



Pennsylvania'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 U.S., 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: U.S. Department of Education

USDOL: U.S. 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 Goal of the Workforce Characteristics Report

The first phase of the State System’s Gap Analysis Project was creating the context for the supply-demand analysis. This was possible with a Georgetown University Center on Education and the Workforce (CEW)-State System collaboration, which resulted in the production of a report that provides contextual data on Baccalaureate-level education output in order to support and inform efforts associated with the State System’s Gap Analysis Project. This report is similar to previous national level work from CEW that examines earnings, employment, and occupational outcomes by major for bachelor’s degree (BD) holders. In this report, customized to the State System and Pennsylvania, CEW delves into the increasing importance of BD holders in the Pennsylvania workforce, the critical role of the State System as part of the state’s BD sector, and how earnings and employment vary by field of study and occupational area. Georgetown University’s Center on Education and the Workforce is a premier world-class independent, nonprofit research and policy institute that studies the link between education, career qualifications, and workforce demands.

The 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 used for the 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 state 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.

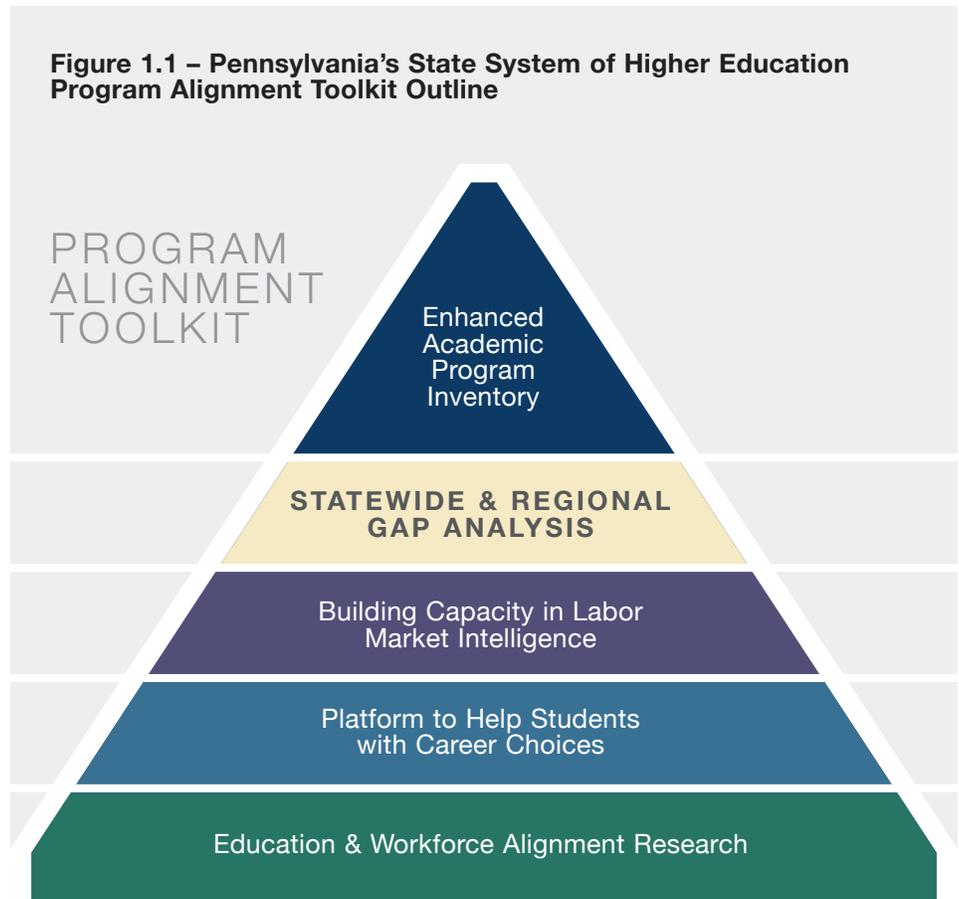
1.2 Pennsylvania’s State System of Higher Education Gap Analysis Project

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 the figure below. 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.

The next section provides a high-level overview of the State System and its fourteen universities in terms of location, enrollment, and bachelor's degree output.



2. PENNSYLVANIA'S STATE SYSTEM OF HIGHER EDUCATION

During the fall of 2013, total enrollment in State System universities was 112,228—inclusive of resident and non-resident enrollment. Figure 2.1 depicts the geographic location of each university across Pennsylvania, while Table 2.1 shows the enrollment by university.

Figure 2.1 – Locations of Pennsylvania's State System of Higher Education Universities



Source: U.S. Department of the Interior – U.S. Geological Survey: Colleges and Universities (published 09-30-2010)

Table 2.1 – Pennsylvania's State System of Higher Education Enrollment by University

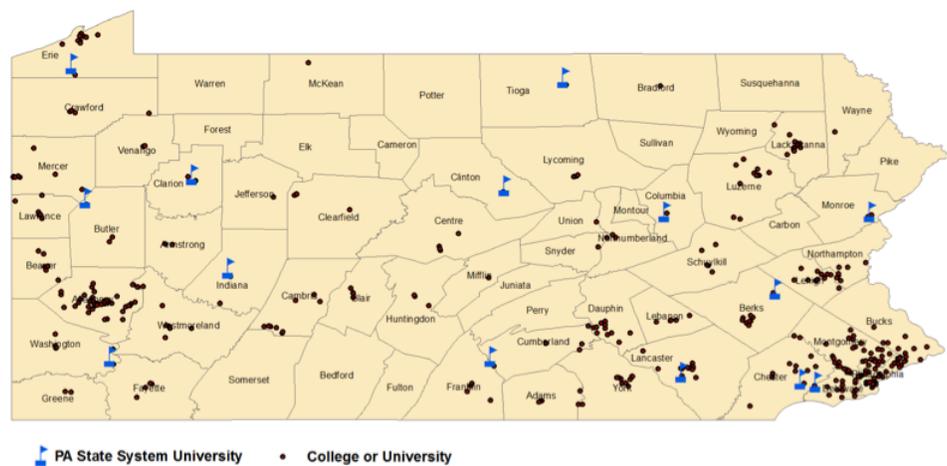
University	Fall 2013 Enrollment
Bloomsburg University of Pennsylvania	10,127
California University of Pennsylvania	8,243
Cheyney University of Pennsylvania	1,212
Clarion University of Pennsylvania	6,080
East Stroudsburg University of Pennsylvania	6,778
Edinboro University of Pennsylvania	7,098
Indiana University of Pennsylvania	14,925
Kutztown University of Pennsylvania	9,513
Lock Haven University	5,260
Mansfield University of Pennsylvania	2,970
Millersville University of Pennsylvania	8,279
Shippensburg University of Pennsylvania	7,548
Slippery Rock University of Pennsylvania	8,347
West Chester University of Pennsylvania	15,845

Source: National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS)

2.1 Universe of Postsecondary Degree Granting Institutions in Pennsylvania

There are approximately 400 postsecondary institutions in Pennsylvania with 394 reporting their enrollment data in 2013. Figure 2.2 illustrates the locations of colleges and universities in 2010—latest latitude and longitude data available—for institutions that report to IPEDS. Latest data indicate these 394 institutions had 814,120 students enrolled. This means approximately one in eight postsecondary enrollees in Pennsylvania institutions are from the fourteen State System universities.³ Furthermore, enrollment in the 166 four-year institutions during this time period was 618,738 indicating that one in six four-year enrollees came from the State System universities.

Figure 2.2 – Locations of Pennsylvania’s Colleges and Universities



Source: U.S. Department of the Interior – U.S. Geological Survey: Colleges and Universities (published 09-30-2010)

2.2 The State System’s Bachelor’s Degree Output

In response to “Rising to the Challenge 2020” strategic plan, the State System formed a unique partnership with Georgetown’s Center on Education and the Workforce (CEW) to produce a report on the statewide bachelor’s degree output from the State System universities and contextualize the output within Pennsylvania’s baccalaureate sector. The forthcoming report provides key data and analysis on the State System’s contribution to Pennsylvania’s production of

³ Source: National Center for Education Statistics’ [NCES], Integrated Postsecondary Education Data System [IPEDS]

bachelor's degrees, the top fields of study among completers, recent trends in the bachelor's degree population and workforce in the state, and occupational areas of employment among incumbent Pennsylvania workers with these undergraduate majors. High-level key findings from the report indicate:⁴

- In recent years, bachelor's degree-holders constituted a growing share of Pennsylvania's population and workforce. About one-out-of-five bachelor's degrees awarded in Pennsylvania were from State System institutions, and the most common State System major groups were STEM-H, Business, Education, Humanities & Liberal Arts, and Social Sciences.
- Pennsylvania bachelor's degree-holders in STEM, health, and business majors had relatively high earnings, while education, social science, and humanities and liberal arts majors typically made less than college-educated workers in the state overall.
- Workers with a bachelor's degree or better had the highest median earnings in the southeast region and the lowest in the northwest region, but the magnitude of these geographic differences varied by field of study.
- Pennsylvania workers with a bachelor's degree in education or health had tighter relationships with a single related occupational area, while humanities and liberal arts and social sciences majors had more varied occupational destinations. Business majors fell somewhere in between.

With an understanding of where institutions are located and a high-level view of degree production, the next section evaluates where State System learners originate. This provides additional geographic perspective of enrollment and workforce size.

⁴ Key findings are extracted from a forthcoming report from Georgetown University's Center on Education and the Workforce's State System Report.

3. IDENTIFYING THE STATE SYSTEM'S SUB-REGIONS

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 112,228 enrolled learners—of which about 86% were Pennsylvania residents.⁵ The Commonwealth's urban and rural economic geography is very diverse, comprising of two distinct urban centers on the western and southeastern portions of the state, as well as key cities located throughout.

3.1 Origins of State System Learners

State System learners, originally from Pennsylvania, come from every county in the state. The vast majority of learners, however, come from counties that are associated with urban centers. The top 10 learner enrollment counties account for about 50% of resident enrollment in the State System. These counties include Allegheny, Chester, Montgomery, Philadelphia, Lancaster and Delaware.

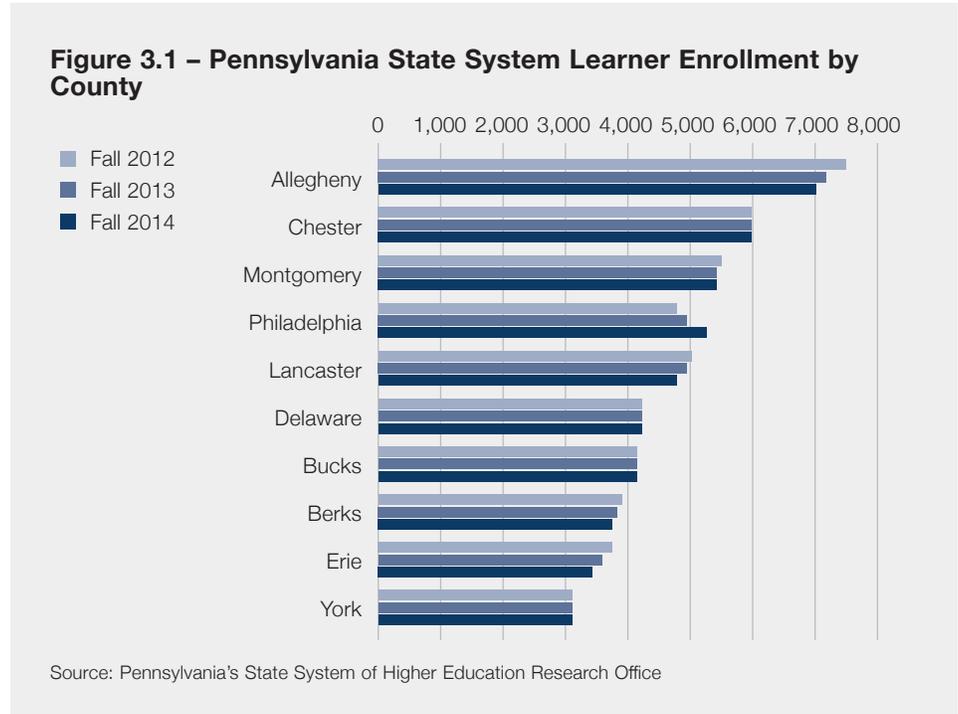
Table 3.1 – Pennsylvania State System Learner Enrollment by County

County	Fall 2012	Fall 2013	Fall 2014
Allegheny	7,549	7,172	7,020
Chester	5,976	5,991	5,996
Montgomery	5,536	5,440	5,401
Philadelphia	4,799	4,998	5,263
Lancaster	5,030	4,964	4,786
Delaware	4,204	4,220	4,206
Bucks	4,150	4,178	4,145
Berks	3,950	3,872	3,759
Erie	3,758	3,587	3,469
York	3,142	3,135	3,104

Source: Pennsylvania's State System of Higher Education Research Office

⁵ Based on average fall enrollment 2012–2014

Figure 3.1 shows the Pennsylvania resident fall enrollment numbers between 2012 and 2014 for the top 10 counties. Table 3.1 provides enrollment detail for the top 10 counties.



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 3.2) 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 3.2 and Table 3.3. 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 3.2 – 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%

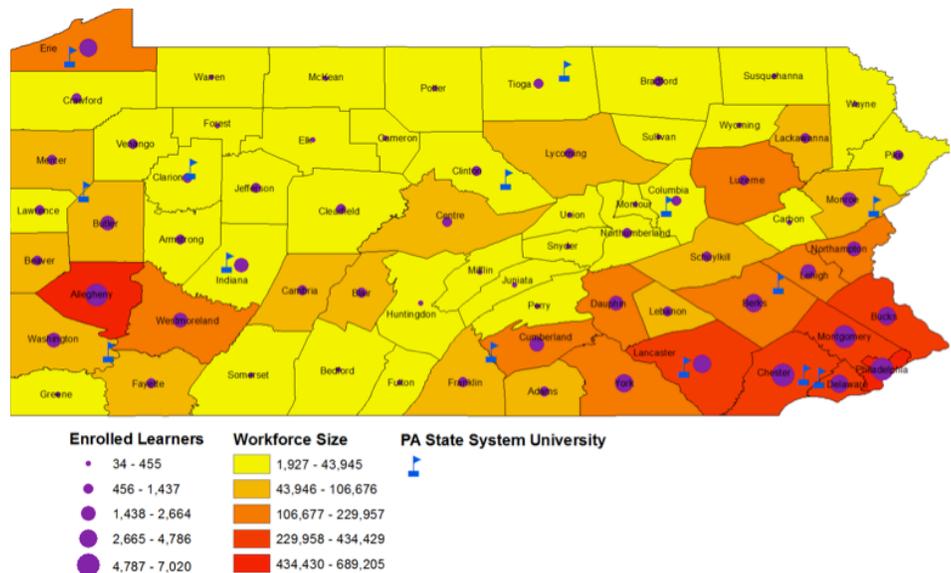
Source: Pennsylvania's State System of Higher Education Research Office (2011-2013 Average Annual Enrollment), Bureau of Labor Statistics (QCEW 2014 Annual)

Table 3.3 – 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 (2011-2013 Average Annual Enrollment), Bureau of Labor Statistics (QCEW 2014 Annual)

Figure 3.2 – State System Learner Origin and Workforce Size by County



Source: Pennsylvania's State System of Higher Education (2011-2013 Average Annual Enrollment), BLS (QCEW 2014 Annual) Oxford Economics mapping

3.2 Pennsylvania Sub-regions

Pennsylvania’s economically diverse geography supports the need for a more regionalized perspective of economic and workforce characteristics. The State System conducted original research to identify five broad sub-regions as well as fourteen university-specific workforce regions. It is important to note that these five regions align with Pennsylvania’s Partnerships for Regional Economic Performance (PREP). The PREP regions are Pennsylvania’s network of businesses as defined by the Department of Community and Economic Development (DCED). Aligning the State System’s five regions to the PREP regions reflects a broader goal of the State System to connect higher education with economic development in the commonwealth.

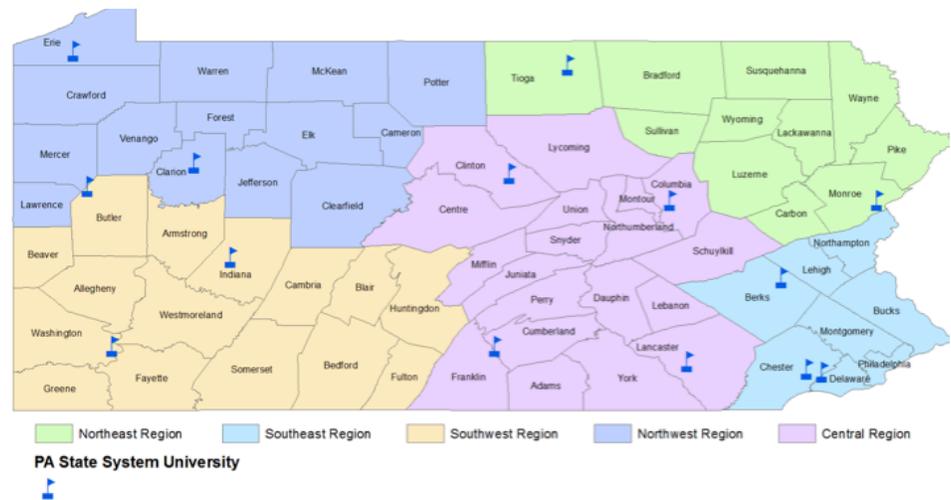
The only exception to the PREP region boundary is Schuylkill County, which was allocated the Central sub-region. This allocation balances enrollment between regions, although learners from Schuylkill were nearly evenly dispersed between the Central, Northeast and Southeast sub-regions.

Figure 3.3 illustrates the geographic areas for the sub-regions as well as the locations of the State System universities. Table 3.4 provides summary data of the population and learner enrollment for each respective sub-region.

For PREP geographic boundaries please see Appendix A.

The next section of this report describes key economic and workforce data and contextualizes Pennsylvania’s economic environment.

Figure 3.3 – Pennsylvania State System Sub-regions



Source: Oxford Economics mapping

Table 3.4 – Pennsylvania Population and State System Learner Enrollment by Sub-region

Pennsylvania Region	Number of Counties	Regional Population	Regional Population Share	PA Resident State System Learners	Regional State System Learner Share
Northwest	14	941,584	7.4%	11,504	11.7%
Southwest	15	2,943,544	23.1%	21,741	22.1%
Central	19	2,690,436	21.1%	22,813	23.2%
Northeast	11	1,061,613	8.3%	8,202	8.4%
Southeast	8	5,094,204	40.0%	33,940	34.6%
Pennsylvania Total	67	12,731,381	100.0%	98,200	100.0%

Source: American Community Survey 2009-2013 five-year file; Pennsylvania's State System of Higher Education Research Office (2012-2014 Average Annual Enrollment)

4. OVERVIEW OF THE LABOR MARKET OF PENNSYLVANIA

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 Pennsylvania’s workforce has changed over the past several years, as well as projections of how the Keystone State 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 Pennsylvania and the U.S.

Table 4.1 – Pennsylvania and U.S. Workforce Characteristics Summary

Workforce Characteristic	Pennsylvania	United States	Data Source
Population	12.7 million	311.5 million	2009-2013 American Community Survey 5-Year Estimates
Employed	5.6 million	136.6 million	2014 BLS Quarterly Census of Employment and Wages
Unemployed	370,000	9.6 million	2014 BLS Local Area Unemployment Statistics
Unemployment Rate	5.8%	6.2%	2014 BLS Local Area Unemployment Statistics
Poverty Rate	13.7%	15.8%	2013 Census Small Area Income and Poverty Estimates
Business Establishments	347,000	9.4 million	2014 BLS Quarterly Census of Employment and Wages
Educational Attainment (25+ Population with Bachelor's or Higher)	27.4%	28.8%	2009-2013 American Community Survey 5-Year Estimates
Bachelor's or Higher Completions	137,000	2.7 million	Integrated Postsecondary Education Data System 3-Year Average AY2010-11 to AY2012-13
Projected Employment	6.2 million*	160 million**	Oxford Economics- Pennsylvania Projections 2024* and BLS- U.S. 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 and replacement job demand.

- Key Skilled High Demand Occupations: five key skilled occupations and new and 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 profiles for five key skilled high demand occupations.

3. Demographics and Socio-economic Indicators – an evaluation of the demographic profile of Pennsylvania’s population. 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 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 About 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 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 trends 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 the projections, Oxford Economics provided insight into new job growth and occupational demand over the next 10 years.

