

PENNSYLVANIA'S STATE SYSTEM OF HIGHER EDUCATION



CALU



CLARION
UNIVERSITY



MANSFIELD
UNIVERSITY

Millersville
University



SlipperyRock
University

WCU
WEST CHESTER
UNIVERSITY

Dixon University Center's

WORKFORCE CHARACTERISTICS TECHNICAL REPORT

A report for Pennsylvania's
State System of Higher Education

2016



Pennsylvania's
STATE SYSTEM
of Higher Education

CONTENTS

5	1. Introduction
6	1.1 Pennsylvania's State System of Higher Education Gap Analysis Project
7	1.2 Goal of the Workforce Characteristics Report
9	2. Pennsylvania's State System Learner Origin
11	3. Summary of Dixon University Center Workforce Region
11	3.1 Defining Dixon University Center's Workforce Region
13	4. Labor Market of Dixon University Center's Workforce Region
14	4.1 Employment Projections
16	5. Industries in Dixon University Center's Workforce Region
17	5.1 Top Employers in Dixon University Center's Workforce Region
19	6. Occupations in Dixon University Center's Workforce Region
19	6.1 Skilled Occupations
20	6.2 Top Skilled Occupations in Dixon University Center's Workforce Region
23	6.3 Key Skilled High Demand Occupations Aligning to University-level Education
27	6.4 Industry Staffing Patterns for Key Skilled High Demand Occupations in Dixon University Center's Workforce Region
29	6.5 Key Skilled High Demand Occupational Profiles

36	7. Demographic and Socio-economic Indicators of Dixon University Center’s Workforce Region
36	7.1 Demographics of Dixon University Center’s Workforce Region
38	7.2 Socio-economic Indicators of Dixon University Center’s Workforce Region
42	8. Next Steps
43	9. Data Sources
44	Appendix A: Methodology for Identifying State System University Workforce Regions
50	Appendix B: Industry Projections 2014-2024 for Dixon University Center’s Workforce Region
59	Appendix C: Occupation Projections 2014-2024 for Dixon University Center’s Workforce Region
86	About The State System’s Gap Analysis Project

GLOSSARY OF TERMS

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

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

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

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

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

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

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

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

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

ACRONYMS USED

ACS: American Community Survey

BLS: Bureau of Labor Statistics

EMSI: Economic Modeling Specialists International

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

IPEDS: Integrated Postsecondary Education Data System

LAUS: Local Area Unemployment Statistics

LEHD: Longitudinal Employment and Housing Dynamics

NCES: National Center for Education Statistics

OES: Occupational Employment Statistics

O*NET: Occupational Network

PUMS: Public Use Microdata Sample

QCEW: Quarterly Census of Employment and Wages

SAIPE: Small Area Income and Poverty Estimates

USDOE: US Department of Education

USDOL: US Department of Labor

1. INTRODUCTION

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

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

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

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

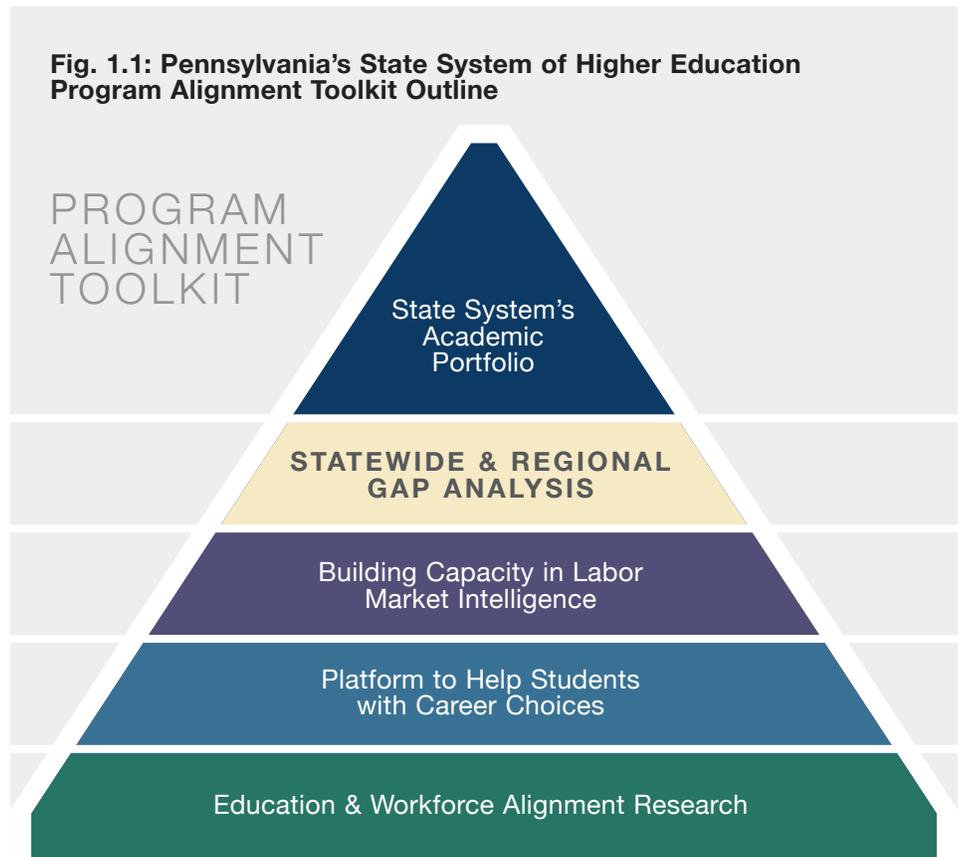
2 Source: The State System’s Economic and Employment Impact on the Commonwealth of Pennsylvania – released April 15, 2015.

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

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

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

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



to the Challenge 2020.” The Program Alignment Toolkit helps provide multiple perspectives of how higher education can connect to the state’s economy and lead to career success for students. A key component of this toolkit is the development of a statewide and regional gap analysis. Other high impact strategies that are a part of the State System’s Program Alignment Toolkit are presented in the figure on the previous page. The ultimate goal of this plan is to assist the State System’s fourteen universities to increase their individual and collective impact on Pennsylvania’s economy.

1.2 Goal of the Workforce Characteristics Report

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

The intentions of this Workforce Characteristics report are fourfold.

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

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

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

2. PENNSYLVANIA'S STATE SYSTEM LEARNER ORIGIN

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

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

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

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

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

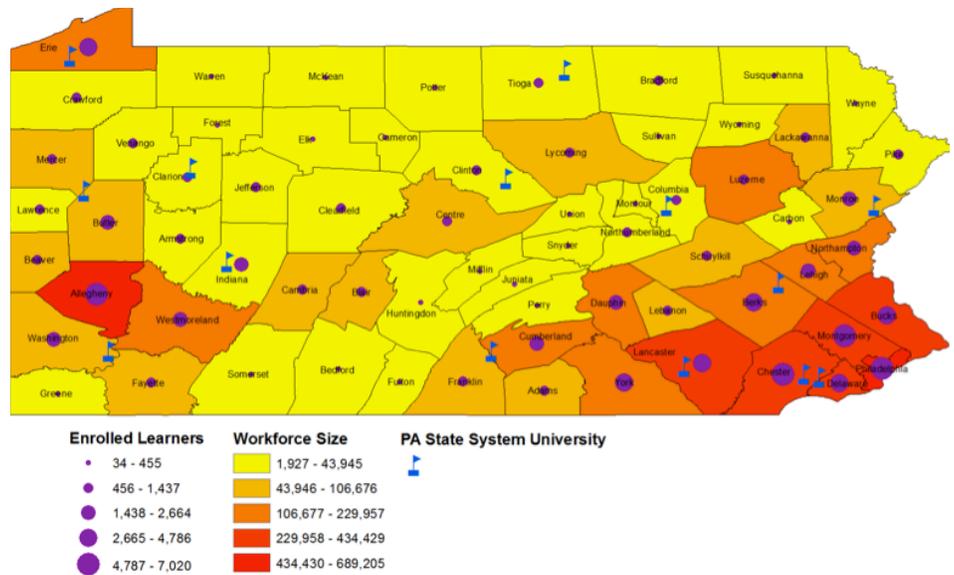
³ Based on Fall 2013 enrollment.

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

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

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

Figure 2.1 – State System Learner Origin and Workforce Size County



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

3. SUMMARY OF DIXON UNIVERSITY CENTER WORKFORCE REGION

Located in Dauphin County, Pennsylvania, Dixon University Center (DUC) supports the central region of Pennsylvania’s State System of Higher Education. The following sections outline the supporting data used to select DUC’s workforce region—defined as Cumberland, Dauphin, and Perry counties. Subsequent sections provide a brief analysis of economic, workforce, demographic and socio-economic information. The purpose of providing this analysis is to gain better insight into how the workforce region has changed over the past several years, as well as projections of how the area will continue to change over the next several years.

A BRIEF NOTE ON DEVELOPING THE WORKFORCE REGION

Part of the geographic research and analysis involves central place theory—a geographical theory that seeks to explain the location and connectedness of economic activity. More specifically, this research seeks to quantify the interconnectedness of local economies surrounding the State System universities. This is measured by workforce commuting and economic activity (i.e. industry production, supply-chains, sales, etc.).

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

3.1 Defining Dixon University Center’s Workforce Region

The main factors used to identify the DUC-specific workforce region involved evaluation of commuting patterns and economic activity (business demand and household demand). The aim is to identify the workforce region that surrounds DUC and is consequently supported by DUC, while also being inclusive of less populated rural counties. A workforce region is defined as: a labor market area or an economically integrated region within which residents can find jobs within

a reasonable commuting distance or can change their employment without changing their place of residence.⁴

The counties in the region were identified using a multi-step process. Table 3.1 provides the final selection of counties.⁵ When taken into the context of regional economic activity, about 60% of regional demand for goods and services are produced by businesses located within the region. This indicates that regional business activity is locally contained. Similarly, 90% of household demand is satisfied by local production, meaning that households are not traveling outside the region to purchase goods or services to consume.

The majority of DUC workforce region residents also work in the region (70%). This reflects a very strong centralized connection between workers and economic activity in a region that has more than 318,000 jobs.

Table 3.1 – Dixon University Center Workforce Region Commuting Patterns and Economic Activity

County Combination	Job Share of People Living the Region	Job Share of People Employed in the Region	Business Demand	Household Demand
Cumberland, Dauphin, Perry	0.70	0.54	0.60	0.90

Sources: US Census - LEHD, Minnesota IMPLAN Group

4 Bureau of Labor Statistics: Labor Market Area

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

4. LABOR MARKET OF DIXON UNIVERSITY CENTER'S WORKFORCE REGION

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

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

Workforce Characteristic	DUC Workforce Region	Pennsylvania	Source
Population	552,400	12.7 million	2009-2013 American Community Survey 5-Year Estimates
Employed	318,400	5.6 million	2014 BLS Quarterly Census of Employment and Wages
Unemployed	14,200	370,000	2014 BLS Local Area Unemployment Statistics
Unemployment Rate	5.6%	5.8%	2014 BLS Local Area Unemployment Statistics
Poverty Rate	11.3%	13.7%	2013 Census Small Area Income and Poverty Estimates
Business Establishments	14,000	347,000	2014 BLS Quarterly Census of Employment and Wages
Educational Attainment (25+ Population with Bachelor's or Higher)	29.0%	27.4%	2009-2013 American Community Survey 5-Year Estimates
Bachelor's or Higher Completions	4,700	137,000	Integrated Postsecondary Education Data System 2012-2013
Projected Job Growth 2014-2024	29,900	536,200	Oxford Economics Projections 2024

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

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

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

- Top Skilled Occupations: largest skilled employed occupations and new 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 profile for five key skilled high demand occupations

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

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

4.1 Employment Projections

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

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

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

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

5. INDUSTRIES IN DIXON UNIVERSITY CENTER'S WORKFORCE REGION

Over the five years of 2009 to 2014, Dixon University Center's (DUC) workforce region experienced job growth in many service-based sectors. Sectors such as education and health care, professional and business services, and leisure and hospitality added a combined 11,600 new jobs between 2009 and 2014. Government experienced the largest nominal employment loss, while large relative job losses occurred within information, financial activities, and trade, transportation, and utilities. Overall, the economy added about 3,400 jobs during the recovery period, 2009 to 2014. This growth reflects the recovery period for Pennsylvania from one of the worst recessions since the Great Depression—the Great Recession which lasted from 2007 to 2009.

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

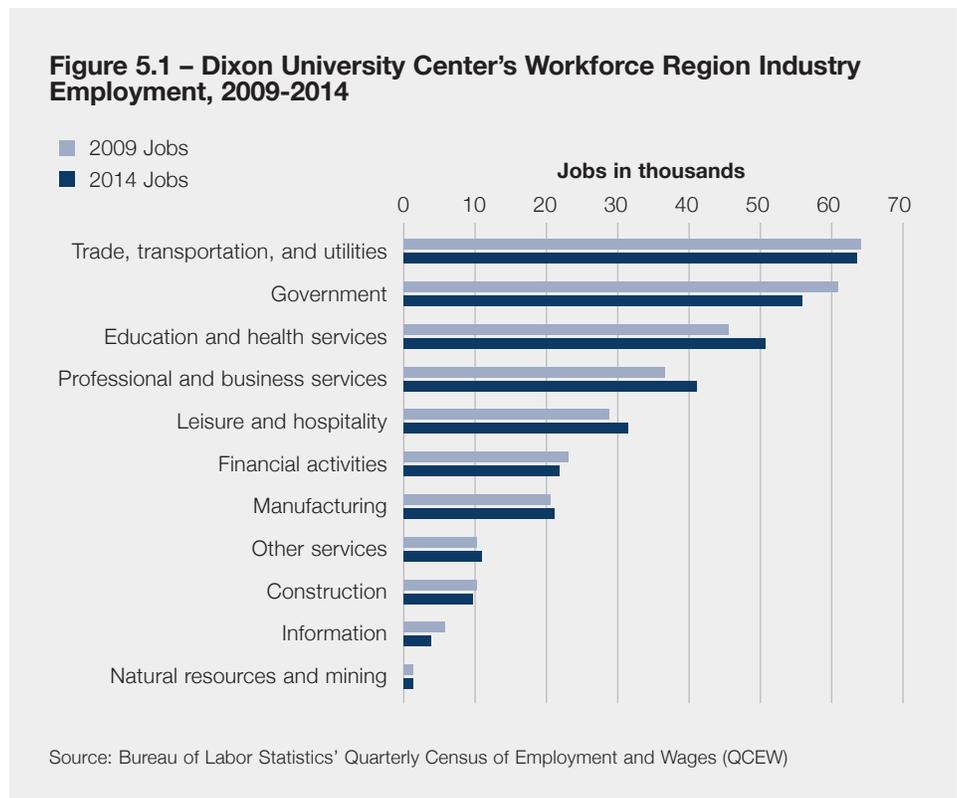


Table 5.1 – Dixon University Center’s Workforce Region Industry Employment, 2009-2014

Industry Employment	2009 Jobs	2014 Jobs	Absolute Change 09-14	% Change 09-14
Total, all industries	307,249	310,604	3,355	1.1%
Trade, transportation, and utilities	64,099	63,453	-646	-1.0%
Government	60,582	55,553	-5,029	-8.3%
Education and health services	45,411	50,362	4,951	10.9%
Professional and business services	36,352	40,944	4,592	12.6%
Leisure and hospitality	29,157	31,192	2,035	7.0%
Financial activities	23,137	21,979	-1,158	-5.0%
Manufacturing	20,814	20,965	151	0.7%
Other services	10,257	10,978	721	7.0%
Construction	10,454	9,880	-574	-5.5%
Information	5,683	4,091	-1,592	-28.0%
Natural resources and mining	1,305	1,211	-94	-7.2%

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

5.1 Top Employers in Dixon University Center’s Workforce Region

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

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

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

Table 5.2: Top employers in Dixon University Center’s Workforce Region

Establishment Name
Ahold Financial Services
Angels on Call
Cumberland County
Cumberland Valley School District
Dickinson College
Federal Government
Giant Food Stores
H E Rohrer
Hershey Entertainment & Resorts
HM Health Solutions
Holy Spirit Hospital
Milton S. Hershey Medical Center
Newport School District
Pennsylvania State University
Perry County Commissioners
Pennsylvania Higher Education Assistance Agency
Pinnacle Health Hospitals
Specialty Bakers
State Government
Susquenita School District
The Hershey Company
Tyco Electronics Corporation
United Parcel Service
Wal-Mart
West Perry School District

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

6. OCCUPATIONS IN DIXON UNIVERSITY CENTER'S WORKFORCE REGION

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

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

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

6.1 Skilled Occupations

The O*NET program is the nation's primary source of occupational information. Essential to the project is the O*NET database, containing information on hundreds of standardized and occupation-specific descriptors.⁶

For this analysis a "skilled" occupation is defined as an occupation in O*NET Job Zones 3, 4, or 5. 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

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

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

Most occupations in Job Zone 3 require training in vocational schools, related on-the-job experience, or an associate's degree. Most occupations in Job Zone 4 require a four-year bachelor's degree, but some do not. Most occupations in Job Zone 5 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 Dixon University Center's Workforce Region

