



Pennsylvania's
**WORKFORCE
CHARACTERISTICS
REPORT**

A Briefing Paper

A report for Pennsylvania's State System of Higher Education

2016



CONTENTS

| | |
|-----------|--|
| 3 | Background |
| 5 | The Labor Market Landscape |
| 6 | Top Indicators on the Health of the Economy |
| 7 | Pennsylvania Sub-region Breakdown |
| 9 | Industries in Pennsylvania |
| 11 | Largest Skilled Occupations |
| 14 | Key Skilled High Demand Occupations Aligning to University-level Education |
| 15 | Key Skilled High Demand Occupational Profile |
| 21 | Key Skilled High Demand Occupations in Pennsylvania's Sub-Regions |
| 23 | Demographic and Socioeconomic Composition |
| 23 | Pennsylvania's Demographics |
| 30 | Conclusion |
| 31 | Appendix 1: High Demand Skilled Occupations in Pennsylvania, 2014 to 2024 |
| 33 | About The State System's Gap Analysis Project |

BACKGROUND

Pennsylvania's State System of Higher Education (State System) commissioned an education supply and workforce demand gap analysis. This gap analysis project is in direct response to the State System's strategic plan, *Rising to the Challenge 2020* and is a means to get a handle on the big economic picture for the commonwealth and its regions. Knowing the supply of graduates in a given area and the relevant employer demand for those graduates helps university stakeholders evaluate the entire economic eco-system and determine areas that deserve their attention.

The two phases of the State System's Gap Analysis Project created the context for the supply-demand analysis to better understand the characteristics of the economy and workforce it supports as well as the education preparation needed for these jobs. The outcome of phase I and phase II include the following two reports:

- **Phase I: 'Degrees of Value: College Majors and the Pennsylvania State System's Contribution to the Workforce'** from Georgetown University's Center on Education and the Workforce (CEW) delves into the increasing importance of bachelor's degree holders in the commonwealth's workforce, the critical role the State System plays as a part of Pennsylvania's bachelor's degree sector, and how earnings, employment vary by field of study and occupational area for the majors.
- **Phase II: 'Workforce Characteristics Report'** for Pennsylvania and its regions which contain a set of economic, workforce, demographic and socio-economic information to be used to help contextualize the next phase of research—the gap analysis.

The goal of this **Workforce Characteristics Briefing Paper** is to provide high level findings from the statewide and regional Workforce Characteristics Report. By doing so it answers key policy questions including:

- What is the labor market landscape for Pennsylvania and its regions?
- What are the largest skilled occupations employed within the state?
- What are some characteristics of specific high-volume and high-growth occupations including:

-
- 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?
 - What is the demographic and socio-economic composition of Pennsylvania's workforce?

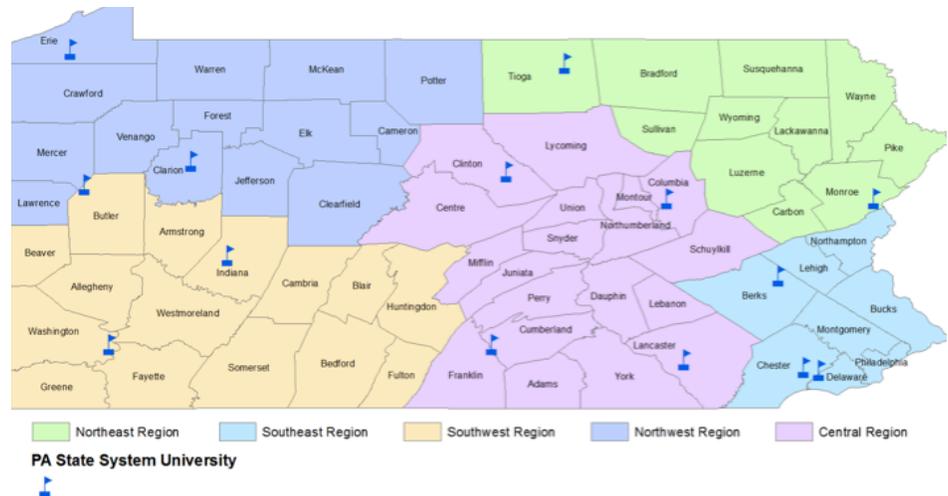
Detailed technical reports are available for both Pennsylvania and its regions.

THE LABOR MARKET LANDSCAPE

Pennsylvania’s economically diverse geography supports the need for a regionalized perspective of economic and workforce characteristics. To respond to this, the State System conducted research to identify five broad sub-regions as well as fourteen university-specific workforce regions (labor sheds). It is important to note that the five broad sub-regions developed by the State System align with Pennsylvania’s Partnerships for Regional Economic Performance (PREP). The PREP regions are Pennsylvania’s network of businesses as defined by the Department of Community and Economic Development (DCED). Aligning the State System’s five regions to the PREP reflects a broader goal of the State System to connect higher education with economic development in the commonwealth. The only exception to the PREP region boundary is Schuylkill County, which was put within the Central sub-region. This allocation better balances enrollment between regions, given that learners from Schuylkill were nearly evenly dispersed between the Central, Northeast and Southeast sub-regions.

Figure 1 illustrates the geographic areas for the sub-regions as well as the locations of the State System Universities. Figure 2 provides summary data of the population and learner enrollment for each respective sub-region

Fig. 1: Pennsylvania State System Sub Regions



Source: Oxford Economics mapping

Fig. 2: Pennsylvania Population and State System Learner Enrollment by Sub-Region

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

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

Subsequent sections of this Briefing Report present the workforce characteristics for Pennsylvania and its five regions as defined by the State System Gap Analysis Project. The five regions include:

- Central Pennsylvania (CEN),
- North East Pennsylvania (NE),
- North West Pennsylvania (NW),
- South East Pennsylvania (SE), and
- South West Pennsylvania (SW).

Top Indicators on the Health of the Economy

With a population of 12.7 million and an employment base of 5.6 million workers, Pennsylvania is a driving economic force within the U.S. The commonwealth is home to approximately 347,000 business establishments and has an unemployment rate lower than the U.S.

The bachelor's degree educational attainment rate for those working in Pennsylvania is slightly lower than the U.S. average. Projections of new job growth in Pennsylvania over the next 10 years indicate that approximately 536,213 new jobs will be created as a result of industry growth. This projected industry growth translates into needs for occupations and skilled workers to staff companies, which is further described in the Skilled Occupations section of this briefing paper.

Fig. 3: Pennsylvania and U.S. Workforce Characteristics Summary

| Workforce Characteristic | Pennsylvania | United States | Data Source |
|---|---------------------|----------------------|--|
| Population | 12.7 million | 311.5 million | 2009-2013 American Community Survey 5-Year Estimates |
| Employed | 5.6 million | 136.6 million | 2014 BLS Quarterly Census of Employment and Wages |
| Unemployed | 370,000 | 9.6 million | 2014 BLS Local Area Unemployment Statistics |
| Unemployment Rate | 5.80% | 6.20% | 2014 BLS Local Area Unemployment Statistics |
| Poverty Rate | 13.70% | 15.80% | 2013 Census Small Area Income and Poverty Estimates |
| Business Establishments | 347,000 | 9.4 million | 2014 BLS Quarterly Census of Employment and Wages |
| Educational Attainment (25+ Population with Bachelor's or Higher) | 27.40% | 28.80% | 2009-2013 American Community Survey 5-Year Estimates |
| Bachelor's or Higher Completions | 137,000 | 2.7 million | Integrated Postsecondary Education Data System 3-Year Average AY2010-11 to AY2012-13 |
| Projected Employment | 6.2 million* | 160 million** | Oxford Economics- Pennsylvania Projections 2024* and BLS- U.S. Projections 2024** |

Pennsylvania Sub-region Breakdown

The economic indicators vary by Pennsylvania region, reflecting diverse regional industry, workforce, infrastructure, and education attributes. Data demonstrate the following top level workforce characteristics for the five sub-regions:

1. Southeast Region (SE) has the largest population and therefore the largest business establishment and employment numbers. It has the highest level of educational attainment, however, the unemployment rate for the SE is slightly higher than the statewide total.
2. Southwest (SW) has the second largest population and the second largest employment numbers. It has a high level of educational attainment and the unemployment rate for the SW is equal to the state.
3. Central Region (CEN) has the third highest population along with the lowest unemployment rate of any region. It also has the lowest poverty rate of any region at 12% and is expected to grow to 1.3 million jobs in 2024.
4. Northeast (NE) has the region has the highest poverty rate of any region in the state but is expected to grow significantly over the next 10 years.

The estimated 440,000 jobs in 2024 are largely due to the growth in trade, transportation, and utilities sectors concentrated in the region.

- Northwest Region (NW) is the least populated region in the state but has a high concentration of manufacturing establishments. The manufacturing sectors provide many jobs opportunities that do not require post-secondary education, which largely explains why NW has the lowest levels of educational attainment in the state.

Figure 4 allows a comparative analysis of the economic indicators between the five regions of Pennsylvania to gauge economic strengths as well as areas of concern.

