REGIONAL ECONOMIC COMPETITIVENESS, PART 1: PRODUCTIVITY AND PROSPERITY IN ARIZONA

May 2023

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P3 | PRODUCTIVITY AND PROSPERITY PROJECT

ASU W. P. CAREY SCHOOL of BUSINESS
ARIZONA STATE UNIVERSITY

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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

Worldwide, the goal of economic development is to improve prosperity, not simply to grow in economic size. Aggregate growth rates, such as of population and employment, have little (if any) relationship to gains in prosperity.

Prosperity, which generally is measured on a per person basis, is in part dependent on productivity, which generally is assessed on a per worker basis. The employment-to-population ratio is another important aspect of prosperity. One means of assessing regional economic competitiveness is to examine how a region compares to its peers on indicators of productivity, the employment-to-population ratio, and prosperity.

As seen in Chart S-1, Arizona was below the U.S. average in 2021 in each of the indicators after adjusting those indicators measured in dollars for the cost of living (which in Arizona was below the U.S. average). Similarly, Arizona ranked below the middle of the states on all but one indicator (see Chart S-2). Arizona was further below average on the per capita indicators than the per worker indicators since the state was below average on the employment-to-population ratio.

Since 1969, the earliest year of data for most indicators, Arizona has fallen further behind the national average on each of the productivity and prosperity indicators. However, Arizona improved relative to the national average on each of the indicators after adjusting for the change in the cost of living between 2008 (the earliest year of data on the cost of living) and 2021. This advance was largely due to Arizona's decrease in the cost of living relative to the U.S. average — Arizona's decline was the second greatest among the states.

The state's two large metropolitan areas — Phoenix and Tucson — account for approximately 85-to-90 percent of the state's economic activity and thus logically are largely responsible for the state's poor performance on productivity, the employment-to-population ratio, and prosperity. Indeed, in 2021, the Phoenix and Tucson metro areas were considerably below the norm for like-sized metro areas (as measured by employment) on each of the indicators. In the rest of the state, however, the comparison to the average of similarly sized areas was mixed, with the Flagstaff, Sierra Vista, and Yuma metro areas and the nonmetro area comparing favorably on at least some of the indicators. Given the low employment-to-population ratio throughout the state except for Metro Flagstaff, most of the state was further below average on the prosperity indicators than on the productivity indicators.

Historically, the various areas of the state generally did not compare as poorly to similarly sized areas as in 2021. While some areas experienced a relative improvement in some indicators between 1969 and 2021 (on an unadjusted basis), deterioration over time was more common. However, largely due to the relative decline in the cost of living across Arizona, improvements in the cost-of-living-adjusted indicators were common between 2008 and 2021.

With the exception of Metro Flagstaff, which has an overall employment-to-population ratio slightly higher than the average of its peers, both the age distribution and the employment-to-population ratio by age group contribute to the low overall employment-to-population ratio. In most of the state, a low employment-to-population ratio in most or all age groups has more of an effect on the overall employment-to-population ratio than the age distribution.

CHART S-1
PRODUCTIVITY AND PROSPERITY INDICATORS, PERCENT DIFFERENCE FROM THE NATIONAL AVERAGE AFTER ADJUSTMENT FOR THE COST OF LIVING, ARIZONA 2021

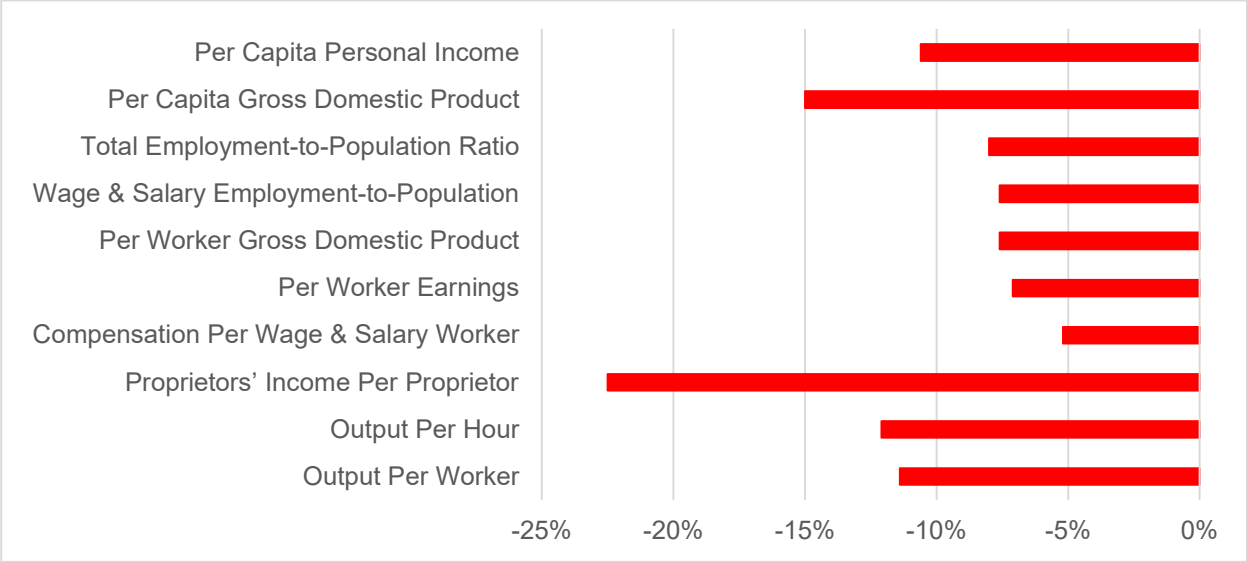
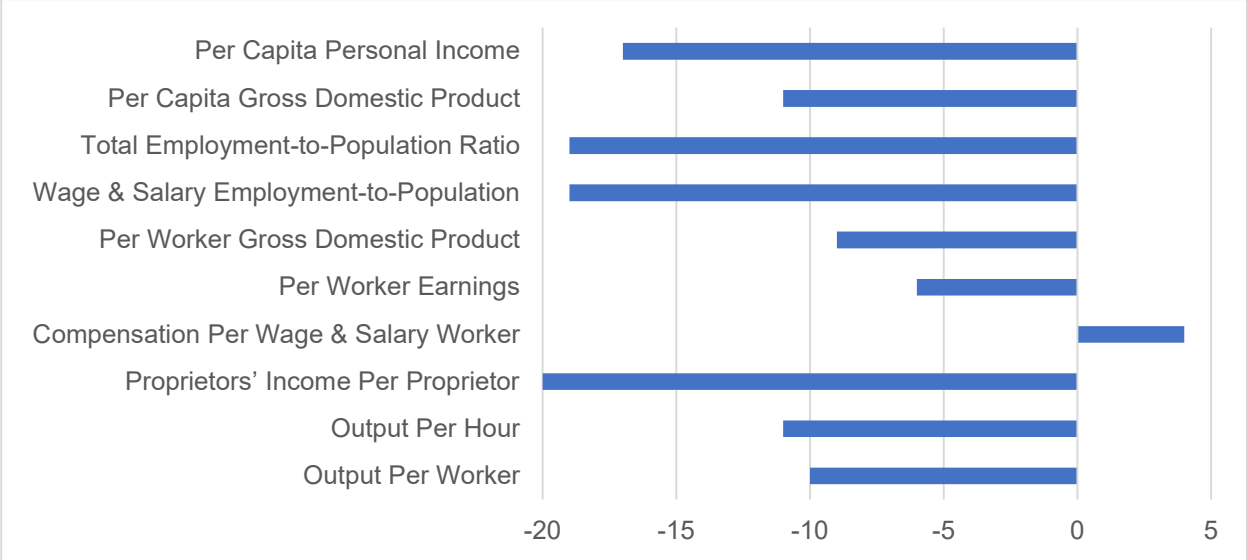


CHART S-2
PRODUCTIVITY AND PROSPERITY INDICATORS, RANK AMONG THE STATES AFTER ADJUSTMENT FOR THE COST OF LIVING, ARIZONA 2021



Notes:
The District of Columbia is one of 51 "states."
Ranks are expressed as the difference in rank from 26th (the midpoint). For example, the -20 value for proprietors' income per proprietor is equivalent to a rank of 46th, where a rank of 1 is best.

Source (Charts S-1 and S-2): Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis, and the U.S. Department of Labor, Bureau of Labor Statistics.

INTRODUCTION

This is the first of three papers that investigate regional economic competitiveness, as measured by various indicators of productivity and prosperity. The focus of this first paper is to demonstrate that regional competitiveness in Arizona, and throughout most of the state's subregions, compares poorly to comparable areas nationally and has declined over time. The second paper examines traded economic clusters as a possible explanation of why Arizona's competitiveness is subpar. The third paper reviews the factors important to economic development, how Arizona rates on these factors, and suggests ways in which the state's inferior competitiveness can be addressed.

Economically, productivity is the efficiency with which goods or services are produced by a given set of inputs, such as capital and raw materials. Productivity often is considered to be an intermediate stage between the inputs, such as physical infrastructure, and the outputs of economic performance and prosperity. Economic success generally is seen as being highly dependent on productivity. According to Paul Krugman, "productivity isn't everything, but in the long run it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker."[1]

Prosperity most commonly is defined as economic well-being. It is heavily dependent on productivity, though other factors, such as the percentage of the population who are part of the labor force, also affect regional prosperity.

For regions or countries, the concept of competitiveness has gained popularity among economic development advocates who see regions as competing against each other for expanding and relocating "basic" businesses. Such businesses sell their product primarily to customers located outside the region. Both companies and workers want to locate in competitive regions. In the long run, competitiveness is about growth in productivity, and by extension, prosperity.

In Arizona, the discussion of economic performance largely has been limited to measures of aggregate growth, such as population, employment, and gross product. 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, productivity indicators also are analyzed in this paper.

In this paper, measures of productivity and prosperity are examined as a means of evaluating regional economic competitiveness, with a particular focus on Arizona and subregions within the state. The latest data are for 2021. Changes over time in productivity and prosperity indicators also are analyzed.

[1] Krugman, Paul. "Competitiveness: A Dangerous Obsession," *Foreign Affairs*, Vol. 73, No. 2, March/April 1994, pp. 28-44, reproduced in Krugman, P. *Pop Internationalism*, 1996, pp. 3-24, MIT Press, Cambridge, MA.

Geography

Three levels of geography are examined:

- States. Arizona is compared to the national average, to all states (including the District of Columbia), and to a subset of 15 states: 10 western states — Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Texas, Utah, and Washington — and five states along the South Atlantic coast (Florida, Georgia, North Carolina, South Carolina, and Virginia).
- Metropolitan and nonmetropolitan portions by state. Those counties in Arizona that are not part of a metropolitan area (Apache, Gila, Graham, Greenlee, La Paz, Navajo, and Santa Cruz) are combined and compared to the national average of nonmetro areas, to the nonmetro area of each state,[2] and to the nonmetro area of each of the 15 comparison states. Arizona's metropolitan area — the sum of the state's seven individual metro areas — is similarly compared to the U.S. metro area, the metro area of each state, and the metro area of each of the 15 comparison states.
- Individual metropolitan areas. There are seven metro areas in Arizona:
  - Metro Phoenix-Mesa-Chandler (Metro Phoenix in subsequent references): Maricopa and Pinal counties.
  - Metro Tucson: Pima County.
  - Metro Flagstaff: Coconino County.
  - Metro Lake Havasu City-Kingman (Metro Lake Havasu City in subsequent references): Mohave County.
  - Metro Prescott Valley-Prescott (Metro Prescott in subsequent references): Yavapai County.
  - Metro Sierra Vista-Douglas (Metro Sierra Vista in subsequent references): Cochise County.
  - Metro Yuma: Yuma County.

Nonmetropolitan Arizona's wage and salary employment in 2021 accounted for only 3.2 percent of the state's total. Of the state's metropolitan wage and salary employment in 2021, 76.2 percent was in Metro Phoenix, 13.6 percent was in Metro Tucson, and 10.2 percent was in the other five metro areas combined.

Data and Indicators

The prosperity, productivity, and related indicators examined in this paper are derived from data produced by three federal government agencies.

Bureau of Economic Analysis

The primary source of data is the U.S. Department of Commerce, Bureau of Economic Analysis (BEA), which produces a variety of economic measures annually by state and metropolitan area and for the metro and nonmetro portions of each state. The earliest year of data varies by indicator and by level of geography, but most commonly is for 1969. The latest data are for 2021. Complete substate data for 2022 will not be available until December 2023. The following data series are used in this paper:

[2] Only 47 states have a nonmetropolitan portion: Delaware, the District of Columbia, New Jersey, and Rhode Island are defined as entirely metropolitan.

- Gross Domestic Product (GDP). A measurement of output, GDP is the sum of the value added from all industries. Data by state are available back to 1963. For substate areas, the first year of GDP estimates is 2001. Since the focus in this paper is to compare areas, nominal GDP is used rather than real (inflation adjusted) GDP. The GDP time series from 1963 through 1997 uses data based on the Standard Industrial Classification (SIC), while estimates for 1997 forward are based on North American Industry Classification System (NAICS) data. Thus, two estimates are available for 1997 from the BEA. For this report, the 1963-through-1997 and 1997-through-2021 series have been linked into one time series.[3]
- Compensation. Wages and salaries plus "supplements" — employer contributions for employee pension and insurance funds and employer contributions for government social insurance — comprise compensation. Data begin in 1929 for states and in 1969 for substate areas.
- Proprietors' income. Current-production income of sole proprietorships, partnerships, and tax-exempt cooperatives constitutes proprietors' income. Data begin in 1929 for states and in 1969 for substate areas.
- Earnings. This is the sum of compensation and proprietors' income.[4]
- Personal Income. Personal income — income that is received by, or on behalf of, all persons who live in an area — is calculated as the sum of wage and salary disbursements, supplements to wages and salaries, proprietors' income with inventory valuation adjustment and capital consumption adjustment, rental income of persons with capital consumption adjustment, personal dividend income, personal interest income, and personal current transfer receipts, less contributions for government social insurance. Data by state are available back to 1929, while substate data begin in 1969.
- Population. These annual estimates, expressed as of July 1, generally come from the U.S. Department of Commerce, Census Bureau, and are available back to 1929 by state and to 1969 for substate areas. However, the Census Bureau has not yet released revised estimates for 2010 through 2019 that are consistent with the 2010 and 2020 decennial censuses. The BEA has produced an interim series of such estimates that are used in this paper. The population estimates are used to calculate per capita indicators and the employment-to-population ratios.
- Wage and Salary Employment. The BEA's measure of wage and salary employment is more comprehensive than the measure produced by the U.S. Department of Labor, Bureau of Labor Statistics (BLS), adding estimates for farm workers and other workers not counted by the BLS, such as workers not covered by unemployment insurance. As with the figures from the BLS, the BEA's employment estimates are expressed as the number of jobs (not the number of individuals, some of whom hold more than one job), with no distinction between part-time and full-time employment. Employment is expressed by place of work, not residence. For example, an individual who lives in Bullhead City, Arizona and works in Laughlin, Nevada is counted in Nevada. The first year of BEA employment estimates is 1969.

[3] The linked series includes the actual dollar values for 1997 through 2021 based on the NAICS data. The dollar values for the earlier years are created by applying the annual percent changes calculated from the actual dollar values based on the SIC data to the 1997 NAICS dollar value.

[4] Earnings are expressed both by place of residence and by place of work. The latter measure is examined in this report.

- Total Employment. The BEA adds an estimate of the number of proprietors (those self-employed) to the number of wage and salary workers. However, those self-employed are broadly defined to include individuals who only occasionally do work on their own account and who may also hold a wage and salary job. To avoid double counting, the wage and salary employment measure is primarily used in this paper.
- Regional Price Parity (RPP). The cost of living varies substantially across the country. Thus, when comparing states or metro areas, indicators measured in dollars should be adjusted for the cost of living. Historically, a consistent and accepted measure of the cost of living was not available. The first year of the RPP estimates is 2008.

Various indicators of prosperity are available; two expressed on a per capita basis are examined in this paper:

- Gross domestic product divided by population.
- Personal income divided by population.

True indicators of productivity are limited at a subnational level of geography. Indicators expressed on a per worker basis act as proxies:

- Gross domestic product divided by total employment.
- Earnings divided by total employment.

The per worker earnings measure consists of two parts: compensation divided by wage and salary employment and proprietors' income divided by the number of proprietors.

The difference between the per capita and per worker versions of an indicator such as GDP is the employment-to-population (E-P) ratio, which is a key component of prosperity. Since BEA's employment estimates are reported by place of work, population centers that cross jurisdictional boundaries also affect the E-P ratio calculated from the BEA data. For example, in the New York City area, individuals who live in New Jersey or Connecticut and commute to work in New York state raise the E-P ratio in New York state and lower it in Connecticut and New Jersey.

Census Bureau

Additional data are obtained from the American Community Survey (ACS) produced annually by the Census Bureau. First, the poverty rate — a measure of prosperity — was collected for states for 2010 through 2019 and for 2021.[5] Since sampling error in the ACS is directly related to population size, annual substate poverty rates were not collected. The ACS poverty rates were supplemented with poverty rates from the 1980, 1990, and 2000 decennial censuses, which are for the preceding calendar year (e.g. 1979). Since the calculation of these poverty rates does not consider geographic variations in the cost of living, the value of this indicator is limited.

Second, employment and population data were collected from the ACS by age group. Since these data are subject to sampling error, annual estimates by age group in less-populous areas are not reliable. To reduce the sampling error, the data from the last five years — 2017 through 2021 — are combined.[6] No time series data from the ACS are used for employment. Since both employment and population in the ACS are expressed by place of residence and since

[5] Due to COVID-19, data collection was inadequate to produce reliable estimates for 2020.
[6] The limited data collection during 2020 increases the sampling error present in the 2017-through-2021 dataset relative to other five-year samples.

employment is expressed by individual rather than by job, the E-P ratio calculated from the ACS conceptually differs from that calculated from BEA data. If both employment and population are expressed by place of residence, the overall E-P ratio is determined by two factors: the age distribution of the population and the E-P ratio by age group.

Bureau of Labor Statistics

In 2021 for the first time, the BLS released productivity measures at a subnational level. However, the data are available only for states from 2007 through 2021 and are limited to the nonfarm private sector. From the various measures produced by the BLS, two productivity indicators are analyzed in this paper: output per hour and output per worker.

Cost of Living

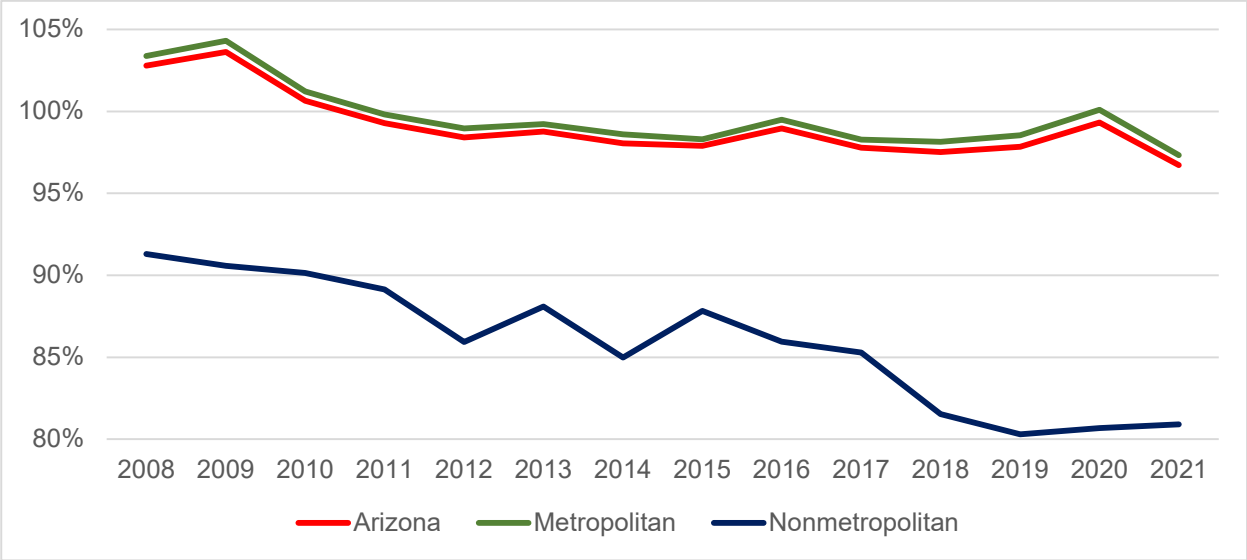
Based on the RPP, the cost of living in Arizona has declined relative to the nation since the earliest data in 2008, as seen in Chart 1. Arizona's cost of living peaked at 3.6 percent above the U.S. average in 2009, 12th highest among the 51 states. By 2021, Arizona's figure was 3.3 percent below average, ranking 23rd. The metropolitan portion of the state followed a similar pattern, with its cost of living relative to the national average falling from 4.3 percent above average and a rank of 12th in 2009 to 2.7 percent below average and a rank of 23rd in 2021. A larger relative decrease occurred in Arizona's nonmetro portion relative to the U.S. average, falling from 8.7 percent below average and a rank of 21st in 2008 to 19.1 percent below average — the lowest of the 47 states with a nonmetro area — in 2021.

Between 2008 and 2021, Arizona had the second-greatest relative decrease in the cost of living among the states; the metropolitan and nonmetro portions of the state each also had the second-largest decrease. The relative cost of living dropped in each of Arizona's seven metropolitan areas, as seen in Chart 2. The change in the relative cost of living ranked 341st or lower among the nation's 384 metro areas in each metro area except Yuma.

Based on various estimates of the cost of living that were produced by several researchers prior to 2008, the cost of living in Arizona ranged from 4 percent less than the national average to equal to the U.S. average. Thus, Arizona's cost of living relative to the national average based on the RPP was unusually high in 2008 and 2009, likely a lingering result of the overheated economy, largely due to the real estate boom, of the mid-2000s. Thus, the subsequent decline in the state's relative cost of living represents a return to historical conditions rather than a downtrend.

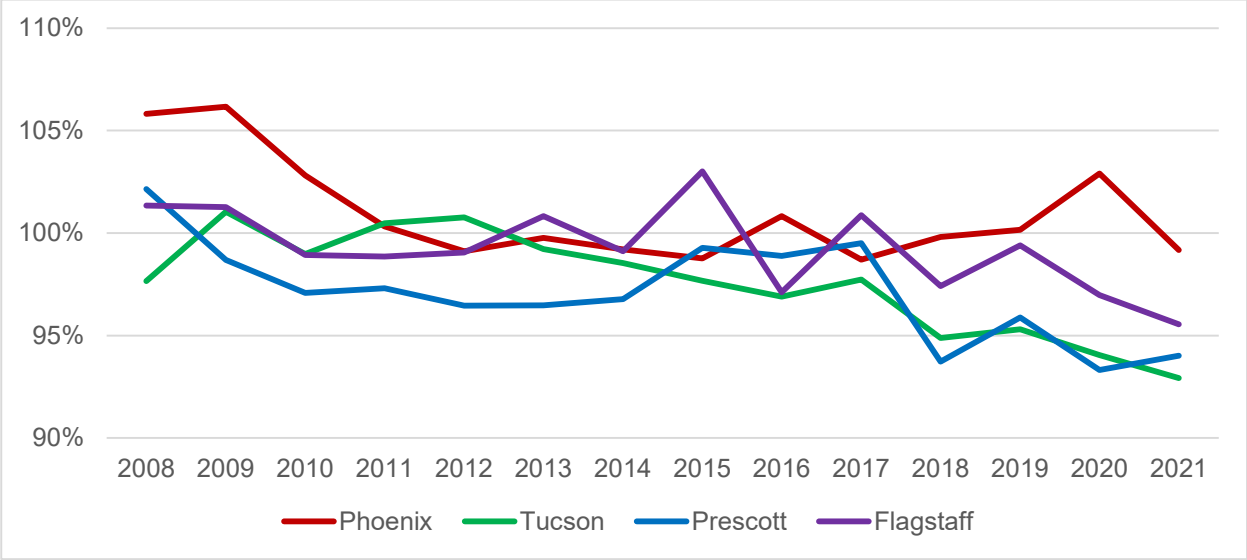
Arizona's 6 percent decrease in the relative cost of living between 2008 and 2021 results in considerably different interpretations of the state's performance over that time period on measures of productivity and prosperity. Without adjusting for the cost of living, the state's prosperity and productivity fell relative to the nation. Adjusting for the cost living results in a modest relative improvement in Arizona.