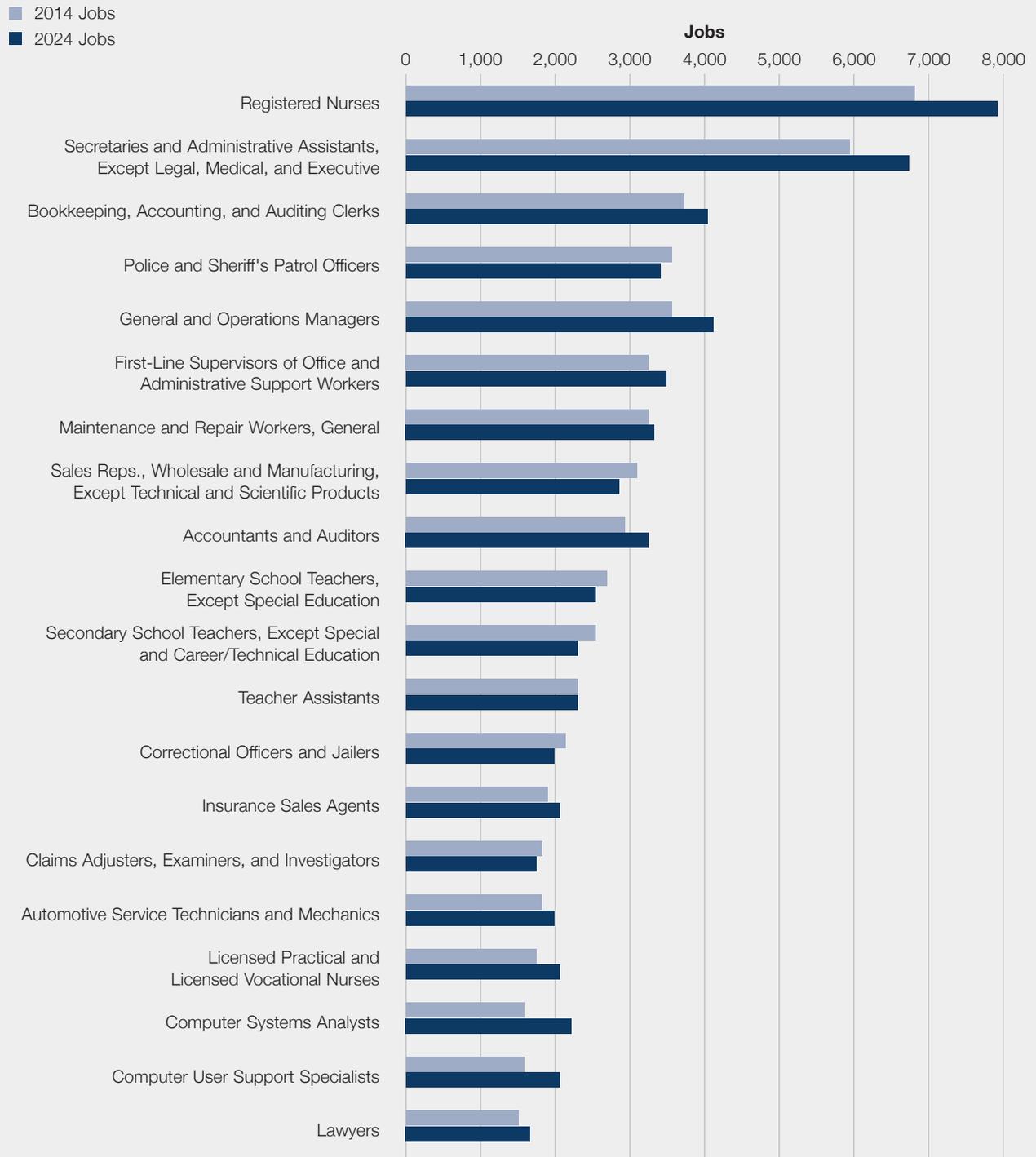
Top skilled occupations in the region are driven by industry composition. Medical centers employ a cadre of health professionals, while enterprise management companies employ a range of business professionals. Given the dominating presence of trade, transportation and utilities; government; and healthcare and education services establishments in DUC's workforce region, top skilled occupations include: registered nurses, secretaries and administrative assistants, sales representatives, police officers, and elementary and secondary school teachers. Figure 6.1 and Table 6.1 highlight the top 20 skilled occupations in the region, 10-year job growth projections, and new and replacement jobs.⁸

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

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

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 DUC’s Workforce Region and Projections, 2014-2024



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

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

SOC Code	Occupation Title	2014 Jobs	2024 Jobs	10-year New and Replacement Demand
29-1141	Registered Nurses	6,833	7,911	2,462
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	5,961	6,735	1,548
43-3031	Bookkeeping, Accounting, and Auditing Clerks	3,699	4,063	730
33-3051	Police and Sheriff’s Patrol Officers	3,587	3,423	1,123
11-1021	General and Operations Managers	3,550	4,108	1,190
43-1011	First-Line Supervisors of Office and Administrative Support Workers	3,277	3,441	949
49-9071	Maintenance and Repair Workers, General	3,211	3,310	807
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	3,069	2,877	521
13-2011	Accountants and Auditors	2,910	3,242	1,301
25-2021	Elementary School Teachers, Except Special Education	2,676	2,536	533
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	2,491	2,267	625
25-9041	Teacher Assistants	2,253	2,329	636
33-3012	Correctional Officers and Jailers	2,159	1,951	461
41-3021	Insurance Sales Agents	1,925	2,074	733
13-1031	Claims Adjusters, Examiners, and Investigators	1,806	1,744	473
49-3023	Automotive Service Technicians and Mechanics	1,800	1,999	722
29-2061	Licensed Practical and Licensed Vocational Nurses	1,754	2,088	797
15-1121	Computer Systems Analysts	1,580	2,195	895
15-1151	Computer User Support Specialists	1,567	2,063	776
23-1011	Lawyers	1,533	1,639	368

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 has 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 DUC’s workforce region.

6.3.1 New and Replacement Demand for Key Skilled High Demand Occupations

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

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 will 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 civil engineers.¹¹

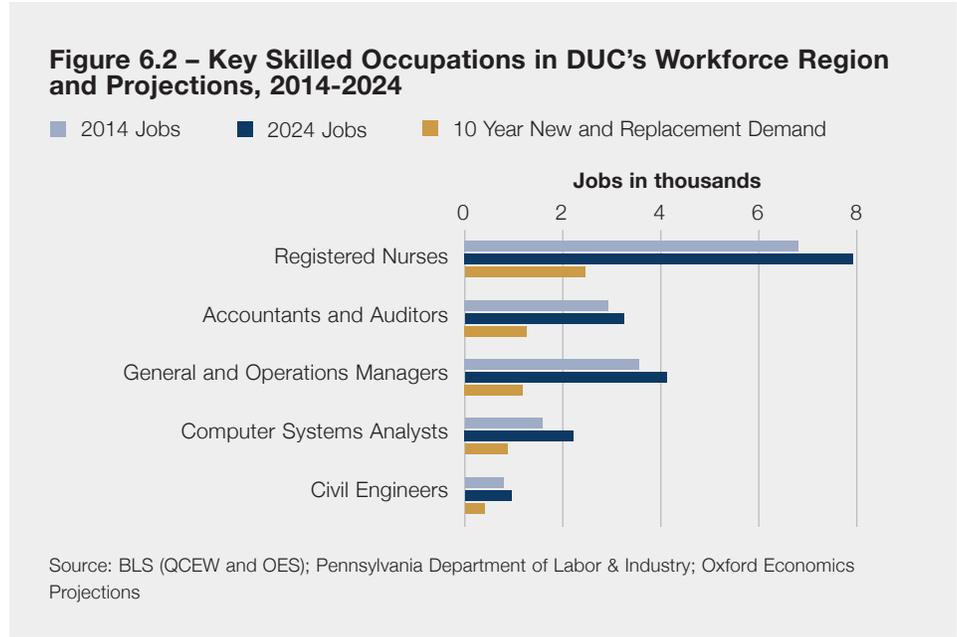


Table 6.2 – Key Skilled Occupations in DUC’s Workforce Region and Projections, 2014-2024

SOC Code	Occupation Title	2014 Jobs	2024 Jobs	10 Year New and Replacement Demand
29-1141	Registered Nurses	6,833	7,911	2,462
13-2011	Accountants and Auditors	2,910	3,242	1,301
11-1021	General and Operations Managers	3,550	4,108	1,190
15-1121	Computer Systems Analysts	1,580	2,195	895
17-2051	Civil Engineers	814	980	388

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 1,100 unique (de-duplicated) job postings appeared in DUC’s Workforce Region for the top five key skilled high demand occupations (registered nurses, accountants and auditors, general and operations managers, computer system analysts, and civil engineers). Sizable job postings include: registered nurses (440 unique postings per month), and computer systems analysts (250 unique postings per month).

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

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	440	213	2.1
Computer Systems Analysts	250	58	4.3
General and Operations Managers	184	188	1.0
Accountants and Auditors	162	159	1.0
Civil Engineers	78	44	1.8

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)

General and Operations Managers

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

Certifications: Six Sigma, Project Management Professional (PMP)

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)

Civil Engineers

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

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

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

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

6.4 Industry Staffing Patterns for Key Skilled High Demand Occupations in Dixon University Center’s Workforce Region

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

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

- The number of the occupation jobs in each respective industry in 2014 (e.g. general medical and surgical hospitals employ over 3,700 registered nurses);
- The percent of the occupation’s employment in the region that is employed in the industry (e.g. the 3,700 registered nurses employed in general medical and surgical hospitals represent over 50% of the total registered nurse workforce in the region);
- The percent of the industry sector’s employment that is made up of the occupation (e.g. the 3,700 registered nurses make up about 30% of employment within general medical and surgical hospitals).

Staffing Patterns for Registered Nurses Employed in DUC’s Workforce Region

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
General Medical and Surgical Hospitals	3,739	54.7%	27.2%
Offices of Physicians	473	6.9%	9.4%
Home Health Care Services	394	5.8%	21.0%
Outpatient Care Centers	306	4.5%	15.9%
Specialty (except Psychiatric and Substance Abuse) Hospitals	291	4.3%	27.6%

Source: Bureau of Labor Statistics – OES & QCEW and Oxford Economics tabulations

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

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Management of Companies and Enterprises	225	6.3%	2.7%
Insurance Carriers	164	4.6%	1.5%
Business, Professional, Labor, Political, and Similar Organizations	113	3.2%	4.5%
General Freight Trucking	97	2.7%	1.3%
Executive, Legislative, and Other General Government Support	97	2.7%	0.8%

Source: Bureau of Labor Statistics – OES & QCEW and Oxford Economics tabulations

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

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Accounting, Tax Preparation, Bookkeeping, and Payroll Services	524	18.0%	38.6%
Management of Companies and Enterprises	422	14.5%	5.0%
Insurance Carriers	256	8.8%	2.4%
Executive, Legislative, and Other General Government Support	98	3.4%	0.8%
Agencies, Brokerages, and Other Insurance Related Activities	70	2.4%	1.5%

Source: Bureau of Labor Statistics – OES & QCEW and Oxford Economics tabulations

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

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Computer Systems Design and Related Services	528	33.4%	12.8%
Insurance Carriers	301	19.1%	2.8%
Management of Companies and Enterprises	200	12.7%	2.4%
Employment Services	106	6.7%	1.0%
Data Processing, Hosting, and Related Services	81	5.1%	7.6%

Source: Bureau of Labor Statistics – OES & QCEW and Oxford Economics tabulations

Staffing Patterns for Civil Engineers Employed in DUC's Workforce Region

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Architectural, Engineering, and Related Services	519	63.8%	14.4%
Executive, Legislative, and Other General Government Support	75	9.3%	0.6%
Employment Services	32	3.9%	0.3%
Justice, Public Order, and Safety Activities	28	3.4%	0.6%
Administration of Economic Programs	27	3.3%	0.6%

Source: Bureau of Labor Statistics – OES & QCEW and Oxford Economics tabulations

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

6.5 Key Skilled High Demand Occupational Profiles

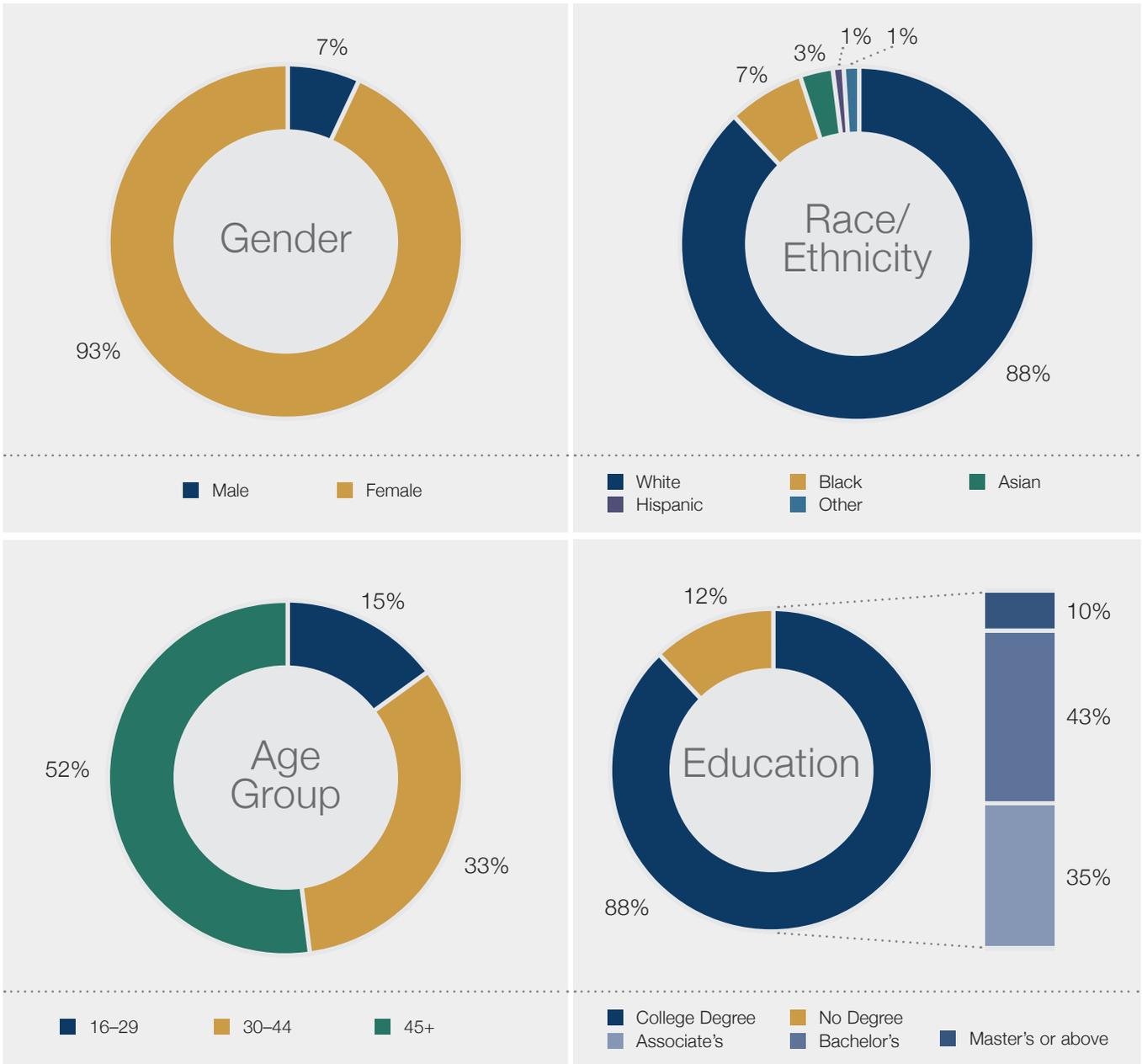
In addition to understanding the industries that employ key skilled high demand occupations, another lens to view key skilled high demand occupations focuses on the characteristics of those employed. The following section outlines the demographics for people from Pennsylvania who work in these key skilled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

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

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

REGISTERED NURSES IN PENNSYLVANIA

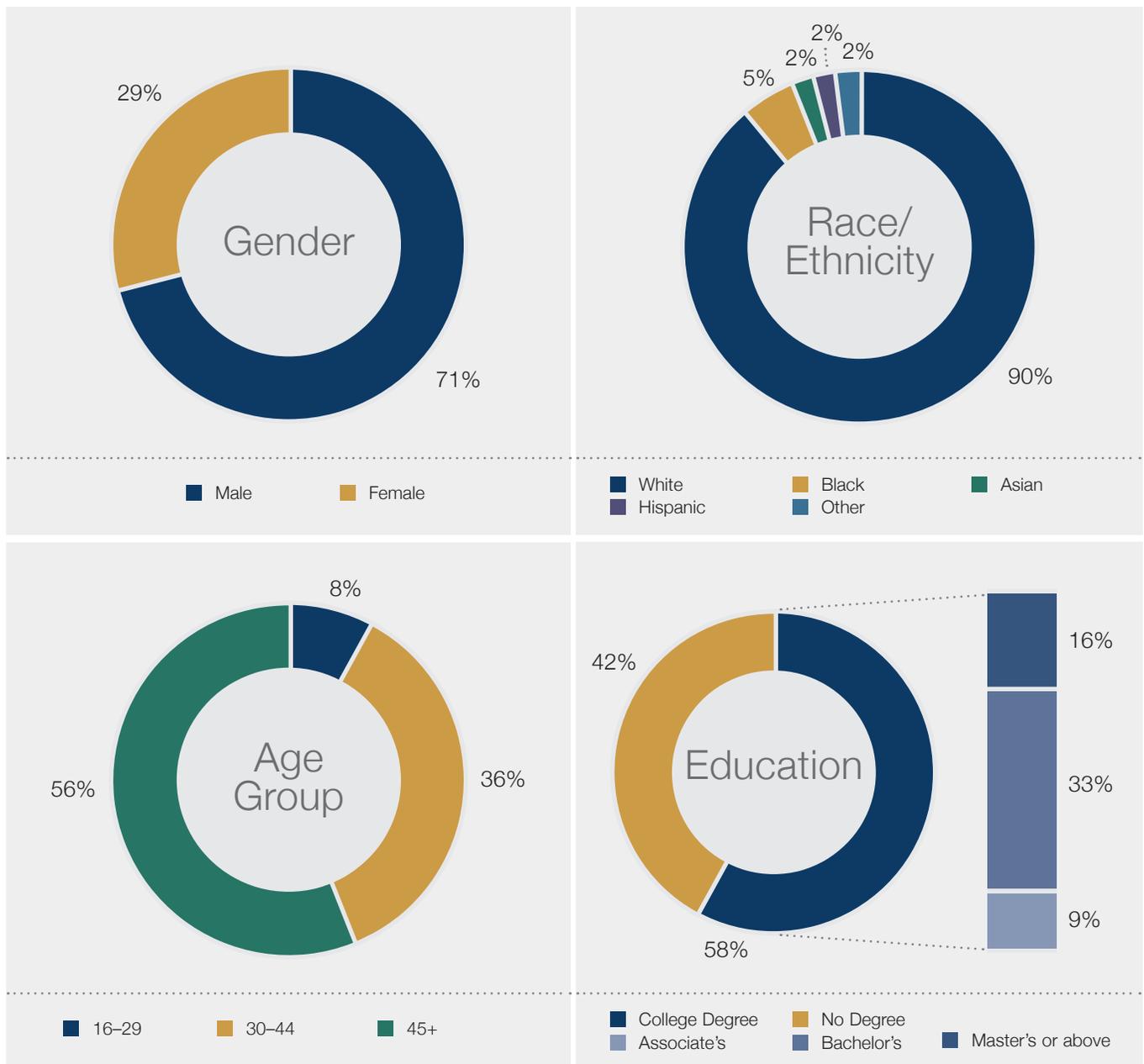
The demographic profile of registered nurses is largely dominated by white females. Age distribution indicates that registered nurses are a more mature cohort of workers (45 years and older), which can put increasing pressure on replacement jobs due to retirements over the next 10 years. Nearly 90% of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