These economic indicators are further evaluated later in this briefing paper. The next section provides an analysis of industries in Pennsylvania with a focus on the post-recession recovery period 2009 to 2014

Fig. 4: Pennsylvania and Sub-Regions Workforce Characteristics Summary

| Workforce Characteristic | NE Region | SE Region | NW Region | SW Region | CEN Region | Pennsylvania |
|--|-------------|-------------|-----------|-------------|-------------|--------------|
| Population | 1.1 million | 5.1 million | 950,000 | 2.9 million | 2.7 million | 12.7 million |
| Employed | 392,000 | 2.3 million | 366,000 | 1.3 million | 1.2 million | 5.6 million |
| Unemployed | 35,000 | 152,000 | 26,800 | 85,200 | 71,000 | 370,000 |
| Unemployment Rate | 6.9% | 5.9% | 6.1% | 5.8% | 5.2% | 5.8% |
| Poverty Rate | 14.1% | 14.3% | 16.0% | 13.2% | 12.0% | 13.7% |
| Business Establishments* | 25,000 | 134,000 | 24,000 | 77,000 | 62,000 | 347,000 |
| Educational Attainment (% of 25+ Population with Bachelor's or Higher) | 21.8% | 32.7% | 19.3% | 27.3% | 22.9% | 27.4% |
| Projected Jobs in 2024 | 440,000 | 2.6 million | 400,000 | 1.5 million | 1.3 million | 6.2 million |

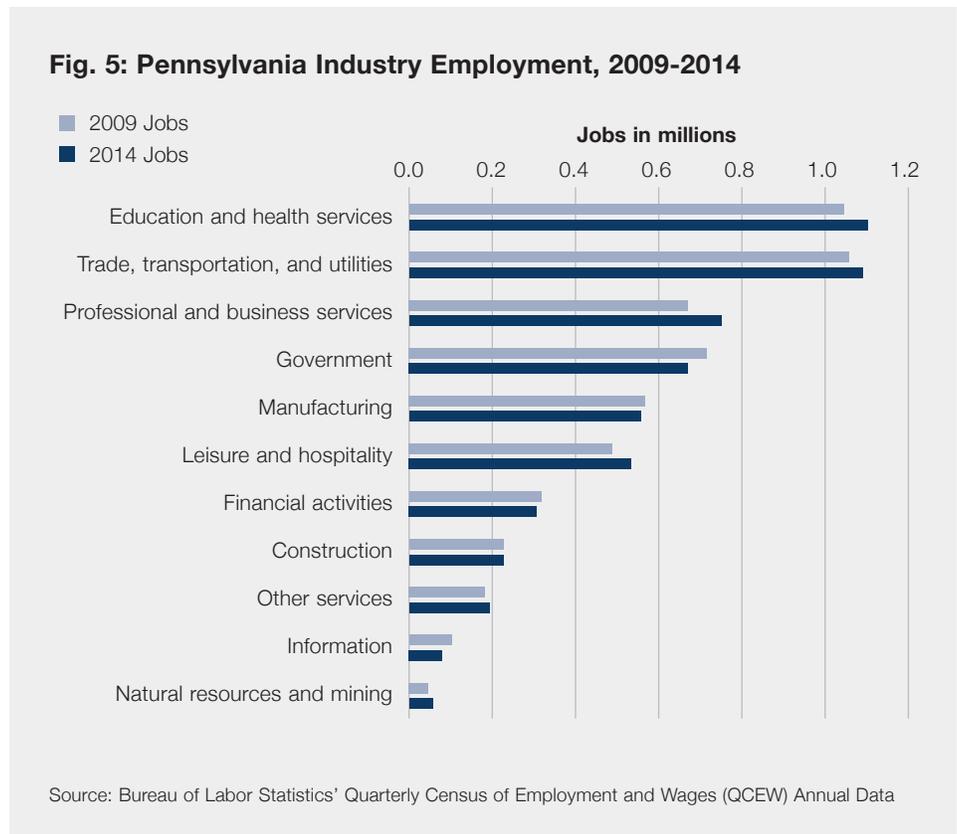
* Region establishment numbers will not sum to statewide numbers due to rounding and data suppressions

Source: BLS (QCEW, LAUS), US Census (ACS, SAIPE), NCES (IPEDS), Oxford Economics Projections

INDUSTRIES IN PENNSYLVANIA

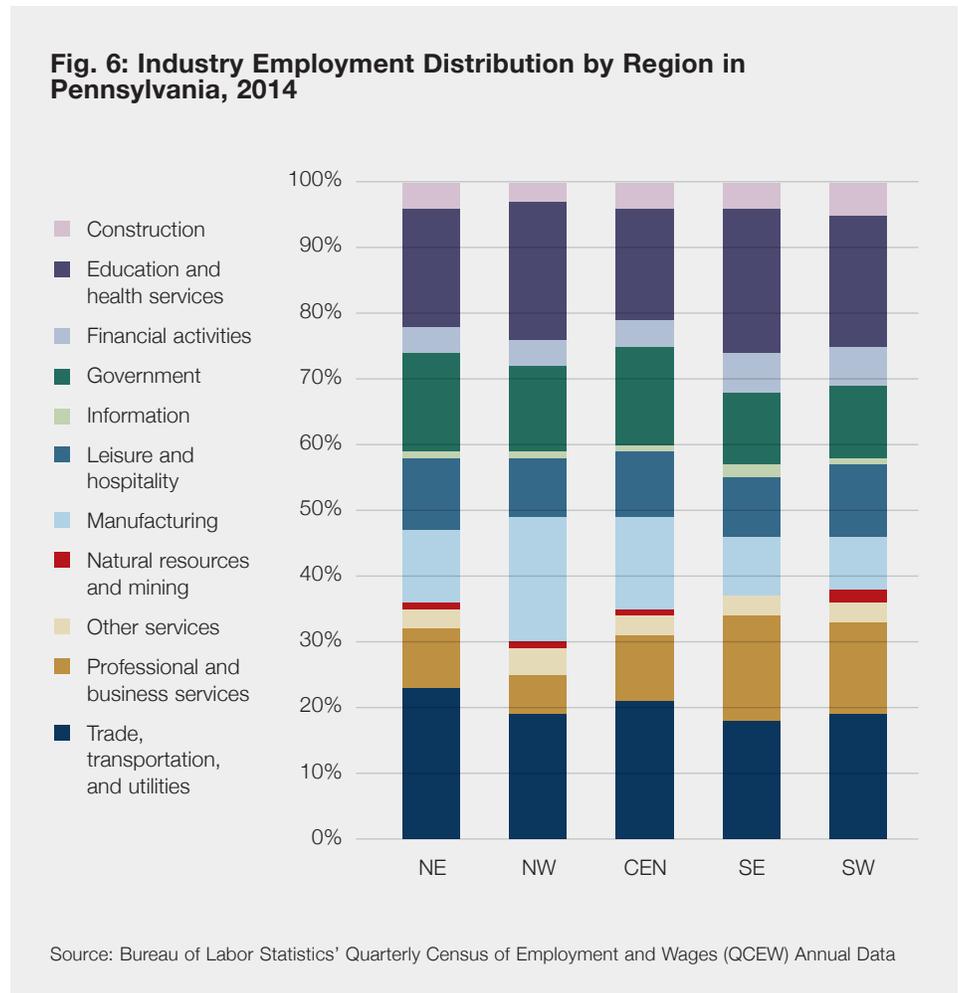
Over the five years from 2009 to 2014, the Pennsylvania economy experienced significant growth in service based sectors, while manufacturing and government saw a reduction in jobs. Sectors such as education and health care, professional and business services, leisure and hospitality have added a combined 187,800 new jobs between 2009 and 2014. Manufacturing declined modestly with a loss of 8,000 jobs. The largest job losses occurred within government and information. Overall, the economy added about 175,550 jobs during the recovery period, 2009 to 2014. This growth reflects the recovery period for Pennsylvania from one of the worst recessions since the Great Depression—the Great Recession which lasted from 2007 to 2009.

Figure 5 illustrates historic and current industry employment in Pennsylvania.



When examining industry employment at the regional level, differences in industry share are apparent. For example, manufacturing employs a larger share of the workforce in Northwest Pennsylvania compared to the other regions. Additionally, professional and business services and financial activities employ a large share of workers in both Southeast and Southwest Pennsylvania.

Figure 6 displays the distribution of industry employment for Pennsylvania's sub-regions in 2014.



