

State Economic Comparison

SUMMARY

The U.S. Bureau of Economic Analysis recently released new estimates of Gross Domestic Product for states. Real Gross Domestic Product (GDP) measures the total output or size of state economies. The metric excludes inflation and is useful to compare the performance of state economies over time. The data also allow analysts to identify the industries that are expanding or contracting across states.

In addition to Real GDP, analysts frequently use two other metrics to quantify and compare state economic performance: Personal Income and Payroll Employment. Personal Income includes all types of income that residents might receive such as wages, business income, rent, interest and dividends. Payroll Employment includes all part and full-time jobs that pay a wage or salary.¹

This research brief uses Real GDP, Personal Income and Payroll Employment to compare economic performance in Pennsylvania to four adjacent states and the U.S. over the past decade.² For the purpose of these comparisons, the Real GDP and Personal Income metrics are computed on a per capita basis. Therefore, the metrics control for the disparate population growth across states and the U.S. In general, stronger population growth will likely be associated with economies that exhibit greater economic expansion.

Some highlights from the comparison are as follows:

- Pennsylvania **Real GDP** (per capita basis) expanded at an average rate of 0.7 percent per annum. The Pennsylvania economy expanded at a faster pace than some states (Ohio and New Jersey), less than others (Maryland and New York), and the same as the national average. The data reveal a strong expansion of the healthcare and professional service sectors.
- Pennsylvania **Personal Income** (per capita basis, includes inflation) expanded at an average rate of 3.3 percent per annum. That rate tied or surpassed the U.S. and all comparison states, except New

York. The data show strong growth in federal transfers such as Social Security and Medicare benefits.

- Pennsylvania Non-Farm **Payroll Employment** grew by a cumulative rate of 2.3 percent (129,000 jobs) over the past decade, surpassing some states (Ohio and New Jersey) but trailing others (New York and Maryland) and the U.S.

**State Performance Metrics - 2003 to 2013
Average Annual or Cumulative Growth Rates**

	Real GDP¹	Personal Income¹	Payroll Employment²
Pennsylvania	0.7%	3.3%	2.3%
Ohio	0.5	2.9	-2.7
New York	1.4	3.9	6.1
New Jersey	0.4	3.1	-1.0
Maryland	1.0	3.3	4.4
United States	0.7	3.2	4.6

¹ Average annual growth rates, per capita basis.

² Cumulative growth rates.

The subsequent pages provide further detail on these three metrics across the five states and the U.S. Industry definitions can be found on the final page of this research brief along with the data sources used to generate all tables and charts.

REAL GROSS DOMESTIC PRODUCT

Real Gross Domestic Product (GDP) measures the total value of production for a state or national economy. The U.S. Bureau of Economic Analysis disaggregates GDP into 14 broad sectors. This breakout allows analysts to identify the sectors that have expanded or contracted based on the amount of goods or services produced. For 2003 to 2013, new data reveal the following trends across the five states and the U.S. (top table, per capita basis):

- The Pennsylvania economy expanded at an average rate of 0.7 percent per annum.

- The construction and wholesale-retail sectors contracted nationally and across most states.
- The manufacturing sector expanded nationally (0.8 percent per annum), but contracted in most states.
- The information sector recorded a robust expansion in Pennsylvania (6.6 percent) due to telecommunications and broadcasting activity.
- Despite the housing bust, the real estate sector recorded a strong expansion in most states.