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

GENERAL AND OPERATIONS MANAGERS IN PENNSYLVANIA

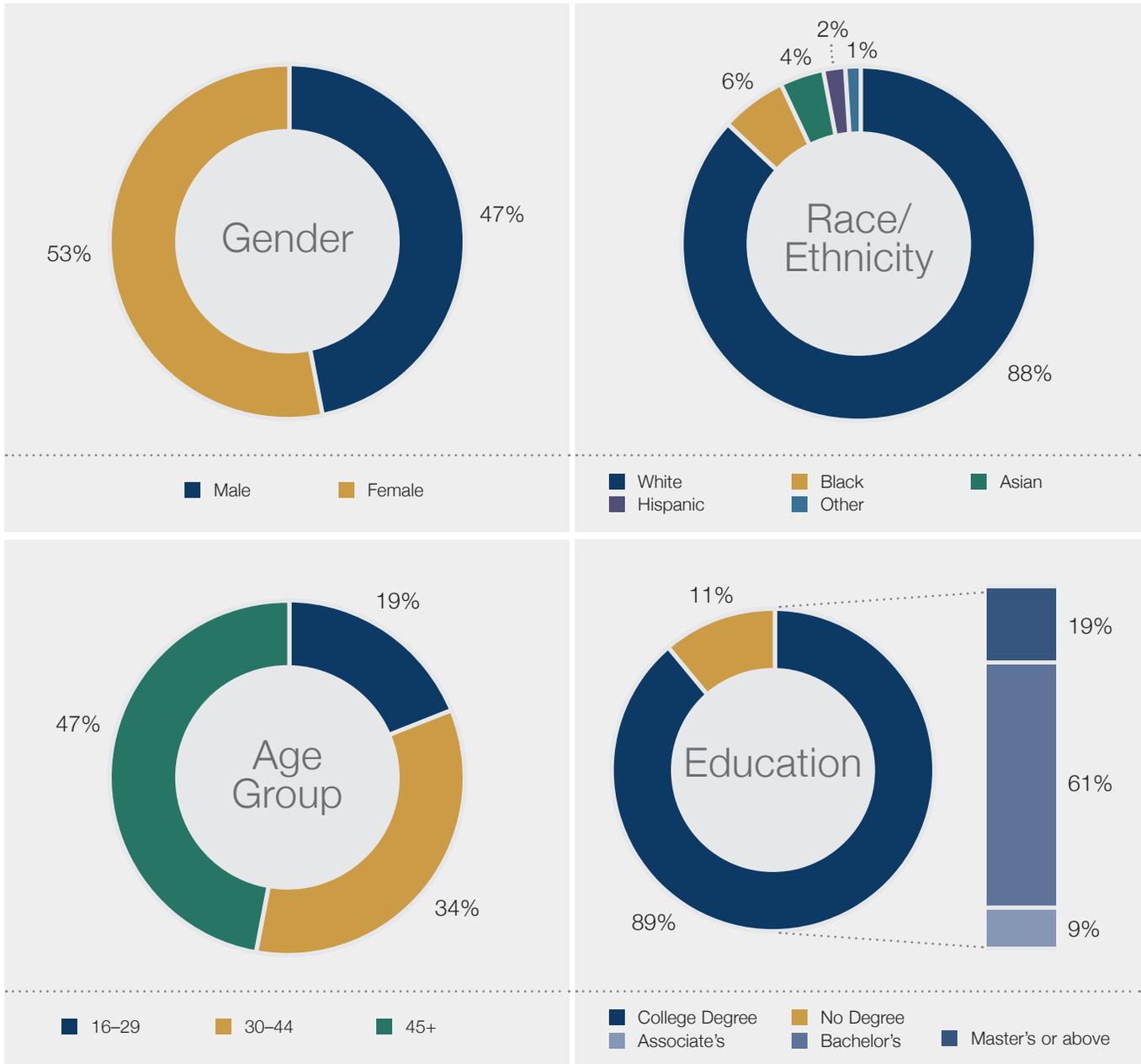
General and operations managers are typically male, though females occupy almost 30% of the employed population. The majority of those in this occupation are white. This occupation is represented by a more mature cohort of workers (45 years and older), though mid-career workers also occupy a significant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



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

ACCOUNTANTS AND AUDITORS IN PENNSYLVANIA

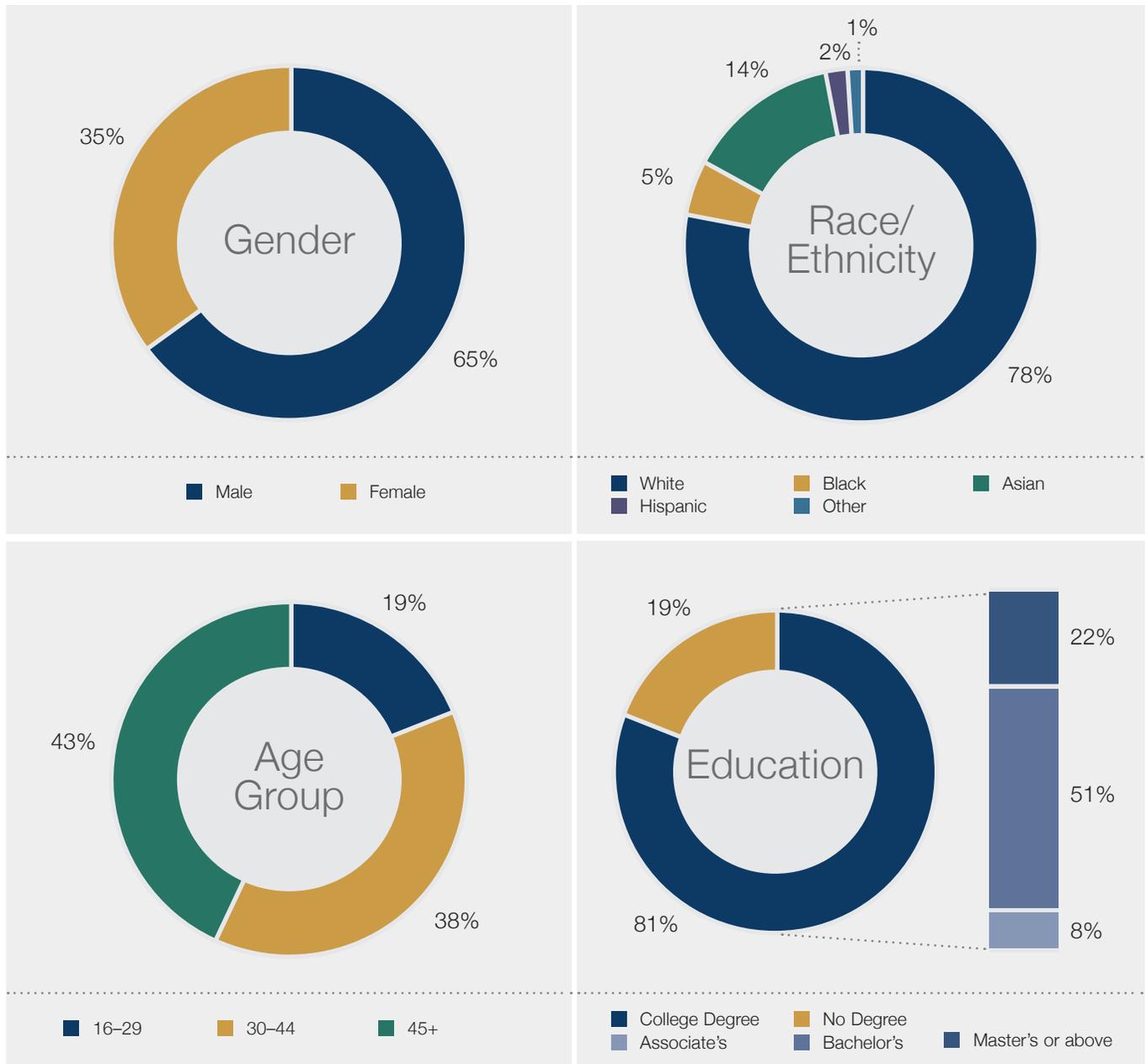
Accountants and auditors are fairly equally split between male and female, though a slightly higher percent of employed accountants and auditors are female. A high proportion of white individuals are found in the occupation. Additionally, the age distribution is fairly even between entry-level and mature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



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

COMPUTER SYSTEMS ANALYSTS IN PENNSYLVANIA

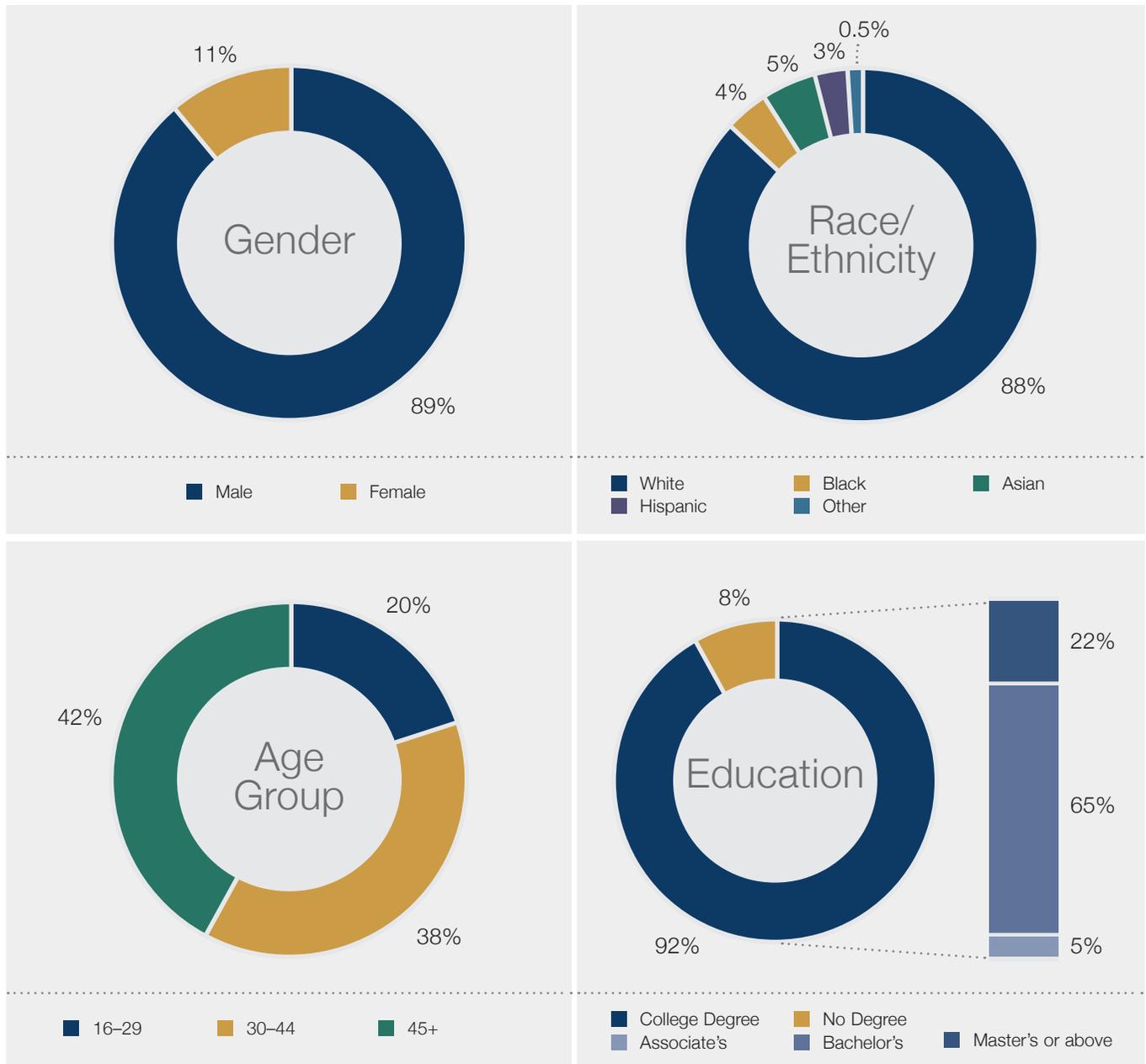
Computer systems analysts show a larger proportion of males in the occupation compared to females. While still represented by a larger share of white workers, a significant number of Asian workers are found in the occupation, making this occupation more diverse than the average Pennsylvania demographic 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

CIVIL ENGINEERS IN PENNSYLVANIA

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



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

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

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

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

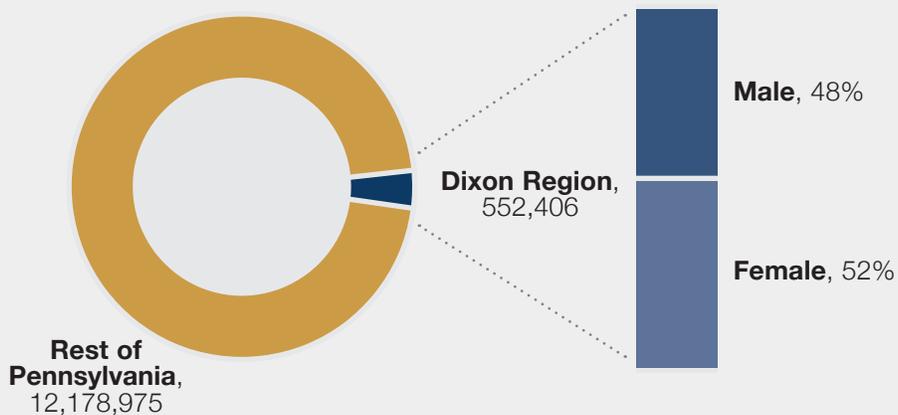
Analysis of three socio-economic indicators—education, unemployment, and poverty—also provides insight into the segment of the population that may be considered economically disadvantaged. Areas with high proportions of economically disadvantaged learners may require additional considerations in education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

7.1 Demographics of Dixon University Center's Workforce Region

The DUC workforce region has a population of about 552,400 people. As shown in Figure 7.1, females make up a slightly larger share of the population compared to males. Figure 7.2 illustrates that the majority of the region is represented by a white demographic, with Blacks representing the next largest group, followed by Hispanics.

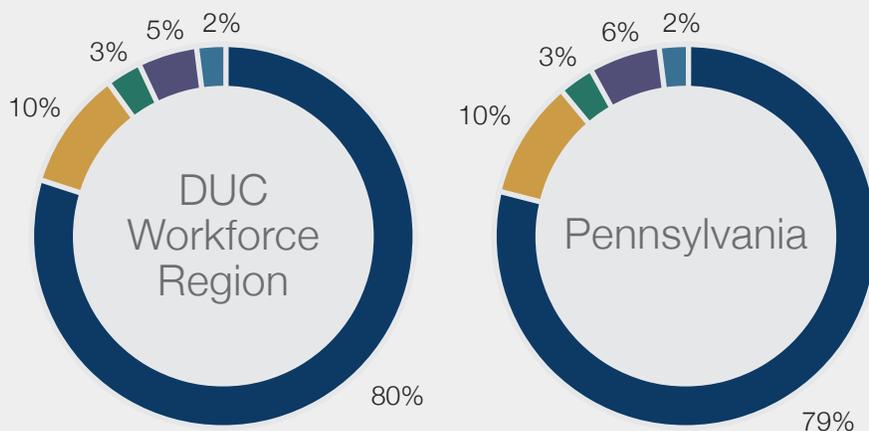
Fall 2014 data from the State System Research Office indicates that approximately 83% (90,966) of learners within the State System are traditional students—ages 18 to 22 year old high school graduates—and 17% (18,640) are adult learners. A view of the change in population by age demographic indicates a diminishing number in the traditional age cohort and a growing rate of adults aged 25 to 34 years old. As illustrated in figure 7.3, the 10 to 19 year old cohort population declined by nearly 2,600 people between 2010 and 2014—a 3.5% decline. Conversely, the 25-34 year old cohort increased by 7.5%, or 5,100 people, over the same time period. This demographic shift presents an opportunity to incorporate a broader university recruitment strategy.