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

LARGEST SKILLED OCCUPATIONS

Top skilled occupations in the state are driven by industry composition. For example, medical centers employ a cadre of health professionals, while enterprise management companies employ a range of business professionals. Given the dominating presence of trade, transportation and utilities; healthcare and education services; and professional and business services establishments in Pennsylvania, top skilled occupations include:

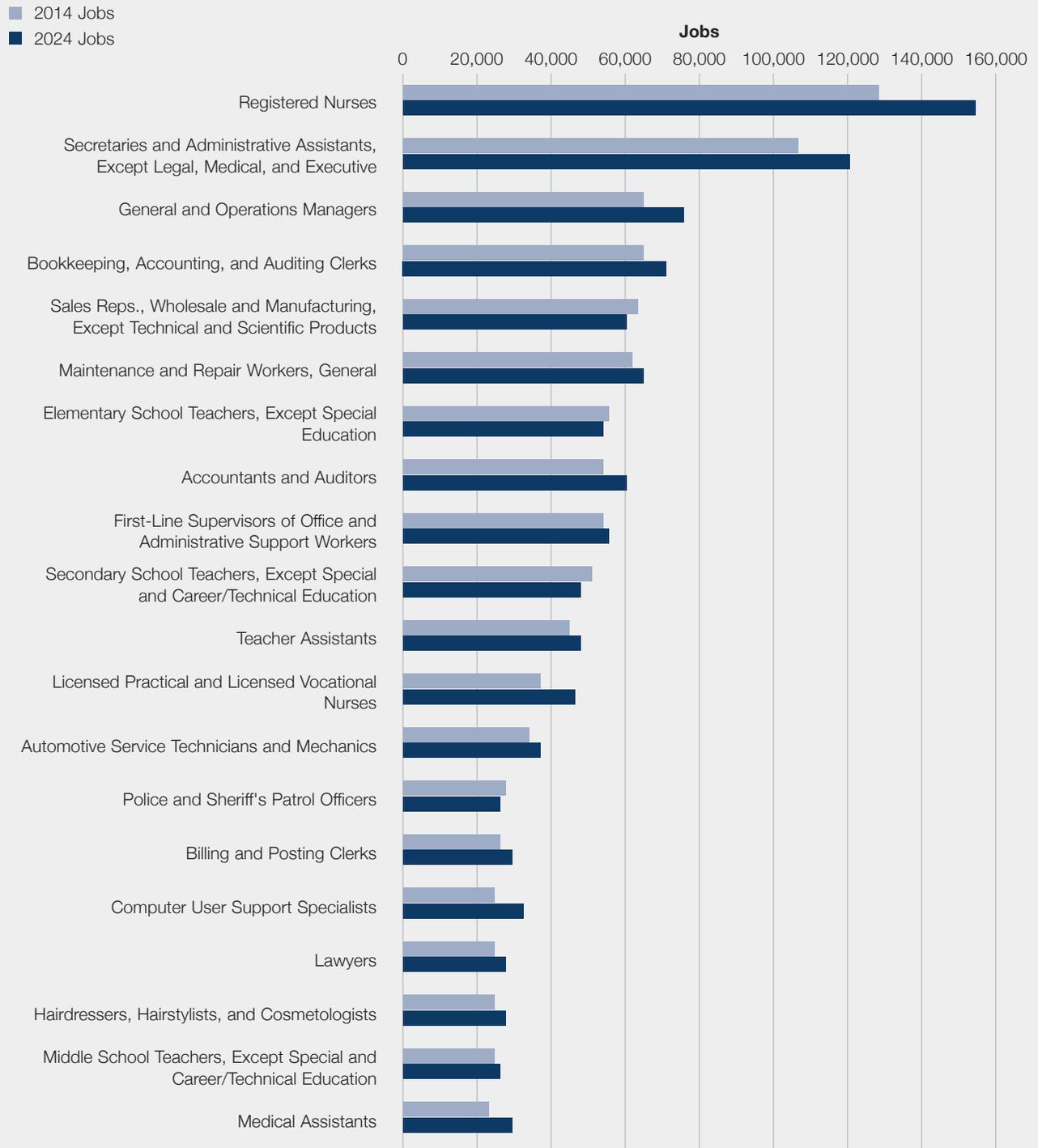
- Registered nurses (128,807 jobs),
- Secretaries and administrative assistants (107,410 jobs), and
- General and operations managers (65,499 jobs).

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

Skilled occupations in the State System's Gap Analysis project are defined using terminology from the O*NET program. The O*NET program is the nation's primary source of occupational information. 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.

Figure 7 highlights the top 20 skilled occupations in the state and 10-year job growth projections from 2014 to 2024.

Fig. 7: Largest Skilled Occupations in Pennsylvania and Projections, 2014-2024



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

New and replacement jobs¹ presented in Figure 8 represents employer demand. Demand for new and replacement jobs reflects new job growth as well as the need to replace workers who retire or otherwise leave an occupation. Therefore, occupations that show little or no job growth may still require a significant number of new workers to fill replacement demand. An example of this is secondary school teachers. Projections indicate that secondary teacher employment will decline by 3,342 jobs between 2014 and 2024. However, the need to replace teachers who retire or leave the occupation will exceed 14,000 jobs over the same time period.

In the next section, an analysis of a narrower set of skilled occupations is provided. This group of occupations comes from the top skilled occupation list and they align more closely to university-level education.

1 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.

Fig. 8: Largest Skilled Occupations (New and Replacement Demand) in Pennsylvania

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

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

Key Skilled High Demand Occupations Aligning to University-level Education

Out of the top skilled occupation list, the following five occupations represent a narrower identification of skilled occupations aligning more closely to university-level education and programs. These occupations include:

- Registered nurses (51,874 10-year new and replacement jobs),
- Accountants and auditors (23,682 10-year new and replacement jobs),
- General and operations managers (22,377 10-year new and replacement jobs),
- Market research analysts & marketing specialists (11,326 10-year new and replacement jobs), and
- Computer systems analysts (12,531 10-year new and replacement jobs).

Figure 9 and Figure 10 display the projected job growth and new and replacement job demand for the key skilled occupations.

