



THE PERFORMANCE OF THE ARIZONA ECONOMY, PARTICULARLY DURING THE CURRENT CYCLE

October 2016

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**A Report from the Productivity and Prosperity Project (P3),
Supported by the Office of the University Economist**

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SUMMARY

While it is valid to compare Arizona's performance to other states and to the national average, economists generally prefer to compare labor market areas — which essentially equate to metropolitan areas. The Phoenix metro area (Maricopa and Pinal counties) accounts for two-thirds of the state's population and more than 70 percent of the economic activity. Metro Tucson (Pima County) is home to 15 percent of the state's residents. Five other metro areas combined account for 13 percent of the state's population; only 5 percent of Arizona's residents live in nonmetropolitan areas.

This report examines economic performance in Arizona and in these four subregions of the state. Performance is evaluated by various indicators organized into three categories: productivity (measured per worker, such as per worker earnings), prosperity (mostly measured on a per person basis, such as per capita personal income), and aggregate growth (such as employment and gross domestic product). Arizona is compared to the national average; the state's metropolitan areas are compared to the national metro average; and the state's nonmetro area is compared to the U.S. nonmetro average.

Productivity and Prosperity Levels in Arizona

Relative to the national average, Arizona's prosperity, and productivity to a lesser extent, has declined since the early 1970s. At that time, Arizona was at the national average on per worker measures and only a little below the national average on per capita measures.

In 2015, after adjusting for the difference in the cost of living between Arizona and the nation, the average wage of wage and salary employees in Arizona was 4.7 percent less than the national average. This below-average figure results from the occupational and industrial job mixes in Arizona being tilted to lower-wage jobs and from the apparent willingness of workers in Arizona to accept slightly lower cost-of-living-adjusted wages, presumably due to perceived nonmonetary advantages to living in the state.

The state's shortfall from the national average is larger on broader per employee indicators. Arizona's employees are further below average on benefits than on wages, with cost-of-living-adjusted total compensation per employee 5.9 percent below average. In contrast, the adjusted average income of proprietors is 30.5 percent below the national average. Including both employees and proprietors, the adjusted per worker earnings figure was 9.1 percent below average in 2015. Adjusted per worker gross domestic product (GDP) was 9.2 percent below average.

In addition to the below-average per worker figures, the state's employment-to-population ratio is substantially below the national average, by 12.3 percent in 2015. The low percentage of the population that is working only in part is due to the state's age distribution, which includes somewhat above-average shares of both children and those of traditional retirement age. Even in the prime ages for workforce participation, the employment-to-population ratio is below average in Arizona.

Due to the low earnings per worker and the low share of residents who are working, Arizona is considerably below the national average on prosperity measures. The cost-of-living-adjusted per

capita earnings figure was 20.3 percent below average in 2015; adjusted per capita gross product was 20.4 percent below average.

Per capita personal income — more an indicator of economic well-being than of economic performance — is not quite as far below average (15.6 percent in 2015 adjusted for living costs). It includes per capita earnings; per capita dividends, interest, and rent (which was 16.4 percent below average on an adjusted basis); and per capita transfer payments, which include incomes from such programs as Social Security, Medicare, Medicaid, and income maintenance (such as food stamps). The adjusted per capita transfer payments figure was a little above average in Arizona in 2015.

Productivity and Prosperity Levels in Substate Areas

Each of the subregions of Arizona contribute to the state's low and declining levels of productivity and prosperity relative to the national average. However, the Phoenix area has the state's highest levels and has declined the least over time.

The levels of productivity and prosperity are appreciably lower in Arizona outside of the Phoenix area, even after adjusting for the local cost of living. On most measures, Metro Phoenix compares much more favorably to the U.S. metro average than does Metro Tucson or the aggregation of the other five metro areas. Still, Metro Phoenix in 2014 was below the metro average on each of the adjusted per worker and per person measures, including considerably below average on most of the per capita measures. Its employment-to-population ratio also was below the metro average. Relative to the national nonmetro average adjusted for the cost of living, the state's nonmetro area in 2014 was considerably below average on per person measures but ranged from above-to-below average on the per worker measures.

If the Phoenix metro area — 12th-most populous in the nation — is compared only to large metro areas, it compares more poorly than to the overall U.S. metro average. For example, after adjusting for the cost of living, per capita GDP in the Phoenix area was 19-to-20 percent less than the averages of the 25 most-populous metros and the 50 most-populous metros (compared to 13 percent less compared to all 381 metro areas). Similarly, adjusted per worker GDP in the Phoenix area was 10 percent less than the averages of the 25 most-populous metros and the 50 most-populous metros (compared to 5 percent less compared to all 381 metro areas).

Economic Performance During the Current Cycle

During the current economic cycle — measured as the period since the end of the last economic expansion at the end of 2007 — the cost of living in Arizona has fallen relative to the national average. Thus, for economic indicators measured in dollars, adjusting Arizona's growth rates relative to the nation for the relative change in the state's cost of living improves the state's performance relative to the U.S. average. Still, annual average adjusted growth rates relative to the nation during the current cycle on aggregate economic measures are substantially lower than in any of the five prior economic cycles.

On prosperity measures, the comparison is a little better. The performance during the current cycle after considering the relative change in the state's cost of living is at the lower end of the

historical range. In contrast, the adjusted per worker gains relative to the nation are within the range of the five prior cycles.

While the last recession in Arizona was unusually severe, it is not simply because of the recession that cost-of-living-adjusted growth rates during the current cycle compare unfavorably on aggregate and per capita measures. Looking exclusively at the expansionary phase of the cycle — since 2010 — Arizona's adjusted gains relative to the nation also compare unfavorably to the increases in the expansionary phase of earlier economic cycles.

Aggregate economic growth rates in the Phoenix area historically were higher than in the rest of the state. Metro Phoenix also fared better historically relative to the nation on measures of productivity and prosperity. During the current economic cycle, however, the Phoenix area has not consistently outperformed the rest of the state. Each of the state's subregions are performing poorly in comparison to earlier economic cycles on aggregate growth and on prosperity.

The Phoenix area was hard hit during the recession, registering the largest declines among the four subregions on some measures of aggregate growth and prosperity. Declines were deeper than the U.S. metro average on all measures. During the current expansion, growth rates in the Phoenix area are higher than in the other three subregions on nearly all measures and are greater than the national metro average on most measures. Despite these recent gains, for the entire cycle, the Phoenix area is below the U.S. metro average on almost all of the measures. It is leading the state only on some economic measures — those related to GDP and those measured on a per worker basis.

Particularly on the aggregate growth measures, the mediocre performance during the current cycle in the Phoenix area and in the rest of the state is in sharp contrast to the past several economic cycles, when growth rates were much higher than average. Growth rates relative to the national averages in Arizona's subregions are much slower than the historical norm during the current cycle even if the analysis is narrowed to the expansionary period since the last recession. For example, the employment growth rate in the Phoenix area during the expansion of each of the five prior economic cycles was at least 2.5 percentage points higher than the national metropolitan average. During the current expansion, the differential is only 0.5 percent.

INTRODUCTION

The primary focus of this paper is the performance of the Arizona economy during the current economic cycle, with comparisons made to prior economic cycles and to the national average. “Economic performance” is defined as the change over time in a variety of economic measures that are grouped into three categories:

- Aggregate measures, such as employment and gross domestic product (GDP).
- Prosperity measures, most of which are calculated on a per person basis, such as per capita personal income and per capita GDP.
- Productivity measures, which are calculated on a per worker basis, such as per worker earnings. True measures of productivity — output per hour worked — are not available for states or substate areas, so the per worker measures really are proxies for productivity.

In order to provide more perspective on the prosperity and productivity measures, their levels in Arizona are compared to the national average in this paper, both for the most recent data and over the historical period.

In Arizona, the discussion of economic performance largely has been limited to measures of aggregate growth. However, the goal of economic development — both by region within the United States and by country internationally — is not simply to get larger. Instead, the ultimate goal is to improve prosperity, which has little relationship to aggregate growth rates. Back in the early 1990s, the Arizona Strategic Planning for Economic Development process recommended that the state shift its focus from measures of aggregate growth to prosperity. Since gains in prosperity are largely dependent on improvements in productivity, the per worker measures also are analyzed in this paper.

The primary measure of economic performance internationally is per capita GDP. This measure is closely linked to productivity. For example, GDP per capita can be expressed as GDP per hour worked multiplied by hour worked per person. Since the number of hours worked relative to the size of the population is relatively stable, the key to gains in prosperity are increases in productivity.

Geographic Areas

While states are commonly compared due to broader data availability, better data quality, and statewide policies that affect economic performance, most economists agree that labor market areas, which generally correspond to metropolitan areas, are a preferable geographic unit of measure. This paper looks at Arizona relative to the national average and also divides the state into four subregions:

- Metropolitan Phoenix-Mesa-Scottsdale consists of Maricopa and Pinal counties. Nearly two-thirds of the state’s 6.76 million residents — 4.48 million people — lived in the Phoenix metro area in 2015.
- Metropolitan Tucson, equivalent to Pima County, had 1.01 million residents in 2015 — almost 15 percent of the state’s total.
- The aggregation of the other five metropolitan areas in Arizona accounted for about 13.5 percent of the state’s population in 2015. Each of these five metros consist of a single county: Flagstaff (Coconino County), Lake Havasu City-Kingman (Mohave County), Prescott (Yavapai County), Sierra Vista-Douglas (Cochise County), and Yuma (Yuma

County). The aggregate population was 0.91 million, ranging by metro area from 0.13-to-0.22 million.

- The nonmetropolitan area of the state, which consists of Apache, Gila, Graham, Greenlee, La Paz, Navajo, and Santa Cruz counties, is the home of only 0.36 million people, a little more than 5 percent of the state's total.

Each of the metropolitan subregions is compared to the national metro average in this paper. Arizona's nonmetropolitan subregion is compared to the U.S. nonmetropolitan average.

Economic Data

The U.S. Department of Commerce's Bureau of Economic Analysis (BEA) produces a variety of economic indicators and is the primary data source used in this paper. Annual data are examined in this paper.

- Gross domestic product (GDP) is available for states in nominal dollars from 1963 through 2015 and in inflation-adjusted (real) dollars from 1987 through 2015. For metro areas, nominal and real estimates of GDP are available for 2001 through 2015. Nominal GDP is split into three categories — compensation of employees, taxes on production and imports less subsidies, and gross operating surplus — though estimates for 2015 are not yet available for these categories and these categories are not reported in real dollars.¹
- Personal income and its components are available for states in nominal dollars from 1929 through 2015. County and metropolitan area data are available for 1969 through 2014. Personal income consist of three categories: earnings by place of residence; dividends, interest, and rent; and transfer payments.² Earnings by place of work also is provided; it consists of the sum of compensation of employees — wages and salaries plus supplements (employee benefits) — and proprietors' income.³
- Employment is available for 1969 through 2015 by state and for 1969 through 2014 by metro area and county. Total employment consists of wage and salary employment plus the number of proprietors.

In this paper, those dollar measures reported only in nominal terms are adjusted for inflation using the GDP implicit price deflator (also produced by the BEA).

The last year for which complete economic data are available from the BEA is 2015 for the states and nation. These figures and revisions to prior years were released in late September 2016. Substate data for 2015 will not be available until mid-November.

¹ The BEA defines each of these terms. Compensation of employees "consists of wages and salaries and of supplements to wages and salaries." Supplements consist "of employer contributions for government social insurance and employer contributions for employee pension and insurance funds." Taxes on production and imports "consist of tax liabilities, such as general sales and property taxes, that are chargeable to business expense in the calculation of profit-type incomes." Subsidies are "the monetary grants paid by government agencies to private business or to government enterprises at another level of government." Gross operating surplus "is the business income of private domestic enterprises. It includes consumption of fixed capital, proprietors' income, corporate profits, and business current transfer payments (net)."

² Transfer payments are now called "personal current transfer receipts" by the BEA and are defined as "Receipts of persons from government and business for which no current services are performed. Current transfer receipts from government include Social Security benefits, medical benefits, veterans' benefits, and unemployment insurance benefits. Current transfer receipts from business include liability payments for personal injury and corporate gifts to nonprofit institutions."

³ Proprietors include sole proprietorships, partnerships, and tax-exempt cooperatives.

The U.S. Department of Labor’s Bureau of Labor Statistics (BLS) produces various measures of employment and other labor-related data. An initial estimate of nonfarm wage and salary employment is produced monthly through the Current Employment Statistics program. A somewhat broader *count* of nonfarm wage and salary employment is available about six months later from the Quarterly Census of Employment and Wages. Once these employment series are revised, the growth rates are similar to the BEA’s broader estimate of wage and salary employment, which is released later.

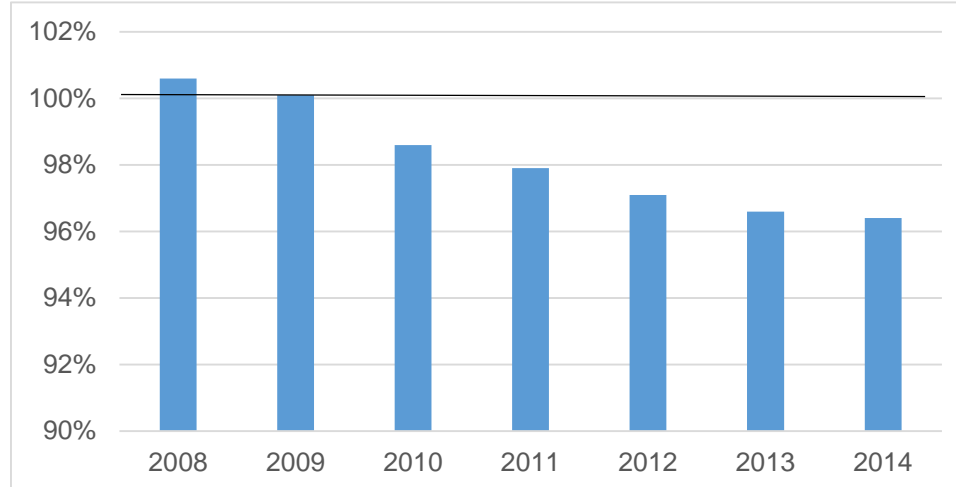
The BLS also produces an estimate of unemployment monthly. Substantial sampling error reduces the usefulness of the monthly unemployment figures at a state and substate level; the annual averages are of somewhat higher quality, but still should be used with caution.

Cost of Living Estimates

In order to compare states and metro areas on indicators measured in dollars for a specific year, an adjustment for geographic differences in the cost of living generally is considered to be desirable. The BEA produces a measure of the cost of living called the “regional price parity” (RPP) for states and metro areas. These cost-of-living figures are available only for the 2008-to-2014 period.

Unfortunately, the 2008-to-2014 availability of the RPP data does not cover the entire economic cycle (2007 to 2015) analyzed in this report. In order to calculate cost-of-living-adjusted data for the entire cycle, the RPP in 2007 is assumed to have been equal to that in 2008. Similarly, the RPP for 2015 is assumed to have been equal to the 2014 figure. As seen in Chart 1, the RPPs in 2009 and 2014 were not much different from in the prior year. A broader discussion of the RPPs, including all of the figures for Arizona, its metropolitan areas, and nonmetro Arizona, is provided in Appendix I.