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



Source: U.S. Census - ACS

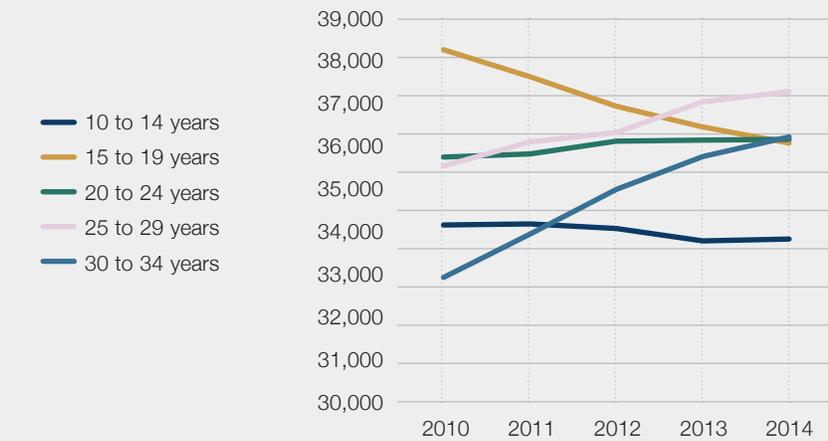
Figure 7.2 – Dixon University Center's Workforce Region Race/Ethnicity Composition



■ White ■ Black ■ Asian ■ Hispanic ■ Other

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

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



Source: U.S. Census

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

7.2 Socio-economic Indicators of Dixon University Center's Workforce Region

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

7.2.1 Educational Attainment in Dixon University Center's Workforce Region

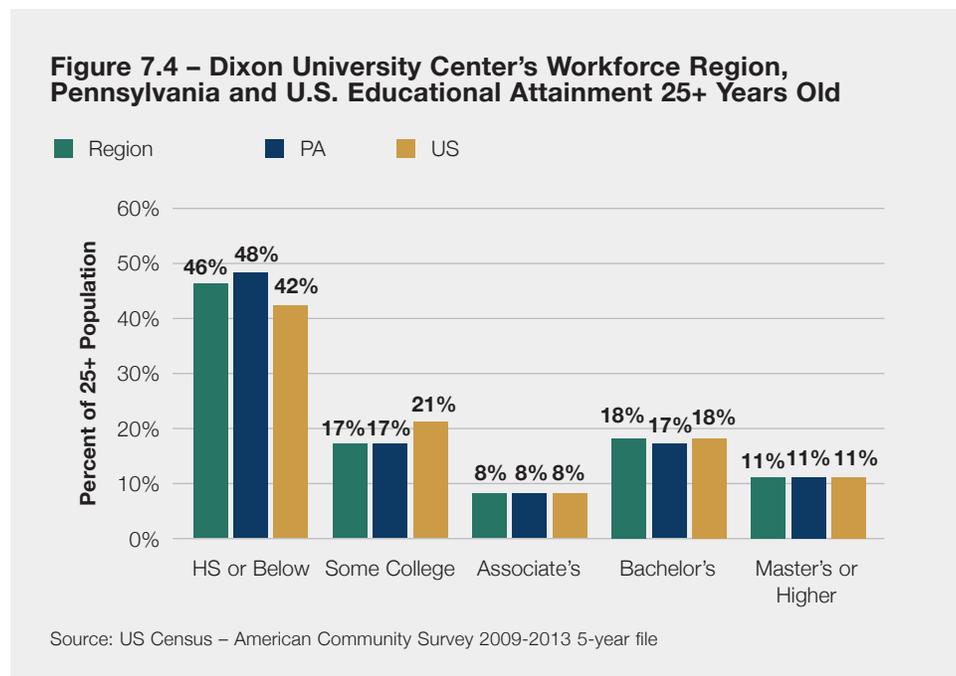
The levels of educational attainment of a population indicate several characteristics in an economy. Areas with better educated workers earn higher wages, are more productive and can typically adjust more quickly to changing economic conditions. Additionally, an educated workforce is less likely to be

unemployed, require social assistance, and more likely to lead a healthier lifestyle—aspects that bolster value in an economy.^{12, 13}

A view of educational attainment in DUC’s workforce region indicates that more than half (54%) of those over 25 years old have had some post-secondary education or higher. Some college is defined by ACS as having some college, but less than one year or one or more years of college credit, but no degree. This is the slightly below the national average of 58% of the population having had at least some post-secondary education or higher.

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

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



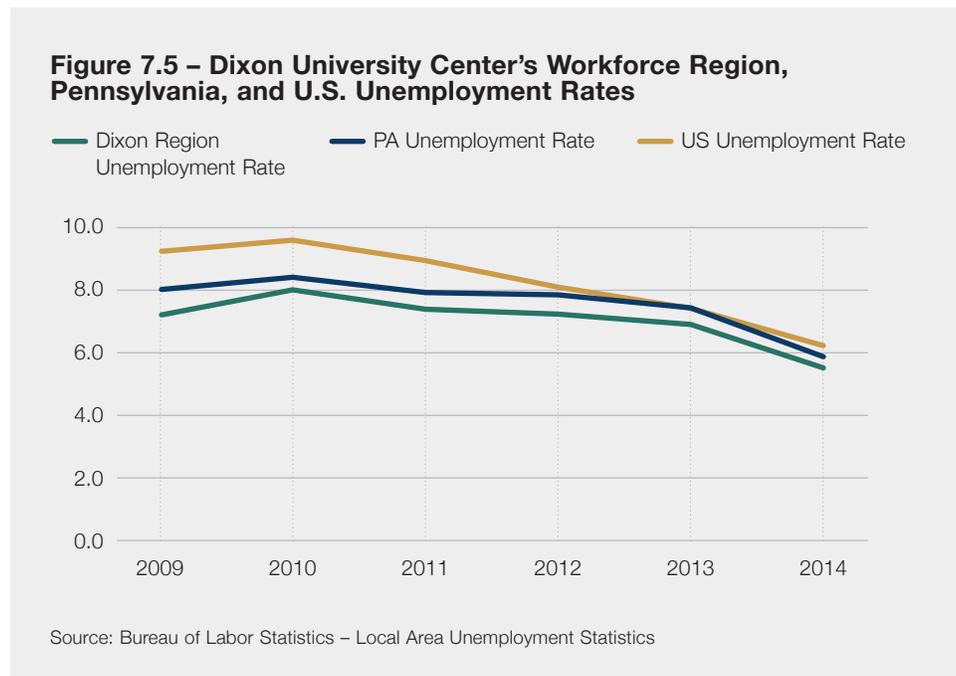
12 Feinstein et. al. (2006), “The effects of education on health: Concepts, evidence and policy implications: A review for the OECD Center for Educational Research and Innovation (CERI)”, unpublished manuscript, OECD, Paris.

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

7.2.2 Unemployment and Poverty in Dixon University Center's Workforce Region

DUC's workforce region unemployment rate—5.6% in 2014—has trended closely with the state and national unemployment rate since 2012. This suggests that opportunities for dislocated workers on average are roughly the same compared to the rest of the nation.

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

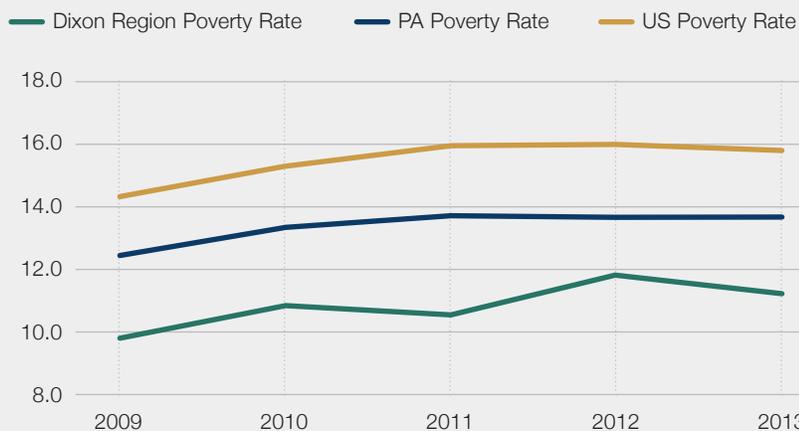


In DUC's workforce region, the poverty rate trended upward since 2009 but declined slightly from 2012 to 2013. The region's poverty rate is below both the state poverty rate and the U.S. average.¹⁴ Given the lower poverty rate compared with the nation, there is an underlying assumption that the compensation associated with the jobs in DUC's workforce region may be higher than the national average.

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

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.

Figure 7.6 – Dixon University Center’s Workforce Region, Pennsylvania, and U.S. Poverty Rates



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

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

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

8. NEXT STEPS

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

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

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

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

9. DATA SOURCES

Bureau of Labor Statistics (BLS):

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

U.S. Census Bureau (Census):

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

National Center for Education Statistics (NCES):

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

Pennsylvania Department of Labor and Industry (PADLI):

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

O*NET Resource Center (O*NET)

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

Economic Modeling Specialists International (EMSI)

APPENDIX A: METHODOLOGY FOR IDENTIFYING STATE SYSTEM UNIVERSITY WORKFORCE REGIONS

Introduction

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

A workforce region is defined as: a labor market area or an economically integrated region within which residents can find jobs within a reasonable commuting distance or can change their employment without changing their place of residence.¹⁵ When determining a workforce region, there is no universal approach.¹⁶ Given the target audience for the workforce region—State System universities—the context used to define the region should reflect multiple regional characteristics that the universities are tasked to support, while still conforming to the broader definition of what is often called a functional economic market area (FEMA). A FEMA is best described as an area that contains key economic markets. These economic markets best reflect drivers of the local economy such as the workforce and inter-industry business activity. For the purposes of this analysis, three drivers are measured in order to best define workforce regions, specifically:

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

¹⁵ Bureau of Labor Statistics: Labor Market Area.

¹⁶ *Functional Economic Market Areas: An economic note*. Communities and Local Government. February 2010. <http://webarchive.nationalarchives.gov.uk/20120919132719/http://www.communities.gov.uk/documents/localgovernment/pdf/1469713.pdf>

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

Further information on each of the measurements is detailed later.

Geographic Consideration

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

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

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

Specifically, small population counties that contain a State System university do not contain a large workforce. Furthermore, the commuting flows of the workforce may seemingly favor the county containing the State System University. However, if a reasonable proportion of in commuters and out commuters (generally 10% or more) are traveling to work in contiguous counties, then these counties were included in the workforce region of the university.¹⁷

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

¹⁷ The contiguous region approach employs the U.S. Department of Labor, Bureau of Labor Statistics’ (BLS) Small Labor Market Areas’ criteria to designating a labor market area. However, the 25% threshold set by the BLS was relaxed in order to adhere to an additional criterion of inclusiveness, wherein every county in Pennsylvania is assigned to at least one university. To meet this criteria, the proportion of county-level State System learner enrollment within PA attending the university was also included to identify a contiguous geographic area that captures both labor shed and county-level learner enrollment density (i.e. a percentage of State System learners from within the county and nearby counties that are attending the university—a “capture rate”).

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

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

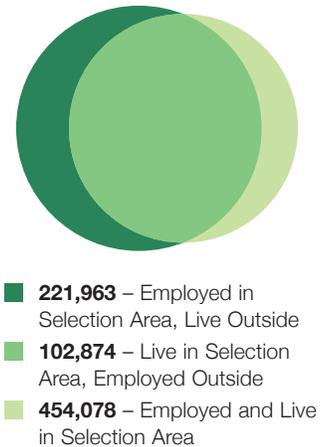
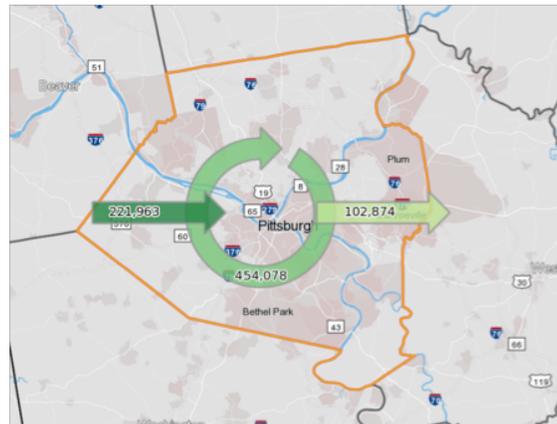
Process

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

Workforce Flows:

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

Inflow/Outflow Job Counts in 2013



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

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

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

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

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

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

Learner Capture Rates and Inclusiveness:

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

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

Economic Activity and Concentration:

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

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

Table A.1 – State System Workforce Region by University

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

Source: Oxford Economics modeling and tabulations

APPENDIX B: INDUSTRY PROJECTIONS 2014-2024 FOR DIXON UNIVERSITY CENTER'S WORKFORCE REGION

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

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

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
Total	All Industries	318,433	348,322	9.4%	1.0
1111	Oilseed and Grain Farming	40	48	20.0%	0.3
1112	Vegetable and Melon Farming	45	45	0.0%	0.2
1113	Fruit and Tree Nut Farming	59	57	-3.4%	0.1
1114	Greenhouse, Nursery, and Floriculture Production	96	96	0.0%	0.3
1119	Other Crop Farming	9	7	-22.2%	0.1
1121	Cattle Ranching and Farming	235	272	15.7%	0.7
1122	Hog and Pig Farming	27	25	-7.4%	0.4
1123	Poultry and Egg Production	41	39	-4.9%	0.4
1124	Sheep and Goat Farming	5	6	20.0%	1.5
1125	Aquaculture	26	31	19.2%	1.7
1129	Other Animal Production	34	39	14.7%	0.8
1133	Logging	19	19	0.0%	0.2
1142	Hunting and Trapping	6	0	-100.0%	1.4
1151	Support Activities for Crop Production	388	524	35.1%	0.5
1152	Support Activities for Animal Production	52	48	-7.7%	0.8
1153	Support Activities for Forestry	26	34	30.8%	0.7
2111	Oil and Gas Extraction	3	2	-33.3%	0.0
2121	Coal Mining	33	29	-12.1%	0.2
2123	Nonmetallic Mineral Mining and Quarrying	83	81	-2.4%	0.4
2131	Support Activities for Mining	25	31	24.0%	0.0
2211	Electric Power Generation, Transmission and Distribution	613	552	-10.0%	0.5
2212	Natural Gas Distribution	167	165	-1.2%	0.6
2213	Water, Sewage and Other Systems	443	507	14.4%	0.9
2361	Residential Building Construction	1,158	1,411	21.8%	0.8
2362	Nonresidential Building Construction	988	1,222	23.7%	0.6
2371	Utility System Construction	1,185	1,642	38.6%	1.1
2372	Land Subdivision	24	31	29.2%	0.2
2373	Highway, Street, and Bridge Construction	449	579	29.0%	0.5
2379	Other Heavy and Civil Engineering Construction	86	122	41.9%	0.3
2381	Foundation, Structure, and Building Exterior Contractors	1,047	1,290	23.2%	0.6
2382	Building Equipment Contractors	3,735	3,997	7.0%	0.9
2383	Building Finishing Contractors	989	998	0.9%	0.6
2389	Other Specialty Trade Contractors	1,047	1,216	16.1%	0.8
3111	Animal Food Manufacturing	584	598	2.4%	4.6
3112	Grain and Oilseed Milling	157	188	19.7%	1.1
3113	Sugar and Confectionery Product Manufacturing	2,249	2,455	9.2%	13.9

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	369	291	-21.1%	0.9
3115	Dairy Product Manufacturing	1,126	1,082	-3.9%	3.6
3116	Animal Slaughtering and Processing	889	1,113	25.2%	0.8
3118	Bakeries and Tortilla Manufacturing	558	506	-9.3%	0.8
3119	Other Food Manufacturing	70	58	-17.1%	0.2
3121	Beverage Manufacturing	419	506	20.8%	0.9
3132	Fabric Mills	36	32	-11.1%	0.3
3133	Textile and Fabric Finishing and Fabric Coating Mills	15	14	-6.7%	0.2
3141	Textile Furnishings Mills	8	7	-12.5%	0.1
3149	Other Textile Product Mills	39	24	-38.5%	0.3
3151	Apparel Knitting Mills	17	14	-17.6%	0.5
3152	Cut and Sew Apparel Manufacturing	132	58	-56.1%	0.5
3159	Apparel Accessories and Other Apparel Manufacturing	16	8	-50.0%	0.6
3169	Other Leather and Allied Product Manufacturing	70	66	-5.7%	2.7
3211	Sawmills and Wood Preservation	76	97	27.6%	0.4
3219	Other Wood Product Manufacturing	437	534	22.2%	0.9
3221	Pulp, Paper, and Paperboard Mills	241	283	17.4%	1.0
3222	Converted Paper Product Manufacturing	180	140	-22.2%	0.3
3231	Printing and Related Support Activities	1,563	1,293	-17.3%	1.5
3241	Petroleum and Coal Products Manufacturing	284	314	10.6%	1.1
3251	Basic Chemical Manufacturing	12	13	8.3%	0.0
3254	Pharmaceutical and Medicine Manufacturing	54	40	-25.9%	0.1
3255	Paint, Coating, and Adhesive Manufacturing	4	5	25.0%	0.0
3259	Other Chemical Product and Preparation Manufacturing	17	20	17.6%	0.1
3261	Plastics Product Manufacturing	853	992	16.3%	0.7
3262	Rubber Product Manufacturing	586	620	5.8%	1.9
3271	Clay Product and Refractory Manufacturing	91	115	26.4%	1.0
3272	Glass and Glass Product Manufacturing	381	370	-2.9%	2.0
3273	Cement and Concrete Product Manufacturing	391	427	9.2%	1.0
3279	Other Nonmetallic Mineral Product Manufacturing	118	147	24.6%	0.7
3311	Iron and Steel Mills and Ferroalloy Manufacturing	365	287	-21.4%	1.7
3312	Steel Product Manufacturing from Purchased Steel	250	286	14.4%	1.8
3313	Alumina and Aluminum Production and Processing	418	496	18.7%	3.1
3314	Nonferrous Metal (except Aluminum) Production and Processing	118	140	18.6%	0.8
3315	Foundries	277	324	17.0%	0.9
3321	Forging and Stamping	80	69	-13.8%	0.3
3322	Cutlery and Handtool Manufacturing	121	105	-13.2%	1.3

