Locksmiths and Safe Repairers	2	79	73	-7.6%	18
49-9095	Manufactured Building and Mobile Home Installers	2	50	65	30.0%	37
49-9096	Riggers	2	97	127	30.9%	56
49-9098	Helpers--Installation, Maintenance, and Repair Workers	2	1,170	1,299	11.0%	500
49-9099	Installation, Maintenance, and Repair Workers, All Other	2	848	1,062	25.2%	348
51-1011	First-Line Supervisors of Production and Operating Workers	2	7,231	7,372	1.9%	1,596
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	2	356	324	-9.0%	84
51-2021	Coil Winders, Tapers, and Finishers	2	208	183	-12.0%	25
51-2022	Electrical and Electronic Equipment Assemblers	2	3,456	3,133	-9.3%	502
51-2023	Electromechanical Equipment Assemblers	2	842	676	-19.7%	46
51-2031	Engine and Other Machine Assemblers	2	447	394	-11.9%	115
51-2041	Structural Metal Fabricators and Fitters	3	1,132	1,206	6.5%	633
51-2091	Fiberglass Laminators and Fabricators	2	114	121	6.1%	41
51-2092	Team Assemblers	2	10,164	9,929	-2.3%	2,123
51-2099	Assemblers and Fabricators, All Other	2	1,642	2,264	37.9%	923
51-3011	Bakers	2	2,506	2,547	1.6%	839
51-3021	Butchers and Meat Cutters	2	1,979	1,752	-11.5%	358

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-3022	Meat, Poultry, and Fish Cutters and Trimmers	1	666	551	-17.3%	78
51-3023	Slaughterers and Meat Packers	1	887	919	3.6%	363
51-3091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	2	101	108	6.9%	43
51-3092	Food Batchmakers	2	1,455	1,497	2.9%	656
51-3093	Food Cooking Machine Operators and Tenders	2	364	388	6.6%	143
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	3	2,154	2,733	26.9%	1,330
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	3	201	193	-4.0%	55
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	2	1,666	1,770	6.2%	706
51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	2	229	234	2.2%	86
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	2	667	591	-11.4%	142
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	2	2,376	2,467	3.8%	550
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	224	173	-22.8%	35
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	1,286	1,347	4.7%	562
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	617	579	-6.2%	186
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	3	335	361	7.8%	144
51-4041	Machinists	3	5,123	5,667	10.6%	2,053
51-4051	Metal-Refining Furnace Operators and Tenders	2	421	401	-4.8%	107
51-4052	Pourers and Casters, Metal	2	265	271	2.3%	108
51-4061	Model Makers, Metal and Plastic	3	30	24	-20.0%	1
51-4062	Patternmakers, Metal and Plastic	3	76	84	10.5%	38
51-4071	Foundry Mold and Coremakers	2	127	117	-7.9%	30
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	2	1,795	1,780	-0.8%	441
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	2,864	3,215	12.3%	1,361
51-4111	Tool and Die Makers	3	847	906	7.0%	217
51-4121	Welders, Cutters, Solderers, and Brazers	3	3,847	4,426	15.1%	1,831
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	2	443	532	20.1%	262
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	2	309	271	-12.3%	57
51-4192	Layout Workers, Metal and Plastic	2	35	36	2.9%	11