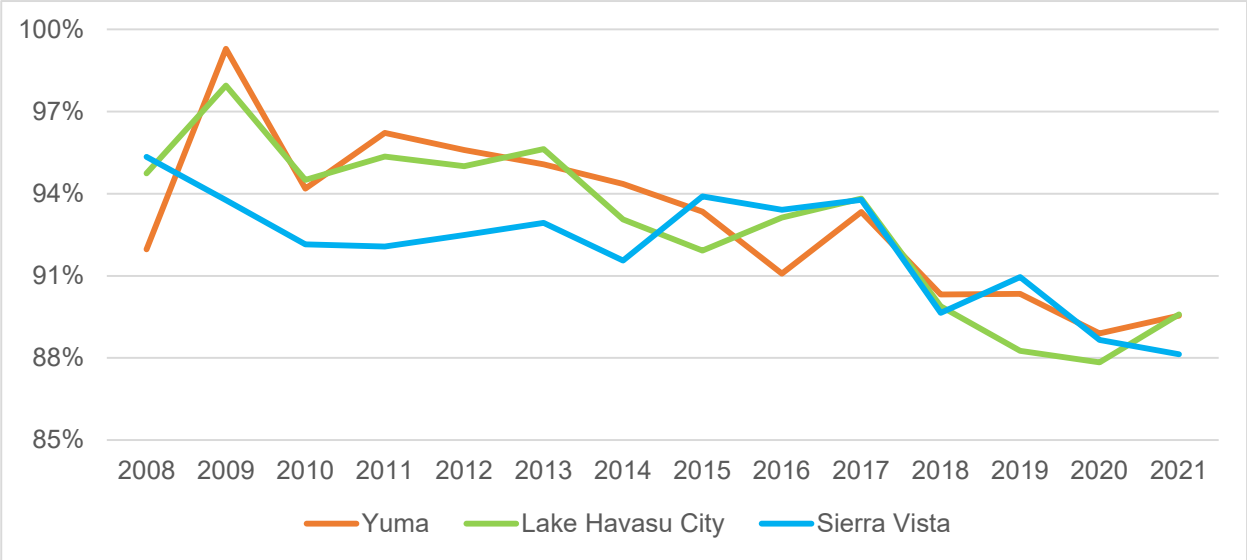
CHART 1
COST OF LIVING IN ARIZONA AS A PERCENTAGE OF THE NATIONAL AVERAGE



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

CHART 2
COST OF LIVING IN ARIZONA'S METROPOLITAN AREAS
AS A PERCENTAGE OF THE NATIONAL AVERAGE





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

MEASURES OF PRODUCTIVITY AND PROSPERITY VERSUS AGGREGATE GROWTH INDICATORS

In order to test the relationship across the economic indicators of the percent change over time, correlation coefficients were calculated for the percent changes over various time periods for states, metropolitan areas, and nonmetro areas. The time periods analyzed are single economic cycles measured from cyclical peak to peak and longer periods consisting of two or more economic cycles. Most of the time periods use data not adjusted for the cost of living, but correlations were examined for the 2008-to-2019 period using adjusted data.

This analysis uses the Pearson correlation coefficient, which can range between 1 (perfect positive correlation) to -1 (perfect negative correlation). A value of 0 indicates absolutely no correlation. In general, a correlation coefficient greater than 0.5 (positive or negative) is considered to indicate a strong relationship, a value from 0.3 to 0.5 indicates a moderate correlation, and a value between 0 and 0.3 indicates weak correlation. These values are subjective and are not related to statistical significance.

The significance level of the correlation coefficients varies with the number of observations (for example, the number of states). For an analysis with a large number of observations, a smaller coefficient is significant than for an analysis with a small number of observations. In addition, the significance of a coefficient varies with the significance level selected by the researcher, which commonly is 5 percent. With a significance level of 5 percent, there is a one-in-20 chance that the determination of whether a relationship between two variables is significant or not is incorrect. More conservative significance levels of 1 percent or even 0.1 percent often are used.

When the number of observations is large, a correlation coefficient can be statistically significant even at low correlations. For example, for an analysis of the 384 metropolitan areas, the correlation coefficient is significant at 0.10 at the 5 percent level, 0.13 at the 1 percent level, and 0.17 at the 0.1 percent level. However, as noted above, such correlations are weak. In a multiple regression analysis, the correlation coefficients are squared — a coefficient of 0.10 explains just 1 percent of the difference in the growth rates across the observations, while a coefficient of 0.7 squared indicates that 49 percent of the variation in the growth rates is explained.

States

At the state level, the percent changes in the various measures of aggregate growth — GDP, earnings, total employment, wage and salary employment, and population — with few exceptions are correlated with each of the other aggregate growth indicators at coefficients of at least 0.7 over each of the time periods selected. The lowest correlations are between the percent changes in GDP and population and between earnings and population.

The percent changes in the various measures of productivity and prosperity — per capita personal income, per capita GDP, per worker GDP, and per worker earnings — are almost as highly correlated to each other as the measures of aggregate growth, regardless of the time period examined. The weakest correlation is between per capita personal income and per worker GDP.

In contrast, correlations between employment growth and changes in the productivity and prosperity indicators are much lower and are statistically significant only in *some* of the shorter

time periods examined. Correlations are stronger with wage and salary employment than with total employment. Over longer time periods, no correlation is significant, with most of the correlation coefficients negative.

In no time period was the percent change in population significantly correlated to the percent change in any of the productivity and prosperity measures at the 1 percent level; only in a few cases of a single economic cycle was the correlation significant at the 5 percent level. Over long time periods, the percent change in population was negatively correlated with the percent change in the productivity and prosperity indicators, with several of the negative correlation coefficients significant at the 5 percent level.

Metropolitan Areas and the Nonmetropolitan Portions of States

The correlation analysis at the metro level focuses on correlations between the four productivity and prosperity indicators and wage and salary employment and population. The same time periods are examined as in the state analysis, but since the earliest GDP data at the metro level are for 2001, correlations with per capita GDP and per worker GDP are limited to the two most-recent economic cycles. Correlations were calculated both across all 384 metro areas and across subsets of the 384 areas. Based on the level of wage and salary employment in 2021, metro areas were placed into six size classes. For more information on these size classes, see the last section of this paper, "Productivity and Prosperity: Individual Metropolitan Areas."

In the analysis of all 384 metro areas, most of the correlations are significant since correlation coefficients of less than 0.2 are significant even at the 0.1 percent level. Across the 14 time periods examined, the median correlation coefficient between the percent changes in wage and salary employment and per capita personal income was 0.37. The median correlation coefficient was similar for per capita GDP over the limited number of time periods available. Median correlation coefficients were weaker with the productivity indicators: 0.25 with per worker earnings and 0.15 with per worker GDP.

Correlations between the percent changes in population and the productivity and prosperity variables also were weak: medians of 0.20 with per capita personal income, 0.11 with per capita GDP, 0,03 with per worker GDP, and 0.13 with per worker earnings.

While the correlation analysis using all 384 metro areas indicates that there is a moderate correlation (a median of a little less than 0.40) between wage and salary employment growth and the percent change in the prosperity indicators, in some time periods the correlation coefficient was less than 0.30. Moreover, this relationship does not hold across each of the size classes. Larger metro areas (the two largest size classes) are similar to the states in having a moderate-to-strong relationship between wage and salary employment growth and the percent change in the prosperity indicators in some economic cycles, but no correlation in other cycles. Once the time period is lengthened, correlations in the large metro areas disappear entirely. In contrast, in the smaller metro areas and in the nonmetro portion of the states, correlations do not diminish with the length of the time period. However, even in these areas, correlations are weak in some time periods.

Conclusion

While aggregate growth in the form of wage and salary employment is moderately-to-strongly correlated with the percent change in prosperity in some time periods at the state, metro, and nonmetro geographies, this relationship does not consistently extend to all time periods. Moreover, for states and large metro areas, the relationship disappears over longer time periods.

Further, the calculation of a significant correlation does not provide any information on cause and effect. Does a popular area with strong aggregate growth attract high-wage employers that boost the area's prosperity, or does the siting and expansion of high-wage employers cause the area to experience stronger aggregate growth?

Thus, one cannot conclude that policies to enhance aggregate economic growth will lead to advances in prosperity. In general, in populous areas, one must conclude that there is no relationship between aggregate growth and gains in prosperity. In less-populous areas, there may be a relationship, at least at some points in time, but it is unclear whether prosperity gains drive aggregate growth or whether aggregate growth drives prosperity gains.

PRODUCTIVITY AND PROSPERITY: STATES

Prosperity Indicators

BEA

The 1969-to-2021 time series of per capita GDP and per capita personal income in Arizona, along with the total employment-to-population ratio and the wage and salary employment-to-population ratio, are displayed in the top graph of Chart 3, with the figures expressed as a percentage of the national average. The two per capita indicators are *not* adjusted for the cost of living.

Each of these four indicators are cyclical in Arizona relative to the national average, peaking during economic expansions and reaching troughs during and shortly after economic recessions. The COVID-19-induced recession of 2020 did not follow this pattern, with Arizona experiencing a temporary improvement in each indicator displayed in the top graph of Chart 3. This likely resulted from Arizona's economy not shutting down to the same extent as in many states. Much of the relative gain in 2020 was lost in 2021.

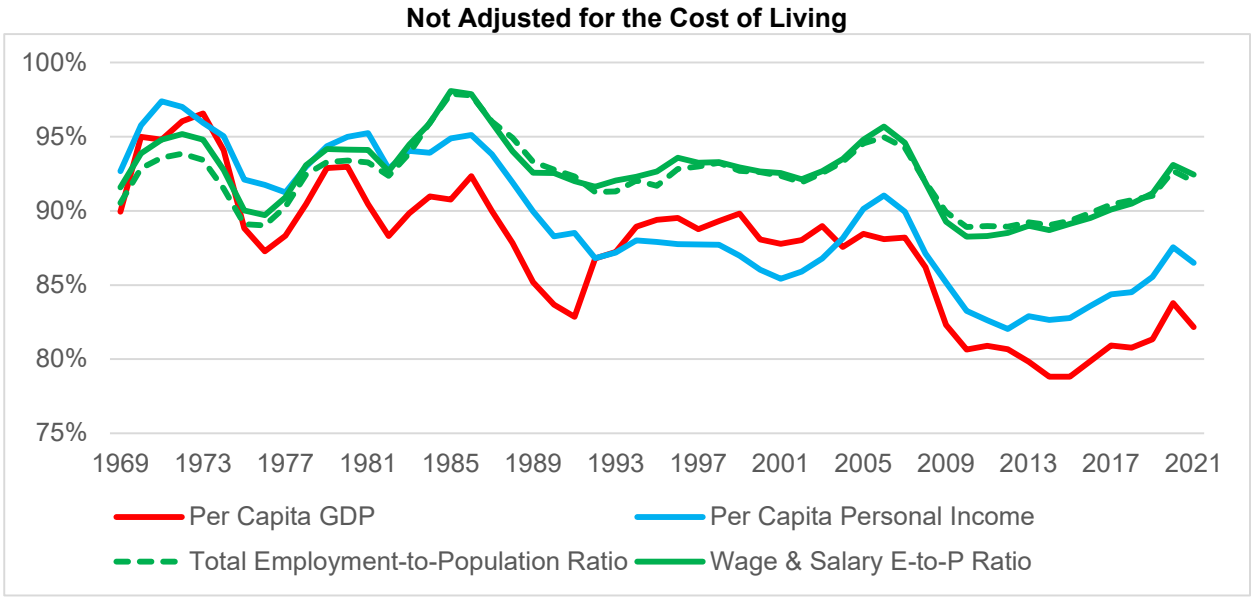
In addition to this cyclicality, a downward trend has been present in the two per capita measures since the early 1970s. Even with the temporary boost in 2020, Arizona's percentage of the national average was lower in each of the per capita indicators than at the peak of each of the five prior expansions. The state's E-P ratio (based on both total employment and wage and salary employment) relative to the nation did not trend down from the 1970s into the 2000s as did the per capita indicators. However, even in 2020, the state's E-P ratio relative to the nation was lower than at the peak of each of the prior five economic cycles.

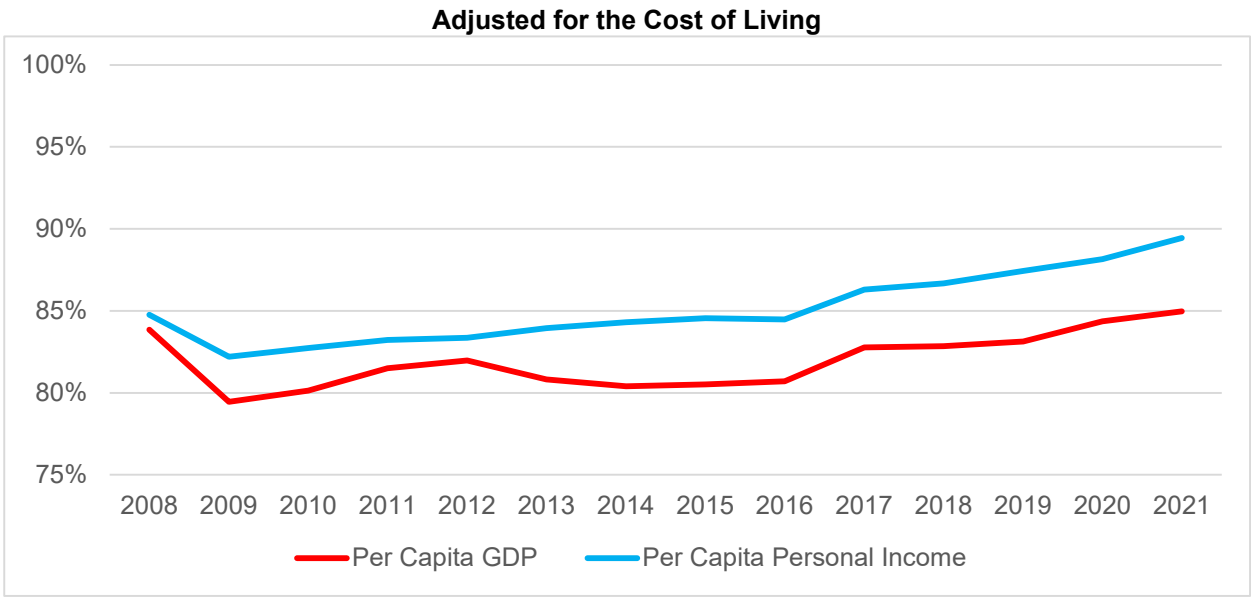
Focusing on the period since 2008 and using per capita indicators adjusted for the cost of living, an increase in Arizona relative to the nation occurred in the two per capita indicators displayed in the bottom graph of Chart 3. Most of Arizona's stronger relative performance based on the adjusted data occurred in 2010 and 2011.

Despite Arizona's stronger relative performance based on the adjusted data, Arizona's per capita indicators adjusted for the cost of living still were far below the U.S. average in 2021, by 15.0 percent for per capita GDP and 10.6 percent for per capita personal income. The primary reason that per capita personal income is not as far below average as per capita GDP is that personal income includes transfer receipts, such as retirement benefits, Medicare, unemployment compensation, and income maintenance. In 2021, per capita transfer receipts in Arizona equaled the U.S. average.

The full time series of per capita personal income in Arizona is shown in Chart 4, not adjusted for the cost of living. Even in 2020, Arizona's percentage of the national average of 87.6 was lower than in most years since the end of the Great Depression; the 2021 value was 86.5 percent. From 1929 through 1991, Arizona's rank among the states never was below 36th. In the 30 years since then, the rank was worse than 36th in 26 years; it was 40th in 2021. Based on data adjusted for the cost of living, Arizona's rank was even worse, ranging from 50th in 2010 and 2012 to 43rd in 2021. Over the 2008-through-2021 period, the adjusted rank averaged six places worse than the unadjusted rank.

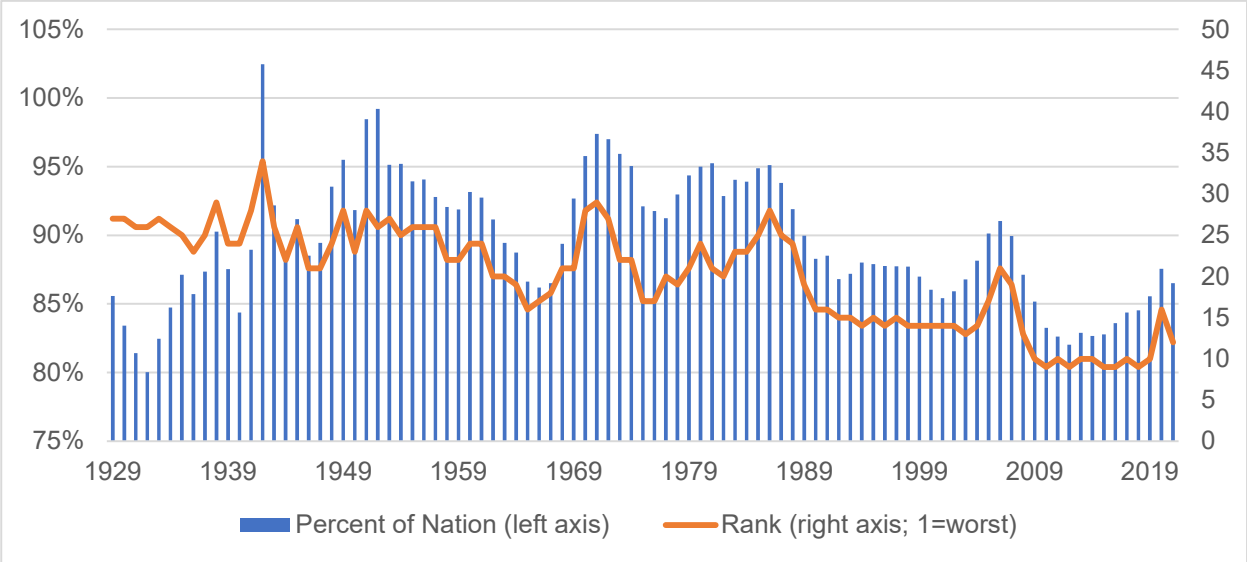
CHART 3
PROSPERITY MEASURES AND THE EMPLOYMENT-TO-POPULATION RATIO EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA





Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

CHART 4
PER CAPITA PERSONAL INCOME, ARIZONA



Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

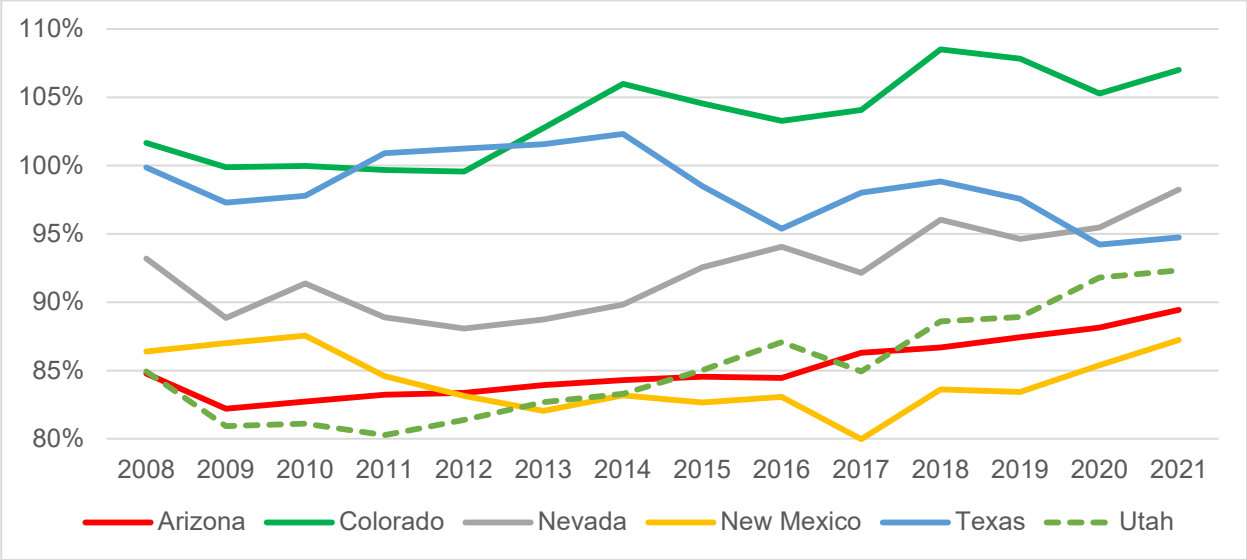
Due to Arizona's below-average cost of living since 2011, the state's shortfall from the national average in each of the per capita and per worker indicators is smaller based on the adjusted data. However, the cost-of-living adjustment worsens Arizona's rank among the states for each of the per capita and per worker indicators examined in this report.

In Chart 5, per capita personal income adjusted for the cost of living expressed as a percentage of the national average is presented for the 15 comparison states from 2008 through 2021. The adjusted figure for Arizona ranked between 12th and 14th among the comparison states throughout this period. Three states had lower figures in several but not all of the years: Idaho, New Mexico, and Utah.

The full time series of per capita GDP in Arizona relative to the nation is shown in Chart 6. From 1963 through 2008, Arizona's percentage of the national average was never below 82.9 percent. From 2009 through 2021, the shortfall from the nation was larger in each year. In 2021, Arizona's figure was 82.2 percent of the U.S. average. Arizona's rank among the states never was below 38th between 1963 and 2008, but the rank ranged from 39th to 43rd in each year from 2009 through 2019. The rank was 36th in 2020 and 2021. Based on data adjusted for the cost of living, Arizona's rank was even worse, ranging from 40th to 49th between 2008 and 2018; it improved to 37th in 2021.

In Chart 7, per capita GDP adjusted for the cost of living as a percentage of the U.S. average is presented for the 15 comparison states from 2008 through 2021. Arizona's adjusted per capita GDP ranked between 11th and 14th among the comparison states between 2008 and 2021. Idaho's figure was consistently lower; Florida and South Carolina ranked below Arizona in most years; and New Mexico was lower in each of the last seven years.

CHART 5
PER CAPITA PERSONAL INCOME ADJUSTED FOR THE COST OF LIVING EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES



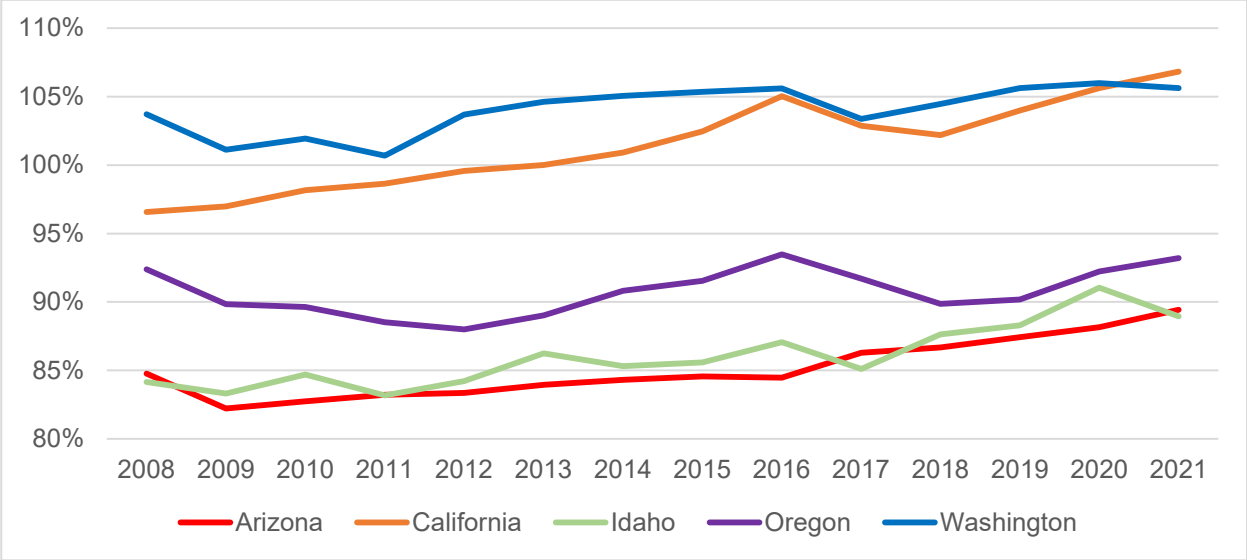


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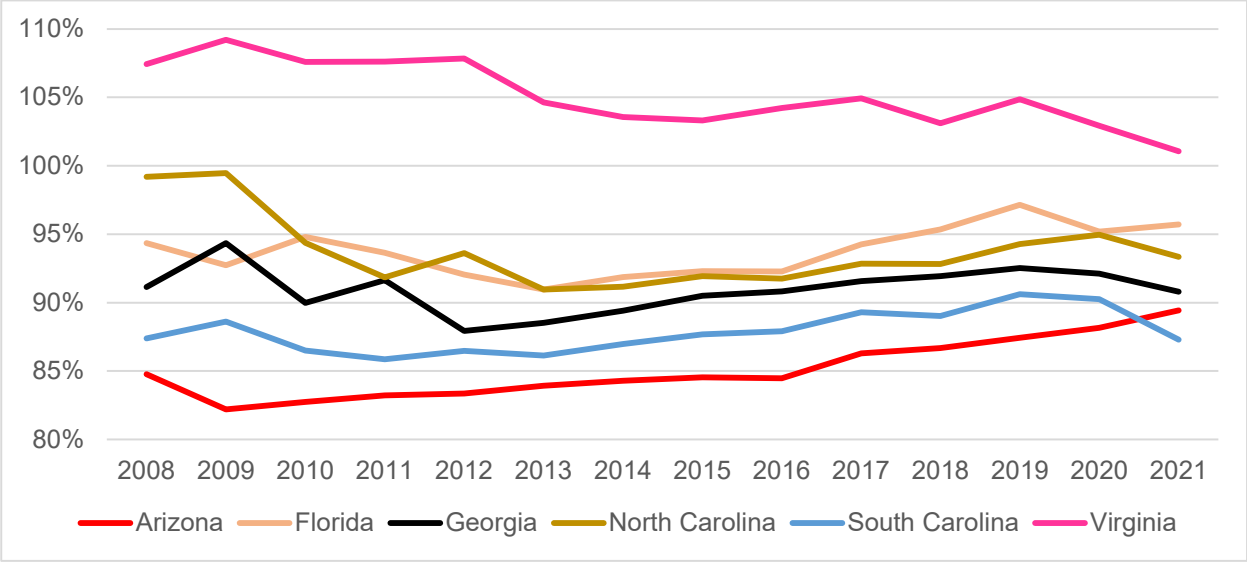
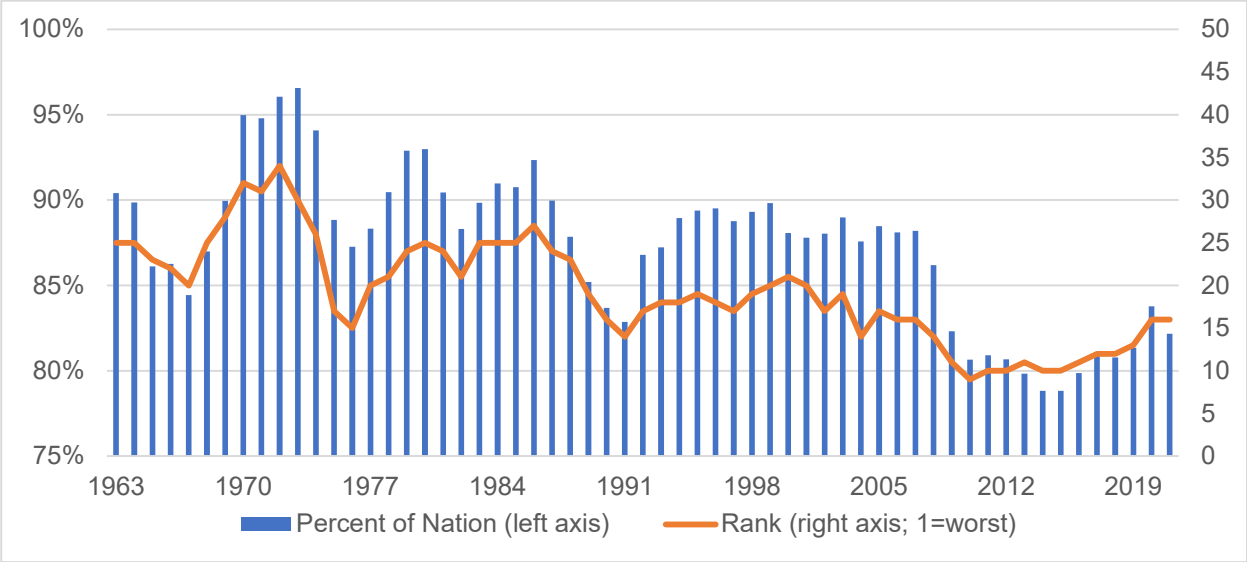
CHART 5 (continued)
PER CAPITA PERSONAL INCOME ADJUSTED FOR THE COST OF LIVING EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES