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3323	Architectural and Structural Metals Manufacturing	438	539	23.1%	0.5
3324	Boiler, Tank, and Shipping Container Manufacturing	132	149	12.9%	0.6
3325	Hardware Manufacturing	24	23	-4.2%	0.4
3326	Spring and Wire Product Manufacturing	103	90	-12.6%	1.0
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	287	336	17.1%	0.3
3328	Coating, Engraving, Heat Treating, and Allied Activities	182	177	-2.7%	0.6
3329	Other Fabricated Metal Product Manufacturing	214	194	-9.3%	0.3
3331	Agriculture, Construction, and Mining Machinery Manufacturing	201	216	7.5%	0.3
3332	Industrial Machinery Manufacturing	71	69	-2.8%	0.3
3333	Commercial and Service Industry Machinery Manufacturing	82	76	-7.3%	0.4
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	61	48	-21.3%	0.2
3335	Metalworking Machinery Manufacturing	515	474	-8.0%	1.2
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	71	57	-19.7%	0.3
3339	Other General Purpose Machinery Manufacturing	355	398	12.1%	0.6
3341	Computer and Peripheral Equipment Manufacturing	8	9	12.5%	0.0
3342	Communications Equipment Manufacturing	41	46	12.2%	0.2
3343	Audio and Video Equipment Manufacturing	9	10	11.1%	0.2
3344	Semiconductor and Other Electronic Component Manufacturing	1,064	924	-13.2%	1.2
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	103	75	-27.2%	0.1
3351	Electric Lighting Equipment Manufacturing	15	19	26.7%	0.1
3353	Electrical Equipment Manufacturing	28	23	-17.9%	0.1
3359	Other Electrical Equipment and Component Manufacturing	1,960	1,881	-4.0%	6.6
3362	Motor Vehicle Body and Trailer Manufacturing	89	114	28.1%	0.3
3363	Motor Vehicle Parts Manufacturing	21	26	23.8%	0.0
3364	Aerospace Product and Parts Manufacturing	160	197	23.1%	0.1
3365	Railroad Rolling Stock Manufacturing	92	117	27.2%	1.4
3369	Other Transportation Equipment Manufacturing	28	36	28.6%	0.4
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	172	166	-3.5%	0.3
3372	Office Furniture (including Fixtures) Manufacturing	34	28	-17.6%	0.1
3379	Other Furniture Related Product Manufacturing	0	0	#DIV/0!	0.0
3391	Medical Equipment and Supplies Manufacturing	495	546	10.3%	0.7
3399	Other Miscellaneous Manufacturing	204	166	-18.6%	0.3
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	1,391	1,418	1.9%	1.8
4232	Furniture and Home Furnishing Merchant Wholesalers	83	96	15.7%	0.4

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
4233	Lumber and Other Construction Materials Merchant Wholesalers	416	465	11.8%	0.9
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	1,735	1,650	-4.9%	1.2
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	135	127	-5.9%	0.5
4236	Household Appliances and Electrical and Electronic Goods Merchant Wholesalers	586	588	0.3%	0.8
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	671	787	17.3%	1.2
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	1,247	1,272	2.0%	0.8
4239	Miscellaneous Durable Goods Merchant Wholesalers	351	453	29.1%	0.5
4241	Paper and Paper Product Merchant Wholesalers	334	290	-13.2%	1.2
4242	Drugs and Druggists' Sundries Merchant Wholesalers	156	123	-21.2%	0.3
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	27	25	-7.4%	0.1
4244	Grocery and Related Product Merchant Wholesalers	2,012	2,093	4.0%	1.2
4245	Farm Product Raw Material Merchant Wholesalers	15	20	33.3%	0.1
4246	Chemical and Allied Products Merchant Wholesalers	211	231	9.5%	0.7
4247	Petroleum and Petroleum Products Merchant Wholesalers	65	52	-20.0%	0.3
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	145	175	20.7%	0.3
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	503	472	-6.2%	0.7
4251	Wholesale Electronic Markets and Agents and Brokers	1,672	1,714	2.5%	0.8
4411	Automobile Dealers	2,952	3,494	18.4%	1.1
4412	Other Motor Vehicle Dealers	221	266	20.4%	0.7
4413	Automotive Parts, Accessories, and Tire Stores	910	1,023	12.4%	0.7
4421	Furniture Stores	346	308	-11.0%	0.7
4422	Home Furnishings Stores	417	409	-1.9%	0.8
4431	Electronics and Appliance Stores	817	807	-1.2%	0.7
4441	Building Material and Supplies Dealers	2,132	2,319	8.8%	0.8
4442	Lawn and Garden Equipment and Supplies Stores	418	454	8.6%	1.2
4451	Grocery Stores	6,374	6,752	5.9%	1.0
4452	Specialty Food Stores	228	222	-2.6%	0.4
4453	Beer, Wine, and Liquor Stores	464	579	24.8%	1.3
4461	Health and Personal Care Stores	1,863	1,823	-2.1%	0.8
4471	Gasoline Stations	2,069	2,049	-1.0%	1.0
4481	Clothing Stores	1,988	1,880	-5.4%	0.8
4482	Shoe Stores	354	374	5.6%	0.8
4483	Jewelry, Luggage, and Leather Goods Stores	255	269	5.5%	0.8
4511	Sporting Goods, Hobby, and Musical Instrument Stores	1,205	1,188	-1.4%	1.0
4512	Book Stores and News Dealers	152	74	-51.3%	0.7

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
4521	Department Stores	2,419	2,031	-16.0%	0.8
4529	Other General Merchandise Stores	2,774	3,144	13.3%	0.7
4531	Florists	156	129	-17.3%	1.1
4532	Office Supplies, Stationery, and Gift Stores	571	464	-18.7%	0.8
4533	Used Merchandise Stores	348	441	26.7%	0.9
4539	Other Miscellaneous Store Retailers	571	587	2.8%	0.8
4541	Electronic Shopping and Mail-Order Houses	791	718	-9.2%	1.0
4542	Vending Machine Operators	183	197	7.7%	2.1
4543	Direct Selling Establishments	570	658	15.4%	1.8
4811	Scheduled Air Transportation	302	266	-11.9%	0.3
4812	Nonscheduled Air Transportation	2	2	0.0%	0.0
4832	Inland Water Transportation	29	38	31.0%	0.5
4841	General Freight Trucking	7,465	8,700	16.5%	3.3
4842	Specialized Freight Trucking	1,033	1,296	25.5%	1.0
4851	Urban Transit Systems	163	172	5.5%	0.3
4852	Interurban and Rural Bus Transportation	0	0	#DIV/0!	0.0
4853	Taxi and Limousine Service	55	56	1.8%	0.3
4854	School and Employee Bus Transportation	1,409	1,575	11.8%	2.4
4855	Charter Bus Industry	33	42	27.3%	0.5
4859	Other Transit and Ground Passenger Transportation	216	307	42.1%	1.0
4862	Pipeline Transportation of Natural Gas	43	57	32.6%	0.6
4869	Other Pipeline Transportation	7	6	-14.3%	0.4
4871	Scenic and Sightseeing Transportation, Land	12	11	-8.3%	0.4
4872	Scenic and Sightseeing Transportation, Water	28	36	28.6%	0.8
4881	Support Activities for Air Transportation	149	198	32.9%	0.3
4882	Support Activities for Rail Transportation	128	135	5.5%	1.7
4884	Support Activities for Road Transportation	526	790	50.2%	2.0
4885	Freight Transportation Arrangement	362	458	26.5%	0.8
4889	Other Support Activities for Transportation	55	72	30.9%	0.7
4911	Postal Service	1,886	1,479	-21.6%	1.4
4921	Couriers and Express Delivery Services	2,177	2,218	1.9%	1.8
4922	Local Messengers and Local Delivery	122	141	15.6%	1.0
4931	Warehousing and Storage	7,315	8,938	22.2%	4.2
5111	Newspaper, Periodical, Book, and Directory Publishers	700	526	-24.9%	0.7
5112	Software Publishers	65	54	-16.9%	0.1
5121	Motion Picture and Video Industries	478	503	5.2%	0.6
5122	Sound Recording Industries	15	14	-6.7%	0.4

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
5151	Radio and Television Broadcasting	569	566	-0.5%	1.1
5171	Wired Telecommunications Carriers	1,185	943	-20.4%	0.8
5172	Wireless Telecommunications Carriers (except Satellite)	203	164	-19.2%	0.6
5174	Satellite Telecommunications	14	14	0.0%	0.6
5179	Other Telecommunications	33	23	-30.3%	0.2
5182	Data Processing, Hosting, and Related Services	1,072	1,146	6.9%	1.6
5191	Other Information Services	413	426	3.1%	0.5
5221	Depository Credit Intermediation	3,997	4,164	4.2%	1.0
5222	Nondepository Credit Intermediation	864	783	-9.4%	0.6
5223	Activities Related to Credit Intermediation	146	131	-10.3%	0.2
5231	Securities and Commodity Contracts Intermediation and Brokerage	318	386	21.4%	0.3
5239	Other Financial Investment Activities	549	806	46.8%	0.5
5241	Insurance Carriers	10,777	9,867	-8.4%	3.9
5242	Agencies, Brokerages, and Other Insurance Related Activities	4,766	6,090	27.8%	2.0
5251	Insurance and Employee Benefit Funds	0	0	#DIV/0!	0.1
5259	Other Investment Pools and Funds	338	410	21.3%	41.1
5311	Lessors of Real Estate	691	640	-7.4%	0.5
5312	Offices of Real Estate Agents and Brokers	367	429	16.9%	0.5
5313	Activities Related to Real Estate	610	658	7.9%	0.4
5321	Automotive Equipment Rental and Leasing	667	791	18.6%	1.5
5322	Consumer Goods Rental	220	235	6.8%	0.6
5323	General Rental Centers	118	130	10.2%	1.3
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	163	225	38.0%	0.5
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	18	24	33.3%	0.3
5411	Legal Services	2,423	2,506	3.4%	0.9
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	1,358	1,619	19.2%	0.6
5413	Architectural, Engineering, and Related Services	3,605	4,290	19.0%	1.1
5414	Specialized Design Services	35	34	-2.9%	0.1
5415	Computer Systems Design and Related Services	4,110	5,647	37.4%	1.0
5416	Management, Scientific, and Technical Consulting Services	2,008	2,106	4.9%	0.7
5417	Scientific Research and Development Services	202	274	35.6%	0.1
5418	Advertising, Public Relations, and Related Services	887	936	5.5%	0.8
5419	Other Professional, Scientific, and Technical Services	1,018	1,167	14.6%	0.7
5511	Management of Companies and Enterprises	8,418	10,248	21.7%	1.7
5611	Office Administrative Services	143	182	27.3%	0.1
5612	Facilities Support Services	254	360	41.7%	0.8

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
5613	Employment Services	10,977	14,650	33.5%	1.4
5614	Business Support Services	2,264	2,550	12.6%	1.1
5615	Travel Arrangement and Reservation Services	250	294	17.6%	0.5
5616	Investigation and Security Services	1,854	2,401	29.5%	0.9
5617	Services to Buildings and Dwellings	3,592	4,237	18.0%	0.8
5619	Other Support Services	1,505	2,008	33.4%	2.1
5621	Waste Collection	151	169	11.9%	0.4
5622	Waste Treatment and Disposal	104	136	30.8%	0.4
5629	Remediation and Other Waste Management Services	276	283	2.5%	0.9
6111	Elementary and Secondary Schools	13,624	12,547	-7.9%	0.7
6112	Junior Colleges	1,613	1,934	19.9%	1.0
6113	Colleges, Universities, and Professional Schools	6,096	5,903	-3.2%	0.9
6114	Business Schools and Computer and Management Training	139	145	4.3%	0.8
6115	Technical and Trade Schools	236	281	19.1%	0.7
6116	Other Schools and Instruction	454	545	20.0%	0.5
6117	Educational Support Services	273	392	43.6%	0.8
6211	Offices of Physicians	5,012	5,812	16.0%	0.9
6212	Offices of Dentists	1,643	1,905	15.9%	0.8
6213	Offices of Other Health Practitioners	2,274	3,275	44.0%	1.2
6214	Outpatient Care Centers	1,922	2,500	30.1%	1.1
6215	Medical and Diagnostic Laboratories	437	538	23.1%	0.7
6216	Home Health Care Services	1,880	2,570	36.7%	0.6
6219	Other Ambulatory Health Care Services	701	879	25.4%	1.0
6221	General Medical and Surgical Hospitals	13,750	14,799	7.6%	1.1
6222	Psychiatric and Substance Abuse Hospitals	709	921	29.9%	1.3
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	1,053	1,301	23.6%	1.8
6231	Nursing Care Facilities (Skilled Nursing Facilities)	2,870	3,212	11.9%	0.7
6232	Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	1,628	1,669	2.5%	1.0
6233	Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	2,970	3,484	17.3%	1.5
6239	Other Residential Care Facilities	602	744	23.6%	1.5
6241	Individual and Family Services	5,101	7,272	42.6%	1.0
6242	Community Food and Housing, and Emergency and Other Relief Services	268	369	37.7%	0.7
6243	Vocational Rehabilitation Services	589	829	40.7%	0.7
6244	Child Day Care Services	2,186	2,702	23.6%	1.1
7111	Performing Arts Companies	69	75	8.7%	0.3

NAICS	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
7112	Spectator Sports	230	191	-17.0%	0.7
7113	Promoters of Performing Arts, Sports, and Similar Events	80	82	2.5%	0.3
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	7	6	-14.3%	0.1
7115	Independent Artists, Writers, and Performers	94	110	17.0%	0.8
7121	Museums, Historical Sites, and Similar Institutions	386	475	23.1%	0.7
7131	Amusement Parks and Arcades	931	848	-8.9%	2.1
7132	Gambling Industries	3,028	3,873	27.9%	4.9
7139	Other Amusement and Recreation Industries	2,725	2,823	3.6%	0.9
7211	Traveler Accommodation	4,505	4,589	1.9%	1.0
7212	RV (Recreational Vehicle) Parks and Recreational Camps	83	85	2.4%	0.6
7213	Rooming and Boarding Houses	8	8	0.0%	0.3
7223	Special Food Services	2,149	2,470	14.9%	1.5
7224	Drinking Places (Alcoholic Beverages)	601	580	-3.5%	0.7
7225	Restaurants and Other Eating Places	16,722	18,926	13.2%	0.7
8111	Automotive Repair and Maintenance	1,733	1,847	6.6%	0.8
8112	Electronic and Precision Equipment Repair and Maintenance	297	356	19.9%	1.2
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	429	533	24.2%	0.9
8114	Personal and Household Goods Repair and Maintenance	38	34	-10.5%	0.2
8121	Personal Care Services	1,745	1,943	11.3%	1.1
8122	Death Care Services	318	384	20.8%	1.0
8123	Drycleaning and Laundry Services	416	437	5.0%	0.6
8129	Other Personal Services	454	569	25.3%	0.7
8131	Religious Organizations	318	314	-1.3%	0.7
8132	Grantmaking and Giving Services	808	716	-11.4%	2.5
8133	Social Advocacy Organizations	544	553	1.7%	1.1
8134	Civic and Social Organizations	1,899	1,987	4.6%	2.1
8139	Business, Professional, Labor, Political, and Similar Organizations	2,516	2,581	2.6%	2.5
8141	Private Households	134	125	-6.7%	0.2
9211	Executive, Legislative, and Other General Government Support	12,289	11,281	-8.2%	1.8
9221	Justice, Public Order, and Safety Activities	4,561	4,539	-0.5%	1.0
9231	Administration of Human Resource Programs	4,398	4,126	-6.2%	2.4
9241	Administration of Environmental Quality Programs	1,837	1,848	0.6%	2.5
9251	Administration of Housing Programs, Urban Planning, and Community Development	393	411	4.6%	2.1
9261	Administration of Economic Programs	4,441	4,392	-1.1%	3.2
9281	National Security and International Affairs	3,493	3,192	-8.6%	2.6

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

APPENDIX C: OCCUPATION PROJECTIONS 2014-2024 FOR DIXON UNIVERSITY CENTER'S WORKFORCE REGION

For this analysis a “skilled” occupation is defined as an occupation in O*NET Job Zones¹⁸ 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.¹⁹

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

¹⁸ <https://www.onetonline.org/help/online/zones>

¹⁹ <http://www.onetcenter.org/overview.html>

- *Education* – These occupations usually require a high school diploma.
- *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	318,433	348,322	9.4%	119,709
11-1011	Chief Executives	5	603	581	-3.6%	120
11-1021	General and Operations Managers	4	3,550	4,108	15.7%	1,190
11-1031	Legislators	4	274	221	-19.3%	19
11-2011	Advertising and Promotions Managers	4	40	32	-20.0%	5
11-2021	Marketing Managers	4	311	340	9.3%	97
11-2022	Sales Managers	4	561	554	-1.2%	114
11-2031	Public Relations and Fundraising Managers	4	129	115	-10.9%	14
11-3011	Administrative Services Managers	3	500	500	0.0%	76
11-3021	Computer and Information Systems Managers	4	706	936	32.6%	333
11-3031	Financial Managers	4	900	892	-0.9%	158
11-3051	Industrial Production Managers	4	243	237	-2.5%	50
11-3061	Purchasing Managers	4	122	117	-4.1%	23
11-3071	Transportation, Storage, and Distribution Managers	4	298	336	12.8%	111
11-3111	Compensation and Benefits Managers	4	51	43	-15.7%	7
11-3121	Human Resources Managers	4	239	288	20.5%	111
11-3131	Training and Development Managers	4	62	76	22.6%	30
11-9021	Construction Managers	4	267	344	28.8%	115
11-9031	Education Administrators, Preschool and Childcare Center/Program	4	110	129	17.3%	49
11-9032	Education Administrators, Elementary and Secondary School	5	360	321	-10.8%	80
11-9033	Education Administrators, Postsecondary	5	243	235	-3.3%	61
11-9039	Education Administrators, All Other	5	41	50	22.0%	20
11-9041	Architectural and Engineering Managers	5	250	266	6.4%	81
11-9051	Food Service Managers	3	308	356	15.6%	110
11-9061	Funeral Service Managers	3	24	27	12.5%	10
11-9071	Gaming Managers	3	51	62	21.6%	22
11-9081	Lodging Managers	3	83	95	14.5%	48
11-9111	Medical and Health Services Managers	5	689	738	7.1%	217
11-9121	Natural Sciences Managers	5	45	51	13.3%	17
11-9131	Postmasters and Mail Superintendents	3	73	40	-45.2%	0
11-9141	Property, Real Estate, and Community Association Managers	4	151	173	14.6%	61
11-9151	Social and Community Service Managers	4	331	389	17.5%	134
11-9161	Emergency Management Directors	4	40	33	-17.5%	0
11-9199	Managers, All Other	4	634	668	5.4%	172