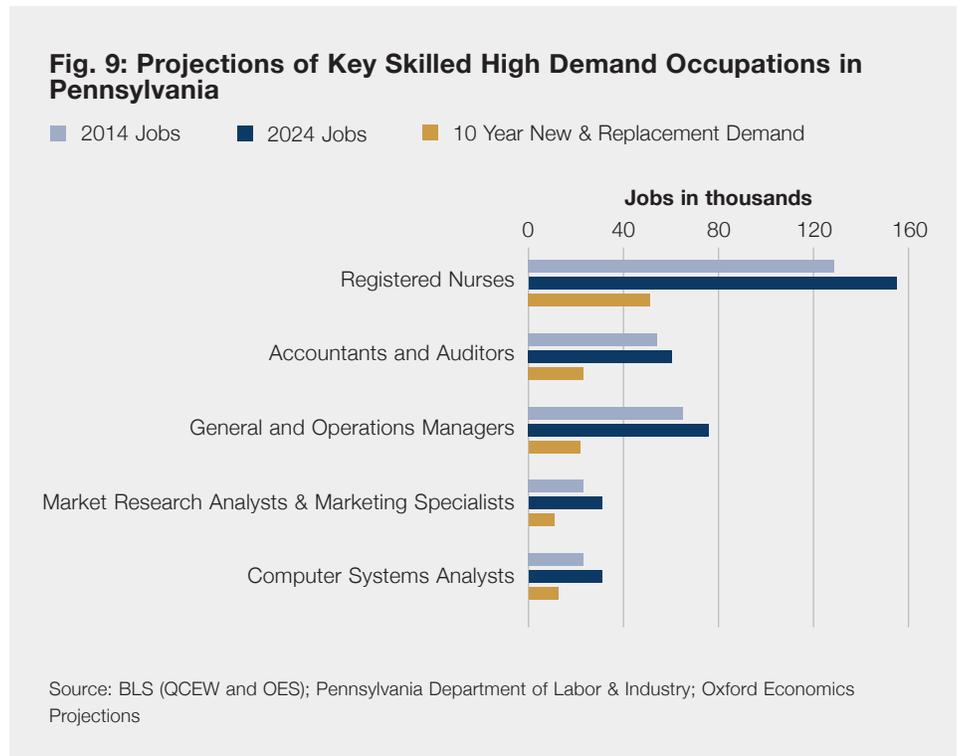


Fig. 10: Projections of Key Skilled High Demand Occupations in Pennsylvania

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

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

Key Skilled High Demand Occupational Profile

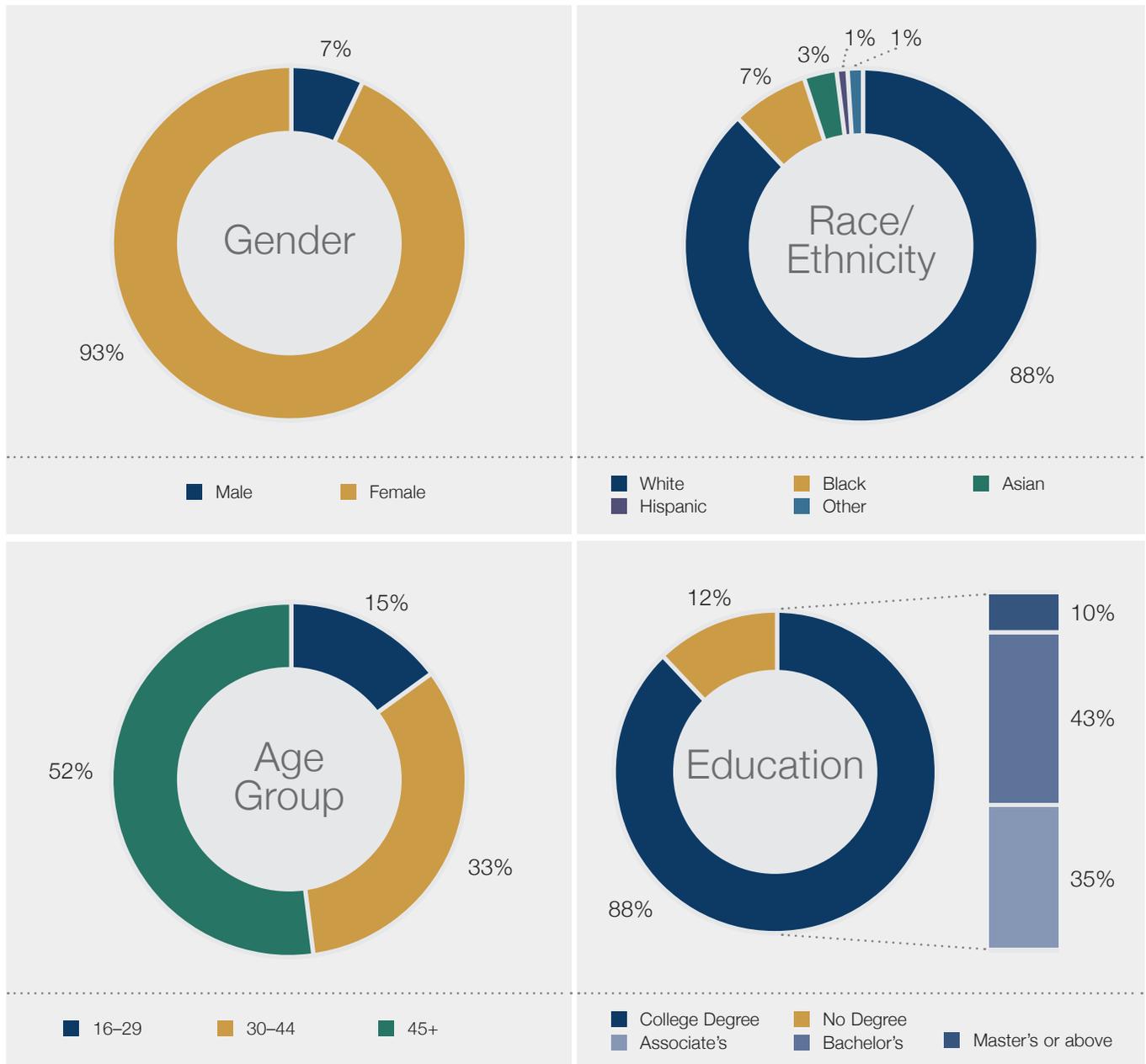
In addition to understanding the industries that employ key skilled high demand occupations, it is useful to focus on the demographic characteristics of those employed. The following section outlines the demographics for people from Pennsylvania who work in these key skilled occupations by showing each 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 of Pennsylvania’s entire population is further described in the demographics section, found later in this report.

REGISTERED NURSES IN PENNSYLVANIA

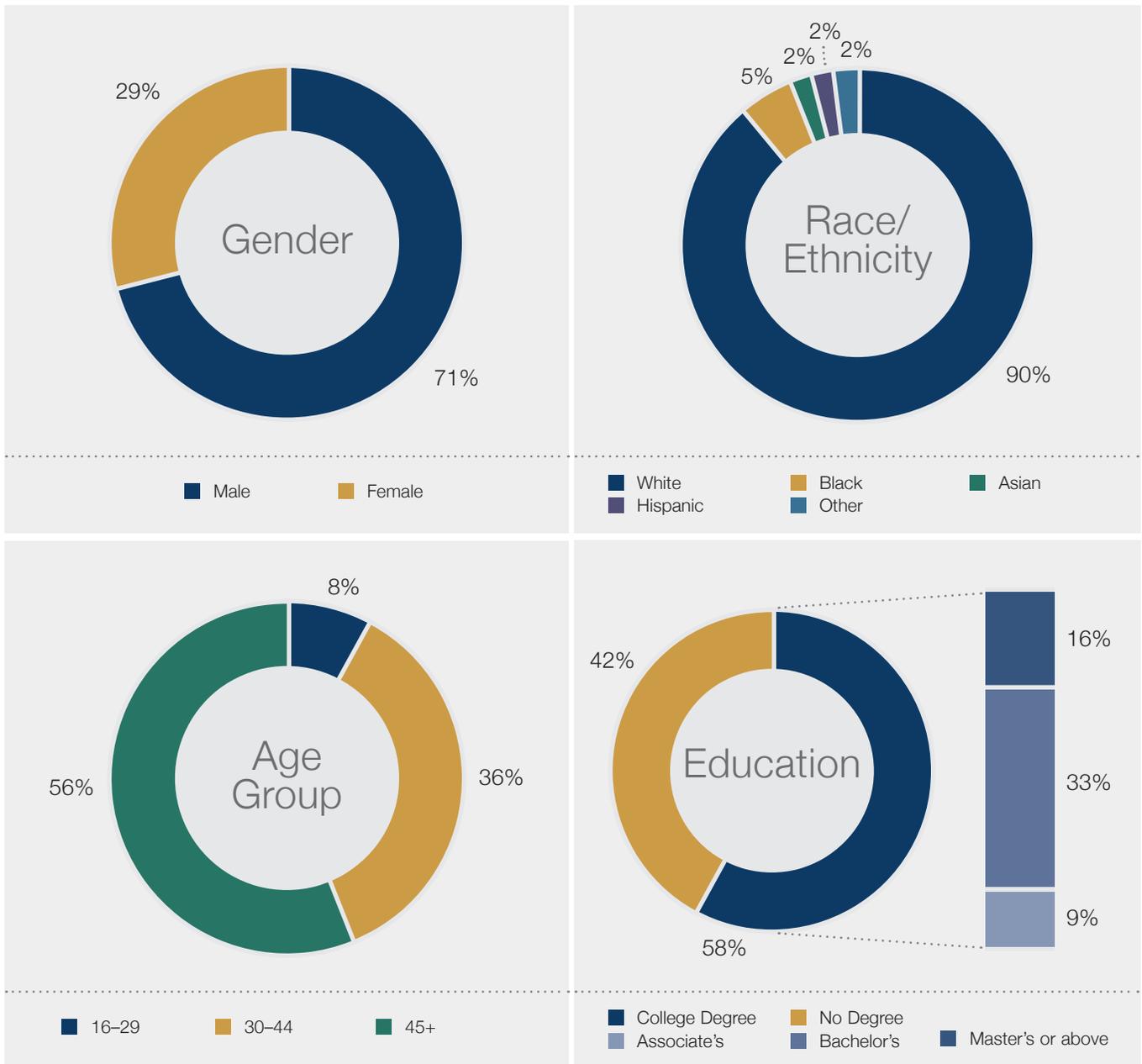
The demographic profile of registered nurses is largely dominated by white females. Age distribution indicates that registered nurses are a more mature cohort of workers (45 years and older), which can put increasing pressure on replacement jobs due to retirements over the next 10 years. Nearly 90% of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