CHART 1
COST OF LIVING IN ARIZONA AS MEASURED BY REGIONAL PRICE PARITY,
EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

In 2014, Arizona's cost of living was 3.6 percent less than the national average. Typically, the cost of living in any area relative to the national average changes only very slowly over time. Thus, the cost of living is rarely considered when calculating percent changes in dollar measures over short time periods. However, according to the RPP figures, Arizona's cost of living dropped 4.2 percent between 2008 and 2014 relative to the national average — the largest change in the nation. Because of the magnitude of this change, it is desirable to consider the change in the cost of living when calculating Arizona's percent changes relative to the nation. While the focus in this paper is to evaluate the state's economic performance relative to the nation adjusting for the changes in the cost of living, unadjusted data also are presented.

Population Estimates

The Census Bureau, also part of the U.S. Department of Commerce, produces the population estimates used by the BEA.⁴ The population estimates are less reliable than the economic data reported by the BEA. The building block for the economic data is the actual employment and wage figures reported by employers, as legally required through the unemployment insurance program. In contrast, the population figures reported by the Census Bureau and used by the BEA are purely estimates. The population estimates are expressed as of July 1 of each year.

An alternative population estimate series for Arizona is produced by the state government's Office of Employment and Population Statistics (OEPS). The annual population changes for Arizona estimated by the Census Bureau are compared to the figures estimated by the OEPS in Chart 2. Relative to the Census Bureau, the OEPS estimates that the state's growth was faster during the mid-2000s, considerably less during the recession and early years of the recovery, and slightly less in recent years. According to the OEPS, the state's population growth was slower than the national average for three consecutive years from 2009 through 2011.

A significant difference between the two population estimate series exists in Arizona's growth rate between 2007 and 2015: 10.7 percent according to the Census Bureau and 7.7 percent according to the OEPS. The latter figure is not much higher than the national average of 6.7 percent. As with the change in the RPP, the difference in the population estimates is too large to ignore. Thus, in this paper, the changes in the per capita measures are calculated using each population estimate series.

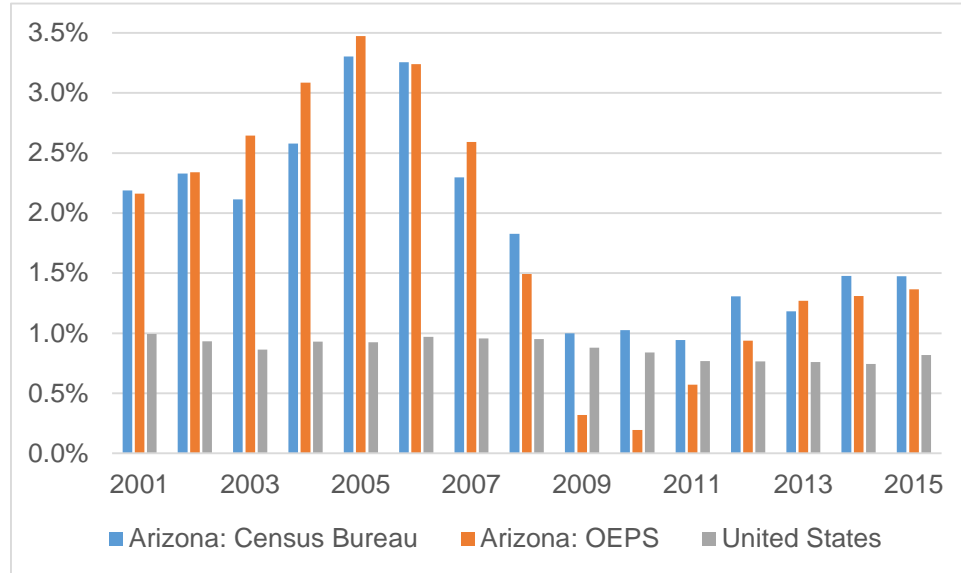
The differences in the annual estimates of Arizona's population change made by the Census Bureau and the OEPS between 2000 and 2010 generally are consistent across Arizona's four subregions. Since 2010, however, the differences diverge. The lesser population change since 2010 estimated for Arizona by the OEPS is entirely in Metro Phoenix. In contrast, the OEPS estimates greater population change than the Census Bureau in the five less-populous metro areas and in the nonmetro portion of the state.

Time Periods

Economic cycles can be dated as beginning with either a recession — the last one started at the end of 2007 — or a recovery (the current economic expansion began in 2010). The first definition is used in this paper. Growth for the entire cycle is calculated as the inflation-adjusted

⁴ The Census Bureau also produces the American Community Survey (ACS). Selected data from the ACS are used in this paper.

CHART 2
ESTIMATES OF ANNUAL POPULATION GROWTH



Note: The population estimates are expressed as of July 1.

Source: U.S. Department of Commerce, Census Bureau, and Arizona Office of Employment and Population Statistics.

percent change between 2007 and 2015 (2014 for substate areas). The annual average growth rate by indicator since 2007 is compared to the annual average in prior economic cycles, with each cycle defined as beginning at the end of an economic expansion. Generally, the current cycle is compared to five prior cycles: 1970 through 1973, 1974 through 1981, 1982 through 1990, 1991 through 2000, and 2001 through 2007. In order to control for changes in the national growth rate by economic cycle, the difference between Arizona and the national average in the annual average by cycle is the focus.

In addition to comparing the entire current cycle to previous cycles, the current economic expansion (since 2010) is compared to the expansions of the last several economic cycles. The annual average is based on the first five years of each expansion; if an expansion did not last five years, the entire expansion is used.

Since the economic cycles are defined beginning with the recession and since the current economic expansion still is in progress, annual average growth rates for the current cycle, once it is complete, likely will be a little higher than the latest figures, for Arizona and the nation. The difference between the currently calculated annual average and the annual average of the eventual complete cycle is not expected to be significant, since the current cycle through 2015 already consists of eight years and the peak growth rates of the cycle likely have already been realized. The impact of the incomplete cycle on the differential in average growth rates between Arizona and the nation is likely to be quite small.

MEASURES OF PRODUCTIVITY AND PROSPERITY IN ARIZONA

In this section, Arizona is compared to the national average on measures of productivity and prosperity using data for 2015. In addition, Arizona is compared to the national average, Arizona's metropolitan areas are compared to the national metro average, and the nonmetro portion of Arizona is compared to the national nonmetro area using data for 2014. For indicators measured in dollars, all of the percent differences from the national average discussed in this section have been adjusted for the difference in the cost of living in Arizona relative to the relevant national average. The figures are shown in Table 1.

Arizona

In 2015, the average wage of wage and salary workers in Arizona was 4.7 percent less than the national average. One reason why the overall average wage varies geographically is that the mix of jobs differs by region. While current data are not available, earlier analyses of job quality indicated that the occupational and industrial job mixes in Arizona caused the average wage to be more than 2 percent lower than the national average.⁵ The balance of the shortfall between Arizona and the United States in the average wage has been assumed to be due to the willingness of workers in Arizona to receive slightly lower wages than they would accept in other places in return for perceived advantages in nonmonetary aspects of living in Arizona, such as climate and lifestyle. This portion of the wage difference has been called the “sunshine factor.”

Broader per employee measures than the average wage are further below the national average in Arizona. Average compensation per wage and salary worker — including wages and salaries and supplements to wages and salaries — was 5.9 percent below average in 2015; the per worker supplements figure in Arizona was 11.3 percent less than the national average. While the majority of workers are in the wage and salary classification, a number of workers are sole proprietors or partners in a business. Average proprietors' income in Arizona is far below the national average; the shortfall in 2015 was 30.5 percent.

Earnings is the sum of proprietors' income and compensation of wage and salary workers. Per worker earnings by place of work were 9.1 percent below average in Arizona in 2015. Gross domestic product is a broader measure than earnings. Per worker GDP in Arizona in 2015 was 9.2 percent below the national average. In 2014, Arizona was below average per worker on each of the three components of GDP: -5.7 percent on compensation of employees, -7.3 percent on taxes on production and imports less subsidies, and -13.8 percent on gross operating surplus.

Thus, on the two broadest proxies for productivity — per worker GDP and per worker earnings — Arizona was about 9 percent below the national average in 2015, after adjusting for the relative cost of living. The number of hours worked does not contribute to Arizona's lower per worker figures. According to the U.S. Bureau of Labor Statistics, the average weekly hours of all private-sector employees in Arizona has ranged from greater than to equal to the national average over the current economic cycle. Based on the American Community Survey, the mean usual hours worked, for workers from 16-to-64 years of age, has been nearly identical in Arizona to the U.S. average over the last several years.

⁵ See the March 2006 University Economist report “Job Quality: 2004 Update,” <http://wpcarey.asu.edu/sites/default/files/jobqualityupdate3-06.pdf>.

TABLE 1
SUMMARY OF PER WORKER AND PER CAPITA MEASURES,
ARIZONA AND SUBREGIONS

	2015			2014		
	Arizona	Arizona	Metro Phoenix	Metro Tucson	Other Metros	Non-metro
NOMINAL VALUES, NOT ADJUSTED FOR THE COST OF LIVING						
Per Worker:						
Wages and Salaries	\$48,854	\$47,823	\$50,297	\$43,714	\$38,911	\$41,726
Supplements	10,612	10,802	10,677	11,087	10,899	11,825
Total Compensation	59,466	58,625	60,974	54,804	49,809	53,551
Proprietors' Income	21,963	23,682	27,084	16,979	17,655	10,568
Earnings by Place of Work	51,002	50,661	53,451	46,123	42,126	40,788
Gross Domestic Product	82,015	81,338	87,892	71,345	62,665	70,700
Employment-to-Population Ratio	51.9%	51.4%	54.5%	49.8%	41.9%	40.1%
Per Capita:						
Earnings by Place of Residence	\$23,613	\$23,275	\$25,998	\$20,312	\$16,543	\$13,907
Dividends, Interest, and Rent	7,291	6,880	6,884	7,910	6,509	4,795
Transfer Payments	8,244	7,741	6,964	8,809	9,205	10,944
Total Personal Income	39,149	37,895	39,846	37,031	32,257	29,645
Gross Domestic Product	42,548	41,827	47,941	35,556	26,256	28,340
COST-OF-LIVING-ADJUSTED PERCENT DIFFERENCE FROM NATIONAL COMPARISON AREA*						
Per Worker:						
Wages and Salaries	-4.7%	-3.8%	-1.6%	-13.9%	-20.4%	12.4%
Supplements	-11.3	-8.0	-10.2	-6.1	-4.1	16.2
Total Compensation	-5.9	-4.6	-3.2	-12.5	-17.3	13.2
Proprietors' Income	-30.5	-25.6	-17.0	-47.7	-43.4	-60.0
Earnings by Place of Work	-9.1	-7.7	-5.5	-17.9	-22.1	-2.2
Gross Domestic Product	-9.2	-9.0	-5.2	-22.6	-29.3	6.0
Employment-to-Population Ratio	-12.3	-11.7	-8.2	-16.2	-29.5	-22.7
Per Capita:						
Earnings by Place of Residence	-20.3	-18.4	-12.3	-31.1	-41.6	-33.1
Dividends, Interest, and Rent	-16.4	-16.4	-19.3	-6.7	-20.2	-22.5
Transfer Payments	2.6	1.2	-5.8	20.0	30.3	22.2
Total Personal Income	-15.6	-14.6	-12.6	-18.2	-26.0	-17.5
Gross Domestic Product	-20.4	-19.7	-12.9	-35.0	-50.1	-18.1

* Arizona is compared to the national average, Arizona's metro areas are compared to the U.S. metro average, and the nonmetro area in Arizona is compared to the U.S. nonmetro average.

Notes:

The Census Bureau's population estimates are used in this table. If the estimates from the OEPS were used instead, for 2014 the E-P ratio and per capita figures would be 1.0 percent higher in Arizona, 1.9 percent higher in Metro Phoenix, 0.2 percent lower in Metro Tucson, 1.1 percent lower in the aggregate of the other five metros, and 2.2 percent lower in nonmetro Arizona.

The 2014 values for Arizona are unrevised in order to be consistent with the substate figures; the 2014 and 2015 values for Arizona are not comparable.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

A measure of productivity such as GDP per worker can be expressed as GDP per hour worked multiplied by the number of hours worked per worker. Since the number of hours worked per worker in Arizona is equal to the national average, Arizona's GDP per hour worked — closer to a true measure of productivity — is below average.

Arizona was further below average on measures of prosperity. A primary reason for the poorer relative performance on per capita measures is the state's low employment-to-population (E-P) ratio. At 51.9 percent in 2015, it was 7.3 percentage points (12.3 percent) below the national average of 59.2 percent, based on the total employment and population figures reported by the BEA.⁶

An employment-to-population ratio also can be calculated from the American Community Survey (ACS), but this is based on the number of individuals working rather than the number of jobs as reported by the BEA. Based on the ACS data, Arizona's E-P ratio is not as far below average: 43.0 percent versus a national figure of 46.8 percent, a difference of 3.8 percentage points (8 percent). The lesser difference based on the ACS than the BEA data implies that a lower share of Arizonans who are working are employed at more than one job.

It is possible to exclude those younger than 16 and those 65 and older from the ACS employment and population figures. The E-P ratio of those 16-to-64 years of age in 2015 was 65.3 percent in Arizona, 3.1 percentage points (5 percent) less the national E-P ratio of 68.4 percent. Thus, the lesser share of people between the ages of 16 and 64 who are working is a greater cause of Arizona's low overall E-P ratio than the state's age demographics. According to the ACS, the younger-than-16 proportion was 21.0 percent in Arizona versus 20.3 percent nationally in 2015. The 65-and-older proportion was 16.4 percent in Arizona versus 14.9 percent nationally.

Some individuals 65 and older are employed, though according to the ACS this proportion is lower in Arizona (13.3 percent) than nationally (16.6 percent). Those 65 and older who are not employed receive income from retirement accounts and investments. Thus, the proportion of children is more important than the proportion of those 65 and older in explaining differences in per capita measures, but the proportion of children is not much higher in Arizona than nationally.

Due to low per worker earnings and to the low employment-to-population ratio, per capita earnings by place of residence in Arizona was 20.3 percent below the national average in 2015. Per capita dividends, interest, and rent — another component of personal income — was 16.4 percent below the national average in Arizona in 2015. Each of its three subcomponents was substantially below average: dividends (-23.2 percent), interest (-14.1 percent), and rent (-11.2 percent).

In contrast, the per capita transfer payments figure in Arizona in 2014 was a little (2.6 percent) above the national average. Retirement transfers (mostly Social Security) and medical transfers (mostly Medicare and Medicaid) are the two largest components of transfer payments. Per capita retirement payments in Arizona in 2015 were 3.2 percent above the U.S. average; per capita medical payments were 0.8 percent below average. Arizona ranged from above to below the

⁶ The Census Bureau's population estimates are used in this section. The note to Table 1 explains the impact of using the estimates from the OEPS instead of the Census Bureau.

national average in the other components, including 10.8 percent below average on per capita income maintenance, which includes food stamps and other public assistance.