Real GDP - Average Annual Growth Rate - 2003 to 2013

	<u>PA</u>	<u>OH</u>	<u>NY</u>	<u>NI</u>	<u>MD</u>	<u>U.S.</u>
Construction	-3.3%	-3.7%	-0.9%	-3.1%	-3.1%	-3.3%
Manufacturing	-2.1	-0.1	-0.8	-3.1	1.1	0.8
Wholesale-Retail	-0.2	-0.4	0.6	-0.8	-0.9	-0.2
Information	6.6	1.2	4.6	4.9	5.5	3.4
Finance-Insurance	0.9	2.2	1.9	1.7	0.1	0.5
Real Estate	2.0	0.9	2.3	1.5	2.0	1.4
Professional Services	2.5	1.6	1.5	1.6	2.9	1.3
Health-Social	1.9	1.8	1.6	1.6	1.8	1.6
Leisure-Hospitality	1.4	0.0	1.9	-0.3	-0.3	0.2
Federal Gov't	-0.7	-0.4	-0.1	-1.8	1.6	-0.1
State-Local Gov't	-0.3	-0.7	-0.1	-0.4	-0.4	-0.6
All Other	<u>1.5</u>	<u>1.6</u>	<u>1.1</u>	<u>1.1</u>	<u>0.8</u>	<u>1.6</u>
Total	0.7	0.5	1.4	0.4	1.0	0.7

Industry Share of the Economy and Decade Change - 2013

	<u>PA</u>		<u>OH</u>		<u>NY</u>		<u>NI</u>		<u>MD</u>		<u>U.S.</u>	
	Share GDP	Decade Change	Share GDP	Decade Change	Share GDP	Decade Change	Share GDP	Decade Change	Share GDP	Decade Change	Share GDP	Decade Change
Construction	3.4	• -1.7	3.1	• -1.7	3.2	• -0.8	3.4	• -1.4	4.4	• -2.3	3.7	• -1.8
Manufacturing	12.0	• -4.0	17.5	• -1.0	5.2	• -1.3	8.2	• -3.4	5.9	• +0.1	12.5	• +0.2
Wholesale-Ret.	11.2	• -1.1	12.0	• -1.1	9.9	• -0.8	13.4	• -1.6	9.4	• -2.0	11.6	• -1.1
Information	5.8	• +2.5	2.6	• +0.2	9.5	• +2.5	5.8	• +2.0	5.6	• +2.0	5.2	• +1.2
Fin.-Insurance	6.3	• +0.1	8.2	• +1.3	14.6	• +0.7	6.8	• +0.8	4.6	• -0.4	6.5	• -0.1
Real Estate	12.7	• +1.4	11.5	• +0.5	14.3	• +1.2	17.6	• +1.9	16.3	• +1.5	13.3	• +0.9
Prof. Service	10.8	• +1.7	9.0	• +0.9	10.6	• +0.1	12.1	• +1.4	11.4	• +1.9	9.2	• +0.5
Health-Social	9.6	• +1.0	8.7	• +1.0	7.3	• +0.2	7.6	• +0.9	7.5	• +0.5	7.3	• +0.7
Leisure-Hosp.	3.5	• +0.2	3.2	• -0.2	4.1	• +0.2	3.1	• -0.2	3.4	• -0.5	3.8	• -0.2
Federal Gov't	2.5	• -0.4	2.5	• -0.2	1.8	• -0.3	1.7	• -0.4	12.5	• +0.7	3.7	• -0.3
State-Local Gov't	8.0	• -0.9	8.9	• -1.1	9.6	• -1.5	9.1	• -0.8	8.2	• -1.2	8.9	• -1.2
All Other	14.3	• +1.1	12.7	• +1.3	9.9	• -0.3	11.4	• +0.8	10.8	• -0.3	14.4	• +1.3

- The professional services sector also recorded a strong expansion. A notable exception is the legal services subsector (not shown), which contracted across all states and the U.S.
- For Pennsylvania, the leisure-hospitality sector (1.4 percent) expanded due, in part, to the legalization of casino gaming.
- The state-local government sector contracted in the U.S. and all states.
- The all other category includes the mining sector, which more than doubled in output for Pennsylvania (10.5 percent per annum) during the decade. For 2013, the mining sector comprised 2.1 percent of the total value of Pennsylvania economic output.

The bottom table from the previous page shows each sector’s share of the respective state or national economy in 2013, and the change in that share over the past decade. For 2013:

- Manufacturing comprised 12.0 percent of Pennsylvania economic output, 4.0 percentage points lower than a decade ago.
- Measured by the value of output, the real estate sector is now Pennsylvania’s single largest industry (12.7 percent of the economy).
- The state-local government sector contracted across all five states and the U.S. Measured by the value of output, Pennsylvania has the smallest state-local government sector (8.0 percent of the economy).

