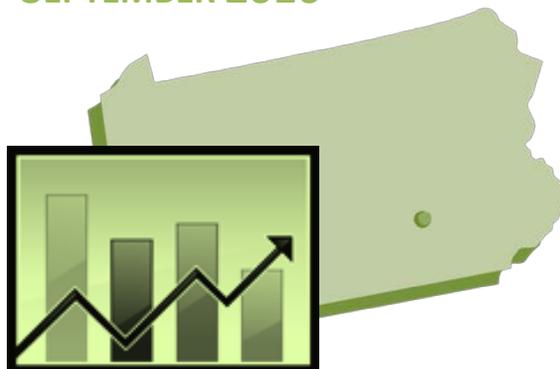


# ECONOMIC REVIEW OF PENNSYLVANIA 2015

CENTER FOR WORKFORCE INFORMATION & ANALYSIS  
SEPTEMBER 2016



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## PREFACE

Pennsylvania's future depends upon the development of a workforce able to compete in today's global economy. Understanding potential obstacles the future workforce will have to overcome is necessary when developing policies and strategies for Pennsylvania to remain economically competitive.

The National Bureau of Economic Research declared that a national economic recession began in December 2007 and ended in June of 2009. Labor markets tend to lag behind output markets. The peak (seasonally adjusted) monthly unemployment rate (8.7 percent) in Pennsylvania since the recession began occurred in February, March, and April of 2010. On an annual basis, the unemployment rate in Pennsylvania during this period also peaked at 8.5 percent in 2010, which was its highest level since 1984. The annualized number of unemployed Pennsylvanians also peaked in 2010 at 540,000. The recession left nearly all industries in Pennsylvania with job losses in 2009 and 2010. Pennsylvania's average employment in 2010 was 5,841,000, its lowest level since 2003. In the ensuing five years, Pennsylvania's labor market has shown steady improvement as employment has increased and the unemployment rate has decreased, indicating that the subsequent recovery is taking hold. In 2015, Pennsylvania's average employment rose to 6,094,000, an increase of 78,000 from 2014 and an increase of 253,000 from 2010. The average unemployment rate in 2015 was 5.1 percent which was 0.8 percentage points lower than in 2014 and 3.4 percentage points lower than in 2010. These are among the signs that the economic recovery seems to be continuing and accelerating, in Pennsylvania; however, more progress would be desirable. The task of effective workforce and economic development is needed to ensure that the economic turnaround endures and strengthens and Pennsylvania's remaining 300,000 unemployed (as of December 2015) find sustainable employment.

Workers from the front-end of the baby-boom generation are moving into their 60s and, beginning in 2011, were expected to start the wave of retirement from the workforce in large numbers. Initially, due to the weak economy, many chose to remain in the workforce, thus complicating the jobs outlook horizon for younger workers. Inevitably, as the economic expansion develops, baby boomers will leave the workforce in large numbers taking with them key skills that kept industry growing and prosperous. Based on Pennsylvania's demographics, far fewer youth are available to enter the labor market to replace those who will be leaving. While technology and global competition will help alleviate some need for workers, a shortage of workers forces greater efficiencies and competition for key skills.

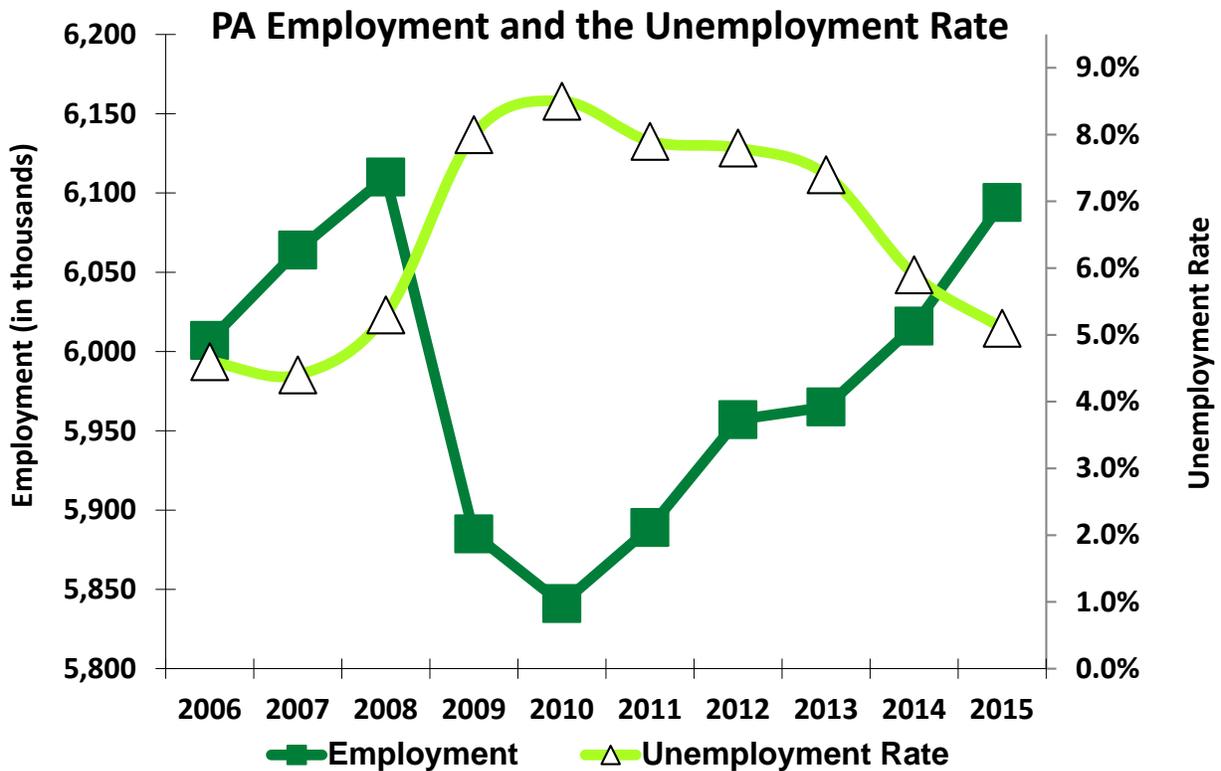
# LABOR FORCE STATISTICS

## Employment

Pennsylvania's average employment was 6,094,000 in 2015. Over the year, employment was up by 78,000, or 1.3 percent. In comparison, the U.S. average employment in 2015 was 148,833,000, up 2,528,000 from 2014, or 1.7 percent. In 2015, Pennsylvania's employment was 99.7 percent of its previous annual high, while the country set its second consecutive record high.

## Unemployment Rate

Pennsylvania's average annual unemployment rate decreased by 0.8 percentage points to 5.1 percent in 2015, after falling by 1.5 percentage points in the previous year. The U.S. unemployment rate in 2015 fell to 5.3 percent, 0.9 percentage points lower than in 2014.



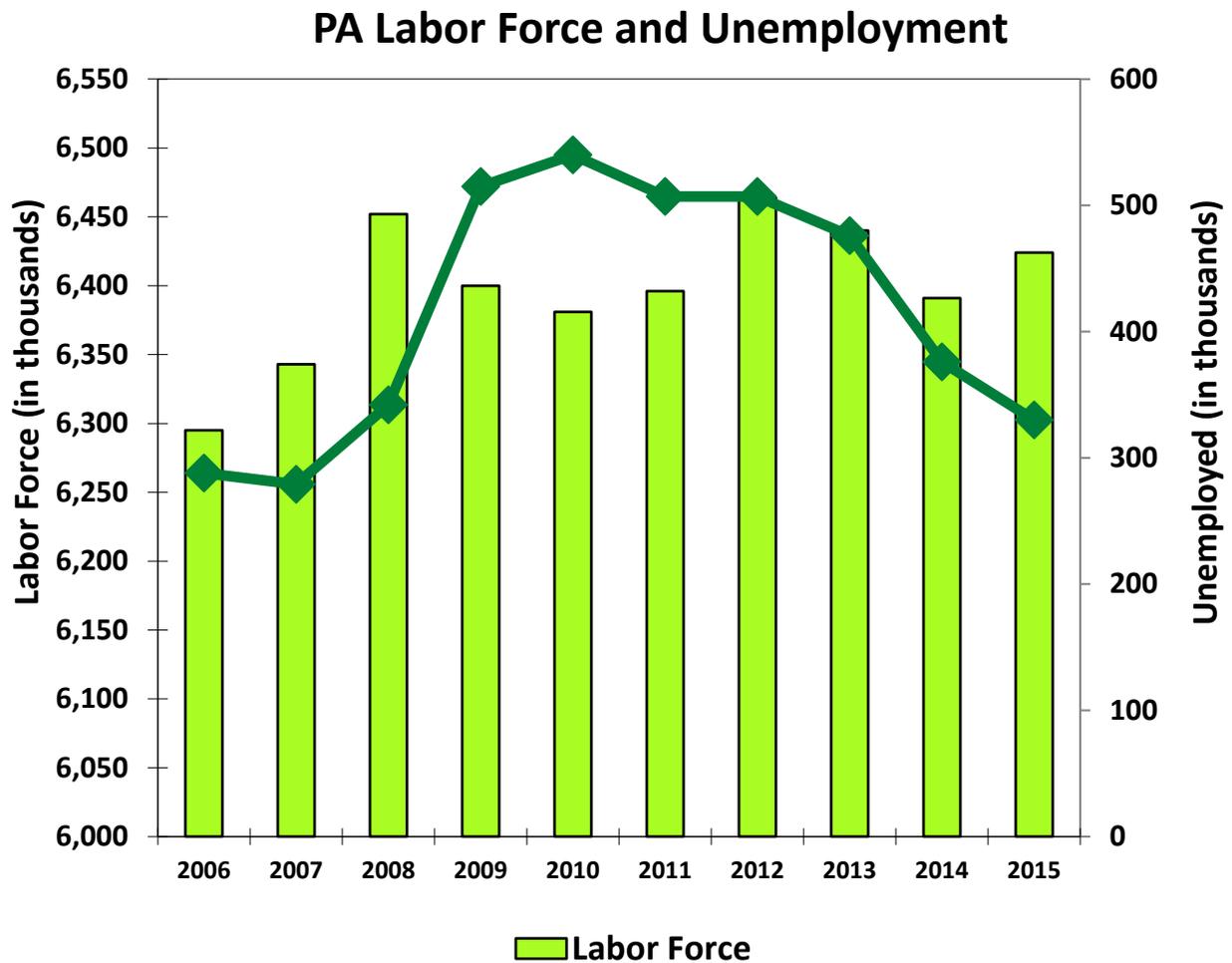
Source: Pennsylvania Local Area Unemployment Statistics

## Labor Force

Pennsylvania's average labor force was 6,424,000 in 2015, up 33,000 from 2014, or 0.5 percent. This was the first annual increase in the labor force after two consecutive decreases. The U.S. labor force was 157,130,000 in 2015, up 1,208,000 from 2014, or 0.8 percent.