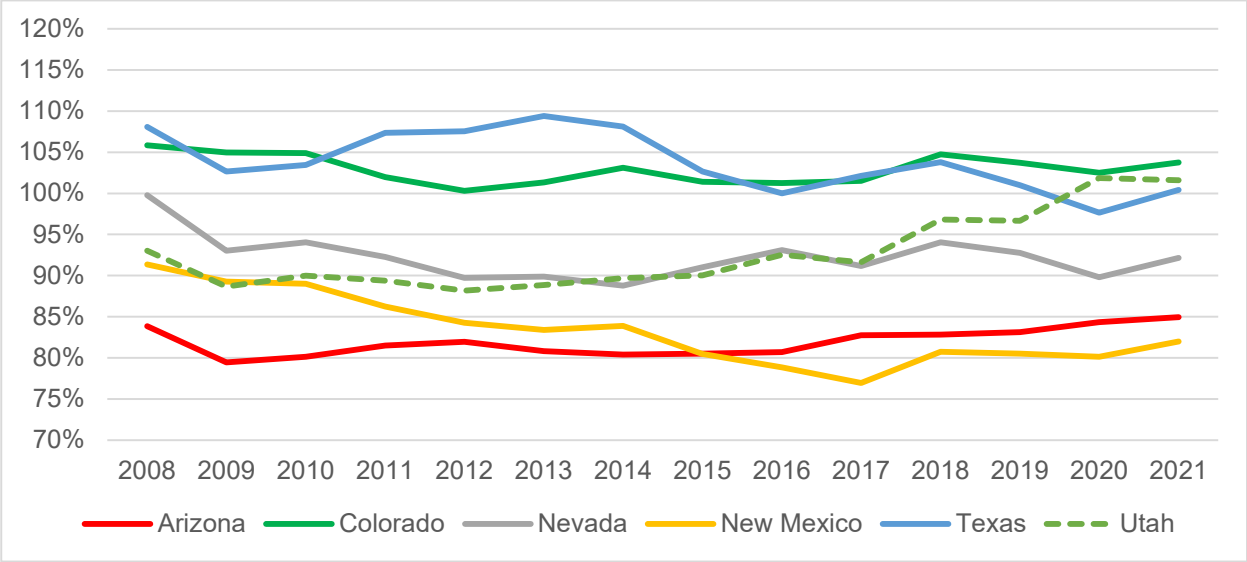
Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

CHART 6
PER CAPITA GROSS DOMESTIC PRODUCT, ARIZONA



Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

CHART 7
PER CAPITA GROSS DOMESTIC PRODUCT ADJUSTED FOR THE COST OF LIVING EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES



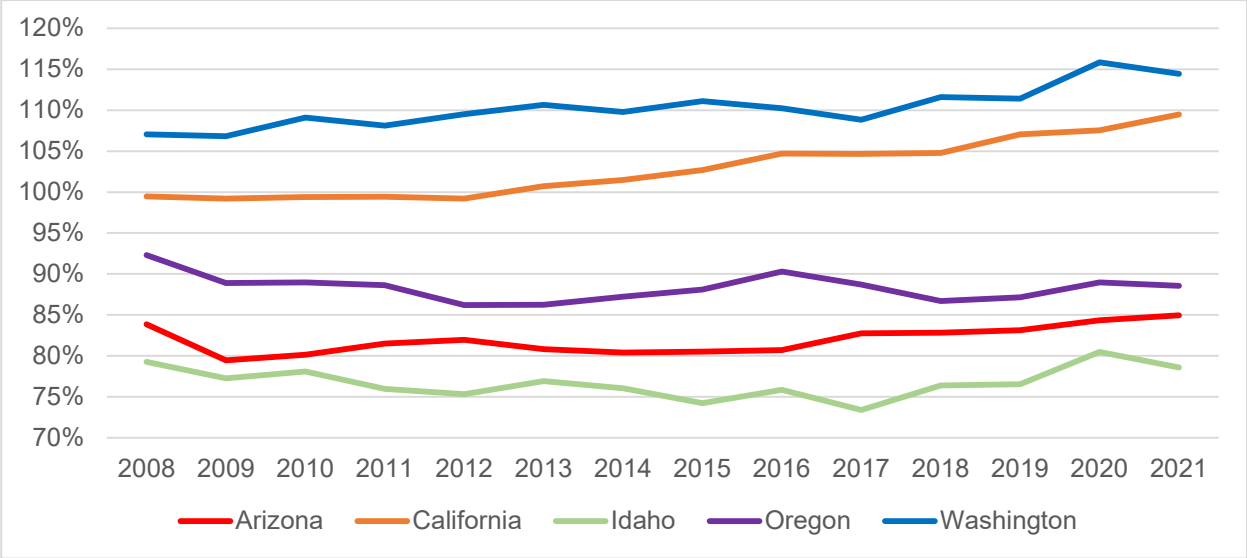


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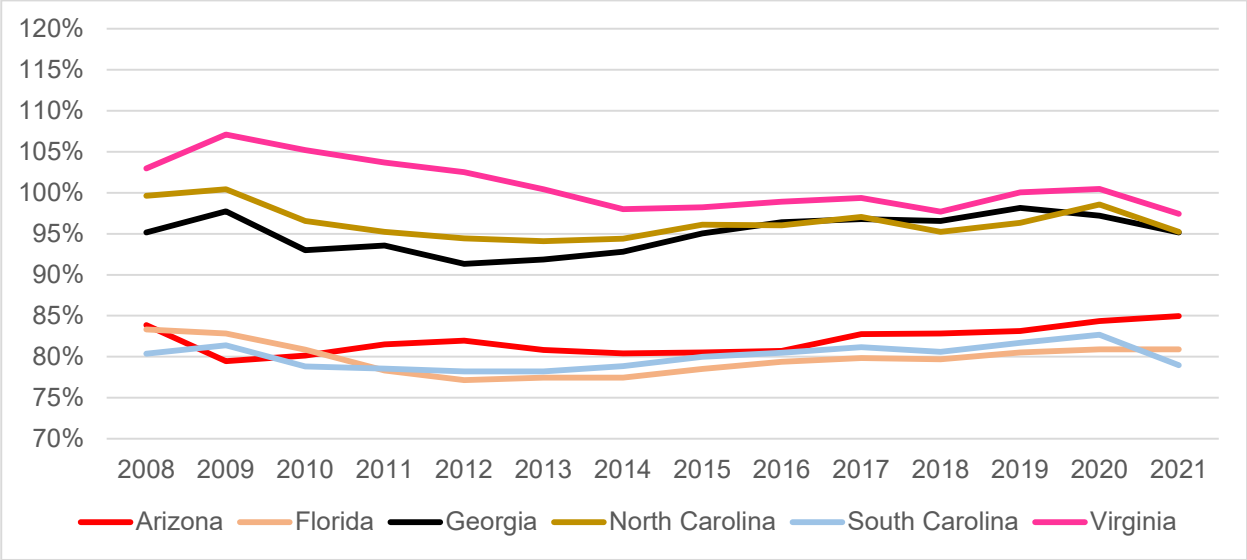
CHART 7 (continued)
PER CAPITA GROSS DOMESTIC PRODUCT ADJUSTED FOR THE COST OF LIVING EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES



Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

ACS: Poverty Rate

The poverty rate is a different type of measure of prosperity. The official poverty rate compares pretax money income to a poverty threshold that is the same across the nation. An annual time series for the nation is available for 1959 through 2021, based on the Current Population Survey's Annual Social and Economic Supplement (CPS ASEC). A Supplemental Poverty Measure (SPM), also based on the CPS ASEC, was introduced in 2011. It differs from the official measure in two primary ways: it considers government assistance to low-income people and its poverty threshold varies across the country based on living costs.

Due to sampling error in the CPS ASEC, annual estimates of poverty by state are not reliable. To reduce sampling error, the average over three years is calculated, but sampling error still is a concern, particularly in less-populous states. Nationally and in most states, the SPM produces lower poverty rates than the official measure. In contrast, in some states, particularly those with a high cost of living, the poverty rate from the SPM is higher than the official rate. Nationally, the average poverty rate for 2019 through 2021 was 11.2 percent based on the official measure and 9.6 percent based on the SPM. In Arizona, the official poverty rate also was 11.2 percent, but the rate from the SPM was less than the national average at 9.0 percent.

For 2019 through 2021, Arizona ranked 32nd among the 51 states based on the official measure and 28th on the SPM, with a rank of 1 assigned to the state with the lowest poverty rate. Among the 15 comparison states, Arizona ranked eighth on the official measure and sixth on the SPM.

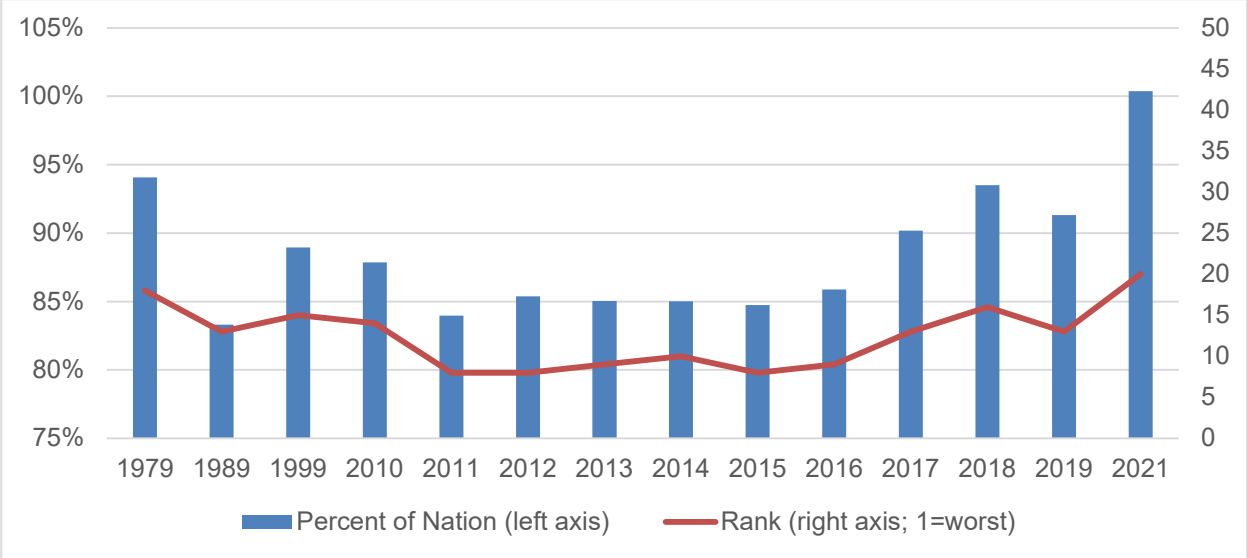
The ACS provides an alternative source for the calculation of the official poverty rate, since sampling error is not as large in the ACS as in the CPS ASEC. The ACS poverty rate for the

nation for 2021 was 12.8 percent, higher than the 11.2 percent calculated from the CPS ASEC. It is not possible to compare the poverty rates from the ACS and CPS ASEC by state since the CPS ASEC averages three years while the ACS provides data for single years or for the average of five years. Annual ACS poverty rates for 2010 through 2019 and for 2021 and poverty rates from the 1980, 1990, and 2000 decennial censuses are presented in Chart 8 for Arizona relative to the nation. [7]

Since a high poverty rate equates to inferior prosperity, the percentage of the national average and the ranks shown in Chart 8 were calculated on an inverse basis. Arizona's official poverty rate as calculated from the ACS was worse than the national average in each of the years displayed except 2021. The state's rank varied from 32nd in 2021 to 44th in multiple years.

In Chart 9, poverty rates from the decennial censuses and ACS are presented for the 15 comparison states, again expressed on an inverse basis as a percentage of the national average. Since these rates are based on the official methodology, they do not reflect geographic variations in the cost of living. The poverty rate in Arizona ranked between eighth and 14th among the comparison states in the years shown. Arizona's poverty rate consistently was better than the figure in New Mexico and in multiple years was better than the rates in Georgia, North Carolina,

CHART 8
POVERTY RATE EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA

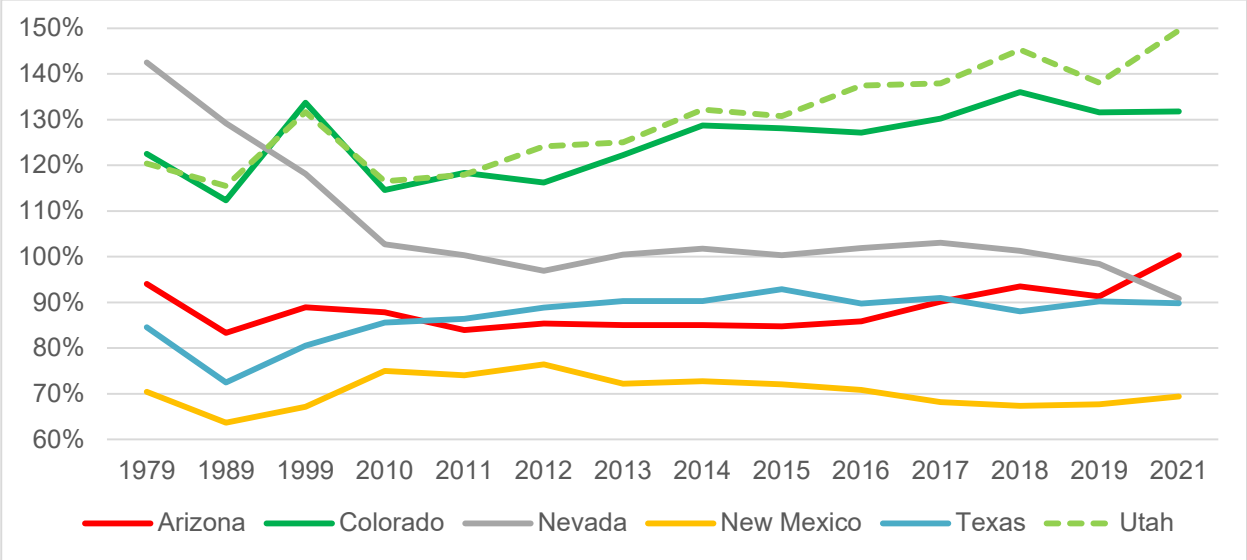


Note: the poverty rate is expressed on an inverse basis. For example, Arizona's poverty rate in 2019 of 13.5 percent was worse than the national average of 12.3 percent. Dividing 12.3 by 13.5 and multiplying by 100 results in Arizona's figure being 91.1 percent of the national average. Thirty-eight states had a lower (better) poverty rate than Arizona.

Source: Calculated from data of the U.S. Department of Commerce, Census Bureau, decennial census and American Community Survey.

[7] The poverty rates from the decennial censuses are for the prior year.

CHART 9
POVERTY RATE EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES



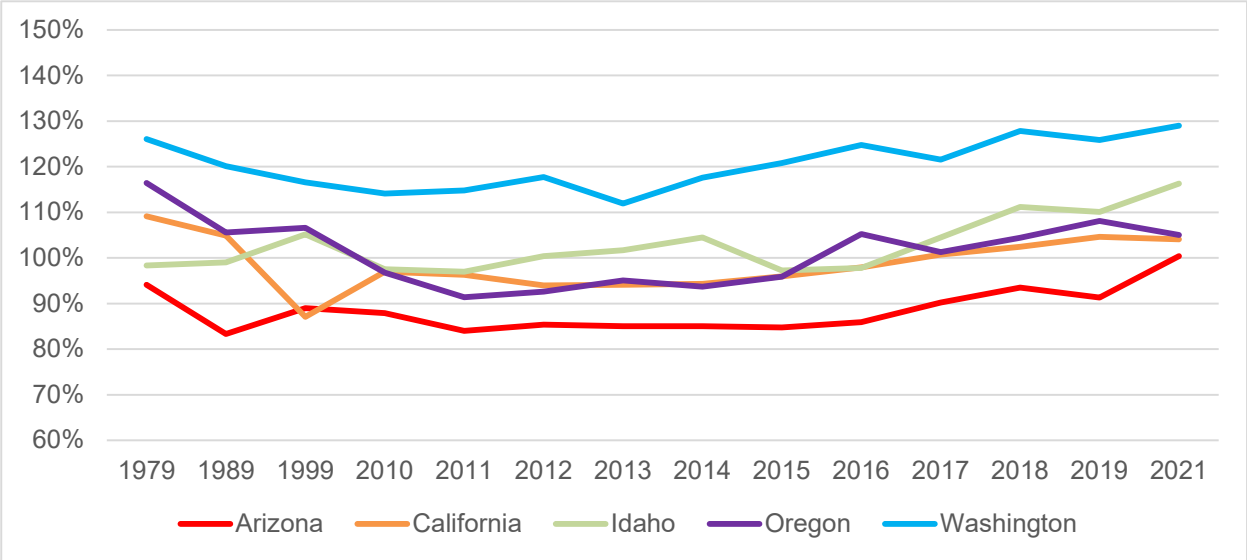


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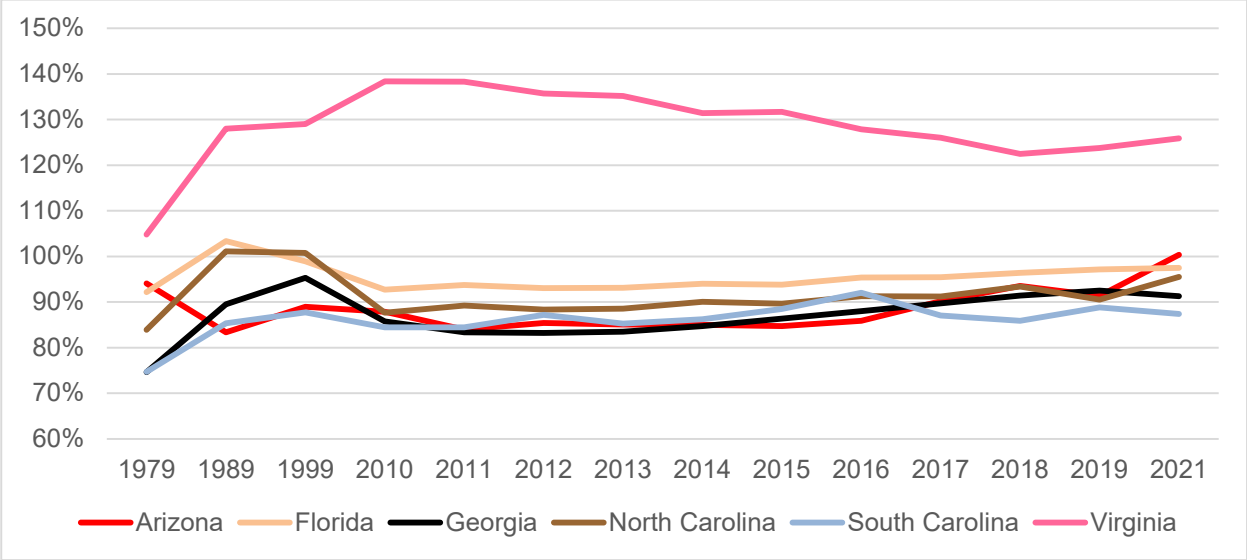
CHART 9 (continued)
POVERTY RATE EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES



Note: the poverty rate is expressed on an inverse basis. For example, Arizona's poverty rate in 2019 of 13.5 percent was worse than the national average of 12.3 percent. Dividing 12.3 by 13.5 and multiplying by 100 results in Arizona's figure being 91.1 percent of the national average.

Source: Calculated from data of the U.S. Department of Commerce, Census Bureau, decennial census and American Community Survey.

South Carolina, and Texas. In 2021, Arizona's poverty rate of 12.8 percent, equal to the national average, ranked in the middle of the 15 comparison states.

Employment-to-Population Ratio

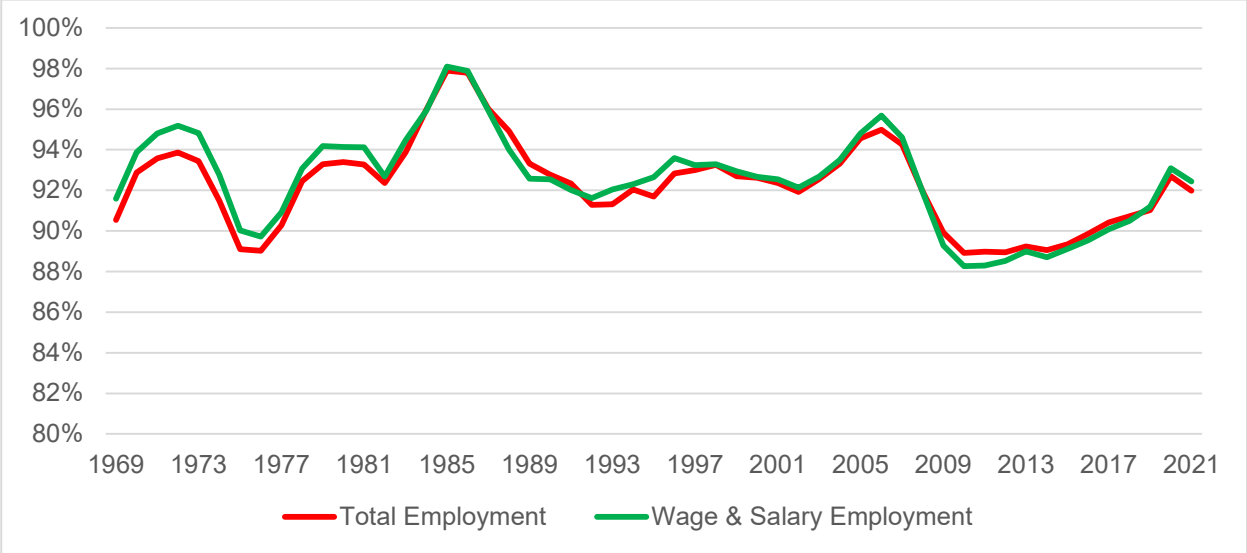
BEA

While the total E-P ratio is higher than the wage and salary E-P ratio, the change over time of the two versions of the E-P ratio calculated from the BEA data are quite similar in Arizona. They also are quite similar when expressed as a percentage of the U.S. average, as seen in Chart 10. To avoid redundancy, the remainder of this section focuses on the wage and salary employment-to-population ratio. Chart 11 provides the time series for Arizona, expressed both as the percentage of the national average and the rank among the states.

Looking at Chart 11, it is obvious that Arizona experiences cyclicality in its E-P ratio relative to the nation, with the percentage of the national average higher during economic expansions than during recessions. No downtrend is apparent, but the peak percentage of the national average during the latest cycle — 93.1 percent in 2020 — was lower than the peak value of each of the prior five cycles.