The next section provides an analysis of industries in Pennsylvania with a focus on the post-recession recovery period 2009 to 2014, as well as top employers in the state.

5. INDUSTRIES IN PENNSYLVANIA

Over the five years from 2009 to 2014, the Pennsylvania economy experienced significant growth in service-based sectors, while manufacturing and government saw a reduction in jobs. Sectors such as education and health care, professional and business services, leisure and hospitality have added a combined 187,800 new jobs between 2009 and 2014. Manufacturing declined modestly with a loss of 8,000 jobs. The largest job losses occurred within government and information. Overall, the economy added about 175,550 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 percentage change.

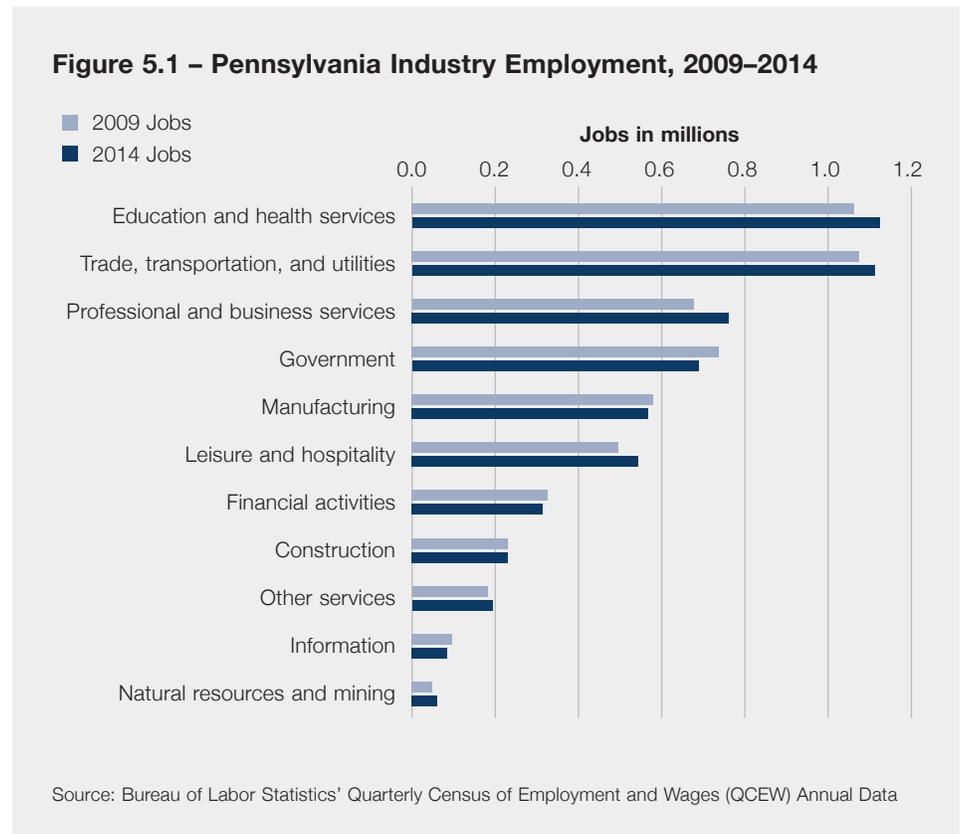


Table 5.1 – Pennsylvania Industry Employment, 2009–2014

Industry	2009 Jobs	2014 Jobs	Absolute Change 09-14	% Change 09-14
Total, all industries	5,468,176	5,643,676	175,500	3%
Education and health services	1,056,215	1,112,926	56,711	5%
Trade, transportation, and utilities	1,071,419	1,098,984	27,565	3%
Professional and business services	672,571	760,077	87,506	13%
Government	726,919	683,064	-43,855	-6%
Manufacturing	575,244	567,177	-8,067	-1%
Leisure and hospitality	494,054	537,664	43,610	9%
Financial activities	318,766	315,815	-2,951	-1%
Construction	224,833	231,034	6,201	3%
Other services	183,924	190,851	6,927	4%
Information	99,770	85,172	-14,598	-15%
Natural resources and mining	44,411	60,912	16,501	37%

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

Appendix C contains additional data on employment in detailed industry sectors as well as location quotients.

5.1 Top Employers in Pennsylvania

Amongst the top 25 employers within Pennsylvania, higher education comprises four spots—the Pennsylvania State System of Higher Education ranks as the 18th largest employer within the Keystone State. Other major employers in the state are listed in Table 5.2 on the next page.

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

Table 5.2 – Top Employers in Pennsylvania

Rank	Firm Name
1	Wal-Mart
2	City of Philadelphia
3	Trustees of The University of Pennsylvania
4	U.S. Postal Service
5	Giant Food Stores
6	United Parcel Service
7	Pennsylvania State University
8	School District of Philadelphia
9	U.S. Department of Defense
10	Pennsylvania Department of Human Services
11	UPMC Presbyterian Shadyside
12	U.S. Department of Veteran Affairs
13	Pennsylvania Department of Corrections
14	University of Pittsburgh
15	PNC Bank
16	Giant Eagle
17	Lowes Home Centers
18	Pennsylvania State System of Higher Education
19	Weis Markets
20	Pennsylvania Department of Transportation
21	Target Corporation
22	Home Depot
23	The Children's Hospital of Philadelphia
24	Comcast Cablevision
25	Vanguard Group

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

6. OCCUPATIONS IN PENNSYLVANIA

The workforce within the state 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 Pennsylvania's workforce, answering questions such as:

- What are the largest skilled occupations employed within the state?
- 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.⁶

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.⁷

Most occupations in Job Zone Three require training in vocational schools, related on-the-job experience, or an associate's degree. Most occupations in Job Zone Four require a four-year bachelor's degree, but some do not. Most

⁶ <http://www.onetcenter.org/overview.html>

⁷ <https://www.onetonline.org/help/online/zones>

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 Pennsylvania

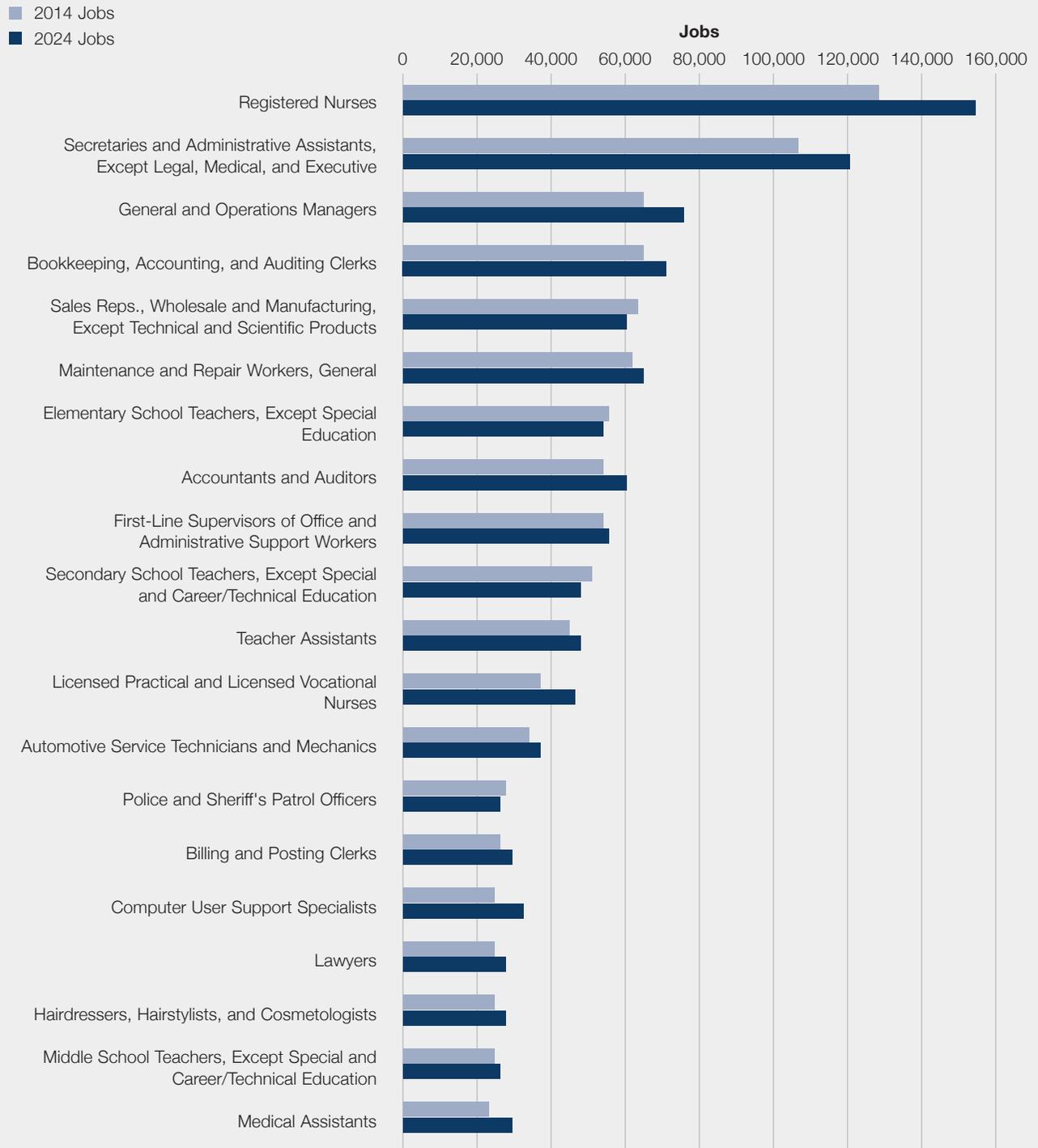
Top skilled occupations in the state are driven by industry composition. Medical centers employ a cadre of health professionals, while enterprise management companies employ a range of business professionals. Given the dominating presence of trade, transportation and utilities; healthcare and education services; and professional and business services establishments in Pennsylvania, top skilled occupations include: management analysts, software developers, human resource specialists, registered nurses, and elementary school teachers. Figure 6.1 and Table 6.1 highlight the top 20 skilled occupations in the state, 10-year job growth projections, and new and replacement jobs.⁸

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

⁸ 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 Pennsylvania and Projections to 2024



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

Table 6.1 – Largest Skilled Occupations and New and Replacement Demand in Pennsylvania

SOC Code	Occupation Title	2014 Jobs	2024 Jobs	10-year New and Replacement Demand
29-1141	Registered Nurses	128,807	154,599	51,874
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	107,410	121,313	27,860
11-1021	General and Operations Managers	65,499	76,216	22,377
43-3031	Bookkeeping, Accounting, and Auditing Clerks	65,090	70,698	12,044
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	63,944	60,271	11,182
49-9071	Maintenance and Repair Workers, General	61,467	64,865	16,938
25-2021	Elementary School Teachers, Except Special Education	55,324	53,736	12,330
13-2011	Accountants and Auditors	54,384	59,962	23,682
43-1011	First-Line Supervisors of Office and Administrative Support Workers	53,975	56,449	15,400
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	50,953	47,611	14,012
25-9041	Teacher Assistants	45,510	47,400	13,200
29-2061	Licensed Practical and Licensed Vocational Nurses	36,876	46,128	18,990
49-3023	Automotive Service Technicians and Mechanics	33,495	36,747	12,992
33-3051	Police and Sheriff's Patrol Officers	27,582	26,483	8,796
43-3021	Billing and Posting Clerks	26,292	28,692	7,718
15-1151	Computer User Support Specialists	25,365	33,260	12,436
23-1011	Lawyers	24,745	27,197	6,676
39-5012	Hairdressers, Hairstylists, and Cosmetologists	24,351	28,440	10,977
25-2022	Middle School Teachers, Except Special and Career/Technical Education	24,071	26,935	8,910
31-9092	Medical Assistants	23,869	28,903	9,826

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.⁹

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 Pennsylvania.

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

⁹ 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.¹⁰

Figure 6.2 and Table 6.2 outline the five key skilled high demand occupations for new and replacement jobs over the next 10 years, specifically: registered nurses, accountants and auditors, general and operations managers, computer system analysts, and market research analysts and marketing specialists.¹¹

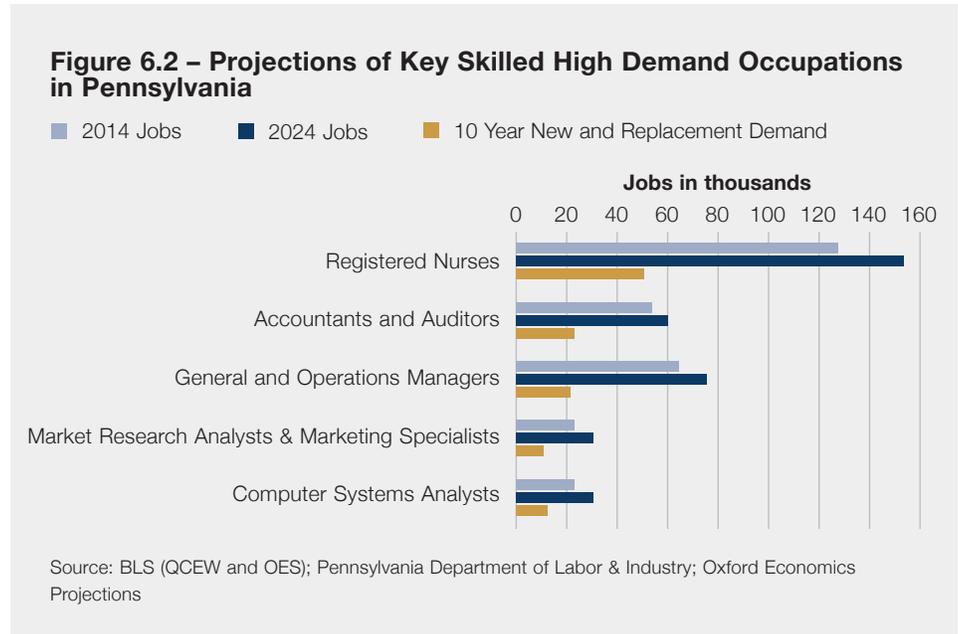


Table 6.2 – Projections of Key Skilled High Demand Occupations in Pennsylvania

SOC Code	Occupation Title	2014 Jobs	2024 Jobs	10 Year New and Replacement Demand
29-1141	Registered Nurses	128,807	154,599	51,874
13-2011	Accountants and Auditors	54,384	59,962	23,682
11-1021	General and Operations Managers	65,499	76,216	22,377
13-1161	Market Research Analysts and Marketing Specialists	23,315	30,907	11,326
15-1121	Computer Systems Analysts	23,193	31,622	12,531

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

¹⁰ Retirement is only one of the metrics factored into new and replacement jobs. Other metrics include out-migration and death.
¹¹ 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 17,200 unique (de-duplicated) job postings appeared in Pennsylvania for the top five key skilled high demand occupations (registered nurses, accountants and auditors, general and operations managers, computer system analysts, and market research analysts and marketing specialists). Sizable job postings include: registered nurses (8,124 unique postings per month), and accountants and auditors (3,122 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 high demand occupations.

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	8,124	4,890	1.7
Accountants and Auditors	3,122	2,673	1.2
General and Operations Managers	2,572	3,725	0.7
Computer Systems Analysts	2,333	960	2.4
Market Research Analysts and Marketing Specialists	1,093	1,091	1.0

Source: Economic Modeling Specialists International (EMSI)

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.

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)

General and Operations Managers

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

Certifications: Six Sigma, Project Management Professional (PMP)

This list of skills and certifications does 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 key skilled high demand occupations.

6.4 Staffing Patterns for Key Skilled High Demand Occupations in Pennsylvania

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 occupations by identifying the top five industries that employ each respective key skilled occupation within Pennsylvania. For each occupation, the table contains:

- The number of jobs in 2014 (e.g. general medical and surgical hospitals employ almost 67,500 registered nurses);
- The percentage of the occupation’s employment in the state that is employed within the industry (e.g. the 67,500 registered nurses employed in general medical and surgical hospitals represent about 27% of the total registered nurse workforce in the state);
- The share of the industry sector’s employment that is made up of the occupation (e.g. the 67,500 registered nurses make up over 52% of employment within general medical and surgical hospitals).

Staffing Patterns for Registered Nurses Employed in Pennsylvania

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
General Medical and Surgical Hospitals	67,491	27.2%	52.4%
Offices of Physicians	10,430	9.4%	8.1%
Home Health Care Services	9,730	21.0%	7.6%
Nursing Care Facilities (Skilled Nursing Facilities)	8,609	9.9%	6.7%
Specialty (except Psychiatric and Substance Abuse) Hospitals	6,944	27.6%	5.4%

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

Staffing Patterns for Accountants and Auditors Employed in Pennsylvania

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Accounting, Tax Preparation, Bookkeeping, and Payroll Services	13,317	38.6%	24.5%
Management of Companies and Enterprises	6,661	5.0%	12.2%
Other Financial Investment Activities	2,677	8.9%	4.9%
Insurance Carriers	1,776	2.4%	3.3%
Management, Scientific, and Technical Consulting Services	1,422	3.0%	2.6%

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

Staffing Patterns for General and Operations Managers Employed in Pennsylvania

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Management of Companies and Enterprises	3,543	2.7%	5.4%
Wholesale Electronic Markets and Agents and Brokers	1,627	3.5%	2.5%
Restaurants and Other Eating Places	1,538	0.5%	2.3%
Individual and Family Services	1,430	1.2%	2.2%
Insurance Carriers	1,137	1.5%	1.7%

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

Staffing Patterns for Computer Systems Analysts Employed in Pennsylvania

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Computer Systems Design and Related Services	8,326	12.8%	35.9%
Management of Companies and Enterprises	3,156	2.4%	13.6%
Insurance Carriers	2,090	2.8%	9.0%
Wholesale Electronic Markets and Agents and Brokers	1,276	2.7%	5.5%
Employment Services	1,046	1.0%	4.5%

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

Staffing Patterns for Market Research Analysts and Marketing Specialists Employed in Pennsylvania

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Management, Scientific, and Technical Consulting Services	2,870	6.0%	12.3%
Management of Companies and Enterprises	2,663	2.0%	11.4%
Other Professional, Scientific, and Technical Services	1,284	4.8%	5.5%
Computer Systems Design and Related Services	1,273	2.0%	5.5%
Insurance Carriers	1,126	1.5%	4.8%

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 give a perspective on 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

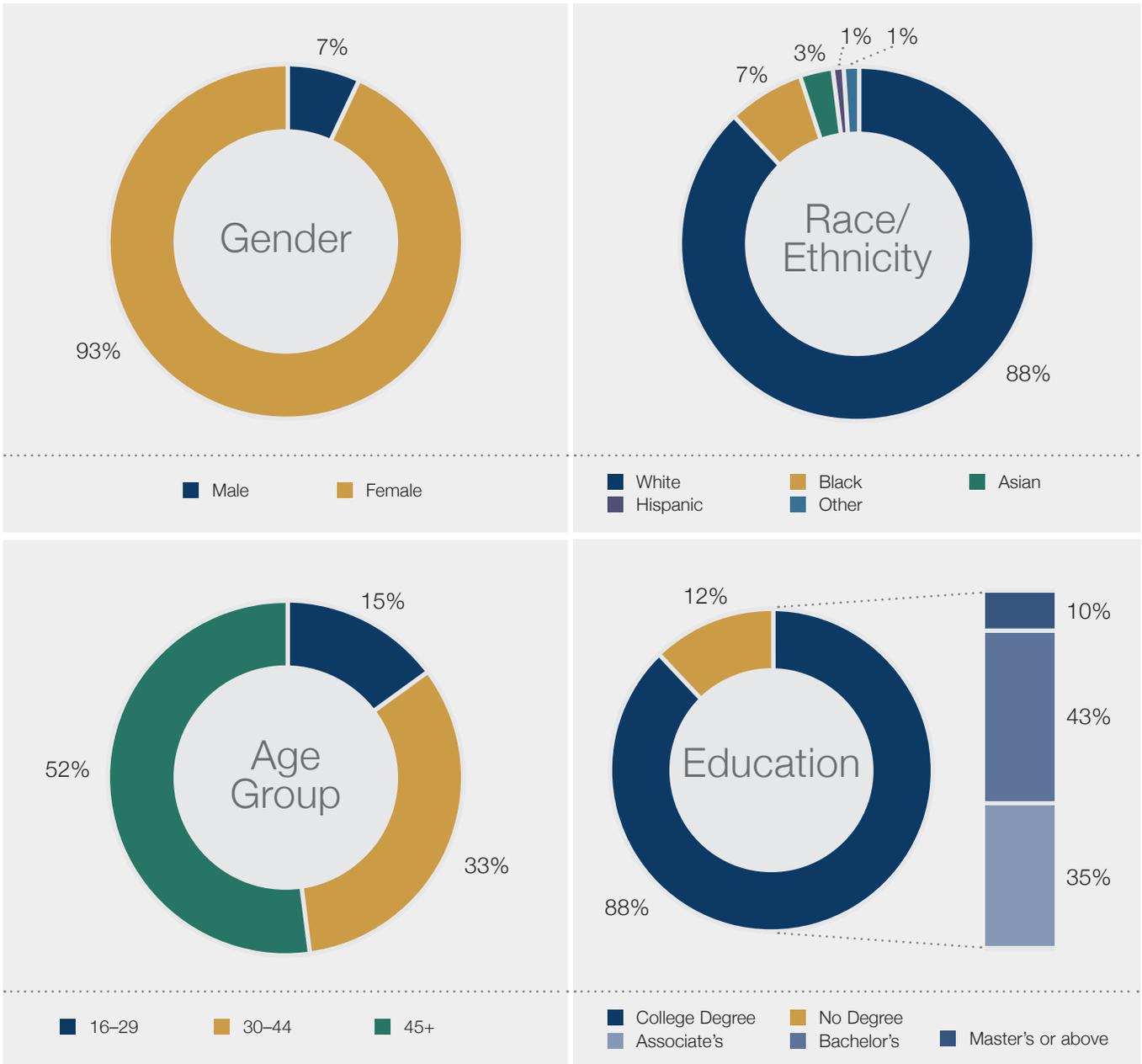
In addition to understanding the industries that employ key skilled high demand occupations, another lens focuses on the characteristics of those employed. The following section outlines the demographics for people from Pennsylvania who work in these key skilled occupations by showing each occupation's composition by gender, race/ethnicity, age, and education. This lends further insight into who generally works in the occupation 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 of Pennsylvania's entire population is further described in Section 7 of the report.