## Unemployed

The average number of unemployed Pennsylvanians in 2015 decreased by 46,000, or 12.2 percent, to 330,000. The U.S. unemployment level in 2015 was 8,296,000, down 1,320,000 or 13.71 percent from 2014.



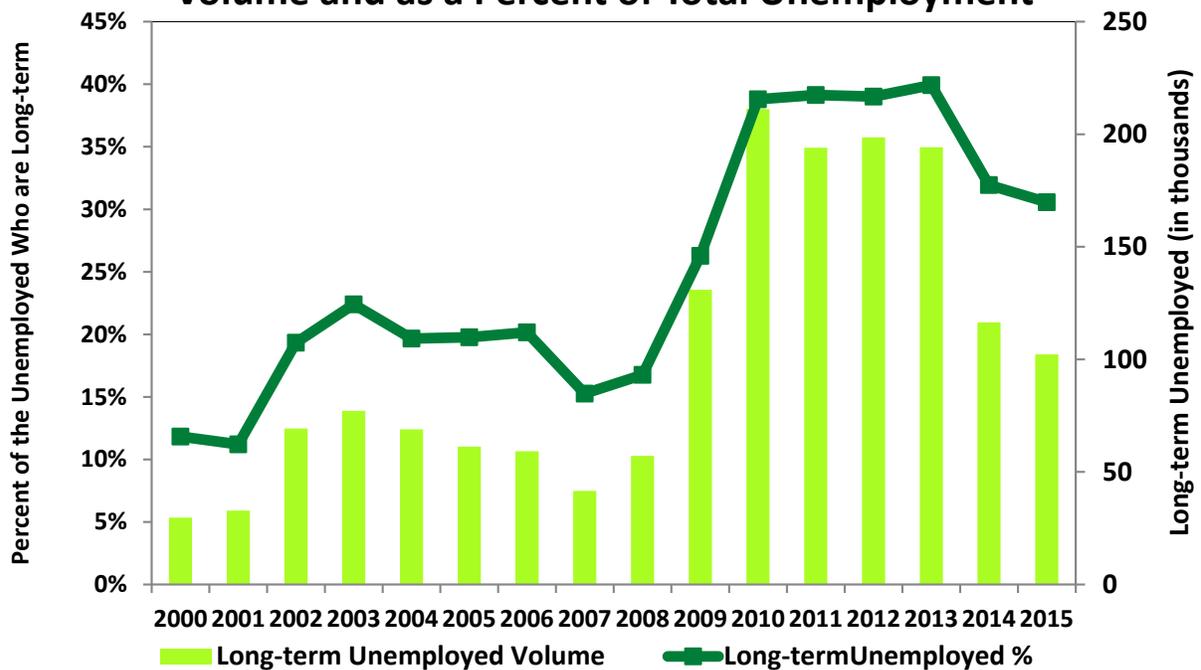
Source: Pennsylvania Local Area Unemployment Statistics

## Long-term Unemployment

Two dimensions of unemployment are its volume (the number of people unemployed at a given time) and duration (the length of time that those unemployed remain unemployed). One measure of duration can be obtained by classifying the unemployed into two categories: short-term (unemployed 26 weeks or less) and long-term (27 weeks or more). The volumes of both short-term and long-term unemployment as well as the average duration of unemployment tend to increase during recessions and in periods immediately thereafter. In non-recessionary times, the level of unemployment is low and consists mostly of the short-term unemployed, who are entrants to the labor market or people looking for better opportunities. During a recession, the percentage of the unemployed who are classified as long-term, the long-term ratio, increases as more of the unemployed move from short-term to long-term unemployment and relatively fewer new entrants seek work. As a recession lengthens, the long-term unemployed find it increasingly more difficult to find work the longer they are unemployed; therefore, even after the recession ends, the long-term ratio may continue to increase.

From 2007 to 2010, the number of long-term unemployed in Pennsylvania and in the U.S. increased more than fivefold. In Pennsylvania, both the number and percent of the long-term unemployed remained elevated through 2013, but decreased by 77,700 or 40.0 percent during 2014 to 116,400. The situation continued to improve in 2015, as the number of long-term unemployed fell another 14,200 or 12.2 percent to 102,200. The share of those unemployed long term decreased to 30.6 percent of the total unemployed population from 39.9 percent in 2013. The U.S. long-term unemployment level in 2015 decreased 27.7 percent to 2,328,000 from 2014 and constituted 28.0 percent of the nation's unemployed population.