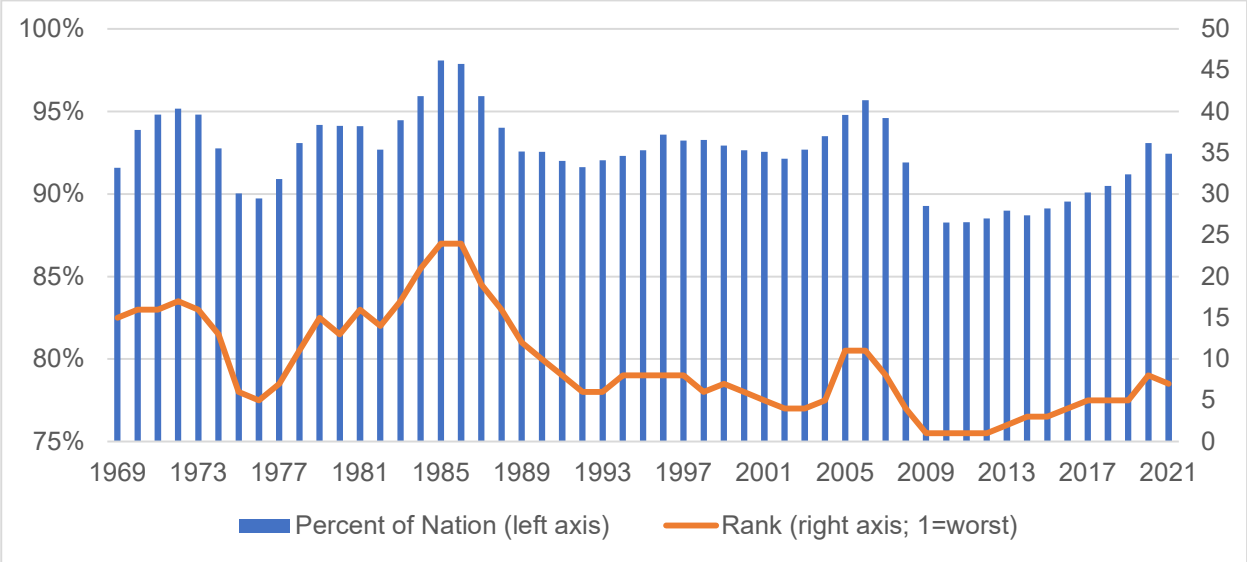
The 1969-through-2021 time series of the wage and salary employment-to-population ratio, expressed a percentage of the national average, is displayed for each of the comparison states in

CHART 10
EMPLOYMENT-TO-POPULATION RATIO EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA



Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

CHART 11
WAGE AND SALARY EMPLOYMENT-TO-POPULATION RATIO, ARIZONA



Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

Chart 12. From 1969 through 1988, Arizona's average rank among the 15 states was 12th. The average rank from 1989 through 2007 was 13.4. From 2008 through 2015, Arizona's E-P ratio was the lowest of the comparison group; from 2016 through 2021 it generally ranked 14th, higher than only New Mexico. In 2021, Arizona ranked 14th, with a figure 9.1 percent less than the national average.

ACS Compared to BEA

Three versions of the E-P ratio are presented in Table 1, based on the total number of people working as determined from the American Community Survey, BEA's estimate of the total number of jobs, and BEA's estimate of the number of wage and salary jobs. To be consistent with the ACS data, the BEA data for 2017 through 2021 were averaged. All three versions of the E-P ratio indicate that Arizona's overall E-P ratio between 2017 and 2021 — years of economic expansion except for 2020 — was considerably below the U.S. average and ranked among the bottom eight states nationally and second worst among the 15 comparison states.

The two versions of the E-P ratio calculated from the BEA data for 2017 through 2021 are very highly correlated (0.984) across all states. The E-P ratio calculated from the ACS data is conceptually most comparable to the total employment-to-population ratio calculated from the BEA data; the correlation is 0.63. The estimates differ for the following reasons:

- The ACS data refer to individuals by their place of residence, while the BEA data report the number of jobs (an individual with two jobs is counted twice) by place of work.

CHART 12
WAGE AND SALARY EMPLOYMENT-TO-POPULATION RATIO EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES

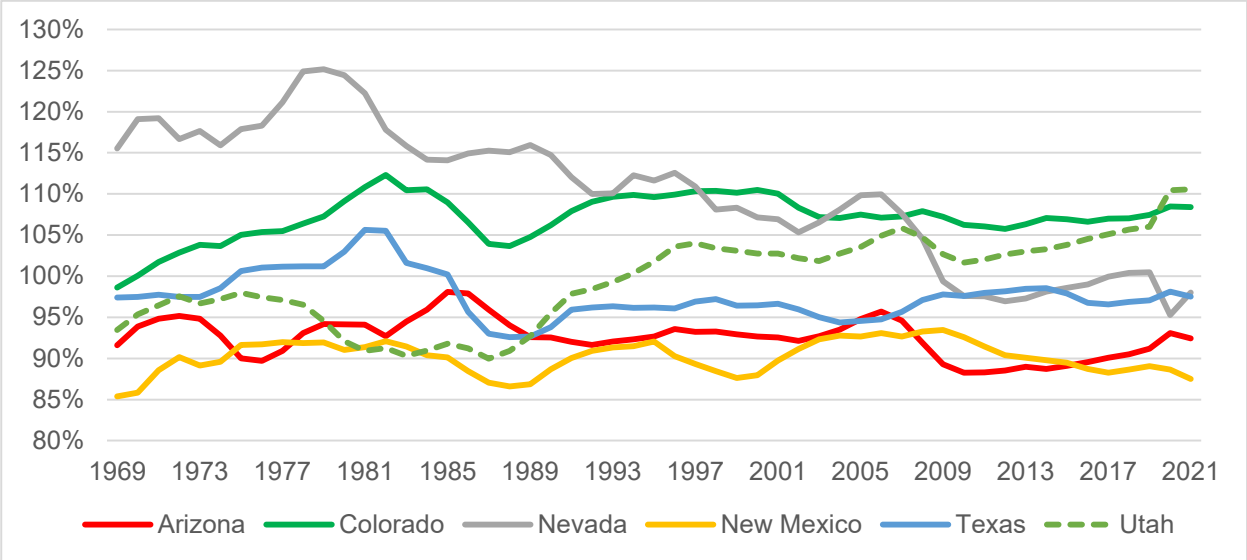


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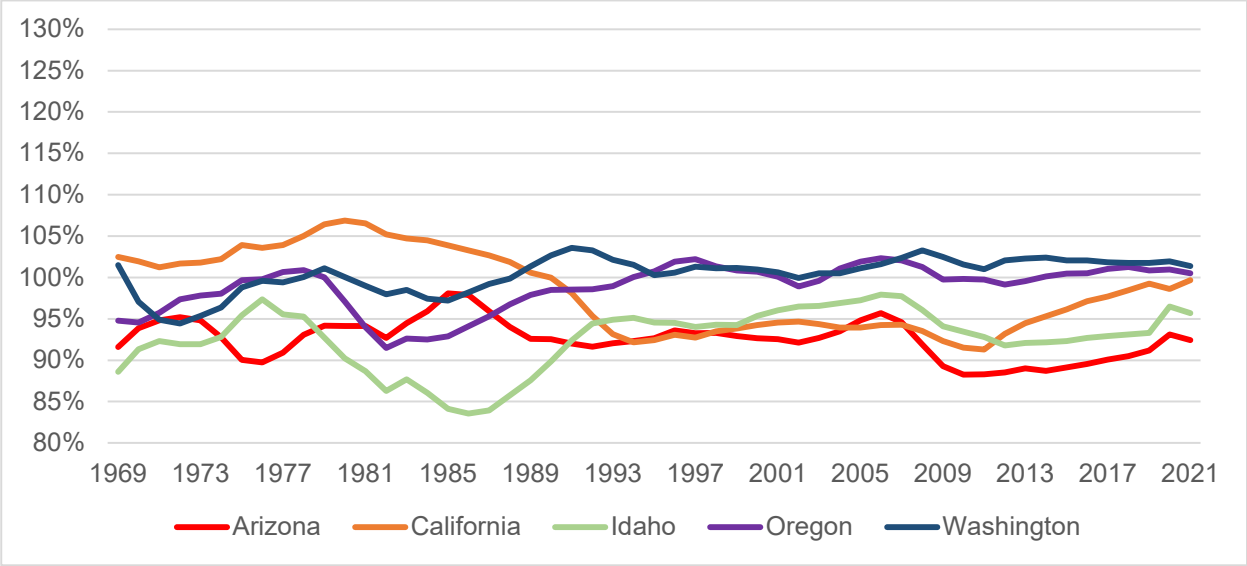
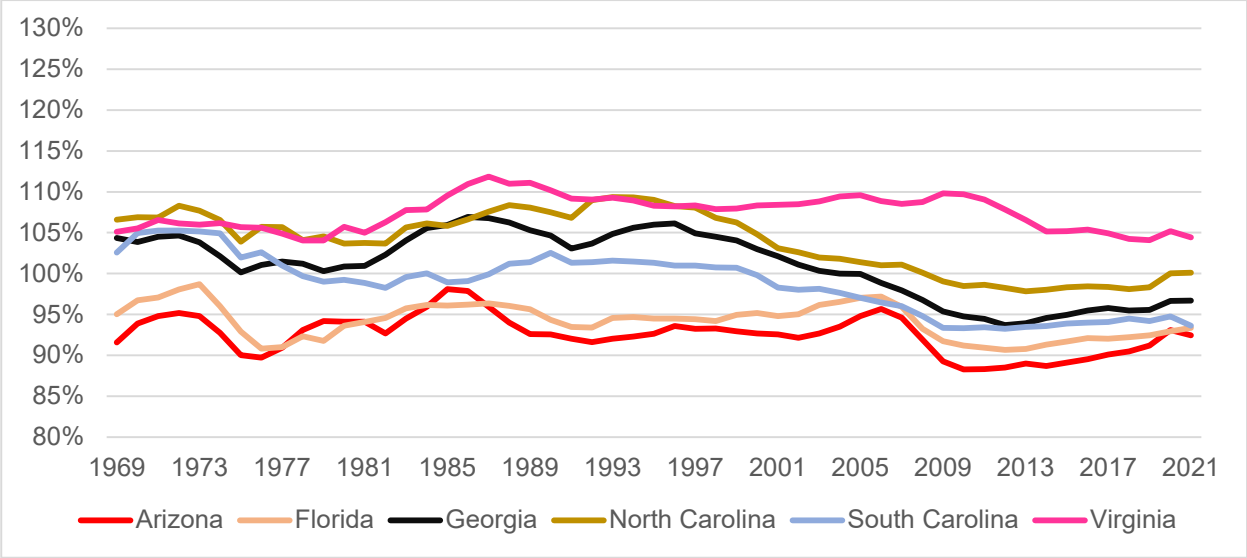
CHART 12 (continued)
WAGE AND SALARY EMPLOYMENT-TO-POPULATION RATIO EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES





Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 1
EMPLOYMENT-TO-POPULATION RATIO, ARIZONA AND COMPARISON STATES, AVERAGE FROM 2017 THROUGH 2021

	Percentage of National Average			Rank		
	ACS	BEA Total	BEA W&S	ACS	BEA Total	BEA W&S
Arizona	94.9%	91.4%	91.4%	44	46	47
California	99.1	99.9	98.7	33	28	34
Colorado	109.4	111.7	107.7	4	7	11
Idaho	97.7	97.3	94.3	38	38	40
Nevada	97.8	99.3	98.8	37	30	33
New Mexico	88.8	86.1	88.4	49	50	49
Oregon	100.3	100.2	100.9	28	26	28
Texas	98.8	101.8	97.2	35	20	36
Utah	102.6	108.0	107.5	21	10	12
Washington	102.6	98.1	101.7	22	35	25
Florida	96.3	98.4	92.6	41	33	46
Georgia	98.5	98.8	96.0	36	31	39
North Carolina	99.1	97.4	99.0	34	37	31
South Carolina	96.1	92.8	94.2	42	44	41
Virginia	105.3	102.1	104.6	15	17	15

Legend:
ACS: American Community Survey, with the number of individuals employed as a percentage of the population.
BEA: U.S. Bureau of Economic Analysis.
Total: Total employment as a percentage of the population.
W&S: Wage and salary employment as a percentage of the population.

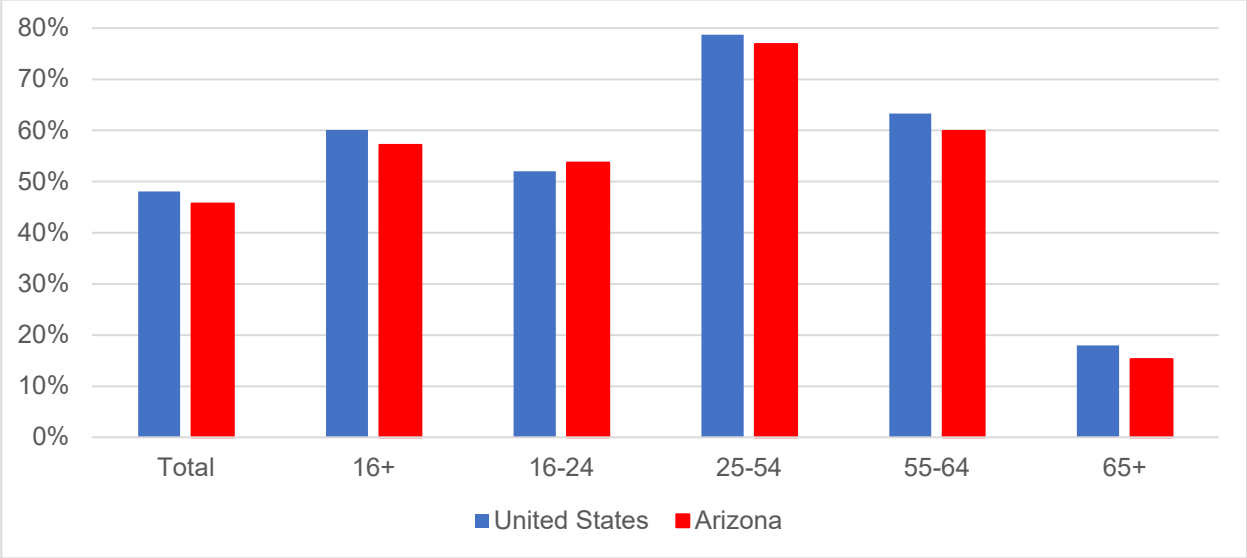
Sources: Calculated from data of the U.S. Department of Commerce, Census Bureau (American Community Survey) and the U.S. Department of Commerce, Bureau of Economic Analysis.

- Differences in data collection. ACS data are collected across the year, with the survey respondent reporting work status in the prior week. Most of the wage and salary employment included in the BEA's estimates are based on reports from employers for the week including the 12th of each month, with the monthly data averaged over the year.
- Sampling error in the ACS.
- Estimation errors by the BEA in the number of proprietors.

Despite these definitional and methodological differences, the correlation in the *ranks* of the states is a very high 0.88 between the ACS E-P ratio and BEA wage and salary employment-to-population ratio and 0.85 between the ACS E-P ratio and BEA total employment to-population ratio.

The age distribution is an important contributor to the overall employment-to-population ratio since the E-P ratio varies significantly by age, as seen in Chart 13. The age data are from the American Community Survey and are expressed by place of residence.

CHART 13
EMPLOYMENT-TO-POPULATION RATIO BY AGE GROUP, UNITED STATES AND ARIZONA, AVERAGE FROM 2017 THROUGH 2021



Source: Calculated from data of the U.S. Department of Commerce, Census Bureau (American Community Survey).

Arizona's E-P ratio among those 16-to-24 years old was somewhat higher than the national average and ranked in the middle of all states and of the 15 comparison states between 2017 and 2021, as seen in Table 2. In each of the other three age groups, Arizona's E-P ratio was less than the U.S. average and ranked among the bottom 12 states nationally and bottom four of the 15 states.

As seen in Table 3, Arizona had a higher population share than the nation in the 16-to-24 and 65-and-older age groups, each of which had a lower E-P ratio than in the 25-to-54 and 55-to-64 age groups. In addition, Arizona's share of the population younger than 16 was slightly higher than the national average. However, in the key working-age groups of 25 to 54 and 55 to 64, the proportion was lower in Arizona than the nation.

Thus, Arizona's age distribution and E-P ratio by age group each contributed to its low overall E-P ratio between 2017 and 2021. The E-P ratio by age group accounted for 55.5 percent of the state's shortfall. The below-average E-P ratio among those of prime working-age — 25 to 54 — is a particular concern in Arizona. It is a significant contributor to the state's poor performance on the prosperity measures. In contrast, much of Arizona's employment shortfall among those 55 and older can be traced to individuals who migrate to the state when they retire.

Productivity Indicators

BEA

The time series of the per worker indicators for Arizona expressed as a percentage of the national average are displayed in the first graph of Chart 14. The figures are *not* adjusted for the cost of living. The per worker GDP and per worker earnings indicators are similar and display some

TABLE 2
EMPLOYMENT-TO-POPULATION RATIO BY AGE GROUP, ARIZONA AND COMPARISON STATES, AVERAGE FROM 2017 THROUGH 2021

	Total	16+	16-24	25-54	55-64	65+
Percentage of National Average						
Arizona	94.9	95.2	103.4	97.7	94.6	84.8
California	99.1	99.4	89.4	98.0	99.2	101.2
Colorado	109.4	108.8	114.3	103.9	106.1	114.8
Idaho	97.7	100.9	115.6	100.5	98.1	92.5
Nevada	97.8	98.1	103.0	97.5	92.9	91.8
New Mexico	88.8	89.1	94.3	91.7	87.9	87.9
Oregon	100.3	98.4	103.7	100.2	95.7	91.9
Texas	98.8	102.6	95.3	98.8	100.6	110.1
Utah	102.6	110.3	125.4	102.1	107.9	108.5
Washington	102.6	102.2	105.4	100.9	100.3	93.3
Florida	96.3	93.7	96.6	99.3	96.8	85.7
Georgia	98.5	100.0	95.3	98.7	97.0	97.0
North Carolina	99.1	98.7	100.0	100.0	96.2	94.5
South Carolina	96.1	95.4	101.6	98.8	92.4	88.8
Virginia	105.3	104.8	103.5	103.3	105.4	110.0
Rank						
Arizona	44	43	28	41	40	48
California	33	32	47	40	30	26
Colorado	4	7	14	14	17	13
Idaho	38	27	10	30	32	39
Nevada	37	37	29	43	43	41
New Mexico	49	49	42	50	46	44
Oregon	28	36	25	31	38	40
Texas	35	21	40	35	26	16
Utah	21	3	2	21	13	20
Washington	22	23	23	27	28	37
Florida	41	45	39	34	36	47
Georgia	36	30	41	37	35	32
North Carolina	34	34	36	32	37	36
South Carolina	42	42	30	36	44	43
Virginia	15	15	26	15	18	17

Source: Calculated from data of the U.S. Department of Commerce, Census Bureau (American Community Survey).

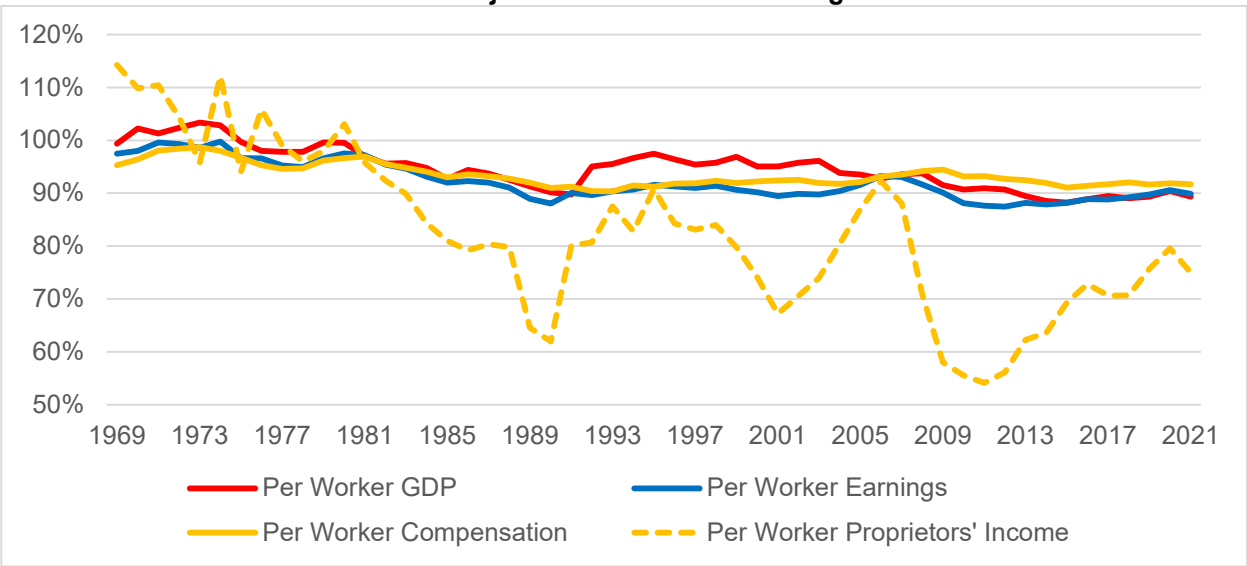
TABLE 3
SHARE OF THE TOTAL POPULATION BY AGE GROUP, ARIZONA AND COMPARISON STATES, AVERAGE FROM 2017 THROUGH 2021

	<16	16-24	25-54	55-64	65+
Percentage of National Average					
Arizona	101.4	102.7	96.7	93.5	109.5
California	101.3	100.9	105.4	93.7	89.6
Colorado	98.0	99.0	107.2	95.6	89.2
Idaho	112.7	102.9	95.1	94.2	98.8
Nevada	101.2	90.4	104.3	96.1	98.3
New Mexico	101.6	102.7	94.5	100.3	109.2
Oregon	92.3	93.2	102.1	99.2	110.1
Texas	114.9	106.9	103.6	87.0	78.2
Utah	130.5	123.1	99.1	73.1	69.1
Washington	98.7	93.6	104.9	97.6	96.4
Florida	88.6	88.4	96.7	104.5	127.0
Georgia	105.9	104.3	102.7	95.2	86.8
North Carolina	98.4	102.2	99.5	100.3	101.4
South Carolina	97.1	98.4	96.4	103.6	110.7
Virginia	98.3	100.8	101.8	100.7	96.5
Rank					
Arizona	19	17	26	48	12
California	20	24	3	47	45
Colorado	32	33	2	43	46
Idaho	3	15	41	46	33
Nevada	22	48	5	42	35
New Mexico	18	16	44	31	13
Oregon	42	47	9	34	11
Texas	2	7	7	49	48
Utah	1	1	19	51	51
Washington	29	45	4	39	42
Florida	45	50	25	16	2
Georgia	10	13	8	44	47
North Carolina	30	18	17	32	29
South Carolina	35	35	32	20	10
Virginia	31	25	11	28	41

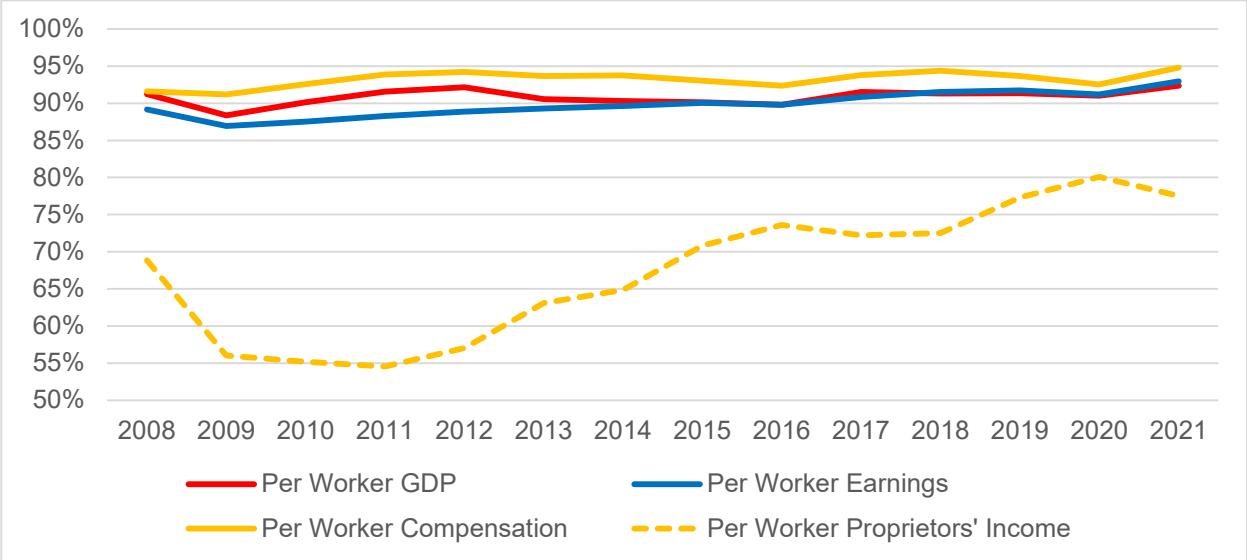
Source: Calculated from data of the U.S. Department of Commerce, Census Bureau (American Community Survey).