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

GENERAL AND OPERATIONS MANAGERS IN PENNSYLVANIA

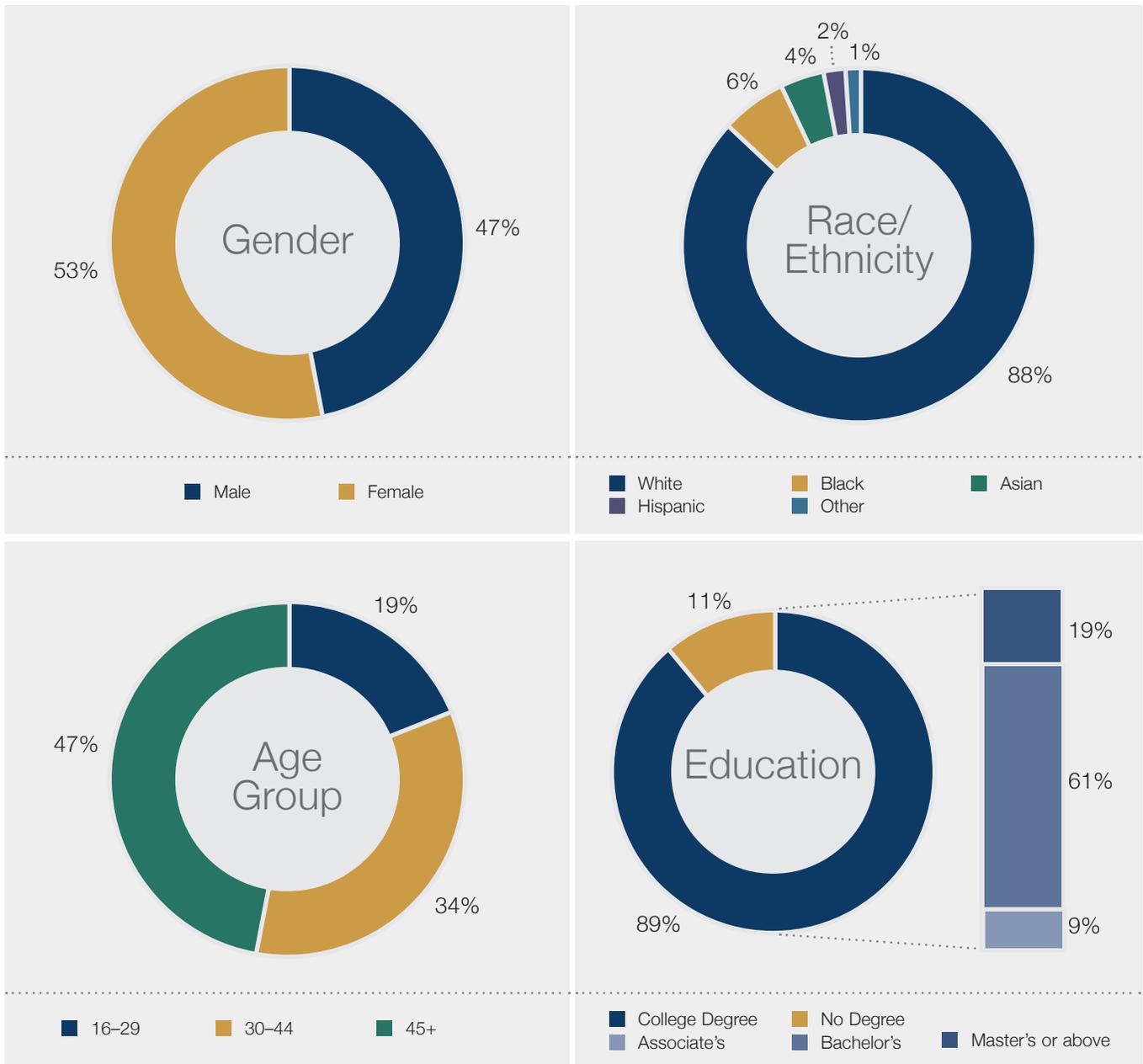
General and operations managers are typically male, though females occupy almost 30% of the employed population. The majority of those in this occupation are white. This occupation is represented by a more mature cohort of workers (45 years and older), though mid-career workers also occupy a significant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



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

ACCOUNTANTS AND AUDITORS IN PENNSYLVANIA

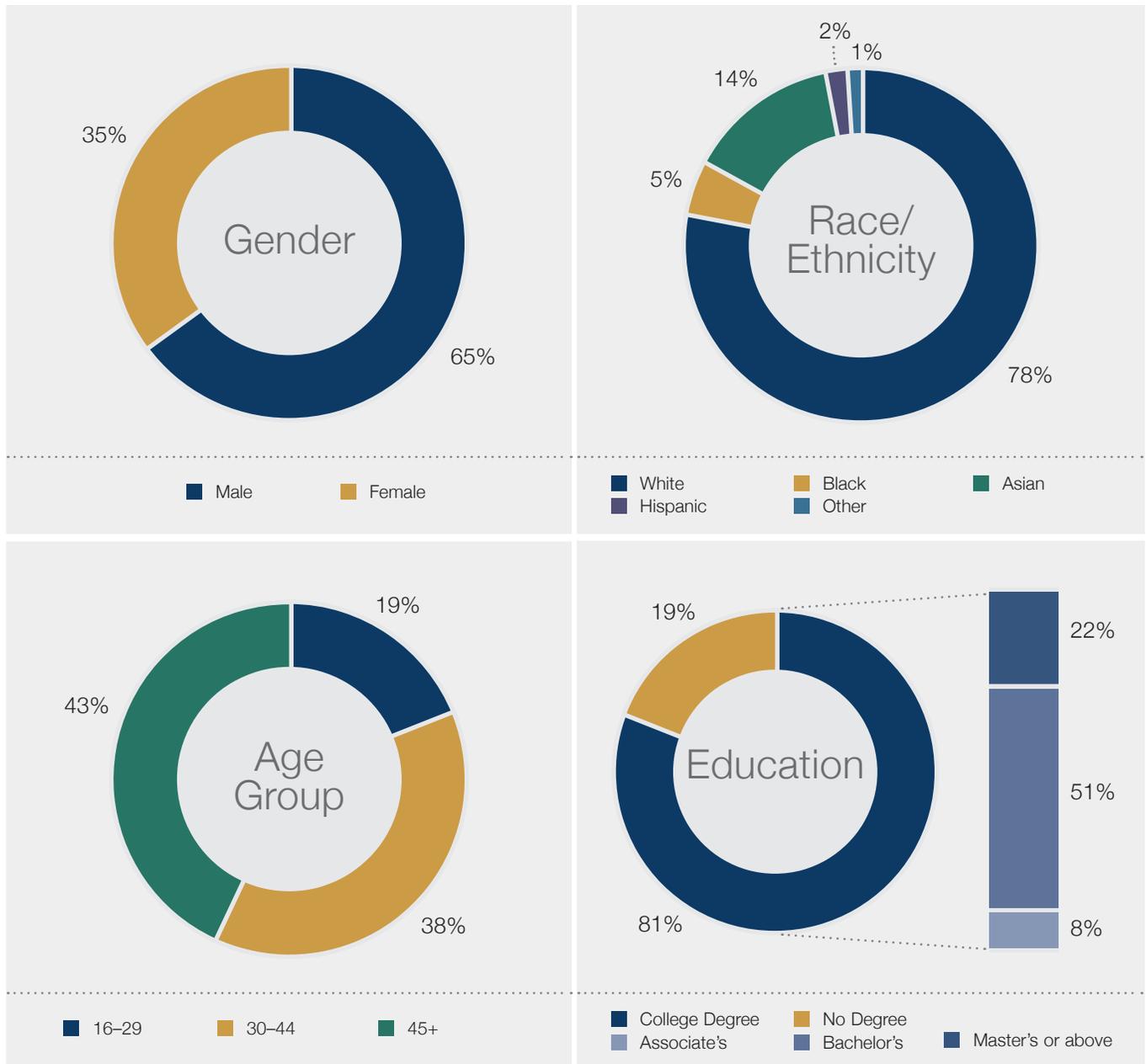
Accountants and auditors are fairly equally split between male and female. A high proportion of white individuals are found in the occupation. Additionally, the age distribution is fairly even between entry-level and mature workers, indicating that the occupation provides good opportunities for first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



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

COMPUTER SYSTEMS ANALYSTS IN PENNSYLVANIA

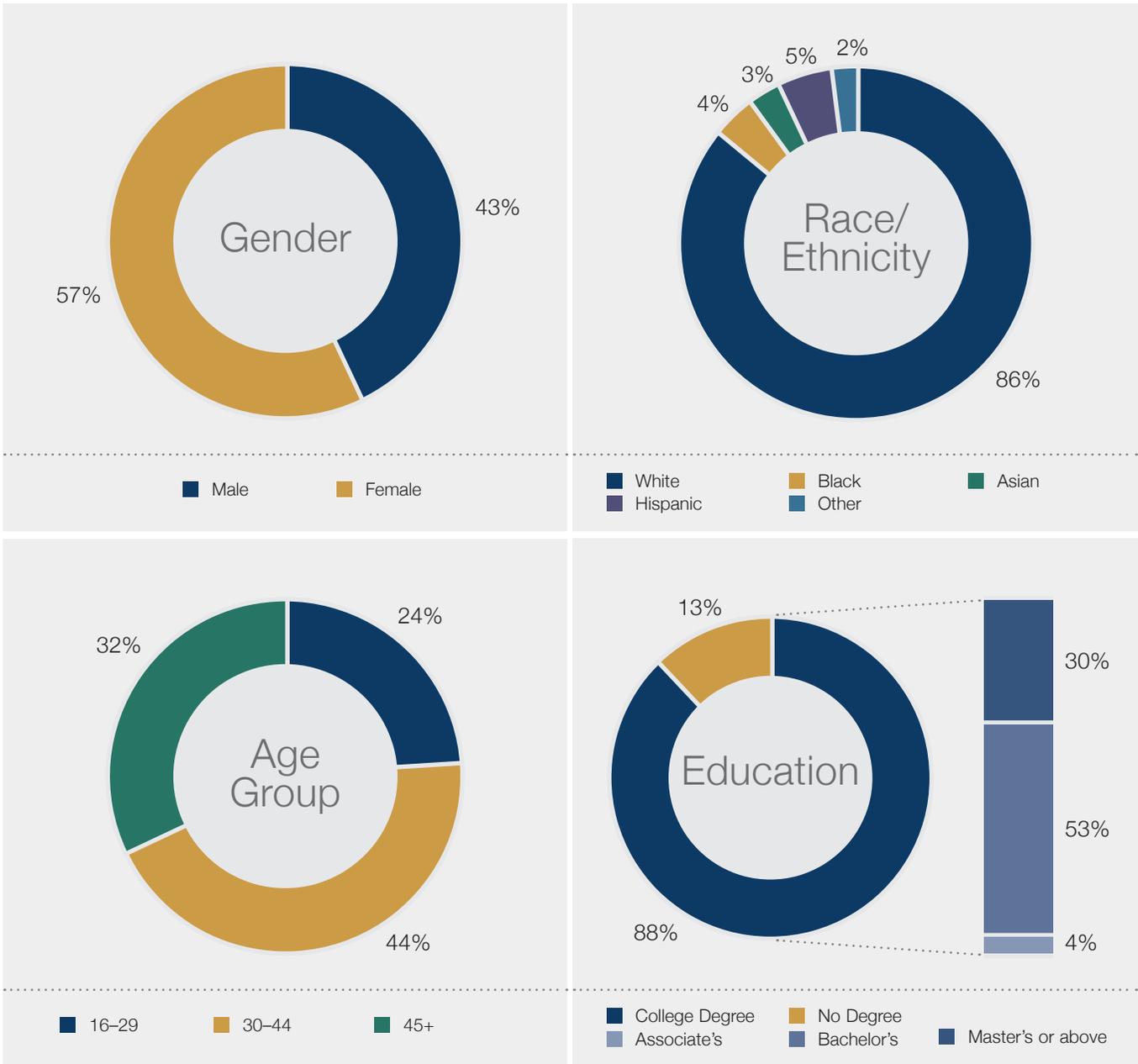
Computer systems analysts show a larger proportion of males in the occupation compared to females. While still represented by a larger share of white workers, a significant number of Asian workers are found in the occupation. The age composition of this occupation indicates that a higher proportion of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