REGISTERED NURSES IN PENNSYLVANIA

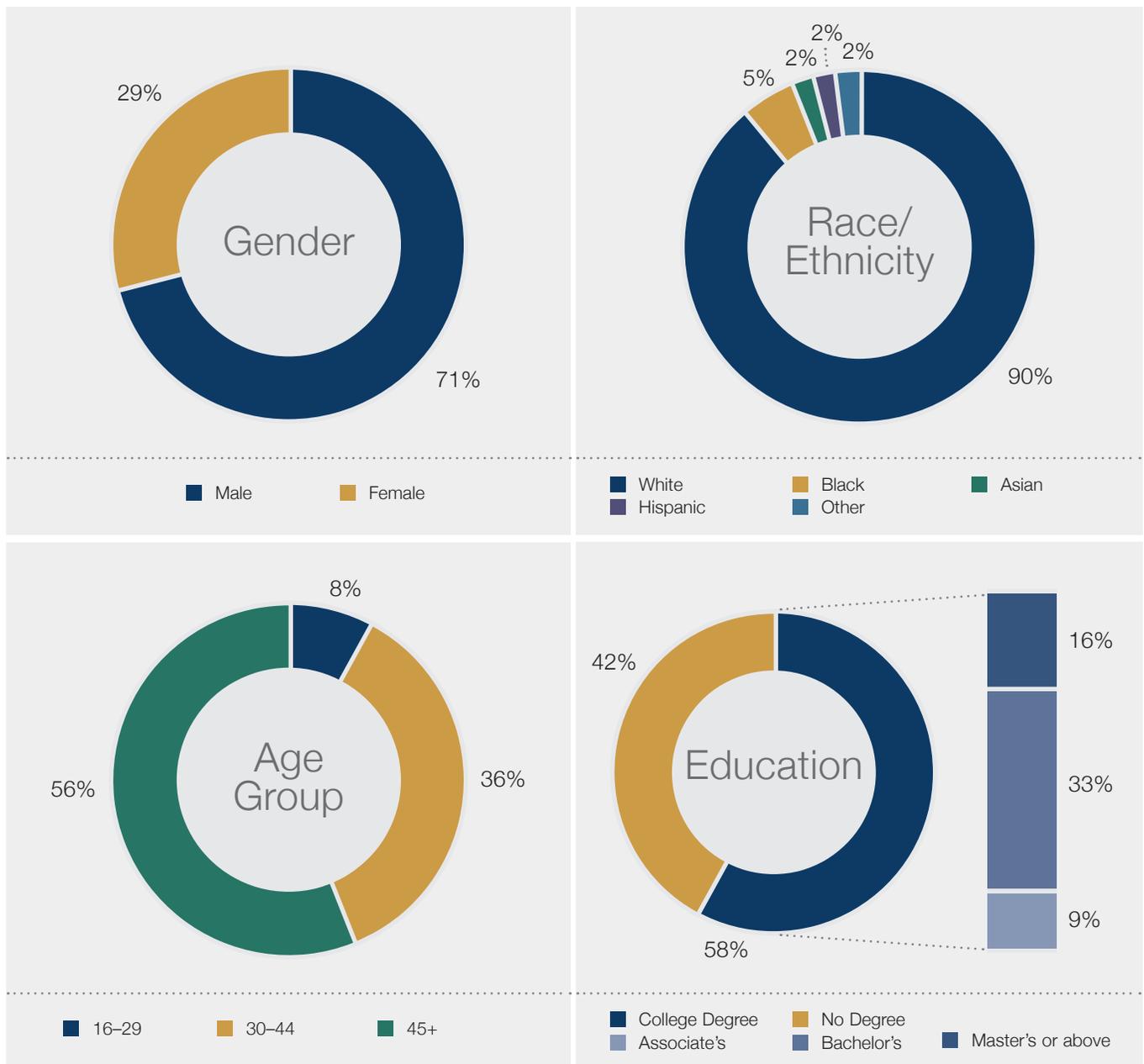
The demographic profile of registered nurses is dominated by white females. Age distribution indicates that registered nurses are a more mature cohort of workers (45 years and older), which can put increasing pressure on replacement jobs due to retirements over the next 10 years. Nearly 90% of registered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



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

GENERAL AND OPERATIONS MANAGERS IN PENNSYLVANIA

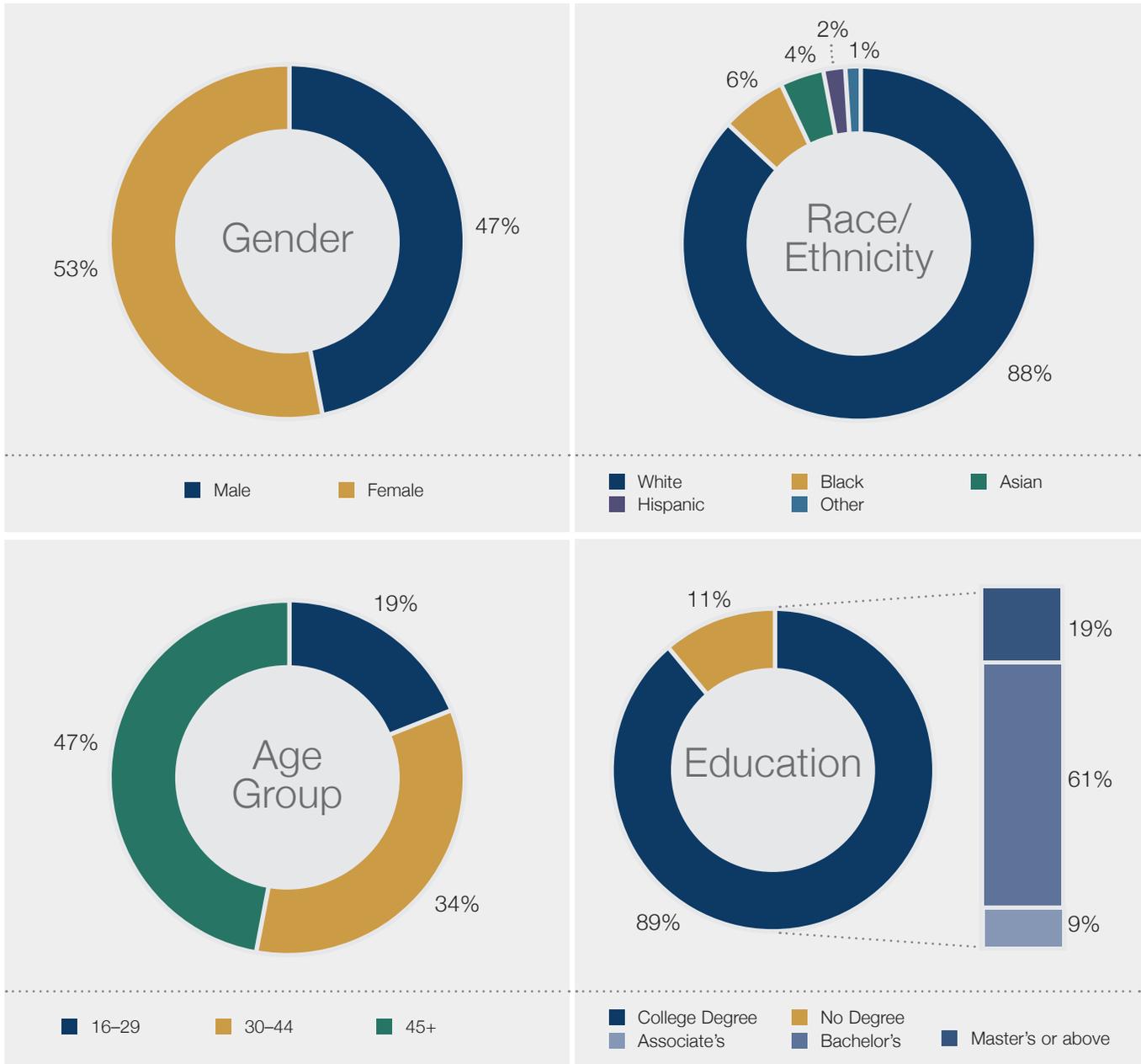
General and operations managers are typically male, though females occupy almost 30% of the employed population. The majority of those in this occupation are white. This occupation is represented by a more mature cohort of workers (45 years and older), though mid-career workers also occupy a significant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



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

ACCOUNTANTS AND AUDITORS IN PENNSYLVANIA

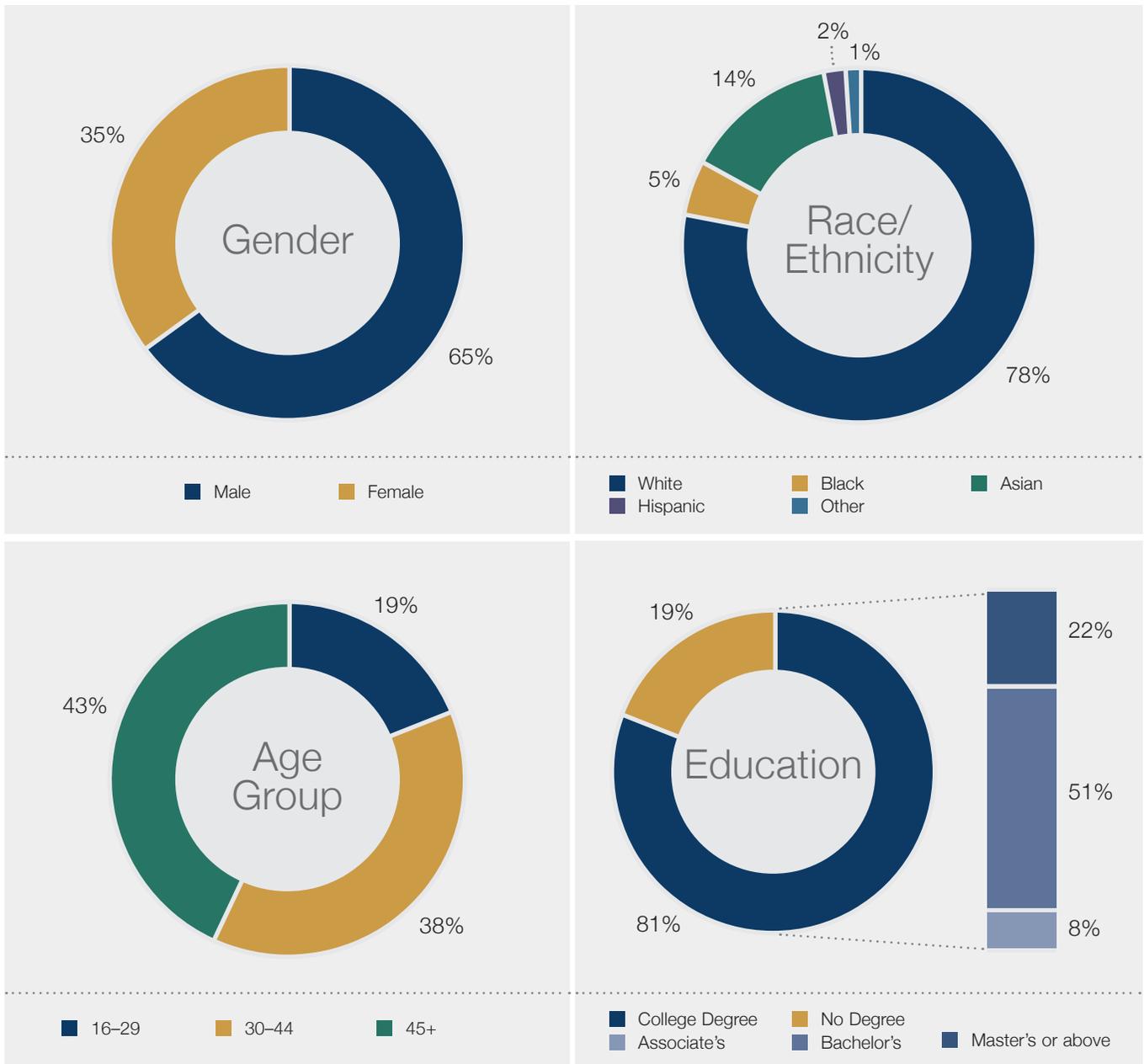
Accountants and auditors are fairly evenly split between male and female, though a slightly higher percent of employed accountants and auditors are female. A high proportion of white individuals are found in the occupation. Additionally, the age distribution is fairly even between entry-level and mature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

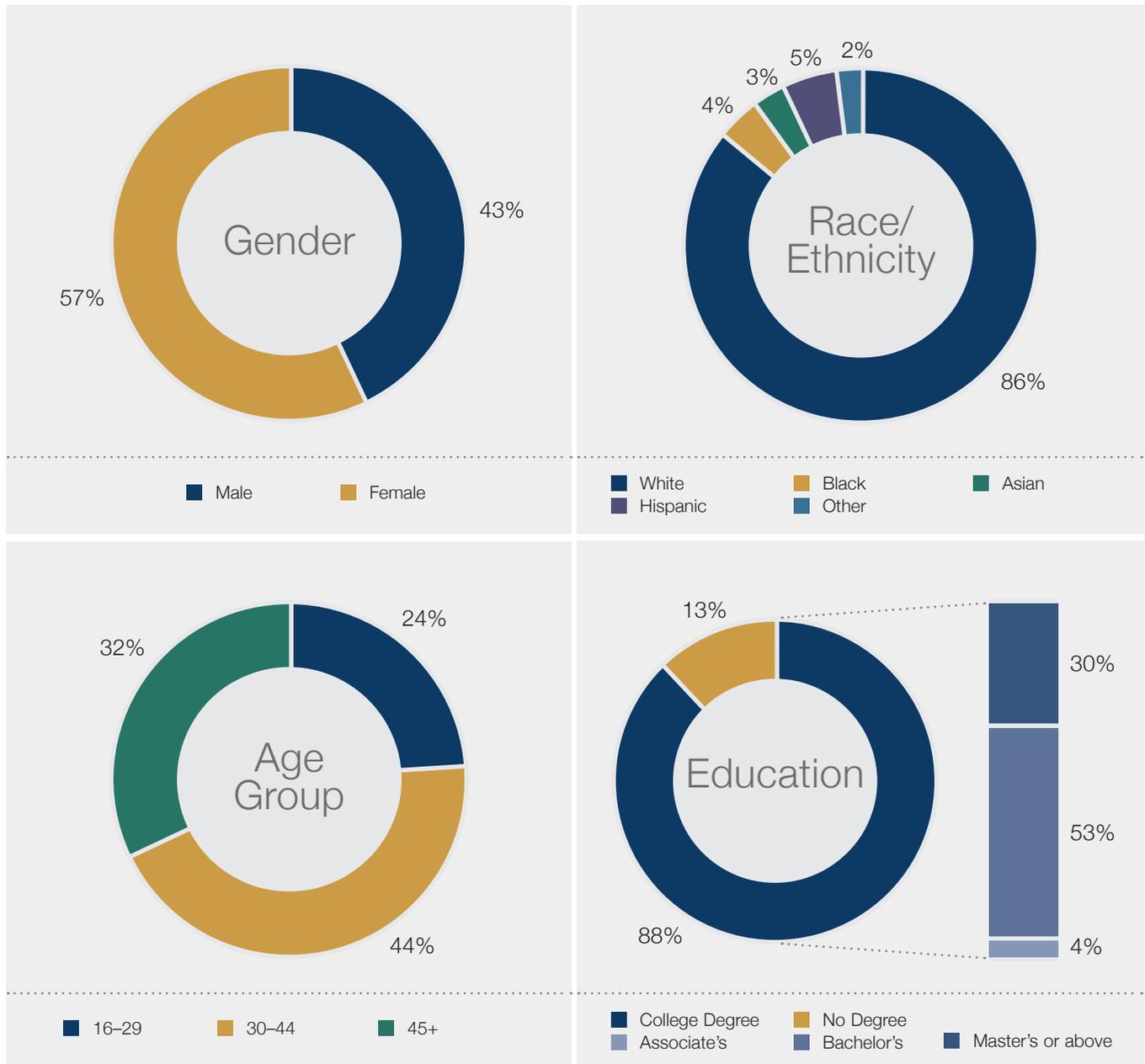
Computer systems analysts show a larger proportion of males in the occupation compared to females. While still represented by a larger share of white workers, a significant number of Asian workers are found in the occupation, making this occupation more diverse than the average Pennsylvania demographic 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 Pennsylvania's demographic and socio-economic characteristics. While not tied to a specific occupation, the analysis further contextualizes the statewide population and workforce.

7. DEMOGRAPHIC AND SOCIO-ECONOMIC INDICATORS IN PENNSYLVANIA

This section provides further information about the regional demographic and socio-economic composition of Pennsylvania’s workforce 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 Pennsylvania’s Demographics

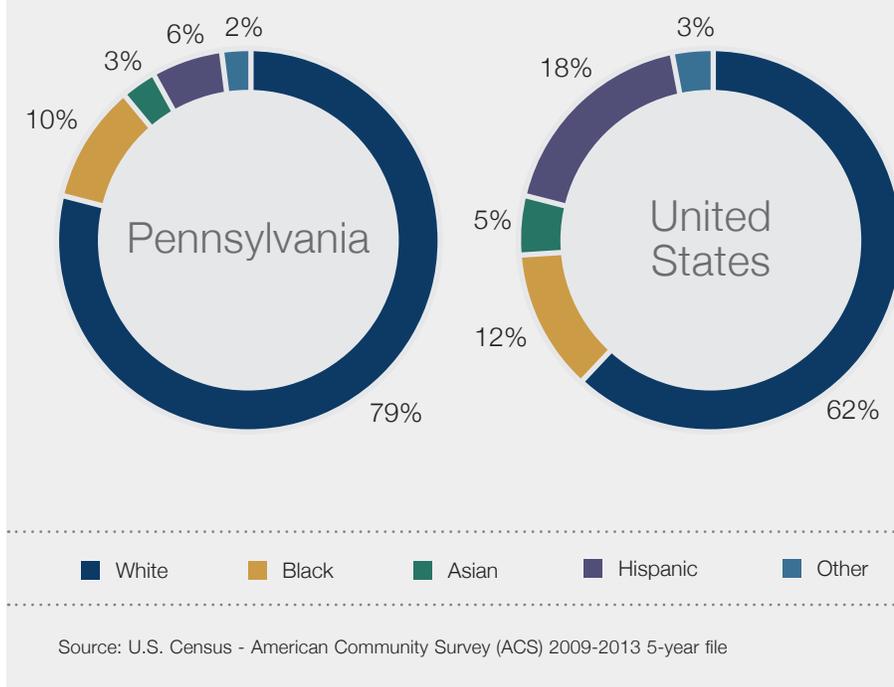
The Pennsylvania economy has a population of about 12.7 million people. As shown in Figure 7.1, there are about 310,000 more females compared to males. Figure 7.2 illustrates that the majority of the state is represented by a White demographic, with Blacks representing the next largest group, followed by Hispanics.