Per capita personal income was 15.6 percent below average in Arizona in 2015. The other broad measure of prosperity, per capita gross product, was 20.4 percent below average in 2015. In 2014, per capita compensation of employees was 16.8 percent below average, per capita taxes on production and imports were 18.2 percent below average, and per capita gross operating surplus was 24.0 percent below average.

Arizona's Subregions

In Table 1, the per worker and per person indicators for 2014 are summarized for Arizona and each of the state's four subregions. In order to be consistent with the substate figures, the 2014 values for Arizona do not reflect the revisions released by the BEA in late September. In each of the major categories, the nominal value for Metro Phoenix is higher than for the other subregions; the exceptions are supplements per worker; per capita dividends, interest, and rent; and per capita transfer payments.

In the bottom portion of Table 1, the cost of living is considered in calculating the percent differences in the values for Arizona and its subregions compared to national norms. On most measures, Metro Phoenix compares much more favorably to the U.S. metro average than does Metro Tucson or the aggregation of the other five metro areas. Still, Metro Phoenix in 2014 was below the metro average on each of the per worker and per person measures, including considerably below average on most of the per capita measures. The E-P ratio also was below the metro average. Other than per capita transfer payments, Metro Tucson and the other metro areas as a whole were below average on each measure, by considerable margins on most indicators. In contrast, Arizona's nonmetropolitan area compared favorably on most of the per worker measures relative to the U.S. nonmetro average. However, except for transfer payments, the per capita measures were far below the nonmetro norm, as was the E-P ratio.

Thus, while Metro Phoenix generally is superior to the rest of the state on productivity and prosperity measures (even after adjusting for the local cost of living), the state's low figures cannot be explained simply by the very low figures in the portion of the state outside the Phoenix area. This would be arithmetically unlikely, since Metro Phoenix accounts for two-thirds of the state's population and 70-to-75 percent of its employment and economic activity measured in dollars. In reality, even Metro Phoenix compares poorly relative to metro areas nationally.

The Phoenix area in 2014 was the 12th-most populous metro area in the country. If it is compared only to large metro areas, it compares even more poorly than to the overall U.S. metro average. For example, after adjusting for the cost of living, per capita GDP in the Phoenix area was 19-to-20 percent less than the average of both the 25 most-populous metros and the 50 most-populous metros (compared to 13 percent less among all 381 metro areas). Similarly, per worker GDP in the Phoenix area was 10 percent less than the average of both the 25 most-populous metros and the 50 most-populous metros (compared to 5 percent less among all 381 metro areas).

In contrast, if the Tucson area (with a population of just more than 1 million) is compared to similarly sized metro areas (between 500,000 and 1.5 million), it compares more favorably than

to the U.S. metro average. Still, after adjusting for the cost of living, the Tucson area's per capita GDP was 29 percent less, and the per worker GDP was 17 percent less, than the size group average.

Similarly, the grouping of Arizona's other five metro areas compares more favorably to similarly sized metro areas than to the overall metro average; each of the five had a population between 127,000 and 219,000 in 2014. After adjusting for the cost of living, the per capita GDP was 39 percent less, and the per worker GDP was 18 percent less, for the aggregate of these five metro areas than the average of metro areas with between 100,000 and 250,000 residents.

PERFORMANCE OF THE ARIZONA ECONOMY

The performance of the Arizona economy since the onset of the last recession is examined in this section for each category of economic indicator: productivity, prosperity, and aggregate. In the “Current Cycle” subsections, inflation-adjusted growth rates are calculated over the entire cycle, the recessionary years (2008 through 2010) and the expansionary years (2011 through 2015).⁷ Arizona’s growth rates are calculated both with and without adjusting for the relative change in the cost of living.

In the “Comparisons to Prior Cycles” subsections, annual average real growth rates over the entire cycle are compared to the averages of the five prior economic cycles, focusing on the difference in the annual averages between Arizona and the nation. The comparison to the nation is made in two ways: as the difference in the annual average percent change and as Arizona’s annual average percent change as a ratio to the national average. The figures for the current cycle are provided on both an unadjusted basis and adjusted for the relative change in the cost of living. The per capita figures for the current cycle are calculated using both the Census Bureau’s population estimates and the estimates from the OEPS. In addition, the analysis of the annual average percent change by economic cycle is repeated for only the expansionary phase of each cycle.

For the productivity and prosperity measures, a ratio of the nominal value in Arizona to the national average is presented annually for the entire length of the time series in the “Long Term” subsections. For recent years, the ratio is both unadjusted and adjusted for living costs.

Productivity Measures

Since productivity is an important determinant of prosperity, it is examined first. The two primary proxies for productivity at a regional level are per worker earnings by place of work and per worker gross product.

Current Cycle

Without adjusting for changes in the relative cost of living, Arizona’s performance on per worker gross domestic product and per worker earnings during the current economic cycle is inferior to the national average, both during the recession and during the subsequent expansion (see Table 2). Within the earnings measure, the growth rate in Arizona for the entire cycle is particularly far below the national average in proprietors’ income per proprietor, though Arizona’s growth rate in this category during the expansion exceeds the U.S. average. In the supplements portion of compensation, the increase in Arizona during the recession was a little greater than the national average.

After adjusting for living costs, Arizona’s performance during the current cycle is below the U.S. average on the two broadest per employee measures, though the gains during the expansionary period are marginally above average.

⁷ The percent change over the 2008-through-2010 period, for example, is calculated as the percent change between the 2007 and 2010 figures.

TABLE 2
PER WORKER MEASURES,
INFLATION-ADJUSTED PERCENT CHANGE IN CURRENT ECONOMIC CYCLE

	Not Adjusted for Cost of Living			Adjusted for Living Costs	
	United States	Arizona	Difference	Arizona	Difference
Gross Domestic Product					
2008 Through 2010	2.8%	-2.1%	-4.9	-0.1%	-2.9
2011 Through 2015	-0.3	-4.1	-3.7	-0.1	0.2
2008 Through 2015	2.4	-6.1	-8.5	-0.2	-2.7
Earnings by Place of Work					
2008 Through 2010	1.1	-3.8	-4.9	-1.9	-3.0
2011 Through 2015	3.5	2.8	-0.7	4.3	0.8
2008 Through 2015	4.7	-1.1	-5.8	2.3	-2.3
Compensation					
2008 Through 2010	2.6	2.2	-0.4	4.3	1.7
2011 Through 2015	3.1	0.6	-2.5	2.4	-0.7
2008 Through 2015	5.8	2.8	-2.9	6.7	1.0
Proprietors' Income					
2008 Through 2010	-2.3	-37.8	-35.4	-36.5	-34.2
2011 Through 2015	10.1	33.4	23.3	30.7	20.6
2008 Through 2015	7.5	-17.0	-24.5	-17.0	-24.5

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Comparison to Prior Cycles

The annual average real percent change in per worker measures during the current economic cycle is compared to the five prior cycles in Table 3. However, since real GDP data are available only back to 1987, the current cycle can be compared only to the two prior cycles on this measure.

On the per worker GDP measure, the annual average percent change in the current cycle is considerably below the figures for the two prior cycles, both nationally and in Arizona (even after adjusting for living costs). Compared to the nation, Arizona's performance in the current cycle is the worst of the three cycles, both with and without adjusting for living costs, though the cost-of-living adjustment favorably affects Arizona's figures.

For the per worker earnings measure, the unadjusted annual average percent change in the current cycle is within the historical range nationally, in Arizona, and measured as the difference between the nation and Arizona. With the adjustment for living costs, Arizona compares slightly more favorably.

Looking only at the expansionary phase of the cycle, the conclusions are similar. Nationally and in Arizona (with and without adjustment for living costs), growth in the current expansion on most indicators is the weakest of the six expansions. The difference in the growth rates between Arizona and the national average is within the historical range both with and without adjustment for the cost of living, but the ranks improve after adjusting for living costs.

TABLE 3
PER WORKER MEASURES, ANNUAL AVERAGE INFLATION-ADJUSTED
PERCENT CHANGE BY ECONOMIC CYCLE

	United States	Arizona	Difference	Ratio
Gross Domestic Product				
1991 Through 2000	1.71%	2.88%	1.17	1.69
2001 Through 2007	1.07	1.18	0.11	1.10
2008 Through 2015	0.30	-0.78	-1.08	negative
2008 Through 2015*	0.30	-0.25	-0.55	negative
Earnings by Place of Work				
1970 Through 1973	1.68	1.95	0.27	1.16
1974 Through 1981	-0.11	-0.29	-0.18	negative
1982 Through 1990	1.39	0.28	-1.10	0.20
1991 Through 2000	2.05	2.33	0.29	1.14
2001 Through 2007	0.53	0.88	0.34	1.64
2008 Through 2015	0.57	-0.14	-0.72	negative
2008 Through 2015*	0.57	0.39	-0.18	0.68
Compensation				
1970 Through 1973	1.68	2.58	0.90	1.54
1974 Through 1981	0.39	0.17	-0.22	0.43
1982 Through 1990	1.49	0.78	-0.71	0.52
1991 Through 2000	1.97	2.10	0.14	1.07
2001 Through 2007	1.21	1.37	0.17	1.14
2008 Through 2015	0.70	0.35	-0.35	0.50
2008 Through 2015*	0.70	0.88	0.18	1.26
Proprietors' Income				
1970 Through 1973	1.79	-2.59	-4.38	negative
1974 Through 1981	-4.12	-4.13	-0.01	negative
1982 Through 1990	1.06	-3.70	-4.76	negative
1991 Through 2000	3.15	5.49	2.35	1.75
2001 Through 2007	-2.61	-1.05	1.56	negative
2008 Through 2015	0.91	-2.30	-3.21	negative
2008 Through 2015*	0.91	-1.78	-2.69	negative

* Adjusted for relative changes in the cost of living.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Long Term

The historical record of Arizona's per worker GDP and per worker earnings, each relative to the national average, is shown in Chart 3. Except for a rise in the early 1990s, the per worker GDP ratio has trended down since the early 1970s, with the 2015 figure the lowest on record at 12.5 percent less than the nation. After adjusting for the cost of living, Arizona's figure was 9.2 percent below average in 2015.

Arizona experienced a significant decline in the ratio of per worker earnings from the mid-1970s through the 1980s; another period of decline has been present since 2007, though only on an unadjusted basis. In 2015, the per worker earnings figure in Arizona was 12.4 percent less than the national average, the lowest on record. After adjusting for the cost of living, Arizona's figure was 9.1 percent below average in 2015.

CHART 3
PER WORKER GROSS DOMESTIC PRODUCT AND
PER WORKER EARNINGS BY PLACE OF WORK IN ARIZONA
AS A PERCENTAGE OF THE NATIONAL AVERAGE

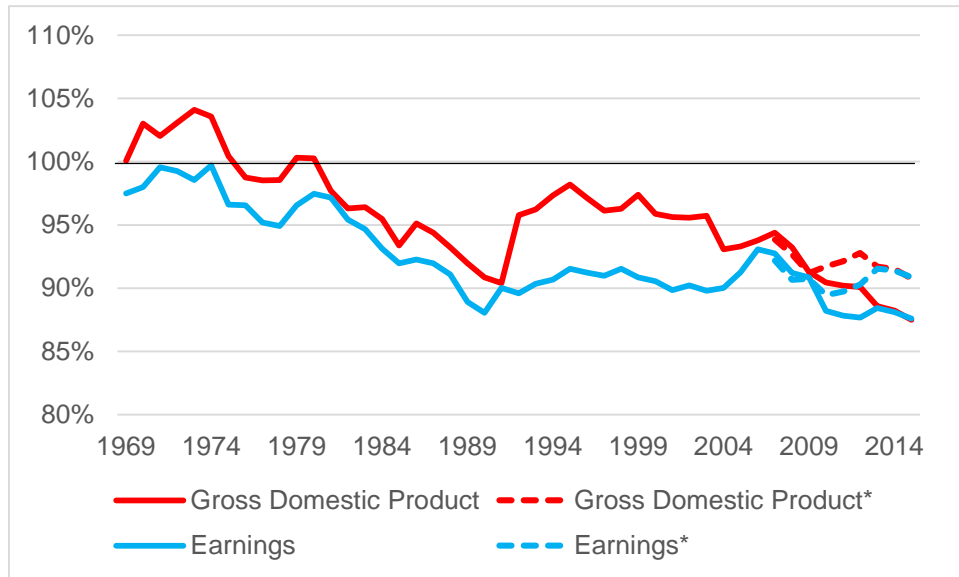
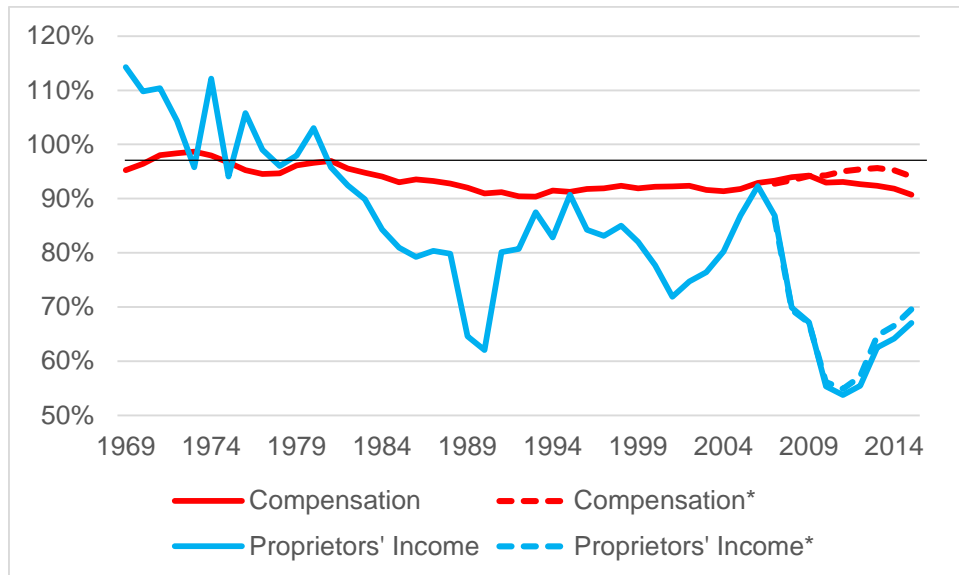


CHART 4
PROPRIETORS' INCOME PER PROPRIETOR AND COMPENSATION PER
EMPLOYEE IN ARIZONA AS A PERCENTAGE OF THE NATIONAL AVERAGE



Charts 3 and 4:

* Adjusted for the cost of living, beginning in 2008.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Arizona's figure as a ratio to the U.S. average is shown for the two subcomponents of earnings by place of work in Chart 4. The ratio for proprietors' income per proprietor has been volatile. In 2015, Arizona was 33.0 percent below average. The differential was larger in 1989, 1990, and from 2010 through 2014. After adjusting for the cost of living, Arizona's figure was 30.5 percent below average in 2015. Compensation per wage and salary employee fell relative to the national average from the mid-1970s through the early 1990s, but has fluctuated in a narrow range since then. Unadjusted, it was 9.3 percent below average in 2015, higher than in only 1992 and 1993. The 2015 figure was 5.9 percent below average after adjusting for the cost of living.

