

PENNSYLVANIA'S STATE SYSTEM OF HIGHER EDUCATION



CALU



CLARION
UNIVERSITY



MANSFIELD
UNIVERSITY

Millersville
University



SlipperyRock
University

WCU
WEST CHESTER
UNIVERSITY

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

A report for Pennsylvania's
State System of Higher Education

2016



Pennsylvania's
STATE SYSTEM
of Higher Education

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GLOSSARY OF TERMS

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

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

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

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

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

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

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

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

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

ACRONYMS USED

ACS: American Community Survey

BLS: Bureau of Labor Statistics

EMSI: Economic Modeling Specialists International

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

IPEDS: Integrated Postsecondary Education Data System

LAUS: Local Area Unemployment Statistics

LEHD: Longitudinal Employment and Housing Dynamics

NCES: National Center for Education Statistics

OES: Occupational Employment Statistics

O*NET: Occupational Network

PUMS: Public Use Microdata Sample

QCEW: Quarterly Census of Employment and Wages

SAIPE: Small Area Income and Poverty Estimates

USDOE: US Department of Education

USDOL: US Department of Labor

1. INTRODUCTION

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

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

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

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

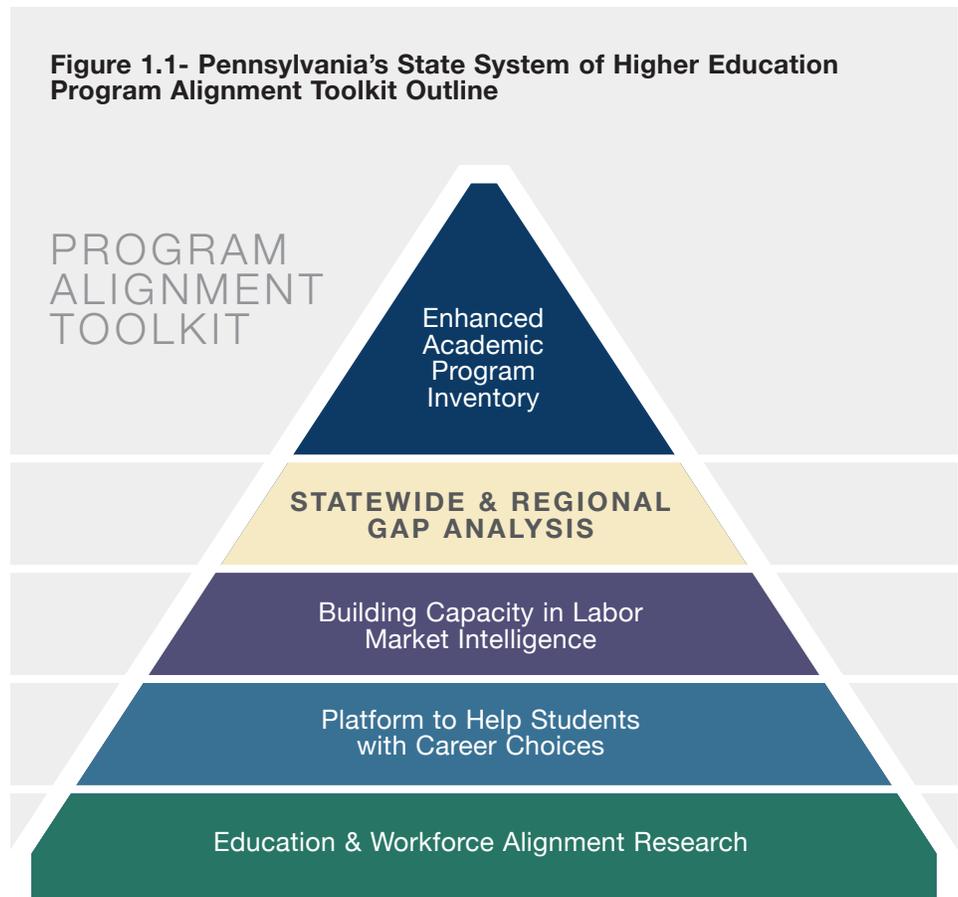
2 Source: The State System’s Economic and Employment Impact on the Commonwealth of Pennsylvania – released April 15, 2015.

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

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

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

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



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

1.2 Goal of the Workforce Characteristics Report

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

The intentions of this Workforce Characteristics Report are fourfold.

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

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

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

2. PENNSYLVANIA'S STATE SYSTEM LEARNER ORIGIN

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

Pennsylvania's total four year institution enrollment in 2013 was approximately 618,700 learners. Of this, the Pennsylvania State System of Higher Education comprised 112,225 enrolled learners—of which almost 90% 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

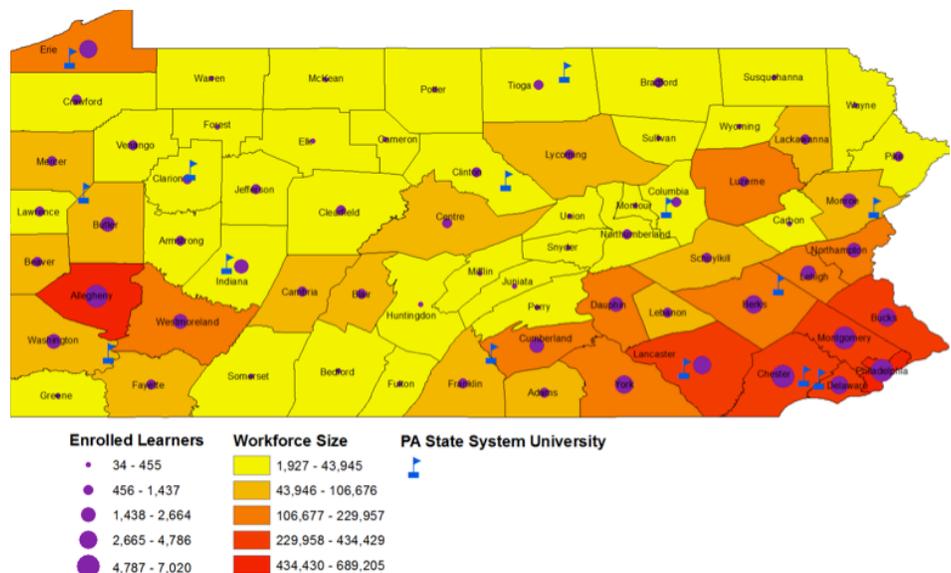
³ Based on Fall 2013 enrollment.

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

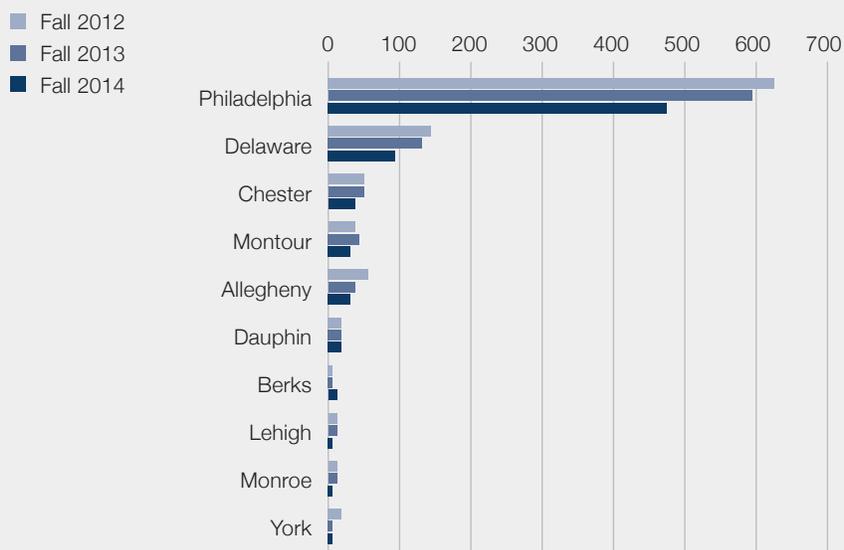


Source: Pennsylvania's State System of Higher Education, Oxford Economics mapping

2.1 Cheyney University's Learner Origin

Cheyney University learners, originally from Pennsylvania, come from nearly every county in the state. The vast majority of learners, however, come from counties that are in the southeast region. The top 10 learner enrollment counties account for about 95% of resident enrollment in Cheyney University. Figure 2.2 shows the Pennsylvania resident fall enrollment numbers between 2012 and 2014 for the top 10 counties. Table 2.3 provides enrollment detail for the top 10 counties.

Figure 2.2 – Cheyney University Learner Enrollment by County



Source: Pennsylvania's State System of Higher Education

Table 2.3 Cheyney University Learner Enrollment by County

County	Fall 2012	Fall 2013	Fall 2014
Philadelphia	618	591	469
Delaware	145	128	96
Chester	52	49	36
Montour	35	42	31
Allegheny	54	35	29
Dauphin	18	16	17
Berks	7	5	10
Lehigh	10	12	8
Monroe	13	13	7
York	17	8	7

Source: Pennsylvania's State System of Higher Education

3. SUMMARY OF CHEYNEY UNIVERSITY WORKFORCE REGION

Located on the border of Delaware County and Chester County, Pennsylvania, Cheyney University (CU) has a strategic location in the southeastern region of Pennsylvania’s State System of Higher Education. It provides a breadth of degree programs and serves a student population of about 1,200 learners, of which about 64% are Pennsylvania residents.⁴

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

A BRIEF NOTE ON DEVELOPING THE WORKFORCE REGION

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

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

⁴ Based on Average Fall Enrollment 2012-2014.

3.1 Defining Cheyney University’s Workforce Region

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

The counties in the region were identified using a multi-step process. Table 3.1 provides the final selection of counties highlighted in green.⁶

When taken in the context of regional economic activity, about 70% 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, 89% of household demand is satisfied by local production, meaning that households are not traveling outside the region to purchase goods or services to consume.

Table 3.1- Cheyney Workforce Region Commuting Patterns, Learner Capture Rate, and Economic Activity

County Combination	Job Share of People Living in the Region	Job Share of People Employed in the Region	Business Demand	Household Demand	Learner Capture Rate
Chester, Delaware, Philadelphia, Montgomery	0.81	0.76	0.70	0.89	0.81

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

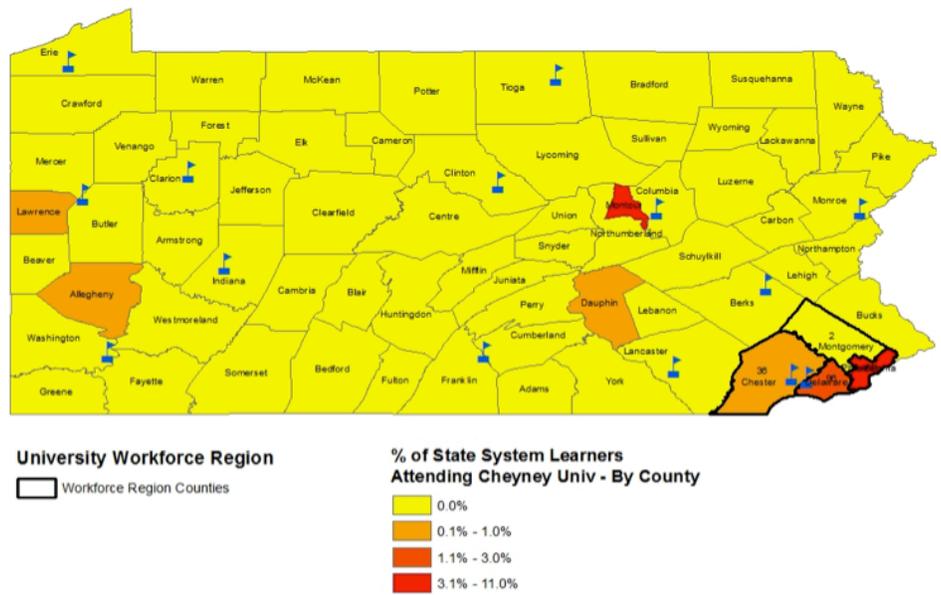
The majority of CU workforce region residents also work in the region (81%). This reflects a very strong centralized connection between workers and economic activity in a region that has more than 1.6 million jobs. Additionally, learners at CU originate from nearby surrounding counties. When looking at the percentage of learners attending State System universities, 81% (the capture rate) of State System learners in CU’s workforce region attend CU.

5 Bureau of Labor Statistics: Labor Market Area.

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

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

Figure 3.1 – Cheyney Workforce Region Learner Origin by Percent of Total State System Student Population



Source: Pennsylvania's State System of Higher Education and Oxford Economics tabulations

4. LABOR MARKET OF CHEYNEY UNIVERSITY'S WORKFORCE REGION

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

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

Workforce Characteristic	CU Workforce Region	Pennsylvania	Source
Population	3.4 million	12.7 million	2009-2013 American Community Survey 5-Year Estimates
Employed	1.6 million	5.6 million	2014 BLS Quarterly Census of Employment and Wages
Unemployed	103,000	370,000	2014 BLS Local Area Unemployment Statistics
Unemployment Rate	6.1%	5.8%	2014 BLS Local Area Unemployment Statistics
Poverty Rate	16.2%	13.7%	2013 Census Small Area Income and Poverty Estimates
Business Establishments	90,200	347,000	2014 BLS Quarterly Census of Employment and Wages
Educational Attainment (25+ Population with Bachelor's or Higher)	34.7%	27.4%	2009-2013 American Community Survey 5-Year Estimates
Bachelor's or Higher Completions	50,000	137,000	Integrated Postsecondary Education Data System 3-Year Average AY2010-11 to AY2012-13
Projected Jobs 2024	1.8 million	6.2 million	Oxford Economics Projections 2024

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

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

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

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

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

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

4.1 Employment Projections

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

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

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

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

5. INDUSTRIES IN CHEYNEY UNIVERSITY'S WORKFORCE REGION

Over the five years of 2009 to 2014, Cheyney University's (CU) workforce region experienced job growth in many service-based sectors. Sectors such as education and health services; professional and business services; and leisure and hospitality added a combined 53,100 new jobs between 2009 and 2014. Manufacturing experienced the largest nominal employment loss, while other job losses occurred within information, financial activities and government. Overall, the economy added about 40,900 jobs during the recovery period, 2009 to 2014. This growth reflects the recovery period for Pennsylvania from one of the worst recessions since the Great Depression—the Great Recession which lasted from 2007 to 2009.

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

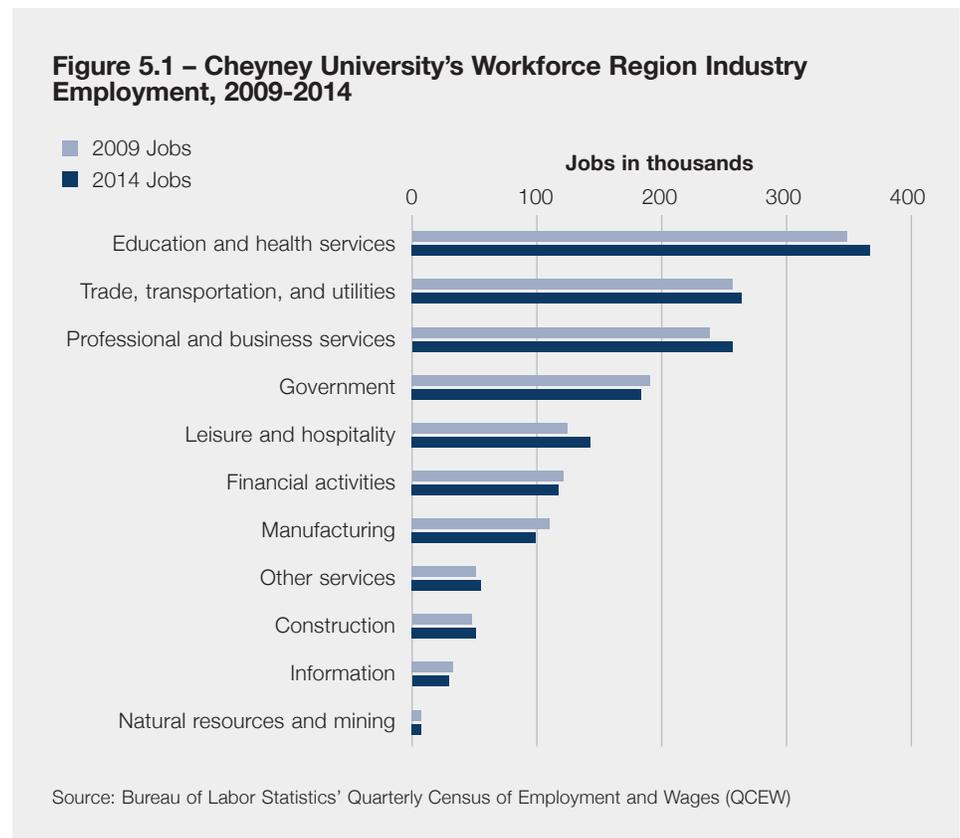


Table 5.1 – Cheyney University’s Workforce Region Industry Employment, 2009-2014

Industry Employment	2009 Jobs	2014 Jobs	Absolute Change 09-14	% Change 09-14
Total, all industries	1,529,481	1,570,372	40,891	2.7%
Education and health services	349,605	366,739	17,134	4.9%
Trade, transportation, and utilities	255,159	263,119	7,960	3.1%
Professional and business services	238,037	255,790	17,753	7.5%
Government	189,124	183,547	-5,577	-2.9%
Leisure and hospitality	125,043	143,258	18,215	14.6%
Financial activities	122,143	117,358	-4,785	-3.9%
Manufacturing	109,272	99,676	-9,596	-8.8%
Other services	51,891	55,977	4,086	7.9%
Construction	49,017	50,134	1,117	2.3%
Information	33,158	28,083	-5,075	-15.3%
Natural resources and mining	7,023	6,693	-330	-4.7%

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

5.1 Top Employers in Cheyney University’s Workforce Region

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

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

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

Table 5.2: Top Employers in Cheyney University's Workforce Region

Establishment Name
Abington Memorial Hospital
AmeriHealth Mercy Services
City of Philadelphia
County of Chester
Crozer-Chester Medical Center
Delaware County
Federal Government
Giant Food Stores
Main Line Hospitals
Merck Sharp & Dohme Corporation
QVC Network
School District of Philadelphia
Siemens Medical Solutions
Smithkline Beecham Corporation
Southeastern Pennsylvania Transportation Authority
State Government
Temple University
The Boeing Company
The Chester County Hospital
The Children's Hospital of Philadelphia
Thomas Jefferson University Hospital
Trustees of the University of Pennsylvania
United Parcel Service
Vanguard Group
Villanova University