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
13-1011	Agents and Business Managers of Artists, Performers, and Athletes	4	5	4	-20.0%	0
13-1021	Buyers and Purchasing Agents, Farm Products	4	31	28	-9.7%	6
13-1022	Wholesale and Retail Buyers, Except Farm Products	3	241	231	-4.1%	56
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	4	789	784	-0.6%	163
13-1031	Claims Adjusters, Examiners, and Investigators	4	1,806	1,744	-3.4%	473
13-1032	Insurance Appraisers, Auto Damage	3	104	124	19.2%	57
13-1041	Compliance Officers	4	897	1,009	12.5%	298
13-1051	Cost Estimators	4	441	495	12.2%	204
13-1071	Human Resources Specialists	4	1,359	1,691	24.4%	623
13-1075	Labor Relations Specialists	4	699	539	-22.9%	46
13-1081	Logisticians	4	399	479	20.1%	132
13-1111	Management Analysts	4	1,255	1,409	12.3%	363
13-1121	Meeting, Convention, and Event Planners	4	231	299	29.4%	104
13-1131	Fundraisers	4	219	260	18.7%	90
13-1141	Compensation, Benefits, and Job Analysis Specialists	4	236	223	-5.5%	40
13-1151	Training and Development Specialists	4	672	769	14.4%	230
13-1161	Market Research Analysts and Marketing Specialists	4	1,259	1,634	29.8%	577
13-1199	Business Operations Specialists, All Other	4	1,436	1,310	-8.8%	44
13-2011	Accountants and Auditors	4	2,910	3,242	11.4%	1,301
13-2021	Appraisers and Assessors of Real Estate	4	111	103	-7.2%	9
13-2031	Budget Analysts	4	137	145	5.8%	66
13-2041	Credit Analysts	4	131	154	17.6%	62
13-2051	Financial Analysts	4	727	841	15.7%	304
13-2052	Personal Financial Advisors	4	295	422	43.1%	181
13-2053	Insurance Underwriters	4	711	689	-3.1%	254
13-2061	Financial Examiners	4	132	131	-0.8%	41
13-2071	Credit Counselors	4	99	130	31.3%	53
13-2072	Loan Officers	3	633	696	10.0%	238
13-2081	Tax Examiners and Collectors, and Revenue Agents	3	538	450	-16.4%	130
13-2082	Tax Preparers	3	82	79	-3.7%	22
13-2099	Financial Specialists, All Other	4	265	235	-11.3%	6
15-1111	Computer and Information Research Scientists	5	20	22	10.0%	4
15-1121	Computer Systems Analysts	4	1,580	2,195	38.9%	895
15-1122	Information Security Analysts	4	191	271	41.9%	110
15-1131	Computer Programmers	4	915	1,234	34.9%	618

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
15-1132	Software Developers, Applications	4	1,517	2,053	35.3%	752
15-1133	Software Developers, Systems Software	4	625	683	9.3%	134
15-1134	Web Developers	3	239	315	31.8%	116
15-1141	Database Administrators	4	344	419	21.8%	146
15-1142	Network and Computer Systems Administrators	4	914	896	-2.0%	139
15-1143	Computer Network Architects	4	248	297	19.8%	88
15-1151	Computer User Support Specialists	3	1,567	2,063	31.7%	776
15-1152	Computer Network Support Specialists	4	358	371	3.6%	81
15-1199	Computer Occupations, All Other	4	629	718	14.1%	200
15-2011	Actuaries	4	170	199	17.1%	84
15-2031	Operations Research Analysts	5	242	257	6.2%	72
15-2041	Statisticians	5	127	147	15.7%	64
17-1011	Architects, Except Landscape and Naval	4	173	219	26.6%	107
17-1012	Landscape Architects	4	49	72	46.9%	39
17-1021	Cartographers and Photogrammetrists	4	20	20	0.0%	5
17-1022	Surveyors	4	93	112	20.4%	43
17-2011	Aerospace Engineers	4	42	51	21.4%	19
17-2021	Agricultural Engineers	4	4	5	25.0%	3
17-2031	Biomedical Engineers	4	32	36	12.5%	13
17-2041	Chemical Engineers	4	46	46	0.0%	14
17-2051	Civil Engineers	4	814	980	20.4%	388
17-2061	Computer Hardware Engineers	4	83	80	-3.6%	14
17-2071	Electrical Engineers	4	327	398	21.7%	152
17-2072	Electronics Engineers, Except Computer	4	179	145	-19.0%	11
17-2081	Environmental Engineers	5	197	237	20.3%	97
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	4	49	49	0.0%	16
17-2112	Industrial Engineers	4	366	370	1.1%	128
17-2131	Materials Engineers	4	57	73	28.1%	38
17-2141	Mechanical Engineers	4	435	443	1.8%	172
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	4	17	16	-5.9%	6
17-2161	Nuclear Engineers	4	80	98	22.5%	45
17-2171	Petroleum Engineers	4	2	2	0.0%	1
17-2199	Engineers, All Other	4	199	244	22.6%	84
17-3011	Architectural and Civil Drafters	4	264	308	16.7%	108
17-3012	Electrical and Electronics Drafters	3	64	53	-17.2%	0
17-3013	Mechanical Drafters	3	143	129	-9.8%	17

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
17-3019	Drafters, All Other	3	13	17	30.8%	6
17-3021	Aerospace Engineering and Operations Technicians	4	2	2	0.0%	1
17-3022	Civil Engineering Technicians	3	145	185	27.6%	76
17-3023	Electrical and Electronics Engineering Technicians	3	205	170	-17.1%	16
17-3024	Electro-Mechanical Technicians	3	19	18	-5.3%	4
17-3025	Environmental Engineering Technicians	4	71	83	16.9%	31
17-3026	Industrial Engineering Technicians	3	73	78	6.8%	23
17-3027	Mechanical Engineering Technicians	3	77	102	32.5%	43
17-3029	Engineering Technicians, Except Drafters, All Other	3	223	288	29.1%	121
17-3031	Surveying and Mapping Technicians	3	95	128	34.7%	54
19-1012	Food Scientists and Technologists	4	32	39	21.9%	18
19-1013	Soil and Plant Scientists	5	10	12	20.0%	6
19-1021	Biochemists and Biophysicists	5	14	20	42.9%	10
19-1022	Microbiologists	5	36	47	30.6%	23
19-1023	Zoologists and Wildlife Biologists	5	22	19	-13.6%	3
19-1029	Biological Scientists, All Other	5	40	32	-20.0%	4
19-1031	Conservation Scientists	4	66	72	9.1%	27
19-1032	Foresters	4	26	22	-15.4%	4
19-1041	Epidemiologists	5	11	8	-27.3%	0
19-1042	Medical Scientists, Except Epidemiologists	5	97	126	29.9%	52
19-1099	Life Scientists, All Other	5	21	24	14.3%	7
19-2012	Physicists	5	10	8	-20.0%	0
19-2021	Atmospheric and Space Scientists	4	7	6	-14.3%	0
19-2031	Chemists	4	136	163	19.9%	71
19-2032	Materials Scientists	5	8	9	12.5%	3
19-2041	Environmental Scientists and Specialists, Including Health	4	155	187	20.6%	81
19-2042	Geoscientists, Except Hydrologists and Geographers	4	57	59	3.5%	23
19-2043	Hydrologists	4	13	10	-23.1%	2
19-2099	Physical Scientists, All Other	5	41	33	-19.5%	1
19-3011	Economists	5	40	42	5.0%	15
19-3022	Survey Researchers	5	108	101	-6.5%	28
19-3031	Clinical, Counseling, and School Psychologists	5	280	290	3.6%	94
19-3039	Psychologists, All Other	5	42	53	26.2%	23
19-3041	Sociologists	5	4	3	-25.0%	2
19-3051	Urban and Regional Planners	5	186	188	1.1%	91

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
19-3091	Anthropologists and Archeologists	5	0	1	#DIV/0!	0
19-3093	Historians	5	12	9	-25.0%	0
19-3099	Social Scientists and Related Workers, All Other	4	58	52	-10.3%	5
19-4011	Agricultural and Food Science Technicians	3	15	14	-6.7%	4
19-4021	Biological Technicians	4	88	96	9.1%	37
19-4031	Chemical Technicians	3	134	171	27.6%	79
19-4041	Geological and Petroleum Technicians	4	12	16	33.3%	10
19-4051	Nuclear Technicians	3	46	50	8.7%	24
19-4061	Social Science Research Assistants	4	29	35	20.7%	19
19-4091	Environmental Science and Protection Technicians, Including Health	4	114	146	28.1%	83
19-4092	Forensic Science Technicians	4	20	18	-10.0%	7
19-4093	Forest and Conservation Technicians	3	47	49	4.3%	24
19-4099	Life, Physical, and Social Science Technicians, All Other	3	124	131	5.6%	59
21-1011	Substance Abuse and Behavioral Disorder Counselors	5	347	352	1.4%	104
21-1012	Educational, Guidance, School, and Vocational Counselors	5	541	554	2.4%	140
21-1013	Marriage and Family Therapists	5	57	83	45.6%	38
21-1014	Mental Health Counselors	5	529	587	11.0%	202
21-1015	Rehabilitation Counselors	5	373	480	28.7%	213
21-1019	Counselors, All Other	5	77	74	-3.9%	14
21-1021	Child, Family, and School Social Workers	4	988	1,139	15.3%	383
21-1022	Healthcare Social Workers	5	420	514	22.4%	192
21-1023	Mental Health and Substance Abuse Social Workers	5	484	592	22.3%	244
21-1029	Social Workers, All Other	5	88	87	-1.1%	19
21-1091	Health Educators	4	169	184	8.9%	62
21-1092	Probation Officers and Correctional Treatment Specialists	4	543	504	-7.2%	137
21-1093	Social and Human Service Assistants	4	1,112	1,239	11.4%	459
21-1094	Community Health Workers	4	72	66	-8.3%	13
21-1099	Community and Social Service Specialists, All Other	4	111	117	5.4%	32
21-2011	Clergy	5	87	99	13.8%	34
21-2021	Directors, Religious Activities and Education	4	60	70	16.7%	37
21-2099	Religious Workers, All Other	4	16	12	-25.0%	2
23-1011	Lawyers	5	1,533	1,639	6.9%	368
23-1012	Judicial Law Clerks	5	156	149	-4.5%	26

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	5	96	82	-14.6%	6
23-1022	Arbitrators, Mediators, and Conciliators	5	28	34	21.4%	10
23-1023	Judges, Magistrate Judges, and Magistrates	5	36	29	-19.4%	1
23-2011	Paralegals and Legal Assistants	3	608	731	20.2%	226
23-2091	Court Reporters	3	97	103	6.2%	32
23-2093	Title Examiners, Abstractors, and Searchers	3	201	205	2.0%	50
23-2099	Legal Support Workers, All Other	3	95	90	-5.3%	13
25-1011	Business Teachers, Postsecondary	5	231	261	13.0%	64
25-1021	Computer Science Teachers, Postsecondary	5	113	131	15.9%	35
25-1022	Mathematical Science Teachers, Postsecondary	5	156	170	9.0%	37
25-1031	Architecture Teachers, Postsecondary	5	26	30	15.4%	8
25-1032	Engineering Teachers, Postsecondary	5	124	149	20.2%	44
25-1041	Agricultural Sciences Teachers, Postsecondary	5	17	16	-5.9%	1
25-1042	Biological Science Teachers, Postsecondary	5	177	180	1.7%	29
25-1043	Forestry and Conservation Science Teachers, Postsecondary	5	6	5	-16.7%	0
25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	5	37	38	2.7%	7
25-1052	Chemistry Teachers, Postsecondary	5	75	81	8.0%	18
25-1053	Environmental Science Teachers, Postsecondary	5	13	11	-15.4%	1
25-1054	Physics Teachers, Postsecondary	5	49	53	8.2%	11
25-1061	Anthropology and Archeology Teachers, Postsecondary	5	15	23	53.3%	11
25-1062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	5	20	20	0.0%	3
25-1063	Economics Teachers, Postsecondary	5	53	62	17.0%	16
25-1064	Geography Teachers, Postsecondary	5	15	16	6.7%	3
25-1065	Political Science Teachers, Postsecondary	5	50	49	-2.0%	6
25-1066	Psychology Teachers, Postsecondary	5	120	130	8.3%	28
25-1067	Sociology Teachers, Postsecondary	5	79	91	15.2%	24
25-1069	Social Sciences Teachers, Postsecondary, All Other	5	21	25	19.0%	7
25-1071	Health Specialties Teachers, Postsecondary	5	331	334	0.9%	53
25-1072	Nursing Instructors and Teachers, Postsecondary	5	167	177	6.0%	35
25-1081	Education Teachers, Postsecondary	5	168	166	-1.2%	23
25-1082	Library Science Teachers, Postsecondary	5	15	16	6.7%	4
25-1111	Criminal Justice and Law Enforcement Teachers, Postsecondary	5	30	36	20.0%	11
25-1112	Law Teachers, Postsecondary	5	26	29	11.5%	6

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
25-1113	Social Work Teachers, Postsecondary	5	29	25	-13.8%	0
25-1121	Art, Drama, and Music Teachers, Postsecondary	5	235	283	20.4%	83
25-1122	Communications Teachers, Postsecondary	5	73	79	8.2%	16
25-1123	English Language and Literature Teachers, Postsecondary	5	241	253	5.0%	48
25-1124	Foreign Language and Literature Teachers, Postsecondary	5	90	101	12.2%	25
25-1125	History Teachers, Postsecondary	5	74	79	6.8%	16
25-1126	Philosophy and Religion Teachers, Postsecondary	5	67	72	7.5%	15
25-1191	Graduate Teaching Assistants	5	65	68	4.6%	13
25-1192	Home Economics Teachers, Postsecondary	5	5	4	-20.0%	0
25-1193	Recreation and Fitness Studies Teachers, Postsecondary	5	49	46	-6.1%	4
25-1194	Vocational Education Teachers, Postsecondary	3	330	356	7.9%	76
25-1199	Postsecondary Teachers, All Other	5	204	233	14.2%	59
25-2011	Preschool Teachers, Except Special Education	3	762	1,037	36.1%	494
25-2012	Kindergarten Teachers, Except Special Education	4	275	254	-7.6%	64
25-2021	Elementary School Teachers, Except Special Education	4	2,676	2,536	-5.2%	533
25-2022	Middle School Teachers, Except Special and Career/Technical Education	4	1,245	1,379	10.8%	447
25-2023	Career/Technical Education Teachers, Middle School	4	29	33	13.8%	13
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	4	2,491	2,267	-9.0%	625
25-2032	Career/Technical Education Teachers, Secondary School	4	208	169	-18.8%	28
25-2051	Special Education Teachers, Preschool	4	30	36	20.0%	12
25-2052	Special Education Teachers, Kindergarten and Elementary School	4	494	478	-3.2%	96
25-2053	Special Education Teachers, Middle School	4	173	162	-6.4%	29
25-2054	Special Education Teachers, Secondary School	4	360	348	-3.3%	75
25-2059	Special Education Teachers, All Other	4	13	15	15.4%	4
25-3011	Adult Basic and Secondary Education and Literacy Teachers and Instructors	4	76	71	-6.6%	11
25-3021	Self-Enrichment Education Teachers	3	362	361	-0.3%	77
25-3097	Teachers and Instructors, All Other, Except Substitute Teachers	3	266	323	21.4%	103
25-3098	Substitute Teachers	3	814	699	-14.1%	54
25-4011	Archivists	5	17	20	17.6%	7
25-4012	Curators	5	26	35	34.6%	16

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
25-4013	Museum Technicians and Conservators	4	31	46	48.4%	23
25-4021	Librarians	5	298	273	-8.4%	48
25-4031	Library Technicians	4	189	171	-9.5%	88
25-9011	Audio-Visual and Multimedia Collections Specialists	4	10	10	0.0%	2
25-9021	Farm and Home Management Advisors	5	2	2	0.0%	0
25-9031	Instructional Coordinators	5	246	272	10.6%	47
25-9041	Teacher Assistants	3	2,253	2,329	3.4%	636
25-9099	Education, Training, and Library Workers, All Other	4	50	51	2.0%	6
27-1011	Art Directors	4	53	59	11.3%	22
27-1012	Craft Artists	2	4	5	25.0%	1
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	3	18	15	-16.7%	3
27-1014	Multimedia Artists and Animators	4	26	30	15.4%	11
27-1019	Artists and Related Workers, All Other	4	15	11	-26.7%	0
27-1021	Commercial and Industrial Designers	4	20	16	-20.0%	3
27-1022	Fashion Designers	3	9	8	-11.1%	1
27-1023	Floral Designers	2	103	76	-26.2%	26
27-1024	Graphic Designers	4	345	329	-4.6%	93
27-1025	Interior Designers	4	41	47	14.6%	23
27-1026	Merchandise Displayers and Window Trimmers	3	144	166	15.3%	64
27-1027	Set and Exhibit Designers	5	9	11	22.2%	5
27-1029	Designers, All Other	4	0	0	#DIV/0!	0
27-2011	Actors	2	39	39	0.0%	15
27-2012	Producers and Directors	4	158	171	8.2%	82
27-2021	Athletes and Sports Competitors	2	38	32	-15.8%	9
27-2022	Coaches and Scouts	4	353	317	-10.2%	76
27-2023	Umpires, Referees, and Other Sports Officials	3	16	13	-18.8%	2
27-2031	Dancers	3	3	3	0.0%	1
27-2032	Choreographers	4	8	9	12.5%	4
27-2041	Music Directors and Composers	3	40	31	-22.5%	5
27-2042	Musicians and Singers	3	31	27	-12.9%	8
27-2099	Entertainers and Performers, Sports and Related Workers, All Other	3	4	3	-25.0%	0
27-3011	Radio and Television Announcers	3	93	85	-8.6%	35
27-3012	Public Address System and Other Announcers	2	19	23	21.1%	10
27-3022	Reporters and Correspondents	4	63	44	-30.2%	14
27-3031	Public Relations Specialists	4	650	608	-6.5%	57