Real Gross Domestic Product Average Annual Growth Rates¹			
	Boom <u>2003-07</u>	Bust <u>2007-09</u>	Recovery <u>2009-13</u>
Pennsylvania	1.3%	-1.3%	1.2%
Ohio	0.5	-3.4	2.4
New York	2.7	-0.8	1.1
New Jersey	1.7	-2.6	0.6
Maryland	2.3	-0.4	0.6
United States	1.7	-2.6	1.3

¹ Per capita basis.

Due to the different industry composition of state and national economies, the response of those economies to recessions and recoveries will vary. The previous decade can be subdivided into three general time periods: the housing and financial boom (2003-2007), the Great Recession (2007-2009) and a modest economic recovery (2009-2013).³ The Real GDP data show that (see table below):

- The New York economy recorded a strong expansion (2.7 percent) prior to the recession due to the financial and real estate sectors.
- Pennsylvania economic fluctuations were relatively moderate during all three phases.
- Only Ohio has enjoyed a robust recovery, and the recoveries for Maryland and New Jersey have been weak.



Technical Notes

Gross Domestic Product represents (1) the total market value of output produced by an economy or (2) the price of all goods and services purchased or used by final consumers. Employee compensation comprises a large portion of state or national GDP because those costs are embedded in prices. For Pennsylvania, employee compensation (includes health, pension and other benefit plans) comprised 56.1 percent of state GDP (2013). For the U.S., the share was 53.0 percent. Other items that comprise GDP include business profits, interest, rent, the depreciation of capital and certain business taxes.

For all states, real estate is one of the largest sectors of the economy. A major factor motivating that result is an imputation made by the U.S. Bureau of Economic Analysis for the net rental value of all occupied homes. The amount is equal to the implicit rental value of homes, less expenses for maintenance, mortgage interest and property tax. In effect, homeowners rent the home to themselves and are treated as a small business that can make a profit or loss.

For the state-local government sector, employee compensation comprises nearly all output value for the sector. For Pennsylvania, employee compensation comprised 90.0 percent of the sector’s output. For the U.S., the figure was 86.5 percent.

PERSONAL INCOME

The second metric used to compare state economic performance is Personal Income, measured on a per capita basis. Personal Income includes five types of income: (1) net wages (wages less payroll taxes), (2) business income (sole proprietorships and partnerships), (3) property income (interest, rent and dividends), (4) government transfers (Social Security, Medicare and Medicaid) and (5) wage supplements (employer contributions for pensions and health and life insurance plans). The growth rates in the table below include inflation because the U.S. Bureau of Economic Analysis does not publish a timely series that excludes it.

For 2003 to 2013, the data reveal the following trends for the five states and the U.S. (top table):

- For Pennsylvania, average net wage growth (2.8 percent per annum) surpassed the U.S. and all states except New York.
- For all five states and the U.S., business income growth surpassed net wage growth.
- For Pennsylvania, property income growth (3.3 percent) was relatively weak due to minor gains in interest income.

- Government transfers expanded at a faster rate than the other income sources. Social Security accounts for approximately one-third of government transfers, Medicare benefits for one-quarter, and Medicaid benefits roughly one-fifth, depending upon the state.

Across all five states and the U.S., net wages is the largest component of Personal Income, but that income source is becoming less important. The data show that (bottom table):

- For 2013, net wages comprised 45.8 percent of Pennsylvania Personal Income. That share is 2.4 percentage points lower than a decade earlier.
- For Pennsylvania, the net wages share of Personal Income is relatively low due to the high proportion of older residents.
- For most states and the U.S., property income is becoming more important, as a greater share of Personal Income is generated from the holding of assets such as stocks, bonds and homes.
- Government transfers comprise roughly one-fifth of Personal Income for Pennsylvania and Ohio. This income source expanded significantly during the past decade.