Figure 7.1 – Pennsylvania Population Distribution by Gender



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

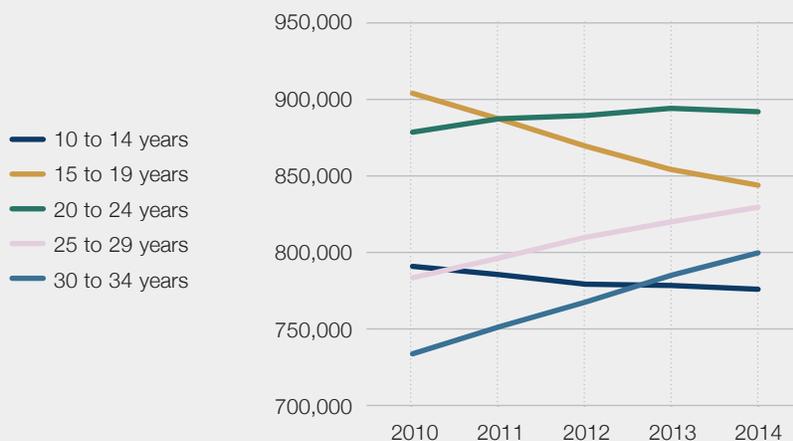
Figure 7.2 – Pennsylvania and U.S. Race/Ethnicity Composition



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 number of adults aged 25 to 34 years old. As illustrated in Figure 7.3, the 10 to 19 year old cohort population declined by over 75,000 people between 2010 and 2014—a 4% decline. Conversely, the 25-34 year old cohort increased nearly 8%, or 113,000 people, over the same time period. This demographic shift presents an opportunity to incorporate a broader university recruitment strategy.

The next sub-section further explores the shifting socio-economic characteristics in Pennsylvania by identifying three inter-related variables.

Figure 7.3 – Pennsylvania Changes in Age Cohorts



Source: U.S. Census

7.2 Pennsylvania’s Socio-economic Indicators

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 Pennsylvania

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.^{12 13}

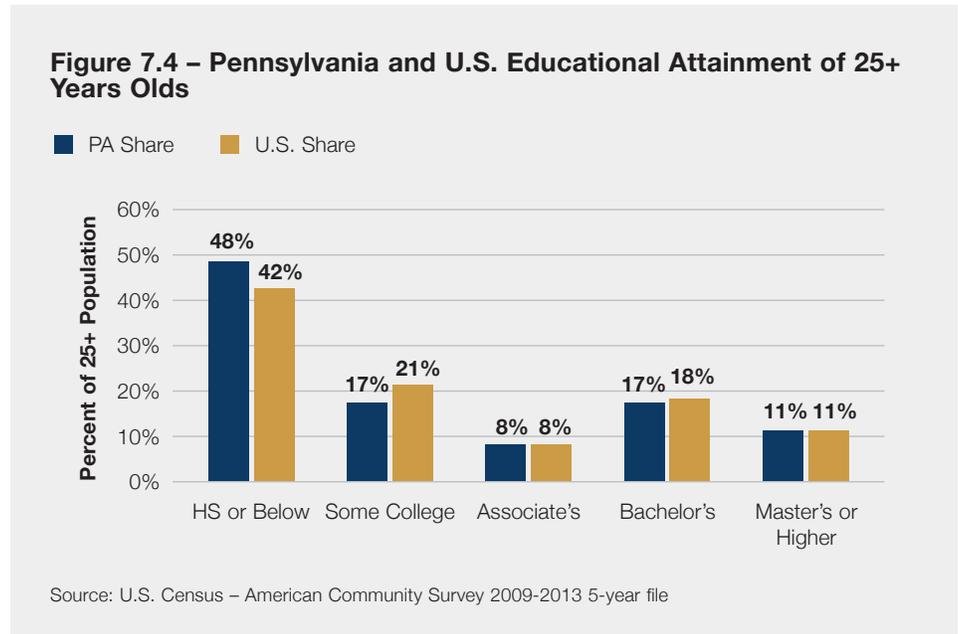
12 Feinstein et. al. (2006), “The effects of education on health: Concepts, evidence and policy implications: A review for the OECD Center for Educational Research and Innovation (CERI)”, unpublished manuscript, OECD, Paris.

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

A view of Pennsylvania's educational attainment indicates that more than half (52%) of those over 25 years old have had some postsecondary 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 lags behind the national average of 58% of the population having some postsecondary education or higher.

When comparing degree completion, Pennsylvania is near the national average for the proportion of the population with an associate's degree, bachelor's degree, and master's degree or higher.

Figure 7.4 compares the educational attainment of the 25 years and older population in the U.S. and Pennsylvania.

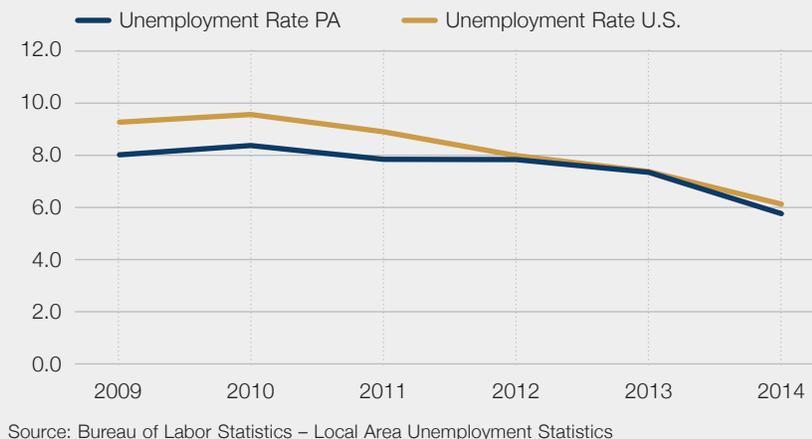


7.2.2 Unemployment and Poverty in Pennsylvania

Pennsylvania's unemployment rate—5.8% in 2014—trended closely with the national unemployment rate since 2012. This suggests that opportunities for dislocated workers on average are roughly the same, compared to the rest of the nation.

Figure 7.5 shows the convergence of the unemployment rates of the U.S. and Pennsylvania from 2009 to 2014.

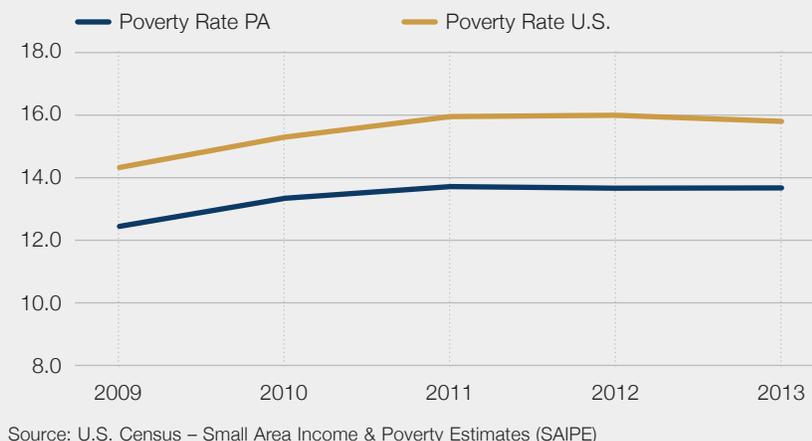
Figure 7.5 – Pennsylvania and U.S. Unemployment Rates



In Pennsylvania, the poverty rate trended upward since 2009. However, the poverty rate remains more than 15% below the U.S. average.¹⁴ Given the lower poverty rate compared with the nation, there is an underlying assumption that the compensation associated with the jobs in Pennsylvania may be higher than the national average.

Figure 7.6 compares the poverty rates of the U.S. and Pennsylvania from 2009 to 2013.

Figure 7.6 – Pennsylvania and U.S. Poverty Rates



¹⁴ 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.

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 state's sub-region workforce areas.
- Describing key economic, workforce, and demographic attributes in the state economy.
- Forecasting the initial 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 Pennsylvania.
- 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 state.

9. DATA SOURCES KEY

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

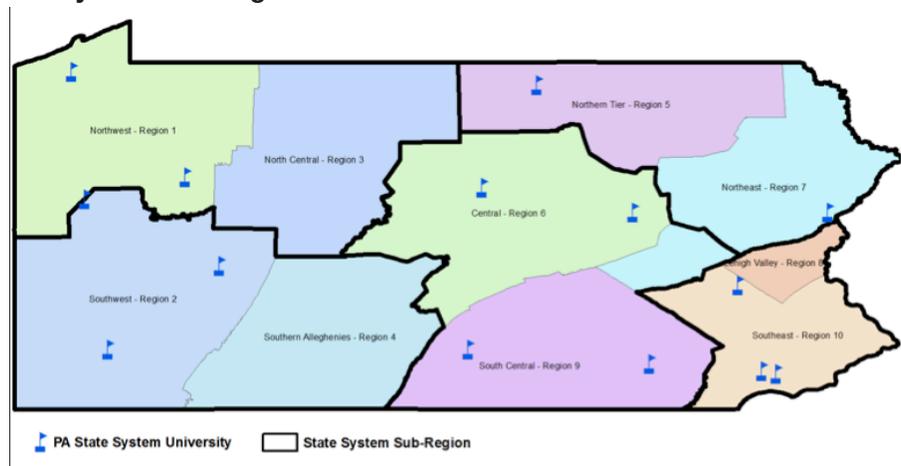
Economic Modeling Specialists International (EMSI)

APPENDIX A: STATE SYSTEM SUB-REGIONS WITH PREP REGIONS AND WIA REGIONS

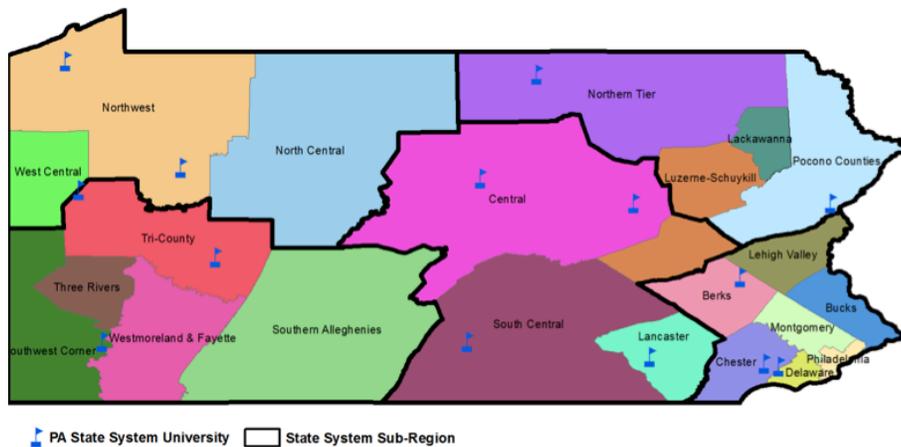
Partnerships for Regional Economic Performance (PREP) regions provide geographic context of how the Pennsylvania Department of Community & Economic Development divides resources and services to support business development, start-ups, investment and other economic development initiatives. To define sub-regions for this project, PREP regions served as the starting point. The following figures outline the sub-regions in relation to PREP regions.

An additional map of Pennsylvania's Workforce Investment Act (WIA) regional boundaries is also provided.

State System Sub-regions and PREP Boundaries



State System Sub-regions and WIA Boundaries



APPENDIX B: PENNSYLVANIA STATE AND COUNTY ENROLLMENT AND EMPLOYMENT

County	Fall 2014 Enrollment in PA's State System	2014 QCEW Employment
Allegheny	7,020	683,111
Chester	5,996	240,469
Montgomery	5,401	472,655
Philadelphia	5,263	640,987
Lancaster	4,786	225,673
Delaware	4,206	216,261
Bucks	4,145	250,889
Berks	3,759	166,792
Erie	3,469	124,095
York	3,104	172,145
Lehigh	2,664	180,757
Westmoreland	2,606	132,312
Cumberland	2,537	126,939
Monroe	2,532	52,933
Northampton	2,514	105,825
Butler	2,067	84,472
Dauphin	1,952	176,004
Washington	1,915	86,961
Indiana	1,645	32,653
Luzerne	1,437	140,329
Franklin	1,302	56,715
Fayette	1,137	39,979
Beaver	1,121	52,811
Mercer	1,095	48,028
Columbia	1,074	24,974
Schuylkill	1,068	50,049
Cambria	1,032	53,915
Crawford	1,024	31,113
Lycoming	1,013	53,197
Lackawanna	986	97,259

County	Fall 2014 Enrollment in PA's State System	2014 QCEW Employment
Northumberland	938	27,985
Clarion	883	13,586
Clearfield	881	29,938
Venango	840	19,251
Armstrong	814	17,582
Lawrence	810	29,500
Lebanon	803	48,869
Adams	705	34,139
Centre	699	67,147
Tioga	656	12,973
Bradford	641	24,568
Pike	633	10,748
Clinton	600	13,043
Jefferson	587	15,435
Blair	584	58,233
Carbon	455	16,974
Elk	398	14,994
Wayne	356	14,651
Montour	340	15,578
Warren	324	15,031
Somerset	323	24,398
Perry	319	7,661
Union	313	16,597
Mifflin	290	15,544
McKean	277	15,770
Snyder	269	15,522
Susquehanna	219	9,281
Bedford	202	15,397
Greene	201	14,844
Huntingdon	182	12,343
Wyoming	162	10,181
Potter	140	5,291
Juniata	123	6,146
Fulton	81	4,807
Cameron	65	2,015
Forest	57	2,053
Sullivan	34	1,772
Total Pennsylvania	96,074	5,643,676

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

APPENDIX C: INDUSTRY PROJECTIONS 2014-2024 FOR PENNSYLVANIA

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 Pennsylvania. Also included in the table are the number of jobs in 2014 and the projected job growth/decline to 2024.

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
Total	All Industries	5,643,677	6,179,890	9.5%	1.0
1111	Oilseed and Grain Farming	715	799	11.7%	0.3
1112	Vegetable and Melon Farming	1,283	1,382	7.7%	0.3
1113	Fruit and Tree Nut Farming	1,752	1,870	6.7%	0.2
1114	Greenhouse, Nursery, and Floriculture Production	9,303	9,486	2.0%	1.6
1119	Other Crop Farming	344	387	12.5%	0.1
1121	Cattle Ranching and Farming	3,167	3,435	8.5%	0.5
1122	Hog and Pig Farming	383	407	6.3%	0.3
1123	Poultry and Egg Production	1,798	1,901	5.7%	1.1
1124	Sheep and Goat Farming	31	37	19.4%	0.5
1125	Aquaculture	219	243	11.0%	0.8
1129	Other Animal Production	780	817	4.7%	1.0
1131	Timber Tract Operations	99	120	21.2%	0.3
1132	Forest Nurseries and Gathering of Forest Products	44	48	9.1%	0.5
1133	Logging	650	646	-0.6%	0.3
1141	Fishing	8	9	12.5%	0.0
1142	Hunting and Trapping	53	48	-9.4%	0.7
1151	Support Activities for Crop Production	2,138	2,503	17.1%	0.2
1152	Support Activities for Animal Production	1,105	1,237	11.9%	1.0
1153	Support Activities for Forestry	161	192	19.3%	0.2
2111	Oil and Gas Extraction	6,396	8,223	28.6%	0.8
2121	Coal Mining	7,307	6,010	-17.8%	2.4
2122	Metal Ore Mining	21	24	14.3%	0.0
2123	Nonmetallic Mineral Mining and Quarrying	4,997	5,085	1.8%	1.3
2131	Support Activities for Mining	18,277	20,546	12.4%	1.0
2211	Electric Power Generation, Transmission and Distribution	14,756	13,864	-6.0%	0.7
2212	Natural Gas Distribution	5,497	5,700	3.7%	1.1
2213	Water, Sewage and Other Systems	11,878	12,645	6.5%	1.4
2361	Residential Building Construction	26,489	33,188	25.3%	1.0
2362	Nonresidential Building Construction	26,151	30,760	17.6%	0.9
2371	Utility System Construction	21,175	27,069	27.8%	1.1
2372	Land Subdivision	1,179	1,453	23.2%	0.7
2373	Highway, Street, and Bridge Construction	20,311	25,575	25.9%	1.2
2379	Other Heavy and Civil Engineering Construction	2,252	2,850	26.6%	0.5
2381	Foundation, Structure, and Building Exterior Contractors	24,833	28,478	14.7%	0.8
2382	Building Equipment Contractors	67,158	78,706	17.2%	0.9
2383	Building Finishing Contractors	21,697	24,197	11.5%	0.8

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
2389	Other Specialty Trade Contractors	28,219	33,999	20.5%	1.2
3111	Animal Food Manufacturing	3,768	3,796	0.7%	1.7
3112	Grain and Oilseed Milling	987	999	1.2%	0.4
3113	Sugar and Confectionery Product Manufacturing	9,580	9,836	2.7%	3.3
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	7,236	7,222	-0.2%	1.0
3115	Dairy Product Manufacturing	6,451	6,237	-3.3%	1.2
3116	Animal Slaughtering and Processing	15,283	16,731	9.5%	0.8
3117	Seafood Product Preparation and Packaging	102	120	17.6%	0.1
3118	Bakeries and Tortilla Manufacturing	14,751	14,613	-0.9%	1.2
3119	Other Food Manufacturing	11,379	12,468	9.6%	1.5
3121	Beverage Manufacturing	7,393	8,551	15.7%	0.9
3122	Tobacco Manufacturing	616	617	0.2%	1.1
3131	Fiber, Yarn, and Thread Mills	312	258	-17.3%	0.3
3132	Fabric Mills	2,228	1,819	-18.4%	1.0
3133	Textile and Fabric Finishing and Fabric Coating Mills	874	730	-16.5%	0.6
3141	Textile Furnishings Mills	1,761	1,339	-24.0%	0.8
3149	Other Textile Product Mills	2,476	2,320	-6.3%	1.0
3151	Apparel Knitting Mills	245	191	-22.0%	0.4
3152	Cut and Sew Apparel Manufacturing	3,862	2,831	-26.7%	0.8
3159	Apparel Accessories and Other Apparel Manufacturing	450	380	-15.6%	0.9
3161	Leather and Hide Tanning and Finishing	402	477	18.7%	2.2
3162	Footwear Manufacturing	243	221	-9.1%	0.4
3169	Other Leather and Allied Product Manufacturing	272	297	9.2%	0.6
3211	Sawmills and Wood Preservation	3,998	5,104	27.7%	1.1
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	2,882	3,621	25.6%	1.0
3219	Other Wood Product Manufacturing	14,599	18,389	26.0%	1.7
3221	Pulp, Paper, and Paperboard Mills	3,305	3,417	3.4%	0.8
3222	Converted Paper Product Manufacturing	20,287	20,413	0.6%	1.8
3231	Printing and Related Support Activities	24,746	21,797	-11.9%	1.3
3241	Petroleum and Coal Products Manufacturing	5,998	5,911	-1.5%	1.3
3251	Basic Chemical Manufacturing	5,718	5,609	-1.9%	1.0
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	3,030	2,976	-1.8%	0.8
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	682	713	4.5%	0.4
3254	Pharmaceutical and Medicine Manufacturing	17,570	16,511	-6.0%	1.5
3255	Paint, Coating, and Adhesive Manufacturing	2,592	2,485	-4.1%	1.0
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	6,049	6,020	-0.5%	1.4