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
27-3041	Editors	4	161	146	-9.3%	36
27-3042	Technical Writers	4	64	67	4.7%	23
27-3043	Writers and Authors	4	79	74	-6.3%	14
27-3091	Interpreters and Translators	4	39	42	7.7%	8
27-3099	Media and Communication Workers, All Other	4	17	14	-17.6%	0
27-4011	Audio and Video Equipment Technicians	3	101	106	5.0%	27
27-4012	Broadcast Technicians	3	44	46	4.5%	14
27-4014	Sound Engineering Technicians	3	19	16	-15.8%	2
27-4021	Photographers	3	87	76	-12.6%	14
27-4031	Camera Operators, Television, Video, and Motion Picture	3	33	28	-15.2%	0
27-4032	Film and Video Editors	3	21	18	-14.3%	0
27-4099	Media and Communication Equipment Workers, All Other	3	17	10	-41.2%	0
29-1011	Chiropractors	5	71	108	52.1%	53
29-1021	Dentists, General	5	181	207	14.4%	71
29-1022	Oral and Maxillofacial Surgeons	5	7	7	0.0%	2
29-1023	Orthodontists	5	5	6	20.0%	3
29-1029	Dentists, All Other Specialists	5	8	6	-25.0%	1
29-1031	Dietitians and Nutritionists	5	157	160	1.9%	23
29-1041	Optometrists	5	69	103	49.3%	57
29-1051	Pharmacists	5	600	615	2.5%	173
29-1061	Anesthesiologists	5	72	80	11.1%	28
29-1062	Family and General Practitioners	5	321	357	11.2%	126
29-1063	Internists, General	5	49	47	-4.1%	10
29-1064	Obstetricians and Gynecologists	5	16	20	25.0%	7
29-1065	Pediatricians, General	5	19	25	31.6%	10
29-1066	Psychiatrists	5	46	43	-6.5%	10
29-1067	Surgeons	5	103	138	34.0%	62
29-1069	Physicians and Surgeons, All Other	5	759	843	11.1%	283
29-1071	Physician Assistants	5	243	285	17.3%	90
29-1081	Podiatrists	5	29	42	44.8%	25
29-1122	Occupational Therapists	5	309	412	33.3%	151
29-1123	Physical Therapists	5	537	744	38.5%	359
29-1124	Radiation Therapists	3	43	39	-9.3%	5
29-1125	Recreational Therapists	4	77	78	1.3%	20
29-1126	Respiratory Therapists	3	275	332	20.7%	96
29-1127	Speech-Language Pathologists	5	230	292	27.0%	96

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
29-1128	Exercise Physiologists	5	18	22	22.2%	6
29-1129	Therapists, All Other	4	21	29	38.1%	11
29-1131	Veterinarians	5	110	143	30.0%	72
29-1141	Registered Nurses	3	6,833	7,911	15.8%	2,462
29-1151	Nurse Anesthetists	5	101	115	13.9%	35
29-1161	Nurse Midwives	5	7	10	42.9%	4
29-1171	Nurse Practitioners	5	185	248	34.1%	96
29-1181	Audiologists	5	28	36	28.6%	15
29-1199	Health Diagnosing and Treating Practitioners, All Other	5	43	34	-20.9%	0
29-2011	Medical and Clinical Laboratory Technologists	4	435	478	9.9%	174
29-2012	Medical and Clinical Laboratory Technicians	3	469	527	12.4%	192
29-2021	Dental Hygienists	3	454	578	27.3%	248
29-2031	Cardiovascular Technologists and Technicians	3	156	197	26.3%	65
29-2032	Diagnostic Medical Sonographers	3	126	153	21.4%	45
29-2033	Nuclear Medicine Technologists	3	56	59	5.4%	11
29-2034	Radiologic Technologists	3	505	576	14.1%	150
29-2035	Magnetic Resonance Imaging Technologists	3	70	95	35.7%	36
29-2041	Emergency Medical Technicians and Paramedics	3	560	636	13.6%	260
29-2051	Dietetic Technicians	2	124	166	33.9%	57
29-2052	Pharmacy Technicians	3	679	718	5.7%	118
29-2053	Psychiatric Technicians	3	84	94	11.9%	27
29-2054	Respiratory Therapy Technicians	3	27	25	-7.4%	1
29-2055	Surgical Technologists	3	183	230	25.7%	64
29-2056	Veterinary Technologists and Technicians	3	164	214	30.5%	67
29-2057	Ophthalmic Medical Technicians	3	54	77	42.6%	30
29-2061	Licensed Practical and Licensed Vocational Nurses	3	1,754	2,088	19.0%	797
29-2071	Medical Records and Health Information Technicians	3	394	478	21.3%	190
29-2081	Opticians, Dispensing	3	149	207	38.9%	109
29-2091	Orthotists and Prosthetists	5	12	18	50.0%	8
29-2092	Hearing Aid Specialists	3	6	6	0.0%	1
29-2099	Health Technologists and Technicians, All Other	3	120	145	20.8%	34
29-9011	Occupational Health and Safety Specialists	4	181	192	6.1%	65
29-9012	Occupational Health and Safety Technicians	3	34	37	8.8%	13
29-9091	Athletic Trainers	5	65	88	35.4%	42
29-9099	Healthcare Practitioners and Technical Workers, All Other	4	53	45	-15.1%	6

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
31-1011	Home Health Aides	2	2,361	3,250	37.7%	1,539
31-1013	Psychiatric Aides	2	96	120	25.0%	49
31-1014	Nursing Assistants	2	3,561	4,040	13.5%	1,198
31-1015	Orderlies	2	151	166	9.9%	44
31-2011	Occupational Therapy Assistants	3	121	168	38.8%	85
31-2012	Occupational Therapy Aides	3	29	53	82.8%	32
31-2021	Physical Therapist Assistants	3	234	347	48.3%	177
31-2022	Physical Therapist Aides	2	118	173	46.6%	83
31-9011	Massage Therapists	3	118	166	40.7%	60
31-9091	Dental Assistants	3	628	745	18.6%	254
31-9092	Medical Assistants	3	1,145	1,484	29.6%	569
31-9093	Medical Equipment Preparers	2	101	116	14.9%	34
31-9094	Medical Transcriptionists	3	213	194	-8.9%	38
31-9095	Pharmacy Aides	2	69	58	-15.9%	6
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	3	97	89	-8.2%	13
31-9097	Phlebotomists	3	241	297	23.2%	112
31-9099	Healthcare Support Workers, All Other	3	102	88	-13.7%	1
33-1011	First-Line Supervisors of Correctional Officers	3	176	180	2.3%	72
33-1012	First-Line Supervisors of Police and Detectives	3	374	424	13.4%	175
33-1021	First-Line Supervisors of Fire Fighting and Prevention Workers	3	105	120	14.3%	62
33-1099	First-Line Supervisors of Protective Service Workers, All Other	3	138	176	27.5%	80
33-2011	Firefighters	3	651	655	0.6%	201
33-2021	Fire Inspectors and Investigators	3	32	26	-18.8%	5
33-3011	Bailiffs	2	28	21	-25.0%	2
33-3012	Correctional Officers and Jailers	3	2,159	1,951	-9.6%	461
33-3021	Detectives and Criminal Investigators	3	360	357	-0.8%	90
33-3041	Parking Enforcement Workers	2	56	63	12.5%	28
33-3051	Police and Sheriff's Patrol Officers	3	3,587	3,423	-4.6%	1,123
33-3052	Transit and Railroad Police	3	11	8	-27.3%	1
33-9011	Animal Control Workers	2	27	25	-7.4%	5
33-9021	Private Detectives and Investigators	3	107	103	-3.7%	37
33-9031	Gaming Surveillance Officers and Gaming Investigators	2	162	216	33.3%	128
33-9032	Security Guards	2	2,502	3,125	24.9%	1,324
33-9091	Crossing Guards	1	471	446	-5.3%	89

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	2	418	438	4.8%	323
33-9093	Transportation Security Screeners	2	169	148	-12.4%	25
33-9099	Protective Service Workers, All Other	2	264	311	17.8%	236
35-1011	Chefs and Head Cooks	3	278	294	5.8%	71
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	2	1,563	1,788	14.4%	705
35-2011	Cooks, Fast Food	1	462	430	-6.9%	69
35-2012	Cooks, Institution and Cafeteria	2	924	904	-2.2%	172
35-2014	Cooks, Restaurant	2	2,116	2,763	30.6%	1,140
35-2015	Cooks, Short Order	1	379	447	17.9%	162
35-2021	Food Preparation Workers	1	1,819	1,739	-4.4%	496
35-3011	Bartenders	2	1,628	1,741	6.9%	800
35-3021	Combined Food Preparation and Serving Workers, Including Fast Food	1	6,858	8,065	17.6%	4,154
35-3022	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	1	668	643	-3.7%	405
35-3031	Waiters and Waitresses	1	5,124	5,892	15.0%	3,480
35-3041	Food Servers, Nonrestaurant	1	668	714	6.9%	261
35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers	1	853	898	5.3%	457
35-9021	Dishwashers	1	1,149	1,143	-0.5%	552
35-9031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	1	758	831	9.6%	685
35-9099	Food Preparation and Serving Related Workers, All Other	1	63	76	20.6%	50
37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	2	339	364	7.4%	119
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	3	147	155	5.4%	25
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	2	4,610	4,838	4.9%	1,285
37-2012	Maids and Housekeeping Cleaners	2	2,138	2,270	6.2%	677
37-2019	Building Cleaning Workers, All Other	2	17	17	0.0%	3
37-2021	Pest Control Workers	2	83	109	31.3%	52
37-3011	Landscaping and Groundskeeping Workers	1	1,738	1,972	13.5%	740
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	2	28	27	-3.6%	6
37-3013	Tree Trimmers and Pruners	2	142	212	49.3%	118
37-3019	Grounds Maintenance Workers, All Other	2	8	7	-12.5%	0
39-1011	Gaming Supervisors	2	350	451	28.9%	289
39-1012	Slot Supervisors	2	19	25	31.6%	9

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
39-1021	First-Line Supervisors of Personal Service Workers	3	367	467	27.2%	173
39-2011	Animal Trainers	2	11	9	-18.2%	3
39-2021	Nonfarm Animal Caretakers	1	259	311	20.1%	92
39-3011	Gaming Dealers	2	1,514	1,933	27.7%	1,181
39-3012	Gaming and Sports Book Writers and Runners	2	25	31	24.0%	16
39-3019	Gaming Service Workers, All Other	2	22	28	27.3%	7
39-3021	Motion Picture Projectionists	2	19	12	-36.8%	4
39-3031	Ushers, Lobby Attendants, and Ticket Takers	2	177	183	3.4%	116
39-3091	Amusement and Recreation Attendants	1	1,008	984	-2.4%	549
39-3092	Costume Attendants	2	2	2	0.0%	1
39-3093	Locker Room, Coatroom, and Dressing Room Attendants	2	63	63	0.0%	34
39-3099	Entertainment Attendants and Related Workers, All Other	2	28	26	-7.1%	15
39-4021	Funeral Attendants	2	87	109	25.3%	49
39-4031	Morticians, Undertakers, and Funeral Directors	3	53	70	32.1%	33
39-5011	Barbers	3	33	33	0.0%	11
39-5012	Hairdressers, Hairstylists, and Cosmetologists	3	1,153	1,272	10.3%	445
39-5092	Manicurists and Pedicurists	2	158	172	8.9%	31
39-5093	Shampooers	2	67	68	1.5%	12
39-5094	Skincare Specialists	3	54	59	9.3%	9
39-6011	Baggage Porters and Bellhops	2	63	65	3.2%	26
39-6012	Concierges	3	40	56	40.0%	27
39-7011	Tour Guides and Escorts	3	53	52	-1.9%	28
39-7012	Travel Guides	3	3	3	0.0%	2
39-9011	Childcare Workers	3	1,213	1,185	-2.3%	335
39-9021	Personal Care Aides	2	2,571	3,957	53.9%	1,728
39-9031	Fitness Trainers and Aerobics Instructors	3	592	659	11.3%	171
39-9032	Recreation Workers	4	747	914	22.4%	256
39-9041	Residential Advisors	3	357	440	23.2%	263
39-9099	Personal Care and Service Workers, All Other	3	75	59	-21.3%	5
41-1011	First-Line Supervisors of Retail Sales Workers	2	2,168	2,274	4.9%	594
41-1012	First-Line Supervisors of Non-Retail Sales Workers	4	525	482	-8.2%	36
41-2011	Cashiers	1	7,388	7,123	-3.6%	3,209
41-2012	Gaming Change Persons and Booth Cashiers	2	92	115	25.0%	104
41-2021	Counter and Rental Clerks	1	829	894	7.8%	309
41-2022	Parts Salespersons	2	551	650	18.0%	263
41-2031	Retail Salespersons	2	9,800	10,427	6.4%	4,184

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
41-3011	Advertising Sales Agents	3	277	239	-13.7%	75
41-3021	Insurance Sales Agents	4	1,925	2,074	7.7%	733
41-3031	Securities, Commodities, and Financial Services Sales Agents	4	515	575	11.7%	203
41-3041	Travel Agents	3	86	95	10.5%	54
41-3099	Sales Representatives, Services, All Other	4	1,695	2,191	29.3%	982
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	4	476	421	-11.6%	50
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	4	3,069	2,877	-6.3%	521
41-9011	Demonstrators and Product Promoters	2	99	102	3.0%	34
41-9012	Models	1	5	6	20.0%	3
41-9021	Real Estate Brokers	4	45	39	-13.3%	1
41-9022	Real Estate Sales Agents	3	297	318	7.1%	70
41-9031	Sales Engineers	4	157	157	0.0%	34
41-9041	Telemarketers	2	505	488	-3.4%	224
41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	2	4	3	-25.0%	0
41-9099	Sales and Related Workers, All Other	3	111	121	9.0%	29
43-1011	First-Line Supervisors of Office and Administrative Support Workers	3	3,277	3,441	5.0%	949
43-2011	Switchboard Operators, Including Answering Service	2	333	285	-14.4%	71
43-2021	Telephone Operators	2	15	9	-40.0%	0
43-3011	Bill and Account Collectors	2	762	775	1.7%	269
43-3021	Billing and Posting Clerks	2	1,394	1,574	12.9%	462
43-3031	Bookkeeping, Accounting, and Auditing Clerks	3	3,699	4,063	9.8%	730
43-3041	Gaming Cage Workers	2	80	101	26.3%	62
43-3051	Payroll and Timekeeping Clerks	2	439	456	3.9%	123
43-3061	Procurement Clerks	3	201	168	-16.4%	46
43-3071	Tellers	2	1,210	1,150	-5.0%	649
43-3099	Financial Clerks, All Other	2	72	88	22.2%	41
43-4011	Brokerage Clerks	3	133	145	9.0%	62
43-4021	Correspondence Clerks	2	63	69	9.5%	28
43-4031	Court, Municipal, and License Clerks	3	320	332	3.8%	66
43-4041	Credit Authorizers, Checkers, and Clerks	3	69	55	-20.3%	0
43-4051	Customer Service Representatives	2	7,051	7,985	13.2%	3,065
43-4061	Eligibility Interviewers, Government Programs	3	1,138	1,049	-7.8%	158
43-4071	File Clerks	2	325	290	-10.8%	60

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
43-4081	Hotel, Motel, and Resort Desk Clerks	2	667	653	-2.1%	390
43-4111	Interviewers, Except Eligibility and Loan	2	461	515	11.7%	155
43-4121	Library Assistants, Clerical	2	273	244	-10.6%	96
43-4131	Loan Interviewers and Clerks	3	396	447	12.9%	109
43-4141	New Accounts Clerks	2	56	54	-3.6%	20
43-4151	Order Clerks	2	533	491	-7.9%	148
43-4161	Human Resources Assistants, Except Payroll and Timekeeping	3	424	387	-8.7%	90
43-4171	Receptionists and Information Clerks	2	2,126	2,177	2.4%	639
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	2	65	46	-29.2%	1
43-4199	Information and Record Clerks, All Other	2	327	224	-31.5%	0
43-5011	Cargo and Freight Agents	2	86	78	-9.3%	22
43-5021	Couriers and Messengers	2	198	171	-13.6%	18
43-5031	Police, Fire, and Ambulance Dispatchers	2	364	329	-9.6%	81
43-5032	Dispatchers, Except Police, Fire, and Ambulance	2	557	660	18.5%	277
43-5041	Meter Readers, Utilities	2	75	71	-5.3%	27
43-5051	Postal Service Clerks	2	235	187	-20.4%	55
43-5052	Postal Service Mail Carriers	2	928	760	-18.1%	366
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	2	432	285	-34.0%	15
43-5061	Production, Planning, and Expediting Clerks	3	717	771	7.5%	256
43-5071	Shipping, Receiving, and Traffic Clerks	2	1,469	1,457	-0.8%	426
43-5081	Stock Clerks and Order Fillers	2	4,452	4,594	3.2%	1,697
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	2	191	226	18.3%	84
43-6011	Executive Secretaries and Executive Administrative Assistants	3	1,434	1,364	-4.9%	162
43-6012	Legal Secretaries	3	658	716	8.8%	189
43-6013	Medical Secretaries	3	1,062	1,450	36.5%	511
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	3	5,961	6,735	13.0%	1,548
43-9011	Computer Operators	3	254	238	-6.3%	51
43-9021	Data Entry Keyers	2	660	541	-18.0%	112
43-9022	Word Processors and Typists	2	789	574	-27.2%	4
43-9031	Desktop Publishers	3	43	36	-16.3%	5
43-9041	Insurance Claims and Policy Processing Clerks	3	1,498	1,419	-5.3%	409
43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	2	449	373	-16.9%	97
43-9061	Office Clerks, General	2	7,564	7,465	-1.3%	1,643