### **PA Long-term Unemployment: Volume and as a Percent of Total Unemployment**

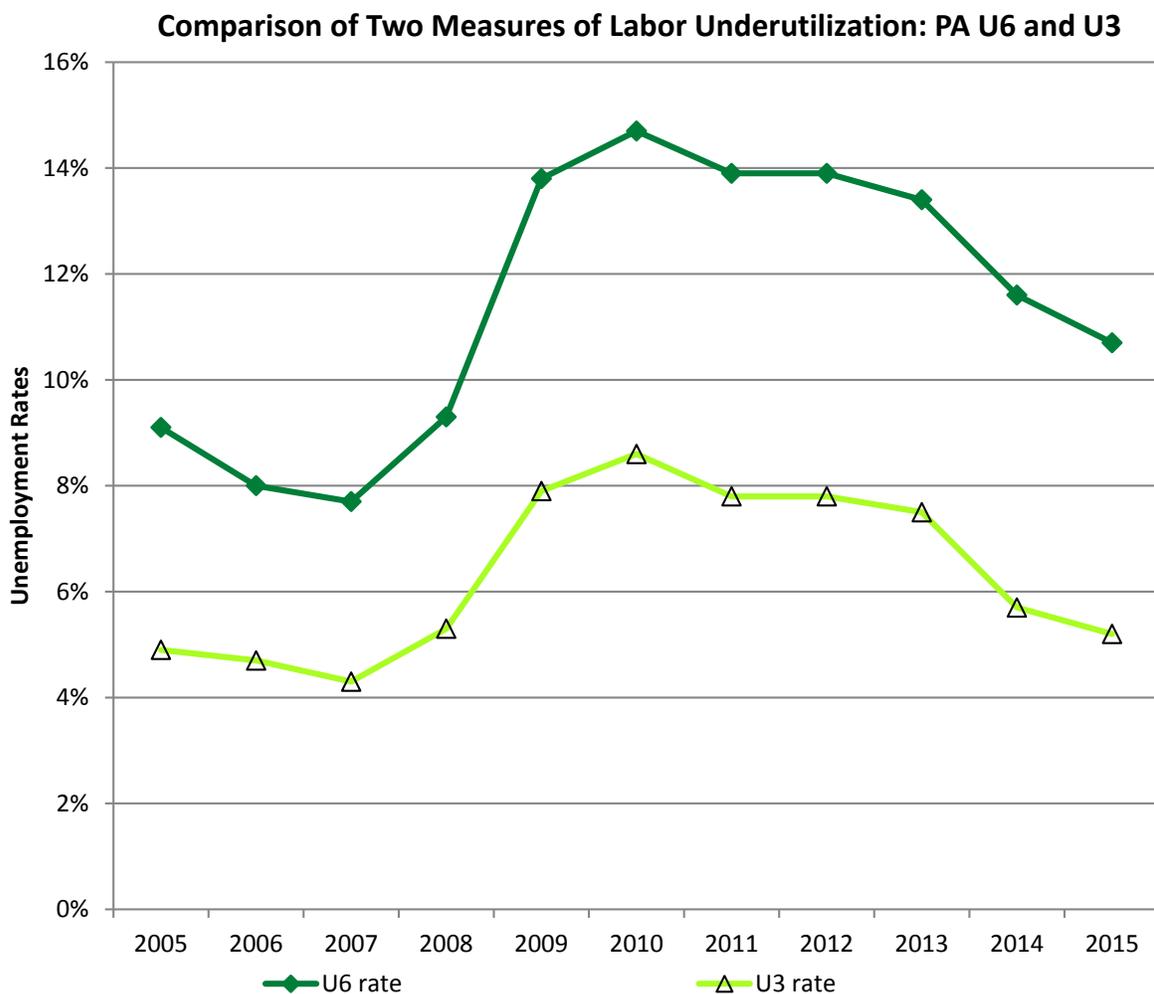


Source: U.S. Census Bureau, Current Population Survey



## Alternative Measures of Labor Underutilization

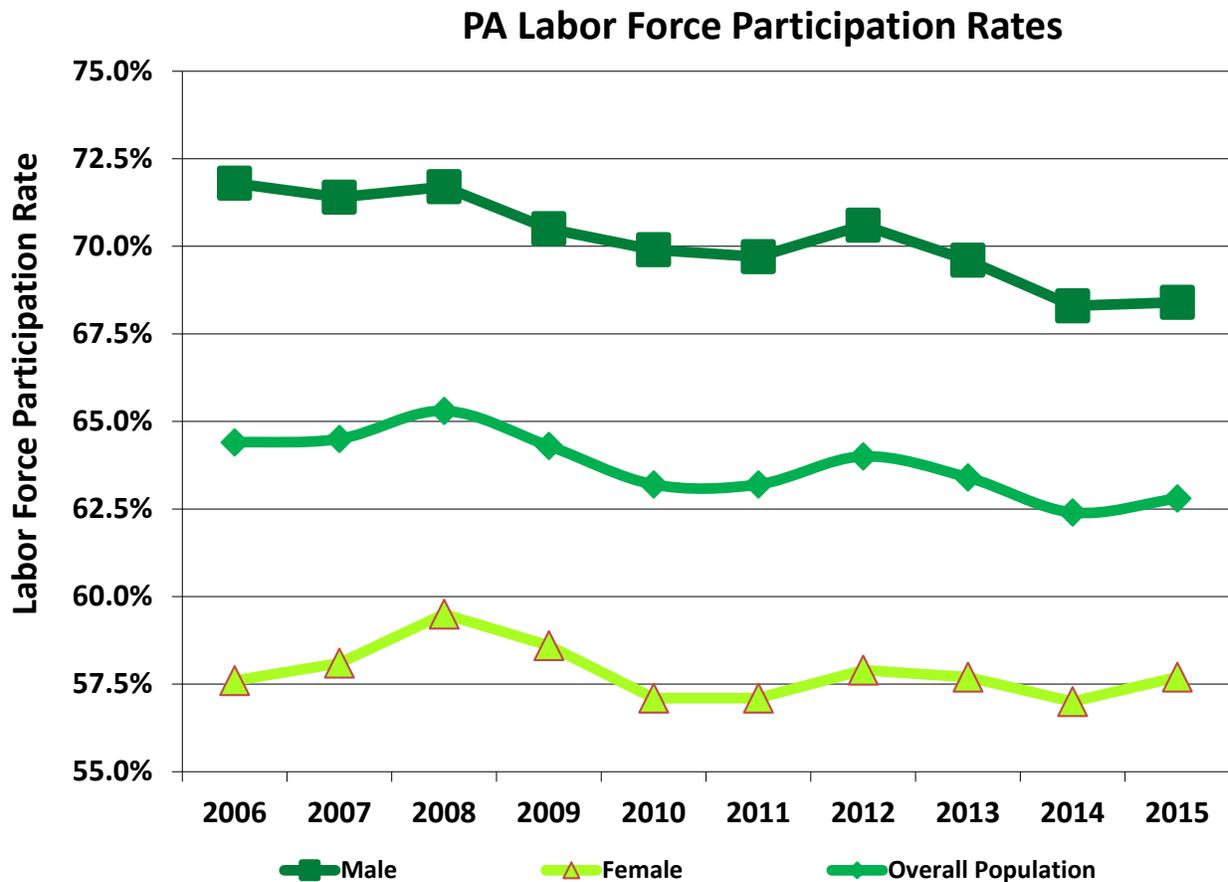
The official unemployment rate discussed earlier (which is termed U3) is one of six measures of labor underutilization reported by the Bureau of Labor Statistics (BLS) on a monthly basis. It measures the percent of the labor force who do not have a job, but are available for work and have actively searched for a job during the four weeks prior to the survey week. It could be claimed that this measure understates the degree that labor is underutilized in the economy, since it doesn't take into account people who are working part-time for economic reasons (but would prefer to work full-time) and marginally attached workers, who want and are available for work and had looked for a job in the prior year (though not in the previous four weeks). The part-time employees count as employed, while the marginally attached workers are not in the labor force. The broadest measure of labor underutilization (termed U6) accounts for both of these groups and consequently, is significantly larger than U3. The U6 rate tends to move in the same direction as U3, indicating that the labor market is improving as the rate decreases. As evidenced in the graph below, such was the case in 2015 as the U6 rate decreased from 11.6 percent in 2014 to 10.7 percent. This was the third consecutive year with a decrease in the U6 rate and the fifth consecutive year without an increase.



Source: U.S. Census Bureau, Current Population Survey

## Labor Force Participation

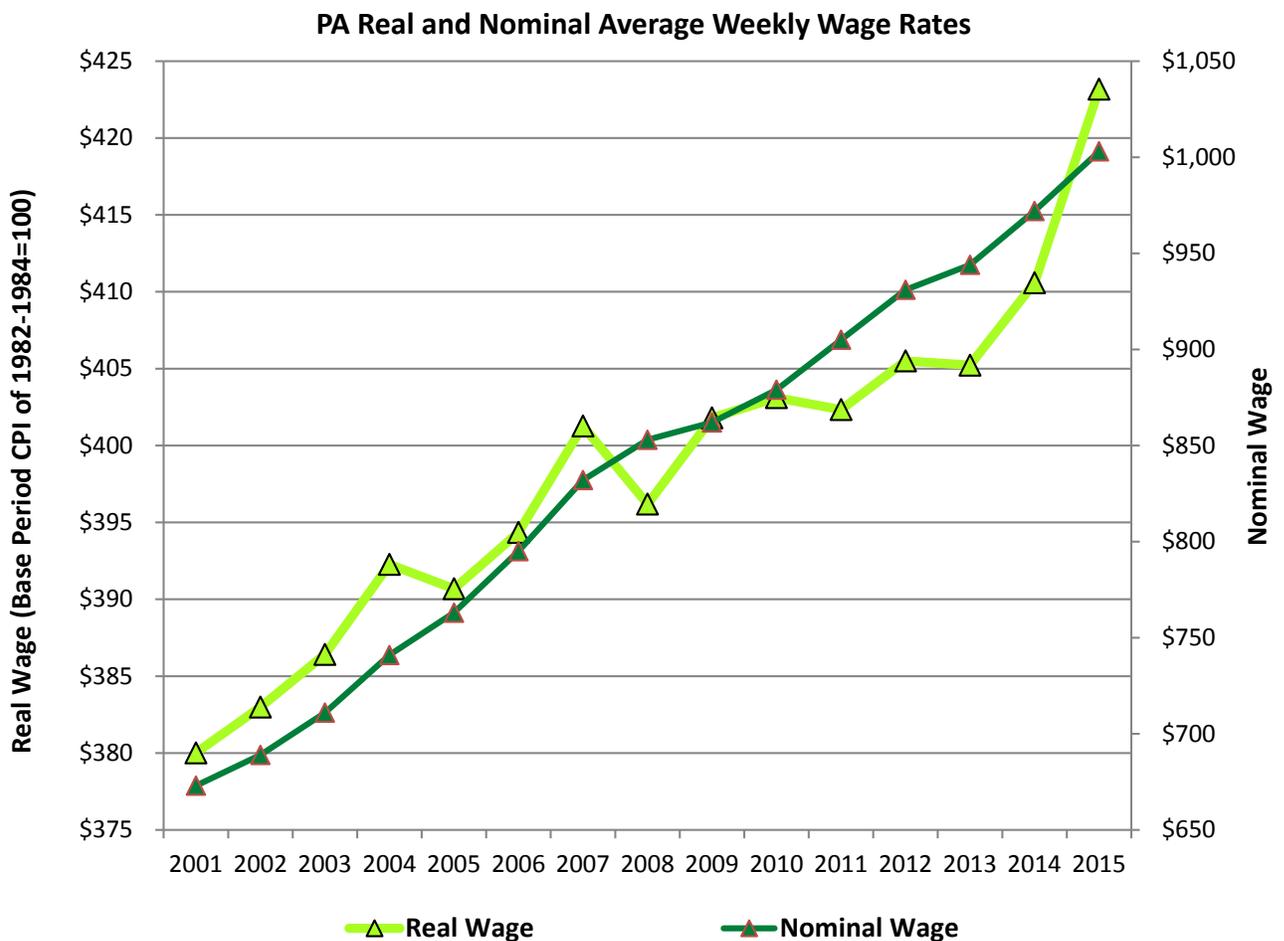
Pennsylvania's labor force participation rate was 62.8 percent in 2015, up 0.4 percentage points from 2014. The most recent peak rate was 65.3 percent in 2008. The rate is a measure of people who are working or who want to work as a percentage of the relevant population. Demographic and sociological factors tend to dominate the long-term trend in the rate; however, cyclical factors such as an improvement in the prospects of employment can increase the rate in the short run. In 2015, the male labor force participation rate was 68.4 percent, up 0.1 percentage points from the previous year, and the female rate was 57.7 percent, up 0.7 percentage points from 2014. During the same period, the nation's average labor force participation rate was 62.7 percent, down 0.2 percentage points from 2014.



Source: U.S. Census Bureau, Current Population Survey

## Nominal and Real Wage Rates

In addition to looking at employment and the labor force as measures of labor demand and labor supply, it is instructive to look at the wage rate, which is the “price” of labor. The nominal wage rate is measured in current (year in question) dollars, while the real wage rate is measured in constant dollars, holding prices at their level in a base year. As such, the real wage rate factors out the effects of inflation and is a measure of the purchasing power of the wage rate. The nominal wage rate tends to increase over time as it reflects a higher price level and increased labor productivity, albeit with a lag. In situations of increasing labor demand, such as periods of recovery in the economy, one usually experiences increases in employment and real and nominal wages. Such was the case in 2015, when the real wage increased by 3.1 percent after increasing by 1.3 percent in the prior year. In addition, the nominal average weekly wage rose by 3.2 percent to \$1,003.



Sources: Quarterly Census of Employment and Wages, Bureau of Labor Statistics, and Center for Workforce Information & Analysis  
 The real wage was calculated by deflating the nominal wage by the annual value of the broadest CPI-U not seasonally adjusted (U.S. City Average for all items), with base period of 1982-1984 = 100. Wage data for 2015 was preliminary.

## INDUSTRY EMPLOYMENT

### Jobs

Pennsylvania's total nonfarm jobs were at 5,868,100 in December 2015, up 44,400 (0.8 percent) from one year before and up 303,700 since the most recent jobs low in February 2010. The December 2015 jobs count set a new high, which was the fifth month in 2015 to set a new high, and surpassed the previous high in October 2015 by 6,100. In 2015, the recession high in April 2008 was surpassed in 10 of the 12 months. U.S. nonfarm jobs were at 143.1 million in December 2015, up 2.7 million jobs from one year prior or 2.0 percent. The U.S. gained 4.7 million jobs (3.4 percent) since the start of the recession. A glance at the chart below shows that Pennsylvania is currently in a jobs-expansion period following the job recovery period which began in early 2010. Measured by its percentage of pre-recession jobs, Pennsylvania has fared worse than the nation in its jobs recovery since the start of the recession. The state jobs count is up 1.0 percent versus the nation's 3.4 percent increase since December 2007. Even though government jobs rose nationwide last year (while continuing to fall in Pennsylvania), the job recovery and expansion in the state as well as the nation has occurred only in private jobs, as government jobs in each are still below their pre-recession levels.