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3259	Other Chemical Product and Preparation Manufacturing	4,309	4,387	1.8%	1.3
3261	Plastics Product Manufacturing	31,436	32,759	4.2%	1.4
3262	Rubber Product Manufacturing	4,663	5,026	7.8%	0.9
3271	Clay Product and Refractory Manufacturing	2,630	2,730	3.8%	1.6
3272	Glass and Glass Product Manufacturing	5,467	5,747	5.1%	1.6
3273	Cement and Concrete Product Manufacturing	8,818	9,532	8.1%	1.2
3274	Lime and Gypsum Product Manufacturing	680	757	11.3%	1.1
3279	Other Nonmetallic Mineral Product Manufacturing	2,593	2,795	7.8%	0.9
3311	Iron and Steel Mills and Ferroalloy Manufacturing	13,428	13,350	-0.6%	3.6
3312	Steel Product Manufacturing from Purchased Steel	6,528	6,546	0.3%	2.6
3313	Alumina and Aluminum Production and Processing	3,297	3,645	10.6%	1.4
3314	Nonferrous Metal (except Aluminum) Production and Processing	6,214	6,323	1.8%	2.4
3315	Foundries	9,410	9,599	2.0%	1.8
3321	Forging and Stamping	10,359	10,898	5.2%	2.5
3322	Cutlery and Handtool Manufacturing	2,265	2,325	2.6%	1.4
3323	Architectural and Structural Metals Manufacturing	20,624	23,277	12.9%	1.4
3324	Boiler, Tank, and Shipping Container Manufacturing	4,950	5,307	7.2%	1.2
3325	Hardware Manufacturing	652	697	6.9%	0.7
3326	Spring and Wire Product Manufacturing	3,044	3,236	6.3%	1.7
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	22,385	22,995	2.7%	1.5
3328	Coating, Engraving, Heat Treating, and Allied Activities	5,756	6,170	7.2%	1.0
3329	Other Fabricated Metal Product Manufacturing	11,079	11,604	4.7%	1.0
3331	Agriculture, Construction, and Mining Machinery Manufacturing	9,608	9,537	-0.7%	0.9
3332	Industrial Machinery Manufacturing	4,986	5,218	4.7%	1.1
3333	Commercial and Service Industry Machinery Manufacturing	2,719	2,425	-10.8%	0.8
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	5,092	5,258	3.3%	1.0
3335	Metalworking Machinery Manufacturing	11,012	10,515	-4.5%	1.5
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	3,070	2,779	-9.5%	0.7
3339	Other General Purpose Machinery Manufacturing	11,630	12,106	4.1%	1.1
3341	Computer and Peripheral Equipment Manufacturing	1,515	1,458	-3.8%	0.2
3342	Communications Equipment Manufacturing	3,462	2,974	-14.1%	0.9
3343	Audio and Video Equipment Manufacturing	389	371	-4.6%	0.5
3344	Semiconductor and Other Electronic Component Manufacturing	10,647	9,961	-6.4%	0.7
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	14,191	14,188	0.0%	0.9
3346	Manufacturing and Reproducing Magnetic and Optical Media	1,026	1,017	-0.9%	1.5

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3351	Electric Lighting Equipment Manufacturing	2,113	2,123	0.5%	1.1
3352	Household Appliance Manufacturing	608	655	7.7%	0.2
3353	Electrical Equipment Manufacturing	7,360	7,547	2.5%	1.2
3359	Other Electrical Equipment and Component Manufacturing	15,892	17,211	8.3%	3.0
3361	Motor Vehicle Manufacturing	1,670	1,689	1.1%	0.2
3362	Motor Vehicle Body and Trailer Manufacturing	5,543	5,890	6.3%	1.0
3363	Motor Vehicle Parts Manufacturing	7,846	7,835	-0.1%	0.4
3364	Aerospace Product and Parts Manufacturing	11,251	10,996	-2.3%	0.6
3365	Railroad Rolling Stock Manufacturing	7,312	7,517	2.8%	6.5
3366	Ship and Boat Building	1,185	1,271	7.3%	0.2
3369	Other Transportation Equipment Manufacturing	3,695	4,232	14.5%	2.8
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	9,122	9,248	1.4%	1.0
3372	Office Furniture (including Fixtures) Manufacturing	4,969	5,386	8.4%	1.2
3379	Other Furniture Related Product Manufacturing	961	1,039	8.1%	0.7
3391	Medical Equipment and Supplies Manufacturing	13,628	13,099	-3.9%	1.1
3399	Other Miscellaneous Manufacturing	12,579	12,105	-3.8%	1.1
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	20,384	22,207	8.9%	1.5
4232	Furniture and Home Furnishing Merchant Wholesalers	2,821	3,022	7.1%	0.7
4233	Lumber and Other Construction Materials Merchant Wholesalers	9,661	10,560	9.3%	1.2
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	21,207	20,846	-1.7%	0.8
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	4,784	5,155	7.8%	0.9
4236	Household Appliances and Electrical and Electronic Goods Merchant Wholesalers	10,439	10,216	-2.1%	0.8
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	9,293	10,610	14.2%	1.0
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	25,600	27,630	7.9%	0.9
4239	Miscellaneous Durable Goods Merchant Wholesalers	9,836	11,607	18.0%	0.8
4241	Paper and Paper Product Merchant Wholesalers	4,866	4,918	1.1%	1.0
4242	Drugs and Druggists' Sundries Merchant Wholesalers	7,694	7,690	-0.1%	1.0
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	3,024	3,085	2.0%	0.5
4244	Grocery and Related Product Merchant Wholesalers	27,325	30,030	9.9%	0.9
4245	Farm Product Raw Material Merchant Wholesalers	667	730	9.4%	0.2
4246	Chemical and Allied Products Merchant Wholesalers	4,452	4,807	8.0%	0.8
4247	Petroleum and Petroleum Products Merchant Wholesalers	3,861	4,012	3.9%	0.9
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	3,962	4,539	14.6%	0.5
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	9,516	9,231	-3.0%	0.7

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
4251	Wholesale Electronic Markets and Agents and Brokers	46,815	47,349	1.1%	1.3
4411	Automobile Dealers	54,490	61,419	12.7%	1.1
4412	Other Motor Vehicle Dealers	4,175	4,588	9.9%	0.7
4413	Automotive Parts, Accessories, and Tire Stores	17,612	18,613	5.7%	0.8
4421	Furniture Stores	7,474	7,498	0.3%	0.8
4422	Home Furnishings Stores	8,005	8,162	2.0%	0.8
4431	Electronics and Appliance Stores	16,401	15,915	-3.0%	0.8
4441	Building Material and Supplies Dealers	39,760	41,554	4.5%	0.9
4442	Lawn and Garden Equipment and Supplies Stores	6,345	6,551	3.2%	1.0
4451	Grocery Stores	126,049	127,480	1.1%	1.2
4452	Specialty Food Stores	10,142	10,066	-0.7%	1.1
4453	Beer, Wine, and Liquor Stores	9,224	10,613	15.1%	1.4
4461	Health and Personal Care Stores	45,420	46,028	1.3%	1.1
4471	Gasoline Stations	39,016	40,129	2.9%	1.1
4481	Clothing Stores	41,880	39,560	-5.5%	1.0
4482	Shoe Stores	8,253	8,448	2.4%	1.0
4483	Jewelry, Luggage, and Leather Goods Stores	5,700	5,517	-3.2%	1.0
4511	Sporting Goods, Hobby, and Musical Instrument Stores	21,117	22,269	5.5%	1.0
4512	Book Stores and News Dealers	3,596	3,251	-9.6%	1.0
4521	Department Stores	51,947	46,335	-10.8%	0.9
4529	Other General Merchandise Stores	58,842	64,490	9.6%	0.8
4531	Florists	3,324	2,616	-21.3%	1.3
4532	Office Supplies, Stationery, and Gift Stores	11,433	10,019	-12.4%	0.9
4533	Used Merchandise Stores	6,190	7,404	19.6%	0.9
4539	Other Miscellaneous Store Retailers	13,571	14,482	6.7%	1.1
4541	Electronic Shopping and Mail-Order Houses	17,434	20,777	19.2%	1.3
4542	Vending Machine Operators	1,760	1,664	-5.5%	1.2
4543	Direct Selling Establishments	8,536	8,612	0.9%	1.6
4811	Scheduled Air Transportation	11,672	12,447	6.6%	0.7
4812	Nonscheduled Air Transportation	727	830	14.2%	0.5
4831	Deep Sea, Coastal, and Great Lakes Water Transportation	224	204	-8.9%	0.1
4832	Inland Water Transportation	390	410	5.1%	0.3
4841	General Freight Trucking	44,045	52,941	20.2%	1.1
4842	Specialized Freight Trucking	19,672	24,177	22.9%	1.1
4851	Urban Transit Systems	5,676	6,252	10.1%	0.6
4852	Interurban and Rural Bus Transportation	805	820	1.9%	0.9
4853	Taxi and Limousine Service	2,262	2,358	4.2%	0.7

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
4854	School and Employee Bus Transportation	27,367	30,276	10.6%	2.7
4855	Charter Bus Industry	2,461	2,692	9.4%	2.0
4859	Other Transit and Ground Passenger Transportation	4,207	4,788	13.8%	1.1
4862	Pipeline Transportation of Natural Gas	1,460	1,815	24.3%	1.2
4869	Other Pipeline Transportation	642	778	21.2%	2.0
4871	Scenic and Sightseeing Transportation, Land	625	656	5.0%	1.1
4872	Scenic and Sightseeing Transportation, Water	308	329	6.8%	0.5
4879	Scenic and Sightseeing Transportation, Other	4	4	0.0%	0.0
4881	Support Activities for Air Transportation	4,303	5,010	16.4%	0.5
4882	Support Activities for Rail Transportation	1,596	2,006	25.7%	1.2
4883	Support Activities for Water Transportation	8,192	8,186	-0.1%	2.0
4884	Support Activities for Road Transportation	5,138	7,225	40.6%	1.1
4885	Freight Transportation Arrangement	4,633	5,523	19.2%	0.6
4889	Other Support Activities for Transportation	1,175	1,366	16.3%	0.9
4911	Postal Service	27,883	20,587	-26.2%	1.1
4921	Couriers and Express Delivery Services	23,553	25,850	9.8%	1.1
4922	Local Messengers and Local Delivery	1,312	1,416	7.9%	0.6
4931	Warehousing and Storage	64,980	78,552	20.9%	2.1
5111	Newspaper, Periodical, Book, and Directory Publishers	19,717	16,257	-17.5%	1.2
5112	Software Publishers	5,115	5,662	10.7%	0.4
5121	Motion Picture and Video Industries	7,240	7,399	2.2%	0.5
5122	Sound Recording Industries	255	243	-4.7%	0.4
5151	Radio and Television Broadcasting	7,838	8,187	4.5%	0.9
5152	Cable and Other Subscription Programming	253	242	-4.3%	0.1
5171	Wired Telecommunications Carriers	24,064	21,502	-10.6%	1.0
5172	Wireless Telecommunications Carriers (except Satellite)	2,213	1,825	-17.5%	0.3
5174	Satellite Telecommunications	108	97	-10.2%	0.3
5179	Other Telecommunications	1,586	1,376	-13.2%	0.5
5182	Data Processing, Hosting, and Related Services	10,128	9,864	-2.6%	0.9
5191	Other Information Services	10,294	12,200	18.5%	0.7
5211	Monetary Authorities-Central Bank	101	82	-18.8%	0.1
5221	Depository Credit Intermediation	77,318	72,001	-6.9%	1.1
5222	Nondepository Credit Intermediation	13,075	12,736	-2.6%	0.5
5223	Activities Related to Credit Intermediation	4,464	4,542	1.7%	0.4
5231	Securities and Commodity Contracts Intermediation and Brokerage	9,532	11,155	17.0%	0.5
5232	Securities and Commodity Exchanges	157	200	27.4%	0.5
5239	Other Financial Investment Activities	30,009	41,151	37.1%	1.7

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
5241	Insurance Carriers	74,714	77,859	4.2%	1.5
5242	Agencies, Brokerages, and Other Insurance Related Activities	46,222	54,367	17.6%	1.1
5251	Insurance and Employee Benefit Funds	94	76	-19.1%	1.0
5259	Other Investment Pools and Funds	1,195	1,500	25.5%	8.2
5311	Lessors of Real Estate	18,839	20,403	8.3%	0.7
5312	Offices of Real Estate Agents and Brokers	7,241	7,685	6.1%	0.6
5313	Activities Related to Real Estate	14,716	16,510	12.2%	0.6
5321	Automotive Equipment Rental and Leasing	7,196	8,157	13.4%	0.9
5322	Consumer Goods Rental	5,111	5,787	13.2%	0.8
5323	General Rental Centers	1,314	1,527	16.2%	0.8
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	6,369	7,900	24.0%	1.1
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	545	587	7.7%	0.6
5411	Legal Services	49,456	52,646	6.5%	1.1
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	34,488	37,182	7.8%	0.9
5413	Architectural, Engineering, and Related Services	62,528	70,402	12.6%	1.1
5414	Specialized Design Services	4,596	6,041	31.4%	0.9
5415	Computer Systems Design and Related Services	64,834	88,371	36.3%	0.9
5416	Management, Scientific, and Technical Consulting Services	47,606	56,499	18.7%	0.9
5417	Scientific Research and Development Services	27,821	32,608	17.2%	1.0
5418	Advertising, Public Relations, and Related Services	16,638	18,805	13.0%	0.8
5419	Other Professional, Scientific, and Technical Services	26,694	32,021	20.0%	1.0
5511	Management of Companies and Enterprises	132,758	151,533	14.1%	1.5
5611	Office Administrative Services	3,013	2,971	-1.4%	0.2
5612	Facilities Support Services	7,107	9,497	33.6%	1.3
5613	Employment Services	108,361	142,374	31.4%	0.8
5614	Business Support Services	31,017	30,873	-0.5%	0.9
5615	Travel Arrangement and Reservation Services	7,473	7,303	-2.3%	0.9
5616	Investigation and Security Services	35,130	40,626	15.6%	1.0
5617	Services to Buildings and Dwellings	77,070	85,180	10.5%	0.9
5619	Other Support Services	16,065	20,454	27.3%	1.3
5621	Waste Collection	8,790	10,772	22.5%	1.3
5622	Waste Treatment and Disposal	3,701	4,340	17.3%	0.7
5629	Remediation and Other Waste Management Services	5,497	6,665	21.2%	1.0
6111	Elementary and Secondary Schools	293,433	284,320	-3.1%	0.9
6112	Junior Colleges	19,599	19,470	-0.7%	0.7
6113	Colleges, Universities, and Professional Schools	147,018	152,009	3.4%	1.2

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
6114	Business Schools and Computer and Management Training	1,488	1,552	4.3%	0.5
6115	Technical and Trade Schools	4,549	5,250	15.4%	0.8
6116	Other Schools and Instruction	11,964	13,553	13.3%	0.8
6117	Educational Support Services	4,738	5,552	17.2%	0.8
6211	Offices of Physicians	110,432	120,550	9.2%	1.1
6212	Offices of Dentists	33,605	37,333	11.1%	0.9
6213	Offices of Other Health Practitioners	42,072	55,213	31.2%	1.3
6214	Outpatient Care Centers	39,858	50,842	27.6%	1.3
6215	Medical and Diagnostic Laboratories	11,186	13,110	17.2%	1.1
6216	Home Health Care Services	46,405	69,757	50.3%	0.9
6219	Other Ambulatory Health Care Services	20,808	25,540	22.7%	1.7
6221	General Medical and Surgical Hospitals	248,181	271,788	9.5%	1.1
6222	Psychiatric and Substance Abuse Hospitals	12,817	14,569	13.7%	1.3
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	25,123	33,972	35.2%	2.5
6231	Nursing Care Facilities (Skilled Nursing Facilities)	86,747	98,689	13.8%	1.2
6232	Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	55,870	64,223	15.0%	1.9
6233	Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	67,910	83,119	22.4%	1.9
6239	Other Residential Care Facilities	7,847	9,119	16.2%	1.1
6241	Individual and Family Services	115,858	156,278	34.9%	1.3
6242	Community Food and Housing, and Emergency and Other Relief Services	6,574	7,790	18.5%	1.0
6243	Vocational Rehabilitation Services	11,183	13,218	18.2%	0.8
6244	Child Day Care Services	41,350	48,707	17.8%	1.2
7111	Performing Arts Companies	4,279	4,651	8.7%	0.9
7112	Spectator Sports	6,003	6,796	13.2%	1.1
7113	Promoters of Performing Arts, Sports, and Similar Events	6,225	7,246	16.4%	1.2
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	183	201	9.8%	0.2
7115	Independent Artists, Writers, and Performers	1,039	1,208	16.3%	0.5
7121	Museums, Historical Sites, and Similar Institutions	8,204	9,334	13.8%	0.8
7131	Amusement Parks and Arcades	8,499	9,237	8.7%	1.1
7132	Gambling Industries	9,532	10,665	11.9%	0.9
7139	Other Amusement and Recreation Industries	50,039	56,373	12.7%	0.9
7211	Traveler Accommodation	54,602	59,608	9.2%	0.7
7212	RV (Recreational Vehicle) Parks and Recreational Camps	3,410	3,716	9.0%	1.4
7213	Rooming and Boarding Houses	298	337	13.1%	0.5
7223	Special Food Services	37,157	40,961	10.2%	1.4

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
7224	Drinking Places (Alcoholic Beverages)	16,795	17,189	2.3%	1.1
7225	Restaurants and Other Eating Places	334,874	368,731	10.1%	0.8
8111	Automotive Repair and Maintenance	35,864	39,112	9.1%	1.0
8112	Electronic and Precision Equipment Repair and Maintenance	4,677	5,137	9.8%	1.1
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	8,041	8,924	11.0%	1.0
8114	Personal and Household Goods Repair and Maintenance	2,050	2,062	0.6%	0.7
8121	Personal Care Services	36,613	42,621	16.4%	1.4
8122	Death Care Services	7,264	7,946	9.4%	1.3
8123	Drycleaning and Laundry Services	10,132	10,252	1.2%	0.8
8129	Other Personal Services	11,315	13,320	17.7%	0.9
8131	Religious Organizations	8,422	8,901	5.7%	1.1
8132	Grantmaking and Giving Services	5,904	6,115	3.6%	1.0
8133	Social Advocacy Organizations	7,260	8,042	10.8%	0.8
8134	Civic and Social Organizations	32,320	34,336	6.2%	2.0
8139	Business, Professional, Labor, Political, and Similar Organizations	18,554	19,869	7.1%	1.0
8141	Private Households	4,251	4,016	-5.5%	0.4
9211	Executive, Legislative, and Other General Government Support	116,028	111,895	-3.6%	0.9
9221	Justice, Public Order, and Safety Activities	56,126	54,636	-2.7%	0.7
9231	Administration of Human Resource Programs	15,577	14,996	-3.7%	0.5
9241	Administration of Environmental Quality Programs	9,512	9,564	0.5%	0.7
9251	Administration of Housing Programs, Urban Planning, and Community Development	5,444	5,219	-4.1%	1.6
9261	Administration of Economic Programs	11,794	11,257	-4.6%	0.5
9281	National Security and International Affairs	21,481	19,532	-9.1%	0.9

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

APPENDIX D: OCCUPATION PROJECTIONS 2014-2024 FOR PENNSYLVANIA

For this analysis a “skilled” occupation is defined as an occupation in O*NET Job Zones¹⁵ 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.¹⁶

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.