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

6. OCCUPATIONS IN CHEYNEY UNIVERSITY'S WORKFORCE REGION

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

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

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

6.1 Skilled Occupations

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

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

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

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

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

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

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

6.2 Top Skilled Occupations in Cheyney University's Workforce Region

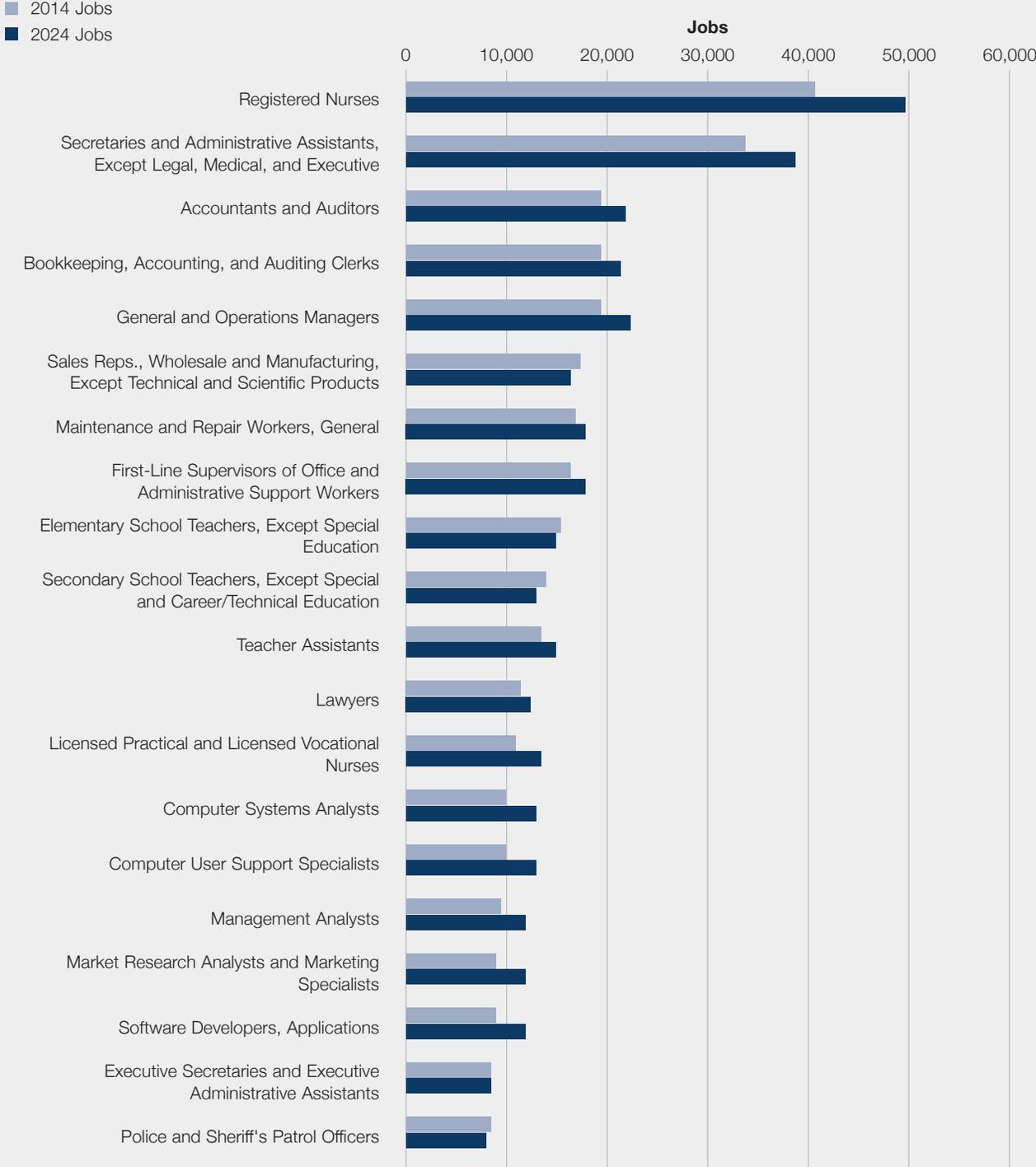
Top skilled occupations in the region are driven by industry composition. Medical centers employ a cadre of health professionals, while enterprise management companies employ a range of business professionals. Given the dominating presence of trade, transportation and utilities; healthcare and education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

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

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

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

Figure 6.1 – Largest Skilled Occupations in CU’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 CU’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	40,519	49,407	17,093
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	33,808	38,418	9,003
13-2011	Accountants and Auditors	19,383	21,722	8,791
43-3031	Bookkeeping, Accounting, and Auditing Clerks	19,327	21,173	3,757
11-1021	General and Operations Managers	19,073	22,444	6,766
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	17,462	16,197	2,792
49-9071	Maintenance and Repair Workers, General	16,933	17,899	4,697
43-1011	First-Line Supervisors of Office and Administrative Support Workers	16,530	17,542	4,971
25-2021	Elementary School Teachers, Except Special Education	15,098	14,795	3,496
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	13,901	13,044	3,878
25-9041	Teacher Assistants	13,562	14,658	4,466
23-1011	Lawyers	11,268	12,226	2,882
29-2061	Licensed Practical and Licensed Vocational Nurses	10,670	13,508	5,656
15-1121	Computer Systems Analysts	9,792	13,046	4,985
15-1151	Computer User Support Specialists	9,732	12,938	4,948
13-1111	Management Analysts	9,418	11,742	3,891
13-1161	Market Research Analysts and Marketing Specialists	8,981	11,968	4,425
15-1132	Software Developers, Applications	8,845	11,889	4,305
43-6011	Executive Secretaries and Executive Administrative Assistants	8,532	8,162	1,009
33-3051	Police and Sheriff’s Patrol Officers	8,412	7,947	2,553

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.¹⁰

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

6.3.1 New and Replacement Demand for Key Skilled High Demand Occupations

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

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

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

Figure 6.2 and Table 6.2 outline the five key skilled high demand occupations for new and replacement jobs over the next 10 years, specifically: registered nurses, accountants and auditors, computer system analysts, market research analysts and marketing specialists, and personal financial advisors.¹²

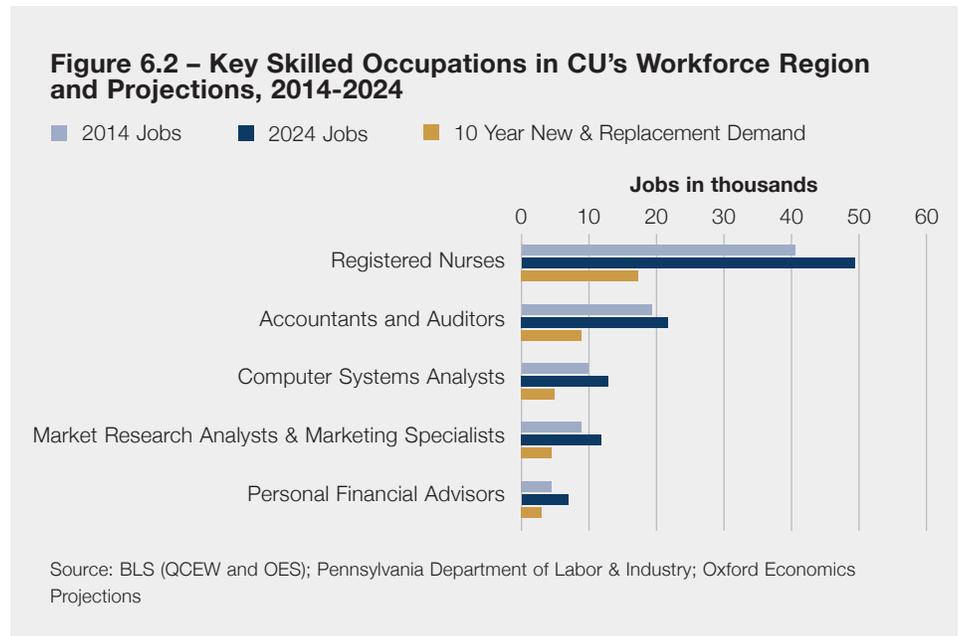


Table 6.2 – Key Skilled Occupations in CU’s Workforce Region and Projections, 2014-2024

SOC Code	Occupation Title	2014 Jobs	2024 Jobs	10 Year New & Replacement Demand
29-1141	Registered Nurses	40,519	49,407	17,093
13-2011	Accountants and Auditors	19,383	21,722	8,791
15-1121	Computer Systems Analysts	9,792	13,046	4,985
13-1161	Market Research Analysts and Marketing Specialists	8,981	11,968	4,425
13-2052	Personal Financial Advisors	4,602	6,774	3,029

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

11 Retirement is only one of the metrics factored into new and replacement jobs. Other metrics include out-migration and death.
 12 Teachers (elementary and secondary) were found in the top skilled high demand occupations. However, the analysis focuses on private sector jobs and opportunities.

While this section focused on 10-year new and replacement demand, the next section highlights the importance of current demand using real-time job posting analytics.

6.3.2 Real-Time Job Postings for Key Skilled High Demand Occupations

Analysis of job postings for key skilled high demand occupations generally supports the findings from Section 6.3.1. Between July 2014 and July 2015 approximately 6,000 unique (de-duplicated) job postings appeared in CU's Workforce Region for the top five key skilled high demand occupations (registered nurses, accountants and auditors, computer system analysts, market research analysts and marketing specialists, and personal financial advisors). Sizable job postings include: registered nurses (2,935 unique postings per month), and accountants and auditors (1,514 unique postings per month).

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

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

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

Occupation	Average Monthly Postings (Jul 2014 - Jul 2015)	Estimated Average Monthly Hires (Jul 2014 - Jul 2015)	Ratio of Postings to Hires
Registered Nurses	2,935	1,569	1.9
Accountants and Auditors	1,514	862	1.8
Computer Systems Analysts	1,151	382	3.0
Market Research Analysts and Marketing Specialists	554	423	1.3
Personal Financial Advisors	132	89	1.5

Source: Economic Modeling Specialists International (EMSI)

Registered Nurses

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

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

Accountants and Auditors

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

Certifications: Certified Public Accountant (CPA)

Computer Systems Analysts

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

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

Market Research Analysts and Marketing Specialists

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

Certifications: Six Sigma, Project Management Professional (PMP)

Personal Financial Advisors

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

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

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

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

6.4 Industry Staffing Patterns for Key Skilled High Demand Occupations in Cheyney University's Workforce Region

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

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

- The number of the occupation jobs in each respective industry in 2014 (e.g. general medical and surgical hospitals employ nearly 19,800 registered nurses);
- The percent of the occupation's employment in the region that is employed in the industry (e.g. the 19,800 registered nurses employed in general medical and surgical hospitals represent nearly 49% of the total registered nurse workforce in the region);
- The percent of the industry sector's employment that is made up of the occupation (e.g. the 19,800 registered nurses make up about 27% of employment within general medical and surgical hospitals).

Staffing Patterns for Registered Nurses Employed in CU'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	19,767	48.8%	27.2%
Specialty (except Psychiatric and Substance Abuse) Hospitals	4,618	11.4%	27.6%
Home Health Care Services	3,104	7.7%	21.0%
Offices of Physicians	2,788	6.9%	9.4%
Nursing Care Facilities (Skilled Nursing Facilities)	2,303	5.7%	9.9%

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

Staffing Patterns for Accountants and Auditors Employed in CU'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	5,424	28.0%	38.6%
Management of Companies and Enterprises	2,143	11.1%	5.0%
Other Financial Investment Activities	1,926	9.9%	8.9%
Insurance Carriers	752	3.9%	2.4%
Management, Scientific, and Technical Consulting Services	709	3.7%	3.0%

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

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

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Computer Systems Design and Related Services	4,299	12.8%	43.9%
Management of Companies and Enterprises	1,015	2.4%	10.4%
Insurance Carriers	885	2.8%	9.0%
Wholesale Electronic Markets and Agents and Brokers	518	2.7%	5.3%
Management, Scientific, and Technical Consulting Services	406	1.7%	4.1%

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

Staffing Patterns for Market Research Analysts Employed in CU's Workforce Region

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Management, Scientific, and Technical Consulting Services	1,432	15.9%	6.0%
Management of Companies and Enterprises	857	9.5%	2.0%
Computer Systems Design and Related Services	657	7.3%	2.0%
Other Financial Investment Activities	486	5.4%	2.2%
Insurance Carriers	476	5.3%	1.5%

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

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

Industry	Occupation Jobs in Industry (2014)	% of Occupation in Industry (2014)	% of Total Jobs in Industry (2014)
Other Financial Investment Activities	2,926	63.6%	13.6%
Securities and Commodity Contracts Intermediation and Brokerage	897	19.5%	17.7%
Depository Credit Intermediation	222	4.8%	1.3%
Agencies, Brokerages, and Other Insurance Related Activities	115	2.5%	0.7%
Activities Related to Credit Intermediation	106	2.3%	5.9%

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

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

6.5 Key Skilled High Demand Occupational Profiles

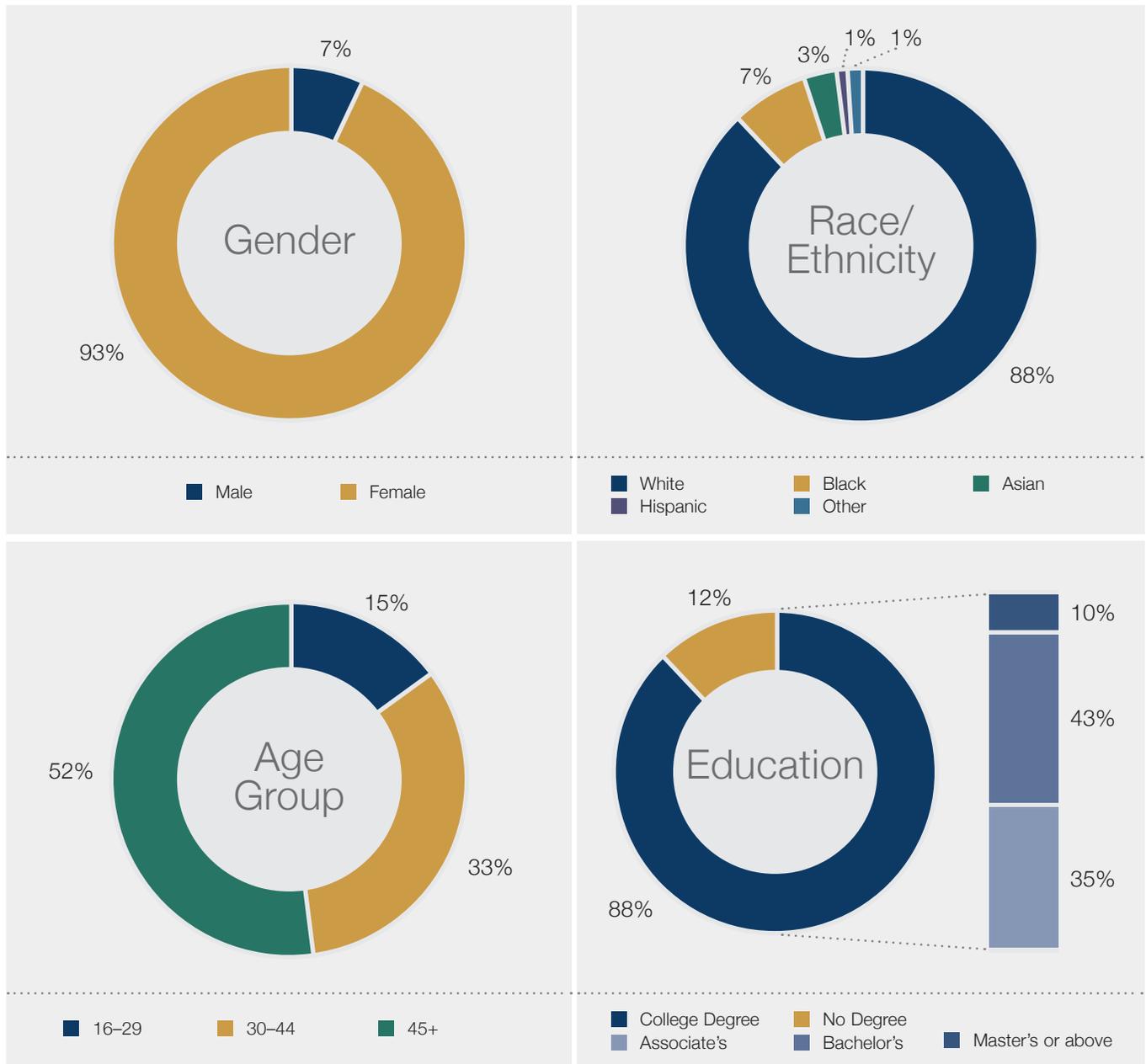
In addition to understanding the industries that employ key skilled high demand occupations, another lens to view key skilled high demand occupations focuses on the characteristics of those employed. The following section outlines the demographics for people from Pennsylvania who work in these key skilled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

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

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

REGISTERED NURSES IN PENNSYLVANIA

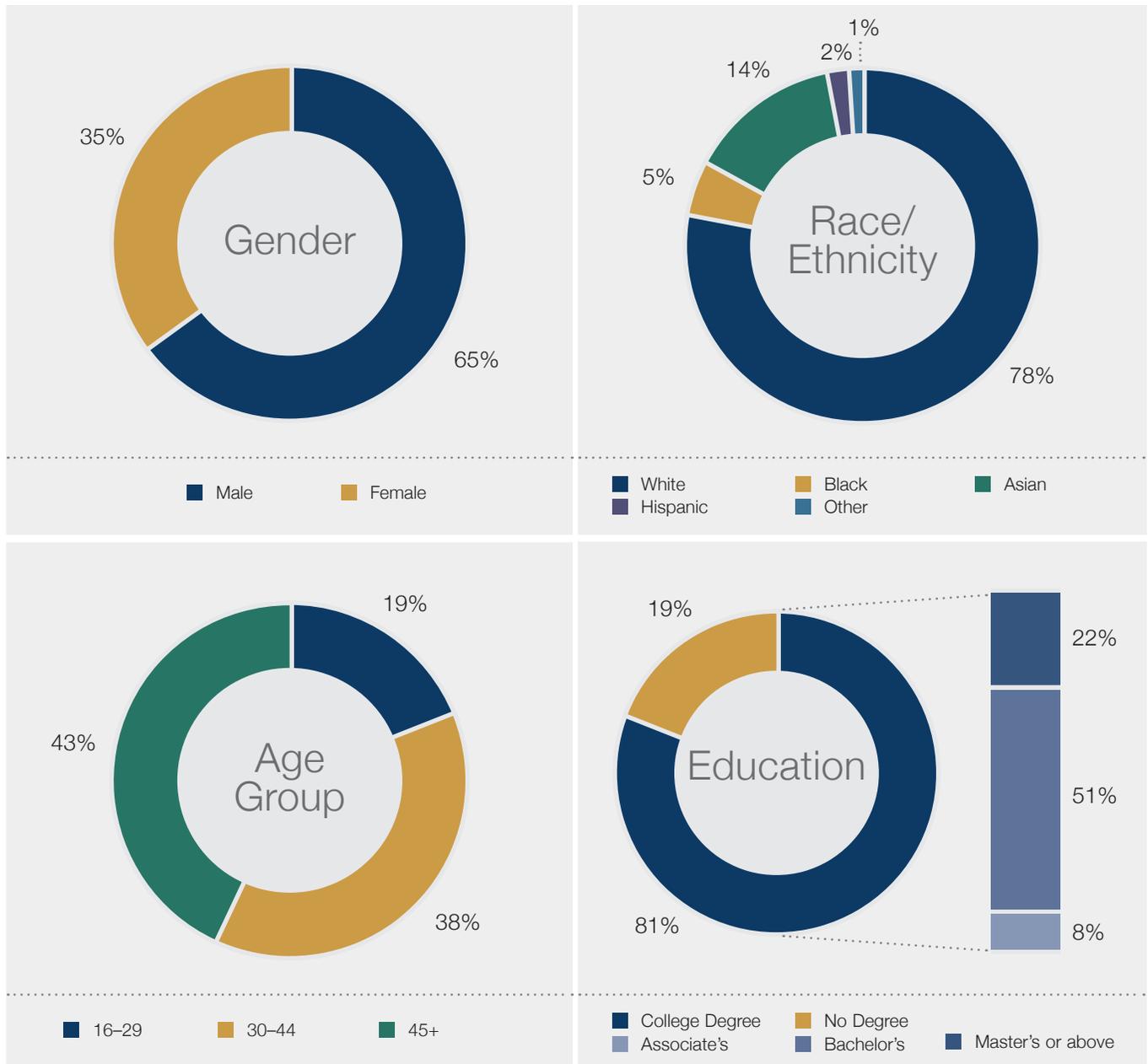
The demographic profile of registered nurses is largely dominated by white females. Age distribution indicates that registered nurses are a more mature cohort of workers (45 years and older), which can put increasing pressure on replacement jobs due to retirements over the next 10 years. Nearly 90% of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