**PA Total Nonfarm Jobs December 2007 to December 2015 (Seasonally Adjusted)**



	December 2015	OTY Change	PA Change from December 2007		US Change from December 2007
			Volume	Percent	Percent
Total Nonfarm Jobs	5,868,100	44,400	56,600	1.0%	3.4%
Total Private Jobs	5,161,300	44,700	104,400	2.1%	4.4%
Government Jobs	706,800	-300	-47,800	-6.3%	-1.5%

Source: Bureau of Labor Statistics, Current Employment Statistics



## Goods-producing Jobs

Pennsylvania's goods-producing jobs in December 2015 were down 12,200 from one year prior, and were 107,400 or 11.5 percent below the level at the start of the recession. All three goods-producing industry supersectors declined over the year with mining & logging having the largest relative decrease, falling by 20.7 percent, which accounted for almost two-thirds of the total job losses in the goods-producing industries, although mining & logging employment represents less than five percent of total employment in those industries. However, the percentage growth in the mining & logging supersector since December 2007 was almost 16 times that of the nation. This was most likely due in part to the Marcellus Shale boom and more recently the impact of declining energy prices. Overall since December 2007, the state fared slightly worse than the nation, with a decrease of 11.5 percent in goods-producing jobs compared to the nation's drop of 10.5 percent. This underperformance in Pennsylvania was caused by manufacturing, the biggest of these industry supersectors, which decreased by 13.6 percent compared to only 10.4 percent in the nation. Over the year, durable goods jobs fell by 1.4 percent, while nondurable goods grew by 0.5 percent. Compared to their pre-recession job levels, both durable goods and nondurable goods were performing below the nation and have not yet recovered to their pre-recession levels.

### **Pennsylvania Goods-producing Industries Nonfarm Wage & Salary Employment (Seasonally Adjusted)**

Industry	December 2015	OTY Change	PA Change from Dec '07		US Change from Dec '07
			Volume	Percent	
<b>Goods-producing Industries</b>	<b>-828,800</b>	<b>-12,200</b>	<b>-107,400</b>	<b>-11.5%</b>	<b>-10.5%</b>
Mining & Logging	30,700	-8,000	9,400	44.1%	2.8%
Construction	231,700	-200	-28,000	-10.8%	-11.9%
Manufacturing	566,400	-4,000	-88,800	-13.6%	-10.4%
Durable Goods	343,900	-5,000	-61,100	-15.1%	-11.2%
Nondurable Goods	222,500	1,000	-27,700	-11.1%	-8.9%

Source: Bureau of Labor Statistics, Current Employment Statistics

## Service-providing Jobs

In December 2015, Pennsylvania's service-providing jobs were up 56,600 from one year prior and up 164,000 jobs or 3.4 percent since December 2007. Pennsylvania's best performing service-providing industry sectors (measured by percent increase) since the start of the recession were management of companies; transportation, warehouse & utilities; health care & social assistance; and arts, entertainment and recreation. These service-providing sectors, with the exception of health care & social assistance were the only ones to outperformed the U.S. sectors. In addition, Pennsylvania's increase in state government jobs since the recession also outpaced the nation. Management of companies was the best performing industry sector, as its employment increased by 20.1 percent while the worst performing sector was information which decreased by 21.0 percent. Finally, as of December 2015, the service-providing industries in both Pennsylvania and the nation had more jobs

than at the recession's start, while jobs in the goods-producing industries were still substantially below their pre-recession levels.

### Pennsylvania Service-Providing Industries Nonfarm Wage & Salary Employment (Seasonally Adjusted)

Industry	December 2015	OTY Change	PA Change from Dec '07		US Change from Dec '07
			Volume	Percent	
<b>Service-providing Industries</b>	<b>5,039,300</b>	<b>56,600</b>	<b>164,000</b>	<b>3.4%</b>	<b>6.0%</b>
Trade, Transp. & Utilities	1,130,200	12,000	-1,300	-0.1%	1.5%
Wholesale Trade	227,300	2,700	-12,900	-5.4%	-2.3%
Retail Trade	632,200	-700	-19,200	-2.9%	1.2%
Transp., Warehouse & Utilities	270,700	10,000	30,800	12.8%	6.8%
Information	85,600	500	-22,700	-21.0%	-8.6%
Financial Activities	315,800	-100	-16,100	-4.9%	-1.1%
Finance & Insurance	254,000	-200	-11,200	-4.2%	-0.7%
Real Estate & Rental & Leasing	61,800	100	-4,900	-7.3%	-2.3%
Professional & Business Services.	778,300	5,400	66,400	9.3%	10.7%
Professional & Technical Services	337,500	4,700	23,400	7.4%	12.2%
Management of Companies & Enterprises	133,200	700	22,300	20.1%	18.0%
Admin & Waste Services	307,600	0	20,700	7.2%	7.6%
Education & Health Services	1,206,200	18,400	127,300	11.8%	18.3%
Educational Services	237,300	5,400	21,300	9.9%	17.7%
Health Care & Social Assistance	968,900	13,000	106,000	12.3%	18.4%
Leisure & Hospitality	557,500	16,300	54,200	10.8%	13.2%
Arts, Entertainment & Recreation	96,200	4,000	10,500	12.3%	10.2%
Accommodations & Food Services	461,300	12,300	43,700	10.5%	13.8%
Other Services	258,900	4,400	4,000	1.6%	2.6%
Government	706,800	-300	-47,800	-6.3%	-1.5%
Federal Government	96,300	400	-7,400	-7.1%	0.4%
State Government	162,800	6,300	2,000	1.2%	-0.6%
Local Government	447,700	-7,000	-42,400	-8.7%	-2.2%

Source: Bureau of Labor Statistics, Current Employment Statistics

## OTHER ECONOMIC INDICATORS

### New Hires

The number of reported New Hires increased by 109,200 in the fourth quarter of 2015, which represented a 20 percent increase from the same quarter in 2014. New Hires in goods-producing Industries increased by only three percent while increasing by 23 percent in the service-providing Industries. Mining was the only sector that experienced a decrease in new hires over the year while those in information increased by 62 percent.

#### Reported Pennsylvania New Hires, 2014 to 2015, 4<sup>th</sup> Quarter

Industry Sector	2015 Q4	2014 Q4	Change from 2014 Q4	
			Volume	Percent
<b>Total New Hires</b>	<b>651,700</b>	<b>542,500</b>	<b>109,200</b>	<b>20%</b>
<b>Goods-producing Industries</b>	<b>48,600</b>	<b>47,400</b>	<b>1,200</b>	<b>3%</b>
Agriculture, Forestry, Fishing, Hunting	1,900	1,600	300	19%
Mining, Quarrying & Oil & Gas Extraction	1,200	2,100	-900	-43%
Construction	20,600	19,200	1,400	7%
Manufacturing	24,900	24,500	400	2%
<b>Service-providing Industries</b>	<b>581,200</b>	<b>473,700</b>	<b>107,500</b>	<b>23%</b>
Trade, Transportation & Utilities	147,100	121,900	25,200	21%
Wholesale Trade	12,500	11,200	1,300	12%
Retail Trade	86,200	73,500	12,700	17%
Transportation, Warehouse & Utilities	48,400	37,200	11,200	30%
Information	8,100	5,000	3,100	62%
Financial Activities	14,800	12,400	2,400	19%
Finance & Insurance	10,500	8,900	1,600	18%
Real Estate & Rental & Leasing	4,300	3,500	800	23%
Professional & Business Services	214,900	173,500	41,400	24%
Professional & Technical Services	20,300	19,700	600	3%
Management of Companies & Enterprises	3,800	3,200	600	19%
Administrative & Waste Services	190,800	150,600	40,200	27%
Education & Health Services	97,800	79,300	18,500	23%
Educational Services	28,200	27,600	600	2%
Health Care & Social Assistance	69,600	51,700	17,900	35%
Leisure & Hospitality	79,000	64,800	14,200	22%
Arts, Entertainment & Recreation	19,000	18,000	1,000	6%
Accommodation & Food Services	60,000	46,800	13,200	28%
Other Services	12,700	10,900	1,800	17%
Government	6,800	5,900	900	15%
Unclassified Industry	21,800	21,400	400	2%

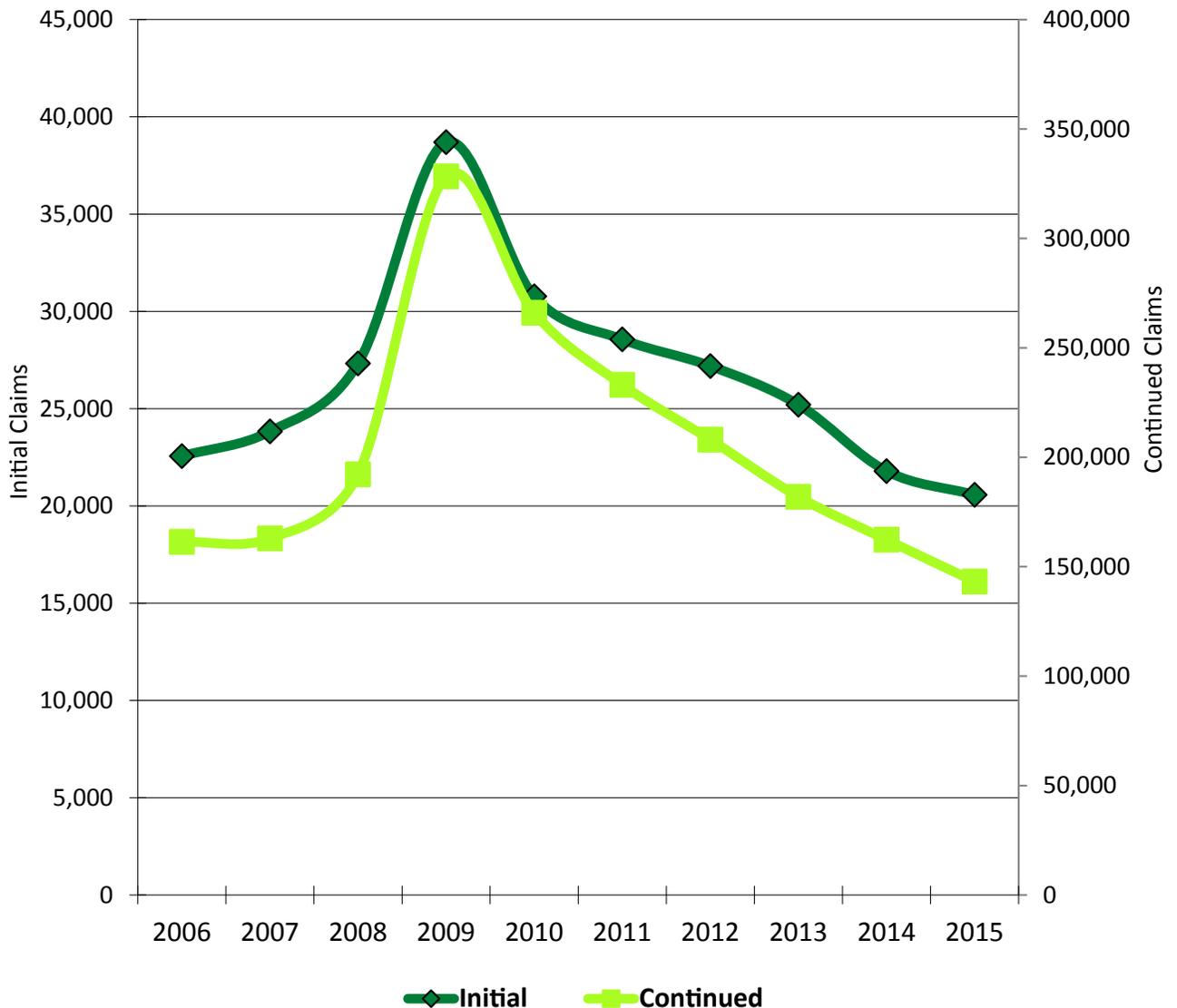
Due to rounding, the sums of sectors into larger categories may not equal the totals for those categories.