CHART 14
PRODUCTIVITY MEASURES
EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA

Not Adjusted for the Cost of Living



Adjusted for the Cost of Living



Note: Total employment is the divisor for per worker GDP and per worker earnings; wage and salary employment is the divisor for per worker compensation; and the number of proprietors is the divisor for per worker proprietors' income.

Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

cyclicality, but not as regularly or to the extent of the prosperity measures since the cyclicality of the employment-to-population ratio contributes to the cyclicality of the per capita indicators. As with the prosperity measures, a downward trend has been present since the early 1970s.

Splitting the per worker earnings indicator into its two components reveals that the compensation per wage and salary worker indicator is quite similar to the per worker earnings indicator in its percentage of the U.S. average — compensation accounts for approximately 90 percent of earnings in Arizona. In contrast, the proprietors' income per proprietor measure has a vastly different pattern. It has experienced much more of a downward trend, and since the 1980s it has displayed considerable cyclicality.

Focusing on the most recent economic cycle and using indicators adjusted for the cost of living, each per worker indicator increased in Arizona relative to the nation after the 2009 trough (see the second graph of Chart 14). However, Arizona's per worker measures adjusted for the cost of living still were below the U.S. average in 2021, by 7.6 percent for per worker GDP, 7.1 percent for per worker earnings, 5.2 percent for compensation per wage and salary worker, and 22.5 percent for proprietors' income per proprietor.

The full time series of Arizona's per worker GDP relative to the nation is shown in Chart 15. From 2013 through 2019, and again in 2021, Arizona's percentage of the national average was lower than in any year before 2013; the 2021 value was 10.7 percent less than the U.S. average. Similarly, Arizona's rank among the states rarely was below 24th through 2008, but ranged from 25th to 33rd between 2009 and 2021; it was 29th in 2021. The state's rank was worse using data adjusted for the cost of living, at between 32nd and 40th from 2008 through 2021; it was 35th in 2021.

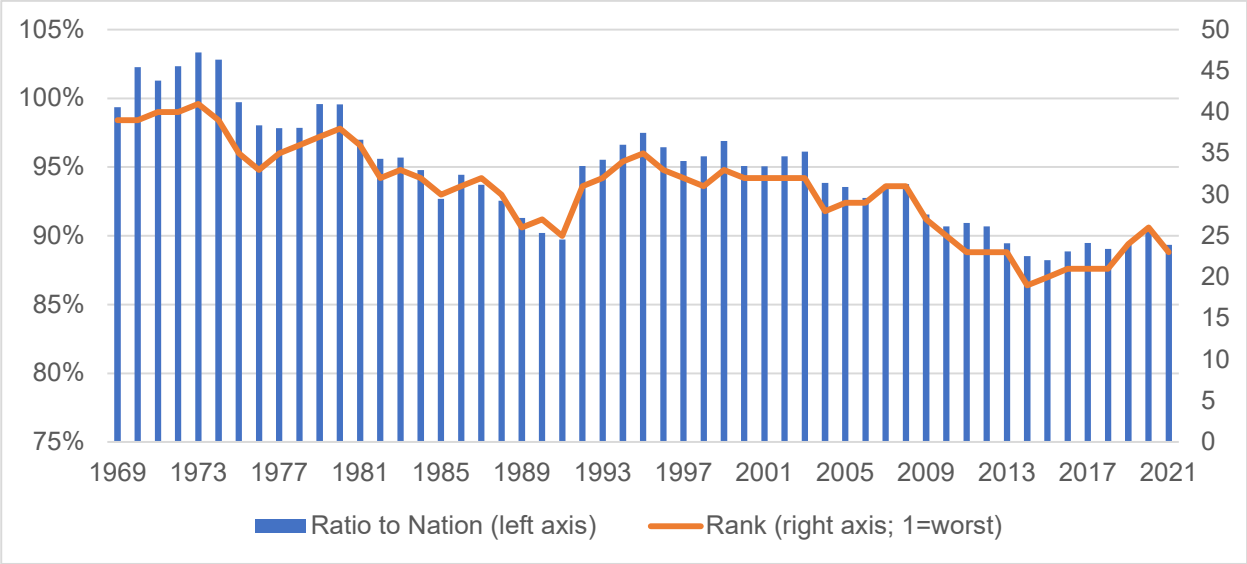
In Chart 16, per worker GDP adjusted for the cost of living relative to the U.S. average is presented for the 15 comparison states. From 2008 through 2021, the adjusted figure in Arizona ranked between seventh and 12th. The value was lower than the Arizona figure in each year in Idaho and New Mexico and lower than in all but one year in Florida, South Carolina, and Utah.

The full time series of Arizona's per worker earnings relative to the nation is shown in Chart 17. Arizona's percentage of the national average between 2010 and 2015 was approximately equal to the previous lows in 1989 and 1990 and was only a little higher in 2021 at 89.9 percent. Arizona's rank was between 28th and 36th from 2009 through 2019. It was up to 25th in 2021. The state's rank was worse using data adjusted for the cost of living, at between 35th and 43rd from 2008 through 2020; the rank was 32nd in 2021.

In Chart 18, per worker earnings adjusted for the cost of living relative to the U.S. average is presented for the 15 comparison states. Arizona's adjusted per worker earnings ranked between eighth and 12th in each year from 2008 through 2021. The values were lower than in Arizona in each year in Florida, Idaho, and Utah and lower in nearly all years in Nevada and South Carolina.

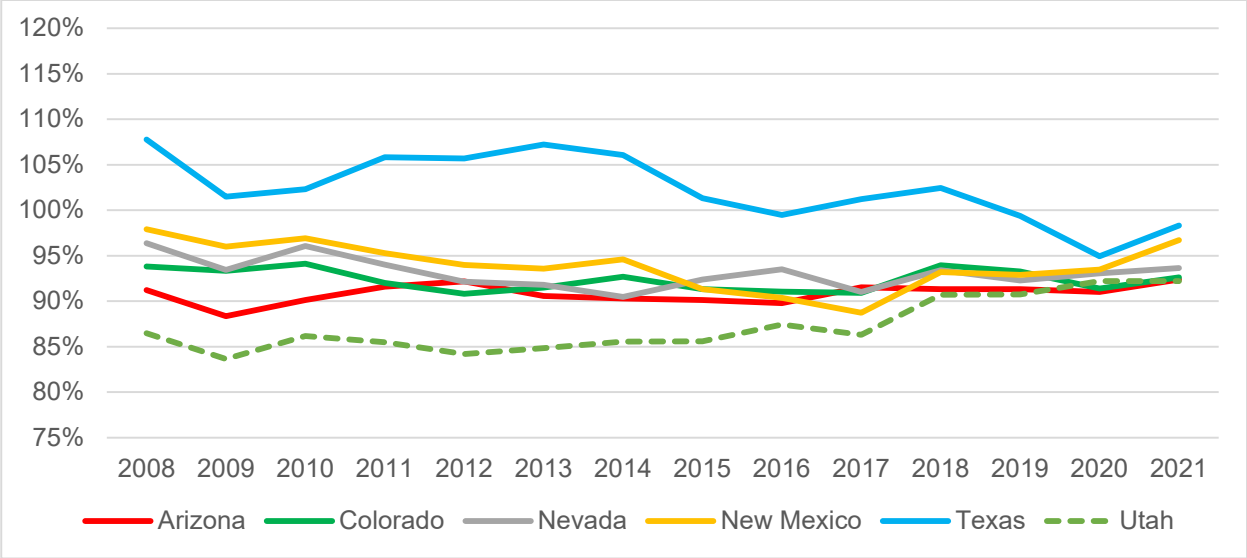
The full time series of Arizona's compensation per wage and salary worker relative to the nation is shown in Chart 19. In the last economic cycle, Arizona's percentage of the national average

CHART 15
PER WORKER GROSS DOMESTIC PRODUCT, ARIZONA



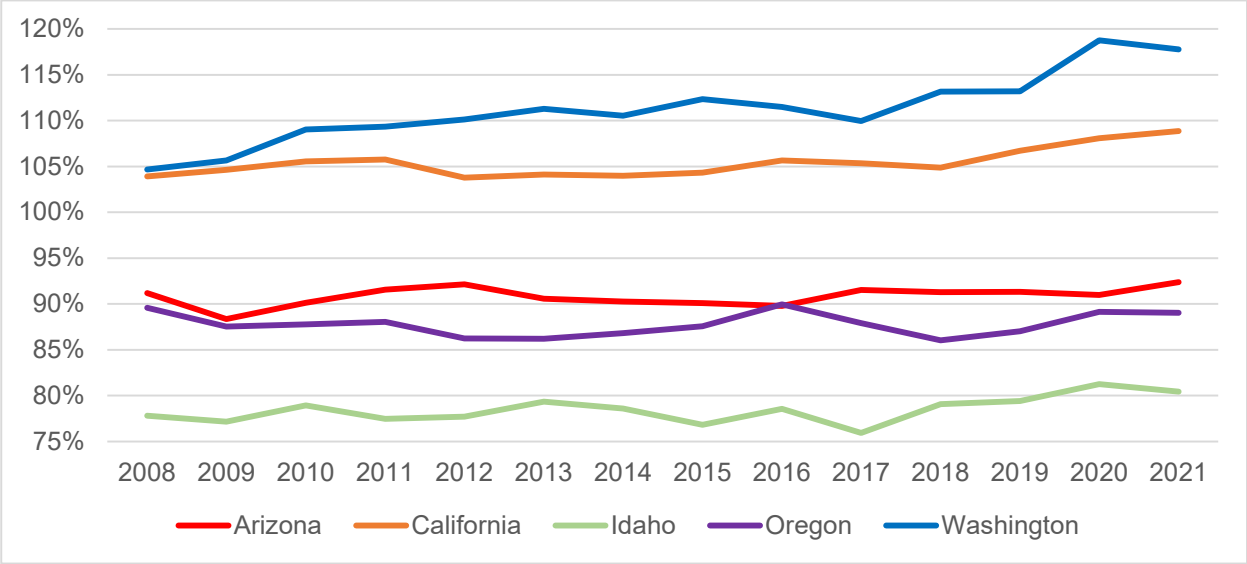
Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

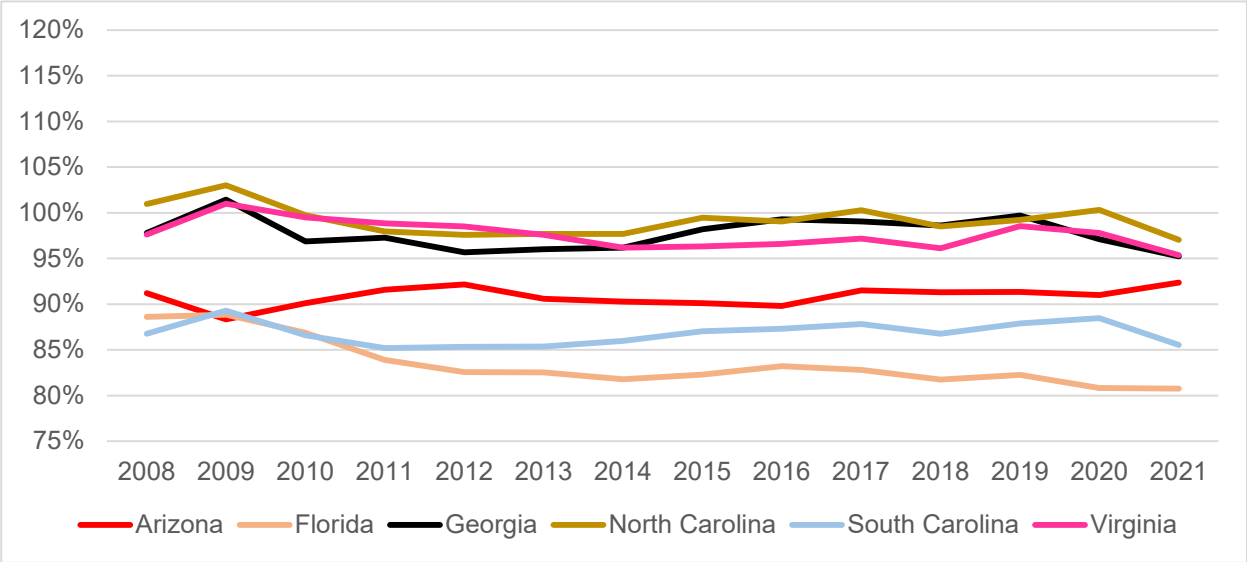
CHART 16
PER WORKER GROSS DOMESTIC PRODUCT ADJUSTED FOR THE COST OF LIVING EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES



(continued)

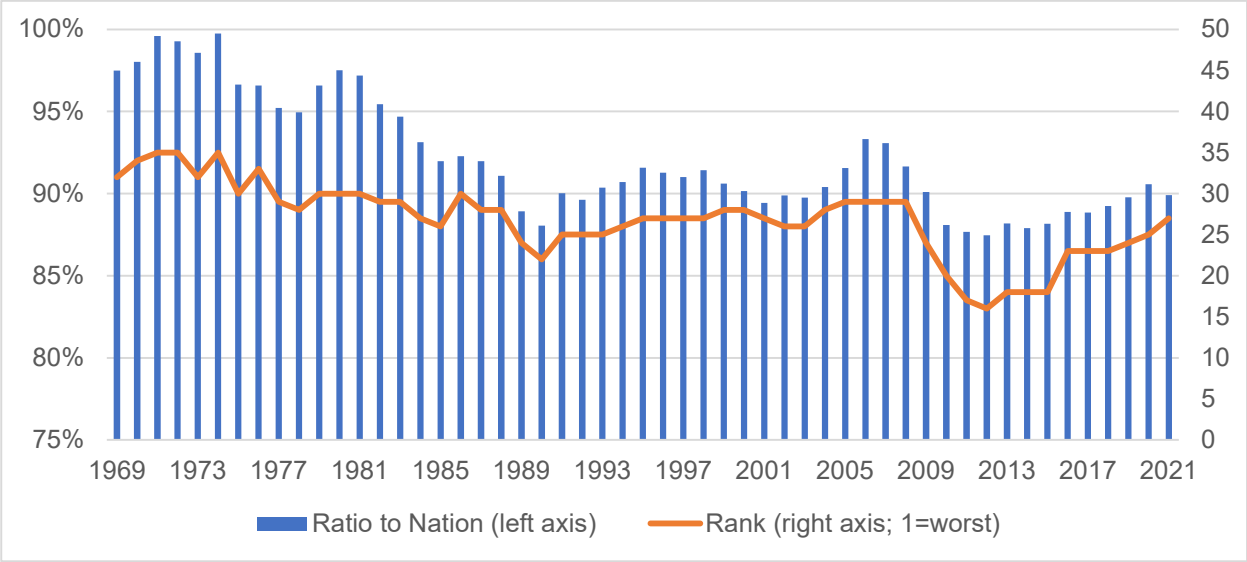
CHART 16 (continued)
PER WORKER GROSS DOMESTIC PRODUCT ADJUSTED FOR THE COST OF LIVING EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES





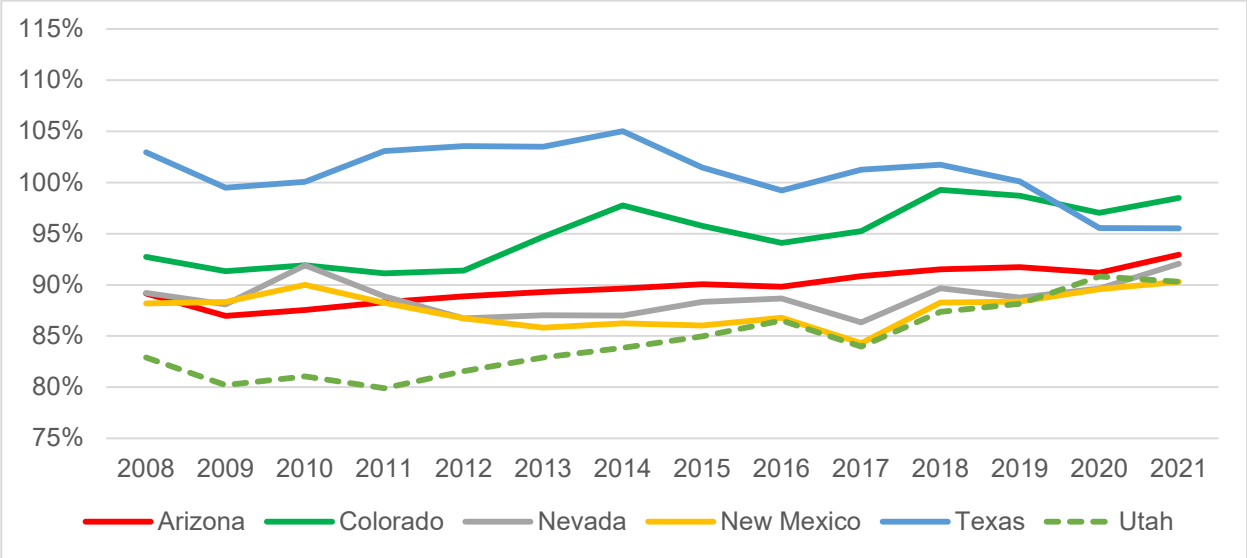
Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

CHART 17
PER WORKER EARNINGS, ARIZONA



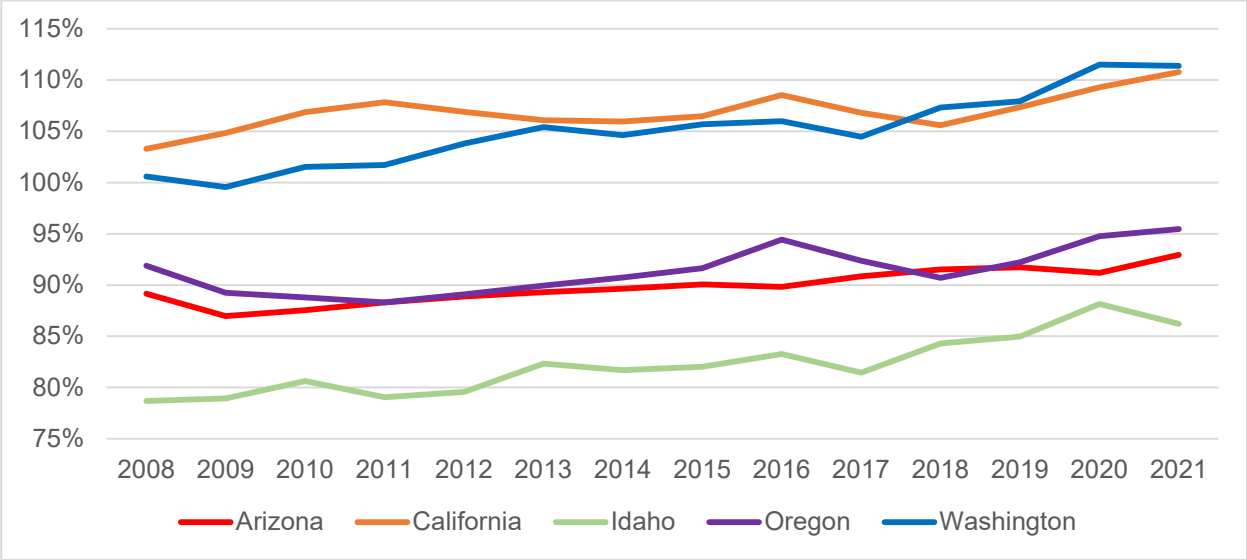
Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

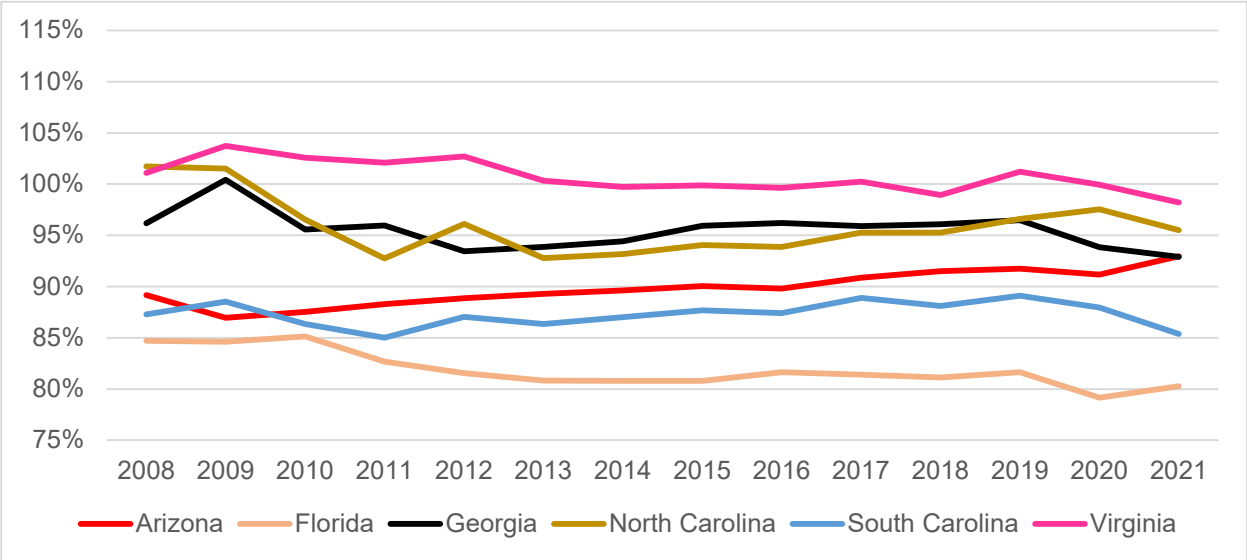
CHART 18
PER WORKER EARNINGS ADJUSTED FOR THE COST OF LIVING EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES



(continued)

CHART 18 (continued)
PER WORKER EARNINGS ADJUSTED FOR THE COST OF LIVING EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES





Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

did not drop quite as low as in 1992 and 1993, but was less than 92 percent from 2014 through 2021; it was 91.7 percent in 2021. Arizona's rank among the states in the latest cycle was comparable to the period since the mid-1970s; the rank was 22nd in 2021. Adjusting for the cost of living, Arizona's rank ranged from 26th to 37th from 2009 through 2020, but advanced to 22nd in 2021.

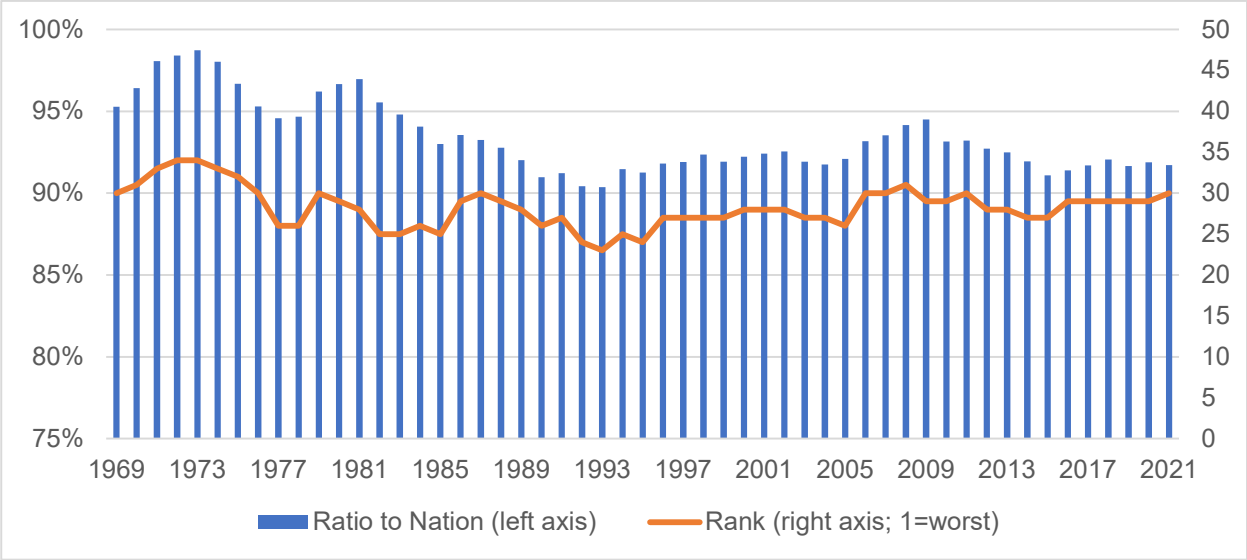
In Chart 20, per worker compensation adjusted for the cost of living relative to the U.S. average is presented for the 15 comparison states. From 2010 through 2021, the adjusted figure in

Arizona ranked from eighth to 10th. The values were lower than in Arizona in each year in Florida, Idaho, New Mexico, South Carolina, and Utah, and in nearly every year in Nevada and Oregon. In 2021, Arizona's adjusted per worker compensation was 5.2 percent less than the national average.

Arizona's relatively better performance on per worker compensation than per worker earnings indicates that proprietors' income per proprietor has been a disproportionately large issue in explaining Arizona's low productivity. The full time series of Arizona's proprietors' income per proprietor relative to the nation is shown in Chart 21. From 2010 through 2012, Arizona's percentage of the national average was the lowest on record, reaching bottom in 2011 at 54.2 percent. By 2021, the situation had improved, but Arizona's figure still was 25.0 percent below the U.S. average.