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
43-9071	Office Machine Operators, Except Computer	2	232	195	-15.9%	56
43-9081	Proofreaders and Copy Markers	4	25	22	-12.0%	4
43-9111	Statistical Assistants	4	57	61	7.0%	21
43-9199	Office and Administrative Support Workers, All Other	3	292	340	16.4%	132
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	3	20	22	10.0%	7
45-2011	Agricultural Inspectors	2	48	42	-12.5%	13
45-2041	Graders and Sorters, Agricultural Products	1	16	17	6.3%	5
45-2091	Agricultural Equipment Operators	2	23	30	30.4%	15
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	1	110	105	-4.5%	40
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals	1	50	48	-4.0%	19
45-2099	Agricultural Workers, All Other	1	0	0	#DIV/0!	0
45-4011	Forest and Conservation Workers	3	23	27	17.4%	8
45-4021	Fallers	1	2	1	-50.0%	0
45-4022	Logging Equipment Operators	1	16	19	18.8%	10
45-4023	Log Graders and Scalers	3	2	2	0.0%	1
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	3	816	963	18.0%	247
47-2011	Boilermakers	3	44	51	15.9%	31
47-2021	Brickmasons and Blockmasons	2	126	170	34.9%	57
47-2022	Stonemasons	3	17	16	-5.9%	0
47-2031	Carpenters	2	1,431	1,640	14.6%	419
47-2041	Carpet Installers	2	89	92	3.4%	26
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	2	20	17	-15.0%	2
47-2044	Tile and Marble Setters	2	39	45	15.4%	13
47-2051	Cement Masons and Concrete Finishers	2	221	268	21.3%	73
47-2053	Terrazzo Workers and Finishers	2	4	4	0.0%	0
47-2061	Construction Laborers	2	1,389	1,770	27.4%	716
47-2071	Paving, Surfacing, and Tamping Equipment Operators	2	74	79	6.8%	21
47-2072	Pile-Driver Operators	2	1	1	0.0%	0
47-2073	Operating Engineers and Other Construction Equipment Operators	2	997	1,010	1.3%	302
47-2081	Drywall and Ceiling Tile Installers	2	76	66	-13.2%	5
47-2082	Tapers	2	23	22	-4.3%	3
47-2111	Electricians	3	1,191	1,354	13.7%	487
47-2121	Glaziers	2	61	69	13.1%	28

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
47-2131	Insulation Workers, Floor, Ceiling, and Wall	2	30	33	10.0%	9
47-2132	Insulation Workers, Mechanical	2	23	28	21.7%	8
47-2141	Painters, Construction and Maintenance	2	270	283	4.8%	69
47-2142	Paperhangers	2	8	6	-25.0%	0
47-2151	Pipelayers	2	64	63	-1.6%	15
47-2152	Plumbers, Pipefitters, and Steamfitters	3	797	817	2.5%	165
47-2161	Plasterers and Stucco Masons	1	21	24	14.3%	3
47-2171	Reinforcing Iron and Rebar Workers	2	9	13	44.4%	5
47-2181	Roofers	2	171	192	12.3%	87
47-2211	Sheet Metal Workers	2	212	206	-2.8%	40
47-2221	Structural Iron and Steel Workers	2	70	83	18.6%	40
47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	2	41	50	22.0%	13
47-3012	Helpers--Carpenters	2	41	48	17.1%	13
47-3013	Helpers--Electricians	2	83	116	39.8%	49
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	1	9	8	-11.1%	2
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	2	62	61	-1.6%	8
47-3016	Helpers--Roofers	2	16	20	25.0%	8
47-3019	Helpers, Construction Trades, All Other	2	13	14	7.7%	3
47-4011	Construction and Building Inspectors	3	426	554	30.0%	245
47-4021	Elevator Installers and Repairers	3	22	19	-13.6%	5
47-4031	Fence Erectors	2	34	31	-8.8%	7
47-4041	Hazardous Materials Removal Workers	3	90	94	4.4%	36
47-4051	Highway Maintenance Workers	2	1,333	1,262	-5.3%	187
47-4061	Rail-Track Laying and Maintenance Equipment Operators	2	12	17	41.7%	7
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	1	88	84	-4.5%	24
47-4099	Construction and Related Workers, All Other	3	18	16	-11.1%	0
47-5011	Derrick Operators, Oil and Gas	1	1	1	0.0%	1
47-5012	Rotary Drill Operators, Oil and Gas	2	3	4	33.3%	3
47-5013	Service Unit Operators, Oil, Gas, and Mining	2	5	7	40.0%	5
47-5021	Earth Drillers, Except Oil and Gas	2	41	58	41.5%	36
47-5031	Explosives Workers, Ordnance Handling Experts, and Blasters	2	9	10	11.1%	3
47-5041	Continuous Mining Machine Operators	1	4	4	0.0%	2
47-5042	Mine Cutting and Channeling Machine Operators	2	4	4	0.0%	1
47-5049	Mining Machine Operators, All Other	2	1	1	0.0%	0
47-5051	Rock Splitters, Quarry	1	8	9	12.5%	4

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
47-5061	Roof Bolters, Mining	2	3	3	0.0%	1
47-5071	Roustabouts, Oil and Gas	1	17	27	58.8%	18
47-5081	Helpers--Extraction Workers	2	16	19	18.8%	11
47-5099	Extraction Workers, All Other	2	0	0	#DIV/0!	0
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	3	890	995	11.8%	358
49-2011	Computer, Automated Teller, and Office Machine Repairers	3	290	315	8.6%	116
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairers	3	17	15	-11.8%	1
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	3	274	250	-8.8%	47
49-2091	Avionics Technicians	3	11	14	27.3%	7
49-2092	Electric Motor, Power Tool, and Related Repairers	3	41	41	0.0%	11
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	3	22	20	-9.1%	3
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	3	285	235	-17.5%	30
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	3	38	37	-2.6%	10
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	3	7	9	28.6%	3
49-2097	Electronic Home Entertainment Equipment Installers and Repairers	3	35	35	0.0%	17
49-2098	Security and Fire Alarm Systems Installers	3	151	191	26.5%	77
49-3011	Aircraft Mechanics and Service Technicians	3	84	78	-7.1%	29
49-3021	Automotive Body and Related Repairers	2	357	422	18.2%	158
49-3022	Automotive Glass Installers and Repairers	2	45	50	11.1%	20
49-3023	Automotive Service Technicians and Mechanics	3	1,800	1,999	11.1%	722
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	3	958	1,208	26.1%	494
49-3041	Farm Equipment Mechanics and Service Technicians	3	44	39	-11.4%	12
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	3	180	193	7.2%	75
49-3043	Rail Car Repairers	2	48	45	-6.3%	17
49-3051	Motorboat Mechanics and Service Technicians	3	12	13	8.3%	3
49-3052	Motorcycle Mechanics	3	48	62	29.2%	31
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	2	80	98	22.5%	39
49-3091	Bicycle Repairers	2	23	20	-13.0%	7
49-3092	Recreational Vehicle Service Technicians	2	16	16	0.0%	7
49-3093	Tire Repairers and Changers	2	145	138	-4.8%	51
49-9011	Mechanical Door Repairers	2	25	23	-8.0%	8

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	3	42	49	16.7%	22
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	3	717	795	10.9%	297
49-9031	Home Appliance Repairers	3	54	46	-14.8%	16
49-9041	Industrial Machinery Mechanics	3	707	851	20.4%	375
49-9043	Maintenance Workers, Machinery	3	194	220	13.4%	61
49-9044	Millwrights	3	66	86	30.3%	36
49-9045	Refractory Materials Repairers, Except Brickmasons	2	5	5	0.0%	2
49-9051	Electrical Power-Line Installers and Repairers	3	193	236	22.3%	126
49-9052	Telecommunications Line Installers and Repairers	2	388	388	0.0%	155
49-9062	Medical Equipment Repairers	3	159	217	36.5%	113
49-9063	Musical Instrument Repairers and Tuners	3	22	18	-18.2%	5
49-9064	Watch Repairers	3	1	1	0.0%	0
49-9069	Precision Instrument and Equipment Repairers, All Other	3	23	19	-17.4%	3
49-9071	Maintenance and Repair Workers, General	3	3,211	3,310	3.1%	807
49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	2	157	154	-1.9%	40
49-9092	Commercial Divers	3	14	13	-7.1%	5
49-9094	Locksmiths and Safe Repairers	2	21	21	0.0%	6
49-9095	Manufactured Building and Mobile Home Installers	2	8	9	12.5%	5
49-9096	Riggers	2	22	28	27.3%	12
49-9098	Helpers--Installation, Maintenance, and Repair Workers	2	300	316	5.3%	111
49-9099	Installation, Maintenance, and Repair Workers, All Other	2	201	249	23.9%	80
51-1011	First-Line Supervisors of Production and Operating Workers	2	1,082	1,117	3.2%	252
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	2	20	24	20.0%	11
51-2021	Coil Winders, Tapers, and Finishers	2	33	26	-21.2%	0
51-2022	Electrical and Electronic Equipment Assemblers	2	435	378	-13.1%	46
51-2023	Electromechanical Equipment Assemblers	2	88	70	-20.5%	4
51-2031	Engine and Other Machine Assemblers	2	39	39	0.0%	14
51-2041	Structural Metal Fabricators and Fitters	3	108	123	13.9%	69
51-2091	Fiberglass Laminators and Fabricators	2	11	13	18.2%	6
51-2092	Team Assemblers	2	1,488	1,500	0.8%	357
51-2099	Assemblers and Fabricators, All Other	2	400	586	46.5%	259
51-3011	Bakers	2	439	435	-0.9%	136
51-3021	Butchers and Meat Cutters	2	331	342	3.3%	108

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-3022	Meat, Poultry, and Fish Cutters and Trimmers	1	124	135	8.9%	47
51-3023	Slaughterers and Meat Packers	1	163	192	17.8%	90
51-3091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	2	33	36	9.1%	14
51-3092	Food Batchmakers	2	577	604	4.7%	270
51-3093	Food Cooking Machine Operators and Tenders	2	80	86	7.5%	33
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	3	198	246	24.2%	118
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	3	18	20	11.1%	7
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	2	274	290	5.8%	115
51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	2	22	20	-9.1%	6
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	2	104	98	-5.8%	27
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	2	346	364	5.2%	84
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	25	18	-28.0%	2
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	178	177	-0.6%	68
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	64	56	-12.5%	16
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	3	52	60	15.4%	26
51-4041	Machinists	3	659	767	16.4%	302
51-4051	Metal-Refining Furnace Operators and Tenders	2	55	54	-1.8%	15
51-4052	Pourers and Casters, Metal	2	47	48	2.1%	19
51-4061	Model Makers, Metal and Plastic	3	10	8	-20.0%	1
51-4062	Patternmakers, Metal and Plastic	3	10	11	10.0%	5
51-4071	Foundry Mold and Coremakers	2	20	22	10.0%	8
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	2	258	237	-8.1%	45
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	412	446	8.3%	179
51-4111	Tool and Die Makers	3	151	147	-2.6%	24
51-4121	Welders, Cutters, Solderers, and Brazers	3	478	578	20.9%	256
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	2	54	56	3.7%	23
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	2	36	31	-13.9%	6
51-4192	Layout Workers, Metal and Plastic	2	4	4	0.0%	2

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	2	77	67	-13.0%	17
51-4194	Tool Grinders, Filers, and Sharpeners	2	17	14	-17.6%	2
51-4199	Metal Workers and Plastic Workers, All Other	2	96	124	29.2%	49
51-5111	Prepress Technicians and Workers	3	101	68	-32.7%	11
51-5112	Printing Press Operators	3	514	408	-20.6%	62
51-5113	Print Binding and Finishing Workers	2	199	167	-16.1%	38
51-6011	Laundry and Dry-Cleaning Workers	1	389	431	10.8%	181
51-6021	Pressers, Textile, Garment, and Related Materials	1	53	60	13.2%	18
51-6031	Sewing Machine Operators	1	131	81	-38.2%	13
51-6041	Shoe and Leather Workers and Repairers	2	44	50	13.6%	44
51-6051	Sewers, Hand	2	148	131	-11.5%	15
51-6052	Tailors, Dressmakers, and Custom Sewers	3	45	51	13.3%	18
51-6061	Textile Bleaching and Dyeing Machine Operators and Tenders	2	6	5	-16.7%	4
51-6062	Textile Cutting Machine Setters, Operators, and Tenders	2	14	9	-35.7%	4
51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	2	18	16	-11.1%	11
51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	2	3	2	-33.3%	1
51-6091	Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	2	12	11	-8.3%	3
51-6092	Fabric and Apparel Patternmakers	3	3	1	-66.7%	0
51-6093	Upholsterers	2	19	19	0.0%	10
51-6099	Textile, Apparel, and Furnishings Workers, All Other	2	30	31	3.3%	6
51-7011	Cabinetmakers and Bench Carpenters	2	86	86	0.0%	36
51-7021	Furniture Finishers	1	20	23	15.0%	15
51-7031	Model Makers, Wood	3	3	3	0.0%	0
51-7032	Patternmakers, Wood	3	2	2	0.0%	1
51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	2	74	98	32.4%	57
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	2	93	122	31.2%	50
51-7099	Woodworkers, All Other	2	4	3	-25.0%	0
51-8011	Nuclear Power Reactor Operators	3	14	15	7.1%	6
51-8012	Power Distributors and Dispatchers	3	30	33	10.0%	15
51-8013	Power Plant Operators	2	87	75	-13.8%	28
51-8021	Stationary Engineers and Boiler Operators	3	147	162	10.2%	78
51-8031	Water and Wastewater Treatment Plant and System Operators	3	398	403	1.3%	173

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-8091	Chemical Plant and System Operators	2	15	16	6.7%	10
51-8092	Gas Plant Operators	3	35	37	5.7%	21
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	2	38	40	5.3%	22
51-8099	Plant and System Operators, All Other	2	34	32	-5.9%	14
51-9011	Chemical Equipment Operators and Tenders	2	21	21	0.0%	12
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	2	56	59	5.4%	29
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	2	79	89	12.7%	42
51-9022	Grinding and Polishing Workers, Hand	1	29	32	10.3%	14
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	2	257	294	14.4%	137
51-9031	Cutters and Trimmers, Hand	2	16	13	-18.8%	1
51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders	2	102	90	-11.8%	16
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	2	171	167	-2.3%	63
51-9051	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	2	30	27	-10.0%	10
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	2	879	931	5.9%	280
51-9071	Jewelers and Precious Stone and Metal Workers	3	18	13	-27.8%	0
51-9081	Dental Laboratory Technicians	2	49	57	16.3%	34
51-9082	Medical Appliance Technicians	3	43	48	11.6%	26
51-9083	Ophthalmic Laboratory Technicians	2	51	51	0.0%	23
51-9111	Packaging and Filling Machine Operators and Tenders	2	1,018	968	-4.9%	262
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	2	98	113	15.3%	41
51-9122	Painters, Transportation Equipment	2	64	66	3.1%	20
51-9123	Painting, Coating, and Decorating Workers	2	25	23	-8.0%	5
51-9141	Semiconductor Processors	2	38	32	-15.8%	11
51-9151	Photographic Process Workers and Processing Machine Operators	2	51	36	-29.4%	5
51-9191	Adhesive Bonding Machine Operators and Tenders	2	10	9	-10.0%	2
51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	2	30	33	10.0%	11
51-9193	Cooling and Freezing Equipment Operators and Tenders	2	68	62	-8.8%	18
51-9194	Etchers and Engravers	2	14	12	-14.3%	3
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	2	100	99	-1.0%	44

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-9196	Paper Goods Machine Setters, Operators, and Tenders	2	171	167	-2.3%	36
51-9197	Tire Builders	2	55	64	16.4%	31
51-9198	Helpers--Production Workers	2	1,343	1,514	12.7%	513
51-9199	Production Workers, All Other	2	240	282	17.5%	102
53-1011	Aircraft Cargo Handling Supervisors	2	20	20	0.0%	6
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	2	547	620	13.3%	245
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	2	634	739	16.6%	294
53-2012	Commercial Pilots	3	22	26	18.2%	12
53-2021	Air Traffic Controllers	3	57	53	-7.0%	24
53-2022	Airfield Operations Specialists	3	11	9	-18.2%	4
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	2	69	108	56.5%	53
53-3021	Bus Drivers, Transit and Intercity	2	164	173	5.5%	55
53-3022	Bus Drivers, School or Special Client	2	1,662	1,923	15.7%	681
53-3031	Driver/Sales Workers	2	1,030	1,094	6.2%	260
53-3032	Heavy and Tractor-Trailer Truck Drivers	2	6,890	8,192	18.9%	2,753
53-3033	Light Truck or Delivery Services Drivers	2	2,547	2,431	-4.6%	367
53-3041	Taxi Drivers and Chauffeurs	1	417	480	15.1%	147
53-3099	Motor Vehicle Operators, All Other	2	85	101	18.8%	38
53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers	2	13	12	-7.7%	3
53-5011	Sailors and Marine Oilers	2	29	38	31.0%	27
53-5021	Captains, Mates, and Pilots of Water Vessels	3	28	36	28.6%	26
53-6011	Bridge and Lock Tenders	1	16	8	-50.0%	0
53-6021	Parking Lot Attendants	2	292	398	36.3%	276
53-6031	Automotive and Watercraft Service Attendants	1	114	122	7.0%	45
53-6041	Traffic Technicians	3	8	9	12.5%	4
53-6051	Transportation Inspectors	3	36	30	-16.7%	7
53-6061	Transportation Attendants, Except Flight Attendants	2	97	89	-8.2%	17
53-6099	Transportation Workers, All Other	2	36	40	11.1%	20
53-7011	Conveyor Operators and Tenders	2	42	40	-4.8%	14
53-7021	Crane and Tower Operators	3	71	84	18.3%	41
53-7032	Excavating and Loading Machine and Dragline Operators	2	27	32	18.5%	9
53-7033	Loading Machine Operators, Underground Mining	2	1	1	0.0%	0
53-7051	Industrial Truck and Tractor Operators	2	2,158	2,610	20.9%	1,160
53-7061	Cleaners of Vehicles and Equipment	2	577	655	13.5%	265

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	2	8,111	10,219	26.0%	5,030
53-7063	Machine Feeders and Offbearers	2	289	291	0.7%	76
53-7064	Packers and Packagers, Hand	2	2,414	2,880	19.3%	1,226
53-7071	Gas Compressor and Gas Pumping Station Operators	2	14	18	28.6%	12
53-7072	Pump Operators, Except Wellhead Pumpers	2	3	4	33.3%	2
53-7073	Wellhead Pumpers	2	2	2	0.0%	2
53-7081	Refuse and Recyclable Material Collectors	2	198	205	3.5%	71
53-7111	Mine Shuttle Car Operators	2	1	1	0.0%	0
53-7121	Tank Car, Truck, and Ship Loaders	2	31	31	0.0%	12
53-7199	Material Moving Workers, All Other	2	26	37	42.3%	19

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 for Education and the Workforce. Oxford Economics completed the analysis and research work for this report, under the guidance of The State System's Office of the Chancellor, the team sought feedback and insight from senior administration and representatives from each of the 14 State System Universities. The team also drew on insight and feedback from subject matter experts involved in labor market intelligence and education program alignment.

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

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