COMPUTER SYSTEMS ANALYSTS IN PENNSYLVANIA

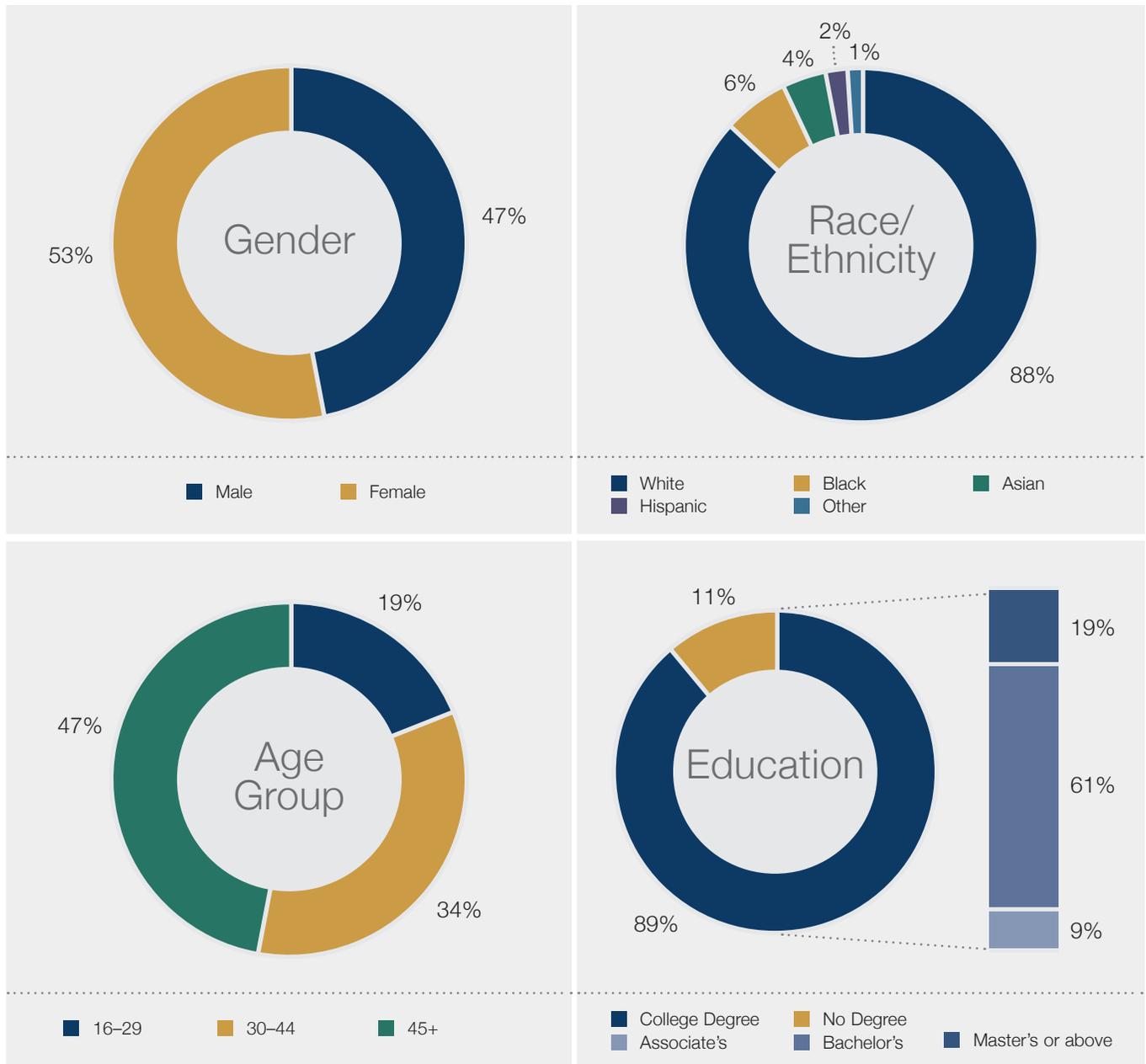
Computer systems analysts show a larger proportion of males in the occupation compared to females. While still represented by a larger share of white workers, a significant number of Asian workers are found in the occupation, making this occupation more diverse than the average Pennsylvania demographic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

ACCOUNTANTS AND AUDITORS IN PENNSYLVANIA

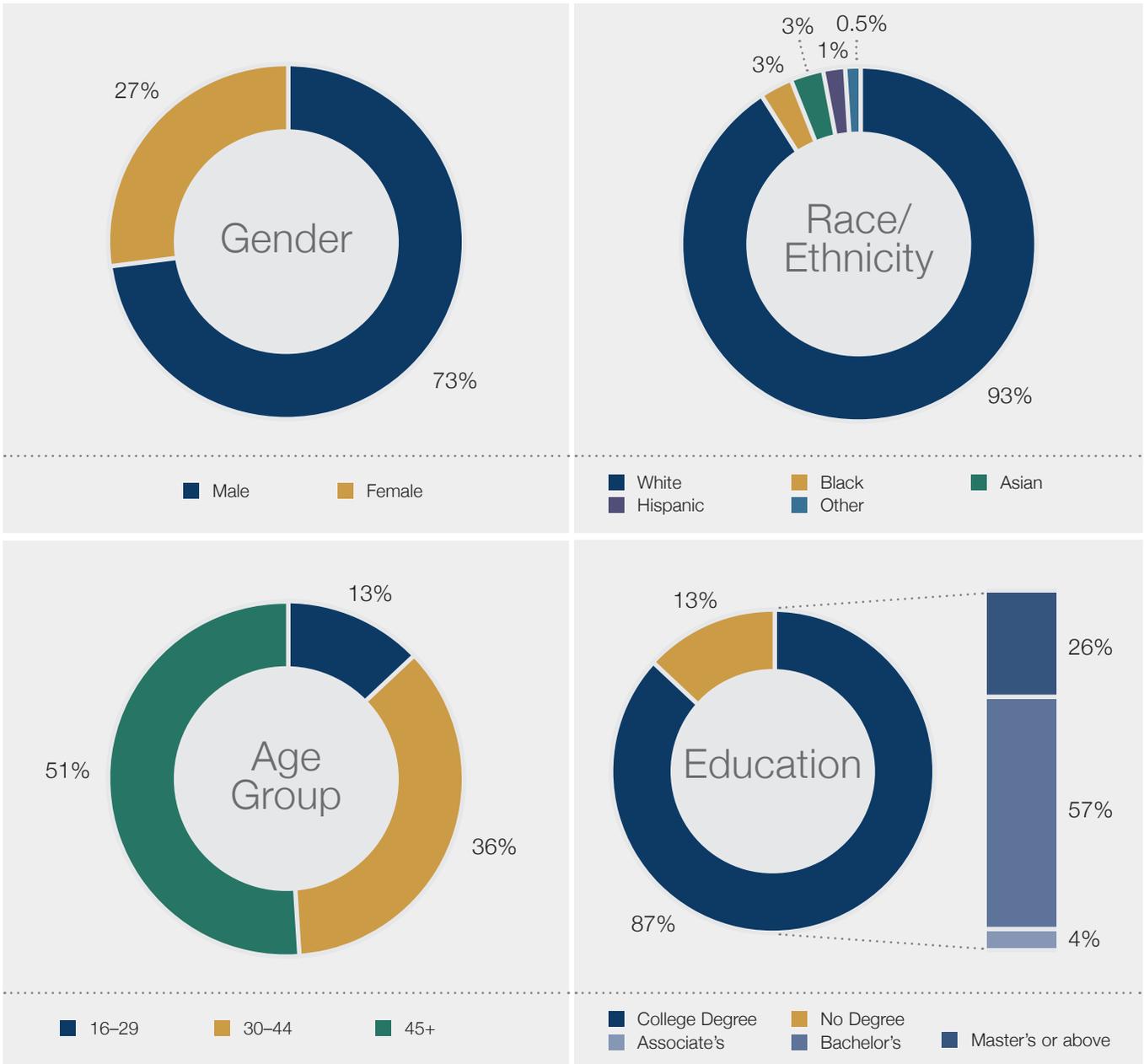
Accountants and auditors are fairly equally split between male and female, though a slightly higher percent of employed accountants and auditors are female. A high proportion of white individuals are found in the occupation. Additionally, the age distribution is fairly even between entry-level and mature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

PERSONAL FINANCIAL ADVISORS IN PENNSYLVANIA

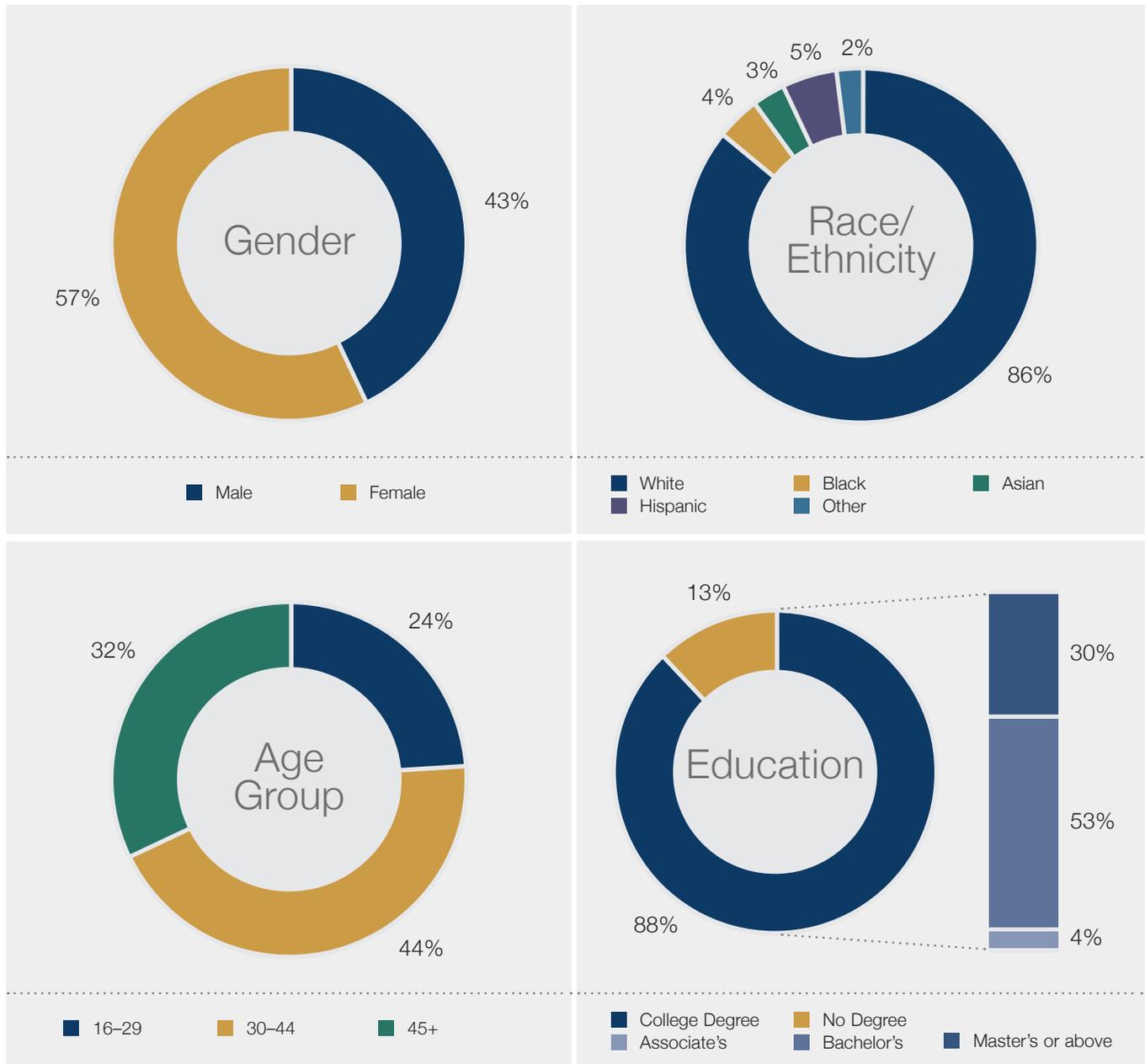
Personal financial advisors are typically male, though females occupy almost 30% of the employed population. The majority of those in this occupation are white. This occupation is represented by a majority of older workers (45 years and older), though mid-career workers also occupy a significant proportion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



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

MARKET RESEARCH ANALYSTS AND MARKETING SPECIALISTS IN PENNSYLVANIA

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



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

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

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

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

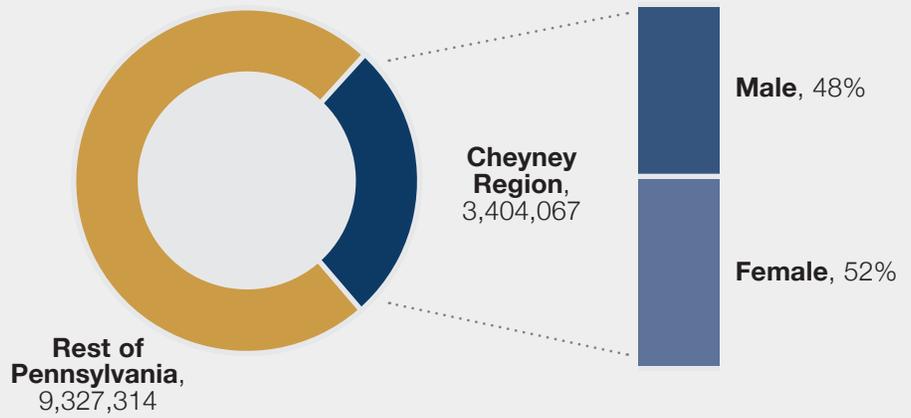
Analysis of three socio-economic indicators—education, unemployment, and poverty—also provides insight into the segment of the population that may be considered economically disadvantaged. Areas with high proportions of economically disadvantaged learners may require additional considerations in education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

7.1 Demographics of Cheyney University's Workforce Region

The CU workforce region has a population of about 3.4 million people. As shown in Figure 7.1, females make up a slightly larger share of the population compared to males. Figure 7.2 illustrates that the majority of the region is represented by a White demographic, with Blacks representing the next largest group, followed by Hispanics.

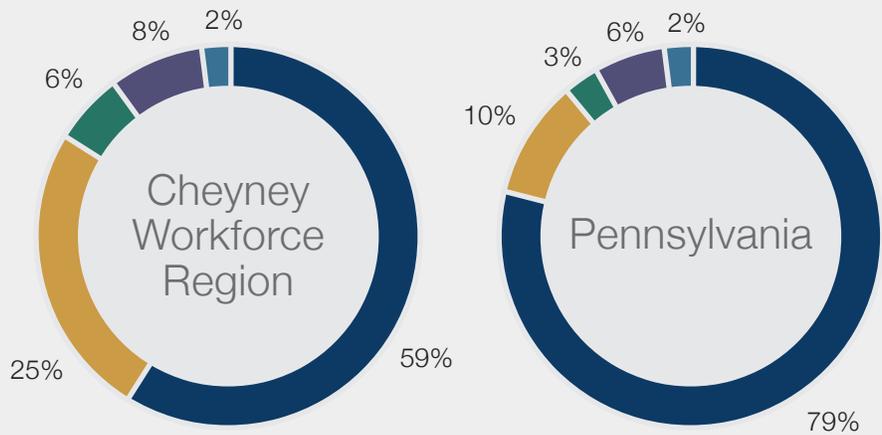
Fall 2014 data from the State System Research Office indicates that approximately 83% (90,966) of learners within the State System are traditional students—ages 18- to 22-year-old high school graduates—and 17% (18,640) are adult learners. A view of the change in population by age demographic indicates 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 19,000 people between 2010 and 2014—a 4% decline. Conversely, the 25-34 year old cohort increased nearly 10%, or 44,700 people, over the same time period. This demographic shift presents an opportunity to incorporate a broader university recruitment strategy.