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	2	466	473	1.5%	169
51-4194	Tool Grinders, Filers, and Sharpeners	2	89	72	-19.1%	10
51-4199	Metal Workers and Plastic Workers, All Other	2	337	459	36.2%	197
51-5111	Prepress Technicians and Workers	3	543	392	-27.8%	90
51-5112	Printing Press Operators	3	2,673	2,407	-10.0%	609
51-5113	Print Binding and Finishing Workers	2	839	784	-6.6%	241
51-6011	Laundry and Dry-Cleaning Workers	1	1,890	2,153	13.9%	939
51-6021	Pressers, Textile, Garment, and Related Materials	1	304	318	4.6%	81
51-6031	Sewing Machine Operators	1	1,522	1,202	-21.0%	414
51-6041	Shoe and Leather Workers and Repairers	2	17	22	29.4%	19
51-6042	Shoe Machine Operators and Tenders	2	59	70	18.6%	74
51-6051	Sewers, Hand	2	1,760	1,623	-7.8%	211
51-6052	Tailors, Dressmakers, and Custom Sewers	3	342	343	0.3%	95
51-6061	Textile Bleaching and Dyeing Machine Operators and Tenders	2	131	87	-33.6%	59
51-6062	Textile Cutting Machine Setters, Operators, and Tenders	2	230	205	-10.9%	113
51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	2	358	279	-22.1%	179
51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	2	199	151	-24.1%	73
51-6091	Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	2	168	112	-33.3%	12
51-6092	Fabric and Apparel Patternmakers	3	51	31	-39.2%	2
51-6093	Upholsterers	2	257	288	12.1%	160
51-6099	Textile, Apparel, and Furnishings Workers, All Other	2	156	129	-17.3%	8
51-7011	Cabinetmakers and Bench Carpenters	2	1,446	1,656	14.5%	813
51-7021	Furniture Finishers	1	301	384	27.6%	256
51-7031	Model Makers, Wood	3	18	19	5.6%	4
51-7032	Patternmakers, Wood	3	26	33	26.9%	11
51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	2	482	710	47.3%	445
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	2	933	1,295	38.8%	574
51-7099	Woodworkers, All Other	2	10	9	-10.0%	1
51-8011	Nuclear Power Reactor Operators	3	79	87	10.1%	40
51-8012	Power Distributors and Dispatchers	3	168	188	11.9%	85
51-8013	Power Plant Operators	2	465	458	-1.5%	211
51-8021	Stationary Engineers and Boiler Operators	3	815	935	14.7%	472

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-8031	Water and Wastewater Treatment Plant and System Operators	3	1,154	1,157	0.3%	489
51-8091	Chemical Plant and System Operators	2	546	511	-6.4%	297
51-8092	Gas Plant Operators	3	165	179	8.5%	105
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	2	378	452	19.6%	275
51-8099	Plant and System Operators, All Other	2	50	46	-8.0%	18
51-9011	Chemical Equipment Operators and Tenders	2	2,176	2,198	1.0%	1,195
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	2	873	904	3.6%	432
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	2	313	355	13.4%	169
51-9022	Grinding and Polishing Workers, Hand	1	241	251	4.1%	98
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	2	1,897	2,092	10.3%	932
51-9031	Cutters and Trimmers, Hand	2	92	71	-22.8%	7
51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders	2	699	590	-15.6%	86
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	2	759	662	-12.8%	203
51-9051	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	2	100	92	-8.0%	34
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	2	5,699	5,745	0.8%	1,526
51-9071	Jewelers and Precious Stone and Metal Workers	3	185	146	-21.1%	12
51-9081	Dental Laboratory Technicians	2	504	591	17.3%	359
51-9082	Medical Appliance Technicians	3	471	436	-7.4%	202
51-9083	Ophthalmic Laboratory Technicians	2	371	346	-6.7%	140
51-9111	Packaging and Filling Machine Operators and Tenders	2	5,422	4,842	-10.7%	1,078
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	2	901	1,038	15.2%	373
51-9122	Painters, Transportation Equipment	2	444	436	-1.8%	121
51-9123	Painting, Coating, and Decorating Workers	2	203	191	-5.9%	46
51-9141	Semiconductor Processors	2	162	148	-8.6%	60
51-9151	Photographic Process Workers and Processing Machine Operators	2	311	221	-28.9%	34
51-9191	Adhesive Bonding Machine Operators and Tenders	2	137	148	8.0%	55
51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	2	197	210	6.6%	71
51-9193	Cooling and Freezing Equipment Operators and Tenders	2	91	86	-5.5%	28
51-9194	Etchers and Engravers	2	121	133	9.9%	53