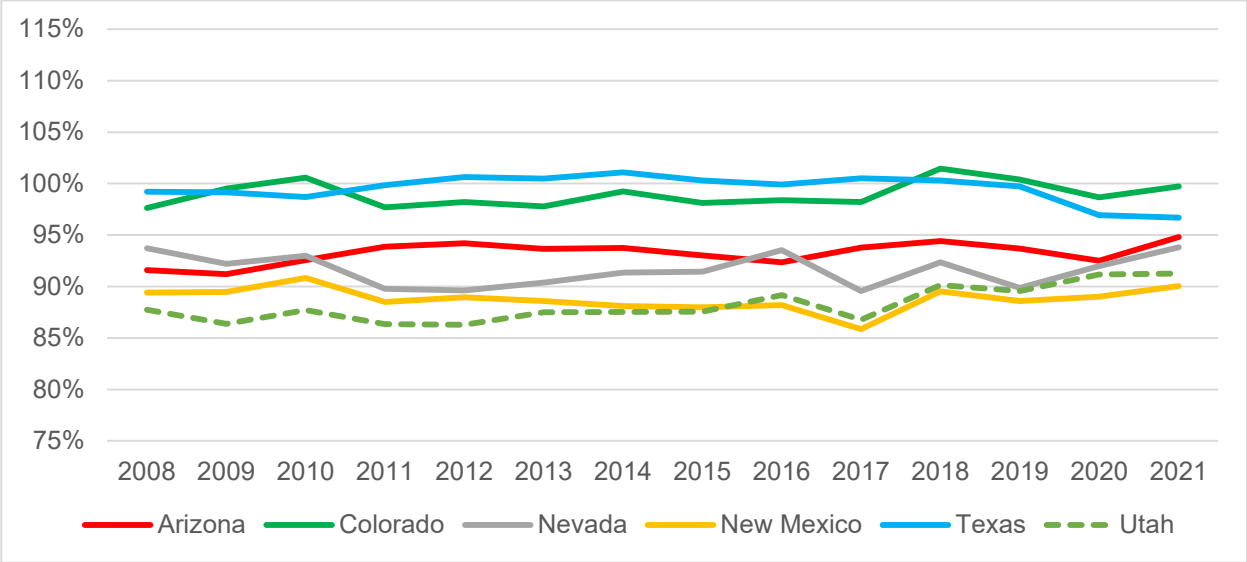
From 2008 through 2021, Arizona's rank among the states on proprietors' income per proprietor ranged from 39th to 50th; it was 44th in 2021. Adjusting for the cost of living, Arizona's rank ranged from 42nd to 50th; the 2021 rank was 46th.

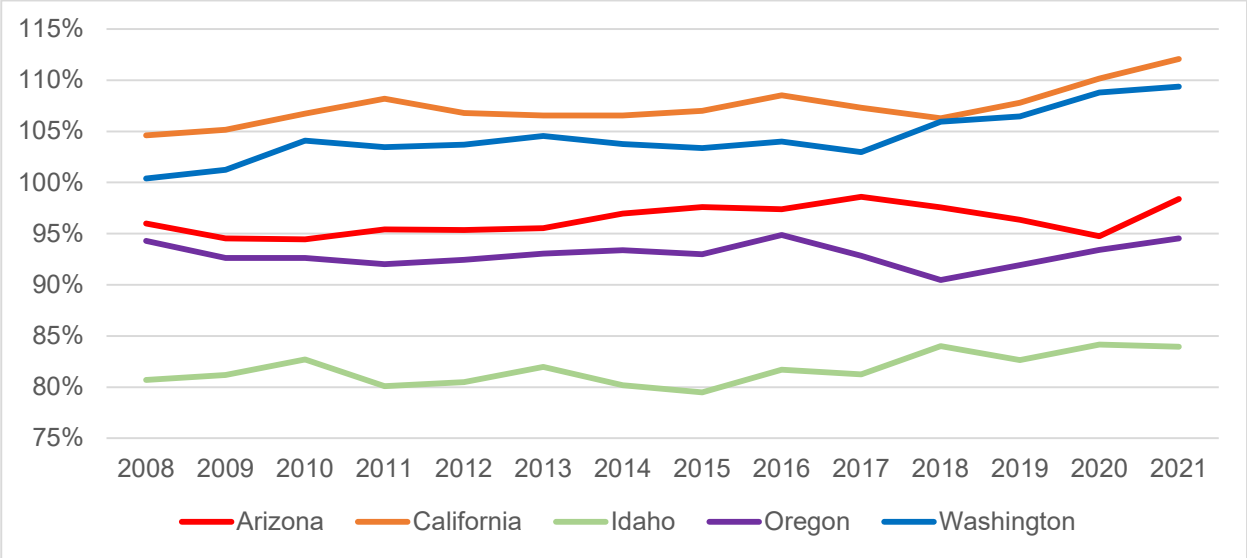
CHART 19
COMPENSATION PER WAGE AND SALARY WORKER, ARIZONA



Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

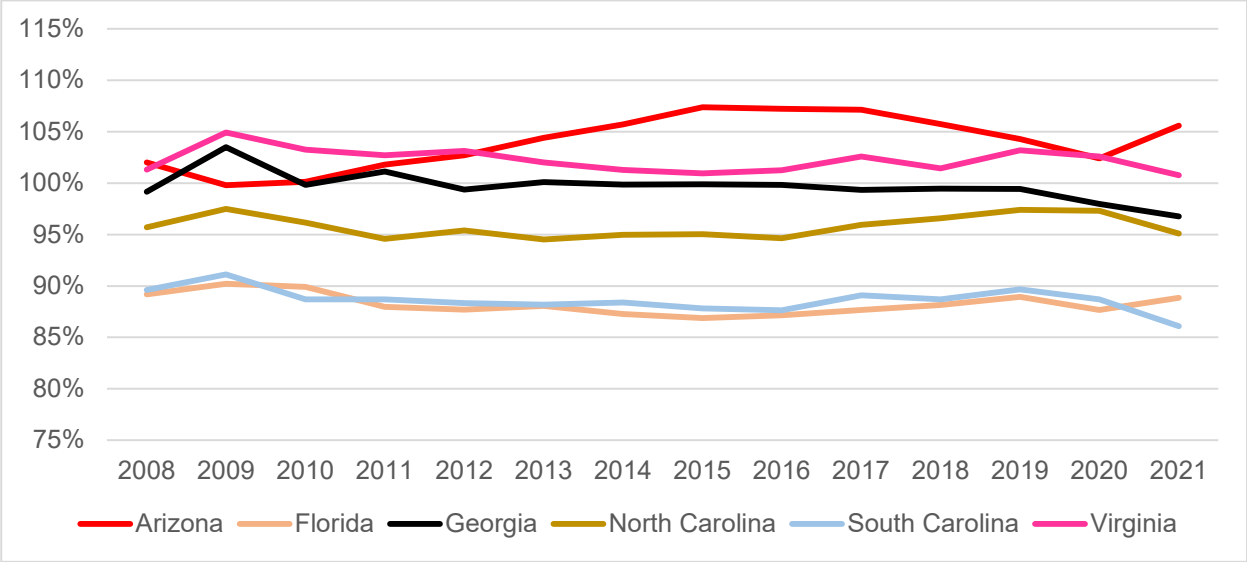
CHART 20
COMPENSATION PER WAGE AND SALARY WORKER ADJUSTED FOR THE COST OF LIVING EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES





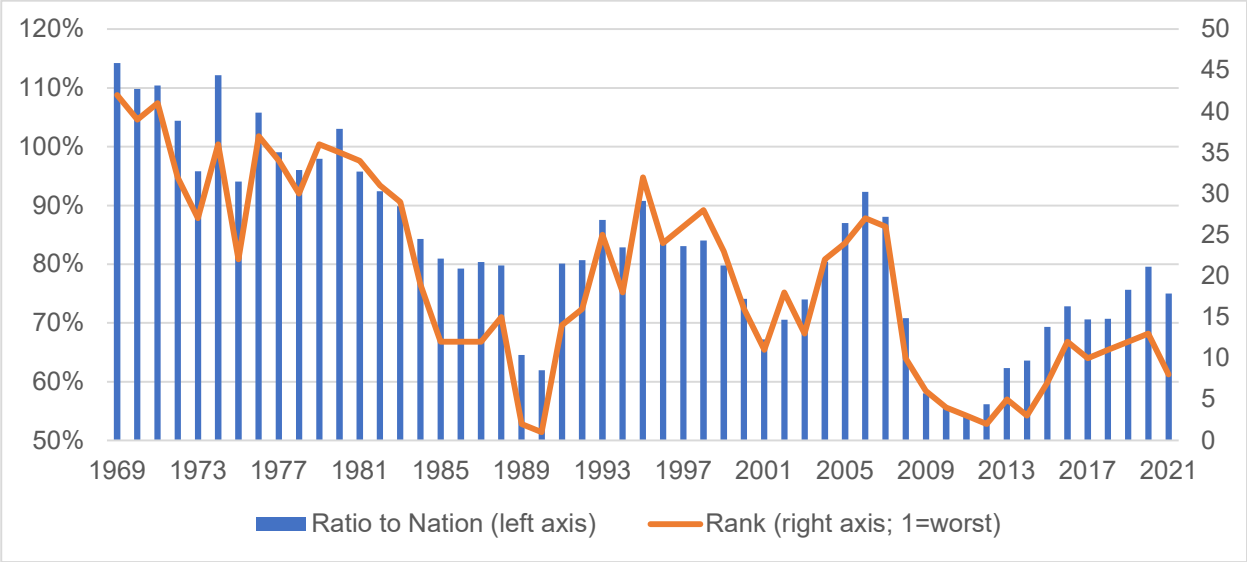
(continued)

CHART 20 (continued)
COMPENSATION PER WAGE AND SALARY WORKER ADJUSTED FOR THE COST OF LIVING EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES



Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

CHART 21
PROPRIETORS' INCOME PER PROPRIETOR, ARIZONA



Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

Proprietors' income is volatile from year to year nationally, but even more so in Arizona, accounting for the sharp ups and downs in Arizona's rank and ratio to the nation seen in Chart 21. The volatility is especially due to farm proprietors' income, even though the farm share of total proprietors' income in recent years has been less than 5 percent, nationally and in Arizona.

In Chart 22, proprietors' income per proprietor adjusted for the cost of living relative to the U.S. average is presented for the 15 comparison states. In some of the comparison states, adjusted proprietors' income per proprietor changed considerably relative to the U.S. average between 2008 and 2021. Arizona's rank varied between 10th and 14th, with several states lower than in Arizona in some but not all years.

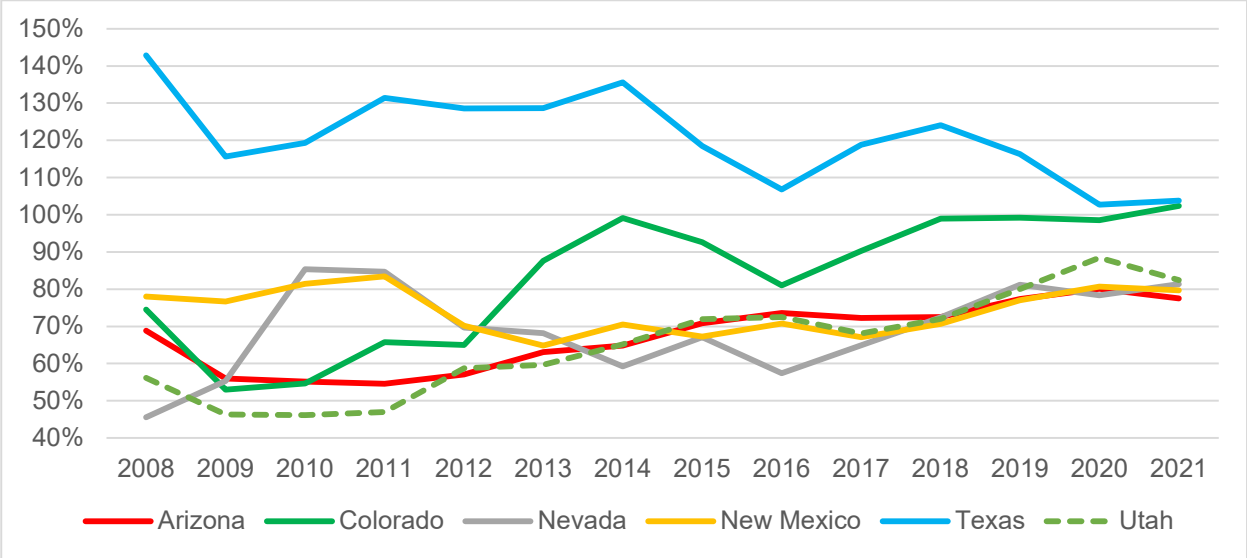
BLS

This analysis of output per hour and output per worker focuses on 2008 through 2021 so the data can be adjusted for the cost of living. The data are displayed in Chart 23. The annual figures of each indicator fluctuate but do not exhibit a trend. Arizona's adjusted figures for 2021 follow:

- Output per hour: 12.1 percent less than the U.S. average, ranking 37th nationally and 11th among the 15 comparison states.
- Output per worker: 11.4 percent less than the U.S. average, ranking 36th nationally and 10th among the comparison states.

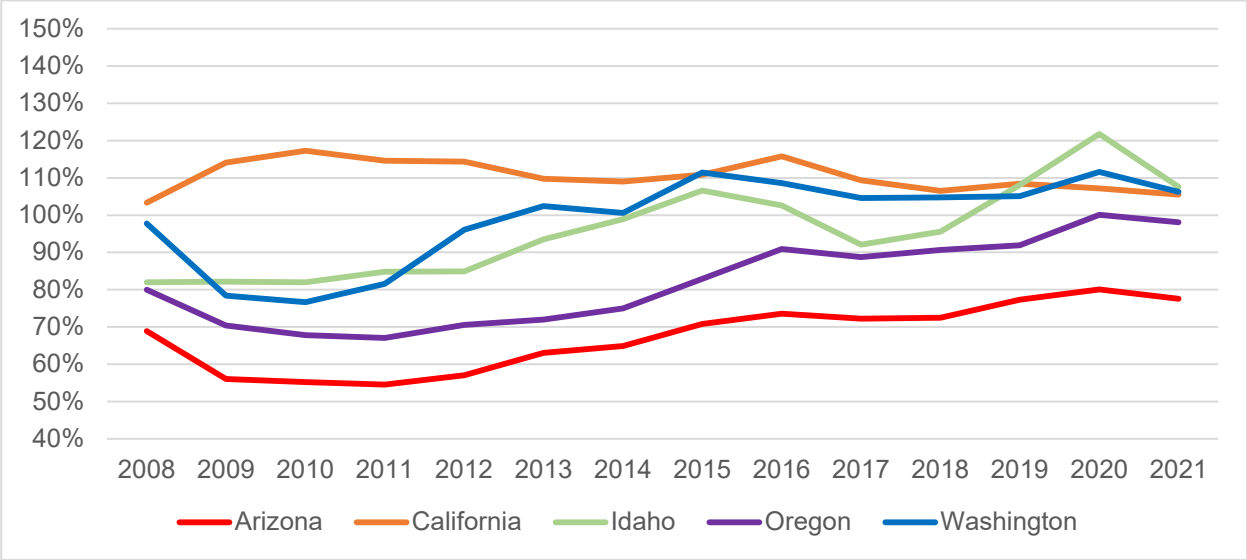
Relative to the per worker GDP and per worker earnings indicators from the BEA, the indicators from the BLS exhibit a larger shortfall from the national average in 2021 and slightly lower ranks, among both the 51 states and the 15 comparison states. On the change between 2008 and 2021, the indicators from the BLS are similar to per worker GDP, but per worker earnings shows a greater improvement relative to the U.S. average.

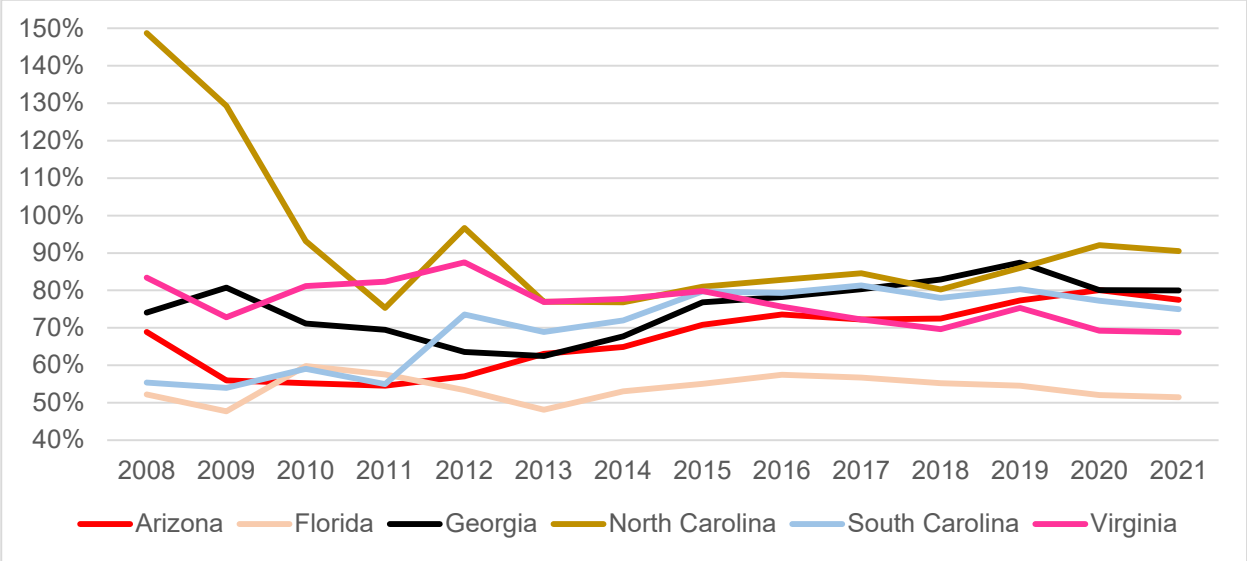
CHART 22
PROPRIETORS' INCOME PER PROPRIETOR ADJUSTED FOR THE COST OF LIVING EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES



(continued)

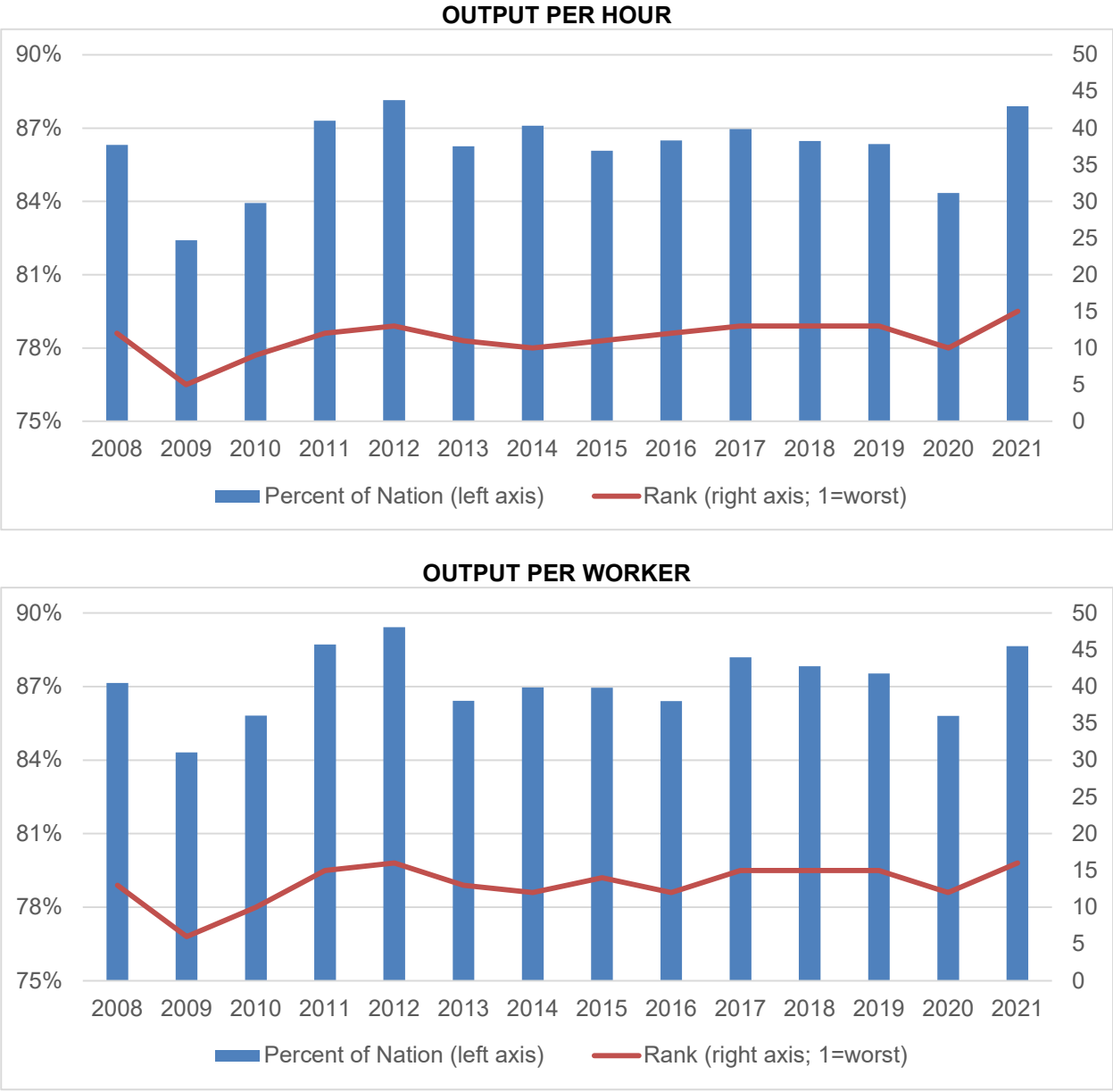
CHART 22 (continued)
PROPRIETORS' INCOME PER PROPRIETOR ADJUSTED FOR THE COST OF LIVING EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE, ARIZONA AND COMPARISON STATES





Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

CHART 23
PRODUCTIVITY INDICATORS FROM THE BUREAU OF LABOR STATISTICS ADJUSTED BY THE COST OF LIVING, ARIZONA EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE



Source: Calculated from U.S. Department of Labor, Bureau of Labor Statistics (productivity) and U.S. Department of Commerce, Bureau of Economic Analysis (cost of living).

Arizona Summary

Each of the prosperity, productivity, and employment-to-population indicators for Arizona is summarized in Table 4, for 2021 and for the change over time. As noted earlier, there are significant differences between the unadjusted and cost-of-living-adjusted figures for 2021 and for the change between 2008 and 2021. On an unadjusted basis, Arizona's performance relative to the national average and to other states continued to decline between 2008 and 2021 (except for proprietors' income per proprietor), furthering downtrends that began in the 1970s and 1980s. In contrast, the adjusted data indicate a relative improvement in each indicator between 2008 and2021. These gains, however, do not totally offset the relative losses that occurred in the unadjusted figures between 1969 and 2008.

Moreover, each indicator adjusted for the cost of living remained well below the national average in 2021. Except for per worker compensation, Arizona ranked between 32nd and 46th among the 51 states on each indicator. The ranks among the 15 comparison states ranged from eighth to 14th.

TABLE 4
SUMMARY OF INDICATORS, ARIZONA

	Unadjusted			Adjusted for the Cost of Living		
	% of U.S. Average	Rank, 51 States	Rank, 15 States	% of U.S. Average	Rank, 51 States	Rank, 15 States
2021						
Per Capita Personal Income	86.5	40	12	89.4	43	12
Per Capita Gross Domestic Product	82.2	36	11	85.0	37	11
Total Employment-to-Population Ratio	92.0	45	14			
Wage & Salary Employment-to-Population	92.4	45	14			
Per Worker Gross Domestic Product	89.3	29	10	92.4	35	10
Per Worker Earnings	89.9	25	7	92.9	32	8
Compensation Per Wage & Salary Worker	91.7	22	8	94.8	22	8
Proprietors' Income Per Proprietor	75.0	44	11	77.5	46	12
Output Per Hour	85.0	35	11	87.9	37	11
Output Per Worker	85.7	35	11	88.6	36	10
2008-to-2021 Change						
Per Capita Personal Income	-0.6	-1	-2	4.6	6	2
Per Capita Gross Domestic Product	-4.0	2	1	1.1	6	1
Total Employment-to-Population Ratio	0.1	3	1			
Wage & Salary Employment-to-Population	0.5	3	1			
Per Worker Gross Domestic Product	-4.5	-8	-2	1.2	0	0
Per Worker Earnings	-1.7	-2	0	3.7	8	2
Compensation Per Wage & Salary Worker	-2.5	-1	-1	3.2	12	2
Proprietors' Income Per Proprietor	4.2	-2	-1	8.6	0	-1
Output Per Hour	-3.7	-7	-2	1.6	3	1
Output Per Worker	-3.9	-10	-2	1.5	3	1
1969-to-2021 Change						
Per Capita Personal Income	-6.2	-9	-6			
Per Capita Gross Domestic Product	-7.8	-12	-5			
Total Employment-to-Population Ratio	1.5	2	0			
Wage & Salary Employment-to-Population	0.8	-8	-1			
Per Worker Gross Domestic Product	-10.1	-16	-5			
Per Worker Earnings	-7.6	-5	-2			
Compensation Per Wage & Salary Worker	-3.6	0	-3			
Proprietors' Income Per Proprietor	-39.2	-34	-9			

Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis, and the U.S. Department of Labor, Bureau of Labor Statistics.