Figure 7.1 – Cheyney University’s Workforce Region Population and Gender Distribution



Source: U.S. Census - ACS

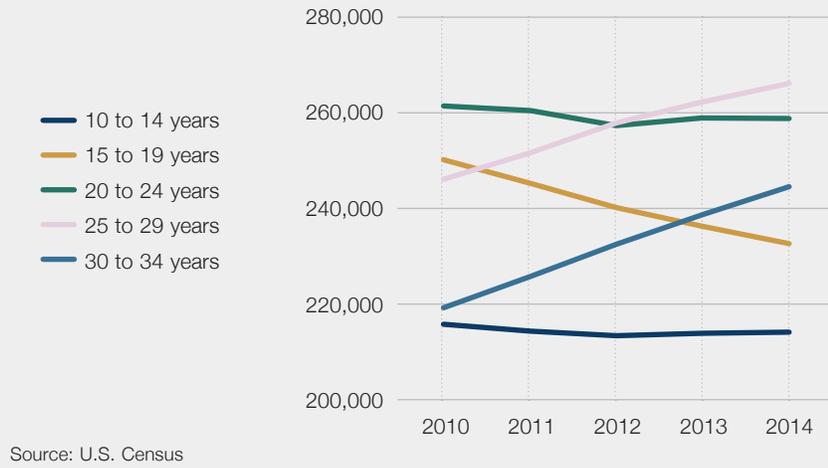
Figure 7.2 – Cheyney University’s Workforce Region Race/Ethnicity Composition



■ White ■ Black ■ Asian ■ Hispanic ■ Other

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

Figure 7.3 – Cheyney University’s Workforce Region Changes in Population of Age Cohorts



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

7.2 Socio-economic Indicators of Cheyney University’s Workforce Region

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

7.2.1 Educational Attainment in Cheyney University’s Workforce Region

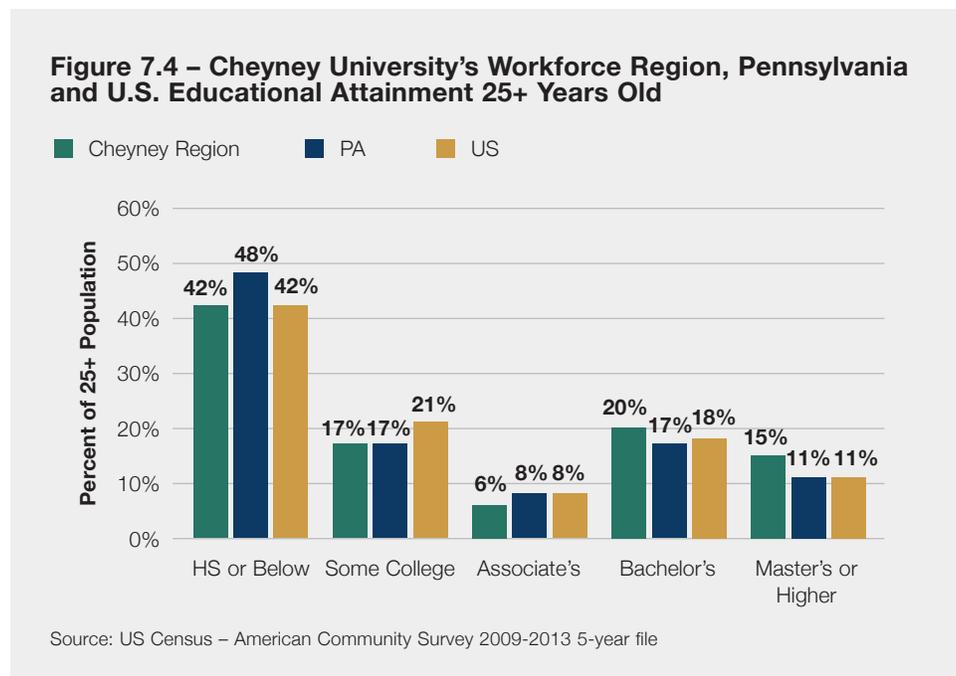
The levels of educational attainment of a population indicate several characteristics in an economy. Areas with better educated workers earn higher wages, are more productive and can typically adjust more quickly to changing economic conditions. Additionally, an educated workforce is less likely to be

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

A view of educational attainment in CU's workforce region indicates that more than half (58%) 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 same as the national average of 58% of the population having had at least some post-secondary education or higher.

When comparing degree completion, CU's workforce region is slightly below 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 CU's workforce region.



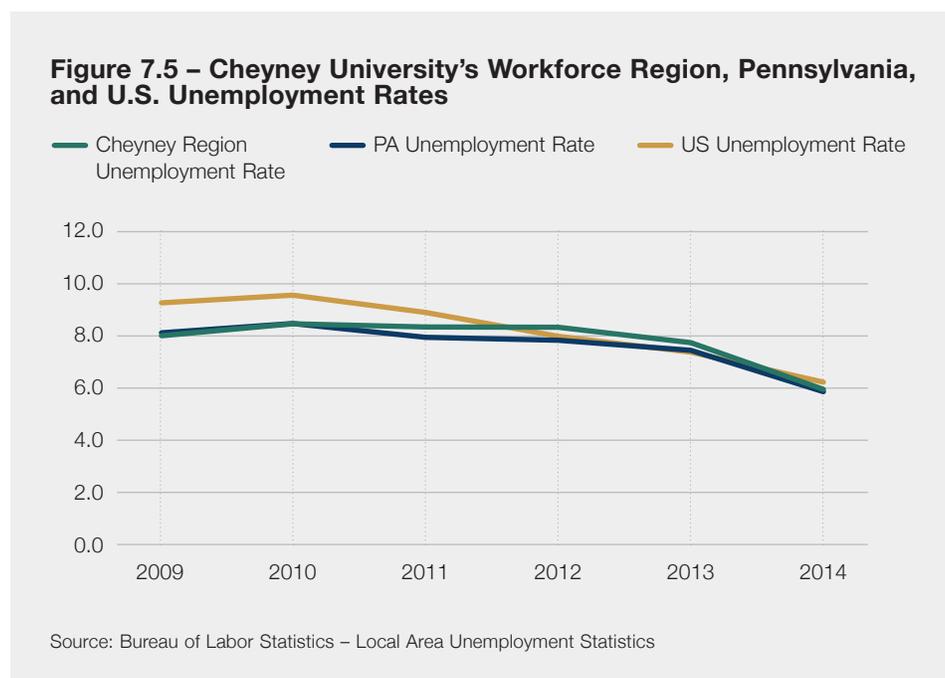
13 Feinstein et. al. (2006), "The effects of education on health: Concepts, evidence and policy implications: A review for the OECD Center for Educational Research and Innovation (CERI)", unpublished manuscript, OECD, Paris.

14 Mitra, Dana (2011), "Pennsylvania's Best Investment: The Social and Economic Benefits of Public Education." Report published for the Education Law Center.

7.2.2 Unemployment and Poverty in Cheyney University's Workforce Region

CU's workforce region unemployment rate—6.1% 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 CU's workforce region, Pennsylvania, and the U.S. from 2009 to 2014.

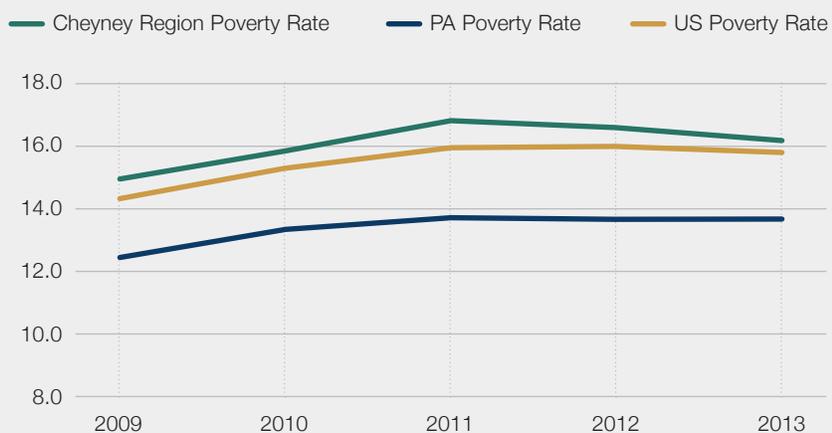


In CU's workforce region, the poverty rate trended upward since 2009 but declined slightly from 2011 to 2013. The region's poverty rate is above the state poverty rate and it has trended above the U.S. average.¹⁵ Given the lower poverty rate compared with the nation, there is an underlying assumption that the compensation associated with the jobs in CU's workforce region may be below the national average.

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

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

Figure 7.6 – Cheyney University’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.

DATA SOURCES

Bureau of Labor Statistics (BLS):

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

U.S. Census Bureau (Census):

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

National Center for Education Statistics (NCES):

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

Pennsylvania Department of Labor and Industry (PADLI):

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

O*NET Resource Center (O*NET)

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

Economic Modeling Specialists International (EMSI)

APPENDIX A: METHODOLOGY FOR IDENTIFYING STATE SYSTEM UNIVERSITY WORKFORCE REGIONS

Introduction

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

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

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

¹⁶ Bureau of Labor Statistics: Labor Market Area.

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

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

Further information on each of the measurements is detailed later.

Geographic Consideration

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

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

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

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

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

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

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

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

Process

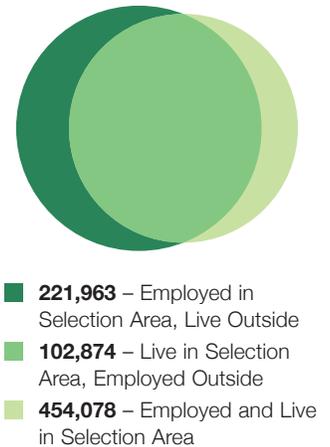
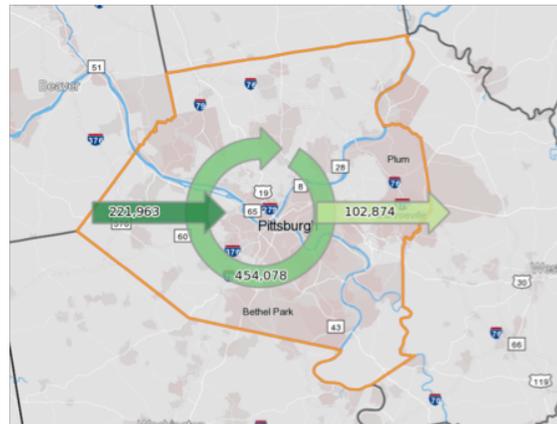
Given the workforce/commute, learner and economic variances that exist within the different geographies across Pennsylvania, an iterative process is used to define the workforce region. This multiple step, iterative process seeks to maximize the primary driver value (workforce flows), while adhering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

Workforce Flows:

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

When these numbers are converted into percentages, we find that

Inflow/Outflow Job Counts in 2013



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

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

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

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

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

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

Learner Capture Rates and Inclusiveness:

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

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

Economic Activity and Concentration:

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

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

Table A.1 – State System Workforce Region by University

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

Source: Oxford Economics modeling and tabulations

APPENDIX B: PENNSYLVANIA STATE AND COUNTY ENROLLMENT AND EMPLOYMENT

County	Fall 2014 Enrollment in Cheyney University	2014 QCEW Employment
Adams	0	34,139
Allegheny	29	683,111
Armstrong	0	17,582
Beaver	1	52,811
Bedford	0	15,397
Berks	10	166,792
Blair	0	58,233
Bradford	0	24,568
Bucks	5	250,889
Butler	0	84,472
Cambria	0	53,915
Cameron	0	2,015
Carbon	0	16,974
Centre	0	67,147
Chester	36	240,469
Clarion	0	13,586
Clearfield	0	29,938
Clinton	0	13,043
Columbia	0	24,974
Crawford	0	31,113
Cumberland	1	126,939
Dauphin	17	176,004
Delaware	96	216,261
Elk	0	14,994
Erie	0	124,095
Fayette	2	39,979
Forest	0	2,053
Franklin	0	56,715
Fulton	0	4,807
Greene	0	14,844
Huntingdon	0	12,343

County	Fall 2014 Enrollment in Cheyney University	2014 QCEW Employment
Indiana	0	32,653
Jefferson	0	15,435
Juniata	0	6,146
Lackawanna	3	97,259
Lancaster	4	225,673
Lawrence	4	29,500
Lebanon	0	48,869
Lehigh	8	180,757
Luzerne	3	140,329
Lycoming	2	53,197
McKean	0	15,770
Mercer	1	48,028
Mifflin	0	15,544
Monroe	7	52,933
Montgomery	2	472,655
Montour	31	15,578
Northampton	4	105,825
Northumberland	0	27,985
Perry	0	7,661
Philadelphia	469	640,987
Pike	0	10,748
Potter	0	5,291
Schuylkill	0	50,049
Snyder	1	15,522
Somerset	0	24,398
Sullivan	0	1,772
Susquehanna	0	9,281
Tioga	1	12,973
Union	1	16,597
Venango	0	19,251
Warren	0	15,031
Washington	0	86,961
Wayne	0	14,651
Westmoreland	0	132,312
Wyoming	0	10,181
York	7	172,145
Total Pennsylvania	745	5,643,676

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

APPENDIX C: INDUSTRY PROJECTIONS 2014-2024 FOR CHEYNEY UNIVERSITY'S WORKFORCE REGION

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

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

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
Total	All Industries	1,620,822	1,788,894	10.4%	1.0
1111	Oilseed and Grain Farming	56	60	7.1%	0.1
1112	Vegetable and Melon Farming	86	75	-12.8%	0.1
1113	Fruit and Tree Nut Farming	102	112	9.8%	0.0
1114	Greenhouse, Nursery, and Floriculture Production	4,706	4,452	-5.4%	2.8
1119	Other Crop Farming	59	68	15.3%	0.1
1121	Cattle Ranching and Farming	137	155	13.1%	0.1
1122	Hog and Pig Farming	6	7	16.7%	0.0
1123	Poultry and Egg Production	44	53	20.5%	0.1
1124	Sheep and Goat Farming	9	10	11.1%	0.5
1125	Aquaculture	16	15	-6.3%	0.2
1129	Other Animal Production	142	160	12.7%	0.6
1132	Forest Nurseries and Gathering of Forest Products	6	6	0.0%	0.2
1142	Hunting and Trapping	4	5	25.0%	0.2
1151	Support Activities for Crop Production	787	986	25.3%	0.2
1152	Support Activities for Animal Production	161	163	1.2%	0.5
2111	Oil and Gas Extraction	78	91	16.7%	0.0
2123	Nonmetallic Mineral Mining and Quarrying	293	275	-6.1%	0.3
2131	Support Activities for Mining	46	59	28.3%	0.0
2211	Electric Power Generation, Transmission and Distribution	3,763	3,656	-2.8%	0.7
2212	Natural Gas Distribution	1,227	1,248	1.7%	0.9
2213	Water, Sewage and Other Systems	1,935	1,945	0.5%	0.8
2361	Residential Building Construction	5,961	7,676	28.8%	0.8
2362	Nonresidential Building Construction	5,922	7,045	19.0%	0.7
2371	Utility System Construction	4,505	5,734	27.3%	0.8
2372	Land Subdivision	257	274	6.6%	0.5
2373	Highway, Street, and Bridge Construction	5,329	6,354	19.2%	1.1
2379	Other Heavy and Civil Engineering Construction	463	573	23.8%	0.4
2381	Foundation, Structure, and Building Exterior Contractors	5,399	6,415	18.8%	0.6
2382	Building Equipment Contractors	17,034	20,869	22.5%	0.8
2383	Building Finishing Contractors	6,434	7,285	13.2%	0.8
2389	Other Specialty Trade Contractors	4,579	5,706	24.6%	0.7
3111	Animal Food Manufacturing	167	182	9.0%	0.3
3112	Grain and Oilseed Milling	42	32	-23.8%	0.1
3113	Sugar and Confectionery Product Manufacturing	1,006	1,048	4.2%	1.2
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	515	467	-9.3%	0.3
3115	Dairy Product Manufacturing	898	924	2.9%	0.6

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3116	Animal Slaughtering and Processing	5,025	5,502	9.5%	0.9
3117	Seafood Product Preparation and Packaging	47	53	12.8%	0.1
3118	Bakeries and Tortilla Manufacturing	3,742	3,322	-11.2%	1.1
3119	Other Food Manufacturing	1,299	1,312	1.0%	0.6
3121	Beverage Manufacturing	1,344	1,430	6.4%	0.6
3122	Tobacco Manufacturing	369	338	-8.4%	2.3
3131	Fiber, Yarn, and Thread Mills	38	25	-34.2%	0.1
3132	Fabric Mills	286	229	-19.9%	0.4
3133	Textile and Fabric Finishing and Fabric Coating Mills	335	217	-35.2%	0.9
3141	Textile Furnishings Mills	202	177	-12.4%	0.3
3149	Other Textile Product Mills	658	630	-4.3%	0.9
3151	Apparel Knitting Mills	35	30	-14.3%	0.2
3152	Cut and Sew Apparel Manufacturing	885	800	-9.6%	0.7
3159	Apparel Accessories and Other Apparel Manufacturing	79	84	6.3%	0.6
3161	Leather and Hide Tanning and Finishing	193	225	16.6%	3.7
3162	Footwear Manufacturing	15	18	20.0%	0.1
3169	Other Leather and Allied Product Manufacturing	17	19	11.8%	0.1
3211	Sawmills and Wood Preservation	24	27	12.5%	0.0
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	89	76	-14.6%	0.1
3219	Other Wood Product Manufacturing	800	898	12.3%	0.3
3221	Pulp, Paper, and Paperboard Mills	1,016	1,021	0.5%	0.8
3222	Converted Paper Product Manufacturing	3,496	3,339	-4.5%	1.1
3231	Printing and Related Support Activities	6,107	5,796	-5.1%	1.1
3241	Petroleum and Coal Products Manufacturing	1,529	1,392	-9.0%	1.2
3251	Basic Chemical Manufacturing	1,677	1,627	-3.0%	1.0
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	878	909	3.5%	0.8
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	184	178	-3.3%	0.4
3254	Pharmaceutical and Medicine Manufacturing	12,073	10,846	-10.2%	3.6
3255	Paint, Coating, and Adhesive Manufacturing	672	759	12.9%	0.9
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	750	711	-5.2%	0.6
3259	Other Chemical Product and Preparation Manufacturing	727	677	-6.9%	0.7
3261	Plastics Product Manufacturing	2,491	2,713	8.9%	0.4
3262	Rubber Product Manufacturing	281	298	6.0%	0.2
3271	Clay Product and Refractory Manufacturing	59	52	-11.9%	0.1
3272	Glass and Glass Product Manufacturing	315	325	3.2%	0.3
3273	Cement and Concrete Product Manufacturing	887	955	7.7%	0.4

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3274	Lime and Gypsum Product Manufacturing	36	44	22.2%	0.2
3279	Other Nonmetallic Mineral Product Manufacturing	365	417	14.2%	0.4
3311	Iron and Steel Mills and Ferroalloy Manufacturing	513	571	11.3%	0.5
3312	Steel Product Manufacturing from Purchased Steel	1,559	1,553	-0.4%	2.2
3313	Alumina and Aluminum Production and Processing	136	158	16.2%	0.2
3314	Nonferrous Metal (except Aluminum) Production and Processing	255	238	-6.7%	0.3
3315	Foundries	225	242	7.6%	0.2
3321	Forging and Stamping	256	285	11.3%	0.2
3322	Cutlery and Handtool Manufacturing	223	219	-1.8%	0.5
3323	Architectural and Structural Metals Manufacturing	3,041	3,593	18.2%	0.7
3324	Boiler, Tank, and Shipping Container Manufacturing	406	352	-13.3%	0.3
3325	Hardware Manufacturing	84	87	3.6%	0.3
3326	Spring and Wire Product Manufacturing	392	474	20.9%	0.8
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	3,689	3,818	3.5%	0.8
3328	Coating, Engraving, Heat Treating, and Allied Activities	623	668	7.2%	0.4
3329	Other Fabricated Metal Product Manufacturing	2,126	2,326	9.4%	0.6
3331	Agriculture, Construction, and Mining Machinery Manufacturing	341	299	-12.3%	0.1
3332	Industrial Machinery Manufacturing	853	928	8.8%	0.7
3333	Commercial and Service Industry Machinery Manufacturing	657	559	-14.9%	0.6
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	453	398	-12.1%	0.3
3335	Metalworking Machinery Manufacturing	479	423	-11.7%	0.2
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	136	137	0.7%	0.1
3339	Other General Purpose Machinery Manufacturing	1,801	1,793	-0.4%	0.6
3341	Computer and Peripheral Equipment Manufacturing	268	162	-39.6%	0.1
3342	Communications Equipment Manufacturing	1,010	888	-12.1%	0.9
3343	Audio and Video Equipment Manufacturing	125	94	-24.8%	0.5
3344	Semiconductor and Other Electronic Component Manufacturing	1,706	1,760	3.2%	0.4
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	3,884	3,634	-6.4%	0.8
3346	Manufacturing and Reproducing Magnetic and Optical Media	677	686	1.3%	3.3
3351	Electric Lighting Equipment Manufacturing	479	460	-4.0%	0.9
3352	Household Appliance Manufacturing	393	419	6.6%	0.5
3353	Electrical Equipment Manufacturing	699	838	19.9%	0.4
3359	Other Electrical Equipment and Component Manufacturing	717	698	-2.6%	0.5
3362	Motor Vehicle Body and Trailer Manufacturing	282	349	23.8%	0.2
3363	Motor Vehicle Parts Manufacturing	2,829	2,712	-4.1%	0.4