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	2	454	443	-2.4%	195
51-9196	Paper Goods Machine Setters, Operators, and Tenders	2	1,917	1,969	2.7%	498
51-9197	Tire Builders	2	60	69	15.0%	33
51-9198	Helpers--Production Workers	2	6,589	7,157	8.6%	2,250
51-9199	Production Workers, All Other	2	924	990	7.1%	299
53-1011	Aircraft Cargo Handling Supervisors	2	62	66	6.5%	21
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	2	1,910	2,187	14.5%	877
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	2	1,961	2,333	19.0%	957
53-2012	Commercial Pilots	3	185	211	14.1%	98
53-2021	Air Traffic Controllers	3	65	59	-9.2%	27
53-2022	Airfield Operations Specialists	3	6	5	-16.7%	3
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	2	417	549	31.7%	221
53-3021	Bus Drivers, Transit and Intercity	2	1,126	1,292	14.7%	479
53-3022	Bus Drivers, School or Special Client	2	6,450	6,904	7.0%	2,084
53-3031	Driver/Sales Workers	2	5,094	5,435	6.7%	1,315
53-3032	Heavy and Tractor-Trailer Truck Drivers	2	18,589	22,669	21.9%	7,993
53-3033	Light Truck or Delivery Services Drivers	2	9,840	9,602	-2.4%	1,629
53-3041	Taxi Drivers and Chauffeurs	1	2,278	2,462	8.1%	643
53-3099	Motor Vehicle Operators, All Other	2	202	251	24.3%	101
53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers	2	24	25	4.2%	8
53-5011	Sailors and Marine Oilers	2	11	14	27.3%	10
53-5021	Captains, Mates, and Pilots of Water Vessels	3	67	59	-11.9%	34
53-5031	Ship Engineers	3	25	29	16.0%	16
53-6011	Bridge and Lock Tenders	1	18	14	-22.2%	5
53-6021	Parking Lot Attendants	2	1,198	1,556	29.9%	1,057
53-6031	Automotive and Watercraft Service Attendants	1	593	676	14.0%	273
53-6041	Traffic Technicians	3	9	10	11.1%	5
53-6051	Transportation Inspectors	3	37	32	-13.5%	9
53-6061	Transportation Attendants, Except Flight Attendants	2	232	216	-6.9%	43
53-6099	Transportation Workers, All Other	2	41	45	9.8%	22
53-7011	Conveyor Operators and Tenders	2	200	187	-6.5%	61
53-7021	Crane and Tower Operators	3	453	556	22.7%	282
53-7032	Excavating and Loading Machine and Dragline Operators	2	274	311	13.5%	80
53-7033	Loading Machine Operators, Underground Mining	2	11	9	-18.2%	0

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
53-7051	Industrial Truck and Tractor Operators	2	7,336	8,774	19.6%	3,845
53-7061	Cleaners of Vehicles and Equipment	2	3,185	3,612	13.4%	1,462
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	2	32,811	40,728	24.1%	19,741
53-7063	Machine Feeders and Offbearers	2	1,157	1,098	-5.1%	238
53-7064	Packers and Packagers, Hand	2	11,308	12,904	14.1%	5,160
53-7071	Gas Compressor and Gas Pumping Station Operators	2	60	72	20.0%	47
53-7072	Pump Operators, Except Wellhead Pumpers	2	99	102	3.0%	60
53-7073	Wellhead Pumpers	2	15	15	0.0%	11
53-7081	Refuse and Recyclable Material Collectors	2	1,435	1,358	-5.4%	385
53-7111	Mine Shuttle Car Operators	2	18	18	0.0%	9
53-7121	Tank Car, Truck, and Ship Loaders	2	101	95	-5.9%	34
53-7199	Material Moving Workers, All Other	2	78	116	48.7%	63

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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Dr. Sue Mukherjee

Executive Director for Program Alignment and Policy Development

Phone: (717) 720-4201

Email: SMukherjee@passhe.edu