Prosperity Measures

For the prosperity measures expressed on a per capita dollar basis, real growth rates for Arizona in the current economic cycle are calculated in four ways:

- Without adjustment for changes in the relative cost of living, using the Census Bureau's population estimates.
- Without adjustment for changes in the relative cost of living, using the OEPS's population estimates.
- Adjusting for changes in the relative cost of living, using the Census Bureau's population estimates.
- Adjusting for changes in the relative cost of living, using the OEPS's population estimates.

Current Cycle

Without adjusting for changes in the relative cost of living, Arizona's performance on per capita gross domestic product and per capita personal income during the current economic cycle has been substantially inferior to the national average, particularly during the recession but also during the subsequent expansion (see Table 4). Within the personal income measure, the growth rate in Arizona is considerably below the national average in earnings by place of residence (the largest component) and in dividends, interest, and rent. In contrast, in the transfer payments component, the increase in Arizona during the recession was greater than the national average. If the population estimates for Arizona from the OEPS are substituted for the figures from the Census Bureau, the differential from the national average is not as great, but Arizona's performance on the per capita measures still is worse than the nation except for transfer payments during the recession. The severity of the recession in Arizona caused a larger increase in payments from public assistance programs and unemployment insurance.

Adjusting for living costs also improves Arizona's relative performance during the current cycle. With this adjustment and using the population estimates from the OEPS, the real percent changes per capita in Arizona during the expansionary portion of the cycle slightly exceed the national average in the personal income, earnings, and transfer payments indicators. For the entire cycle, Arizona has underperformed the nation except for transfer payments.

Comparison to Prior Cycles

The annual average real percent change in per capita measures during the current economic cycle is compared to the five prior cycles in Table 5. The average for the current cycle is calculated all four ways.

TABLE 4
PER CAPITA MEASURES,
INFLATION-ADJUSTED PERCENT CHANGE IN CURRENT ECONOMIC CYCLE

	Not Adjusted for Relative Cost of Living			Adjusted for Living Costs	
	United States	Arizona	Difference	Arizona	Difference
USING CENSUS ESTIMATES FOR ARIZONA POPULATION					
Gross Domestic Product					
2008 Through 2010	-3.7%	-13.6%	-9.9	-11.9%	-8.1
2011 Through 2015	5.4	0.2	-5.2	2.5	-2.9
2008 Through 2015	1.5	-13.5	-14.9	-9.7	-11.2
Personal Income					
2008 Through 2010	-2.7	-9.8	-7.1	-8.0	-5.2
2011 Through 2015	10.1	7.6	-2.5	10.1	0.0
2008 Through 2015	7.1	-2.9	-10.0	1.3	-5.8
Earnings by Place of Residence					
2008 Through 2010	-5.4	-15.6	-10.2	-13.9	-8.5
2011 Through 2015	9.6	7.6	-1.9	10.1	0.5
2008 Through 2015	3.7	-9.2	-12.9	-5.2	-8.9
Dividends, Interest and Rent					
2008 Through 2010	-14.9	-22.5	-7.6	-20.9	-6.0
2011 Through 2015	20.7	16.4	-4.3	19.0	-1.7
2008 Through 2015	2.7	-9.8	-12.5	-5.9	-8.6
Transfer Payments					
2008 Through 2010	26.0	31.0	5.0	33.6	7.7
2011 Through 2015	2.2	0.9	-1.4	3.2	0.9
2008 Through 2015	28.8	32.1	3.4	37.9	9.1
USING OEPS ESTIMATES FOR ARIZONA POPULATION					
Gross Domestic Product					
2008 Through 2010	-3.7	-12.0	-8.3	-10.2	-6.5
2011 Through 2015	5.4	1.1	-4.3	3.4	-2.0
2008 Through 2015	1.5	-11.0	-12.5	-7.2	-8.6
Personal Income					
2008 Through 2010	-2.7	-8.1	-5.3	-6.2	-3.5
2011 Through 2015	10.1	8.6	-1.5	11.1	0.9
2008 Through 2015	7.1	-0.2	-7.3	4.2	-2.9
Earnings by Place of Residence					
2008 Through 2010	-5.4	-14.0	-8.6	-12.3	-6.9
2011 Through 2015	9.6	8.6	-1.0	11.1	1.5
2008 Through 2015	3.7	-6.6	-10.3	-2.6	-6.2
Dividends, Interest and Rent					
2008 Through 2010	-14.9	-21.0	-6.1	-19.4	-4.5
2011 Through 2015	20.7	17.4	-3.3	20.1	-0.6
2008 Through 2015	2.7	-7.3	-10.0	-3.2	-5.9
Transfer Payments					
2008 Through 2010	26.0	33.5	7.5	36.2	10.2
2011 Through 2015	2.2	1.8	-0.5	4.1	1.9
2008 Through 2015	28.8	35.9	7.1	41.8	13.0

Sources: U.S. Department of Commerce, Bureau of Economic Analysis; U.S. Department of Commerce, Census Bureau; and Arizona Office of Employment and Population Statistics.

TABLE 5
PER CAPITA MEASURES, ANNUAL AVERAGE
INFLATION-ADJUSTED PERCENT CHANGE BY ECONOMIC CYCLE

	United States	Arizona	Difference	Ratio
Gross Domestic Product				
1991 Through 2000	2.28%	3.44%	1.16	1.51
2001 Through 2007	1.34	1.71	0.37	1.27
2008 Through 2015	0.18	-1.79	-1.97	negative
2008 Through 2015*	0.18	-1.45	-1.63	negative
2008 Through 2015**	0.18	-1.27	-1.45	negative
2008 Through 2015***	0.18	-0.93	-1.11	negative
Personal Income				
1970 Through 1973	2.85	3.69	0.84	1.29
1974 Through 1981	1.68	1.63	-0.04	0.98
1982 Through 1990	2.64	1.72	-0.91	0.65
1991 Through 2000	2.45	2.20	-0.25	0.90
2001 Through 2007	1.30	1.97	0.67	1.52
2008 Through 2015	0.86	-0.37	-1.23	negative
2008 Through 2015*	0.86	-0.02	-0.88	negative
2008 Through 2015**	0.86	0.16	-0.70	0.19
2008 Through 2015***	0.86	0.51	-0.35	0.59
Earnings by Place of Residence				
1970 Through 1973	2.02	3.09	1.07	1.53
1974 Through 1981	0.55	0.37	-0.18	0.67
1982 Through 1990	2.39	1.20	-1.19	0.50
1991 Through 2000	2.67	2.96	0.29	1.11
2001 Through 2007	0.77	1.44	0.67	1.86
2008 Through 2015	0.45	-1.20	-1.65	negative
2008 Through 2015*	0.45	-0.85	-1.31	negative
2008 Through 2015**	0.45	-0.67	-1.12	negative
2008 Through 2015***	0.45	-0.32	-0.78	negative
Dividends, Interest and Rent				
1970 Through 1973	3.51	4.29	0.77	1.22
1974 Through 1981	4.65	4.24	-0.41	0.91
1982 Through 1990	3.58	2.33	-1.24	0.65
1991 Through 2000	1.50	0.36	-1.14	0.24
2001 Through 2007	1.78	1.62	-0.16	0.91
2008 Through 2015	0.34	-1.28	-1.62	negative
2008 Through 2015*	0.34	-0.94	-1.27	negative
2008 Through 2015**	0.34	-0.75	-1.09	negative
2008 Through 2015***	0.34	-0.41	-0.74	negative
Transfer Payments				
1970 Through 1973	9.11	7.64	-1.47	0.84
1974 Through 1981	4.45	4.84	0.39	1.09
1982 Through 1990	2.49	3.24	0.75	1.30
1991 Through 2000	2.76	1.67	-1.10	0.60
2001 Through 2007	3.27	5.03	1.77	1.54
2008 Through 2015	3.21	3.55	0.33	1.10
2008 Through 2015*	3.21	3.91	0.69	1.22
2008 Through 2015**	3.21	4.10	0.89	1.28
2008 Through 2015***	3.21	4.46	1.25	1.39

Note: The calculations use the Census Bureau's population estimates and are not adjusted for the cost of living except as indicated:

* Using the OEPS population estimates for Arizona.

** Adjusted for changes in the relative cost of living.

*** Using the OEPS population estimates for Arizona and adjusted for changes in relative living costs.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis; U.S. Department of Commerce, Census Bureau; and Arizona Office of Employment and Population Statistics.

On the per capita GDP measure, the annual average percent change in the current cycle is considerably below the figures for the two prior cycles, both nationally and in Arizona. This conclusion for Arizona holds even after adjusting for living costs and using the population estimates from the OEPS. Compared to the nation, Arizona's performance is the worst of the three cycles, based on all four methods of calculation.

The annual average percent change in the current cycle is the lowest of the six cycles in Arizona (calculated all four ways) and the nation for the per capita personal income; earnings by place of residence; and dividends, interest, and rent (DIR) measures. The change in transfer payments is in the middle of the historical range, nationally and in Arizona. Relative to the national average, Arizona's unadjusted growth rate is the lowest of the six cycles for the per capita personal income; earnings by place of residence; and DIR measures. The ranks are slightly higher based on each of the other methods of calculation. For transfer payments after adjusting for living costs and using the population estimates from the OEPS, Arizona's increase relative to the nation is the second highest of the six cycles.

Looking only at the expansionary phase of the cycle, the conclusions are essentially the same. Arizona's performance on per capita GDP, and its performance relative to the national average, is the lowest of the last three expansions by a wide margin, even after adjustment for living costs and using the OEPS's population estimates. In the current expansion, growth in per capita personal income and in per capita earnings by place of residence is weak relative to the five prior expansions in Arizona, using all four means of calculating the figures. The real percent change relative to the nation also compares poorly, but after adjusting for living costs and using the population estimates from the OEPS is not the weakest of the six cycles.

Long Term

The historical record of Arizona's per capita GDP and per capita personal income, each relative to the national average, is shown in Chart 5. The GDP ratio has been highly cyclical but also has trended down since the early 1970s. Without adjusting for the cost of living, the ratio has yet to rise during this economic expansion, with the 2015 figure the lowest on record at 23.3 percent less than the national average using the population estimate from the Census Bureau and 22.5 percent less than the nation using the population estimate from the OEPS. Adjusting for the cost of living, the ratio rose slightly in 2011 and 2012 but has since declined to record lows at 20.4 percent below average using the population estimate from the Census Bureau and 19.6 percent less than the nation using the population estimate from the OEPS.

Arizona experienced a significant decline in the per capita personal income ratio during the late 1980s and early 1990s; another period of decline has been present since 2007. Without adjusting for the cost of living, the 2015 figure is 18.6 percent less than the nation using the population estimate from the Census Bureau and 17.8 percent less than the nation using the population estimate from the OEPS. Only in the early 1930s was the ratio lower. Adjusting for the cost of living, the ratio rose marginally after the recession but has since declined to 15.6 percent below average using the population estimate from the Census Bureau and 14.7 percent less than the nation using the population estimate from the OEPS.

Since 2007, Arizona's poor performance relative to the national average on per capita personal income has especially resulted from the dividends, interest, and rent category, but relative declines also have occurred in the earnings by place of residence category, as seen in Chart 6. In contrast, the ratio to the national average in 2015 in the transfer payments category was higher than in most years since the early 1950s.

Other Measures

Two other types of indicators are related to prosperity: the unemployment rate and the employment-to-population (E-P) ratio. Each of these measures provides perspective on the portion of the population who are employed; Arizona's low proportion employed is a greater cause of its below-average prosperity than its low earnings per worker.

The employment-to-population ratio by year during the current cycle is shown at the top of Table 6. Nationally and in Arizona, the recessionary trough was reached in 2010. The percent change in the E-P ratio is shown in the middle of the table — not only did Arizona experience a much larger decline than the national average during the recession, the state's gains during the expansion also have lagged behind, even using the OEPS's population estimates. In the bottom portion of the table, the annual average E-P ratio by economic cycle is shown. The differential from the national average during the current cycle is considerably greater than in each of the prior cycles.

The employment-to-population ratio rises and falls with the economic cycle, nationally and in Arizona. The cyclical variations are greater in Arizona, resulting in the E-P ratio in Arizona as a percentage of the national average also being cyclical (see Chart 7). Using the population estimates from the Census Bureau, Arizona's E-P ratio as a percentage of the national average was lower from 2010 through 2015 than in any prior year. Using the population estimates from the OEPS, the percentage of the national average from 2013 through 2015 was the lowest on record. That this percentage was still falling five years after the end of the recession marks a break in the historical pattern.

The recent behavior of the unemployment rate also is different from the historical norm. Since the unemployment rate is an inverted measure — the lower the rate the better — the unemployment rate nationally is shown as a ratio to the Arizona rate in Chart 8.⁸ Thus, like the other charts, the lower the percentage, the worse that Arizona is performing relative to the nation. Historically on average, Arizona's unemployment rate was similar to the national average, being lower at times during economic expansions but higher during recessions. During the last recession, Arizona's unemployment rate quickly went from below to above the national average. In 2011 and 2012, Arizona's rate began to improve relative to the national average, as is typical during an economic recovery. However, Arizona lost ground to the U.S. average in each year from 2013 through 2015, an atypical performance for an economic expansion.

⁸ The erratic annual pattern seen in Chart 8, particularly in the earlier years, likely reflects errors in the estimates of the Arizona rate.