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
3364	Aerospace Product and Parts Manufacturing	5,303	4,467	-15.8%	0.9
3365	Railroad Rolling Stock Manufacturing	2,025	2,452	21.1%	6.3
3366	Ship and Boat Building	699	771	10.3%	0.4
3369	Other Transportation Equipment Manufacturing	749	909	21.4%	2.0
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	843	938	11.3%	0.3
3372	Office Furniture (including Fixtures) Manufacturing	1,794	1,962	9.4%	1.5
3379	Other Furniture Related Product Manufacturing	147	133	-9.5%	0.4
3391	Medical Equipment and Supplies Manufacturing	2,641	2,584	-2.2%	0.7
3399	Other Miscellaneous Manufacturing	2,950	2,596	-12.0%	0.9
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	3,528	3,468	-1.7%	0.9
4232	Furniture and Home Furnishing Merchant Wholesalers	1,022	1,033	1.1%	0.8
4233	Lumber and Other Construction Materials Merchant Wholesalers	1,743	1,785	2.4%	0.7
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	8,527	8,262	-3.1%	1.2
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	949	977	3.0%	0.6
4236	Household Appliances and Electrical and Electronic Goods Merchant Wholesalers	3,155	2,859	-9.4%	0.8
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	2,678	2,981	11.3%	1.0
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	4,150	4,608	11.0%	0.5
4239	Miscellaneous Durable Goods Merchant Wholesalers	2,480	3,275	32.1%	0.7
4241	Paper and Paper Product Merchant Wholesalers	1,827	1,852	1.4%	1.3
4242	Drugs and Druggists' Sundries Merchant Wholesalers	5,049	4,760	-5.7%	2.2
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	1,678	1,761	4.9%	1.0
4244	Grocery and Related Product Merchant Wholesalers	6,454	7,004	8.5%	0.7
4245	Farm Product Raw Material Merchant Wholesalers	72	65	-9.7%	0.1
4246	Chemical and Allied Products Merchant Wholesalers	889	952	7.1%	0.6
4247	Petroleum and Petroleum Products Merchant Wholesalers	393	421	7.1%	0.3
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	1,278	1,404	9.9%	0.6
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	2,119	1,990	-6.1%	0.5
4251	Wholesale Electronic Markets and Agents and Brokers	18,995	19,905	4.8%	1.8
4411	Automobile Dealers	10,852	12,662	16.7%	0.8
4412	Other Motor Vehicle Dealers	474	508	7.2%	0.3
4413	Automotive Parts, Accessories, and Tire Stores	3,268	3,660	12.0%	0.5
4421	Furniture Stores	2,258	2,367	4.8%	0.9
4422	Home Furnishings Stores	2,205	2,280	3.4%	0.8
4431	Electronics and Appliance Stores	5,056	5,028	-0.6%	0.9

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
4441	Building Material and Supplies Dealers	8,238	8,774	6.5%	0.6
4442	Lawn and Garden Equipment and Supplies Stores	1,055	1,014	-3.9%	0.6
4451	Grocery Stores	36,124	39,277	8.7%	1.2
4452	Specialty Food Stores	3,412	3,453	1.2%	1.3
4453	Beer, Wine, and Liquor Stores	1,382	1,610	16.5%	0.7
4461	Health and Personal Care Stores	13,728	14,447	5.2%	1.1
4471	Gasoline Stations	5,477	6,123	11.8%	0.5
4481	Clothing Stores	14,089	13,484	-4.3%	1.1
4482	Shoe Stores	3,057	3,058	0.0%	1.3
4483	Jewelry, Luggage, and Leather Goods Stores	1,641	1,542	-6.0%	1.0
4511	Sporting Goods, Hobby, and Musical Instrument Stores	5,146	5,357	4.1%	0.8
4512	Book Stores and News Dealers	1,152	1,111	-3.6%	1.1
4521	Department Stores	14,481	12,746	-12.0%	0.9
4529	Other General Merchandise Stores	8,835	10,750	21.7%	0.4
4531	Florists	899	656	-27.0%	1.2
4532	Office Supplies, Stationery, and Gift Stores	3,121	2,818	-9.7%	0.9
4533	Used Merchandise Stores	1,424	1,551	8.9%	0.7
4539	Other Miscellaneous Store Retailers	3,472	3,934	13.3%	1.0
4541	Electronic Shopping and Mail-Order Houses	6,451	7,941	23.1%	1.7
4542	Vending Machine Operators	403	340	-15.6%	0.9
4543	Direct Selling Establishments	1,980	2,004	1.2%	1.3
4811	Scheduled Air Transportation	8,857	9,491	7.2%	1.8
4812	Nonscheduled Air Transportation	65	80	23.1%	0.1
4831	Deep Sea, Coastal, and Great Lakes Water Transportation	211	188	-10.9%	0.4
4832	Inland Water Transportation	27	35	29.6%	0.1
4841	General Freight Trucking	3,782	4,709	24.5%	0.3
4842	Specialized Freight Trucking	2,389	3,111	30.2%	0.5
4851	Urban Transit Systems	1,131	1,169	3.4%	0.4
4852	Interurban and Rural Bus Transportation	230	240	4.3%	0.9
4853	Taxi and Limousine Service	1,048	1,084	3.4%	1.1
4854	School and Employee Bus Transportation	6,820	7,782	14.1%	2.3
4855	Charter Bus Industry	375	414	10.4%	1.1
4859	Other Transit and Ground Passenger Transportation	1,833	1,907	4.0%	1.6
4862	Pipeline Transportation of Natural Gas	113	137	21.2%	0.3
4869	Other Pipeline Transportation	220	246	11.8%	2.3
4871	Scenic and Sightseeing Transportation, Land	230	191	-17.0%	1.4
4872	Scenic and Sightseeing Transportation, Water	139	168	20.9%	0.8

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
4881	Support Activities for Air Transportation	2,032	2,531	24.6%	0.8
4882	Support Activities for Rail Transportation	293	317	8.2%	0.8
4883	Support Activities for Water Transportation	7,752	7,696	-0.7%	6.4
4884	Support Activities for Road Transportation	826	1,212	46.7%	0.6
4885	Freight Transportation Arrangement	1,767	1,896	7.3%	0.8
4889	Other Support Activities for Transportation	172	176	2.3%	0.5
4911	Postal Service	8,297	5,949	-28.3%	1.2
4921	Couriers and Express Delivery Services	9,026	10,398	15.2%	1.5
4922	Local Messengers and Local Delivery	391	414	5.9%	0.6
4931	Warehousing and Storage	5,798	6,577	13.4%	0.7
5111	Newspaper, Periodical, Book, and Directory Publishers	5,690	4,427	-22.2%	1.2
5112	Software Publishers	2,010	2,182	8.6%	0.5
5121	Motion Picture and Video Industries	2,192	2,256	2.9%	0.5
5122	Sound Recording Industries	153	143	-6.5%	0.8
5151	Radio and Television Broadcasting	2,908	2,996	3.0%	1.1
5152	Cable and Other Subscription Programming	74	73	-1.4%	0.1
5171	Wired Telecommunications Carriers	9,247	8,008	-13.4%	1.3
5172	Wireless Telecommunications Carriers (except Satellite)	717	576	-19.7%	0.4
5174	Satellite Telecommunications	65	54	-16.9%	0.6
5179	Other Telecommunications	728	688	-5.5%	0.7
5182	Data Processing, Hosting, and Related Services	3,563	3,066	-13.9%	1.1
5191	Other Information Services	3,796	4,302	13.3%	0.9
5211	Monetary Authorities-Central Bank	96	77	-19.8%	0.4
5221	Depository Credit Intermediation	17,015	15,093	-11.3%	0.8
5222	Nondepository Credit Intermediation	5,673	5,527	-2.6%	0.8
5223	Activities Related to Credit Intermediation	1,803	1,952	8.3%	0.5
5231	Securities and Commodity Contracts Intermediation and Brokerage	5,057	6,182	22.2%	1.0
5232	Securities and Commodity Exchanges	140	178	27.1%	1.7
5239	Other Financial Investment Activities	21,588	29,261	35.5%	4.2
5241	Insurance Carriers	31,619	33,762	6.8%	2.2
5242	Agencies, Brokerages, and Other Insurance Related Activities	17,236	20,409	18.4%	1.4
5251	Insurance and Employee Benefit Funds	86	69	-19.8%	3.3
5259	Other Investment Pools and Funds	857	1,090	27.2%	20.5
5311	Lessors of Real Estate	7,333	7,909	7.9%	1.0
5312	Offices of Real Estate Agents and Brokers	3,028	3,205	5.8%	0.9
5313	Activities Related to Real Estate	6,300	7,278	15.5%	0.8
5321	Automotive Equipment Rental and Leasing	2,308	2,452	6.2%	1.0

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
5322	Consumer Goods Rental	1,079	1,255	16.3%	0.6
5323	General Rental Centers	321	361	12.5%	0.7
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	2,128	2,816	32.3%	1.3
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	303	332	9.6%	1.1
5411	Legal Services	24,350	25,571	5.0%	1.8
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	14,045	15,201	8.2%	1.2
5413	Architectural, Engineering, and Related Services	17,341	19,198	10.7%	1.0
5414	Specialized Design Services	2,188	2,882	31.7%	1.5
5415	Computer Systems Design and Related Services	33,473	43,289	29.3%	1.6
5416	Management, Scientific, and Technical Consulting Services	23,751	28,389	19.5%	1.6
5417	Scientific Research and Development Services	16,370	18,509	13.1%	2.1
5418	Advertising, Public Relations, and Related Services	6,129	7,104	15.9%	1.1
5419	Other Professional, Scientific, and Technical Services	9,192	11,204	21.9%	1.2
5511	Management of Companies and Enterprises	42,706	50,117	17.4%	1.7
5611	Office Administrative Services	984	863	-12.3%	0.2
5612	Facilities Support Services	2,511	3,318	32.1%	1.5
5613	Employment Services	28,041	36,773	31.1%	0.7
5614	Business Support Services	6,553	5,847	-10.8%	0.6
5615	Travel Arrangement and Reservation Services	2,633	2,782	5.7%	1.1
5616	Investigation and Security Services	13,916	16,241	16.7%	1.4
5617	Services to Buildings and Dwellings	26,381	28,329	7.4%	1.1
5619	Other Support Services	5,920	6,920	16.9%	1.6
5621	Waste Collection	1,894	2,407	27.1%	1.0
5622	Waste Treatment and Disposal	680	811	19.3%	0.5
5629	Remediation and Other Waste Management Services	1,391	1,800	29.4%	0.9
6111	Elementary and Secondary Schools	80,228	78,781	-1.8%	0.9
6112	Junior Colleges	4,189	4,173	-0.4%	0.5
6113	Colleges, Universities, and Professional Schools	58,598	60,699	3.6%	1.7
6114	Business Schools and Computer and Management Training	685	735	7.3%	0.8
6115	Technical and Trade Schools	1,581	1,875	18.6%	0.9
6116	Other Schools and Instruction	5,372	6,111	13.8%	1.2
6117	Educational Support Services	2,934	3,428	16.8%	1.7
6211	Offices of Physicians	29,516	31,918	8.1%	1.0
6212	Offices of Dentists	9,483	10,314	8.8%	0.9
6213	Offices of Other Health Practitioners	9,226	11,583	25.5%	1.0
6214	Outpatient Care Centers	11,103	13,379	20.5%	1.2

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
6215	Medical and Diagnostic Laboratories	4,260	5,177	21.5%	1.4
6216	Home Health Care Services	14,805	23,570	59.2%	1.0
6219	Other Ambulatory Health Care Services	6,253	8,393	34.2%	1.8
6221	General Medical and Surgical Hospitals	72,690	77,659	6.8%	1.1
6222	Psychiatric and Substance Abuse Hospitals	4,677	5,429	16.1%	1.7
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	16,708	23,529	40.8%	5.7
6231	Nursing Care Facilities (Skilled Nursing Facilities)	23,202	26,934	16.1%	1.1
6232	Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	16,269	18,980	16.7%	1.9
6233	Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	18,481	21,966	18.9%	1.8
6239	Other Residential Care Facilities	1,620	1,699	4.9%	0.8
6241	Individual and Family Services	38,852	53,120	36.7%	1.5
6242	Community Food and Housing, and Emergency and Other Relief Services	2,617	3,080	17.7%	1.4
6243	Vocational Rehabilitation Services	2,810	3,073	9.4%	0.7
6244	Child Day Care Services	14,905	17,842	19.7%	1.5
7111	Performing Arts Companies	1,598	1,677	4.9%	1.2
7112	Spectator Sports	2,142	2,536	18.4%	1.3
7113	Promoters of Performing Arts, Sports, and Similar Events	2,271	2,693	18.6%	1.5
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	78	86	10.3%	0.3
7115	Independent Artists, Writers, and Performers	466	502	7.7%	0.8
7121	Museums, Historical Sites, and Similar Institutions	3,497	3,793	8.5%	1.3
7131	Amusement Parks and Arcades	1,004	1,229	22.4%	0.4
7132	Gambling Industries	1,831	1,752	-4.3%	0.6
7139	Other Amusement and Recreation Industries	14,373	15,992	11.3%	0.9
7211	Traveler Accommodation	12,750	14,085	10.5%	0.6
7212	RV (Recreational Vehicle) Parks and Recreational Camps	215	211	-1.9%	0.3
7213	Rooming and Boarding Houses	80	103	28.8%	0.5
7223	Special Food Services	13,433	14,173	5.5%	1.8
7224	Drinking Places (Alcoholic Beverages)	4,562	4,779	4.8%	1.1
7225	Restaurants and Other Eating Places	86,691	97,471	12.4%	0.8
8111	Automotive Repair and Maintenance	8,840	9,639	9.0%	0.9
8112	Electronic and Precision Equipment Repair and Maintenance	1,104	1,152	4.3%	0.9
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	1,113	1,190	6.9%	0.5
8114	Personal and Household Goods Repair and Maintenance	477	416	-12.8%	0.6
8121	Personal Care Services	11,776	14,240	20.9%	1.5

NAICS Code	Industry Title	2014 Jobs	2024 Jobs	% Change 2014-2024	2014 LQ
8122	Death Care Services	1,366	1,430	4.7%	0.8
8123	Drycleaning and Laundry Services	2,669	2,785	4.3%	0.8
8129	Other Personal Services	6,013	6,808	13.2%	1.7
8131	Religious Organizations	2,728	3,114	14.1%	1.2
8132	Grantmaking and Giving Services	2,622	2,932	11.8%	1.6
8133	Social Advocacy Organizations	3,168	3,600	13.6%	1.3
8134	Civic and Social Organizations	7,526	8,300	10.3%	1.6
8139	Business, Professional, Labor, Political, and Similar Organizations	6,312	7,050	11.7%	1.2
8141	Private Households	2,088	2,065	-1.1%	0.6
9211	Executive, Legislative, and Other General Government Support	24,615	24,155	-1.9%	0.7
9221	Justice, Public Order, and Safety Activities	23,708	22,157	-6.5%	1.1
9231	Administration of Human Resource Programs	7,478	7,106	-5.0%	0.8
9241	Administration of Environmental Quality Programs	2,194	2,114	-3.6%	0.6
9251	Administration of Housing Programs, Urban Planning, and Community Development	2,249	2,202	-2.1%	2.3
9261	Administration of Economic Programs	3,954	3,645	-7.8%	0.6
9281	National Security and International Affairs	7,040	6,473	-8.1%	1.0

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

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

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

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

JOB ZONE ONE: Little or No Preparation Needed

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

JOB ZONE TWO: Some Preparation Needed

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

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

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

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

JOB ZONE THREE: Medium Preparation Needed

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

JOB ZONE FOUR: Considerable Preparation Needed

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

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

JOB ZONE FIVE: Extensive Preparation Needed

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

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
Total	All Occupations	NA	1,620,823	1,788,894	10.4%	613,231
11-1011	Chief Executives	5	3,315	3,292	-0.7%	764
11-1021	General and Operations Managers	4	19,073	22,444	17.7%	6,766
11-1031	Legislators	4	622	488	-21.5%	28
11-2011	Advertising and Promotions Managers	4	217	187	-13.8%	42
11-2021	Marketing Managers	4	2,088	2,271	8.8%	635
11-2022	Sales Managers	4	3,211	3,290	2.5%	772
11-2031	Public Relations and Fundraising Managers	4	650	656	0.9%	144
11-3011	Administrative Services Managers	3	2,764	2,815	1.8%	474
11-3021	Computer and Information Systems Managers	4	4,313	5,677	31.6%	1,995
11-3031	Financial Managers	4	5,142	5,279	2.7%	1,088
11-3051	Industrial Production Managers	4	1,165	1,064	-8.7%	168
11-3061	Purchasing Managers	4	620	562	-9.4%	83
11-3071	Transportation, Storage, and Distribution Managers	4	997	1,124	12.7%	373
11-3111	Compensation and Benefits Managers	4	271	234	-13.7%	47
11-3121	Human Resources Managers	4	1,112	1,426	28.2%	603
11-3131	Training and Development Managers	4	336	417	24.1%	170
11-9021	Construction Managers	4	1,412	1,840	30.3%	633
11-9031	Education Administrators, Preschool and Childcare Center/Program	4	707	799	13.0%	282
11-9032	Education Administrators, Elementary and Secondary School	5	2,110	1,972	-6.5%	559
11-9033	Education Administrators, Postsecondary	5	1,962	1,917	-2.3%	512
11-9039	Education Administrators, All Other	5	256	318	24.2%	132
11-9041	Architectural and Engineering Managers	5	1,575	1,621	2.9%	454
11-9051	Food Service Managers	3	1,575	1,771	12.4%	515
11-9061	Funeral Service Managers	3	105	99	-5.7%	26
11-9071	Gaming Managers	3	31	30	-3.2%	6
11-9081	Lodging Managers	3	234	293	25.2%	161
11-9111	Medical and Health Services Managers	5	4,077	4,455	9.3%	1,370
11-9121	Natural Sciences Managers	5	809	862	6.6%	253
11-9131	Postmasters and Mail Superintendents	3	322	221	-31.4%	44
11-9141	Property, Real Estate, and Community Association Managers	4	1,217	1,470	20.8%	566
11-9151	Social and Community Service Managers	4	1,916	2,301	20.1%	825
11-9161	Emergency Management Directors	4	116	95	-18.1%	0
11-9199	Managers, All Other	4	2,949	3,217	9.1%	910