PRODUCTIVITY AND PROSPERITY: METROPOLITAN AND NONMETROPOLITAN AREAS BY STATE

The BEA divides states into metropolitan and nonmetropolitan portions.[8] In Arizona, the nonmetro portion accounts for a small and declining share of the state total. The nonmetro share in 2021 was 4.7 percent of the state's population and less than 4 percent of its GDP, employment, and personal income.

Prosperity Indicators

The top graph of Chart 24 illustrates a significant downward trend since the early 1970s, but especially since the mid-1980s, in per capita personal income in Arizona's metropolitan portion relative to the U.S. metropolitan average, in terms of both percentage and rank. Despite improvement from the low point after the 2008-to2010 recession, Arizona's metro per capita personal income was 15.6 percent less than the U.S. metro average in 2021 — lower than in every year prior to 2000. The rank in 2021 was 42nd among the 51 states, lower than in every year prior to 2008.

In Arizona's nonmetropolitan portion, a significant downtrend in per capita personal income as a percentage of the U.S. nonmetropolitan average occurred from the late 1970s through the 1990s, but much of the loss was recovered during the 2000s. Further gains after 2013 pushed the percentage of the national nonmetro average to the highest on record, though still 10.9 percent below average in 2021. The state's rank among the 47 states with a nonmetropolitan portion slipped during the late 1970s. Arizona ranked last in the nation from 1981 through 2008 and again from 2011 through 2016. In 2021, Arizona's nonmetro area ranked 39th.

The bottom graph of Chart 24 provides per capita personal income adjusted for the cost of living. Relative to the U.S. metro average, Arizona's metro portion slipped during the 2008-to-2010 recession to 18.5 percent below average but then advanced to 11.8 percent below average in 2021. The decline in the relative cost of living largely explains this improvement. Arizona's metro rank among the 51 states rose from 50th in various years to 46th in 2021.

Adjusted per capita personal income in the nonmetro portion of the state relative to the U.S. nonmetro average rose from 21.1 percent below average in 2008 to 2.0 percent below average in 2021. Similarly, the rank improved from last to 27th among the 47 states with a nonmetro area. Thus, per capita personal income in 2021 in Arizona's nonmetro portion was not as far below the U.S. nonmetro average as Arizona's metro portion was below the U.S. metro average.

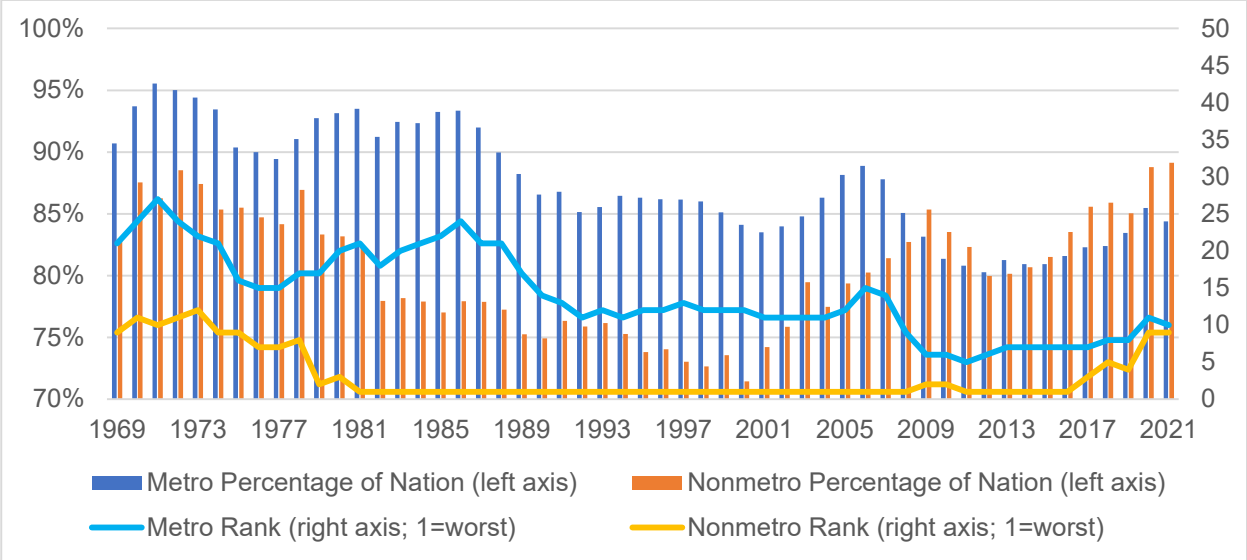
Between 2001, the earliest data, and 2021, unadjusted per capita gross domestic product in Arizona's metropolitan portion peaked at 13.3 percent less than the U.S. metro average in 2003. The trough was in 2015 at 23.2 percent below average; in 2021, the figure was 20.1 percent below average. The rank dropped from 37th in 2001 to 46th in 2009 and 2010, then improved to 41st in 2021.

The temporal pattern of unadjusted per capita gross domestic product was different for Arizona's nonmetro portion relative to the U.S. nonmetro average. The low point of 18.7 percent below average occurred in 2002 and 2004. In 2011, Arizona's figure was only 1.7 percent below

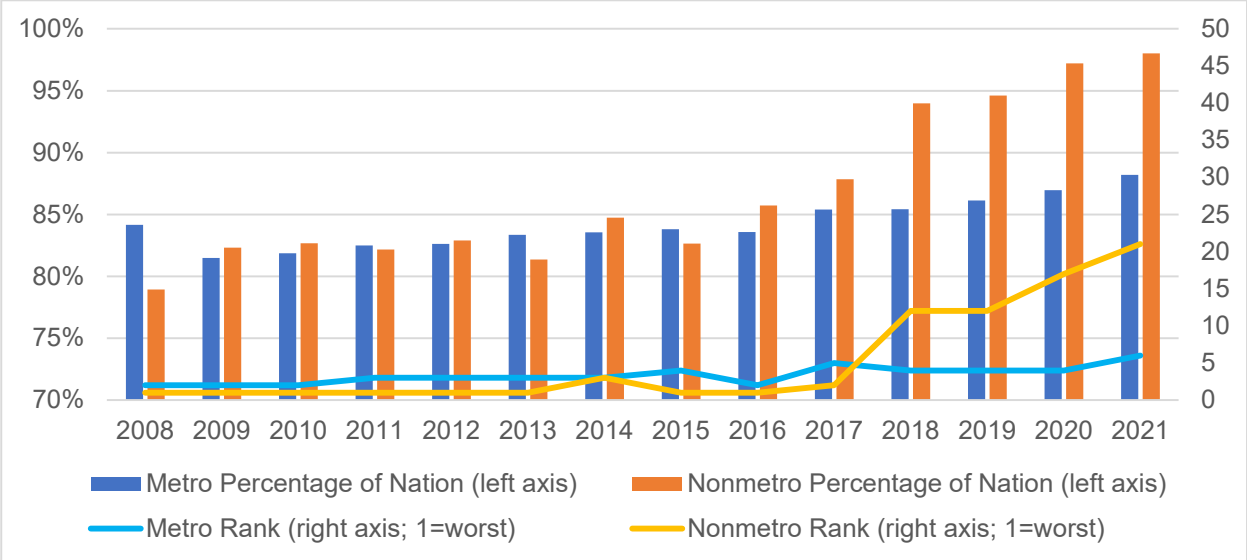
[8] Delaware, the District of Columbia, New Jersey, and Rhode Island consist entirely of metropolitan areas.

CHART 24
PER CAPITA PERSONAL INCOME,
ARIZONA'S METROPOLITAN AREA AND NONMETROPOLITAN AREA

Not Adjusted for the Cost of Living



Adjusted for the Cost of Living



Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

average, but fell to 17.4 percent below average in 2015 before rebounding to 10.1 percent below average in 2021. The rank improved from 46th in 2004 to 28th in 2011, dropped back to 36th in 2015, but was up to 33rd in 2021.

Per capita GDP adjusted for the cost of living is displayed in Chart 25. As a percentage of the U.S. metro average, Arizona's metro portion slipped in 2009 to 21.8 percent below average, was little changed through 2016, but then rose to 16.5 percent below average in 2021. Arizona's metro rank was 50th 2009, but improved to 42nd in 2021.

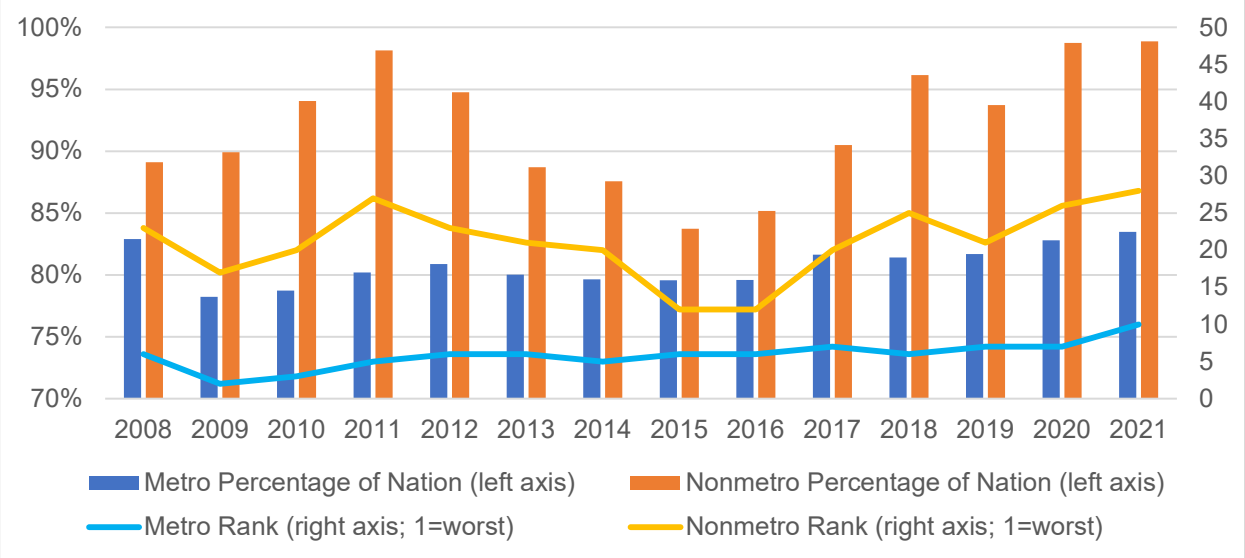
In the nonmetro portion of the state, adjusted per capita GDP as a percentage of the U.S. nonmetro average rose during and shortly after the recession to only 1.9 percent below average, slumped for a few years to 16.3 percent below average, then improved between 2016 and 2021 to just 1.1 percent below average. Similarly, the rank fluctuated from 21st to 31st, then reached 20th in 2021. Adjusted per capita GDP in Arizona's metro portion in 2021 was much further below the U.S. metro average than Arizona's nonmetro portion was below the U.S. nonmetro average.

Arizona's poor comparison in 2021 on each of the prosperity indicators overwhelmingly was due to the underperformance of the state's metro areas.

Employment-to-Population Ratio

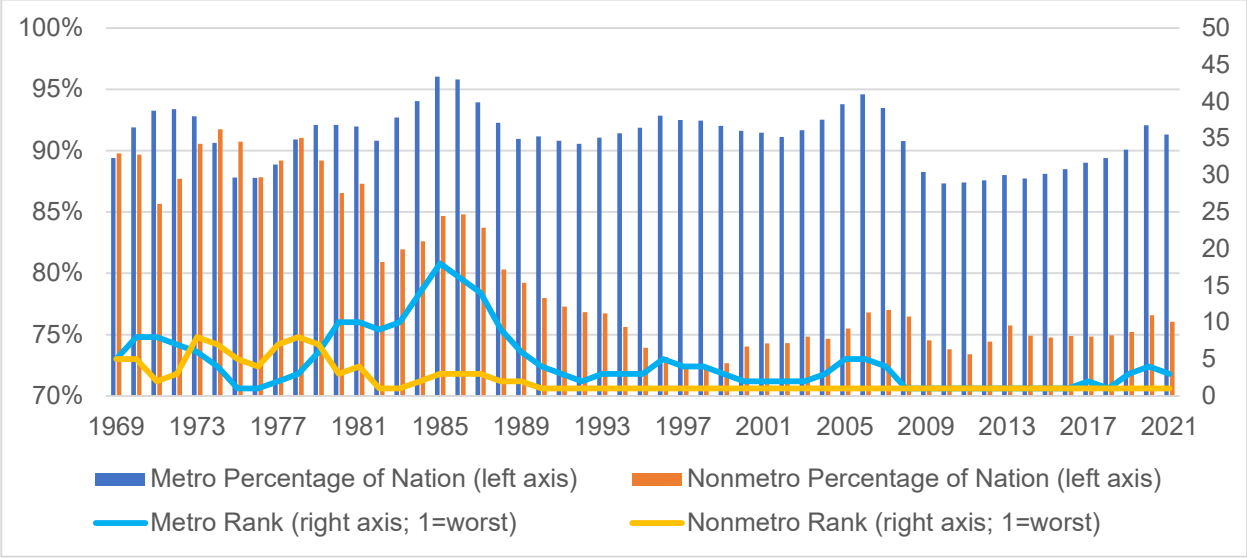
The wage and salary employment-to-population ratio in Arizona's metro and nonmetro portions is displayed in Chart 26. As a percentage of the U.S. metro average, Arizona's metro portion recorded the lowest levels on record from 2010 through 2012. While the E-P ratio rose relative to the U.S. metro average after that, it remained a little less than the peak of most prior expansions.

CHART 25
PER CAPITA GROSS DOMESTIC PRODUCT ADJUSTED FOR THE COST OF LIVING, ARIZONA'S METROPOLITAN AREA AND NONMETROPOLITAN AREA



Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

CHART 26
WAGE AND SALARY EMPLOYMENT-TO-POPULATION RATIO, ARIZONA'S METROPOLITAN AREA AND NONMETROPOLITAN AREA



Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

Except between 1984 and 1987, Arizona's metro rank was among the 10 worst of the 51 states; from 2008 through 2016, Arizona's metro portion had the lowest wage and salary E-P ratio in the nation. It ranked 49th in 2021.

The employment-to-population ratio in the nonmetro portion of the state as a percentage of the U.S. nonmetro average dropped considerably during the 1980s and 1990s and improved only a little after that. Arizona's nonmetro portion had the lowest wage and salary E-P ratio in the nation in each year from 1990 through 2021. In 2021, the wage and salary E-P ratio in Arizona's nonmetro portion was 24.0 percent below the U.S. nonmetro average while Arizona's metro portion was 8.7 percent below the U.S. metro average.

Based on the ACS data for 2017 through 2021, the overall employment-to-population ratio in Arizona's metropolitan area was 46.5 — 5.3 percent less than the U.S. metro figure of 49.1. The E-P ratio in Arizona's metro area was less than the U.S. metro average in each age group 25 or older. The population share in Arizona's metro area was less than the U.S. metro average in the 25-to-64 age group and higher than average in the 65-or-older age group. The E-P ratio by age group was responsible for 52 percent of the shortfall in the overall E-P ratio in Metropolitan Arizona.

For 2017 through 2021, the overall E-P ratio in Arizona's nonmetropolitan area was only 29.4 percent — 32.4 percent less than the U.S. nonmetro figure of 43.6. The E-P ratio in Arizona's nonmetro area was significantly less than the U.S. nonmetro average in each age group, but especially among those 25-to-54 years of age. The population share in Arizona's nonmetro area was less than the U.S. nonmetro average in the 25-to-64 age group and higher than average in the

younger-than-16 age group. The E-P ratio by age group was responsible for 89 percent of the significant shortfall in the overall E-P ratio in Nonmetropolitan Arizona.

Productivity Indicators

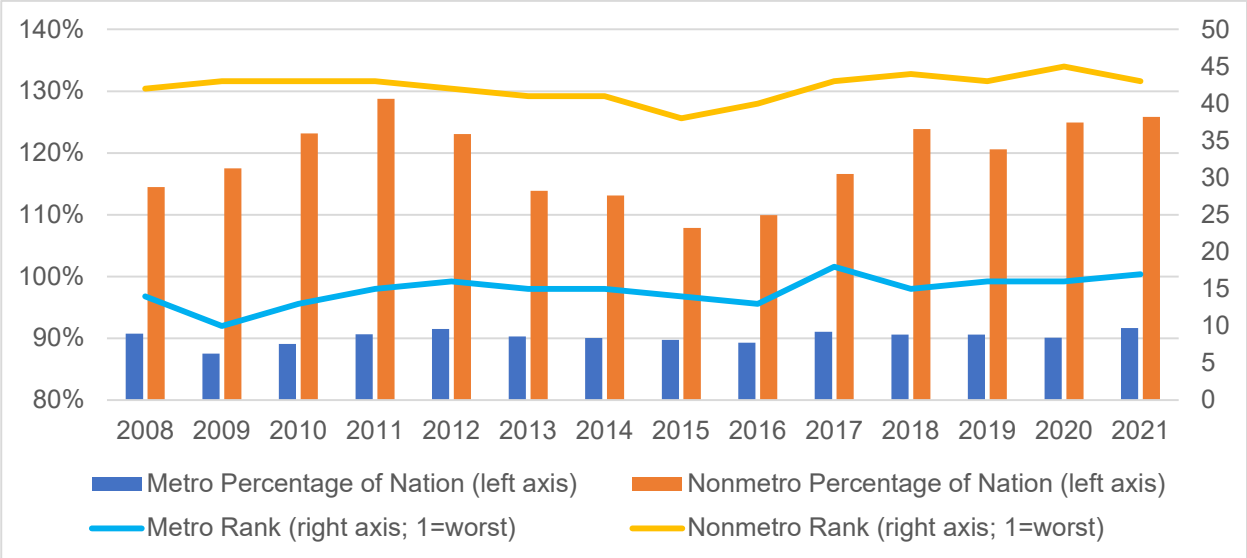
Unadjusted per worker GDP in Arizona's metro portion dropped relative to the U.S. metro average after 2001, from 7.4 percent below average and a rank of 23rd to 12.3 percent below average and a rank of 32nd in 2021. In contrast, unadjusted per worker GDP in Arizona's nonmetro portion has been higher than the nonmetro average. In 2001, it was 14.6 percent above average and ranked ninth; in 2021, it was 14.4 percent above average and ranked seventh.

Per worker GDP adjusted for the cost of living is displayed in Chart 27. As a percentage of the U.S. metro average, Arizona's metro portion dropped briefly in 2009 but otherwise changed little from 2008 through 2021, with the figure generally 8-to-10 percent below average. Arizona's metro rank generally was between 34th and 39th among the 51 states.

In contrast, adjusted per worker GDP in the nonmetro portion of the state as a percentage of the U.S. nonmetro average was considerably above average in each year, with annual fluctuations following the same pattern as per capita GDP. Arizona's nonmetro portion ranked among the top 10 in each year, including fifth in 2021.

In the top graph of Chart 28, the cyclicality of per worker earnings in Arizona's metro portion relative to the U.S. metropolitan average can be seen. In addition, a downward trend has been present since the early 1970s, in terms of both percentage and rank. While some cyclicality in Arizona's nonmetropolitan portion is present, this is overshadowed by a significant downtrend in the percentage of the U.S. nonmetropolitan average since the mid-1980s.

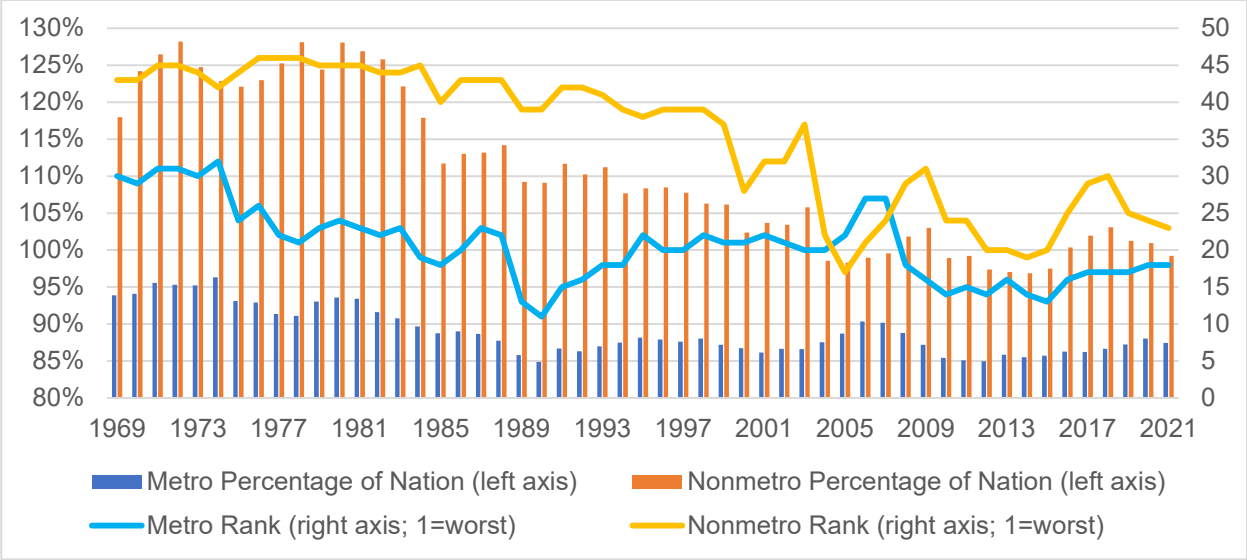
CHART 27
PER WORKER GROSS DOMESTIC PRODUCT ADJUSTED FOR THE COST OF LIVING, ARIZONA'S METROPOLITAN AREA AND NONMETROPOLITAN AREA



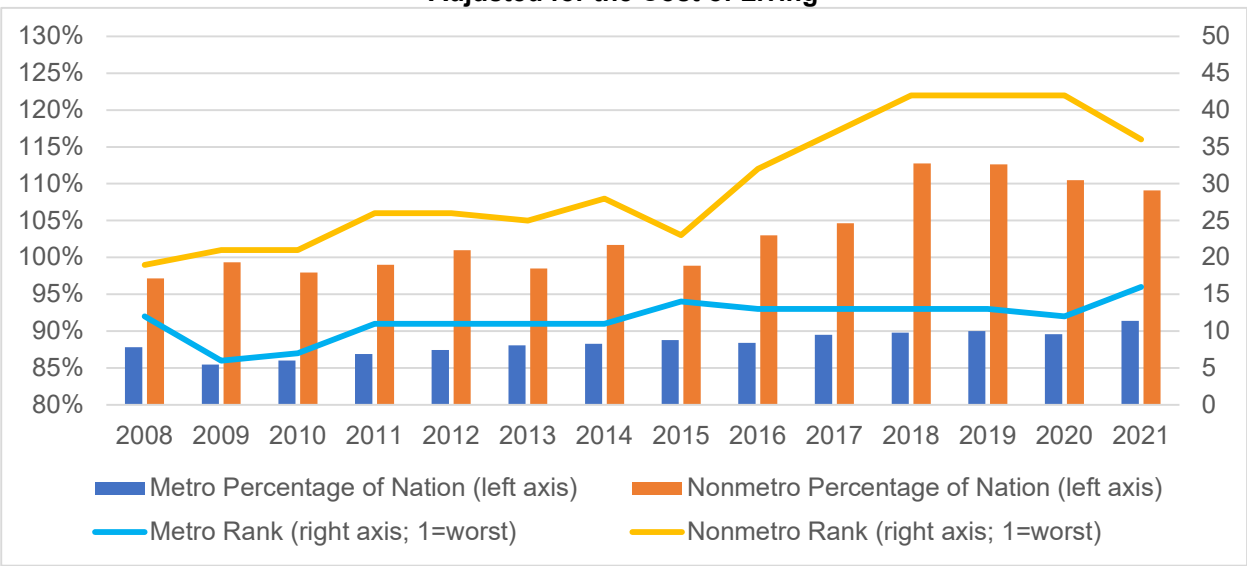
Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

CHART 28
PER WORKER EARNINGS,
ARIZONA'S METROPOLITAN AREA AND NONMETROPOLITAN AREA

Not Adjusted for the Cost of Living



Adjusted for the Cost of Living



Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

The bottom graph of Chart 28 provides per worker earnings adjusted for the cost of living. Relative to the U.S. metro average, Arizona's metro portion slipped during the recession to 14.5 percent below average but slowly improved after that to 8.6 percent below average in 2021. Arizona's metro rank improved from 46th in 2009 to 36th in 2021.

In the nonmetro portion of the state, adjusted per worker earnings fluctuated as a percentage of the U.S. nonmetro average through 2015 but was above average in each year from 2016 through 2021. Similarly, the rank improved from the middle to 12th among the 47 states with a nonmetro area in 2021. In 2021, per worker earnings in Arizona's metro portion was below the U.S. metro average, while Arizona's nonmetro portion was above the U.S. nonmetro average.