CHART 5
PER CAPITA GROSS DOMESTIC PRODUCT AND PER CAPITA PERSONAL INCOME IN ARIZONA AS A PERCENTAGE OF THE NATIONAL AVERAGE

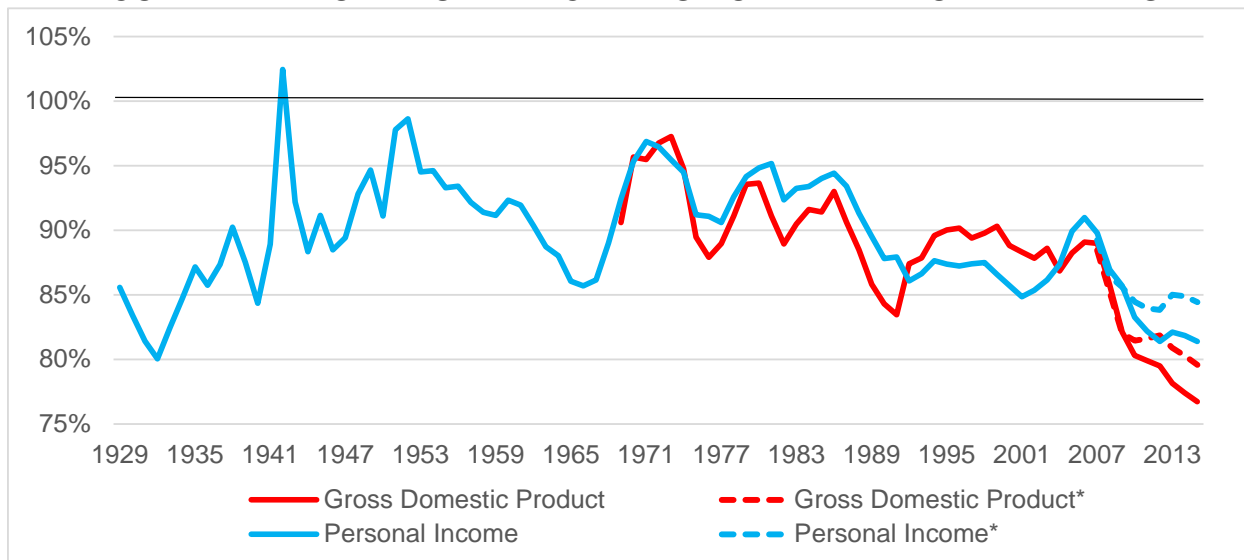
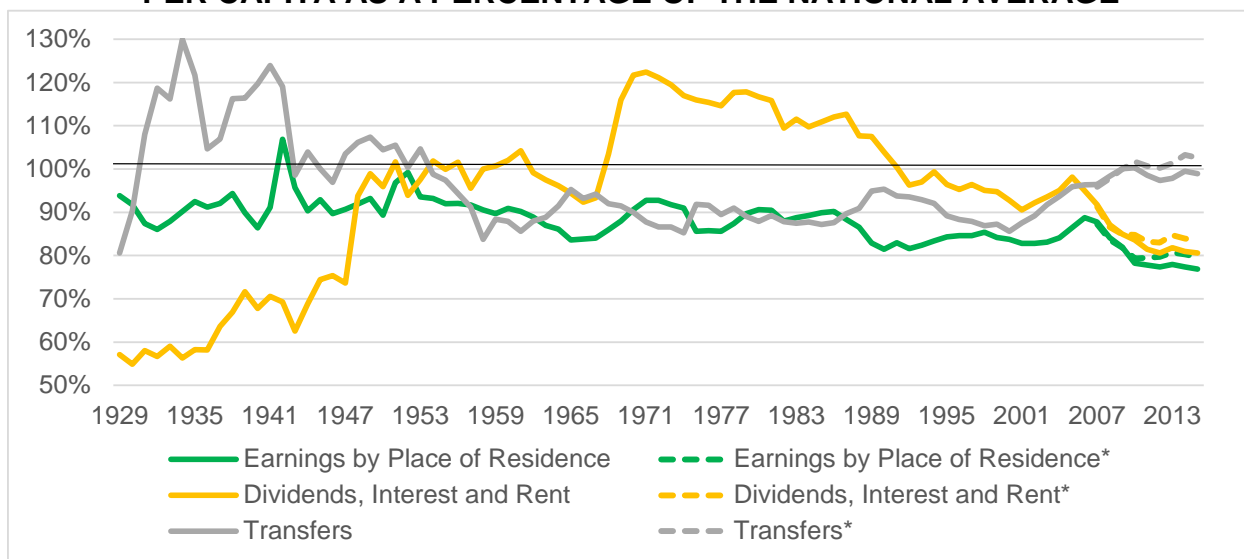


CHART 6
COMPONENTS OF PERSONAL INCOME IN ARIZONA, PER CAPITA AS A PERCENTAGE OF THE NATIONAL AVERAGE



Charts 5 and 6:
 U.S. Census Bureau estimates are used for population.
 * Adjusted for the cost of living, beginning in 2008.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, and U.S. Department of Commerce, Census Bureau.

TABLE 6
EMPLOYMENT-TO-POPULATION RATIO

	United States	Arizona: Census Bureau*	Arizona: OEPS**	Difference: Census Bureau*	Difference: OEPS**
2007	59.7%	56.3%	55.3%	-3.4	-4.4
2008	59.1	54.3	53.6	-4.8	-5.5
2009	56.8	51.1	50.7	-5.7	-6.1
2010	55.9	49.7	49.7	-6.2	-6.2
2011	56.6	50.1	50.4	-6.5	-6.2
2012	57.0	50.3	50.7	-6.7	-6.3
2013	57.6	50.8	51.3	-6.8	-6.7
2014	58.4	51.2	51.7	-7.2	-6.8
2015	59.2	51.9	52.4	-7.3	
Percent Change:					
2008 Through 2010	-6.3	-11.8	-10.1	-3.5	-3.8
2011 Through 2015	5.8	4.5	5.4	-1.3	-0.4
2008 Through 2015	-0.9	-7.9	-5.3	-7.0	-4.4
Average by Cycle:					
1969 Through 1973	45.2	42.0		-3.2	
1974 Through 1981	48.4	44.3		-4.1	
1982 Through 1990	52.6	49.9		-2.6	
1991 Through 2000	55.9	51.7		-4.3	
2001 Through 2007	58.2	54.4	53.8	-3.8	-4.4
2008 Through 2015	57.6	51.2	51.3	-6.4	-6.3

* Calculated using the population estimates from the Census Bureau.

** Calculated using the population estimates from the OEPS.

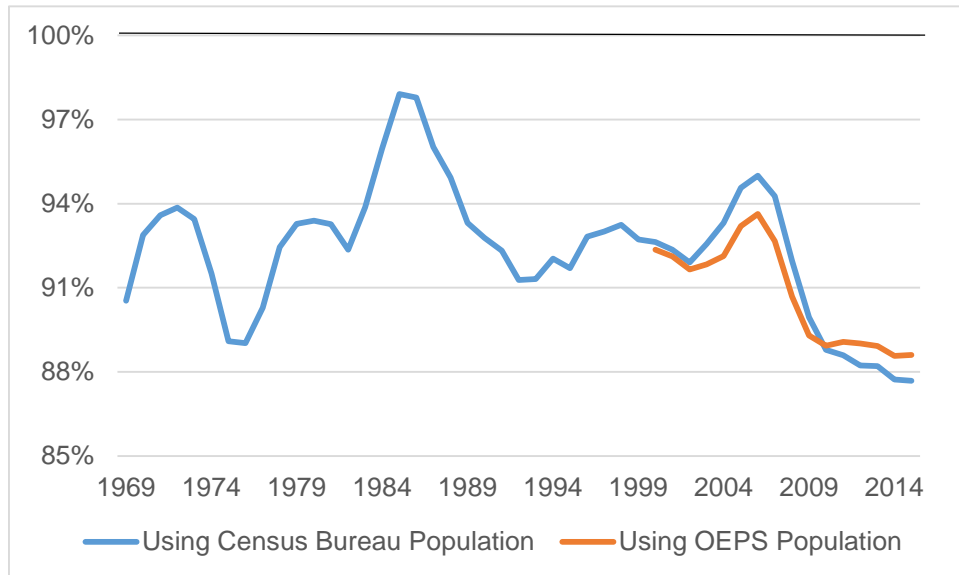
Sources: U.S. Department of Commerce, Bureau of Economic Analysis; U.S. Department of Commerce, Census Bureau; and Arizona Office of Employment and Population Statistics.

Aggregate Measures

Compared to the per capita and per employee measures, the analysis of aggregate growth over time must take into consideration the natural slowing of the percent change in areas that are growing. For example, an increase of 75,000 employees on a base of 2.5 million workers, as in the late 1990s in Arizona, was a percent gain of 3.0 percent. Today, a 75,000 increase on a base of 3.5 million equals a 2.1 percent change. Relative to the national average, Arizona's base is smaller and its growth has been faster. Thus, the magnitude of the natural slowing in the percent change over time is greater for Arizona than for the nation, causing the differential in percent growth rates between Arizona and the nation to narrow over time, even if numeric growth is unchanged. While this phenomenon adds complexity to the comparison of growth rates over time, the difference in aggregate growth rates in Arizona during the current cycle compared to earlier cycles, as discussed in this subsection, is so large that only a small portion of the slower percent growth can be attributed to the natural slowing of the percent change as the base becomes larger.

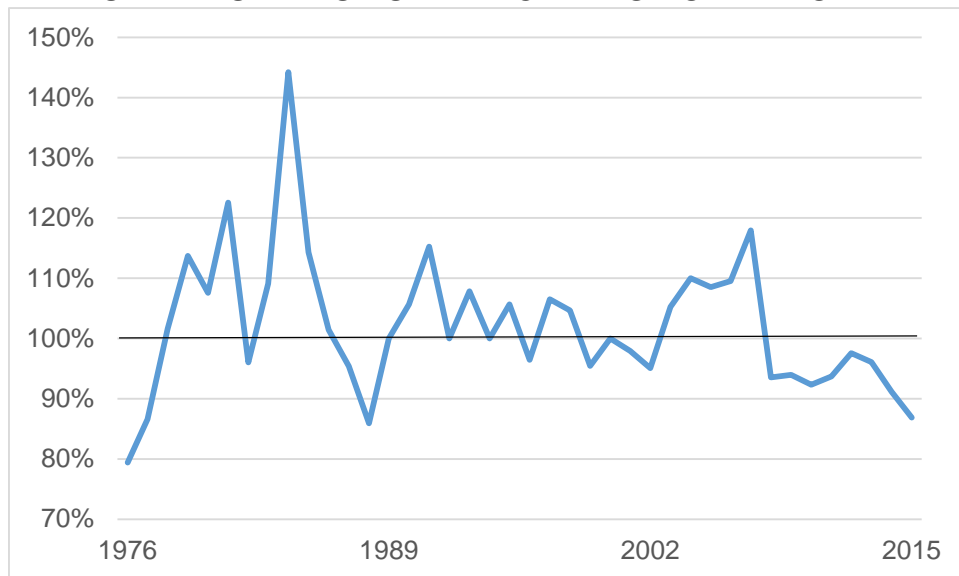
A wide range of aggregate growth measures are available, including GDP, personal income and its components, various measures of employment, and population. While not an economic measure, population is a significant factor in the aggregate growth rates of economic measures.

CHART 7
EMPLOYMENT-TO-POPULATION RATIO IN ARIZONA
AS A PERCENTAGE OF THE NATIONAL AVERAGE



Sources: U.S. Department of Commerce, Bureau of Economic Analysis; U.S. Department of Commerce, Census Bureau; and Arizona Office of Employment and Population Statistics.

CHART 8
UNEMPLOYMENT RATE,
UNITED STATES AS A PERCENTAGE OF ARIZONA



Source: U.S. Department of Labor, Bureau of Labor Statistics.

Historically, the population growth rate in Arizona was much greater than the national average: 2.75 times as much in the two prior economic cycles and at least 3.25 times higher in earlier cycles. Based on the Census Bureau's estimates, the population growth rate in Arizona between 2007 and 2015 was only 1.6 times as much as the national average. Based on the OEPS's population estimates, growth during this cycle is only 1.1 times the national average.

One means of avoiding the issue of naturally declining percent changes is to look at the numeric change in population and employment. In Table 7, the annual average change in number in Arizona is shown for recent economic cycles, along with the state's share of the national change. Numeric increases in population and employment in Arizona, as well as the state's share of the national total, were unusually high during the 1991-2000 and 2001-07 economic cycles. Based on the Census Bureau's estimates, numeric population gains are down considerably in the current cycle, but are not much less than the average of each of the three cycles from 1970 through 1990. The annual average population change using the estimates from the OEPS are lower, by more than 20,000.

Even the population estimates from the OEPS are strong relative to the change in employment in the current cycle. The average annual changes in wage and salary employment and in total employment are much lower than in earlier cycles. Wage and salary employment in Arizona in 2015 still was less than the peak reached before the start of the last recession.

Over the last 30 years of the 20th century, wage and salary employment accounted for at least 79 percent of the total employment change in each cycle. This share fell to 67 percent in the 2001-07 cycle. In the current cycle, the wage and salary employment change was still negative through 2015, while the number of proprietors had increased.

Table 8 shows the annual growth rates in the various employment measures in the current economic cycle. Growth rates in the BEA's measure of wage and salary employment are quite

TABLE 7
POPULATION AND EMPLOYMENT, ANNUAL AVERAGE
NUMERIC CHANGE BY ECONOMIC CYCLE

	Population		Total Employment		W&S Employment		Proprietors	
	Arizona	Share of Nation	Arizona	Share of Nation	Arizona	Share of Nation	Arizona	Share of Nation
1970-1973	97,070	3.9%	53,387	2.9%	46,245	3.1%	7,142	2.0%
1974-1981	85,603	3.8	48,460	2.4	40,801	2.4	7,659	2.2
1982-1990	97,110	4.3	64,615	2.5	50,924	2.5	13,691	2.4
1991-2000	147,649	4.5	90,743	3.4	74,019	3.5	16,724	2.8
2001-2007	143,871	5.3	95,822	4.6	64,037	7.6	31,784	2.6
2008-2015	82,715	3.3	8,835	0.7	-4,618	-0.9	13,453	1.7
2008-2015*	60,409	2.4						

* Based on the OEPS estimates.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis; U.S. Department of Commerce, Census Bureau; and Arizona Office of Employment and Population Statistics.

TABLE 8
DIFFERENCE IN EMPLOYMENT GROWTH RATES,
ARIZONA LESS THE NATIONAL AVERAGE

	Total	Wage and Salary			Proprietors
	BEA	BEA	QCEW	CES	BEA
2008	-1.6%	-2.0%	-2.0%	-1.6%	-0.1%
2009	-2.0	-2.6	-2.6	-2.9	0.4
2010	-1.0	-1.1	-1.1	-1.2	-1.0
2011	0.0	-0.1	-0.3	-0.1	0.0
2012	0.1	0.4	0.5	0.4	-0.8
2013	0.4	0.6	0.6	0.7	-0.4
2014	0.2	0.0	0.1	0.1	0.5
2015	0.6	0.7	0.7	0.5	0.2

Sources:

Total BEA: U.S. Department of Commerce, Bureau of Economic Analysis.

Wage and Salary BEA: U.S. Department of Commerce, Bureau of Economic Analysis.

Wage and Salary QCEW: U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

Wage and Salary CES: U.S. Department of Labor, Bureau of Labor Statistics, Current Employment Statistics.

Proprietors BEA: U.S. Department of Commerce, Bureau of Economic Analysis.

similar to those in the two wage and employment series reported by the BLS, once each series is revised. The wage and salary employment growth rate in Arizona has been slightly higher than the national average since 2012.

Current Cycle

Without adjusting for changes in the relative cost of living, Arizona's performance on gross domestic product, personal income, and earnings by place of work during the current economic cycle is inferior to the national average by a wide margin. Arizona's performance during the recession was much below the U.S. average. Given the poor performance during the recession, one might have expected Arizona to experience a period of very rapid growth during the ensuing economic expansion. Instead, gains during the subsequent expansion are below the national average in GDP and barely above average in personal income and earnings by place of work (see Table 9). This represents a sharp break from the historical norm for expansionary periods, when aggregate growth in Arizona typically was much faster than the nation.

Adjusting for living costs improves Arizona's relative performance during the current cycle. With this adjustment, the real percent changes in Arizona still are considerably less than the national average for the entire cycle and during the recession, but are above average in the expansionary period on personal income and earnings and only slightly below average on GDP.

The cost-of-living-adjusted growth rates are consistent with those of employment, displayed in Table 10. Employment losses during the recession were much more severe in Arizona, but the gains since the recession are somewhat greater than the national average.