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	55	51	-7.3%	15
13-1021	Buyers and Purchasing Agents, Farm Products	4	105	110	4.8%	32
13-1022	Wholesale and Retail Buyers, Except Farm Products	3	1,186	1,109	-6.5%	247
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	4	3,905	3,889	-0.4%	819
13-1031	Claims Adjusters, Examiners, and Investigators	4	5,630	6,026	7.0%	2,064
13-1032	Insurance Appraisers, Auto Damage	3	313	374	19.5%	174
13-1041	Compliance Officers	4	3,982	4,603	15.6%	1,447
13-1051	Cost Estimators	4	2,390	2,673	11.8%	1,095
13-1071	Human Resources Specialists	4	6,237	7,800	25.1%	2,895
13-1075	Labor Relations Specialists	4	1,847	1,569	-15.1%	267
13-1081	Logisticians	4	2,214	2,511	13.4%	591
13-1111	Management Analysts	4	9,418	11,742	24.7%	3,891
13-1121	Meeting, Convention, and Event Planners	4	1,122	1,525	35.9%	575
13-1131	Fundraisers	4	1,102	1,451	31.7%	597
13-1141	Compensation, Benefits, and Job Analysis Specialists	4	1,286	1,244	-3.3%	244
13-1151	Training and Development Specialists	4	3,736	4,376	17.1%	1,381
13-1161	Market Research Analysts and Marketing Specialists	4	8,981	11,968	33.3%	4,425
13-1199	Business Operations Specialists, All Other	4	5,730	5,753	0.4%	701
13-2011	Accountants and Auditors	4	19,383	21,722	12.1%	8,791
13-2021	Appraisers and Assessors of Real Estate	4	552	567	2.7%	99
13-2031	Budget Analysts	4	792	833	5.2%	375
13-2041	Credit Analysts	4	713	820	15.0%	320
13-2051	Financial Analysts	4	5,054	6,371	26.1%	2,639
13-2052	Personal Financial Advisors	4	4,602	6,774	47.2%	3,029
13-2053	Insurance Underwriters	4	2,209	2,340	5.9%	992
13-2061	Financial Examiners	4	566	669	18.2%	285
13-2071	Credit Counselors	4	621	804	29.5%	316
13-2072	Loan Officers	3	3,487	3,840	10.1%	1,318
13-2081	Tax Examiners and Collectors, and Revenue Agents	3	1,220	1,034	-15.2%	309
13-2082	Tax Preparers	3	871	761	-12.6%	155
13-2099	Financial Specialists, All Other	4	1,444	1,454	0.7%	201
15-1111	Computer and Information Research Scientists	5	137	137	0.0%	17
15-1121	Computer Systems Analysts	4	9,792	13,046	33.2%	4,985
15-1122	Information Security Analysts	4	1,017	1,467	44.2%	607
15-1131	Computer Programmers	4	6,323	7,988	26.3%	3,736

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
15-1132	Software Developers, Applications	4	8,845	11,889	34.4%	4,305
15-1133	Software Developers, Systems Software	4	4,467	4,344	-2.8%	427
15-1134	Web Developers	3	1,549	2,017	30.2%	720
15-1141	Database Administrators	4	2,223	2,807	26.3%	1,043
15-1142	Network and Computer Systems Administrators	4	5,241	5,006	-4.5%	665
15-1143	Computer Network Architects	4	1,486	1,826	22.9%	576
15-1151	Computer User Support Specialists	3	9,732	12,938	32.9%	4,948
15-1152	Computer Network Support Specialists	4	2,110	2,200	4.3%	492
15-1199	Computer Occupations, All Other	4	2,548	3,014	18.3%	915
15-2011	Actuaries	4	672	864	28.6%	409
15-2031	Operations Research Analysts	5	1,175	1,505	28.1%	608
15-2041	Statisticians	5	912	1,242	36.2%	644
17-1011	Architects, Except Landscape and Naval	4	820	959	17.0%	430
17-1012	Landscape Architects	4	247	311	25.9%	141
17-1021	Cartographers and Photogrammetrists	4	69	74	7.2%	20
17-1022	Surveyors	4	435	486	11.7%	166
17-2011	Aerospace Engineers	4	618	762	23.3%	305
17-2021	Agricultural Engineers	4	50	53	6.0%	23
17-2031	Biomedical Engineers	4	404	443	9.7%	150
17-2041	Chemical Engineers	4	639	583	-8.8%	131
17-2051	Civil Engineers	4	3,532	3,950	11.8%	1,381
17-2061	Computer Hardware Engineers	4	476	422	-11.3%	45
17-2071	Electrical Engineers	4	1,713	1,989	16.1%	701
17-2072	Electronics Engineers, Except Computer	4	1,181	971	-17.8%	88
17-2081	Environmental Engineers	5	1,071	1,281	19.6%	520
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	4	412	402	-2.4%	123
17-2112	Industrial Engineers	4	2,241	2,153	-3.9%	672
17-2131	Materials Engineers	4	335	432	29.0%	224
17-2141	Mechanical Engineers	4	2,515	2,493	-0.9%	928
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	4	60	58	-3.3%	20
17-2161	Nuclear Engineers	4	443	535	20.8%	244
17-2171	Petroleum Engineers	4	10	14	40.0%	7
17-2199	Engineers, All Other	4	1,116	1,331	19.3%	440
17-3011	Architectural and Civil Drafters	4	1,278	1,363	6.7%	393
17-3012	Electrical and Electronics Drafters	3	309	258	-16.5%	2
17-3013	Mechanical Drafters	3	748	665	-11.1%	80

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
17-3019	Drafters, All Other	3	90	105	16.7%	29
17-3021	Aerospace Engineering and Operations Technicians	4	54	60	11.1%	16
17-3022	Civil Engineering Technicians	3	672	780	16.1%	277
17-3023	Electrical and Electronics Engineering Technicians	3	988	843	-14.7%	99
17-3024	Electro-Mechanical Technicians	3	157	134	-14.6%	24
17-3025	Environmental Engineering Technicians	4	387	447	15.5%	161
17-3026	Industrial Engineering Technicians	3	434	426	-1.8%	100
17-3027	Mechanical Engineering Technicians	3	468	543	16.0%	188
17-3029	Engineering Technicians, Except Drafters, All Other	3	727	932	28.2%	386
17-3031	Surveying and Mapping Technicians	3	418	499	19.4%	173
19-1012	Food Scientists and Technologists	4	65	77	18.5%	34
19-1013	Soil and Plant Scientists	5	55	71	29.1%	38
19-1021	Biochemists and Biophysicists	5	1,023	1,354	32.4%	644
19-1022	Microbiologists	5	524	696	32.8%	348
19-1023	Zoologists and Wildlife Biologists	5	93	78	-16.1%	12
19-1029	Biological Scientists, All Other	5	169	162	-4.1%	47
19-1031	Conservation Scientists	4	190	204	7.4%	76
19-1032	Foresters	4	52	46	-11.5%	10
19-1041	Epidemiologists	5	36	26	-27.8%	1
19-1042	Medical Scientists, Except Epidemiologists	5	3,218	3,989	24.0%	1,544
19-1099	Life Scientists, All Other	5	48	55	14.6%	16
19-2012	Physicists	5	69	56	-18.8%	2
19-2021	Atmospheric and Space Scientists	4	32	27	-15.6%	2
19-2031	Chemists	4	2,715	3,013	11.0%	1,174
19-2032	Materials Scientists	5	110	113	2.7%	36
19-2041	Environmental Scientists and Specialists, Including Health	4	1,023	1,346	31.6%	651
19-2042	Geoscientists, Except Hydrologists and Geographers	4	314	353	12.4%	151
19-2043	Hydrologists	4	64	66	3.1%	22
19-2099	Physical Scientists, All Other	5	94	74	-21.3%	2
19-3011	Economists	5	254	273	7.5%	106
19-3022	Survey Researchers	5	977	1,028	5.2%	364
19-3031	Clinical, Counseling, and School Psychologists	5	1,577	1,632	3.5%	532
19-3039	Psychologists, All Other	5	126	151	19.8%	62
19-3041	Sociologists	5	58	51	-12.1%	25
19-3051	Urban and Regional Planners	5	538	532	-1.1%	253

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
19-3091	Anthropologists and Archeologists	5	29	33	13.8%	8
19-3093	Historians	5	27	21	-22.2%	0
19-3099	Social Scientists and Related Workers, All Other	4	147	137	-6.8%	21
19-4011	Agricultural and Food Science Technicians	3	87	76	-12.6%	23
19-4021	Biological Technicians	4	2,230	2,587	16.0%	1,093
19-4031	Chemical Technicians	3	1,568	1,825	16.4%	756
19-4041	Geological and Petroleum Technicians	4	56	74	32.1%	46
19-4051	Nuclear Technicians	3	284	348	22.5%	189
19-4061	Social Science Research Assistants	4	327	413	26.3%	236
19-4091	Environmental Science and Protection Technicians, Including Health	4	617	789	27.9%	450
19-4092	Forensic Science Technicians	4	45	48	6.7%	22
19-4093	Forest and Conservation Technicians	3	116	127	9.5%	67
19-4099	Life, Physical, and Social Science Technicians, All Other	3	716	782	9.2%	364
21-1011	Substance Abuse and Behavioral Disorder Counselors	5	2,365	2,337	-1.2%	645
21-1012	Educational, Guidance, School, and Vocational Counselors	5	3,339	3,497	4.7%	943
21-1013	Marriage and Family Therapists	5	373	456	22.3%	166
21-1014	Mental Health Counselors	5	3,383	3,518	4.0%	1,059
21-1015	Rehabilitation Counselors	5	2,069	2,615	26.4%	1,128
21-1019	Counselors, All Other	5	298	303	1.7%	71
21-1021	Child, Family, and School Social Workers	4	5,207	5,962	14.5%	1,972
21-1022	Healthcare Social Workers	5	2,548	3,287	29.0%	1,332
21-1023	Mental Health and Substance Abuse Social Workers	5	2,949	3,597	22.0%	1,476
21-1029	Social Workers, All Other	5	313	329	5.1%	87
21-1091	Health Educators	4	874	982	12.4%	346
21-1092	Probation Officers and Correctional Treatment Specialists	4	1,232	1,284	4.2%	451
21-1093	Social and Human Service Assistants	4	7,054	8,129	15.2%	3,180
21-1094	Community Health Workers	4	385	419	8.8%	132
21-1099	Community and Social Service Specialists, All Other	4	501	547	9.2%	167
21-2011	Clergy	5	592	734	24.0%	285
21-2021	Directors, Religious Activities and Education	4	506	628	24.1%	349
21-2099	Religious Workers, All Other	4	134	114	-14.9%	24
23-1011	Lawyers	5	11,268	12,226	8.5%	2,882
23-1012	Judicial Law Clerks	5	353	371	5.1%	91

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	217	191	-12.0%	17
23-1022	Arbitrators, Mediators, and Conciliators	5	129	159	23.3%	51
23-1023	Judges, Magistrate Judges, and Magistrates	5	82	67	-18.3%	3
23-2011	Paralegals and Legal Assistants	3	4,652	5,697	22.5%	1,833
23-2091	Court Reporters	3	238	240	0.8%	65
23-2093	Title Examiners, Abstractors, and Searchers	3	1,240	1,421	14.6%	461
23-2099	Legal Support Workers, All Other	3	214	202	-5.6%	25
25-1011	Business Teachers, Postsecondary	5	1,820	2,205	21.2%	657
25-1021	Computer Science Teachers, Postsecondary	5	768	917	19.4%	264
25-1022	Mathematical Science Teachers, Postsecondary	5	1,064	1,151	8.2%	247
25-1031	Architecture Teachers, Postsecondary	5	189	235	24.3%	74
25-1032	Engineering Teachers, Postsecondary	5	1,142	1,381	20.9%	410
25-1041	Agricultural Sciences Teachers, Postsecondary	5	144	116	-19.4%	0
25-1042	Biological Science Teachers, Postsecondary	5	1,488	1,593	7.1%	329
25-1043	Forestry and Conservation Science Teachers, Postsecondary	5	56	49	-12.5%	1
25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	5	351	400	14.0%	102
25-1052	Chemistry Teachers, Postsecondary	5	607	699	15.2%	183
25-1053	Environmental Science Teachers, Postsecondary	5	128	128	0.0%	19
25-1054	Physics Teachers, Postsecondary	5	430	506	17.7%	141
25-1061	Anthropology and Archeology Teachers, Postsecondary	5	140	136	-2.9%	18
25-1062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	5	195	213	9.2%	46
25-1063	Economics Teachers, Postsecondary	5	450	544	20.9%	162
25-1064	Geography Teachers, Postsecondary	5	144	164	13.9%	42
25-1065	Political Science Teachers, Postsecondary	5	479	529	10.4%	122
25-1066	Psychology Teachers, Postsecondary	5	908	1,006	10.8%	235
25-1067	Sociology Teachers, Postsecondary	5	602	718	19.3%	207
25-1069	Social Sciences Teachers, Postsecondary, All Other	5	199	246	23.6%	77
25-1071	Health Specialties Teachers, Postsecondary	5	2,725	2,887	5.9%	575
25-1072	Nursing Instructors and Teachers, Postsecondary	5	1,105	1,149	4.0%	210
25-1081	Education Teachers, Postsecondary	5	1,426	1,468	2.9%	256
25-1082	Library Science Teachers, Postsecondary	5	144	173	20.1%	51
25-1111	Criminal Justice and Law Enforcement Teachers, Postsecondary	5	199	218	9.5%	49
25-1112	Law Teachers, Postsecondary	5	214	255	19.2%	73

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
25-1113	Social Work Teachers, Postsecondary	5	250	227	-9.2%	14
25-1121	Art, Drama, and Music Teachers, Postsecondary	5	2,014	2,492	23.7%	780
25-1122	Communications Teachers, Postsecondary	5	630	732	16.2%	196
25-1123	English Language and Literature Teachers, Postsecondary	5	1,620	1,661	2.5%	284
25-1124	Foreign Language and Literature Teachers, Postsecondary	5	701	802	14.4%	207
25-1125	History Teachers, Postsecondary	5	568	648	14.1%	165
25-1126	Philosophy and Religion Teachers, Postsecondary	5	623	687	10.3%	159
25-1191	Graduate Teaching Assistants	5	626	734	17.3%	202
25-1192	Home Economics Teachers, Postsecondary	5	48	40	-16.7%	0
25-1193	Recreation and Fitness Studies Teachers, Postsecondary	5	383	386	0.8%	61
25-1194	Vocational Education Teachers, Postsecondary	3	1,457	1,394	-4.3%	155
25-1199	Postsecondary Teachers, All Other	5	1,710	2,075	21.3%	621
25-2011	Preschool Teachers, Except Special Education	3	5,076	6,917	36.3%	3,299
25-2012	Kindergarten Teachers, Except Special Education	4	1,635	1,605	-1.8%	472
25-2021	Elementary School Teachers, Except Special Education	4	15,098	14,795	-2.0%	3,496
25-2022	Middle School Teachers, Except Special and Career/Technical Education	4	6,547	7,351	12.3%	2,448
25-2023	Career/Technical Education Teachers, Middle School	4	170	199	17.1%	80
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	4	13,901	13,044	-6.2%	3,878
25-2032	Career/Technical Education Teachers, Secondary School	4	1,225	1,100	-10.2%	276
25-2051	Special Education Teachers, Preschool	4	177	208	17.5%	63
25-2052	Special Education Teachers, Kindergarten and Elementary School	4	2,914	3,017	3.5%	763
25-2053	Special Education Teachers, Middle School	4	1,018	1,012	-0.6%	227
25-2054	Special Education Teachers, Secondary School	4	2,144	2,213	3.2%	590
25-2059	Special Education Teachers, All Other	4	69	81	17.4%	21
25-3011	Adult Basic and Secondary Education and Literacy Teachers and Instructors	4	430	406	-5.6%	65
25-3021	Self-Enrichment Education Teachers	3	3,056	2,992	-2.1%	588
25-3097	Teachers and Instructors, All Other, Except Substitute Teachers	3	2,024	2,516	24.3%	839
25-3098	Substitute Teachers	3	4,349	4,060	-6.6%	617
25-4011	Archivists	5	130	148	13.8%	49
25-4012	Curators	5	208	257	23.6%	100

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25-4013	Museum Technicians and Conservators	4	230	291	26.5%	122
25-4021	Librarians	5	1,828	1,806	-1.2%	431
25-4031	Library Technicians	4	1,087	1,083	-0.4%	609
25-9011	Audio-Visual and Multimedia Collections Specialists	4	78	84	7.7%	22
25-9021	Farm and Home Management Advisors	5	20	16	-20.0%	0
25-9031	Instructional Coordinators	5	1,658	1,749	5.5%	234
25-9041	Teacher Assistants	3	13,562	14,658	8.1%	4,466
25-9099	Education, Training, and Library Workers, All Other	4	326	332	1.8%	36
27-1011	Art Directors	4	471	544	15.5%	210
27-1012	Craft Artists	2	16	13	-18.8%	1
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	3	116	111	-4.3%	33
27-1014	Multimedia Artists and Animators	4	209	231	10.5%	76
27-1019	Artists and Related Workers, All Other	4	33	23	-30.3%	0
27-1021	Commercial and Industrial Designers	4	253	238	-5.9%	62
27-1022	Fashion Designers	3	47	45	-4.3%	12
27-1023	Floral Designers	2	567	369	-34.9%	95
27-1024	Graphic Designers	4	3,098	3,393	9.5%	1,276
27-1025	Interior Designers	4	592	769	29.9%	413
27-1026	Merchandise Displayers and Window Trimmers	3	807	988	22.4%	417
27-1027	Set and Exhibit Designers	5	108	129	19.4%	52
27-1029	Designers, All Other	4	3	2	-33.3%	0
27-2011	Actors	2	606	558	-7.9%	185
27-2012	Producers and Directors	4	979	1,037	5.9%	486
27-2021	Athletes and Sports Competitors	2	316	385	21.8%	191
27-2022	Coaches and Scouts	4	2,523	2,420	-4.1%	696
27-2023	Umpires, Referees, and Other Sports Officials	3	108	100	-7.4%	24
27-2031	Dancers	3	48	41	-14.6%	11
27-2032	Choreographers	4	90	102	13.3%	43
27-2041	Music Directors and Composers	3	284	222	-21.8%	39
27-2042	Musicians and Singers	3	366	331	-9.6%	107
27-2099	Entertainers and Performers, Sports and Related Workers, All Other	3	36	35	-2.8%	0
27-3011	Radio and Television Announcers	3	494	501	1.4%	239
27-3012	Public Address System and Other Announcers	2	94	103	9.6%	35
27-3022	Reporters and Correspondents	4	428	316	-26.2%	112
27-3031	Public Relations Specialists	4	3,553	3,532	-0.6%	523