Personal Income - Average Annual Growth Rate - 2003 to 2013

	<u>PA</u>	<u>OH</u>	<u>NY</u>	<u>NI</u>	<u>MD</u>	<u>U.S.</u>
Net Wages	2.8%	2.0%	3.1%	2.4%	2.4%	2.4%
Business Income	3.3	4.8	4.3	3.9	4.2	3.2
Property Income	3.3	2.7	5.4	3.5	3.9	3.7
Gov't Transfers	5.0	5.3	4.2	5.0	5.5	5.3
Wage Supplements	<u>2.8</u>	<u>2.1</u>	<u>3.9</u>	<u>2.7</u>	<u>3.5</u>	<u>2.6</u>
Total	3.3	2.9	3.9	3.1	3.3	3.2

Share of Total Personal Income and Decade Change - 2013

	<u>PA</u>	<u>OH</u>	<u>NY</u>	<u>NI</u>	<u>MD</u>	<u>U.S.</u>
	Share Income	Share Income	Share Income	Share Income	Share Income	Share Income
	Decade Change	Decade Change	Decade Change	Decade Change	Decade Change	Decade Change
Net Wages	45.8	47.3	44.8	51.3	52.0	46.4
	• -2.4	• -4.4	• -3.5	• -3.4	• -4.4	• -3.6
Business Income	8.9	8.6	9.8	8.7	7.8	9.5
	• 0.0	• +1.4	• +0.4	• +0.7	• +0.6	• +0.1
Property Income	16.8	15.2	18.2	18.0	19.2	18.3
	• 0.0	• -0.4	• +2.5	• +0.7	• +1.1	• +0.8
Gov't Transfers	19.5	20.2	17.7	14.4	13.1	17.3
	• +2.9	• +4.1	• +0.6	• +2.4	• +2.5	• +3.1
Wage Supp.	8.9	8.9	9.6	7.7	7.9	8.4
	• -0.5	• -0.7	• 0.0	• -0.3	• +0.2	• -0.5

The figure below displays the contributions to average annual Personal Income growth by income source during the previous decade. For Pennsylvania, net wages comprised the largest share (1.4 percentage points) of the total 3.3 percent average per capita growth rate. Government transfers was the next largest contributor (0.8 percentage points), followed by property income (0.6 percentage points), wage supplements and business income (0.3 percentage points each). This pattern generally mimics those for other states and the U.S.

As noted, Personal Income is not measured on a real basis and includes inflationary gains. During the past decade, the Philadelphia-Wilmington-Atlantic City Consumer Price Index (referred to as PA CPI-U in the graph below) increased at an average rate of 2.5 percent per annum. The growth rate differential between Personal Income and inflation suggests real income gains that improved average living conditions during the previous decade. However, that outcome does not provide insight regarding the distribution of those gains. Moreover, not all types of income included in Personal Income can be spent, such as imputed rental income and many government transfers.