TABLE 9
AGGREGATE MEASURES,
INFLATION-ADJUSTED PERCENT CHANGE IN CURRENT ECONOMIC CYCLE

	Not Adjusted for Living Costs			Adjusted for Living Costs	
	United States	Arizona	Difference	Arizona	Difference
Gross Domestic Product					
2008 Through 2010	-1.2%	-10.2%	-9.1	-8.4%	-7.2
2011 Through 2015	9.5	6.7	-2.8	9.2	-0.4
2008 Through 2015	8.3	-4.2	-12.5	0.0	-8.3
Personal Income					
2008 Through 2010	-0.1	-6.2	-6.1	-4.3	-4.2
2011 Through 2015	14.4	14.6	0.2	17.3	2.8
2008 Through 2015	14.3	7.5	-6.8	12.2	-2.1
Earnings by Place of Work					
2008 Through 2010	-2.7	-11.8	-9.1	-10.0	-7.3
2011 Through 2015	13.8	14.4	0.6	17.0	3.2
2008 Through 2015	10.7	0.9	-9.8	5.3	-5.4
Compensation					
2008 Through 2010	-3.1	-9.0	-5.9	-7.1	-4.0
2011 Through 2015	12.3	11.5	-0.9	14.0	1.7
2008 Through 2015	8.8	1.5	-7.3	5.9	-2.9
Proprietors' Income					
2008 Through 2010	0.7	-36.3	-37.0	-35.0	-35.7
2011 Through 2015	24.9	50.5	25.6	54.0	29.1
2008 Through 2015	25.8	-4.1	-29.9	0.1	-25.7

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 10
EMPLOYMENT, PERCENT CHANGE IN CURRENT ECONOMIC CYCLE

	United States	Arizona	Difference
Total Employment			
2008 Through 2010	-3.8%	-8.3%	-4.5
2011 Through 2015	9.9	11.3	1.3
2008 Through 2015	5.7	2.0	-3.7
Wage & Salary Employment			
2008 Through 2010	-5.6	-10.9	-5.4
2011 Through 2015	8.9	10.8	1.9
2008 Through 2015	2.9	-1.3	-4.2
Number of Proprietors			
2008 Through 2010	3.1	2.4	-0.7
2011 Through 2015	13.5	12.9	-0.6
2008 Through 2015	17.0	15.6	-1.5

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Comparison to Prior Cycles

The annual average real percent change in aggregate measures during the current economic cycle is compared to the five prior cycles in Table 11. On the GDP measure, the annual average percent change in the current cycle is far below the figures for the two prior cycles in Arizona, and also the lowest of the three cycles nationally. Compared to the nation, Arizona's performance is by far the worst of the three cycles, both with and without adjusting for the cost of living.

Comparisons are not quite as negative based on the personal income series. Still, the annual average percent change in the current cycle is much lower than in the five prior cycles in Arizona for both personal income and earnings, even after adjusting for the cost of living. The difference in the growth rate between Arizona and the national average on each measure also is the lowest of the six cycles, both with and without adjusting for living costs.

These results are consistent with those based on employment, as seen in Table 12. Total employment and wage and salary employment levels in 2015 were hardly different from those in 2007 in Arizona; nationally employment rose over this period. In each of the five prior cycles, growth in Arizona had been at least 1.9 times as fast as the national average.

Looking only at the expansionary phase of the cycle, the conclusions are the same. Arizona's aggregate growth rates, and its performance relative to the national average, are the lowest of the last six expansions by a wide margin. Of the 14 measures included in Table 13, growth during the current cycle is the slowest — both in Arizona and as a differential from the U.S. average — in all but proprietors' income, even after adjustment for living costs. Without adjusting for living costs, the average growth rate during the current expansion ranges by indicator from slightly lower to slightly higher than the U.S. average. Considering the relative decline in living costs in Arizona, growth rates are a little higher in Arizona than the nation.

TABLE 11
AGGREGATE MEASURES, ANNUAL AVERAGE
INFLATION-ADJUSTED PERCENT CHANGE BY ECONOMIC CYCLE

	United States	Arizona	Difference	Ratio
Gross Domestic Product				
1991 Through 2000	3.54%	6.98%	3.45	1.97
2001 Through 2007	2.29	4.34	2.04	1.89
2008 Through 2015	1.00	-0.53	-1.53	negative
2008 Through 2015*	1.00	0.00	-1.00	0.00
Personal Income				
1970 Through 1973	4.11	9.05	4.94	2.20
1974 Through 1981	2.73	5.25	2.52	1.92
1982 Through 1990	3.60	4.83	1.23	1.34
1991 Through 2000	3.71	5.70	1.99	1.54
2001 Through 2007	2.25	4.60	2.35	2.04
2008 Through 2015	1.69	0.91	-0.78	0.54
2008 Through 2015*	1.69	1.45	-0.24	0.86
Earnings by Place of Work				
1970 Through 1973	3.68	8.87	5.19	2.41
1974 Through 1981	1.84	4.17	2.33	2.27
1982 Through 1990	3.50	4.45	0.96	1.27
1991 Through 2000	3.88	6.42	2.53	1.65
2001 Through 2007	1.75	4.02	2.27	2.30
2008 Through 2015	1.28	0.11	-1.17	0.09
2008 Through 2015*	1.28	0.65	-0.63	0.51
Compensation				
1970 Through 1973	3.55	9.48	5.93	2.67
1974 Through 1981	2.29	4.51	2.22	1.97
1982 Through 1990	3.43	4.66	1.23	1.36
1991 Through 2000	3.67	6.08	2.40	1.65
2001 Through 2007	1.81	3.95	2.14	2.18
2008 Through 2015	1.06	0.18	-0.88	0.17
2008 Through 2015*	1.06	0.72	-0.34	0.68
Proprietors' Income				
1970 Through 1973	4.64	4.42	-0.22	0.95
1974 Through 1981	-1.88	1.03	2.90	negative
1982 Through 1990	4.18	2.07	-2.11	0.50
1991 Through 2000	5.68	10.24	4.57	1.80
2001 Through 2007	1.23	4.59	3.37	3.75
2008 Through 2015	2.91	-0.52	-3.43	negative
2008 Through 2015*	2.91	0.01	-2.90	0.00

* Adjusted for changes in the relative cost of living.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 12
EMPLOYMENT, ANNUAL AVERAGE PERCENT CHANGE BY ECONOMIC CYCLE

	United States	Arizona	Difference	Ratio
Total Employment				
1970 Through 1973	1.97%	6.78%	4.82	3.45
1974 Through 1981	1.95	4.47	2.52	2.29
1982 Through 1990	2.08	4.16	2.08	2.00
1991 Through 2000	1.80	3.99	2.19	2.22
2001 Through 2007	1.21	3.11	1.90	2.58
2008 Through 2015	0.70	0.25	-0.45	0.36
Wage & Salary Employment				
1970 Through 1973	1.83	6.72	4.89	3.67
1974 Through 1981	1.89	4.34	2.45	2.29
1982 Through 1990	1.90	3.84	1.94	2.02
1991 Through 2000	1.68	3.89	2.22	2.32
2001 Through 2007	0.60	2.54	1.94	4.23
2008 Through 2015	0.35	-0.17	-0.52	negative
Number of Proprietors				
1970 Through 1973	2.80	7.19	4.39	2.57
1974 Through 1981	2.34	5.38	3.04	2.30
1982 Through 1990	3.09	5.99	2.90	1.94
1991 Through 2000	2.45	4.50	2.05	1.84
2001 Through 2007	3.94	5.70	1.76	1.45
2008 Through 2015	1.98	1.82	-0.16	0.92

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 13
AGGREGATE MEASURES, ANNUAL AVERAGE INFLATION-ADJUSTED PERCENT CHANGE DURING THE
EXPANSIONARY PHASE BY ECONOMIC CYCLE, ARIZONA LESS THE NATIONAL AVERAGE

	Gross Domestic Product	Personal Income	Earnings by Place of Work	Total Compensation	Wages and Salaries	Supplements to Wages and Salaries	Proprietors' Income
1971-73		4.78%	5.16%	5.93%	5.91%	6.14%	-0.77%
1976-79		3.54	3.92	3.78	3.92	2.97	5.08
1983-87		2.96	2.76	2.93	2.99	2.69	1.13
1992-96	4.58%	2.52	3.09	3.17	3.19	3.06	2.72
2002-06	2.34	3.27	3.13	2.65	2.83	1.92	7.29
2011-15	-0.53	0.03	0.11	-0.16	-0.10	-0.46	3.97
2011-15*	-0.07	0.50	0.57	0.31	0.36	0.00	4.47

	Earnings by Place of Residence	Dividends, Interest, and Rent	Transfer Payments	Population	Total Employment	Wage and Salary Employment	Number of Proprietors
1971-73	5.15%	4.06%	3.52%	4.57%	4.85%	4.98%	4.03%
1976-79	3.95	3.13	1.82	2.61	3.89	3.88	3.93
1983-87	2.81	3.33	3.11	2.63	3.49	3.40	4.04
1992-96	3.11	1.56	1.43	2.63	2.76	3.00	1.55
2002-06	3.25	2.82	3.88	1.79	2.38	2.47	1.99
2011-15	0.14	-0.25	0.23	0.50	0.25	0.35	-0.11
2011-15*	0.60	0.23	0.69				

* Dollar measures are adjusted for changes in the relative cost of living.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

ECONOMIC PERFORMANCE OF SUBREGIONS WITHIN ARIZONA

This section compares growth rates from 2008 through 2014 (the last year of substate data) in measures of aggregate growth, productivity, and prosperity in the Phoenix area, the Tucson area, and the combination of the state's other five metro areas to the national metro average. The nonmetro portion of the state is compared to the national nonmetro average. The current cycle is split into the recessionary and expansionary portions. In addition, annual average growth rates in the current cycle are compared to those in prior cycles. Further, for measures of productivity and prosperity, the historical record of the nominal values relative to the relevant U.S. average is examined.

The analysis is conducted both with and without adjusting for the cost of living. The relative annual percent change in the cost of living (as measured by the regional price parities) from 2008 through 2014 was not consistent across Arizona's subregions relative to the relevant U.S. average, as seen in Table 14. For the entire period, relative to the relevant national average, the Tucson area's cost of living hardly changed, while the Phoenix area and nonmetro Arizona experienced large declines. Thus, the relative growth rates across the subregions vary considerably depending on whether the data are adjusted for living costs.

Productivity Measures

Current Cycle

Growth rates measured by per worker GDP differ considerably from those gauged by per worker earnings across the four subregions. The cost-of-living adjustment also causes the relative ranks across the subregions to vary. Thus, it is difficult to conclude which of the four Arizona subregions has performed best during the current economic cycle relative to the relevant national average.

TABLE 14
PERCENT CHANGE IN THE RELATIVE COST OF LIVING
IN ARIZONA'S SUBREGIONS*

	Metro Phoenix	Metro Tucson	Other Metros	Nonmetro
2009	-0.4%	0.8%	-1.8%	-1.2%
2010	-1.7	0.0	-1.8	-0.6
2011	-1.4	0.3	2.7	-2.0
2012	-1.1	0.0	0.0	-0.2
2013	-0.2	-0.2	-3.2	1.5
2014	-0.2	-0.4	1.3	-3.8
2009 Through 2010	-2.2	0.8	-3.5	-1.8
2011 Through 2014	-2.9	-0.3	0.9	-4.6
2009 Through 2014	-5.0	0.4	-2.7	-6.3

* The metropolitan areas are compared to the national metropolitan average and the nonmetro area is compared to the national nonmetro average. Cost of living is measured by the regional price parities.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Focusing on the figures adjusted for the cost of living, per worker growth rates relative to the relevant national average during the recession were strongest in the five less-populous metro areas, with above-average gains on both per worker GDP and per worker earnings. The other subregions generally had below-average performance, with the nonmetro area doing particularly poorly on per worker GDP, as seen in Table 15.

However, during the expansion the less-populous metro areas have posted the worst results. The percent changes in Metro Tucson and nonmetro Arizona also have generally been below the relevant U.S. average. The Phoenix area has done the best during the expansion, with above-average gains on each measure.

Over the entire economic cycle, the Phoenix area has performed the best on per worker GDP, with a percent change close to the U.S. metro average. The nonmetro area has been far below the U.S. nonmetro average on per worker GDP. The Tucson area has done the worst on per worker earnings, with the other subregions slightly exceeding the relevant national average.

Comparison to Prior Cycles

Since GDP by metro area is available only back to 2001, per worker earnings is the focus of the comparison of the current cycle to prior cycles. As seen in Table 16, without adjusting for the

TABLE 15
PER WORKER MEASURES IN ARIZONA'S SUBREGIONS IN CURRENT
ECONOMIC CYCLE, DIFFERENCE FROM THE NATIONAL AVERAGE IN THE
INFLATION-ADJUSTED PERCENT CHANGE*

	Metro Phoenix	Metro Tucson Unadjusted	Other Metros	Nonmetro
Gross Domestic Product				
2008 Through 2010	-4.7	-2.2	-2.1	-9.5
2011 Through 2014	-1.1	-3.3	-7.1	-6.4
2008 Through 2014	-5.8	-5.5	-9.2	-15.7
Earnings by Place of Work				
2008 Through 2010	-4.1	0.8	0.6	-2.7
2011 Through 2014	-0.4	-2.8	-2.7	-2.5
2008 Through 2014	-4.5	-2.1	-2.1	-5.4
Adjusted for the Cost of Living				
Gross Domestic Product				
2008 Through 2010	-2.4	-2.9	1.7	-8.5
2011 Through 2014	2.0	-2.8	-7.7	-2.3
2008 Through 2014	-0.3	-5.6	-6.4	-10.9
Earnings by Place of Work				
2008 Through 2010	-1.8	0.1	4.5	-1.7
2011 Through 2014	2.8	-2.3	-3.3	1.8
2008 Through 2014	1.0	-2.2	1.0	0.1

* The metropolitan areas are compared to the national metropolitan average and the nonmetro area is compared to the national nonmetro average.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 16
PER WORKER MEASURES IN ARIZONA'S SUBREGIONS BY ECONOMIC CYCLE,
DIFFERENCE FROM THE NATIONAL AVERAGE IN THE INFLATION-ADJUSTED
ANNUAL AVERAGE PERCENT CHANGE*

	Metro Phoenix	Metro Tucson	Other Metros	Nonmetro
Earnings by Place of Work				
1970 Through 1973	0.1	0.5	1.6	1.5
1974 Through 1981	-0.0	-0.3	-1.5	0.2
1982 Through 1990	-0.9	-1.6	-1.5	-1.7
1991 Through 2000	0.6	-0.0	-0.8	-0.5
2001 Through 2007	0.1	0.3	0.8	-0.5
2008 Through 2014	-0.7	-0.3	-0.3	-0.7
2008 Through 2014**	0.1	-0.3	0.1	0.0

* The metropolitan areas are compared to the national metropolitan average and the nonmetro area is compared to the national nonmetro average.

** Adjusted for relative changes in the cost of living.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

cost of living, the per worker percent change compared to the relevant national average in the current cycle is within the historical range in each of the subregions, though it ranks second lowest of the six cycles in Metro Phoenix, Metro Tucson, and nonmetro Arizona. Adjusting for the cost of living raises the rank in Metro Phoenix and nonmetro Arizona. The results are nearly identical looking only at the expansionary portion of each cycle.