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

MARKET RESEARCH ANALYSTS AND MARKETING SPECIALISTS IN PENNSYLVANIA

Market research analysts and marketing specialists indicate a larger proportion of females within the occupation compared to males. The race/ethnicity distribution of the occupation is predominately white. The age distribution of the occupation shows more than two thirds of the employed market research analysts and marketing specialists are under 45 years old. Nearly 90% of workers in this occupation 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

While this section covers skilled occupations state-wide, the next section briefly highlights the top high demand skilled occupations in each of Pennsylvania's five sub-regions.

Key Skilled High Demand Occupations in Pennsylvania's Sub-Regions

Given the range of employment and industry characteristics across each of the sub regions, many similarities between the top key skilled occupations exist. For example, registered nurses, appear in all regions as a top high demand skilled occupation. Other notable occupations showing up in almost every region include accountants and auditors and general and operations managers as well as market research analysts & marketing specialists. This reflects the presence of these occupations across a range of business functions in many different Pennsylvania industries. The following tables provide current and projected jobs as well as new and replacement job demand for each of the sub-regions.

Figures 11 to 15 display the projected job growth and new and replacement job demand for the key skilled occupations in each respective region.

Fig. 11: Key Skilled Occupations in Central Pennsylvania and Projections, 2014-2024

| SOC Code | Occupation Title | 2014 Jobs | 2024 Jobs | 10-Year New & Replacement Demand |
|----------|--|-----------|-----------|----------------------------------|
| 29-1141 | Registered Nurses | 24,034 | 28,621 | 9,453 |
| 11-1021 | General and Operations Managers | 13,398 | 15,670 | 4,658 |
| 13-2011 | Accountants and Auditors | 9,658 | 10,614 | 4,171 |
| 13-1161 | Market Research Analysts and Marketing Specialists | 3,727 | 4,937 | 1,806 |
| 13-1051 | Cost Estimators | 2,376 | 2,731 | 1,162 |

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

Fig. 12: Key Skilled Occupations in Northwest Pennsylvania and Projections, 2014-2024

| SOC Code | Occupation Title | 2014 Jobs | 2024 Jobs | 10-Year New & Replacement Demand |
|----------|--------------------------------------|-----------|-----------|----------------------------------|
| 29-1141 | Registered Nurses | 8,531 | 10,173 | 3,370 |
| 11-1021 | General and Operations Managers | 4,369 | 4,958 | 1,367 |
| 13-2011 | Accountants and Auditors | 2,744 | 2,913 | 1,083 |
| 17-2141 | Mechanical Engineers | 1,031 | 1,023 | 382 |
| 11-9111 | Medical and Health Services Managers | 878 | 934 | 270 |

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

Fig. 13: Key Skilled Occupations in Northeast Pennsylvania and Projections, 2014-2024

| Code | Occupation Title | 2014 Jobs | 2024 Jobs | 10-Year New & Replacement Demand |
|---------|--|-----------|-----------|----------------------------------|
| 29-1141 | Registered Nurses | 8,544 | 10,329 | 3,515 |
| 11-1021 | General and Operations Managers | 4,459 | 5,152 | 1,486 |
| 13-1161 | Market Research Analysts and Marketing Specialists | 1,204 | 1,547 | 537 |
| 15-1121 | Computer Systems Analysts | 1,022 | 1,264 | 423 |
| 13-1111 | Management Analysts | 1,018 | 1,145 | 296 |

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

Fig. 14: Key Skilled Occupations in Southeast Pennsylvania and Projections, 2014-2024

| Code | Occupation Title | 2014 Jobs | 2024 Jobs | 10-Year New & Replacement Demand |
|---------|--|-----------|-----------|----------------------------------|
| 29-1141 | Registered Nurses | 56,147 | 68,896 | 24,118 |
| 13-2011 | Accountants and Auditors | 25,453 | 28,254 | 11,274 |
| 11-1021 | General and Operations Managers | 27,499 | 32,312 | 9,708 |
| 13-1161 | Market Research Analysts and Marketing Specialists | 11,847 | 15,780 | 5,829 |
| 15-1121 | Computer Systems Analysts | 12,413 | 16,782 | 6,564 |

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

Fig. 15: Key Skilled Occupations in Southwest Pennsylvania and Projections, 2014-2024

| SOC Code | Occupation Title | 2014 Jobs | 2024 Jobs | 10-Year New & Replacement Demand |
|----------|--|-----------|-----------|----------------------------------|
| 29-1141 | Registered Nurses | 31,551 | 36,580 | 11,418 |
| 13-2011 | Accountants and Auditors | 13,610 | 15,001 | 5,922 |
| 15-1121 | Computer Systems Analysts | 5,589 | 7,885 | 3,284 |
| 13-1161 | Market Research Analysts and Marketing Specialists | 5,648 | 7,542 | 2,799 |
| 17-2051 | Civil Engineers | 4,301 | 4,971 | 1,843 |

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

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

DEMOGRAPHIC AND SOCIOECONOMIC COMPOSITION

This section provides information about the regional demographic and socio-economic composition of Pennsylvania’s workforce in order to better understand the characteristics of the population. An additional focus evaluates changes in age cohorts for university-age residents.

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

Pennsylvania’s Demographics

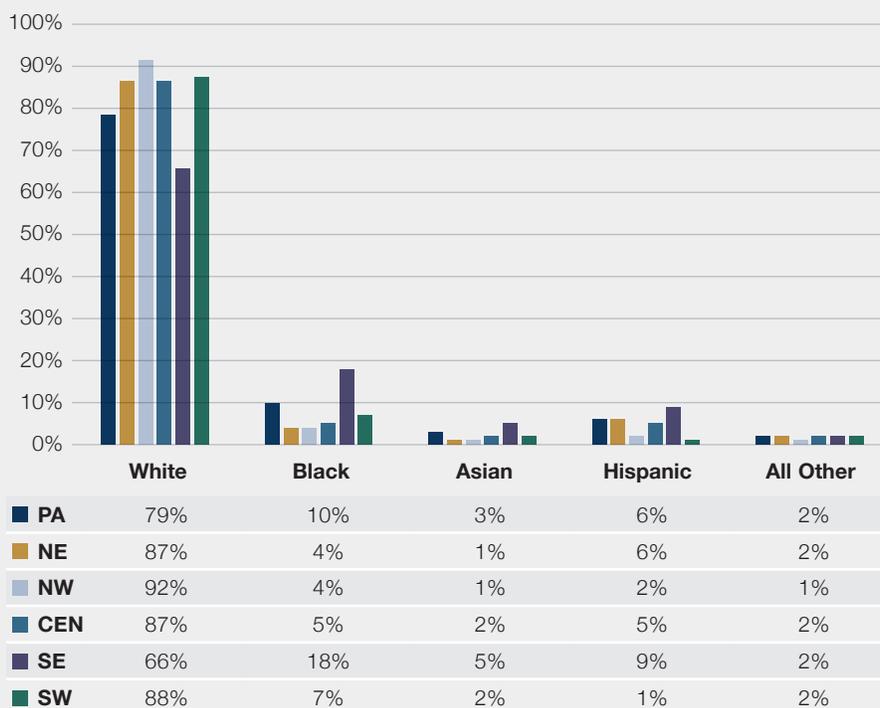
The Pennsylvania economy has a population of about 12.7 million people. As shown in Figure 16, there are about 310,000 more females compared to males. Figure 17 illustrates that the majority of the state is represented by a white demographic, with Blacks representing the next largest group, followed by Hispanics.