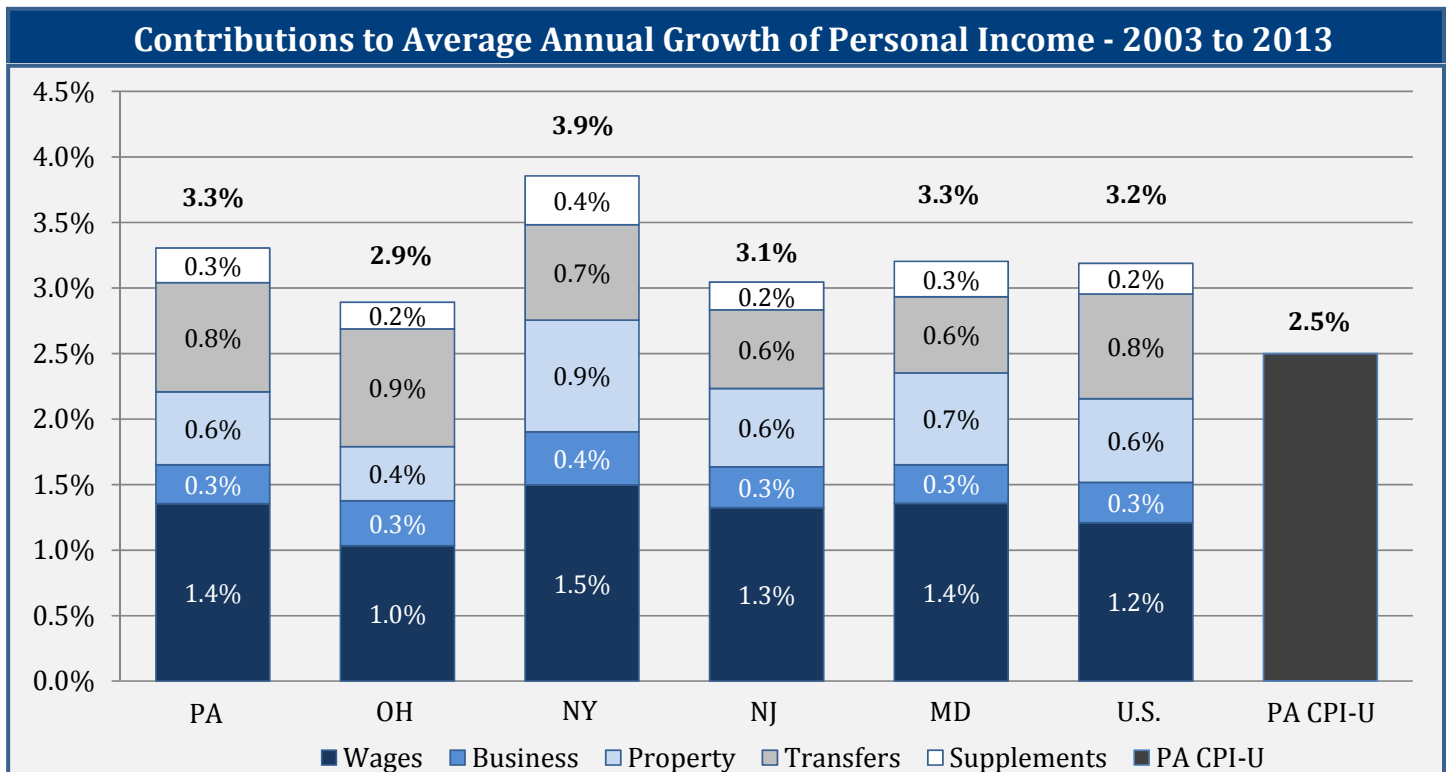
Technical Notes

The income earned by independent contractors is included with business income, not wage income. The U.S. Bureau of Economic Analysis treats independent contractors as small businesses.

Government transfers include Food Stamps or Supplemental Nutrition Assistance Program (SNAP) benefits. During the past decade, those benefits increased dramatically for the U.S. (12.5 percent per annum growth, per capita basis) and Pennsylvania (13.0 percent). Medicare benefits also expanded rapidly for the U.S. (7.0 percent) and Pennsylvania (6.5 percent).

Due in part to record corporate profits, dividend income grew considerably in the U.S. (5.0 percent) and Pennsylvania (4.8 percent). Dividend income includes distributions made by pass through entities known as S corporations to their shareholders.

Personal Income excludes all types of capital gains. Most taxes are not deducted, except for payroll taxes (deducted from wages) and property taxes (deducted from the imputed rental income portion of property income).



NON-FARM PAYROLL EMPLOYMENT

The third economic performance metric is Non-Farm Payroll Employment. Payroll Employment includes all full and part-time jobs, but does not include independent contractors or individuals who serve as sole proprietors or most partners who serve in a partnership. Unlike Real GDP and Personal Income, the metric is not computed on a per capita basis. The growth rates represent the cumulative growth of employment over the past decade based on average employment levels for 2003 and 2013.

During the past decade, Pennsylvania Payroll

Employment increased by roughly 129,000 full and part-time jobs, a cumulative gain of 2.3 percent. The first table below lists sectors in ascending order based on the change in payroll jobs for Pennsylvania. During the past decade, the employment data show that:

- Manufacturing and information sector employment contracted in the five states and U.S.
- Total government employment contracted except in Maryland and the U.S. The U.S. recorded an expansion at both the federal and state-local government levels.