Source: Pennsylvania New Hire Reporting Program

## Weekly Claims for Unemployment Compensation

Pennsylvania's average weekly number of initial claims continued to decrease in 2015, after peaking in 2009. The state's average weekly number of continued claims also decreased during the same period. The decline in initial claims indicates that fewer workers are being laid off, while the decrease in continued claims indicates that covered unemployed workers are returning to work more quickly.

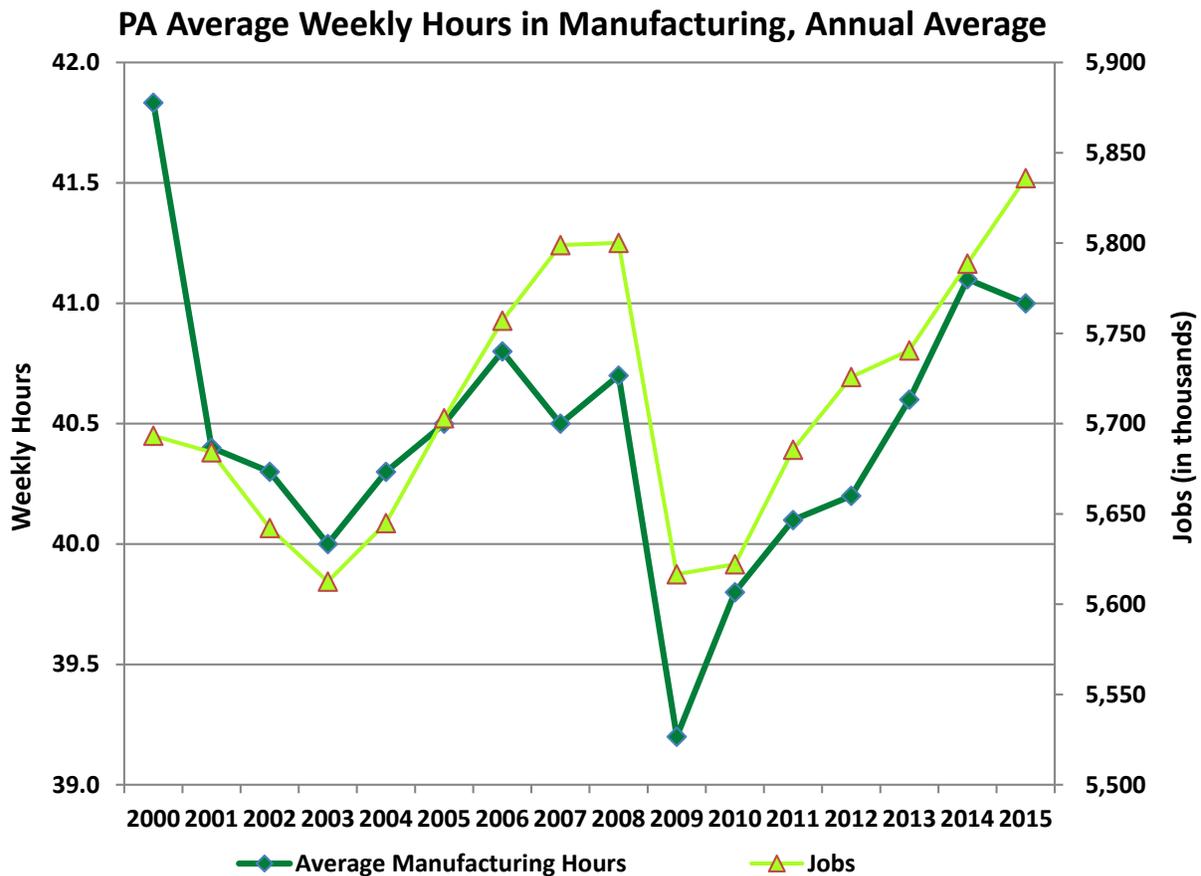
### PA Average Weekly Initial and Continued Claims for Unemployment Compensation



Source: Pennsylvania Unemployment Compensation System

## Average Weekly Hours in Manufacturing

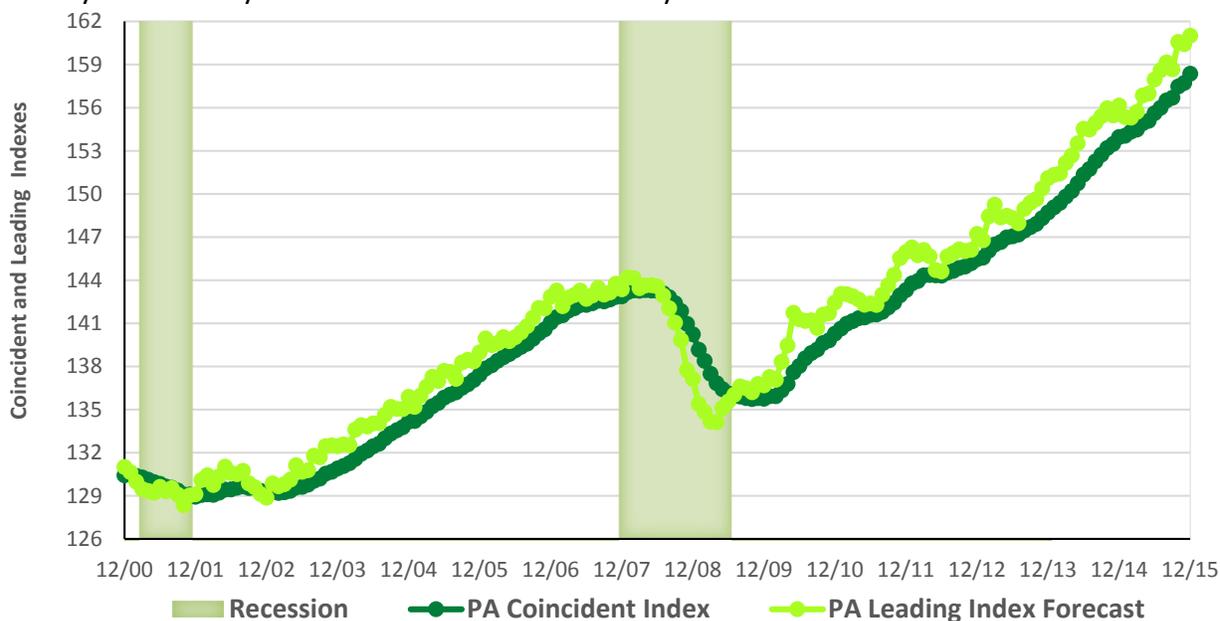
Average weekly hours are a leading indicator, often forecasting the direction of the economy. As the economy begins to grow out of a recession (e.g. in 2004), employers will tend to delay hiring new workers until they are more confident that economic growth is improving and instead, will have their existing employees work more hours. Eventually, as the economy continues to improve, businesses will add more workers and this increase in employment will reinforce the positive trend in economic growth (e.g. in 2005 to 2006). In contrast, when the economy is just beginning to slow down, employers wishing to maintain employee loyalty will retain workers by reducing hours worked, rather than immediately laying off workers (e.g. in 2001). If the slowdown deepens, businesses may need to lay off workers, reinforcing the negative trend in economic growth (e.g. in 2002 to 2003). The annual average of weekly hours in manufacturing turned down in 2007 (although it recovered most of that in 2008), signaling that employers were likely reducing hours due to the economic recession. From 2009 to 2014, both average weekly hours and total employment increased, although initially hours increased by a greater percentage. In 2015, average hours decreased marginally, while the number of jobs continued to increase at the same rate as in 2014. The divergence in the two series may be due to the overall decline in the importance of jobs in manufacturing relative to the overall economy. Alternatively, it may signal a longer term decline in the economy, particularly if the trend continues. However, one should not read too much into the marginal 2015 decrease.



Source: Bureau of Labor Statistics, Current Employment Statistics

## Coincident and Leading Economic Indexes<sup>1</sup>

The Federal Reserve Bank of Philadelphia produces on a monthly basis a coincident economic index and a leading economic index for Pennsylvania. The coincident index combines four state-level indicators to summarize current economic conditions. The four variables are nonfarm payroll employment, average hours worked in manufacturing, the unemployment rate, and wage and salary disbursements deflated by the consumer price index (U.S. city average). The trend for each state's index is set to the trend of its gross domestic product (GDP), so long-term growth in the state's index matches long-term growth in its GDP. The leading index for each state predicts the six-month growth rate of the state's coincident index. In addition to the coincident index, the models include other variables that lead the economy: state-level housing permits (1 to 4 units), state initial unemployment insurance claims, delivery times from the Institute for Supply Management manufacturing survey, and the interest rate spread between the 10-year Treasury bond and the 3-month Treasury bill.



In the graph above, months of national recessions are depicted as green columns. Sustained rises in the coincident index indicate recoveries while sustained decreases indicate contractions. When the leading index forecast exceeds the coincident index, it is projecting growth over the following six months. Since the coincident index is rising and the leading index forecast is above it, these indicators signal that Pennsylvania is in a recovery which is anticipated to continue.