Fig. 16: Pennsylvania Population Distribution by Gender



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

Fig. 17: Pennsylvania and Sub-Regions Race/Ethnicity Composition



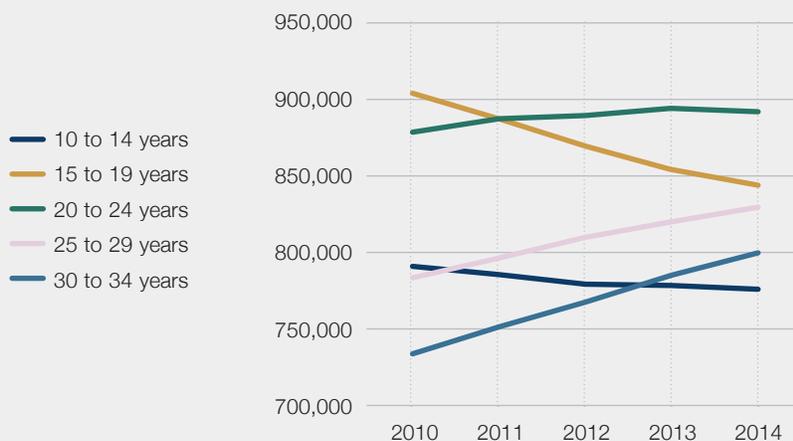
Source: U.S. Census - American Community Survey (ACS) 2009-2013 5-year file

Next, the age characteristics of both the Pennsylvania population and State System learners are analyzed. Fall 2014 data from the State System Research Office indicates

- Traditional students (aged 18 to 22 years) comprise approximately 83% (90,966) of learners within the State System and
- Adult learners (aged 23 year and above) comprise about 17% (18,640) of State System learners.

A view of the change in population by age demographic indicates a diminishing number in the traditional age cohort in the commonwealth and a growing number of adults aged 25 to 34 years old. As illustrated in figure 18, the 10 to 19 year old cohort population declined by over 75,000 people between 2010 and 2014—a 4% decline. Conversely, the 25-34 year old cohort increased nearly 8%, or 113,000 people, over the same time period. This demographic shift presents challenges and opportunities related to university recruitment strategy.

Fig. 18: Pennsylvania Changes in Age Cohorts



Source: U.S. Census

The next sub-section further explores the shifting socio-economic characteristics in Pennsylvania by identifying three inter-related variables—educational attainment, unemployment, and poverty.

Educational Attainment in Pennsylvania

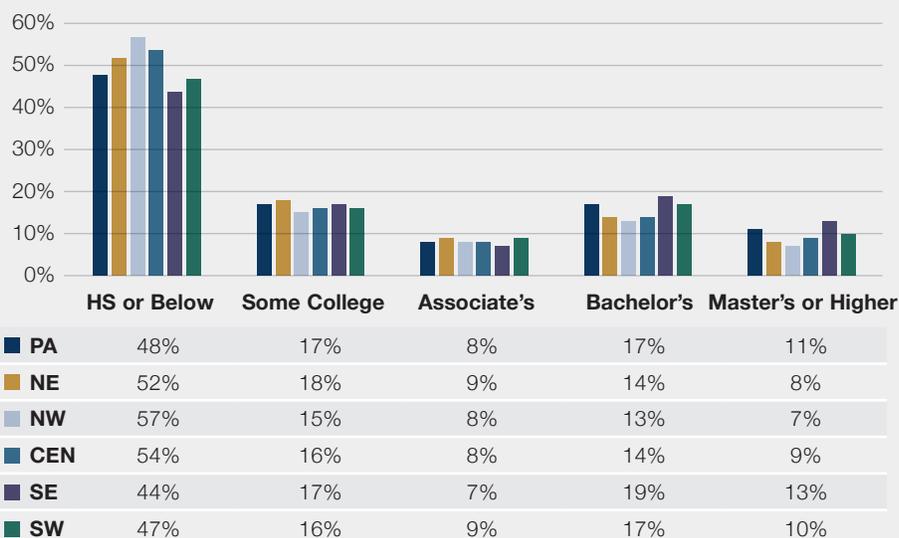
The levels of educational attainment of a population indicate several characteristics in an economy. Areas with better educated workers earn higher wages, are more productive and can typically adjust more quickly to changing economic conditions. Additionally, an educated workforce is less likely to be unemployed, require social assistance, and more likely to lead a healthier lifestyle.^{2, 3}

A view of Pennsylvania's educational attainment indicates that more than half (52%) of those over 25 years old have had some post-secondary education or higher. Some college is defined by the American Community Survey (ACS) as having some college, but less than one year or one or more years of college credit, but no degree. This lags behind the national average of 58% of the population having some post-secondary education or higher.

2 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.

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

Fig. 19: Pennsylvania and Sub-Regions Educational Attainment of 25+ Years Olds



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

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

At the regional level, Southeast Pennsylvania has the highest level of educational attainment with 39% of the 25+ population having an associate’s degree or higher, while Northwest Pennsylvania has the lowest level at 28%.

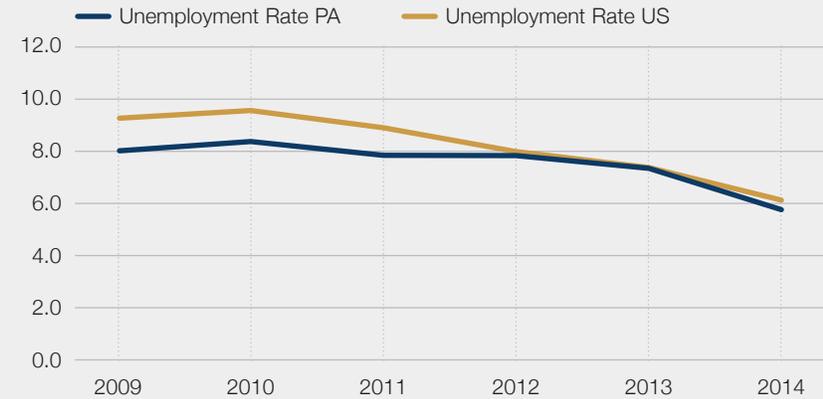
Figure 19 compares the educational attainment of the 25 years and older population in Pennsylvania and its sub-regions.

Unemployment

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

Figure 20 shows the convergence of the unemployment rates of the US and Pennsylvania from 2009 to 2014.

Fig. 20: Pennsylvania and U.S. Unemployment Rate

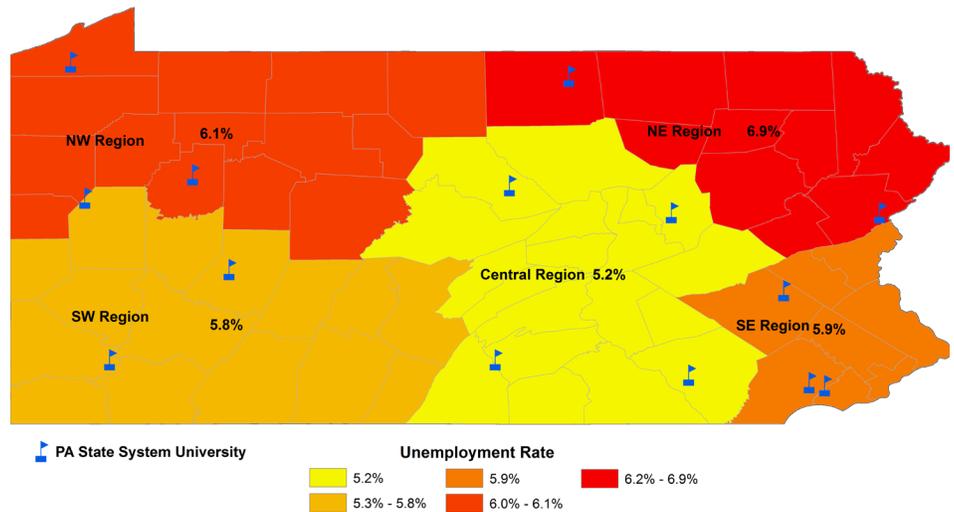


Source: Bureau of Labor Statistics – Local Area Unemployment Statistics

At the regional level, Central Pennsylvania has the lowest unemployment rate at 5.2%, while Northeast Pennsylvania has the highest unemployment rate at 6.9%.

Figure 21 displays the unemployment rates for Pennsylvania’s sub-regions in 2014.