¹⁵ <https://www.onetonline.org/help/online/zones>

¹⁶ <http://www.onetcenter.org/overview.html>

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

JOB ZONE THREE: Medium Preparation Needed

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

JOB ZONE FOUR: Considerable Preparation Needed

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

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

JOB ZONE FIVE: Extensive Preparation Needed

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

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
Total	All Occupations	NA	5,643,677	6,179,890	9.5%	2,126,666
11-1011	Chief Executives	5	11,195	11,047	-1.3%	2,509
11-1021	General and Operations Managers	4	65,499	76,216	16.4%	22,377
11-1031	Legislators	4	2,061	1,648	-20.0%	125
11-2011	Advertising and Promotions Managers	4	630	544	-13.7%	123
11-2021	Marketing Managers	4	5,432	5,966	9.8%	1,712
11-2022	Sales Managers	4	10,175	10,236	0.6%	2,259
11-2031	Public Relations and Fundraising Managers	4	1,671	1,623	-2.9%	308
11-3011	Administrative Services Managers	3	8,004	8,135	1.6%	1,357
11-3021	Computer and Information Systems Managers	4	10,785	14,072	30.5%	4,864
11-3031	Financial Managers	4	14,887	14,848	-0.3%	2,715
11-3051	Industrial Production Managers	4	6,563	6,344	-3.3%	1,294
11-3061	Purchasing Managers	4	2,031	1,895	-6.7%	326
11-3071	Transportation, Storage, and Distribution Managers	4	3,502	4,003	14.3%	1,364
11-3111	Compensation and Benefits Managers	4	740	645	-12.8%	133
11-3121	Human Resources Managers	4	3,402	4,204	23.6%	1,688
11-3131	Training and Development Managers	4	890	1,095	23.0%	441
11-9021	Construction Managers	4	6,023	7,753	28.7%	2,606
11-9031	Education Administrators, Preschool and Childcare Center/Program	4	2,031	2,221	9.4%	735
11-9032	Education Administrators, Elementary and Secondary School	5	7,713	7,128	-7.6%	1,962
11-9033	Education Administrators, Postsecondary	5	5,192	5,049	-2.8%	1,331
11-9039	Education Administrators, All Other	5	700	837	19.6%	331
11-9041	Architectural and Engineering Managers	5	5,442	5,756	5.8%	1,723
11-9051	Food Service Managers	3	5,703	6,306	10.6%	1,758
11-9061	Funeral Service Managers	3	540	537	-0.6%	162
11-9071	Gaming Managers	3	160	178	11.3%	51
11-9081	Lodging Managers	3	1,040	1,220	17.3%	631
11-9111	Medical and Health Services Managers	5	13,336	14,546	9.1%	4,453
11-9121	Natural Sciences Managers	5	1,601	1,778	11.1%	573
11-9131	Postmasters and Mail Superintendents	3	1,080	686	-36.5%	83
11-9141	Property, Real Estate, and Community Association Managers	4	3,121	3,723	19.3%	1,404
11-9151	Social and Community Service Managers	4	5,843	6,965	19.2%	2,465
11-9161	Emergency Management Directors	4	390	324	-16.9%	3
11-9199	Managers, All Other	4	7,893	8,573	8.6%	2,399
13-1011	Agents and Business Managers of Artists, Performers, and Athletes	4	130	126	-3.1%	40

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
13-1021	Buyers and Purchasing Agents, Farm Products	4	400	415	3.8%	119
13-1022	Wholesale and Retail Buyers, Except Farm Products	3	4,233	3,997	-5.6%	919
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	4	14,469	14,742	1.9%	3,368
13-1031	Claims Adjusters, Examiners, and Investigators	4	14,329	15,176	5.9%	5,093
13-1032	Insurance Appraisers, Auto Damage	3	750	915	22.0%	434
13-1041	Compliance Officers	4	10,867	12,563	15.6%	3,950
13-1051	Cost Estimators	4	9,896	11,147	12.6%	4,614
13-1071	Human Resources Specialists	4	19,642	24,278	23.6%	8,830
13-1075	Labor Relations Specialists	4	5,403	4,486	-17.0%	698
13-1081	Logisticians	4	6,004	7,149	19.1%	1,944
13-1111	Management Analysts	4	21,463	26,143	21.8%	8,251
13-1121	Meeting, Convention, and Event Planners	4	3,012	3,994	32.6%	1,443
13-1131	Fundraisers	4	2,802	3,511	25.3%	1,340
13-1141	Compensation, Benefits, and Job Analysis Specialists	4	3,672	3,461	-5.7%	607
13-1151	Training and Development Specialists	4	10,527	12,115	15.1%	3,674
13-1161	Market Research Analysts and Marketing Specialists	4	23,315	30,907	32.6%	11,326
13-1199	Business Operations Specialists, All Other	4	16,630	16,659	0.2%	2,001
13-2011	Accountants and Auditors	4	54,384	59,962	10.3%	23,682
13-2021	Appraisers and Assessors of Real Estate	4	1,481	1,485	0.3%	230
13-2031	Budget Analysts	4	1,981	2,128	7.4%	981
13-2041	Credit Analysts	4	2,201	2,513	14.2%	969
13-2051	Financial Analysts	4	11,597	14,084	21.4%	5,522
13-2052	Personal Financial Advisors	4	8,095	11,458	41.5%	4,871
13-2053	Insurance Underwriters	4	5,393	5,780	7.2%	2,489
13-2061	Financial Examiners	4	1,521	1,671	9.9%	638
13-2071	Credit Counselors	4	1,791	2,261	26.2%	855
13-2072	Loan Officers	3	11,827	13,083	10.6%	4,529
13-2081	Tax Examiners and Collectors, and Revenue Agents	3	4,043	3,497	-13.5%	1,095
13-2082	Tax Preparers	3	2,111	1,854	-12.2%	385
13-2099	Financial Specialists, All Other	4	3,852	3,722	-3.4%	391
15-1111	Computer and Information Research Scientists	5	280	291	3.9%	46
15-1121	Computer Systems Analysts	4	23,193	31,622	36.3%	12,531
15-1122	Information Security Analysts	4	2,451	3,490	42.4%	1,417
15-1131	Computer Programmers	4	14,318	18,478	29.1%	8,849
15-1132	Software Developers, Applications	4	21,322	28,985	35.9%	10,702
15-1133	Software Developers, Systems Software	4	10,186	10,254	0.7%	1,321
15-1134	Web Developers	3	3,922	5,125	30.7%	1,842

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
15-1141	Database Administrators	4	5,423	6,792	25.2%	2,493
15-1142	Network and Computer Systems Administrators	4	14,609	14,022	-4.0%	1,922
15-1143	Computer Network Architects	4	3,642	4,351	19.5%	1,289
15-1151	Computer User Support Specialists	3	25,365	33,260	31.1%	12,436
15-1152	Computer Network Support Specialists	4	5,383	5,664	5.2%	1,309
15-1199	Computer Occupations, All Other	4	6,964	8,249	18.5%	2,513
15-2011	Actuaries	4	1,551	1,987	28.1%	938
15-2031	Operations Research Analysts	5	2,692	3,276	21.7%	1,220
15-2041	Statisticians	5	1,991	2,712	36.2%	1,408
17-1011	Architects, Except Landscape and Naval	4	2,955	3,519	19.1%	1,612
17-1012	Landscape Architects	4	851	1,124	32.1%	540
17-1021	Cartographers and Photogrammetrists	4	240	262	9.2%	71
17-1022	Surveyors	4	1,613	1,874	16.2%	684
17-2011	Aerospace Engineers	4	1,292	1,659	28.4%	703
17-2021	Agricultural Engineers	4	100	119	19.0%	55
17-2031	Biomedical Engineers	4	972	994	2.3%	288
17-2041	Chemical Engineers	4	1,633	1,589	-2.7%	434
17-2051	Civil Engineers	4	12,672	14,662	15.7%	5,445
17-2061	Computer Hardware Engineers	4	1,222	1,109	-9.2%	148
17-2071	Electrical Engineers	4	6,612	7,552	14.2%	2,583
17-2072	Electronics Engineers, Except Computer	4	3,486	2,980	-14.5%	368
17-2081	Environmental Engineers	5	3,246	3,917	20.7%	1,610
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	4	1,222	1,254	2.6%	427
17-2112	Industrial Engineers	4	9,426	9,395	-0.3%	3,163
17-2131	Materials Engineers	4	1,312	1,661	26.6%	846
17-2141	Mechanical Engineers	4	10,498	10,601	1.0%	4,067
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	4	311	280	-10.0%	88
17-2161	Nuclear Engineers	4	1,693	2,017	19.1%	902
17-2171	Petroleum Engineers	4	831	1,189	43.1%	655
17-2199	Engineers, All Other	4	3,576	4,521	26.4%	1,668
17-3011	Architectural and Civil Drafters	4	4,708	5,150	9.4%	1,577
17-3012	Electrical and Electronics Drafters	3	1,272	1,102	-13.4%	42
17-3013	Mechanical Drafters	3	3,767	3,401	-9.7%	458
17-3019	Drafters, All Other	3	260	316	21.5%	94
17-3021	Aerospace Engineering and Operations Technicians	4	120	137	14.2%	42
17-3022	Civil Engineering Technicians	3	2,374	2,799	17.9%	1,020
17-3023	Electrical and Electronics Engineering Technicians	3	4,137	3,530	-14.7%	416

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
17-3024	Electro-Mechanical Technicians	3	581	516	-11.2%	108
17-3025	Environmental Engineering Technicians	4	1,232	1,488	20.8%	578
17-3026	Industrial Engineering Technicians	3	1,813	1,843	1.7%	482
17-3027	Mechanical Engineering Technicians	3	1,783	2,090	17.2%	737
17-3029	Engineering Technicians, Except Drafters, All Other	3	2,745	3,579	30.4%	1,517
17-3031	Surveying and Mapping Technicians	3	1,553	1,940	24.9%	728
19-1012	Food Scientists and Technologists	4	361	435	20.5%	200
19-1013	Soil and Plant Scientists	5	150	190	26.7%	103
19-1021	Biochemists and Biophysicists	5	1,755	2,477	41.1%	1,257
19-1022	Microbiologists	5	1,093	1,475	34.9%	747
19-1023	Zoologists and Wildlife Biologists	5	251	226	-10.0%	46
19-1029	Biological Scientists, All Other	5	431	415	-3.7%	121
19-1031	Conservation Scientists	4	562	620	10.3%	240
19-1032	Foresters	4	351	361	2.8%	116
19-1041	Epidemiologists	5	120	100	-16.7%	8
19-1042	Medical Scientists, Except Epidemiologists	5	5,796	7,287	25.7%	2,882
19-1099	Life Scientists, All Other	5	160	184	15.0%	56
19-2012	Physicists	5	191	162	-15.2%	12
19-2021	Atmospheric and Space Scientists	4	90	77	-14.4%	7
19-2031	Chemists	4	5,685	6,546	15.1%	2,695
19-2032	Materials Scientists	5	361	383	6.1%	131
19-2041	Environmental Scientists and Specialists, Including Health	4	2,918	3,707	27.0%	1,725
19-2042	Geoscientists, Except Hydrologists and Geographers	4	1,193	1,374	15.2%	605
19-2043	Hydrologists	4	170	164	-3.5%	48
19-2099	Physical Scientists, All Other	5	311	249	-19.9%	9
19-3011	Economists	5	572	639	11.7%	260
19-3022	Survey Researchers	5	2,677	2,778	3.8%	958
19-3031	Clinical, Counseling, and School Psychologists	5	5,415	5,659	4.5%	1,882
19-3039	Psychologists, All Other	5	411	496	20.7%	206
19-3041	Sociologists	5	130	122	-6.2%	64
19-3051	Urban and Regional Planners	5	1,685	1,728	2.6%	851
19-3091	Anthropologists and Archeologists	5	50	59	18.0%	17
19-3093	Historians	5	90	72	-20.0%	1
19-3099	Social Scientists and Related Workers, All Other	4	471	456	-3.2%	82
19-4011	Agricultural and Food Science Technicians	3	381	326	-14.4%	92
19-4021	Biological Technicians	4	4,151	4,853	16.9%	2,071
19-4031	Chemical Technicians	3	4,121	4,879	18.4%	2,068

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
19-4041	Geological and Petroleum Technicians	4	712	937	31.6%	579
19-4051	Nuclear Technicians	3	1,113	1,280	15.0%	657
19-4061	Social Science Research Assistants	4	732	928	26.8%	531
19-4091	Environmental Science and Protection Technicians, Including Health	4	1,705	2,169	27.2%	1,231
19-4092	Forensic Science Technicians	4	150	150	0.0%	63
19-4093	Forest and Conservation Technicians	3	371	398	7.3%	207
19-4099	Life, Physical, and Social Science Technicians, All Other	3	2,005	2,204	9.9%	1,034
21-1011	Substance Abuse and Behavioral Disorder Counselors	5	7,802	7,956	2.0%	2,373
21-1012	Educational, Guidance, School, and Vocational Counselors	5	10,993	11,257	2.4%	2,848
21-1013	Marriage and Family Therapists	5	1,200	1,511	25.9%	579
21-1014	Mental Health Counselors	5	11,163	12,040	7.9%	3,928
21-1015	Rehabilitation Counselors	5	7,042	8,884	26.2%	3,822
21-1019	Counselors, All Other	5	970	995	2.6%	238
21-1021	Child, Family, and School Social Workers	4	16,344	18,693	14.4%	6,172
21-1022	Healthcare Social Workers	5	7,972	10,220	28.2%	4,103
21-1023	Mental Health and Substance Abuse Social Workers	5	10,113	12,271	21.3%	4,999
21-1029	Social Workers, All Other	5	1,020	1,089	6.8%	299
21-1091	Health Educators	4	2,701	3,067	13.6%	1,102
21-1092	Probation Officers and Correctional Treatment Specialists	4	4,081	4,044	-0.9%	1,286
21-1093	Social and Human Service Assistants	4	22,576	25,478	12.9%	9,638
21-1094	Community Health Workers	4	1,130	1,203	6.5%	360
21-1099	Community and Social Service Specialists, All Other	4	1,490	1,615	8.4%	484
21-2011	Clergy	5	1,880	2,240	19.1%	816
21-2021	Directors, Religious Activities and Education	4	1,550	1,843	18.9%	986
21-2099	Religious Workers, All Other	4	410	333	-18.8%	60
23-1011	Lawyers	5	24,745	27,197	9.9%	6,676
23-1012	Judicial Law Clerks	5	1,170	1,214	3.8%	286
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	5	720	651	-9.6%	76
23-1022	Arbitrators, Mediators, and Conciliators	5	320	393	22.8%	125
23-1023	Judges, Magistrate Judges, and Magistrates	5	270	228	-15.6%	16
23-2011	Paralegals and Legal Assistants	3	10,122	12,502	23.5%	4,094
23-2091	Court Reporters	3	910	951	4.5%	281
23-2093	Title Examiners, Abstractors, and Searchers	3	2,811	3,175	12.9%	998
23-2099	Legal Support Workers, All Other	3	710	694	-2.3%	111

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
25-1011	Business Teachers, Postsecondary	5	4,892	5,729	17.1%	1,572
25-1021	Computer Science Teachers, Postsecondary	5	2,181	2,568	17.7%	714
25-1022	Mathematical Science Teachers, Postsecondary	5	3,021	3,238	7.2%	673
25-1031	Architecture Teachers, Postsecondary	5	520	635	22.1%	193
25-1032	Engineering Teachers, Postsecondary	5	2,901	3,497	20.5%	1,031
25-1041	Agricultural Sciences Teachers, Postsecondary	5	380	330	-13.2%	17
25-1042	Biological Science Teachers, Postsecondary	5	3,902	4,135	6.0%	826
25-1043	Forestry and Conservation Science Teachers, Postsecondary	5	140	125	-10.7%	7
25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	5	880	990	12.5%	243
25-1052	Chemistry Teachers, Postsecondary	5	1,611	1,824	13.2%	456
25-1053	Environmental Science Teachers, Postsecondary	5	320	319	-0.3%	48
25-1054	Physics Teachers, Postsecondary	5	1,110	1,312	18.2%	368
25-1061	Anthropology and Archeology Teachers, Postsecondary	5	350	352	0.6%	57
25-1062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	5	490	533	8.8%	118
25-1063	Economics Teachers, Postsecondary	5	1,181	1,372	16.2%	370
25-1064	Geography Teachers, Postsecondary	5	360	399	10.8%	94
25-1065	Political Science Teachers, Postsecondary	5	1,201	1,314	9.4%	298
25-1066	Psychology Teachers, Postsecondary	5	2,471	2,700	9.3%	602
25-1067	Sociology Teachers, Postsecondary	5	1,641	1,943	18.4%	549
25-1069	Social Sciences Teachers, Postsecondary, All Other	5	500	618	23.6%	193
25-1071	Health Specialties Teachers, Postsecondary	5	7,183	7,453	3.8%	1,362
25-1072	Nursing Instructors and Teachers, Postsecondary	5	3,211	3,277	2.1%	551
25-1081	Education Teachers, Postsecondary	5	3,732	3,815	2.2%	652
25-1082	Library Science Teachers, Postsecondary	5	360	424	17.8%	118
25-1111	Criminal Justice and Law Enforcement Teachers, Postsecondary	5	570	600	5.3%	118
25-1112	Law Teachers, Postsecondary	5	570	647	13.5%	163
25-1113	Social Work Teachers, Postsecondary	5	650	614	-5.5%	64
25-1121	Art, Drama, and Music Teachers, Postsecondary	5	5,222	6,406	22.7%	1,967
25-1122	Communications Teachers, Postsecondary	5	1,641	1,861	13.4%	469
25-1123	English Language and Literature Teachers, Postsecondary	5	4,622	4,727	2.3%	807
25-1124	Foreign Language and Literature Teachers, Postsecondary	5	1,891	2,134	12.9%	530
25-1125	History Teachers, Postsecondary	5	1,541	1,704	10.6%	398
25-1126	Philosophy and Religion Teachers, Postsecondary	5	1,581	1,720	8.8%	383

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
25-1191	Graduate Teaching Assistants	5	1,571	1,818	15.7%	484
25-1192	Home Economics Teachers, Postsecondary	5	120	106	-11.7%	5
25-1193	Recreation and Fitness Studies Teachers, Postsecondary	5	1,030	1,036	0.6%	163
25-1194	Vocational Education Teachers, Postsecondary	3	4,722	4,573	-3.2%	571
25-1199	Postsecondary Teachers, All Other	5	4,492	5,377	19.7%	1,559
25-2011	Preschool Teachers, Except Special Education	3	14,526	18,977	30.6%	8,622
25-2012	Kindergarten Teachers, Except Special Education	4	5,863	5,608	-4.3%	1,548
25-2021	Elementary School Teachers, Except Special Education	4	55,324	53,736	-2.9%	12,330
25-2022	Middle School Teachers, Except Special and Career/Technical Education	4	24,071	26,935	11.9%	8,910
25-2023	Career/Technical Education Teachers, Middle School	4	620	724	16.8%	290
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	4	50,953	47,611	-6.6%	14,012
25-2032	Career/Technical Education Teachers, Secondary School	4	4,482	3,974	-11.3%	957
25-2051	Special Education Teachers, Preschool	4	650	767	18.0%	235
25-2052	Special Education Teachers, Kindergarten and Elementary School	4	10,645	10,861	2.0%	2,628
25-2053	Special Education Teachers, Middle School	4	3,722	3,673	-1.3%	802
25-2054	Special Education Teachers, Secondary School	4	7,823	7,975	1.9%	2,053
25-2059	Special Education Teachers, All Other	4	250	292	16.8%	75
25-3011	Adult Basic and Secondary Education and Literacy Teachers and Instructors	4	1,431	1,320	-7.8%	188
25-3021	Self-Enrichment Education Teachers	3	7,954	7,740	-2.7%	1,485
25-3097	Teachers and Instructors, All Other, Except Substitute Teachers	3	5,192	6,205	19.5%	1,901
25-3098	Substitute Teachers	3	15,977	14,234	-10.9%	1,592
25-4011	Archivists	5	330	382	15.8%	130
25-4012	Curators	5	500	618	23.6%	240
25-4013	Museum Technicians and Conservators	4	550	709	28.9%	304
25-4021	Librarians	5	5,512	5,470	-0.8%	1,321
25-4031	Library Technicians	4	3,101	3,165	2.1%	1,810
25-9011	Audio-Visual and Multimedia Collections Specialists	4	230	245	6.5%	61
25-9021	Farm and Home Management Advisors	5	50	40	-20.0%	1
25-9031	Instructional Coordinators	5	4,322	4,512	4.4%	563
25-9041	Teacher Assistants	3	45,510	47,400	4.2%	13,200
25-9099	Education, Training, and Library Workers, All Other	4	900	899	-0.1%	82
27-1011	Art Directors	4	1,251	1,434	14.6%	546

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27-1012	Craft Artists	2	70	59	-15.7%	6
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	3	310	309	-0.3%	99
27-1014	Multimedia Artists and Animators	4	510	580	13.7%	202
27-1019	Artists and Related Workers, All Other	4	110	82	-25.5%	2
27-1021	Commercial and Industrial Designers	4	840	717	-14.6%	133
27-1022	Fashion Designers	3	210	191	-9.0%	48
27-1023	Floral Designers	2	2,131	1,478	-30.6%	450
27-1024	Graphic Designers	4	8,704	9,318	7.1%	3,370
27-1025	Interior Designers	4	1,501	1,903	26.8%	1,000
27-1026	Merchandise Displayers and Window Trimmers	3	2,761	3,306	19.7%	1,350
27-1027	Set and Exhibit Designers	5	280	344	22.9%	144
27-1029	Designers, All Other	4	7	6	-14.3%	0
27-2011	Actors	2	1,571	1,476	-6.0%	511
27-2012	Producers and Directors	4	2,701	2,944	9.0%	1,424
27-2021	Athletes and Sports Competitors	2	920	1,076	17.0%	511
27-2022	Coaches and Scouts	4	7,573	7,163	-5.4%	1,990
27-2023	Umpires, Referees, and Other Sports Officials	3	340	313	-7.9%	74
27-2031	Dancers	3	130	109	-16.2%	25
27-2032	Choreographers	4	200	225	12.5%	94
27-2041	Music Directors and Composers	3	960	758	-21.0%	139
27-2042	Musicians and Singers	3	1,030	936	-9.1%	307
27-2099	Entertainers and Performers, Sports and Related Workers, All Other	3	90	88	-2.2%	2
27-3011	Radio and Television Announcers	3	1,341	1,347	0.4%	635
27-3012	Public Address System and Other Announcers	2	210	248	18.1%	96
27-3022	Reporters and Correspondents	4	1,391	1,056	-24.1%	394
27-3031	Public Relations Specialists	4	9,434	9,302	-1.4%	1,313
27-3041	Editors	4	3,271	2,953	-9.7%	738
27-3042	Technical Writers	4	1,381	1,338	-3.1%	388
27-3043	Writers and Authors	4	1,571	1,556	-1.0%	380
27-3091	Interpreters and Translators	4	960	986	2.7%	155
27-3099	Media and Communication Workers, All Other	4	310	267	-13.9%	9
27-4011	Audio and Video Equipment Technicians	3	1,971	2,069	5.0%	529
27-4012	Broadcast Technicians	3	650	666	2.5%	194
27-4014	Sound Engineering Technicians	3	310	284	-8.4%	55
27-4021	Photographers	3	2,021	1,786	-11.6%	360
27-4031	Camera Operators, Television, Video, and Motion Picture	3	490	446	-9.0%	29