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
27-3041	Editors	4	1,055	931	-11.8%	216
27-3042	Technical Writers	4	564	513	-9.0%	125
27-3043	Writers and Authors	4	572	572	0.0%	144
27-3091	Interpreters and Translators	4	321	310	-3.4%	35
27-3099	Media and Communication Workers, All Other	4	108	91	-15.7%	2
27-4011	Audio and Video Equipment Technicians	3	748	769	2.8%	185
27-4012	Broadcast Technicians	3	242	243	0.4%	67
27-4014	Sound Engineering Technicians	3	106	94	-11.3%	16
27-4021	Photographers	3	694	605	-12.8%	115
27-4031	Camera Operators, Television, Video, and Motion Picture	3	165	150	-9.1%	12
27-4032	Film and Video Editors	3	102	87	-14.7%	1
27-4099	Media and Communication Equipment Workers, All Other	3	75	58	-22.7%	0
29-1011	Chiropractors	5	290	387	33.4%	162
29-1021	Dentists, General	5	1,031	1,137	10.3%	364
29-1022	Oral and Maxillofacial Surgeons	5	38	40	5.3%	11
29-1023	Orthodontists	5	28	35	25.0%	13
29-1029	Dentists, All Other Specialists	5	29	26	-10.3%	6
29-1031	Dietitians and Nutritionists	5	997	1,056	5.9%	190
29-1041	Optometrists	5	332	423	27.4%	203
29-1051	Pharmacists	5	3,951	4,409	11.6%	1,501
29-1061	Anesthesiologists	5	416	440	5.8%	139
29-1062	Family and General Practitioners	5	1,840	1,929	4.8%	602
29-1063	Internists, General	5	276	241	-12.7%	34
29-1064	Obstetricians and Gynecologists	5	93	116	24.7%	44
29-1065	Pediatricians, General	5	104	124	19.2%	41
29-1066	Psychiatrists	5	315	333	5.7%	106
29-1067	Surgeons	5	580	733	26.4%	307
29-1069	Physicians and Surgeons, All Other	5	4,396	4,700	6.9%	1,458
29-1071	Physician Assistants	5	1,412	1,589	12.5%	454
29-1081	Podiatrists	5	116	158	36.2%	89
29-1122	Occupational Therapists	5	1,980	2,742	38.5%	1,073
29-1123	Physical Therapists	5	3,170	4,386	38.4%	2,113
29-1124	Radiation Therapists	3	227	207	-8.8%	25
29-1125	Recreational Therapists	4	436	484	11.0%	154
29-1126	Respiratory Therapists	3	1,792	2,215	23.6%	683
29-1127	Speech-Language Pathologists	5	1,486	2,096	41.0%	830

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29-1128	Exercise Physiologists	5	91	120	31.9%	41
29-1129	Therapists, All Other	4	101	142	40.6%	53
29-1131	Veterinarians	5	938	1,237	31.9%	634
29-1141	Registered Nurses	3	40,519	49,407	21.9%	17,093
29-1151	Nurse Anesthetists	5	564	619	9.8%	174
29-1161	Nurse Midwives	5	41	68	65.9%	34
29-1171	Nurse Practitioners	5	1,180	1,613	36.7%	648
29-1181	Audiologists	5	143	172	20.3%	62
29-1199	Health Diagnosing and Treating Practitioners, All Other	5	160	132	-17.5%	9
29-2011	Medical and Clinical Laboratory Technologists	4	2,854	3,144	10.2%	1,154
29-2012	Medical and Clinical Laboratory Technicians	3	3,111	3,557	14.3%	1,334
29-2021	Dental Hygienists	3	2,587	3,133	21.1%	1,246
29-2031	Cardiovascular Technologists and Technicians	3	884	1,125	27.3%	374
29-2032	Diagnostic Medical Sonographers	3	731	878	20.1%	249
29-2033	Nuclear Medicine Technologists	3	297	303	2.0%	49
29-2034	Radiologic Technologists	3	2,966	3,398	14.6%	891
29-2035	Magnetic Resonance Imaging Technologists	3	432	586	35.6%	223
29-2041	Emergency Medical Technicians and Paramedics	3	3,954	5,111	29.3%	2,460
29-2051	Dietetic Technicians	2	835	1,118	33.9%	382
29-2052	Pharmacy Technicians	3	4,667	5,326	14.1%	1,198
29-2053	Psychiatric Technicians	3	530	596	12.5%	174
29-2054	Respiratory Therapy Technicians	3	144	130	-9.7%	1
29-2055	Surgical Technologists	3	1,025	1,293	26.1%	365
29-2056	Veterinary Technologists and Technicians	3	1,476	1,952	32.2%	632
29-2057	Ophthalmic Medical Technicians	3	284	373	31.3%	123
29-2061	Licensed Practical and Licensed Vocational Nurses	3	10,670	13,508	26.6%	5,656
29-2071	Medical Records and Health Information Technicians	3	2,474	3,180	28.5%	1,373
29-2081	Opticians, Dispensing	3	814	1,073	31.8%	537
29-2091	Orthotists and Prosthetists	5	59	71	20.3%	18
29-2092	Hearing Aid Specialists	3	44	50	13.6%	11
29-2099	Health Technologists and Technicians, All Other	3	644	731	13.5%	138
29-9011	Occupational Health and Safety Specialists	4	732	805	10.0%	288
29-9012	Occupational Health and Safety Technicians	3	122	137	12.3%	49
29-9091	Athletic Trainers	5	373	489	31.1%	225
29-9099	Healthcare Practitioners and Technical Workers, All Other	4	306	283	-7.5%	54

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
31-1011	Home Health Aides	2	17,345	24,499	41.2%	11,923
31-1013	Psychiatric Aides	2	651	609	-6.5%	124
31-1014	Nursing Assistants	2	21,997	26,098	18.6%	8,543
31-1015	Orderlies	2	756	860	13.8%	250
31-2011	Occupational Therapy Assistants	3	714	975	36.6%	482
31-2012	Occupational Therapy Aides	3	210	317	51.0%	167
31-2021	Physical Therapist Assistants	3	1,306	1,847	41.4%	894
31-2022	Physical Therapist Aides	2	634	816	28.7%	331
31-9011	Massage Therapists	3	652	873	33.9%	287
31-9091	Dental Assistants	3	3,523	3,842	9.1%	1,091
31-9092	Medical Assistants	3	6,639	7,910	19.1%	2,604
31-9093	Medical Equipment Preparers	2	596	723	21.3%	240
31-9094	Medical Transcriptionists	3	1,088	869	-20.1%	76
31-9095	Pharmacy Aides	2	454	405	-10.8%	59
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	3	874	949	8.6%	259
31-9097	Phlebotomists	3	1,666	2,083	25.0%	803
31-9099	Healthcare Support Workers, All Other	3	513	502	-2.1%	67
33-1011	First-Line Supervisors of Correctional Officers	3	399	412	3.3%	166
33-1012	First-Line Supervisors of Police and Detectives	3	902	1,007	11.6%	405
33-1021	First-Line Supervisors of Fire Fighting and Prevention Workers	3	239	267	11.7%	137
33-1099	First-Line Supervisors of Protective Service Workers, All Other	3	788	990	25.6%	446
33-2011	Firefighters	3	1,477	1,474	-0.2%	444
33-2021	Fire Inspectors and Investigators	3	72	59	-18.1%	12
33-3011	Bailiffs	2	63	48	-23.8%	4
33-3012	Correctional Officers and Jailers	3	4,896	4,396	-10.2%	1,018
33-3021	Detectives and Criminal Investigators	3	816	810	-0.7%	204
33-3041	Parking Enforcement Workers	2	140	157	12.1%	71
33-3051	Police and Sheriff's Patrol Officers	3	8,412	7,947	-5.5%	2,553
33-3052	Transit and Railroad Police	3	24	18	-25.0%	2
33-9011	Animal Control Workers	2	97	102	5.2%	30
33-9021	Private Detectives and Investigators	3	561	495	-11.8%	148
33-9031	Gaming Surveillance Officers and Gaming Investigators	2	98	90	-8.2%	36
33-9032	Security Guards	2	15,540	18,652	20.0%	7,464
33-9091	Crossing Guards	1	1,308	1,082	-17.3%	99

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	2	1,393	1,623	16.5%	1,239
33-9093	Transportation Security Screeners	2	384	339	-11.7%	60
33-9099	Protective Service Workers, All Other	2	906	1,083	19.5%	827
35-1011	Chefs and Head Cooks	3	1,298	1,383	6.5%	343
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	2	7,974	9,162	14.9%	3,637
35-2011	Cooks, Fast Food	1	2,262	2,128	-5.9%	360
35-2012	Cooks, Institution and Cafeteria	2	5,751	5,793	0.7%	1,237
35-2014	Cooks, Restaurant	2	10,561	13,669	29.4%	5,563
35-2015	Cooks, Short Order	1	1,947	2,337	20.0%	871
35-2021	Food Preparation Workers	1	9,827	9,292	-5.4%	2,573
35-3011	Bartenders	2	8,142	8,949	9.9%	4,241
35-3021	Combined Food Preparation and Serving Workers, Including Fast Food	1	35,618	41,556	16.7%	21,238
35-3022	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	1	3,426	3,206	-6.4%	1,989
35-3031	Waiters and Waitresses	1	25,537	29,349	14.9%	17,327
35-3041	Food Servers, Nonrestaurant	1	3,854	4,299	11.5%	1,689
35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers	1	3,923	4,098	4.5%	2,072
35-9021	Dishwashers	1	5,943	5,775	-2.8%	2,716
35-9031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	1	3,800	4,159	9.4%	3,428
35-9099	Food Preparation and Serving Related Workers, All Other	1	313	403	28.8%	271
37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	2	1,968	2,089	6.1%	666
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	3	908	906	-0.2%	104
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	2	27,208	28,167	3.5%	7,198
37-2012	Maids and Housekeeping Cleaners	2	10,200	11,401	11.8%	3,803
37-2019	Building Cleaning Workers, All Other	2	127	112	-11.8%	11
37-2021	Pest Control Workers	2	588	716	21.8%	313
37-3011	Landscaping and Groundskeeping Workers	1	10,721	11,679	8.9%	4,082
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	2	173	150	-13.3%	24
37-3013	Tree Trimmers and Pruners	2	1,008	1,292	28.2%	630
37-3019	Grounds Maintenance Workers, All Other	2	27	22	-18.5%	1
39-1011	Gaming Supervisors	2	211	217	2.8%	119
39-1012	Slot Supervisors	2	12	12	0.0%	3

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	2,359	3,048	29.2%	1,158
39-2011	Animal Trainers	2	131	122	-6.9%	53
39-2021	Nonfarm Animal Caretakers	1	2,598	3,019	16.2%	825
39-3011	Gaming Dealers	2	941	970	3.1%	502
39-3012	Gaming and Sports Book Writers and Runners	2	27	31	14.8%	14
39-3019	Gaming Service Workers, All Other	2	13	14	7.7%	2
39-3021	Motion Picture Projectionists	2	88	86	-2.3%	50
39-3031	Ushers, Lobby Attendants, and Ticket Takers	2	1,678	1,912	13.9%	1,273
39-3091	Amusement and Recreation Attendants	1	3,395	3,918	15.4%	2,452
39-3092	Costume Attendants	2	52	52	0.0%	28
39-3093	Locker Room, Coatroom, and Dressing Room Attendants	2	222	195	-12.2%	93
39-3099	Entertainment Attendants and Related Workers, All Other	2	267	277	3.7%	169
39-4021	Funeral Attendants	2	388	452	16.5%	188
39-4031	Morticians, Undertakers, and Funeral Directors	3	235	296	26.0%	131
39-5011	Barbers	3	224	251	12.1%	97
39-5012	Hairdressers, Hairstylists, and Cosmetologists	3	7,876	9,586	21.7%	3,937
39-5092	Manicurists and Pedicurists	2	1,083	1,253	15.7%	282
39-5093	Shampooers	2	462	502	8.7%	119
39-5094	Skincare Specialists	3	352	349	-0.9%	20
39-6011	Baggage Porters and Bellhops	2	452	552	22.1%	272
39-6012	Concierges	3	220	283	28.6%	121
39-7011	Tour Guides and Escorts	3	505	481	-4.8%	246
39-7012	Travel Guides	3	32	27	-15.6%	16
39-9011	Childcare Workers	3	7,379	7,046	-4.5%	1,872
39-9021	Personal Care Aides	2	19,106	28,484	49.1%	11,929
39-9031	Fitness Trainers and Aerobics Instructors	3	3,209	3,778	17.7%	1,130
39-9032	Recreation Workers	4	3,460	4,341	25.5%	1,295
39-9041	Residential Advisors	3	2,277	3,013	32.3%	1,878
39-9099	Personal Care and Service Workers, All Other	3	409	365	-10.8%	70
41-1011	First-Line Supervisors of Retail Sales Workers	2	10,618	11,237	5.8%	3,010
41-1012	First-Line Supervisors of Non-Retail Sales Workers	4	2,843	2,626	-7.6%	207
41-2011	Cashiers	1	35,441	35,449	0.0%	16,674
41-2012	Gaming Change Persons and Booth Cashiers	2	56	54	-3.6%	48
41-2021	Counter and Rental Clerks	1	3,986	4,158	4.3%	1,348
41-2022	Parts Salespersons	2	1,890	2,180	15.3%	855
41-2031	Retail Salespersons	2	51,061	53,851	5.5%	21,327

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
41-3011	Advertising Sales Agents	3	1,973	1,857	-5.9%	690
41-3021	Insurance Sales Agents	4	6,550	6,818	4.1%	2,253
41-3031	Securities, Commodities, and Financial Services Sales Agents	4	5,189	5,998	15.6%	2,256
41-3041	Travel Agents	3	907	853	-6.0%	419
41-3099	Sales Representatives, Services, All Other	4	10,802	13,648	26.3%	5,945
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	4	4,197	3,611	-14.0%	345
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	4	17,462	16,197	-7.2%	2,792
41-9011	Demonstrators and Product Promoters	2	574	585	1.9%	185
41-9012	Models	1	48	57	18.8%	24
41-9021	Real Estate Brokers	4	404	339	-16.1%	3
41-9022	Real Estate Sales Agents	3	2,603	2,812	8.0%	644
41-9031	Sales Engineers	4	986	1,029	4.4%	255
41-9041	Telemarketers	2	2,041	1,582	-22.5%	517
41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	2	30	24	-20.0%	1
41-9099	Sales and Related Workers, All Other	3	551	505	-8.3%	51
43-1011	First-Line Supervisors of Office and Administrative Support Workers	3	16,530	17,542	6.1%	4,971
43-2011	Switchboard Operators, Including Answering Service	2	1,511	1,241	-17.9%	266
43-2021	Telephone Operators	2	114	65	-43.0%	0
43-3011	Bill and Account Collectors	2	3,645	3,239	-11.1%	822
43-3021	Billing and Posting Clerks	2	8,042	8,689	8.0%	2,273
43-3031	Bookkeeping, Accounting, and Auditing Clerks	3	19,327	21,173	9.6%	3,757
43-3041	Gaming Cage Workers	2	109	124	13.8%	71
43-3051	Payroll and Timekeeping Clerks	2	2,261	2,302	1.8%	586
43-3061	Procurement Clerks	3	744	622	-16.4%	168
43-3071	Tellers	2	5,257	4,157	-20.9%	1,984
43-3099	Financial Clerks, All Other	2	396	460	16.2%	201
43-4011	Brokerage Clerks	3	1,044	1,178	12.8%	532
43-4021	Correspondence Clerks	2	225	242	7.6%	92
43-4031	Court, Municipal, and License Clerks	3	725	745	2.8%	143
43-4041	Credit Authorizers, Checkers, and Clerks	3	368	283	-23.1%	1
43-4051	Customer Service Representatives	2	33,671	37,671	11.9%	14,173
43-4061	Eligibility Interviewers, Government Programs	3	2,597	2,407	-7.3%	374
43-4071	File Clerks	2	1,801	1,504	-16.5%	230

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
43-4081	Hotel, Motel, and Resort Desk Clerks	2	1,896	2,049	8.1%	1,304
43-4111	Interviewers, Except Eligibility and Loan	2	2,970	3,465	16.7%	1,146
43-4121	Library Assistants, Clerical	2	1,631	1,612	-1.2%	732
43-4131	Loan Interviewers and Clerks	3	2,151	2,453	14.0%	616
43-4141	New Accounts Clerks	2	240	228	-5.0%	82
43-4151	Order Clerks	2	2,981	2,849	-4.4%	931
43-4161	Human Resources Assistants, Except Payroll and Timekeeping	3	2,000	1,800	-10.0%	399
43-4171	Receptionists and Information Clerks	2	12,507	12,300	-1.7%	3,254
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	2	1,802	1,749	-2.9%	481
43-4199	Information and Record Clerks, All Other	2	1,484	1,219	-17.9%	161
43-5011	Cargo and Freight Agents	2	958	850	-11.3%	230
43-5021	Couriers and Messengers	2	988	816	-17.4%	59
43-5031	Police, Fire, and Ambulance Dispatchers	2	967	980	1.3%	322
43-5032	Dispatchers, Except Police, Fire, and Ambulance	2	1,824	2,084	14.3%	832
43-5041	Meter Readers, Utilities	2	306	252	-17.6%	72
43-5051	Postal Service Clerks	2	1,033	725	-29.8%	147
43-5052	Postal Service Mail Carriers	2	4,084	2,977	-27.1%	1,246
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	2	1,899	1,188	-37.4%	36
43-5061	Production, Planning, and Expediting Clerks	3	3,723	3,854	3.5%	1,178
43-5071	Shipping, Receiving, and Traffic Clerks	2	6,027	5,797	-3.8%	1,568
43-5081	Stock Clerks and Order Fillers	2	20,307	20,856	2.7%	7,644
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	2	706	752	6.5%	228
43-6011	Executive Secretaries and Executive Administrative Assistants	3	8,532	8,162	-4.3%	1,009
43-6012	Legal Secretaries	3	5,744	6,199	7.9%	1,604
43-6013	Medical Secretaries	3	6,012	7,638	27.0%	2,328
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	3	33,808	38,418	13.6%	9,003
43-9011	Computer Operators	3	1,076	943	-12.4%	152
43-9021	Data Entry Keyers	2	3,466	2,908	-16.1%	652
43-9022	Word Processors and Typists	2	2,067	1,485	-28.2%	30
43-9031	Desktop Publishers	3	278	265	-4.7%	65
43-9041	Insurance Claims and Policy Processing Clerks	3	4,853	5,068	4.4%	1,795
43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	2	2,046	1,728	-15.5%	469
43-9061	Office Clerks, General	2	38,626	37,904	-1.9%	8,173