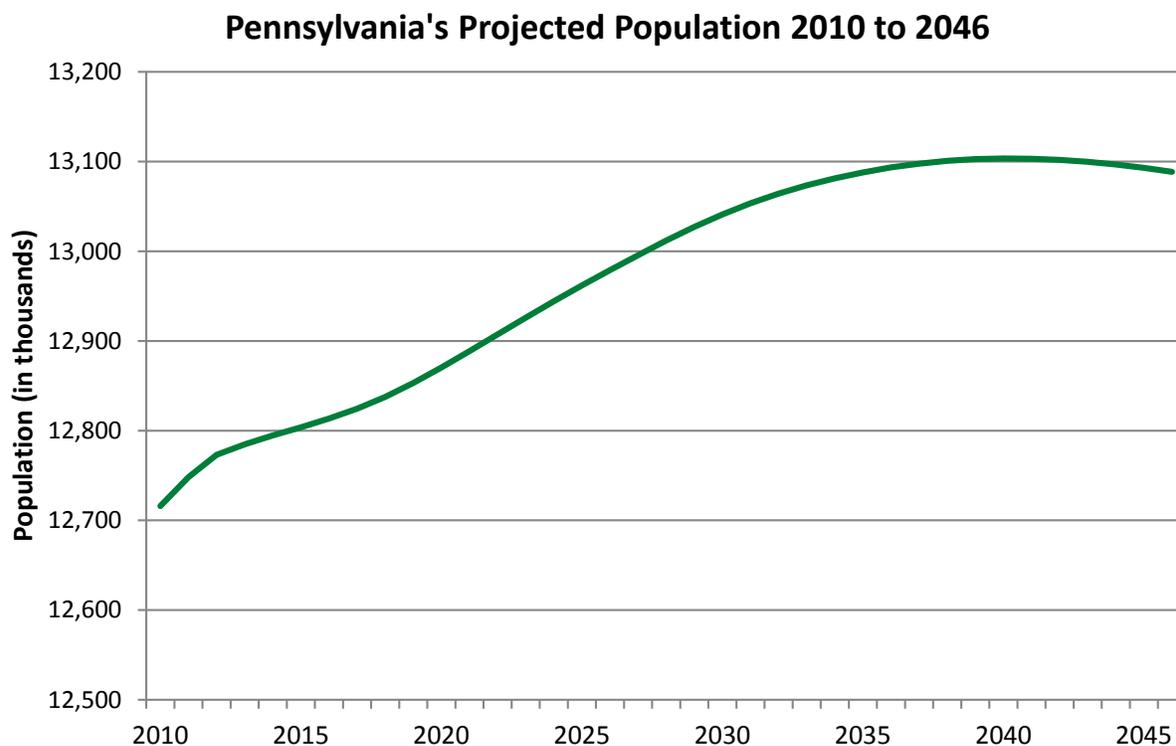
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<sup>1</sup> Material for this section was taken from the Philadelphia Federal Reserve Website. More information on the indexes can be found at <http://www.phil.frb.org/research-and-data/regional-economy/indexes/coincident/> and <http://www.philadelphiafed.org/research-and-data/regional-economy/indexes/leading/>.

## DEMOGRAPHICS

### Population

Population change is the underlying force that moves the economy. From 2015 to 2025, Pennsylvania's population is projected to grow by 1.2 percent. In comparison, the nation's population is projected to grow by 8.1 percent. While the state's overall population growth will be relatively low in the years to come, and is projected to peak in 2040, its age distribution is expected to change more dramatically.

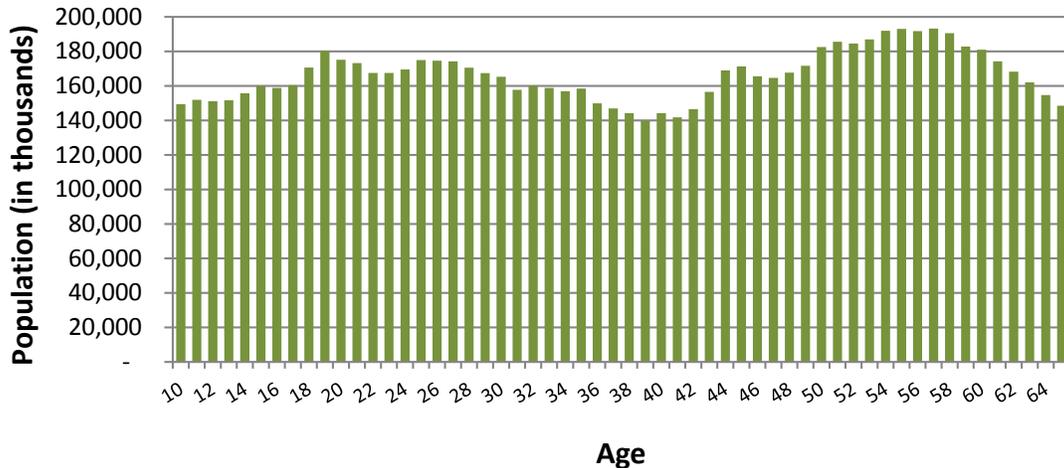


Sources: U.S. Census Bureau and IHS Economics

### Age

The state's percentage of those aged 65 and over is the seventh highest in the nation (17.03%) – Florida (19.51%), Maine (18.86%), West Virginia (18.25%), Vermont (17.57%), Montana (17.30%) and Hawaii (17.13%) are higher. The number of Pennsylvanians age 65 and over was 2.2 million in 2015 and the proportion of that age cohort is projected to increase at least through 2046. This is largely a by-product of the aging of the population born during the baby-boom period after World War II (1946 to 1964). The oldest of the baby-boom generation turned 65 in 2011 (now age 69) and the youngest will turn 65 in 2029 (now age 51). Thus, a large wave of baby boomers will be leaving the workforce over the next few decades. Since the number of births from the mid-1960s until the mid-1980s was lower than that during the baby-boom years, the natural increase in the workforce population (entrants) will be insufficient to replace those leaving it (separations). This will have profound effects on the future distribution of workers across industries and occupations.

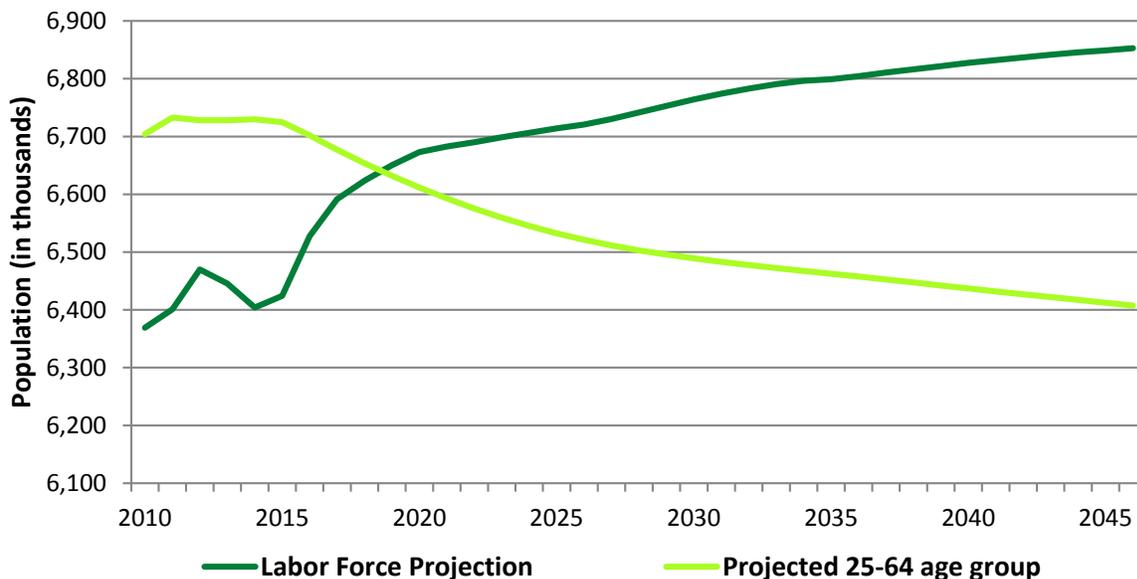
### Pennsylvania Population: Age 10 to 65 in 2015



Source: U.S. Census Bureau

The modest overall population increase is expected to be accompanied by a greater proportion aged 65 and above and a declining volume of the traditional working age population (25 to 64). Beginning around 2015, the total working age population is projected to decline annually through 2046. This probably will result in worker shortages in the coming years with some areas, industries, and occupations being affected sooner and harder than others. Normally this would imply a shrinking labor force; however, the projections indicate that the labor force will increase through 2046. This could be due to a substantial in-migration of workers and an overall increase in the labor force participation rate, both of which are projected. Whether the increase in the labor force participation rate is across all cohorts, or only the non-prime labor force groups is unclear.

### Pennsylvania's Projected Labor Force 2010 to 2046



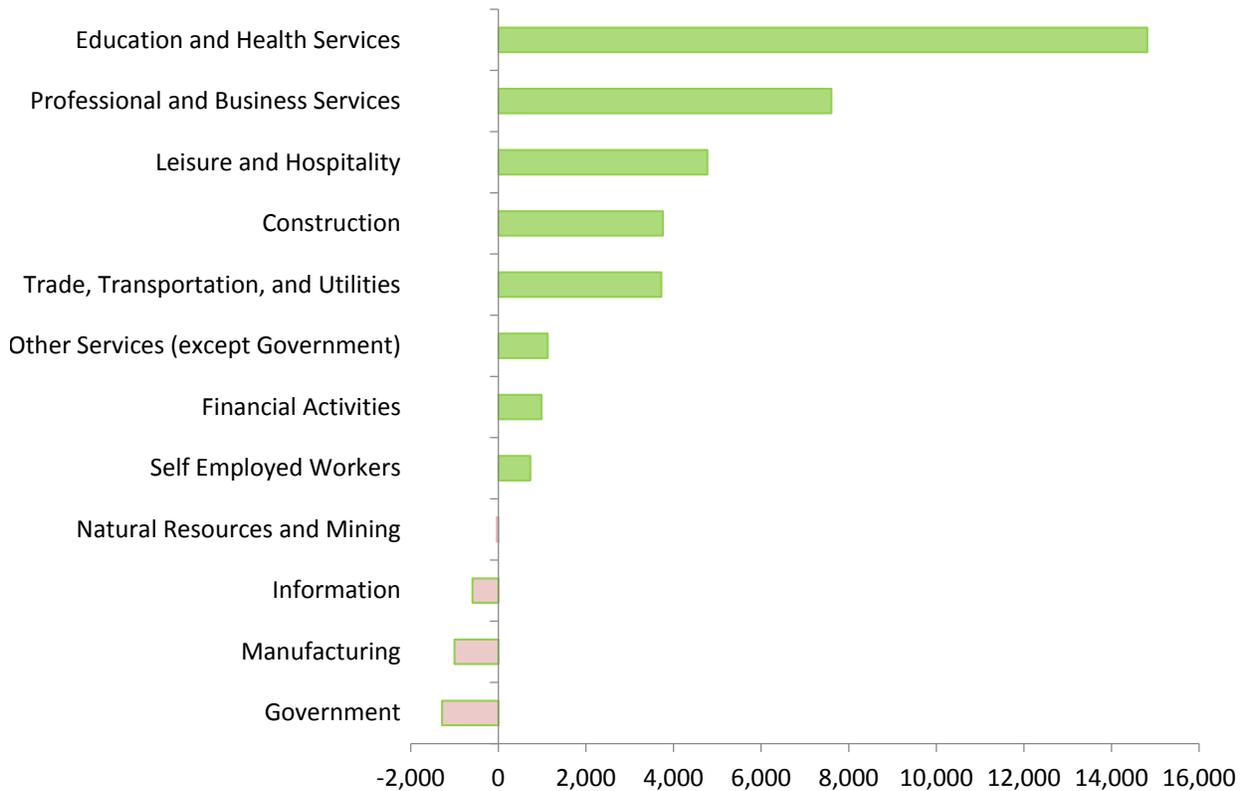
Sources: U.S. Census Bureau, Bureau of Labor Statistics and IHS Economics