Long Term

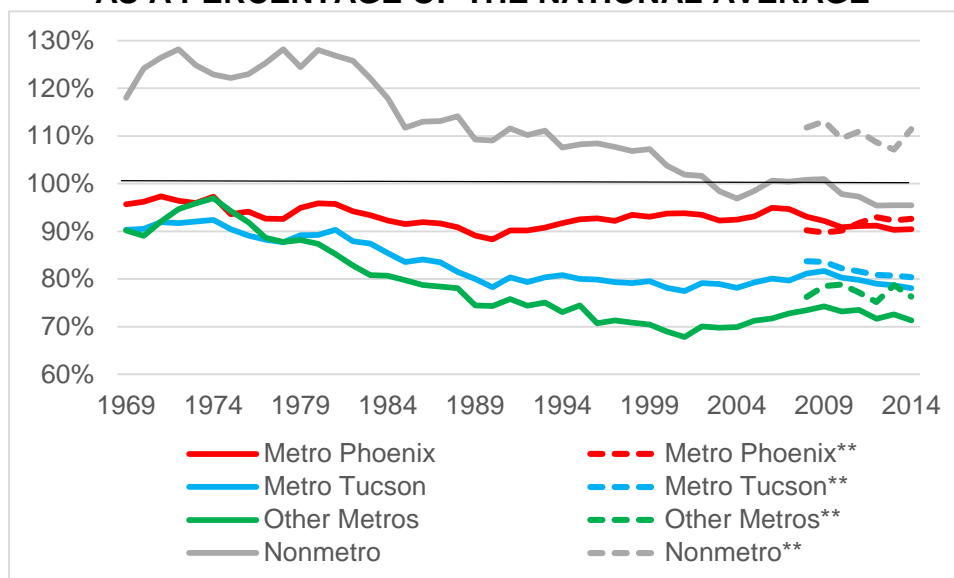
As seen in Chart 9, per worker earnings in each of the three metro subregions has been below the national metro average throughout the available time period. In contrast, the nonmetro Arizona figure historically was higher than the national nonmetro average, but has been below average in recent years without adjusting for the cost of living.

The decline over time in the ratio has been least in the Phoenix area. In contrast, the rest of the state has experienced significant declines, with the greatest declines generally occurring during the 1980s.

Prosperity Measures

As in the Arizona section of this report, the per capita figures are calculated in four ways, with and without adjusting for the cost of living and using the two estimates of population. The population estimates of the Census Bureau and OEPS are most different for Metro Phoenix, with the OEPS growth rates lower during both the recession and the expansion. For Metro Tucson, the OEPS growth rates are lower during the recession but similar to the Census Bureau during the expansion. For the aggregation of the five small metro areas and for the nonmetro area, the OEPS growth rates are lower during the recession but higher during the expansion.

CHART 9
PER WORKER EARNINGS BY PLACE OF WORK IN ARIZONA'S SUBREGIONS
AS A PERCENTAGE OF THE NATIONAL AVERAGE*



* The metropolitan areas are compared to the national metropolitan average and the nonmetro area is compared to the national nonmetro average.

** Adjusted for the cost of living, beginning in 2008.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Current Cycle

Large differences in relative growth rates across the four subregions are present between the per capita GDP and per capita personal income measures. The cost-of-living adjustment and the choice of population estimate also causes variations in the relative performance across the subregions.

Focusing on the figures adjusted for the cost of living and using the population estimates made by the OEPS, per capita growth rates relative to the relevant national average during the recession were strongest in the five less-populous metro areas, with above-average gains on both per capita GDP and per capita personal income. Nonmetro Arizona also had above-average gains in per capita personal income. Otherwise growth rates were below average, generally considerably below average, during the recession. The Phoenix area performed the worst of the four subregions on per capita personal income and second worst on per capita GDP.

During the expansion, the relative performance reversed, with Metro Phoenix posting the strongest figures, above the U.S. metro average. The rest of the state is below the relevant U.S. average, with the growth rates in the less-populous metro areas considerably below average, as seen in Table 17.

TABLE 17
PER CAPITA MEASURES IN ARIZONA'S SUBREGIONS IN CURRENT ECONOMIC
CYCLE, DIFFERENCE FROM THE NATIONAL AVERAGE IN THE INFLATION-
ADJUSTED PERCENT CHANGE*

	Metro Phoenix	Metro Tucson	Other Metros	Nonmetro
Unadjusted Using Census Bureau Population				
Gross Domestic Product				
2008 Through 2010	-10.1	-5.6	-6.6	-12.1
2011 Through 2014	-2.2	-6.4	-10.8	-5.9
2008 Through 2014	-12.4	-11.5	-16.5	-17.9
Personal Income				
2008 Through 2010	-7.2	-2.2	0.1	1.4
2011 Through 2014	-2.8	-3.5	-3.9	-4.2
2008 Through 2014	-10.2	-5.6	-3.7	-2.9
Adjusted for the Cost of Living Using Census Bureau Population				
Gross Domestic Product				
2008 Through 2010	-8.1	-6.1	-3.2	-11.2
2011 Through 2014	1.0	-5.8	-11.5	-1.7
2008 Through 2014	-7.5	-11.6	-14.0	-13.3
Personal Income				
2008 Through 2010	-5.1	-2.8	3.8	2.4
2011 Through 2014	0.4	-2.9	-4.6	0.2
2008 Through 2014	-5.0	-5.7	-0.6	2.8
Unadjusted Using OEPS Population				
Gross Domestic Product				
2008 Through 2010	-8.5	-3.5	-5.4	-10.6
2011 Through 2014	-0.5	-6.7	-12.0	-7.9
2008 Through 2014	-9.2	-9.8	-16.4	-18.2
Personal Income				
2008 Through 2010	-5.5	0.0	1.4	3.1
2011 Through 2014	-1.1	-3.8	-5.2	-6.3
2008 Through 2014	-6.8	-3.7	-3.6	-3.2
Adjusted for the Cost of Living Using OEPS Population				
Gross Domestic Product				
2008 Through 2010	-6.4	-4.1	-2.0	-9.7
2011 Through 2014	2.8	-6.2	-12.6	-3.7
2008 Through 2014	-4.1	-9.9	-13.9	-13.6
Personal Income				
2008 Through 2010	-3.3	-0.6	5.1	4.2
2011 Through 2014	2.2	-3.3	-5.9	-2.0
2008 Through 2014	-1.4	-3.8	-0.5	2.4

* The metropolitan areas are compared to the national metropolitan average and the nonmetro area is compared to the national nonmetro average.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis; U.S. Department of Commerce, Census Bureau; and Arizona Office of Employment and Population Statistics.

Over the entire economic cycle, growth rates in Arizona are below the relevant U.S. average, except for per capita personal income in nonmetro Arizona. The Phoenix area has performed the best on per capita GDP. The Tucson area has done the worst on per capita personal income.

Comparison to Prior Cycles

Since a long historical record is not available for GDP, per capita earnings by place of residence is examined instead. On this measure, the annual average percent change in the current cycle relative to the relevant national average is subpar but within the historical range, except in Metro Phoenix without adjusting for the cost of living — in which the current cycle has the weakest performance of the six cycles, as seen in Table 18. The results are similar for per capita personal income.

TABLE 18
PER CAPITA MEASURES IN ARIZONA'S SUBREGIONS BY ECONOMIC CYCLE,
DIFFERENCE FROM THE NATIONAL AVERAGE IN THE INFLATION-ADJUSTED
ANNUAL AVERAGE PERCENT CHANGE*

	Metro Phoenix	Metro Tucson	Other Metros	Nonmetro
Earnings by Place of Residence				
1970 Through 1973	1.4	1.3	0.3	1.2
1974 Through 1981	0.1	-0.6	-2.1	-0.2
1982 Through 1990	-0.9	-1.9	-1.7	-2.3
1991 Through 2000	0.7	0.3	-1.0	-0.7
2001 Through 2007	0.3	0.6	1.6	1.4
2008 Through 2014	-1.7	-1.2	-1.7	-1.4
2008 Through 2014**	-1.2	-1.0	-1.7	-1.4
2008 Through 2014***	-0.9	-1.3	-1.3	-0.7
2008 Through 2014****	-0.4	-1.0	-1.3	-0.7
Personal Income				
1970 Through 1973	1.2	0.7	0.6	1.3
1974 Through 1981	0.2	-0.3	-1.4	-0.8
1982 Through 1990	-0.9	-1.2	-1.0	-1.1
1991 Through 2000	-0.0	-0.2	-1.0	-0.3
2001 Through 2007	0.3	0.8	1.2	2.0
2008 Through 2014	-1.5	-0.8	-0.5	-0.4
2008 Through 2014**	-1.0	-0.5	-0.5	-0.4
2008 Through 2014***	-0.7	-0.8	-0.1	0.4
2008 Through 2014****	-0.2	-0.6	-0.1	0.3

* The metropolitan areas are compared to the national metropolitan average and the nonmetro area is compared to the national nonmetro average.

Note: The calculations use the Census Bureau's population estimates and are not adjusted for the cost of living except as indicated:

** Using the OEPS population estimates for Arizona.

*** Adjusted for changes in the relative cost of living.

**** Using the OEPS population estimates for Arizona and adjusted for changes in relative living costs.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis; U.S. Department of Commerce, Census Bureau; and Arizona Office of Employment and Population Statistics.

Looking only at the expansionary portion of each cycle, Metro Tucson's performance relative to the U.S. metro average during the current cycle is the worst of the six cycles based on all four calculations on each measure. The current cycle in Metro Phoenix also ranks last among the cycles except when using the OEPS estimates and adjusting for the cost of living.

Long Term

Per capita earnings in each of the four subregions has been below the relevant national average throughout the available time period, as seen in Chart 10. Except in Metro Phoenix, the ratio to the national average has fallen significantly over time. Even in Metro Phoenix, the ratios in recent years have been the lowest of the time series.

Each of the four subregions also has been below the relevant national average throughout the available time period on per capita personal income, as seen in Chart 11. The declines over time have not been quite as large as for per capita earnings, except in the Phoenix area. Metro Phoenix has dropped about as much relative to the national average as the other subregions.

Other Measures

The current employment-to-population ratio is less than the relevant national average throughout the state. The differential is least in Metro Phoenix, where the ratio in 2014 was 6 percent below average using the population estimate from the OEPS and 8 percent below average based on the Census Bureau's estimate. The E-P ratio was 16 percent below average in Metro Tucson, 23-to-24 percent below average in nonmetro Arizona, and 29-to-30 percent below average in the five less populous metros.

In the current cycle, the E-P ratio declined relative to the national average in both the recession and the expansion in each of Arizona's subregions, except for during the expansion using the population estimate from the OEPS in Metro Phoenix and during the expansion using the population estimate from the Census Bureau in nonmetro Arizona. For the entire cycle, the performance relative to the relevant national average was worst in the five less-populous metros and least unfavorable in nonmetro Arizona.

Relative to the five prior economic cycles, the performance relative to the relevant national average in the current cycle is the worst in the two large metro areas and second worst in the other two subregions. The comparison is only slightly less unfavorable when considering only the expansionary portion of each cycle.

The history of the E-P ratio relative to the relevant national average is shown in Chart 12. The figures have fluctuated but not shown a trend in Metro Phoenix, Metro Tucson, and nonmetro Arizona. The less-populous metro areas have experienced a significant down trend.

The unemployment rate is not readily available for the U.S. metro and nonmetro averages, so the rates in Arizona's subregions are compared to the national average. In 2015, the unemployment rate in Metro Phoenix was equal to the national average. The rate was higher (worse) than the national average in the other subregions, though only by a small amount in Metro Tucson.

CHART 10
PER CAPITA EARNINGS BY PLACE OF RESIDENCE IN ARIZONA'S SUBREGIONS
AS A PERCENTAGE OF THE NATIONAL AVERAGE*

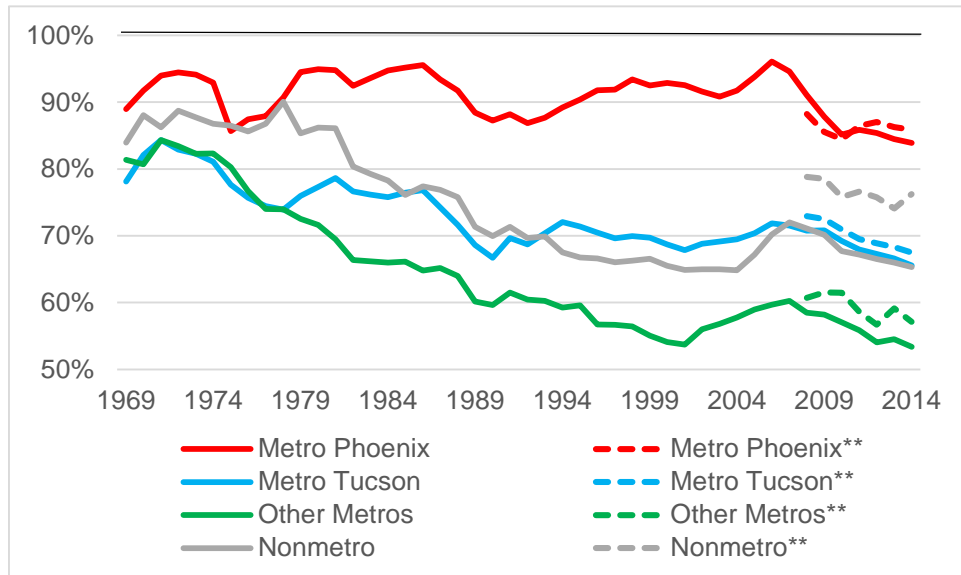
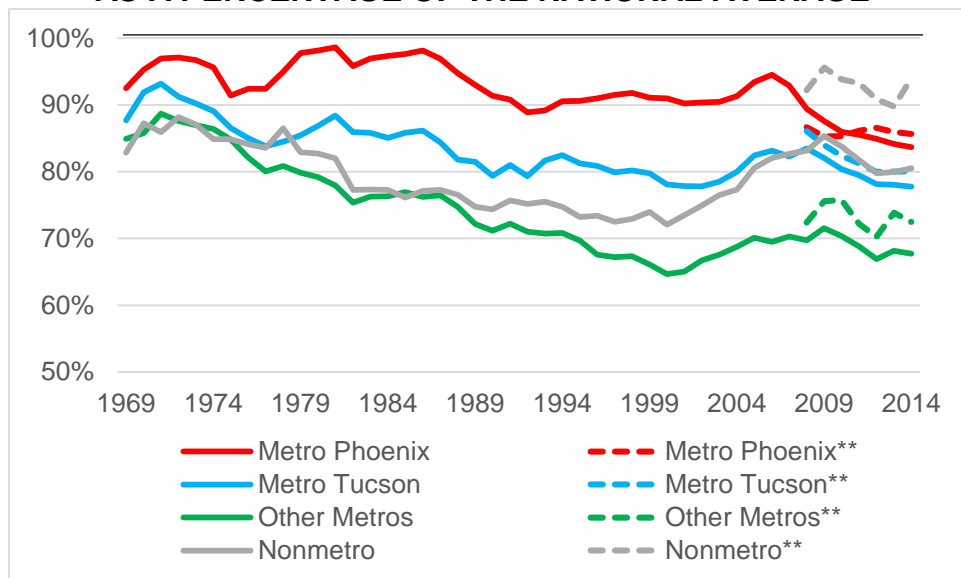