Fig. 21: Pennsylvania’s Sub-Region Unemployment Rates, 2014

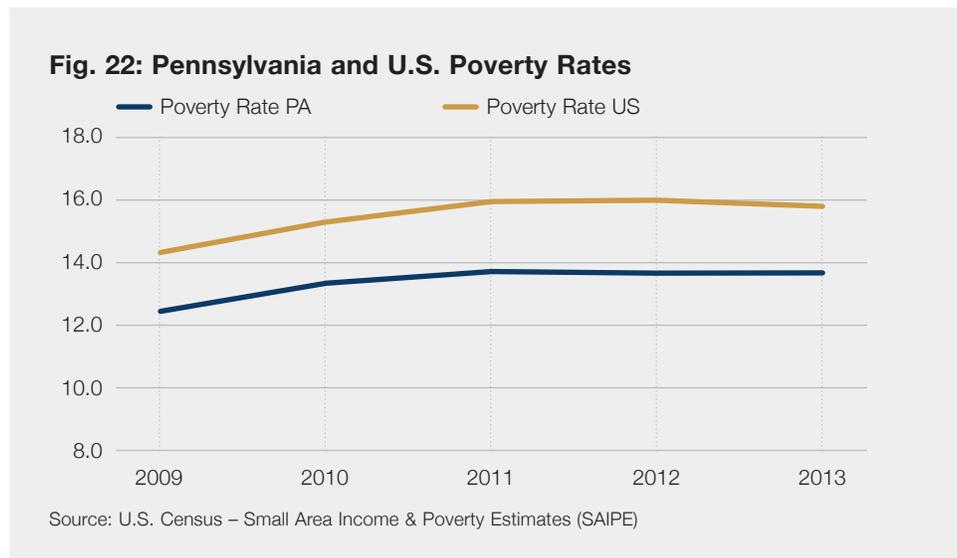


Source: Bureau of Labor Statistics – Local Area Unemployment Statistics, Oxford Economics Mapping

Poverty

In Pennsylvania, the poverty rate trended upward since 2009. However, the poverty rate remains more than 15% below the U.S. average.⁴ Given the lower poverty rate compared with the nation, there is an underlying assumption that the compensation associated with the jobs in Pennsylvania may be higher than the national average.

Figure 22 compares the poverty rates of the US and Pennsylvania from 2009 to 2013.

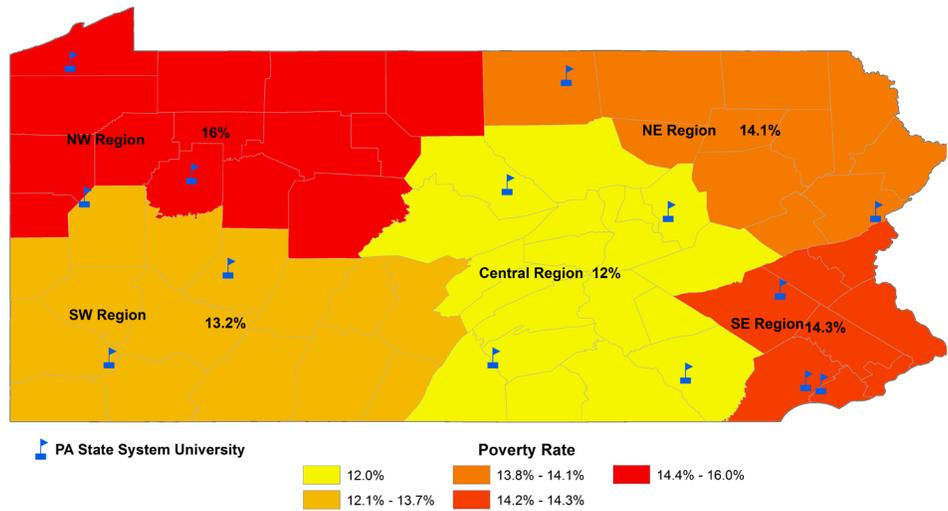


At the regional level, Central Pennsylvania has the lowest poverty rate at 12% while Northwest Pennsylvania has the highest poverty rate at 16%. However, Northwest Pennsylvania is close to the U.S. poverty rate of 15.9% indicating that all regions in Pennsylvania are at or below the national poverty rate.

Figure 23 displays the poverty rates for Pennsylvania's sub-regions in 2013.

⁴ 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.

Fig. 23: Pennsylvania's Sub-Region Poverty Rates, 2013



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

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.

CONCLUSION

These findings are further described in the statewide and regional Workforce Characteristics Reports.

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

- Defining the state's sub-region workforce areas
- Describing key economic, workforce, and demographic attributes in the state economy
- Forecasting the initial demand for skilled occupations in Pennsylvania and its regions.

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.

The report was produced through a multi-organization collaboration that consisted of Pennsylvania's State System of Higher Education Office of the Chancellor, Oxford Economics USA Inc., and Georgetown University's Center for Education and the Workforce—the team. This report is confidential to clients of Pennsylvania's State System of Higher Education and may not be published or distributed without their prior written permission.

APPENDIX 1: HIGH DEMAND⁵ SKILLED⁶ OCCUPATIONS IN PENNSYLVANIA, 2014 TO 2024

| SOC Code | Occupation Title | Job Zone | New and Replacement Jobs, 2014-2024 |
|----------|--|----------|-------------------------------------|
| 29-1141 | Registered Nurses | 3 | 51,874 |
| 43-6014 | Secretaries and Administrative Assistants, Except Legal, Medical, and Executive | 3 | 27,860 |
| 13-2011 | Accountants and Auditors | 4 | 23,682 |
| 11-1021 | General and Operations Managers | 4 | 22,377 |
| 29-2061 | Licensed Practical and Licensed Vocational Nurses | 3 | 18,990 |
| 49-9071 | Maintenance and Repair Workers, General | 3 | 16,938 |
| 43-1011 | First-Line Supervisors of Office and Administrative Support Workers | 3 | 15,400 |
| 25-2031 | Secondary School Teachers, Except Special and Career/Technical Education | 4 | 14,012 |
| 25-9041 | Teacher Assistants | 3 | 13,200 |
| 49-3023 | Automotive Service Technicians and Mechanics | 3 | 12,992 |
| 15-1121 | Computer Systems Analysts | 4 | 12,531 |
| 15-1151 | Computer User Support Specialists | 3 | 12,436 |
| 25-2021 | Elementary School Teachers, Except Special Education | 4 | 12,330 |
| 43-3031 | Bookkeeping, Accounting, and Auditing Clerks | 3 | 12,044 |
| 13-1161 | Market Research Analysts and Marketing Specialists | 4 | 11,326 |
| 41-4012 | Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products | 4 | 11,182 |
| 39-5012 | Hairdressers, Hairstylists, and Cosmetologists | 3 | 10,977 |
| 47-2111 | Electricians | 3 | 10,844 |
| 15-1132 | Software Developers, Applications | 4 | 10,702 |
| 31-9092 | Medical Assistants | 3 | 9,826 |
| 21-1093 | Social and Human Service Assistants | 4 | 9,638 |
| 25-2022 | Middle School Teachers, Except Special and Career/Technical Education | 4 | 8,910 |

5 New and replacement demand over 5,000

6 Occupations in Job Zones Three, Four, and Five

| SOC Code | Occupation Title | Job Zone | New and Replacement Jobs, 2014-2024 |
|-----------------|---|-----------------|--|
| 15-1131 | Computer Programmers | 4 | 8,849 |
| 13-1071 | Human Resources Specialists | 4 | 8,830 |
| 43-6013 | Medical Secretaries | 3 | 8,822 |
| 33-3051 | Police and Sheriff's Patrol Officers | 3 | 8,796 |
| 25-2011 | Preschool Teachers, Except Special Education | 3 | 8,622 |
| 51-4121 | Welders, Cutters, Solderers, and Brazers | 3 | 8,389 |
| 13-1111 | Management Analysts | 4 | 8,251 |
| 51-4041 | Machinists | 3 | 7,597 |
| 49-9041 | Industrial Machinery Mechanics | 3 | 6,914 |
| 29-1123 | Physical Therapists | 5 | 6,878 |
| 23-1011 | Lawyers | 5 | 6,676 |
| 49-1011 | First-Line Supervisors of Mechanics, Installers, and Repairers | 3 | 6,663 |
| 29-2041 | Emergency Medical Technicians and Paramedics | 3 | 6,661 |
| 21-1021 | Child, Family, and School Social Workers | 4 | 6,172 |
| 39-9041 | Residential Advisors | 3 | 6,043 |
| 49-3031 | Bus and Truck Mechanics and Diesel Engine Specialists | 3 | 6,003 |
| 49-9021 | Heating, Air Conditioning, and Refrigeration Mechanics and Installers | 3 | 5,999 |
| 47-1011 | First-Line Supervisors of Construction Trades and Extraction Workers | 3 | 5,995 |
| 41-3021 | Insurance Sales Agents | 4 | 5,937 |
| 39-9011 | Childcare Workers | 3 | 5,579 |
| 13-2051 | Financial Analysts | 4 | 5,522 |
| 17-2051 | Civil Engineers | 4 | 5,445 |
| 51-4011 | Computer-Controlled Machine Tool Operators, Metal and Plastic | 3 | 5,149 |
| 29-1069 | Physicians and Surgeons, All Other | 5 | 5,145 |
| 13-1031 | Claims Adjusters, Examiners, and Investigators | 4 | 5,093 |

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.

Oxford Economics is a key adviser to corporate, financial, government and education decision-makers and thought leaders. Oxford Economics' worldwide client base now comprises over 1000 international organizations, including leading multinational companies and financial institutions; key government bodies and trade associations; and top universities, consultancies, and think tanks.

This report is confidential to clients of Pennsylvania's State System of Higher Education and may not be published or distributed without their prior written permission. Contact information for such request is provided below:

Dr. Sue Mukherjee

Executive Director for Program Alignment and Policy Development

Phone: (717) 720-4201

Email: SMukherjee@passhe.edu