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
27-4032	Film and Video Editors	3	310	271	-12.6%	9
27-4099	Media and Communication Equipment Workers, All Other	3	210	163	-22.4%	4
29-1011	Chiropractors	5	1,321	1,834	38.8%	809
29-1021	Dentists, General	5	3,662	4,139	13.0%	1,395
29-1022	Oral and Maxillofacial Surgeons	5	134	142	6.0%	41
29-1023	Orthodontists	5	100	125	25.0%	49
29-1029	Dentists, All Other Specialists	5	100	90	-10.0%	21
29-1031	Dietitians and Nutritionists	5	3,191	3,377	5.8%	602
29-1041	Optometrists	5	1,381	1,813	31.3%	896
29-1051	Pharmacists	5	12,415	13,396	7.9%	4,258
29-1061	Anesthesiologists	5	1,531	1,622	5.9%	516
29-1062	Family and General Practitioners	5	6,513	7,051	8.3%	2,356
29-1063	Internists, General	5	990	924	-6.7%	179
29-1064	Obstetricians and Gynecologists	5	340	432	27.1%	167
29-1065	Pediatricians, General	5	370	465	25.7%	169
29-1066	Psychiatrists	5	980	979	-0.1%	275
29-1067	Surgeons	5	2,091	2,688	28.6%	1,154
29-1069	Physicians and Surgeons, All Other	5	15,007	16,213	8.0%	5,145
29-1071	Physician Assistants	5	4,952	5,595	13.0%	1,617
29-1081	Podiatrists	5	510	724	42.0%	420
29-1122	Occupational Therapists	5	6,283	8,498	35.3%	3,201
29-1123	Physical Therapists	5	10,685	14,539	36.1%	6,878
29-1124	Radiation Therapists	3	780	744	-4.6%	121
29-1125	Recreational Therapists	4	1,401	1,509	7.7%	449
29-1126	Respiratory Therapists	3	5,242	6,224	18.7%	1,739
29-1127	Speech-Language Pathologists	5	4,782	6,486	35.6%	2,411
29-1128	Exercise Physiologists	5	330	442	33.9%	152
29-1129	Therapists, All Other	4	390	558	43.1%	212
29-1131	Veterinarians	5	2,721	3,630	33.4%	1,880
29-1141	Registered Nurses	3	128,807	154,599	20.0%	51,874
29-1151	Nurse Anesthetists	5	2,051	2,269	10.6%	648
29-1161	Nurse Midwives	5	150	213	42.0%	89
29-1171	Nurse Practitioners	5	3,912	5,106	30.5%	1,907
29-1181	Audiologists	5	560	700	25.0%	267
29-1199	Health Diagnosing and Treating Practitioners, All Other	5	510	441	-13.5%	47
29-2011	Medical and Clinical Laboratory Technologists	4	8,584	9,424	9.8%	3,441

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
29-2012	Medical and Clinical Laboratory Technicians	3	9,584	10,955	14.3%	4,105
29-2021	Dental Hygienists	3	9,174	11,245	22.6%	4,555
29-2031	Cardiovascular Technologists and Technicians	3	2,931	3,719	26.9%	1,227
29-2032	Diagnostic Medical Sonographers	3	2,421	2,932	21.1%	851
29-2033	Nuclear Medicine Technologists	3	1,020	1,086	6.5%	215
29-2034	Radiologic Technologists	3	9,764	11,232	15.0%	2,980
29-2035	Magnetic Resonance Imaging Technologists	3	1,361	1,772	30.2%	628
29-2041	Emergency Medical Technicians and Paramedics	3	13,076	15,427	18.0%	6,661
29-2051	Dietetic Technicians	2	2,971	4,114	38.5%	1,493
29-2052	Pharmacy Technicians	3	14,586	16,116	10.5%	3,214
29-2053	Psychiatric Technicians	3	1,551	1,728	11.4%	491
29-2054	Respiratory Therapy Technicians	3	490	460	-6.1%	19
29-2055	Surgical Technologists	3	3,472	4,452	28.2%	1,312
29-2056	Veterinary Technologists and Technicians	3	4,212	5,624	33.5%	1,858
29-2057	Ophthalmic Medical Technicians	3	1,120	1,501	34.0%	519
29-2061	Licensed Practical and Licensed Vocational Nurses	3	36,876	46,128	25.1%	18,990
29-2071	Medical Records and Health Information Technicians	3	7,964	9,855	23.7%	4,037
29-2081	Opticians, Dispensing	3	3,131	4,233	35.2%	2,171
29-2091	Orthotists and Prosthetists	5	300	362	20.7%	92
29-2092	Hearing Aid Specialists	3	146	162	11.0%	31
29-2099	Health Technologists and Technicians, All Other	3	2,231	2,694	20.8%	639
29-9011	Occupational Health and Safety Specialists	4	2,411	2,624	8.8%	922
29-9012	Occupational Health and Safety Technicians	3	570	643	12.8%	232
29-9091	Athletic Trainers	5	1,291	1,729	33.9%	818
29-9099	Healthcare Practitioners and Technical Workers, All Other	4	900	821	-8.8%	148
31-1011	Home Health Aides	2	54,641	73,969	35.4%	34,352
31-1013	Psychiatric Aides	2	1,891	1,920	1.5%	509
31-1014	Nursing Assistants	2	75,720	88,822	17.3%	28,393
31-1015	Orderlies	2	2,381	2,687	12.9%	767
31-2011	Occupational Therapy Assistants	3	2,481	3,409	37.4%	1,693
31-2012	Occupational Therapy Aides	3	600	923	53.8%	493
31-2021	Physical Therapist Assistants	3	4,652	6,680	43.6%	3,285
31-2022	Physical Therapist Aides	2	2,231	3,013	35.1%	1,307
31-9011	Massage Therapists	3	2,291	3,160	37.9%	1,099
31-9091	Dental Assistants	3	12,535	14,009	11.8%	4,222
31-9092	Medical Assistants	3	23,869	28,903	21.1%	9,826

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31-9093	Medical Equipment Preparers	2	1,891	2,265	19.8%	733
31-9094	Medical Transcriptionists	3	3,912	3,308	-15.4%	457
31-9095	Pharmacy Aides	2	1,491	1,274	-14.6%	138
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	3	2,491	2,606	4.6%	638
31-9097	Phlebotomists	3	5,302	6,552	23.6%	2,479
31-9099	Healthcare Support Workers, All Other	3	1,461	1,343	-8.1%	117
33-1011	First-Line Supervisors of Correctional Officers	3	1,321	1,377	4.2%	562
33-1012	First-Line Supervisors of Police and Detectives	3	2,931	3,325	13.4%	1,370
33-1021	First-Line Supervisors of Fire Fighting and Prevention Workers	3	790	892	12.9%	462
33-1099	First-Line Supervisors of Protective Service Workers, All Other	3	2,181	2,721	24.8%	1,214
33-2011	Firefighters	3	4,892	4,944	1.1%	1,532
33-2021	Fire Inspectors and Investigators	3	240	201	-16.3%	46
33-3011	Bailiffs	2	210	162	-22.9%	19
33-3012	Correctional Officers and Jailers	3	16,217	14,785	-8.8%	3,594
33-3021	Detectives and Criminal Investigators	3	2,701	2,698	-0.1%	691
33-3041	Parking Enforcement Workers	2	450	501	11.3%	224
33-3051	Police and Sheriff's Patrol Officers	3	27,582	26,483	-4.0%	8,796
33-3052	Transit and Railroad Police	3	80	62	-22.5%	7
33-9011	Animal Control Workers	2	260	270	3.8%	78
33-9021	Private Detectives and Investigators	3	1,561	1,407	-9.9%	444
33-9031	Gaming Surveillance Officers and Gaming Investigators	2	510	573	12.4%	295
33-9032	Security Guards	2	43,169	50,856	17.8%	19,777
33-9091	Crossing Guards	1	4,222	3,532	-16.3%	372
33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	2	5,492	6,180	12.5%	4,667
33-9093	Transportation Security Screeners	2	1,271	1,164	-8.4%	240
33-9099	Protective Service Workers, All Other	2	3,311	3,937	18.9%	3,000
35-1011	Chefs and Head Cooks	3	4,742	5,056	6.6%	1,255
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	2	29,683	33,419	12.6%	12,852
35-2011	Cooks, Fast Food	1	8,684	7,857	-9.5%	1,071
35-2012	Cooks, Institution and Cafeteria	2	18,748	18,924	0.9%	4,069
35-2014	Cooks, Restaurant	2	40,578	52,327	29.0%	21,183
35-2015	Cooks, Short Order	1	7,443	8,869	19.2%	3,262
35-2021	Food Preparation Workers	1	35,346	32,802	-7.2%	8,633
35-3011	Bartenders	2	31,234	33,562	7.5%	15,499

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
35-3021	Combined Food Preparation and Serving Workers, Including Fast Food	1	134,139	154,195	15.0%	77,679
35-3022	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	1	11,835	11,250	-4.9%	7,045
35-3031	Waiters and Waitresses	1	97,283	109,443	12.5%	63,644
35-3041	Food Servers, Nonrestaurant	1	13,216	14,899	12.7%	5,947
35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers	1	14,927	15,534	4.1%	7,828
35-9021	Dishwashers	1	21,710	20,943	-3.5%	9,767
35-9031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	1	14,666	15,735	7.3%	12,912
35-9099	Food Preparation and Serving Related Workers, All Other	1	1,181	1,484	25.7%	987
37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	2	6,313	6,795	7.6%	2,231
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	3	2,841	2,938	3.4%	430
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	2	88,429	92,434	4.5%	24,283
37-2012	Maids and Housekeeping Cleaners	2	36,456	40,488	11.1%	13,331
37-2019	Building Cleaning Workers, All Other	2	370	335	-9.5%	40
37-2021	Pest Control Workers	2	1,721	2,137	24.2%	958
37-3011	Landscaping and Groundskeeping Workers	1	33,835	37,787	11.7%	13,811
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	2	510	461	-9.6%	88
37-3013	Tree Trimmers and Pruners	2	2,951	3,892	31.9%	1,955
37-3019	Grounds Maintenance Workers, All Other	2	90	78	-13.3%	5
39-1011	Gaming Supervisors	2	1,100	1,274	15.8%	765
39-1012	Slot Supervisors	2	60	69	15.0%	21
39-1021	First-Line Supervisors of Personal Service Workers	3	7,663	9,792	27.8%	3,653
39-2011	Animal Trainers	2	270	257	-4.8%	115
39-2021	Nonfarm Animal Caretakers	1	5,693	6,721	18.1%	1,913
39-3011	Gaming Dealers	2	4,832	5,554	14.9%	3,153
39-3012	Gaming and Sports Book Writers and Runners	2	110	129	17.3%	61
39-3019	Gaming Service Workers, All Other	2	70	80	14.3%	15
39-3021	Motion Picture Projectionists	2	290	267	-7.9%	147
39-3031	Ushers, Lobby Attendants, and Ticket Takers	2	4,782	5,356	12.0%	3,538
39-3091	Amusement and Recreation Attendants	1	13,936	15,763	13.1%	9,746
39-3092	Costume Attendants	2	140	141	0.7%	78
39-3093	Locker Room, Coatroom, and Dressing Room Attendants	2	790	709	-10.3%	346
39-3099	Entertainment Attendants and Related Workers, All Other	2	670	684	2.1%	413

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
39-4021	Funeral Attendants	2	2,001	2,353	17.6%	996
39-4031	Morticians, Undertakers, and Funeral Directors	3	1,211	1,542	27.3%	691
39-5011	Barbers	3	690	743	7.7%	269
39-5012	Hairdressers, Hairstylists, and Cosmetologists	3	24,351	28,440	16.8%	10,977
39-5092	Manicurists and Pedicurists	2	3,331	3,729	11.9%	741
39-5093	Shampooers	2	1,421	1,480	4.2%	303
39-5094	Skincare Specialists	3	1,120	1,094	-2.3%	61
39-6011	Baggage Porters and Bellhops	2	1,181	1,347	14.1%	616
39-6012	Concierges	3	710	901	26.9%	379
39-7011	Tour Guides and Escorts	3	1,401	1,423	1.6%	770
39-7012	Travel Guides	3	90	77	-14.4%	44
39-9011	Childcare Workers	3	22,600	21,429	-5.2%	5,579
39-9021	Personal Care Aides	2	61,637	93,324	51.4%	39,915
39-9031	Fitness Trainers and Aerobics Instructors	3	10,975	12,920	17.7%	3,865
39-9032	Recreation Workers	4	12,746	15,997	25.5%	4,776
39-9041	Residential Advisors	3	7,593	9,826	29.4%	6,043
39-9099	Personal Care and Service Workers, All Other	3	1,271	1,118	-12.0%	202
41-1011	First-Line Supervisors of Retail Sales Workers	2	42,746	44,132	3.2%	11,013
41-1012	First-Line Supervisors of Non-Retail Sales Workers	4	8,902	8,245	-7.4%	674
41-2011	Cashiers	1	147,814	140,880	-4.7%	62,577
41-2012	Gaming Change Persons and Booth Cashiers	2	290	320	10.3%	285
41-2021	Counter and Rental Clerks	1	14,689	15,620	6.3%	5,261
41-2022	Parts Salespersons	2	9,823	11,218	14.2%	4,331
41-2031	Retail Salespersons	2	195,146	206,101	5.6%	81,800
41-3011	Advertising Sales Agents	3	5,717	5,338	-6.6%	1,956
41-3021	Insurance Sales Agents	4	16,872	17,695	4.9%	5,937
41-3031	Securities, Commodities, and Financial Services Sales Agents	4	11,024	11,893	7.9%	3,943
41-3041	Travel Agents	3	2,573	2,237	-13.1%	1,006
41-3099	Sales Representatives, Services, All Other	4	30,180	38,249	26.7%	16,728
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	4	10,554	9,366	-11.3%	1,172
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	4	63,944	60,271	-5.7%	11,182
41-9011	Demonstrators and Product Promoters	2	1,742	1,745	0.2%	533
41-9012	Models	1	120	141	17.5%	59
41-9021	Real Estate Brokers	4	1,021	869	-14.9%	27
41-9022	Real Estate Sales Agents	3	6,979	7,595	8.8%	1,782

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
41-9031	Sales Engineers	4	3,004	3,130	4.2%	773
41-9041	Telemarketers	2	7,570	6,124	-19.1%	2,173
41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	2	105	87	-17.1%	5
41-9099	Sales and Related Workers, All Other	3	1,792	1,652	-7.8%	183
43-1011	First-Line Supervisors of Office and Administrative Support Workers	3	53,975	56,449	4.6%	15,400
43-2011	Switchboard Operators, Including Answering Service	2	5,332	4,394	-17.6%	952
43-2021	Telephone Operators	2	300	182	-39.3%	5
43-3011	Bill and Account Collectors	2	12,436	11,566	-7.0%	3,319
43-3021	Billing and Posting Clerks	2	26,292	28,692	9.1%	7,718
43-3031	Bookkeeping, Accounting, and Auditing Clerks	3	65,090	70,698	8.6%	12,044
43-3041	Gaming Cage Workers	2	410	481	17.3%	281
43-3051	Payroll and Timekeeping Clerks	2	7,714	7,760	0.6%	1,905
43-3061	Procurement Clerks	3	2,611	2,289	-12.3%	696
43-3071	Tellers	2	23,511	19,606	-16.6%	9,885
43-3099	Financial Clerks, All Other	2	1,251	1,423	13.7%	606
43-4011	Brokerage Clerks	3	2,291	2,457	7.2%	1,039
43-4021	Correspondence Clerks	2	660	704	6.7%	265
43-4031	Court, Municipal, and License Clerks	3	2,401	2,477	3.2%	485
43-4041	Credit Authorizers, Checkers, and Clerks	3	1,281	958	-25.2%	9
43-4051	Customer Service Representatives	2	107,460	119,666	11.4%	44,675
43-4061	Eligibility Interviewers, Government Programs	3	8,594	8,075	-6.0%	1,347
43-4071	File Clerks	2	5,362	4,550	-15.1%	754
43-4081	Hotel, Motel, and Resort Desk Clerks	2	8,204	8,681	5.8%	5,456
43-4111	Interviewers, Except Eligibility and Loan	2	8,844	10,063	13.8%	3,157
43-4121	Library Assistants, Clerical	2	4,742	4,823	1.7%	2,267
43-4131	Loan Interviewers and Clerks	3	6,923	7,789	12.5%	1,879
43-4141	New Accounts Clerks	2	1,091	1,065	-2.4%	402
43-4151	Order Clerks	2	9,935	9,431	-5.1%	3,042
43-4161	Human Resources Assistants, Except Payroll and Timekeeping	3	6,473	5,834	-9.9%	1,299
43-4171	Receptionists and Information Clerks	2	41,389	41,108	-0.7%	11,174
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	2	2,491	2,366	-5.0%	613
43-4199	Information and Record Clerks, All Other	2	3,672	2,854	-22.3%	267
43-5011	Cargo and Freight Agents	2	1,681	1,521	-9.5%	432
43-5021	Couriers and Messengers	2	2,861	2,424	-15.3%	226
43-5031	Police, Fire, and Ambulance Dispatchers	2	3,181	3,174	-0.2%	1,008

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
43-5032	Dispatchers, Except Police, Fire, and Ambulance	2	7,153	8,378	17.1%	3,467
43-5041	Meter Readers, Utilities	2	1,501	1,319	-12.1%	437
43-5051	Postal Service Clerks	2	3,471	2,562	-26.2%	605
43-5052	Postal Service Mail Carriers	2	13,726	10,389	-24.3%	4,571
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	2	6,383	4,075	-36.2%	294
43-5061	Production, Planning, and Expediting Clerks	3	13,766	14,438	4.9%	4,542
43-5071	Shipping, Receiving, and Traffic Clerks	2	26,442	25,765	-2.6%	7,211
43-5081	Stock Clerks and Order Fillers	2	79,527	79,743	0.3%	28,001
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	2	2,561	2,907	13.5%	1,003
43-6011	Executive Secretaries and Executive Administrative Assistants	3	23,371	22,128	-5.3%	2,535
43-6012	Legal Secretaries	3	11,976	13,236	10.5%	3,655
43-6013	Medical Secretaries	3	21,680	27,973	29.0%	8,822
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	3	107,410	121,313	12.9%	27,860
43-9011	Computer Operators	3	3,272	3,004	-8.2%	603
43-9021	Data Entry Keyers	2	9,945	8,373	-15.8%	1,901
43-9022	Word Processors and Typists	2	6,813	5,036	-26.1%	214
43-9031	Desktop Publishers	3	800	739	-7.6%	169
43-9041	Insurance Claims and Policy Processing Clerks	3	12,056	12,473	3.5%	4,343
43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	2	6,263	5,264	-16.0%	1,416
43-9061	Office Clerks, General	2	127,579	124,901	-2.1%	26,701
43-9071	Office Machine Operators, Except Computer	2	2,971	2,382	-19.8%	596
43-9081	Proofreaders and Copy Markers	4	480	402	-16.3%	60
43-9111	Statistical Assistants	4	590	620	5.1%	206
43-9199	Office and Administrative Support Workers, All Other	3	5,002	5,873	17.4%	2,324
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	3	440	443	0.7%	127
45-2011	Agricultural Inspectors	2	360	313	-13.1%	99
45-2041	Graders and Sorters, Agricultural Products	1	230	270	17.4%	94
45-2091	Agricultural Equipment Operators	2	410	473	15.4%	213
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	1	1,981	1,636	-17.4%	465
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals	1	1,321	1,368	3.6%	585
45-2099	Agricultural Workers, All Other	1	10	8	-20.0%	1
45-4011	Forest and Conservation Workers	3	170	188	10.6%	44