Change in Non-Farm Payroll Employment (000's) - 2003 to 2013

	<u>PA</u>	<u>OH</u>	<u>NY</u>	<u>NI</u>	<u>MD</u>	<u>U.S.</u>
Manufacturing	-149	-181	-157	-107	-39	-2,504
Information	-32	-22	-18	-27	-12	-504
All Government	-31	-44	-44	-7	42	278
Wholesale-Retail	-31	-70	54	-35	-14	294
Finance-Real Estate	-26	-28	-15	-22	-11	-198
Construction	-20	-46	5	-24	-20	-906
Education	17	28	107	14	14	653
Leisure-Hospitality	63	28	188	32	39	2,070
All Other	66	9	76	12	4	1,293
Professional Services	110	63	121	44	41	1,930
Health-Social	<u>163</u>	<u>120</u>	<u>199</u>	<u>80</u>	<u>66</u>	<u>3,642</u>
Total	129	-144	516	-42	111	6,048

Industry Share of Total Non-Farm Payroll Employment and Decade Growth - 2013

	<u>PA</u>		<u>OH</u>		<u>NY</u>		<u>NI</u>		<u>MD</u>		<u>U.S.</u>	
	Share	Decade Growth	Share	Decade Growth	Share	Decade Growth	Share	Decade Growth	Share	Decade Growth	Share	Decade Growth
Manufacturing	9.8	• -20.9	12.6	• -21.5	5.1	• -25.6	6.2	• -30.6	4.1	• -26.9	8.8	• -17.3
Information	1.5	• -26.8	1.4	• -22.4	2.9	• -6.3	1.9	• -26.5	1.5	• -22.9	2.0	• -15.8
All Government	12.5	• -4.2	14.4	• -5.5	16.2	• -2.9	15.6	• -1.1	19.4	• +9.1	16.0	• +1.3
Wholesale-Ret.	14.9	• -3.5	15.0	• -8.2	14.2	• +4.4	16.8	• -5.1	14.3	• -3.7	15.3	• +1.4
Fin.-Real Estate	5.4	• -7.8	5.4	• -9.1	7.6	• -2.1	6.5	• -7.9	5.6	• -6.7	5.8	• -2.5
Construction	3.9	• -8.2	3.5	• -20.0	3.6	• +1.5	3.5	• -14.9	5.7	• -12.2	4.3	• -13.5
Education	3.9	• +8.5	2.2	• +31.7	4.9	• +31.9	2.5	• +16.6	2.9	• +23.2	2.5	• +24.2
Leisure-Hosp.	9.3	• +13.3	9.8	• +5.7	9.4	• +29.0	9.0	• +9.8	9.8	• +17.9	10.4	• +17.0
All Other	14.4	• +8.7	13.9	• +1.3	12.4	• +7.4	15.2	• +2.0	13.4	• +1.2	14.5	• +7.0
Prof. Services	8.0	• +31.5	7.2	• +19.9	8.4	• +19.1	9.3	• +13.4	10.1	• +18.7	7.5	• +23.3
Health-Social	16.3	• +21.1	14.5	• +18.7	15.2	• +17.3	13.6	• +17.6	13.3	• +23.9	13.0	• +25.8
Total	100.0	• +2.3	100.0	• -2.7	100.0	• +6.1	100.0	• -1.0	100.0	• +4.4	100.0	• +4.6

- Three sectors drove most employment gains across the states: leisure-hospitality, professional services and healthcare-social services.

The second table lists each sector's share of total employment in 2013, and the percentage change in the sector's number of payroll jobs during the previous decade. Based on average annual employment data:

- The healthcare-social service sector (16.3 percent of Payroll Employment) is the largest employer in Pennsylvania, followed by the wholesale-retail (14.9 percent) and government (12.5 percent) sectors.
- During the previous decade, the Pennsylvania healthcare-social service (21.1 percent), professional services (31.5 percent) and leisure-hospitality (13.3 percent) sectors recorded strong employment gains.
- Manufacturing (-20.9 percent) and information (-26.8 percent) sector employment contracted significantly in Pennsylvania and all other states.