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43-9071	Office Machine Operators, Except Computer	2	854	623	-27.0%	109
43-9081	Proofreaders and Copy Markers	4	135	113	-16.3%	17
43-9111	Statistical Assistants	4	242	258	6.6%	88
43-9199	Office and Administrative Support Workers, All Other	3	1,837	2,117	15.2%	813
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	3	110	105	-4.5%	26
45-2011	Agricultural Inspectors	2	107	91	-15.0%	27
45-2041	Graders and Sorters, Agricultural Products	1	45	55	22.2%	20
45-2091	Agricultural Equipment Operators	2	116	128	10.3%	55
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	1	545	421	-22.8%	101
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals	1	303	274	-9.6%	96
45-2099	Agricultural Workers, All Other	1	4	3	-25.0%	0
45-4011	Forest and Conservation Workers	3	51	56	9.8%	12
45-4021	Fallers	1	13	10	-23.1%	0
45-4022	Logging Equipment Operators	1	113	117	3.5%	52
45-4023	Log Graders and Scalers	3	1	1	0.0%	0
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	3	3,913	4,796	22.6%	1,363
47-2011	Boilermakers	3	175	231	32.0%	148
47-2021	Brickmasons and Blockmasons	2	636	833	31.0%	263
47-2022	Stonemasons	3	87	82	-5.7%	1
47-2031	Carpenters	2	7,907	9,285	17.4%	2,541
47-2041	Carpet Installers	2	517	641	24.0%	253
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	2	128	118	-7.8%	20
47-2044	Tile and Marble Setters	2	233	298	27.9%	106
47-2051	Cement Masons and Concrete Finishers	2	1,144	1,317	15.1%	309
47-2053	Terrazzo Workers and Finishers	2	27	24	-11.1%	1
47-2061	Construction Laborers	2	7,293	9,173	25.8%	3,644
47-2071	Paving, Surfacing, and Tamping Equipment Operators	2	533	584	9.6%	162
47-2072	Pile-Driver Operators	2	13	13	0.0%	3
47-2073	Operating Engineers and Other Construction Equipment Operators	2	3,964	4,149	4.7%	1,333
47-2081	Drywall and Ceiling Tile Installers	2	494	459	-7.1%	68
47-2082	Tapers	2	151	182	20.5%	55
47-2111	Electricians	3	5,472	6,935	26.7%	2,953
47-2121	Glaziers	2	303	350	15.5%	147

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
47-2131	Insulation Workers, Floor, Ceiling, and Wall	2	183	227	24.0%	81
47-2132	Insulation Workers, Mechanical	2	107	147	37.4%	55
47-2141	Painters, Construction and Maintenance	2	1,631	1,879	15.2%	590
47-2142	Paperhangers	2	52	43	-17.3%	3
47-2151	Pipelayers	2	250	225	-10.0%	39
47-2152	Plumbers, Pipefitters, and Steamfitters	3	3,627	4,067	12.1%	1,100
47-2161	Plasterers and Stucco Masons	1	119	143	20.2%	25
47-2171	Reinforcing Iron and Rebar Workers	2	67	69	3.0%	14
47-2181	Roofers	2	882	1,008	14.3%	466
47-2211	Sheet Metal Workers	2	1,026	1,136	10.7%	330
47-2221	Structural Iron and Steel Workers	2	380	431	13.4%	195
47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	2	222	238	7.2%	43
47-3012	Helpers--Carpenters	2	230	309	34.3%	111
47-3013	Helpers--Electricians	2	374	584	56.1%	281
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	1	56	56	0.0%	12
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	2	286	282	-1.4%	40
47-3016	Helpers--Roofers	2	83	110	32.5%	47
47-3019	Helpers, Construction Trades, All Other	2	69	73	5.8%	10
47-4011	Construction and Building Inspectors	3	1,718	2,107	22.6%	863
47-4021	Elevator Installers and Repairers	3	99	95	-4.0%	29
47-4031	Fence Erectors	2	148	153	3.4%	47
47-4041	Hazardous Materials Removal Workers	3	429	546	27.3%	269
47-4051	Highway Maintenance Workers	2	3,321	3,184	-4.1%	504
47-4061	Rail-Track Laying and Maintenance Equipment Operators	2	61	75	23.0%	26
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	1	329	412	25.2%	188
47-4099	Construction and Related Workers, All Other	3	97	83	-14.4%	1
47-5011	Derrick Operators, Oil and Gas	1	2	2	0.0%	2
47-5012	Rotary Drill Operators, Oil and Gas	2	10	12	20.0%	10
47-5013	Service Unit Operators, Oil, Gas, and Mining	2	48	64	33.3%	47
47-5021	Earth Drillers, Except Oil and Gas	2	165	200	21.2%	108
47-5031	Explosives Workers, Ordnance Handling Experts, and Blasters	2	24	28	16.7%	10
47-5041	Continuous Mining Machine Operators	1	5	5	0.0%	2
47-5042	Mine Cutting and Channeling Machine Operators	2	8	7	-12.5%	3
47-5051	Rock Splitters, Quarry	1	29	29	0.0%	11
47-5071	Roustabouts, Oil and Gas	1	90	115	27.8%	67

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
47-5081	Helpers--Extraction Workers	2	53	68	28.3%	41
47-5099	Extraction Workers, All Other	2	1	1	0.0%	0
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	3	4,311	4,920	14.1%	1,835
49-2011	Computer, Automated Teller, and Office Machine Repairers	3	1,486	1,621	9.1%	605
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairers	3	63	53	-15.9%	1
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	3	1,786	1,757	-1.6%	429
49-2091	Avionics Technicians	3	213	247	16.0%	103
49-2092	Electric Motor, Power Tool, and Related Repairers	3	163	156	-4.3%	41
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	3	49	45	-8.2%	7
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	3	884	746	-15.6%	110
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	3	214	217	1.4%	63
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	3	41	48	17.1%	16
49-2097	Electronic Home Entertainment Equipment Installers and Repairers	3	166	131	-21.1%	47
49-2098	Security and Fire Alarm Systems Installers	3	1,056	1,122	6.3%	327
49-3011	Aircraft Mechanics and Service Technicians	3	1,818	1,499	-17.5%	453
49-3021	Automotive Body and Related Repairers	2	1,586	1,858	17.2%	688
49-3022	Automotive Glass Installers and Repairers	2	234	272	16.2%	113
49-3023	Automotive Service Technicians and Mechanics	3	7,383	8,287	12.2%	3,050
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	3	2,136	2,665	24.8%	1,071
49-3041	Farm Equipment Mechanics and Service Technicians	3	186	156	-16.1%	42
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	3	1,146	1,185	3.4%	435
49-3043	Rail Car Repairers	2	110	117	6.4%	53
49-3051	Motorboat Mechanics and Service Technicians	3	47	47	0.0%	10
49-3052	Motorcycle Mechanics	3	103	129	25.2%	63
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	2	278	291	4.7%	85
49-3091	Bicycle Repairers	2	100	84	-16.0%	30
49-3092	Recreational Vehicle Service Technicians	2	35	34	-2.9%	13
49-3093	Tire Repairers and Changers	2	475	464	-2.3%	179
49-9011	Mechanical Door Repairers	2	148	151	2.0%	60
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	3	201	229	13.9%	101

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	3	3,046	3,699	21.4%	1,584
49-9031	Home Appliance Repairers	3	410	356	-13.2%	125
49-9041	Industrial Machinery Mechanics	3	2,696	2,937	8.9%	1,122
49-9043	Maintenance Workers, Machinery	3	603	693	14.9%	197
49-9044	Millwrights	3	269	348	29.4%	145
49-9045	Refractory Materials Repairers, Except Brickmasons	2	5	5	0.0%	2
49-9051	Electrical Power-Line Installers and Repairers	3	910	1,054	15.8%	537
49-9052	Telecommunications Line Installers and Repairers	2	2,450	2,403	-1.9%	930
49-9062	Medical Equipment Repairers	3	786	1,018	29.5%	506
49-9063	Musical Instrument Repairers and Tuners	3	109	98	-10.1%	33
49-9064	Watch Repairers	3	17	11	-35.3%	1
49-9069	Precision Instrument and Equipment Repairers, All Other	3	83	67	-19.3%	10
49-9071	Maintenance and Repair Workers, General	3	16,933	17,899	5.7%	4,697
49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	2	357	304	-14.8%	45
49-9092	Commercial Divers	3	60	56	-6.7%	21
49-9094	Locksmiths and Safe Repairers	2	144	145	0.7%	44
49-9095	Manufactured Building and Mobile Home Installers	2	46	58	26.1%	32
49-9096	Riggers	2	86	110	27.9%	46
49-9098	Helpers--Installation, Maintenance, and Repair Workers	2	1,010	1,090	7.9%	401
49-9099	Installation, Maintenance, and Repair Workers, All Other	2	755	928	22.9%	292
51-1011	First-Line Supervisors of Production and Operating Workers	2	4,937	4,861	-1.5%	917
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	2	656	535	-18.4%	92
51-2021	Coil Winders, Tapers, and Finishers	2	66	65	-1.5%	13
51-2022	Electrical and Electronic Equipment Assemblers	2	2,005	1,804	-10.0%	277
51-2023	Electromechanical Equipment Assemblers	2	546	447	-18.1%	39
51-2031	Engine and Other Machine Assemblers	2	384	329	-14.3%	89
51-2041	Structural Metal Fabricators and Fitters	3	741	805	8.6%	430
51-2091	Fiberglass Laminators and Fabricators	2	33	36	9.1%	13
51-2092	Team Assemblers	2	6,112	5,752	-5.9%	1,057
51-2099	Assemblers and Fabricators, All Other	2	1,172	1,568	33.8%	611
51-3011	Bakers	2	2,543	2,482	-2.4%	749
51-3021	Butchers and Meat Cutters	2	1,984	1,845	-7.0%	447
51-3022	Meat, Poultry, and Fish Cutters and Trimmers	1	664	555	-16.4%	84

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-3023	Slaughterers and Meat Packers	1	920	956	3.9%	379
51-3091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	2	69	68	-1.4%	23
51-3092	Food Batchmakers	2	1,046	1,060	1.3%	456
51-3093	Food Cooking Machine Operators and Tenders	2	255	281	10.2%	110
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	3	1,390	1,737	25.0%	831
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	3	111	100	-9.9%	24
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	2	652	691	6.0%	275
51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	2	87	94	8.0%	38
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	2	216	197	-8.8%	52
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	2	1,169	1,237	5.8%	294
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	98	68	-30.6%	16
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	601	601	0.0%	234
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	337	324	-3.9%	110
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	3	180	205	13.9%	88
51-4041	Machinists	3	3,116	3,462	11.1%	1,264
51-4051	Metal-Refining Furnace Operators and Tenders	2	68	67	-1.5%	20
51-4052	Pourers and Casters, Metal	2	39	44	12.8%	20
51-4061	Model Makers, Metal and Plastic	3	11	9	-18.2%	1
51-4062	Patternmakers, Metal and Plastic	3	24	29	20.8%	15
51-4071	Foundry Mold and Coremakers	2	17	17	0.0%	6
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	2	533	513	-3.8%	115
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	1,283	1,378	7.4%	548
51-4111	Tool and Die Makers	3	429	432	0.7%	83
51-4121	Welders, Cutters, Solderers, and Brazers	3	3,342	3,943	18.0%	1,688
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	2	244	272	11.5%	124
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	2	154	131	-14.9%	25
51-4192	Layout Workers, Metal and Plastic	2	23	25	8.7%	8
51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	2	209	217	3.8%	81

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-4194	Tool Grinders, Filers, and Sharpeners	2	46	37	-19.6%	5
51-4199	Metal Workers and Plastic Workers, All Other	2	243	330	35.8%	140
51-5111	Prepress Technicians and Workers	3	496	370	-25.4%	90
51-5112	Printing Press Operators	3	2,400	2,142	-10.8%	527
51-5113	Print Binding and Finishing Workers	2	765	702	-8.2%	205
51-6011	Laundry and Dry-Cleaning Workers	1	2,139	2,422	13.2%	1,048
51-6021	Pressers, Textile, Garment, and Related Materials	1	336	373	11.0%	111
51-6031	Sewing Machine Operators	1	968	872	-9.9%	366
51-6041	Shoe and Leather Workers and Repairers	2	10	12	20.0%	11
51-6042	Shoe Machine Operators and Tenders	2	15	18	20.0%	19
51-6051	Sewers, Hand	2	999	1,132	13.3%	240
51-6052	Tailors, Dressmakers, and Custom Sewers	3	315	342	8.6%	108
51-6061	Textile Bleaching and Dyeing Machine Operators and Tenders	2	117	70	-40.2%	44
51-6062	Textile Cutting Machine Setters, Operators, and Tenders	2	177	186	5.1%	115
51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	2	131	107	-18.3%	70
51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	2	73	49	-32.9%	20
51-6091	Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	2	48	47	-2.1%	17
51-6092	Fabric and Apparel Patternmakers	3	30	29	-3.3%	5
51-6093	Upholsterers	2	156	160	2.6%	82
51-6099	Textile, Apparel, and Furnishings Workers, All Other	2	188	154	-18.1%	4
51-7011	Cabinetmakers and Bench Carpenters	2	694	803	15.7%	399
51-7021	Furniture Finishers	1	136	168	23.5%	110
51-7031	Model Makers, Wood	3	5	5	0.0%	0
51-7032	Patternmakers, Wood	3	16	20	25.0%	6
51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	2	173	217	25.4%	122
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	2	408	509	24.8%	195
51-7099	Woodworkers, All Other	2	9	7	-22.2%	0
51-8011	Nuclear Power Reactor Operators	3	87	99	13.8%	47
51-8012	Power Distributors and Dispatchers	3	181	209	15.5%	98
51-8013	Power Plant Operators	2	527	541	2.7%	260
51-8021	Stationary Engineers and Boiler Operators	3	495	558	12.7%	277
51-8031	Water and Wastewater Treatment Plant and System Operators	3	1,250	1,209	-3.3%	485
51-8091	Chemical Plant and System Operators	2	393	363	-7.6%	210

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-8092	Gas Plant Operators	3	215	223	3.7%	126
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	2	355	392	10.4%	226
51-8099	Plant and System Operators, All Other	2	129	122	-5.4%	50
51-9011	Chemical Equipment Operators and Tenders	2	1,635	1,579	-3.4%	826
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	2	462	446	-3.5%	197
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	2	109	118	8.3%	53
51-9022	Grinding and Polishing Workers, Hand	1	102	104	2.0%	40
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	2	1,148	1,202	4.7%	500
51-9031	Cutters and Trimmers, Hand	2	35	30	-14.3%	4
51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders	2	474	404	-14.8%	65
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	2	445	357	-19.8%	88
51-9051	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	2	35	29	-17.1%	9
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	2	3,974	3,965	-0.2%	1,023
51-9071	Jewelers and Precious Stone and Metal Workers	3	145	111	-23.4%	6
51-9081	Dental Laboratory Technicians	2	266	287	7.9%	165
51-9082	Medical Appliance Technicians	3	236	217	-8.1%	100
51-9083	Ophthalmic Laboratory Technicians	2	290	273	-5.9%	112
51-9111	Packaging and Filling Machine Operators and Tenders	2	3,654	3,168	-13.3%	631
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	2	486	549	13.0%	190
51-9122	Painters, Transportation Equipment	2	526	510	-3.0%	137
51-9123	Painting, Coating, and Decorating Workers	2	137	129	-5.8%	31
51-9141	Semiconductor Processors	2	89	87	-2.2%	38
51-9151	Photographic Process Workers and Processing Machine Operators	2	370	270	-27.0%	48
51-9191	Adhesive Bonding Machine Operators and Tenders	2	89	92	3.4%	31
51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	2	129	131	1.6%	40
51-9193	Cooling and Freezing Equipment Operators and Tenders	2	72	71	-1.4%	25
51-9194	Etchers and Engravers	2	96	106	10.4%	42
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	2	172	174	1.2%	80
51-9196	Paper Goods Machine Setters, Operators, and Tenders	2	1,543	1,514	-1.9%	330

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
51-9197	Tire Builders	2	27	29	7.4%	14
51-9198	Helpers--Production Workers	2	4,287	4,393	2.5%	1,200
51-9199	Production Workers, All Other	2	872	915	4.9%	264
53-1011	Aircraft Cargo Handling Supervisors	2	86	92	7.0%	30
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	2	1,854	1,995	7.6%	724
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	2	1,735	1,961	13.0%	744
53-2012	Commercial Pilots	3	426	539	26.5%	278
53-2021	Air Traffic Controllers	3	130	119	-8.5%	54
53-2022	Airfield Operations Specialists	3	242	249	2.9%	140
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	2	569	777	36.6%	329
53-3021	Bus Drivers, Transit and Intercity	2	1,132	1,170	3.4%	352
53-3022	Bus Drivers, School or Special Client	2	8,073	9,282	15.0%	3,250
53-3031	Driver/Sales Workers	2	4,290	4,451	3.8%	981
53-3032	Heavy and Tractor-Trailer Truck Drivers	2	11,065	13,527	22.3%	4,791
53-3033	Light Truck or Delivery Services Drivers	2	9,947	9,821	-1.3%	1,762
53-3041	Taxi Drivers and Chauffeurs	1	2,721	2,839	4.3%	666
53-3099	Motor Vehicle Operators, All Other	2	318	385	21.1%	149
53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers	2	27	30	11.1%	10
53-5011	Sailors and Marine Oilers	2	30	37	23.3%	26
53-5021	Captains, Mates, and Pilots of Water Vessels	3	288	283	-1.7%	175
53-5031	Ship Engineers	3	63	72	14.3%	39
53-6011	Bridge and Lock Tenders	1	36	28	-22.2%	9
53-6021	Parking Lot Attendants	2	2,566	3,124	21.7%	2,054
53-6031	Automotive and Watercraft Service Attendants	1	492	556	13.0%	221
53-6041	Traffic Technicians	3	18	20	11.1%	9
53-6051	Transportation Inspectors	3	253	238	-5.9%	77
53-6061	Transportation Attendants, Except Flight Attendants	2	344	301	-12.5%	45
53-6099	Transportation Workers, All Other	2	82	89	8.5%	43
53-7011	Conveyor Operators and Tenders	2	101	97	-4.0%	34
53-7021	Crane and Tower Operators	3	548	592	8.0%	260
53-7032	Excavating and Loading Machine and Dragline Operators	2	117	144	23.1%	45
53-7051	Industrial Truck and Tractor Operators	2	5,224	5,962	14.1%	2,452
53-7061	Cleaners of Vehicles and Equipment	2	2,482	2,756	11.0%	1,080
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	2	27,818	32,266	16.0%	14,472
53-7063	Machine Feeders and Offbearers	2	583	523	-10.3%	89

SOC Code	Occupation Title	Job Zone	2014	2024	% Change 2014-2024	New and Replacement Jobs
53-7064	Packers and Packagers, Hand	2	7,897	8,658	9.6%	3,250
53-7071	Gas Compressor and Gas Pumping Station Operators	2	44	51	15.9%	33
53-7072	Pump Operators, Except Wellhead Pumpers	2	57	61	7.0%	37
53-7073	Wellhead Pumpers	2	11	11	0.0%	8
53-7081	Refuse and Recyclable Material Collectors	2	1,155	1,242	7.5%	459
53-7121	Tank Car, Truck, and Ship Loaders	2	97	80	-17.5%	21
53-7199	Material Moving Workers, All Other	2	49	67	36.7%	34

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

ABOUT THE STATE SYSTEM'S GAP ANALYSIS PROJECT

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

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

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