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
45-4021	Fallers	1	60	40	-33.3%	0
45-4022	Logging Equipment Operators	1	520	587	12.9%	284
45-4023	Log Graders and Scalers	3	90	105	16.7%	30
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	3	18,488	22,214	20.2%	5,995
47-2011	Boilermakers	3	760	955	25.7%	598
47-2021	Brickmasons and Blockmasons	2	2,921	3,628	24.2%	1,014
47-2022	Stonemasons	3	400	385	-3.8%	16
47-2031	Carpenters	2	33,545	38,804	15.7%	10,196
47-2041	Carpet Installers	2	1,811	2,156	19.1%	800
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	2	430	390	-9.3%	58
47-2044	Tile and Marble Setters	2	840	1,049	24.9%	356
47-2051	Cement Masons and Concrete Finishers	2	5,432	6,191	14.0%	1,408
47-2053	Terrazzo Workers and Finishers	2	90	81	-10.0%	3
47-2061	Construction Laborers	2	33,605	42,704	27.1%	17,230
47-2071	Paving, Surfacing, and Tamping Equipment Operators	2	2,361	2,680	13.5%	814
47-2072	Pile-Driver Operators	2	50	53	6.0%	13
47-2073	Operating Engineers and Other Construction Equipment Operators	2	19,529	20,877	6.9%	7,001
47-2081	Drywall and Ceiling Tile Installers	2	1,681	1,557	-7.4%	229
47-2082	Tapers	2	510	596	16.9%	167
47-2111	Electricians	3	22,120	26,939	21.8%	10,844
47-2121	Glaziers	2	1,381	1,578	14.3%	652
47-2131	Insulation Workers, Floor, Ceiling, and Wall	2	630	766	21.6%	262
47-2132	Insulation Workers, Mechanical	2	420	574	36.7%	213
47-2141	Painters, Construction and Maintenance	2	5,482	6,255	14.1%	1,924
47-2142	Paperhangers	2	160	139	-13.1%	9
47-2151	Pipelayers	2	1,231	1,207	-1.9%	292
47-2152	Plumbers, Pipefitters, and Steamfitters	3	15,287	16,642	8.9%	4,140
47-2161	Plasterers and Stucco Masons	1	400	492	23.0%	95
47-2171	Reinforcing Iron and Rebar Workers	2	290	314	8.3%	76
47-2181	Roofers	2	4,052	4,250	4.9%	1,759
47-2211	Sheet Metal Workers	2	4,602	4,824	4.8%	1,210
47-2221	Structural Iron and Steel Workers	2	1,741	1,930	10.9%	853
47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	2	970	1,006	3.7%	153
47-3012	Helpers--Carpenters	2	960	1,282	33.5%	453
47-3013	Helpers--Electricians	2	1,491	2,136	43.3%	932

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	1	190	190	0.0%	40
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	2	1,161	1,151	-0.9%	173
47-3016	Helpers--Roofers	2	380	503	32.4%	213
47-3019	Helpers, Construction Trades, All Other	2	290	312	7.6%	48
47-4011	Construction and Building Inspectors	3	5,753	7,188	24.9%	3,022
47-4021	Elevator Installers and Repairers	3	390	355	-9.0%	97
47-4031	Fence Erectors	2	910	903	-0.8%	247
47-4041	Hazardous Materials Removal Workers	3	1,881	2,280	21.2%	1,065
47-4051	Highway Maintenance Workers	2	11,185	11,027	-1.4%	2,002
47-4061	Rail-Track Laying and Maintenance Equipment Operators	2	440	499	13.4%	144
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	1	1,241	1,421	14.5%	579
47-4099	Construction and Related Workers, All Other	3	460	407	-11.5%	14
47-5011	Derrick Operators, Oil and Gas	1	620	567	-8.5%	288
47-5012	Rotary Drill Operators, Oil and Gas	2	2,331	2,585	10.9%	1,977
47-5013	Service Unit Operators, Oil, Gas, and Mining	2	1,391	1,565	12.5%	1,069
47-5021	Earth Drillers, Except Oil and Gas	2	1,151	1,362	18.3%	725
47-5031	Explosives Workers, Ordnance Handling Experts, and Blasters	2	180	203	12.8%	71
47-5041	Continuous Mining Machine Operators	1	610	531	-13.0%	201
47-5042	Mine Cutting and Channeling Machine Operators	2	530	400	-24.5%	87
47-5049	Mining Machine Operators, All Other	2	150	151	0.7%	49
47-5051	Rock Splitters, Quarry	1	500	522	4.4%	215
47-5061	Roof Bolters, Mining	2	660	548	-17.0%	219
47-5071	Roustabouts, Oil and Gas	1	1,831	2,177	18.9%	1,204
47-5081	Helpers--Extraction Workers	2	1,571	1,640	4.4%	857
47-5099	Extraction Workers, All Other	2	210	182	-13.3%	31
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	3	16,027	18,133	13.1%	6,663
49-2011	Computer, Automated Teller, and Office Machine Repairers	3	4,552	4,935	8.4%	1,822
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairers	3	250	233	-6.8%	23
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	3	5,052	5,037	-0.3%	1,278
49-2091	Avionics Technicians	3	460	538	17.0%	226
49-2092	Electric Motor, Power Tool, and Related Repairers	3	760	768	1.1%	228
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	3	180	169	-6.1%	27

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49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	3	3,592	3,207	-10.7%	621
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	3	880	914	3.9%	283
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	3	140	162	15.7%	51
49-2097	Electronic Home Entertainment Equipment Installers and Repairers	3	610	541	-11.3%	229
49-2098	Security and Fire Alarm Systems Installers	3	2,941	3,204	8.9%	989
49-3011	Aircraft Mechanics and Service Technicians	3	2,761	2,345	-15.1%	757
49-3021	Automotive Body and Related Repairers	2	6,823	7,953	16.6%	2,919
49-3022	Automotive Glass Installers and Repairers	2	930	1,065	14.5%	434
49-3023	Automotive Service Technicians and Mechanics	3	33,495	36,747	9.7%	12,992
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	3	11,955	14,921	24.8%	6,003
49-3041	Farm Equipment Mechanics and Service Technicians	3	840	715	-14.9%	198
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	3	4,322	4,607	6.6%	1,776
49-3043	Rail Car Repairers	2	670	767	14.5%	381
49-3051	Motorboat Mechanics and Service Technicians	3	230	219	-4.8%	50
49-3052	Motorcycle Mechanics	3	900	1,157	28.6%	576
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	2	1,351	1,510	11.8%	508
49-3091	Bicycle Repairers	2	410	344	-16.1%	122
49-3092	Recreational Vehicle Service Technicians	2	310	308	-0.6%	124
49-3093	Tire Repairers and Changers	2	2,591	2,419	-6.6%	864
49-9011	Mechanical Door Repairers	2	520	530	1.9%	209
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	3	980	1,137	16.0%	514
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	3	12,365	14,586	18.0%	5,999
49-9031	Home Appliance Repairers	3	1,511	1,399	-7.4%	551
49-9041	Industrial Machinery Mechanics	3	15,167	17,128	12.9%	6,914
49-9043	Maintenance Workers, Machinery	3	4,632	5,198	12.2%	1,393
49-9044	Millwrights	3	1,321	1,697	28.5%	701
49-9045	Refractory Materials Repairers, Except Brickmasons	2	160	150	-6.3%	56
49-9051	Electrical Power-Line Installers and Repairers	3	3,802	4,462	17.4%	2,299
49-9052	Telecommunications Line Installers and Repairers	2	7,343	7,650	4.2%	3,236
49-9062	Medical Equipment Repairers	3	2,641	3,406	29.0%	1,688
49-9063	Musical Instrument Repairers and Tuners	3	450	425	-5.6%	159
49-9064	Watch Repairers	3	70	58	-17.1%	12

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
49-9069	Precision Instrument and Equipment Repairers, All Other	3	270	228	-15.6%	43
49-9071	Maintenance and Repair Workers, General	3	61,467	64,865	5.5%	16,938
49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	2	1,571	1,424	-9.4%	288
49-9092	Commercial Divers	3	370	347	-6.2%	131
49-9094	Locksmiths and Safe Repairers	2	370	363	-1.9%	105
49-9095	Manufactured Building and Mobile Home Installers	2	180	224	24.4%	123
49-9096	Riggers	2	330	425	28.8%	181
49-9098	Helpers--Installation, Maintenance, and Repair Workers	2	4,452	4,807	8.0%	1,768
49-9099	Installation, Maintenance, and Repair Workers, All Other	2	2,961	3,637	22.8%	1,144
51-1011	First-Line Supervisors of Production and Operating Workers	2	27,082	27,694	2.3%	6,059
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	2	1,451	1,380	-4.9%	400
51-2021	Coil Winders, Tapers, and Finishers	2	570	505	-11.4%	68
51-2022	Electrical and Electronic Equipment Assemblers	2	9,564	8,732	-8.7%	1,460
51-2023	Electromechanical Equipment Assemblers	2	2,731	2,215	-18.9%	187
51-2031	Engine and Other Machine Assemblers	2	2,311	2,037	-11.9%	595
51-2041	Structural Metal Fabricators and Fitters	3	4,852	5,136	5.9%	2,682
51-2091	Fiberglass Laminators and Fabricators	2	420	457	8.8%	164
51-2092	Team Assemblers	2	35,826	35,253	-1.6%	7,737
51-2099	Assemblers and Fabricators, All Other	2	5,132	6,916	34.8%	2,724
51-3011	Bakers	2	9,494	9,414	-0.8%	2,943
51-3021	Butchers and Meat Cutters	2	6,673	6,036	-9.5%	1,335
51-3022	Meat, Poultry, and Fish Cutters and Trimmers	1	2,191	1,908	-12.9%	356
51-3023	Slaughterers and Meat Packers	1	2,801	2,921	4.3%	1,165
51-3091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	2	460	494	7.4%	195
51-3092	Food Batchmakers	2	6,223	6,464	3.9%	2,866
51-3093	Food Cooking Machine Operators and Tenders	2	1,721	1,924	11.8%	767
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	3	8,514	10,697	25.6%	5,149
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	3	920	917	-0.3%	286
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	2	5,713	5,905	3.4%	2,256
51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	2	1,531	1,541	0.7%	554
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	2	2,741	2,417	-11.8%	571

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	2	9,264	9,284	0.2%	1,810
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	1,050	728	-30.7%	95
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	5,292	5,487	3.7%	2,255
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	2,611	2,409	-7.7%	748
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	3	1,411	1,449	2.7%	536
51-4041	Machinists	3	19,959	21,676	8.6%	7,597
51-4051	Metal-Refining Furnace Operators and Tenders	2	1,661	1,533	-7.7%	372
51-4052	Pourers and Casters, Metal	2	1,141	1,164	2.0%	466
51-4061	Model Makers, Metal and Plastic	3	300	250	-16.7%	29
51-4062	Patternmakers, Metal and Plastic	3	360	401	11.4%	185
51-4071	Foundry Mold and Coremakers	2	680	603	-11.3%	132
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	2	6,283	6,038	-3.9%	1,351
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	9,034	9,868	9.2%	4,018
51-4111	Tool and Die Makers	3	4,252	4,452	4.7%	991
51-4121	Welders, Cutters, Solderers, and Brazers	3	17,408	20,133	15.7%	8,389
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	2	2,081	2,200	5.7%	935
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	2	1,441	1,254	-13.0%	256
51-4192	Layout Workers, Metal and Plastic	2	210	216	2.9%	62
51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	2	1,971	1,938	-1.7%	651
51-4194	Tool Grinders, Filers, and Sharpeners	2	520	432	-16.9%	67
51-4199	Metal Workers and Plastic Workers, All Other	2	1,100	1,400	27.3%	545
51-5111	Prepress Technicians and Workers	3	1,991	1,355	-31.9%	239
51-5112	Printing Press Operators	3	9,344	7,799	-16.5%	1,511
51-5113	Print Binding and Finishing Workers	2	3,061	2,645	-13.6%	657
51-6011	Laundry and Dry-Cleaning Workers	1	7,863	8,684	10.4%	3,631
51-6021	Pressers, Textile, Garment, and Related Materials	1	1,251	1,303	4.2%	337
51-6031	Sewing Machine Operators	1	4,552	3,867	-15.0%	1,496
51-6041	Shoe and Leather Workers and Repairers	2	170	206	21.2%	180
51-6042	Shoe Machine Operators and Tenders	2	243	221	-9.1%	235
51-6051	Sewers, Hand	2	3,997	4,042	1.1%	659
51-6052	Tailors, Dressmakers, and Custom Sewers	3	1,020	1,100	7.8%	349

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-6061	Textile Bleaching and Dyeing Machine Operators and Tenders	2	340	269	-20.9%	195
51-6062	Textile Cutting Machine Setters, Operators, and Tenders	2	890	813	-8.7%	458
51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	2	990	718	-27.5%	441
51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	2	560	412	-26.4%	192
51-6091	Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	2	510	368	-27.8%	66
51-6092	Fabric and Apparel Patternmakers	3	120	96	-20.0%	14
51-6093	Upholsterers	2	840	904	7.6%	488
51-6099	Textile, Apparel, and Furnishings Workers, All Other	2	530	502	-5.3%	74
51-7011	Cabinetmakers and Bench Carpenters	2	4,542	4,787	5.4%	2,138
51-7021	Furniture Finishers	1	1,030	1,254	21.7%	815
51-7031	Model Makers, Wood	3	100	105	5.0%	21
51-7032	Patternmakers, Wood	3	90	110	22.2%	34
51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	2	3,001	4,189	39.6%	2,544
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	2	4,302	5,774	34.2%	2,453
51-7099	Woodworkers, All Other	2	60	55	-8.3%	5
51-8011	Nuclear Power Reactor Operators	3	340	372	9.4%	168
51-8012	Power Distributors and Dispatchers	3	690	768	11.3%	345
51-8013	Power Plant Operators	2	2,031	1,930	-5.0%	849
51-8021	Stationary Engineers and Boiler Operators	3	3,782	4,296	13.6%	2,148
51-8031	Water and Wastewater Treatment Plant and System Operators	3	6,033	6,186	2.5%	2,693
51-8091	Chemical Plant and System Operators	2	1,451	1,371	-5.5%	804
51-8092	Gas Plant Operators	3	1,241	1,396	12.5%	842
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	2	1,461	1,698	16.2%	1,012
51-8099	Plant and System Operators, All Other	2	410	400	-2.4%	169
51-9011	Chemical Equipment Operators and Tenders	2	4,522	4,562	0.9%	2,479
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	2	1,931	2,021	4.7%	978
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	2	1,401	1,487	6.1%	658
51-9022	Grinding and Polishing Workers, Hand	1	1,030	1,073	4.2%	423
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	2	6,073	6,635	9.3%	2,923
51-9031	Cutters and Trimmers, Hand	2	290	236	-18.6%	32

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders	2	2,571	2,193	-14.7%	341
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	2	3,071	2,909	-5.3%	1,053
51-9051	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	2	700	614	-12.3%	212
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	2	19,829	20,216	2.0%	5,534
51-9071	Jewelers and Precious Stone and Metal Workers	3	540	426	-21.1%	35
51-9081	Dental Laboratory Technicians	2	1,281	1,430	11.6%	843
51-9082	Medical Appliance Technicians	3	1,181	1,062	-10.1%	476
51-9083	Ophthalmic Laboratory Technicians	2	1,181	1,116	-5.5%	460
51-9111	Packaging and Filling Machine Operators and Tenders	2	16,047	14,901	-7.1%	3,762
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	2	3,722	4,347	16.8%	1,601
51-9122	Painters, Transportation Equipment	2	1,961	1,901	-3.1%	511
51-9123	Painting, Coating, and Decorating Workers	2	690	657	-4.8%	163
51-9141	Semiconductor Processors	2	460	419	-8.9%	167
51-9151	Photographic Process Workers and Processing Machine Operators	2	1,141	823	-27.9%	140
51-9191	Adhesive Bonding Machine Operators and Tenders	2	480	508	5.8%	181
51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	2	640	724	13.1%	268
51-9193	Cooling and Freezing Equipment Operators and Tenders	2	500	480	-4.0%	160
51-9194	Etchers and Engravers	2	380	403	6.1%	150
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	2	2,021	2,016	-0.2%	917
51-9196	Paper Goods Machine Setters, Operators, and Tenders	2	7,743	7,931	2.4%	2,013
51-9197	Tire Builders	2	440	493	12.0%	232
51-9198	Helpers--Production Workers	2	23,010	23,987	4.2%	6,851
51-9199	Production Workers, All Other	2	3,161	3,475	9.9%	1,112
53-1011	Aircraft Cargo Handling Supervisors	2	230	240	4.3%	73
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	2	6,943	7,806	12.4%	3,046
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	2	8,034	9,314	15.9%	3,676
53-2012	Commercial Pilots	3	1,136	1,365	20.2%	671
53-2021	Air Traffic Controllers	3	430	402	-6.5%	189
53-2022	Airfield Operations Specialists	3	330	332	0.6%	183
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	2	1,841	2,456	33.4%	1,006

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
53-3021	Bus Drivers, Transit and Intercity	2	5,680	6,256	10.1%	2,155
53-3022	Bus Drivers, School or Special Client	2	30,194	34,072	12.8%	11,510
53-3031	Driver/Sales Workers	2	18,068	19,040	5.4%	4,426
53-3032	Heavy and Tractor-Trailer Truck Drivers	2	72,622	87,398	20.3%	30,063
53-3033	Light Truck or Delivery Services Drivers	2	35,446	34,657	-2.2%	5,938
53-3041	Taxi Drivers and Chauffeurs	1	7,944	8,580	8.0%	2,238
53-3099	Motor Vehicle Operators, All Other	2	990	1,206	21.8%	471
53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers	2	250	231	-7.6%	61
53-5011	Sailors and Marine Oilers	2	392	413	5.4%	271
53-5021	Captains, Mates, and Pilots of Water Vessels	3	465	456	-1.9%	280
53-5031	Ship Engineers	3	66	77	16.7%	42
53-6011	Bridge and Lock Tenders	1	120	88	-26.7%	26
53-6021	Parking Lot Attendants	2	5,873	7,380	25.7%	4,930
53-6031	Automotive and Watercraft Service Attendants	1	2,351	2,600	10.6%	1,001
53-6041	Traffic Technicians	3	60	67	11.7%	30
53-6051	Transportation Inspectors	3	470	431	-8.3%	132
53-6061	Transportation Attendants, Except Flight Attendants	2	1,120	1,021	-8.8%	187
53-6099	Transportation Workers, All Other	2	270	298	10.4%	146
53-7011	Conveyor Operators and Tenders	2	1,201	1,111	-7.5%	354
53-7021	Crane and Tower Operators	3	2,011	2,315	15.1%	1,097
53-7032	Excavating and Loading Machine and Dragline Operators	2	1,781	1,871	5.1%	382
53-7033	Loading Machine Operators, Underground Mining	2	180	144	-20.0%	8
53-7051	Industrial Truck and Tractor Operators	2	27,432	32,309	17.8%	13,877
53-7061	Cleaners of Vehicles and Equipment	2	11,165	12,338	10.5%	4,801
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	2	115,791	140,560	21.4%	66,493
53-7063	Machine Feeders and Offbearers	2	4,822	4,648	-3.6%	1,065
53-7064	Packers and Packagers, Hand	2	33,835	37,811	11.8%	14,640
53-7071	Gas Compressor and Gas Pumping Station Operators	2	840	979	16.5%	640
53-7072	Pump Operators, Except Wellhead Pumpers	2	1,191	1,278	7.3%	771
53-7073	Wellhead Pumpers	2	900	1,016	12.9%	785
53-7081	Refuse and Recyclable Material Collectors	2	5,152	5,709	10.8%	2,216
53-7111	Mine Shuttle Car Operators	2	300	290	-3.3%	132
53-7121	Tank Car, Truck, and Ship Loaders	2	530	508	-4.2%	184
53-7199	Material Moving Workers, All Other	2	250	354	41.6%	182

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.

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