The cumulative employment gains or losses from the previous page do not control for population gains. States with population gains will likely also exhibit stronger economic and employment growth. The table below lists population growth for individuals who are age 20 to 64, or prime working age. Other columns list the ratio of payroll jobs to residents age 20 to 64 for 2003 and 2013, and the decade change in that ratio. Many analysts view the employment-to-population ratio as a better metric to gauge job creation and

performance compared to the unemployment rate because exits from the labor force will reduce the unemployment rate but are not always a positive outcome for state and national economies.⁴ When population growth is also factored into the employment comparison:

- Pennsylvania's relative job creation improves, as the employment-to-population ratio declines by a smaller percentage than the U.S. and most other comparison states.
- Only New York records an increase in the ratio as payroll employment growth exceeded population growth for those age 20 to 64.



Technical Notes

National data suggest that the healthcare, wholesale-retail and leisure-hospitality sectors employ a disproportionate share of part-time workers, thereby overstating the true employment share of those sectors.

Although not itemized separately, Pennsylvania natural resource and mining sector employment more than doubled (100.7 percent, 18,000 payroll jobs) during the past decade.

The Non-Farm Payroll Employment data do not include individuals employed in the agricultural, forestry and fishing sector. For 2013, the data show there were roughly 35,500 individuals employed in that sector in Pennsylvania and employment increased by 9,000 payroll jobs during the past decade.

Employment-to-Population Ratio - 2003 vs. 2013					
	Employment <u>Growth</u>	Population <u>Growth</u> ¹	<u>Employment/Population Ratio</u> ²		
			<u>2003</u>	<u>2013</u>	<u>Change</u>
Pennsylvania	2.3%	4.9%	77.5%	75.6%	-1.9%
Ohio	-2.7	1.5	80.0	76.7	-3.3
New York	6.1	4.3	72.8	74.1	+1.3
New Jersey	-1.0	4.2	77.1	73.3	-3.9
Maryland	4.4	8.3	74.2	71.5	-2.6
United States	4.6	9.5	75.4	72.1	-3.3

¹ Residents age 20 to 64 only.
² Payroll Employment divided by residents age 20 to 64.

Endnotes

1. The Payroll Employment data are based on business location, not state of residence.
2. The analysis excludes Delaware and West Virginia because those state economies are roughly one-tenth the size of Pennsylvania.
3. These discrete time periods may not correspond to the exact peak and trough of economic activity for each state and the nation.
4. The U.S. Bureau of Labor Statistics (BLS) publishes monthly and annual employment-to-population ratios for the U.S. and all states. That ratio differs from the ratio used for this research brief in three major respects. First, the BLS ratio is based on survey data from the Current Population Survey. Second, the employment figure includes self-employed individuals in addition to payroll jobs. Third, all individuals age 65 and older are included in the population measure. However, as noted by a recent working paper by the Federal Reserve Bank of New York, the inclusion of residents age 65 and older may yield misleading trends due to the large number of baby boomers who are approaching, or have reached, retirement age. That structural trend will depress the employment-to-population ratio, regardless of economic performance.

Definitions

- The *leisure and hospitality sector* includes arts, entertainment, recreation, amusement, accommodation, food service and drinking establishments.
- The *professional services sector* includes scientific, technical, legal, computer design and management services.
- For Real GDP, the *all other sector* includes agriculture-forestry-fishing, natural resources-mining, utilities, transportation, administration support and waste remediation, education and other miscellaneous services.
- The *education sector* includes all post-secondary institutions, private schools, technical and other instructional establishments. All public school employees are included in the state-local government sector.

Data Sources

- Gross State Product and Personal Income data are from the U.S. Bureau of Economic Analysis and may be found at <http://www.bea.gov/regional/index.htm>.
- Payroll Employment data are from the U.S. Bureau of Labor Statistics and may be found at <http://www.bls.gov/sae/data.htm>.
- Population data are from the U.S. Census Bureau and may be found at <http://www.census.gov/popest/>.

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