# PROJECTIONS

## Industry

Pennsylvania’s education & health services, professional & business services, and leisure & hospitality sectors are anticipated to account for 79 percent of the total annual employment growth through 2024. The government, information, manufacturing, and natural resources and mining sectors are the only four sectors projected to lose jobs annually. Both the growing and shrinking sectors reflect continuing trends that are reflecting the dynamics of an aging population’s need for more health care; the gradual transition of the baby-boom generation out of the workforce and into an active retirement; technological change which has affected all industries, but has been more pronounced in industries such as publishing (excluding internet) in the information sector; and the continued transformation of the state’s economy from that of a goods producer to a service provider.

**PA Annual Employment Change by Industry Sector to 2024**



Source: Center for Workforce Information & Analysis

## Growing Industries

The list of growing industries is dominated by those found in the health care & social assistance sector. Added this year to the list of growing industries were: other general merchandise stores; residential intellectual & developmental disability, mental health, & substance abuse facilities; self-employed workers; traveler accommodation; and automobile dealers.

### **Top 25 Growing Industries in Pennsylvania through 2024, by Volume**

Industry	Annual Employment Growth
Restaurants and Other Eating Places	3,160
Individual and Family Services	2,730
Employment Services	1,800
Computer Systems Design and Related Services	1,490
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	1,470
Other General Merchandise Stores	1,400
General Medical and Surgical Hospitals	1,380
Home Health Care Services	1,370
Outpatient Care Centers	1,270
Colleges, Universities, and Professional Schools	1,190
Offices of Other Health Practitioners	1,140
Offices of Physicians	1,060
Management of Companies and Enterprises	890
Other Financial Investment Activities	890
Building Equipment Contractors	890
Specialty (except Psychiatric and Substance Abuse) Hospitals	850
Residential Intellectual & Developmental Disability, Mental Health, & Substance Abuse Facilities	810
Warehousing and Storage	790
Management, Scientific, and Technical Consulting Services	750
General Freight Trucking	740
Self-employed Workers	730
Utility System Construction	680
Traveler Accommodation	590
Automobile Dealers	550
Nursing Care Facilities (Skilled Nursing Facilities)	510

Source: Center for Workforce Information & Analysis

## Declining Industries

The list of industries projected to decline is dominated by those found in the retail trade sector. Some new industries to the list this year include clothing stores; local government, excluding education and hospitals; and business support services.

### **Top 25 Declining Industries in Pennsylvania through 2024, by Volume**

<b>Industry</b>	<b>Annual Employment Loss</b>
Department Stores	-890
Postal Service	-780
Newspaper, Periodical, Book, and Directory Publishers	-490
Clothing Stores	-480
Depository Credit Intermediation	-420
Wired Telecommunications Carriers	-370
Local Government, Excluding Education and Hospitals	-300
Office Supplies, Stationery, and Gift Stores	-270
Printing and Related Support Activities	-250
Federal Government, Excluding Post Office	-250
Cut and Sew Apparel Manufacturing	-160
Business Support Services	-160
Electronics and Appliance Stores	-140
Bakeries and Tortilla Manufacturing	-130
Insurance Carriers	-130
Religious Organizations	-120
Converted Paper Product Manufacturing	-120
Medical Equipment and Supplies Manufacturing	-120
Semiconductor and Other Electronic Component Manufacturing	-100
Metalworking Machinery Manufacturing	-90
Other Miscellaneous Manufacturing	-90
Other Residential Care Facilities	-90
Textile Furnishings Mills	-90
Communications Equipment Manufacturing	-90
Elementary and Secondary Schools	-90

Source: Center for Workforce Information & Analysis

## Emerging Industries

Pennsylvania has forecast a number of emerging industries through 2024. An emerging industry is defined here as having statewide employment of less than 30,000 and annual employment gains of at least 50. The emerging industries are spread throughout most industry sectors, with construction and health care and social assistance dominating the list.

### **Top 50 Emerging Industries in Pennsylvania through 2024**

Industry	Annual Employment Gain
Specialty (except Psychiatric and Substance Abuse) Hospitals	850
Utility System Construction	680
Other Specialty Trade Contractors	480
Residential Building Construction	460
Nonresidential Building Construction	420
Other Ambulatory Health Care Services	350
Other Professional, Scientific, and Technical Services	330
Foundation, Structure, and Building Exterior Contractors	330
Building Finishing Contractors	330
Architectural and Structural Metals Manufacturing	250
Waste Collection	240
Facilities Support Services	240
Other Schools and Instruction	210
Specialized Freight Trucking	200
Scientific Research and Development Services	190
Used Merchandise Stores	190
School and Employee Bus Transportation	180
Electronic Shopping and Mail Order Houses	180
Other Support Services	170
Highway, Street, and Bridge Construction	150
Sporting Goods, Hobby, and Musical Instrument Stores	140
Software Publishers	130
Lessors of Real Estate	120
Animal Slaughtering and Processing	120
Medical and Diagnostic Laboratories	120

Source: Center for Workforce Information & Analysis

## Top 50 Emerging Industries in Pennsylvania through 2024 (continued)

Industry	Annual Employment Gain
Commercial and Industrial Machinery and Equipment Rental and Leasing	120
Advertising, Public Relations, and Related Services	110
Activities Related to Real Estate	100
Educational Support Services	100
Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	90
Automotive Parts, Accessories, and Tire Stores	90
Other Miscellaneous Store Retailers	90
Other Personal Services	90
Miscellaneous Durable Goods Merchant Wholesalers	90
Other Information Services	90
Museums, Historical Sites, and Similar Institution	90
Grocery and Related Product Wholesalers	80
Scheduled Air Transportation	80
Amusement Parks and Arcades	80
Motion Picture and Video Industries	80
Support Activities for Road Transportation	80
Other Electrical Equipment and Component Manufacturing	70
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	70
Remediation and Other Waste Management Services	70
Freight Transportation Arrangement	70
Gambling Industries	60
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	60
Cement and Concrete Product Manufacturing	60
Machinery, Equipment, and Supplies Merchant Wholesalers	50
Other Food Manufacturing	50

Source: Center for Workforce Information & Analysis

### Occupations

Modest economic growth coupled with an aging workforce will create opportunities for job seekers in all major occupational groups. The greatest total opportunities among these groups will be in food preparation & serving related occupations; office & administrative support occupations; and sales & related occupations. Major occupational groups not already mentioned and having the best opportunities due to growth will be transportation & material

moving occupations; healthcare practitioners & technical occupations; and healthcare support occupations. Major occupational groups not already listed and having the best opportunities due to replacements (mainly those leaving due to retirement) will be; production occupations; education, training, & library occupations; and business & financial operations occupations. Seventy-eight percent of all job openings over this period will be due to replacement.

### Annual Openings by Major Occupation Group to 2024

Occupational Group	Annual Openings through 2024		
	Growth	Replacements	Total
Food Preparation and Serving Related Occupations	17,950	4,190	22,140
Office and Administrative Support Occupations	19,160	2,650	21,810
Sales and Related Occupations	18,680	1,620	20,300
Transportation and Material Moving Occupations	10,440	3,100	13,540
Healthcare Practitioners and Technical Occupations	8,390	4,560	12,950
Production Occupations	9,230	1,170	10,400
Education, Training, and Library Occupations	7,390	1,560	8,960
Business and Financial Operations Occupations	6,250	2,300	8,540
Personal Care and Service Occupations	5,660	2,850	8,510
Healthcare Support Occupations	4,690	3,400	8,090
Management Occupations	6,210	1,430	7,640
Installation, Maintenance, and Repair Occupations	5,660	1,750	7,410
Construction and Extraction Occupations	4,180	2,820	7,000
Building and Grounds Cleaning and Maintenance Occupations	4,380	1,350	5,730
Community and Social Service Occupations	3,080	1,400	4,470
Computer and Mathematical Occupations	2,250	1,870	4,120
Protective Service Occupations	2,810	440	3,250
Architecture and Engineering Occupations	2,340	450	2,780
Arts, Design, Entertainment, Sports, and Media Occupations	2,050	260	2,310
Life, Physical, and Social Science Occupations	1,460	410	1,860
Farming, Fishing, and Forestry Occupations	1,140	50	1,190
Legal Occupations	840	260	1,110

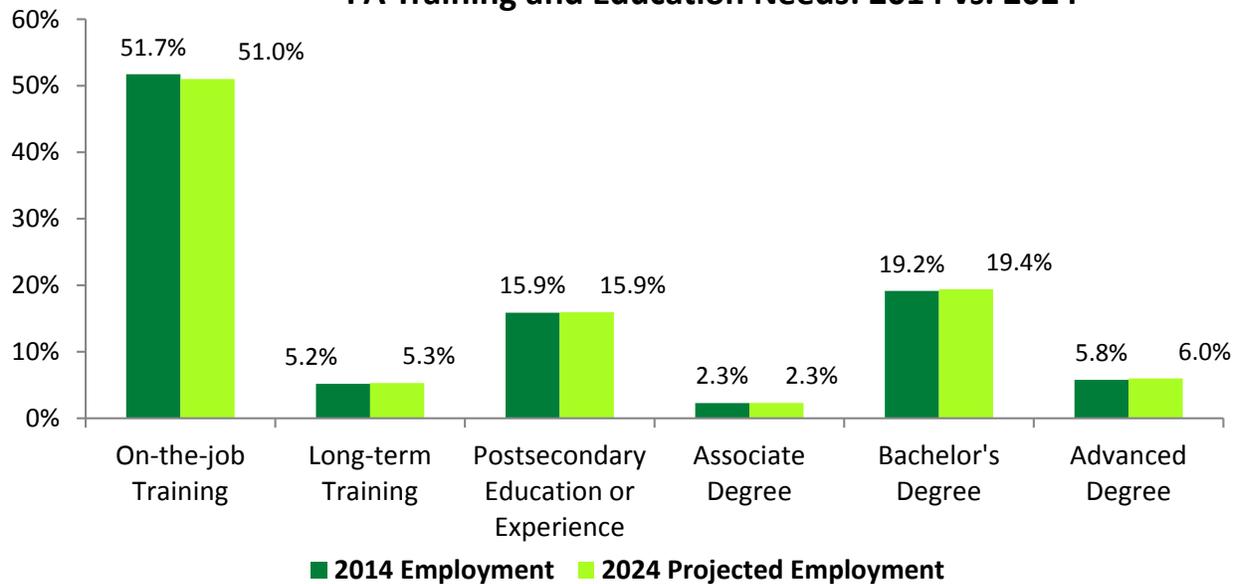
Source: Center for Workforce Information & Analysis

Total openings equal growth plus replacements. Totals may not sum due to rounding.