CHART 11
PER CAPITA PERSONAL INCOME IN ARIZONA'S SUBREGIONS
AS A PERCENTAGE OF THE NATIONAL AVERAGE*



Charts 10 and 11:

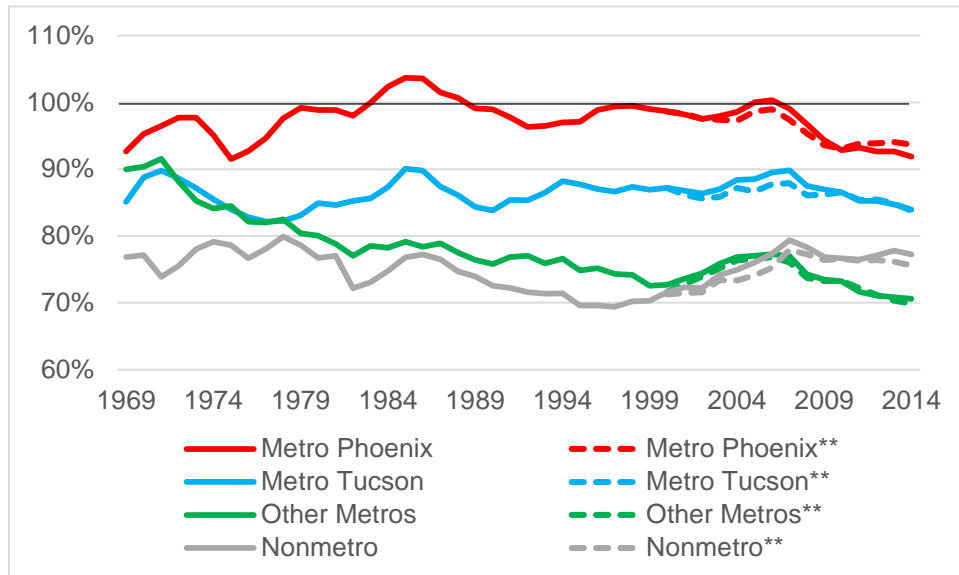
U.S. Census Bureau estimates are used for population.

* The metropolitan areas are compared to the U.S. metropolitan average; the nonmetro area is compared to the U.S. nonmetro average.

** Adjusted for the cost of living, beginning in 2008.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

CHART 12
EMPLOYMENT-TO-POPULATION RATIO IN ARIZONA'S SUBREGIONS
AS A PERCENTAGE OF THE NATIONAL AVERAGE*



* The metropolitan areas are compared to the U.S. metropolitan average; the nonmetro area is compared to the U.S. nonmetro average.

** Using the population estimates from the OEPS. The solid lines use the estimates from the Census Bureau.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis; U.S. Department of Commerce, Census Bureau; and Arizona Office of Employment and Population Statistics.

In each of Arizona's subregions, the unemployment rate rose more than the national average during the last recession. During the current expansion, the rate has not changed much relative to the nation in any of the subregions, though the differential has widened in Metro Tucson and in the five less-populous metro areas. For the entire cycle, each of the subregions has performed worse than the nation, particularly the parts of the state outside the two large metro areas. The average unemployment rate relative to the national average during the current cycle compares unfavorably to the two prior cycles in the two populous metro areas.

Aggregate Measures

Current Cycle

Three aggregate economic measures are included in Table 19: GDP, earnings, and total employment. The two dollar measures are shown with and without adjustment for the cost of living. The results are not consistent across these measures.

Focusing on employment and the dollar figures adjusted for the cost of living, growth rates relative to the relevant national average during the recession were below average in each subregion. The Phoenix area performed the worst on earnings. The five less-populous metros did

TABLE 19
AGGREGATE MEASURES IN ARIZONA'S SUBREGIONS IN CURRENT ECONOMIC
CYCLE, DIFFERENCE FROM THE NATIONAL AVERAGE IN THE INFLATION-
ADJUSTED PERCENT CHANGE*

	Metro Phoenix	Metro Tucson Unadjusted	Other Metros	Nonmetro
Gross Domestic Product				
2008 Through 2010	-8.9	-6.0	-7.4	-11.1
2011 Through 2014	0.7	-7.9	-12.9	-5.3
2008 Through 2014	-9.0	-13.8	-19.8	-16.4
Earnings by Place of Work				
2008 Through 2010	-8.3	-3.2	-4.9	-4.7
2011 Through 2014	1.6	-7.5	-8.5	-1.2
2008 Through 2014	-7.7	-10.6	-13.2	-6.2
Total Employment				
2008 Through 2010	-4.5	-3.9	-5.4	-2.1
2011 Through 2014	2.0	-4.6	-5.7	1.3
2008 Through 2014	-3.1	-8.4	-10.9	-0.9
Adjusted for the Cost of Living				
Gross Domestic Product				
2008 Through 2010	-6.8	-6.6	-4.0	-10.2
2011 Through 2014	4.2	-7.4	-13.6	-1.1
2008 Through 2014	-3.5	-13.9	-17.1	-11.7
Earnings by Place of Work				
2008 Through 2010	-6.2	-3.8	-1.4	-3.7
2011 Through 2014	5.1	-7.0	-9.2	3.3
2008 Through 2014	-2.2	-10.7	-10.3	-0.9

* The metropolitan areas are compared to the national metropolitan average and the nonmetro area is compared to the national nonmetro average.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

the best on both earnings and GDP. The nonmetro area was closest to average on employment but was far below average on GDP.

During the expansion, the growth rates have been considerably below average on each measure in Metro Tucson and in the five less-populous metros. Metro Phoenix has registered above-average growth rates on each measure and nonmetro Arizona is above average on employment and earnings.

Over the entire economic cycle, each subregion has been inferior to the relevant average on each measure. The Phoenix area has performed the best on GDP and the nonmetro area has been best on employment and earnings. The Tucson area and the five less-populous metros have lagged far behind the U.S. metro average.

Comparison to Prior Cycles

In each of the five prior economic cycles, the employment growth rate in each of Arizona's subregions was greater than the relevant national average with just one exception. Growth rates

in the subregions generally were much greater than average, as seen in Table 20. In contrast, in the current cycle, the performance in each of the subregions has been far inferior to the relevant U.S. average, with each subregion not regaining by 2014 the jobs lost during the recession, while the nation's employment levels were higher than those in the prior cycle. Even if the analysis is restricted to the expansionary period, the performance in each subregion in the current cycle is far inferior to each of the five prior cycles.

The results are similar for the earnings measure. Without adjusting for the cost of living, the percent change in the current cycle relative to the relevant national average is considerably worse than in each of the five prior cycles in each of the subregions — for both the entire cycle and for the expansionary portion. Even after adjusting for living costs, the performance in the current cycle — total cycle and the expansionary portion — is worse than in each of the five prior cycles in Metro Phoenix, Metro Tucson, and in the five less-populous metros.

TABLE 20
AGGREGATE MEASURES IN ARIZONA'S SUBREGIONS BY ECONOMIC CYCLE,
DIFFERENCE FROM THE NATIONAL AVERAGE IN THE INFLATION-ADJUSTED
ANNUAL AVERAGE PERCENT CHANGE*

	Metro Phoenix	Metro Tucson	Other Metros	Nonmetro
Earnings by Place of Work				
1970 Through 1973	5.5	5.6	4.8	4.5
1974 Through 1981	2.8	1.6	0.3	1.6
1982 Through 1990	1.4	-0.7	-0.1	-0.2
1991 Through 2000	3.2	1.5	1.1	0.7
2001 Through 2007	2.1	1.4	3.1	1.6
2008 Through 2014	-1.1	-1.5	-1.9	-0.9
2008 Through 2014**	-0.3	-1.5	-1.5	-0.1
Total Employment				
1970 Through 1973	5.3	5.0	3.1	2.9
1974 Through 1981	2.9	1.8	1.8	1.4
1982 Through 1990	2.4	0.9	1.5	1.6
1991 Through 2000	2.5	1.5	1.8	1.2
2001 Through 2007	2.0	1.1	2.3	2.0
2008 Through 2014	-0.4	-1.2	-1.6	-0.1

* The metropolitan areas are compared to the national metropolitan average and the nonmetro area is compared to the national nonmetro average.

** Adjusted for relative changes in the cost of living.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

APPENDIX I

REGIONAL PRICE PARITIES

The regional price parity (RPP) estimates for the states and metro areas produced by the U.S. Department of Commerce's Bureau of Economic Analysis (BEA) are the most comprehensive available estimates of regional differences in the cost of living. A relatively new product of the BEA, the cost-of-living figures are available annually only for the 2008-to-2014 period.

The RPP estimates and the methodology used to produce these estimates are available at <http://www.bea.gov/regional/index.htm>. An analysis of the RPPs is included in the August 2014 University Economist paper "Measures of Prosperity and Productivity Adjusted for the Cost of Living," available at <http://wpcarey.asu.edu/sites/default/files/prosperitycol8-14.pdf>.

The BEA produces RPPs for three categories: goods, rents, and services other than rents. In the rents category, the BEA considers owned housing to be a capital good (an investment) rather than a consumption item. Instead of measuring either the price of the home or the mortgage payment, the BEA instead measures "owners' equivalent rent" — the amount of rent that could be collected if the owner were to place the housing unit in the rental market.

Generally, the relative cost of living in a region does not change quickly over time. However, the relative cost of living in Arizona dropped noticeably between 2008 and 2014. The overall decline was the greatest in the nation, as was the drop in the index for goods. The index for rents declined by the second-largest amount; the change in the services other than rents category ranked 37th. The ranks were nearly identical for Arizona's metropolitan areas as a group. The ranks were not quite as low for Arizona's nonmetropolitan area. Among the 381 metro areas nationally, the Phoenix area ranked fourth lowest on the change in the relative cost of living overall, with low ranks in each of the three components. Some of the state's less-populous metro areas also ranked near the bottom.

The rents component of the RPP is responsible for most of the difference in the overall cost of living across regions and for most of the relative change in living costs over time. Most of the decline in Arizona's RPP occurred in 2010, 2011, and 2012. This period of decline corresponds to the crash in Arizona's real estate market following the huge increases in the 2003-to-2006 period

The RPPs for Arizona and its subregions follow.

REGIONAL PRICE PARITIES

	All Items	Goods	Rents	Other	All Items	Goods	Rents	Other
Arizona								
2008	100.6	101.2	102.6	98.8				
2009	100.1	101.0	100.3	98.9				
2010	98.6	100.6	95.1	98.2				
2011	97.9	99.4	94.2	98.2				
2012	97.1	98.6	93.8	97.4				
2013	96.6	98.6	91.5	97.4				
2014	96.4	98.5	91.1	97.3				
Arizona Metropolitan Areas					Arizona Nonmetropolitan Area			
2008	101.2	101.1	105.7	99.0	90.2	100.0	60.1	97.1
2009	100.7	100.9	103.1	99.3	89.3	99.5	60.0	94.6
2010	99.1	100.4	97.3	98.4	89.3	99.1	57.3	94.5
2011	98.4	99.3	96.5	98.4	87.7	98.5	53.9	93.6
2012	97.7	98.5	96.3	97.7	87.8	98.6	57.1	92.4
2013	97.2	98.5	93.7	97.7	89.1	98.6	61.8	92.5
2014	97.0	98.4	93.7	97.6	85.7	98.7	52.7	92.3
Phoenix Metropolitan Area					Tucson Metropolitan Area			
2008	103.2	102.7	110.8	99.8	97.0	95.8	98.6	97.6
2009	102.7	102.1	110.3	99.7	97.7	96.6	97.7	99.3
2010	100.8	101.4	104.5	98.4	97.6	97.1	94.2	100.2
2011	99.3	99.6	101.0	98.1	97.8	97.6	93.1	100.8
2012	98.1	98.6	99.3	97.0	97.7	96.9	92.8	101.3
2013	97.9	98.7	97.8	97.0	97.5	96.9	92.1	101.3
2014	97.7	98.7	96.9	96.9	97.1	96.8	91.0	101.3
Flagstaff Metropolitan Area					Lake Havasu City Metropolitan Area			
2008	99.4	99.8	99.7	98.8	95.8	95.8	92.6	97.6
2009	99.3	99.1	105.5	95.8	96.4	96.6	91.3	99.3
2010	98.4	99.3	102.5	94.8	95.8	97.1	86.1	100.2
2011	97.9	98.9	102.6	93.9	95.3	97.6	82.4	100.8
2012	97.5	98.7	102.2	93.4	94.5	96.9	79.4	101.3
2013	98.1	98.6	105.0	93.6	94.2	96.9	78.7	101.3
2014	97.9	98.4	104.6	93.5	93.6	96.8	77.0	101.3
Prescott Metropolitan Area					Sierra Vista Metropolitan Area			
2008	99.9	99.8	101.8	98.8	94.8	99.8	81.9	98.8
2009	98.3	99.1	100.4	95.8	93.2	99.1	79.7	95.8
2010	97.1	99.3	96.4	94.8	92.8	99.3	78.6	94.8
2011	95.6	98.9	92.4	93.9	93.2	98.9	82.2	93.9
2012	95.6	98.7	93.7	93.4	92.8	98.7	82.3	93.4
2013	95.6	98.6	93.6	93.6	91.7	98.6	79.0	93.6
2014	95.4	98.4	93.5	93.5	90.7	98.4	76.2	93.5
Yuma Metropolitan Area								
2008	93.3	95.8	81.8	97.6				
2009	94.8	96.6	84.5	99.3				
2010	94.2	97.1	79.9	100.2				
2011	95.1	97.6	81.6	100.8				
2012	93.9	96.9	77.5	101.3				
2013	93.6	96.9	76.8	101.3				
2014	93.3	96.8	76.2	101.3				

THE PRODUCTIVITY AND PROSPERITY PROJECT

The Productivity and Prosperity Project: An Analysis of Economic Competitiveness (P3) is an ongoing initiative begun in 2005, sponsored by Arizona State University President Michael M. Crow. P3 analyses incorporate literature reviews, existing empirical evidence, and economic and econometric analyses.

Enhancing productivity is the primary means of attaining economic prosperity. Productive individuals and businesses are the most competitive and prosperous. Competitive regions attract and retain these productive workers and businesses, resulting in strong economic growth and high standards of living. An overarching objective of P3's work is to examine competitiveness from the perspective of an individual, a business, a region, and a country.

THE CENTER FOR COMPETITIVENESS AND PROSPERITY RESEARCH

The Center for Competitiveness and Prosperity Research is a research unit of the L. William Seidman Research Institute in the W. P. Carey School of Business, specializing in applied economic and demographic research with a geographic emphasis on Arizona and the metropolitan Phoenix area. The Center conducts research projects under sponsorship of private businesses, nonprofit organizations, government entities and other ASU units. In particular, the Center administers both the Productivity and Prosperity Project, and the Office of the University Economist.

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