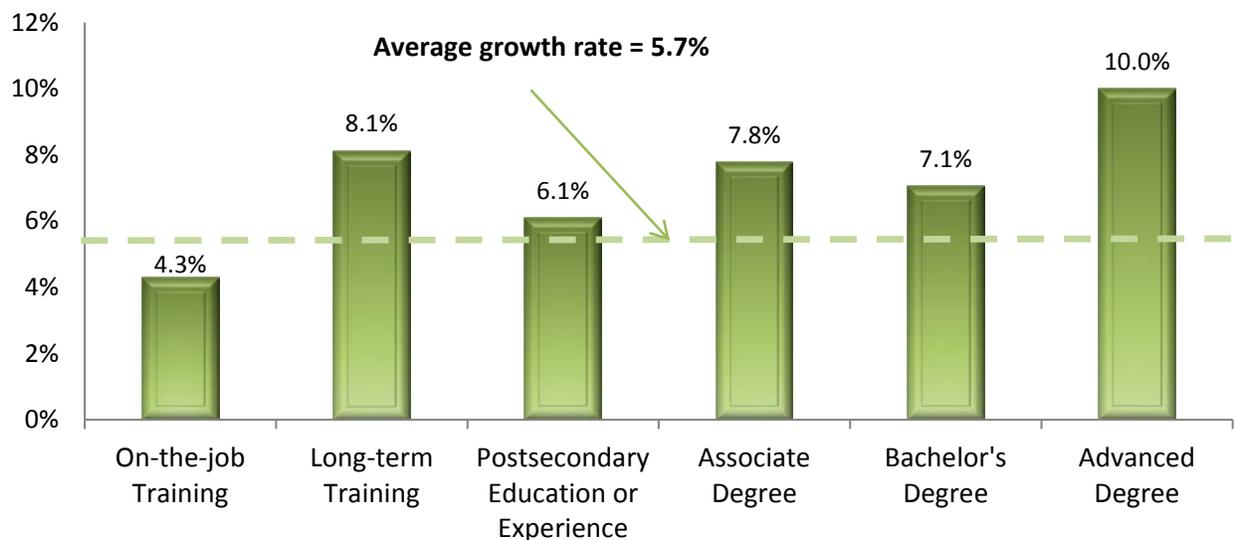
## Educational and Training Needs

Over the 10-year period from 2014 to 2024, training and educational requirements of jobs will shift away from short-term and moderate-term on-the-job training towards long-term training and more advanced formal education. Jobs collectively requiring any of the training categories are projected to grow by 5.7 percent and jobs requiring each of the training categories individually, likewise will grow. While jobs requiring on-the-job training (the largest group) are projected to grow by only 4.3 percent, jobs requiring an advanced degree are projected to grow by 10.0 percent and those requiring long-term training by 8.1 percent.

### PA Training and Education Needs: 2014 vs. 2024



### PA 10 Year Growth Rate in Training and Education Needs



Source: Center for Workforce Information & Analysis  
Totals may not sum due to rounding.

## Emerging Occupations

Pennsylvania has forecast a number of emerging occupations through 2024. An emerging occupation is defined here as having statewide employment less than 10,000 and projected to have at least 100 annual openings through 2024. The top 50 emerging occupations, ranked in descending order from the highest projected ten-year percentage change, are depicted below. The emerging occupations are concentrated in the following major groups: healthcare practitioners & technical occupations; community & social service occupations; healthcare support occupations; and production occupations.

### Top 50 Emerging Occupations in Pennsylvania Through 2024

Occupational Title	10-Year Change	Average Annual Openings		
		Growth	Replacements	Total
Occupational Therapy Assistants	33%	80	70	160
Physical Therapist Assistants	29%	140	140	280
Nurse Practitioners	28%	110	90	210
Physical Therapist Aides	28%	60	70	130
Operations Research Analysts	28%	80	50	130
Web Developers	24%	110	60	170
Physician Assistants	22%	110	110	220
Occupational Therapists	21%	140	120	260
Electrical Power-Line Installers and Repairers	21%	80	150	230
CNC Machine Tool Operators, Metal and Plastic	21%	180	260	440
Cardiovascular Technologists and Technicians	20%	60	60	120
Veterinary Technologists and Technicians	18%	80	40	120
Brickmasons and Blockmasons	18%	70	30	100
Substance Abuse and Behavioral Disorder Counselors	18%	160	180	340
Speech-Language Pathologists	18%	90	130	220
Health Specialties Teachers, Postsecondary	18%	130	130	260
Healthcare Social Workers	17%	140	200	340
Nursing Instructors and Teachers, Postsecondary	16%	50	60	110
Clinical, Counseling, and School Psychologists	16%	120	160	280
Security and Fire Alarm Systems Installers	16%	50	80	120
Refuse and Recyclable Material Collectors	16%	90	140	230
Cement Masons and Concrete Finishers	15%	80	70	150
Agricultural Equipment Operators	14%	40	70	110
Opticians, Dispensing	14%	50	90	130
Phlebotomists	14%	80	110	190

Source: Center for Workforce Information & Analysis  
Total openings equals growth plus replacements. Totals may not sum due to rounding.

## Top 50 Emerging Occupations in Pennsylvania Through 2024 (continued)

Occupational Title	10-Year Change	Average Annual Openings		
		Growth	Replacements	Total
Biological Science Teachers, Postsecondary	13%	50	70	120
Hotel, Motel, and Resort Desk Clerks	13%	110	430	530
Taxi Drivers and Chauffeurs	12%	130	190	310
Rehabilitation Counselors	12%	100	160	260
Medical Records and Health Information Technicians	12%	100	180	280
Medical and Clinical Laboratory Technicians	12%	120	230	350
Nonfarm Animal Caretakers	12%	90	150	240
Roofers	12%	60	70	130
Respiratory Therapists	12%	60	120	190
Social and Community Service Managers	12%	80	170	250
Environmental Science and Protection Technicians	12%	20	80	100
Environmental Engineers	12%	40	90	130
Maintenance Workers, Machinery	11%	50	80	130
Medical and Clinical Laboratory Technologists	11%	100	210	300
Chefs and Head Cooks	10%	50	80	130
Cost Estimators	10%	100	280	390
Database Administrators	10%	60	120	180
Human Resources Managers	10%	40	100	140
Painters, Construction and Maintenance	10%	90	140	240
Automotive and Watercraft Service Attendants	10%	20	90	120
Residential Advisors	10%	80	240	320
Cargo and Freight Agents	10%	30	100	140
Environmental Scientists and Specialists	10%	30	90	120
Paralegals and Legal Assistants	9%	90	220	310
Art, Drama, and Music Teachers, Postsecondary	9%	50	90	140

Source: Center for Workforce Information & Analysis

Total openings equal growth plus replacements. Totals may not sum due to rounding.

## CONCLUSION

The Great Recession officially ended in June of 2009, but labor markets continued to deteriorate into 2010. The job recovery period that ensued was sluggish and meager, and it was not until 2014 that Pennsylvania surpassed its previous jobs high and entered into a jobs expansion period. This expansion continued in 2015 as virtually all of Pennsylvania's labor market indicators in 2015 showed a true strengthening of the labor market. Pennsylvania's average employment was 6,094,000 in 2015, an increase of 78,000 jobs from 2014 or 1.3 percent. In 2015, the average unemployment rate was 5.1 percent, a decrease of 0.8 percentage points from 2014 and was 0.2 percentage points lower than the U.S. average rate of 5.3 percent. Pennsylvania's total nonfarm jobs were at 5,868,100 in December 2015, up 44,400 (0.8 percent) from one year before and up 303,700 since the most recent jobs low in February 2010. The December 2015 jobs count set a new high (the fifth month of 2015 to do so) surpassing the previous high in October by 6,100. Other signs of an improving labor market were decreases in long-term unemployment, initial and continuing claims, and U6 (the broadest measure of labor underutilization), as well as increases in the labor force, labor force participation rate, and the nominal and real wage rates. The nation's labor market improvement over this period was somewhat better than Pennsylvania's. Further, not all sectors have improved and the overall improvement is relatively modest. In addition, this is occurring in an environment where Pennsylvania's economy continues to adapt and transform itself from goods-producing to service-providing industries. The leading economic index also projects continued growth in the economy going forward, which may result in further improvement in the labor market. However, there are potential headwinds that could affect the national economy, including international developments and (particularly monetary) policy changes which could have a detrimental effect on Pennsylvania's economy and labor market.

The longer term trends indicate that workers from the baby-boom generation are moving into their 60s and will be retiring in large numbers over the coming years. They will take key skills with them. Beginning around 2015, Pennsylvania's total working age population (age 25 to 64) is projected to decline annually through 2046. Far fewer youth will be available to enter the labor market, forcing greater efficiencies and competition for key skills. Even with an influx of outside labor and higher labor force participation rates, which are expected, there probably will be worker shortages in the coming years and some areas, industries, and occupations will be affected sooner and harder than others.

Jobs in most major occupational groups will be plentiful for current and future labor market participants. If another downturn can be averted, modest economic growth coupled with an aging workforce will create opportunities for anyone seeking a job. Higher-paying jobs will go to those achieving more than a high school education.

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