Compensation per wage and salary worker in Arizona's metro portion as a percentage of the U.S. metro average slipped during the 1980s but has not changed much since then (see the top graph of Chart 29). In 2021 adjusted for the cost of living (see the bottom graph of Chart 29), Arizona's metro portion was 6.9 percent below average and ranked 44th. Proprietors' income per proprietor in Metro Arizona as a percentage of the U.S. metro average dropped considerably during the 1970s and 1980s, partially recovered from the early 1990s through the mid-2000s, fell to the lowest level on record in 2011, and recovered moderately after that (see the top graph of Chart 29). In 2021 adjusted for the cost of living, Arizona's metro portion was 22.1 percent below average and ranked 44th in the nation.

In Arizona's nonmetro portion, compensation per wage and salary worker as a percentage of the U.S. nonmetro average also slipped during the 1980s and has not changed much since then. In 2021 adjusted for the cost of living, Arizona's nonmetro portion was 20.5 percent above average and ranked fourth in the nation. Proprietors' income per proprietor in Nonmetro Arizona as a percentage of the U.S. nonmetro average dropped substantially during the 1970s and 1980s, fell further from 2003 through 2013 to the lowest level on record, and recovered modestly after that. In 2021 adjusted for the cost of living, Arizona's nonmetro portion was 35.6 percent below average and ranked 44th among the 47 states with a nonmetro area.

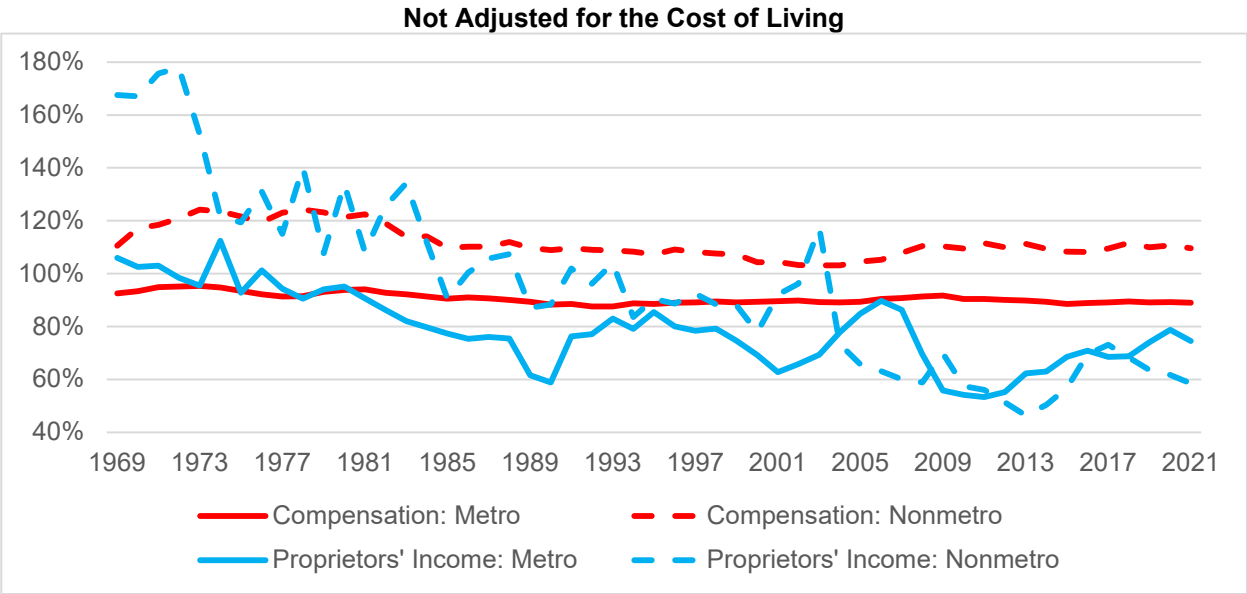
Thus, Arizona's nonmetro portion compares much more favorably to its peers than does the metro portion on compensation per wage and salary worker. However, the nonmetro portion compares less favorably to its peers than does the metro portion on proprietors' income per proprietor.

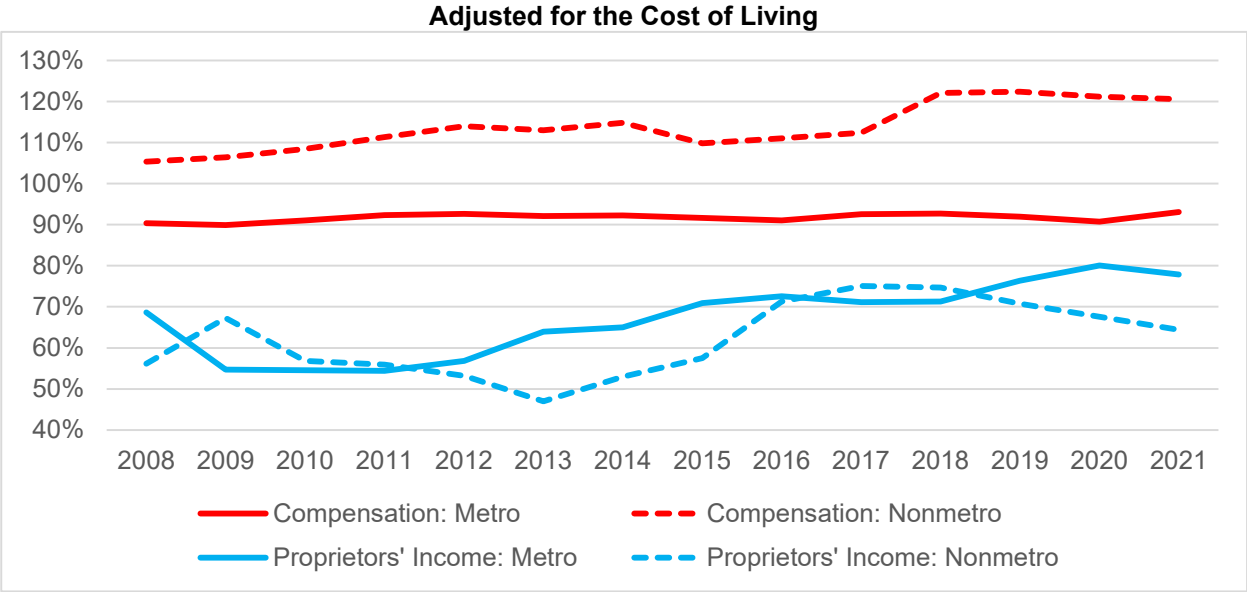
Metro-Nonmetro Summary

On each of the indicators shown in Table 5, Arizona compared unfavorably to the national average and Metropolitan Arizona compared unfavorably to the national metropolitan average in 2021. In contrast, Nonmetropolitan Arizona compared favorably to the national nonmetropolitan average on per worker GDP and compensation per wage and salary worker and was not much below average on the per capita indicators. Except for the employment-to-population ratios and proprietors' income per proprietor, Nonmetropolitan Arizona compared more favorably to the national nonmetro average than did Metropolitan Arizona to the national metro average.

In Table 6, the change over time is summarized, first based on the cost-of-living-adjusted change between 2008 and 2021, then on the unadjusted change over the full time series (1969 to 2021,

CHART 29
COMPENSATION PER WAGE AND SALARY WORKER AND PROPRIETORS' INCOME PER PROPRIETOR EXPRESSED AS A PERCENTAGE OF THE NATIONAL AVERAGE FOR METROPOLITAN AND NONMETROPOLITAN AREAS, ARIZONA'S METROPOLITAN AREA AND NONMETROPOLITAN AREA





Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

except for 2001 to 2021 for the GDP indicators). Between 2008 and 2021 relative to its national average, the nonmetro portion compared more favorably than the metro portion on each adjusted indicator except the wage and salary E-P ratio and proprietors' income per proprietor. Over the full time series, the nonmetro portion compared more favorably than the metro portion on each indicator except per worker earnings, proprietors' income per proprietor, and the wage and salary E-P ratio.

TABLE 5
SUMMARY OF INDICATORS,
ARIZONA'S METROPOLITAN AREA AND NONMETROPOLITAN AREA, 2021

	State	Metropolitan Portion	Non-metropolitan Portion
Number of States	51	51	47
Wage and Salary Employment	3,076,770	2,979,813	96,957
Percentage of U.S. Average Adjusted for the Cost of Living*			
Per Capita Personal Income	89.4%	88.2%	98.0%
Per Capita Gross Domestic Product	85.0	83.5	98.9
Total Employment-to-Population Ratio	92.0	91.1	78.6
Wage & Salary Employment-to-Population Ratio	92.4	91.3	76.0
Per Worker Gross Domestic Product	92.4	91.7	125.9
Per Worker Earnings	92.9	91.4	109.1
Compensation Per Wage & Salary Worker	94.8	93.1	120.5
Proprietors' Income Per Proprietor	77.5	77.9	64.4
Rank Among States Expressed as a Percentile Adjusted for the Cost of Living**			
Per Capita Personal Income	84	90	57
Per Capita Gross Domestic Product	73	82	43
Total Employment-to-Population Ratio	88	96	100
Wage & Salary Employment-to-Population Ratio	88	96	100
Per Worker Gross Domestic Product	69	69	11
Per Worker Earnings	63	71	26
Compensation Per Wage & Salary Worker	43	51	9
Proprietors' Income Per Proprietor	90	86	94

* Arizona is compared to the national average, Metro Arizona is compared to the national metro average, and Nonmetro Arizona is compared to the national nonmetro average.

** For example, Nonmetropolitan Arizona ranked 27th among the 47 states with a nonmetro area on per capita personal income; 27 divided by 47 equals 57th percentile. The 100th percentile represents the worst rank.

Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 6
SUMMARY OF INDICATORS, ARIZONA'S METROPOLITAN AREA AND NONMETROPOLITAN AREA, CHANGE OVER TIME

	State	Metropolitan Portion	Non-metropolitan Portion
Number of States	51	51	47
2008-to-2021 Change in Percentage of National Average Adjusted for the Cost of Living*			
Per Capita Personal Income	4.6	4.0	19.1
Per Capita Gross Domestic Product	1.1	0.6	9.8
Total Employment-to-Population Ratio	0.1	-0.2	0.7
Wage & Salary Employment-to-Population Ratio	0.5	0.5	-0.5
Per Worker Gross Domestic Product	1.2	0.9	11.4
Per Worker Earnings	3.7	3.6	11.9
Compensation Per Wage & Salary Worker	3.2	2.7	15.1
Proprietors' Income Per Proprietor	8.6	9.2	8.3
2008-to-2021 Change in Rank Among States Adjusted for the Cost of Living			
Per Capita Personal Income	6	4	20
Per Capita Gross Domestic Product	6	4	5
Total Employment-to-Population Ratio	3	1	0
Wage & Salary Employment-to-Population Ratio	3	2	0
Per Worker Gross Domestic Product	0	3	1
Per Worker Earnings	8	4	17
Compensation Per Wage & Salary Worker	12	11	5
Proprietors' Income Per Proprietor	0	2	2
Change in Percentage of National Average: 1969 to 2021			
Per Capita Personal Income	-6.2	-6.3	6.1
Total Employment-to-Population Ratio	1.5	0.5	1.6
Wage & Salary Employment-to-Population Ratio	0.8	1.9	-13.8
Per Worker Earnings	-7.6	-6.5	-18.8
Compensation Per Wage & Salary Worker	-3.6	-3.5	-0.9
Proprietors' Income Per Proprietor	-39.2	-31.5	-109.1
Change in Percentage of National Average: 2001 to 2021			
Per Capita Gross Domestic Product	-5.6	-5.4	7.4
Per Worker Gross Domestic Product	-5.8	-4.9	-0.2
Change in Rank Among States: 1969 to 2021			
Per Capita Personal Income	-9	-11	0
Total Employment-to-Population Ratio	2	-1	0
Wage & Salary Employment-to-Population Ratio	-8	-2	-4
Per Worker Earnings	-5	-12	-20
Compensation Per Wage & Salary Worker	0	-1	2
Proprietors' Income Per Proprietor	-34	-31	-44
Change in Rank Among States: 2001 to 2021			
Per Capita Gross Domestic Product	-4	-4	11
Per Worker Gross Domestic Product	-9	-9	2

* Arizona is compared to the national average, Metro Arizona is compared to the national metro average, and Nonmetro Arizona is compared to the national nonmetro average.

Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

PRODUCTIVITY AND PROSPERITY: INDIVIDUAL METROPOLITAN AREAS

Based on the data presented in the previous section on Arizona's metropolitan and nonmetropolitan portions, and considering the dominance of Arizona's metro areas in the state's economy, Arizona's poor performance on productivity and prosperity measures is predominantly due to its metropolitan areas. In this section, each of Arizona's seven metro areas is examined, with comparisons to other U.S. metro areas of similar size, as measured by wage and salary employment in 2021.

For most types of economic analyses, labor market areas, which generally correspond to metropolitan areas, are preferable to states as the primary geographic unit of measure. The nation's 384 metro areas were placed into six metropolitan size classes based on the number of wage and salary workers in 2021. Several factors were considered in determining the division between each size class (SC). First, natural breaks in the time series were examined. This determined the division between size classes 1 and 2: there was a large gap between four metro areas that had employment between 1.02 and 1.08 million and the next highest employment at 0.86 million. No other significant natural breaks are present among the remaining metro areas. Second, a gradual increase in the number of metro areas per size class was sought — none of the size classes should have a significantly larger number of metro areas than the other size classes. Third, none of Arizona's seven metro areas should be near the division between size classes. The following size classes were created:

- SC1: 36 metro areas with employment of at least 1 million. Metro Phoenix ranked 12th with employment of 2.271 million in 2021.
- SC2: 41 metro areas with employment of between 350,000 and 999,999. Metro Tucson ranked 28th in the size class with employment of approximately 404,000.
- SC3: 63 metro areas with employment of between 175,000 and 349,999.
- SC4: 68 metro areas with employment of between 100,000 and 174,999.
- SC5: 85 metro areas with employment of between 60,000 and 99,999. In the size class, Metro Yuma ranked 46th with employment of approximately 74,000, Metro Prescott ranked 57th with employment of approximately 69,000, and Metro Flagstaff ranked 68th with employment of approximately 65,000.
- SC6: 91 metro areas with employment of less than 60,000. In the size class, Metro Lake Havasu City ranked 14th with employment of approximately 57,000 and Metro Sierra Vista ranked 68th with employment of approximately 40,000.

The metro size-class averages and the nonmetro average for 2021 are presented in Table 7 for the indicators, with those measured in dollars adjusted for the cost of living. For each indicator except proprietors' income per proprietor, size class 1 had the highest average in 2021. The lowest average was either in SC6 or in the nonmetro area, except for per worker GDP and proprietors' income per proprietor. For most of the indicators, a large difference was present between the averages of SC1 and SC2. The differences between SC1 and SC6 and between SC1 and the nonmetro area were significant for each indicator, with SC6 and the nonmetro area generally between 10-and-30 percent less than SC1.

Unlike the 2021 values, the percent change over time in the indicators shown in Table 7 generally is not related to employment size. Between 1969 and 2021, the greatest gain in the total

TABLE 7
AVERAGES BY METROPOLITAN AREA SIZE CLASS AND NONMETROPOLITAN AREA

Size Class Defined by Wage and Salary Employment in 2021	Per Capita Personal Income	Per Capita Gross Domestic Product	Total Employ-ment-to-Popula-tion Ratio	Wage and Salary Employ-ment-to-Popula-tion Ratio	Per Worker Gross Domestic Product	Per Worker Earnings	Compen-sation Per Wage and Salary Worker	Proprie-tors' Income Per Proprie-tor	Regional Price Parity
2021*									
Metropolitan:									
1 Million & More	$69,348	$79,220	64.8%	48.5%	$122,226	$76,736	$90,138	$36,835	105.5%
350,000-999,999	63,417	68,621	62.0	48.2	110,701	69,439	78,767	36,819	96.4
175,000-349,999	58,983	58,932	57.2	43.8	102,958	63,968	73,889	31,607	96.5
100,000-174,999	63,161	64,463	57.1	44.1	112,857	67,289	76,023	37,717	89.2
60,000-99,999	56,940	57,365	56.9	44.0	100,765	61,621	69,900	33,313	93.2
Less Than 60,000	56,227	54,185	51.7	40.2	104,734	62,116	70,524	32,946	92.2
Nonmetropolitan	56,148	55,310	51.5	37.5	107,295	58,483	67,398	34,718	89.0
2008 to 2021**									
Metropolitan:									
1 Million & More	25.2%	17.7%	5.3%	-1.3%	11.8%	12.0%	17.1%	5.3%	0.2%
350,000-999,999	19.9	10.0	0.3	-4.7	9.6	10.1	14.3	-0.2	-2.1
175,000-349,999	22.5	9.7	0.5	-4.0	9.1	10.3	13.1	11.1	-1.0
100,000-174,999	24.9	13.4	-0.4	-4.5	13.9	11.8	14.7	7.6	-1.7
60,000-99,999	24.2	11.5	-1.6	-5.1	13.2	12.5	14.2	16.6	-1.3
Less Than 60,000	23.6	10.4	-2.1	-5.4	12.7	11.8	12.7	23.6	-0.9
Nonmetropolitan	22.4	8.8	-0.3	-3.3	9.1	9.7	10.5	14.5	2.1
1969 to 2021***									
Metropolitan:									
1 Million & More	181.8%	28.3%	38.0%	15.2%	19.6%	75.3%	103.4%	-5.9%	
350,000-999,999	170.6	18.1	33.0	16.0	16.6	64.6	83.8	0.1	
175,000-349,999	164.0	18.9	27.9	12.4	17.8	55.6	77.4	-15.9	
100,000-174,999	179.4	25.1	28.7	15.3	25.0	56.6	75.0	-5.6	
60,000-99,999	173.6	21.8	28.7	17.4	21.3	57.8	77.3	-9.8	
Less Than 60,000	163.9	22.3	20.0	9.5	24.1	50.7	67.8	-9.6	
Nonmetropolitan	190.4	32.4	26.0	22.0	31.5	61.1	83.9	-1.5	

* Adjusted for the cost of living. ** Percent change adjusted for the cost of living and inflation.
*** Percent change adjusted for inflation. The change in the two GDP indicators is from 2001 to 2021.
Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

employment-to-population ratio, per worker earnings, and compensation per wage and salary worker was in SC1, but the nonmetro area had the largest gain in most of the other indicators. Between 2008 and 2021 after adjusting for the cost of living, the percent change was greatest in SC1 in per capita personal income, per capita GDP, compensation per wage and salary worker, and each of E-P ratios.

In Table 8, each of Arizona's metropolitan areas is compared to its size-class average in 2021 on the per capita prosperity indicators, the per worker productivity indicators, and the employment-to-population ratios. The state's metro areas compare unfavorably, generally quite unfavorably, to other metro areas of similar size with the following exceptions:

- Metro Flagstaff compared favorably on each indicator except per worker earnings and compensation per wage and salary worker.
- Metro Sierra Vista compared favorably on per worker GDP, per worker earnings, and compensation per wage and salary worker.
- Metro Yuma compared favorably on each per worker indicator.

Neither Metro Phoenix nor Metro Tucson compared at all well relative to their size-class peers on any of the indicators shown in Table 7, with each area ranking in the bottom 30 percent in each of the indicators.

The change over time relative to the size-class average in each of Arizona's metropolitan areas is shown in Table 9 for each of the eight indicators. Two time periods are summarized:

- 2008 to 2021, adjusted for the cost of living.
- 1969 to 2021, not adjusted for the cost of living. For the GDP indicators, 2001 is the first year of data.

The temporal change in the indicators between the initial year and 2021 is expressed in two ways:

- The change in the percentage of the size-class average.
- The change in rank within the size class.

Between 2008 and 2021, the adjusted change in the two per capita indicators generally was above the size-class average, aided by the relative decline in the cost of living across Arizona. The change in the two E-P ratios varied by metro area, with gains in Lake Havasu City and Yuma, but losses elsewhere. In the four per worker indicators, an above-average performance generally occurred, again assisted by the relative decrease in the cost of living.

In contrast to the cost-of-living-adjusted gains that generally occurred between 2008 and 2021 in the per capita and per worker indicators in Arizona's metro areas, the unadjusted change between 1969 and 2021 in per capita personal income was below — generally substantially below — the size-class average in each of Arizona's metro areas except Flagstaff. The change in each of the E-P ratios was above average in the Flagstaff and Phoenix areas, near average in Metro Prescott, but well below average in the other metro areas. The change in per worker earnings and its two components was subpar in Arizona's metro areas, except for Metro Yuma being above average on per worker earnings and compensation per wage and salary worker.

TABLE 8
COMPARISON TO SIZE-CLASS AVERAGE, ARIZONA'S METROPOLITAN AREAS, 2021

	Phoenix	Tucson	Yuma	Prescott	Flagstaff	Lake Havasu City	Sierra Vista
Wage & Salary Employment	2,271,030	404,217	73,885	69,346	64,693	56,716	39,926
Size Class	SC1	SC2	SC5	SC5	SC5	SC6	SC6
Number of Metro Areas in Size Class	36	41	85	85	85	91	91
Percentage of Size-Class Average							
Per Capita Personal Income*	84.8%	89.8%	86.9%	91.7%	104.6%	82.0%	99.1%
Per Capita Gross Domestic Product*	81.3	74.9	84.4	67.3	106.2	66.6	89.7
Total Employment-to-Population Ratio	92.7	82.0	77.5	76.9	102.4	69.6	80.4
Wage & Salary Employment-to-Population Ratio	94.6	79.7	81.0	65.0	101.3	64.9	78.9
Per Worker Gross Domestic Product*	87.8	91.3	109.0	87.5	103.7	95.7	111.6
Per Worker Earnings*	87.6	92.0	108.7	79.4	93.1	87.3	110.3
Compensation Per Wage & Salary Worker*	88.3	94.6	102.6	90.0	91.8	89.8	117.0
Proprietors' Income Per Proprietor*	73.6	84.0	140.0	67.7	105.7	92.0	72.2
Rank in Size Class Expressed as a Percentile**							
Per Capita Personal Income*	92	85	93	76	28	97	47
Per Capita Gross Domestic Product*	81	95	82	99	36	98	68
Total Employment-to-Population Ratio	86	100	98	99	51	98	93
Wage & Salary Employment-to-Population Ratio	78	100	94	100	47	98	92
Per Worker Gross Domestic Product*	78	78	19	84	32	54	18
Per Worker Earnings*	83	83	20	98	78	90	18
Compensation Per Wage & Salary Worker*	81	73	32	94	92	88	5
Proprietors' Income Per Proprietor*	83	78	12	84	36	48	82

* Adjusted for the cost of living.
** For example, Metro Phoenix ranked 33rd among 36 metro areas on per capita personal income; 33 divided by 36 equals 92nd percentile.

Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 9
COMPARISON TO SIZE-CLASS AVERAGE, ARIZONA'S METROPOLITAN AREAS, CHANGE OVER TIME

	Phoenix	Tucson	Yuma	Prescott	Flagstaff	Lake Havasu City	Sierra Vista
Size Class	SC1	SC2	SC5	SC5	SC5	SC6	SC6
Number of Metro Areas in Size Class	36	41	85	85	85	91	91
Change in Percentage of Size-Class Average: 2008 to 2021 Adjusted for the Cost of Living							
Per Capita Personal Income	3.9	1.7	7.1	8.4	7.1	7.0	3.2
Per Capita Gross Domestic Product	-0.8	0.1	4.1	0.0	1.4	4.9	3.4
Total Employment-to-Population Ratio	-1.4	-1.7	1.8	-0.9	-0.8	2.9	-3.7
Wage & Salary Employment-to-Population Ratio	0.0	-1.7	0.6	-0.8	-1.4	3.3	-3.9
Per Worker Gross Domestic Product	0.6	2.0	2.9	1.1	2.2	3.1	9.1
Per Worker Earnings	4.1	0.7	4.5	4.7	0.9	4.3	0.8
Compensation Per Wage & Salary Worker	2.8	-0.5	6.5	5.0	-0.8	1.3	2.2
Proprietors' Income Per Proprietor	9.8	11.1	-22.9	6.6	14.8	19.8	0.7
Change in Rank in Size Class: 2008 to 2021 Adjusted for the Cost of Living							
Per Capita Personal Income	1	1	3	14	24	2	10
Per Capita Gross Domestic Product	3	2	6	0	-3	1	6
Total Employment-to-Population Ratio	0	-2	1	-2	-6	0	-3
Wage & Salary Employment-to-Population Ratio	2	-2	1	-1	-3	0	-3
Per Worker Gross Domestic Product	3	5	4	2	5	11	19
Per Worker Earnings	2	2	8	0	4	2	2
Compensation Per Wage & Salary Worker	2	-1	27	2	-5	-1	7
Proprietors' Income Per Proprietor	2	-4	-3	4	11	26	0

(continued)

TABLE 9 (continued)
COMPARISON TO SIZE-CLASS AVERAGE, ARIZONA'S METROPOLITAN AREAS, CHANGE OVER TIME

	Phoenix	Tucson	Yuma	Prescott	Flagstaff	Lake Havasu City	Sierra Vista
Size Class	SC1	SC2	SC5	SC5	SC5	SC6	SC6
Number of Metro Areas in Size Class	36	41	85	85	85	91	91
Change in Percentage of Size-Class Average: 1969 to 2021							
Per Capita Personal Income	-5.8	-6.6	-20.9	-10.5	16.7	-30.3	-19.6
Total Employment-to-Population Ratio	1.6	-2.3	-30.2	3.0	11.1	-15.1	-21.1
Wage & Salary Employment-to-Population Ratio	5.6	-3.4	-30.7	-2.3	5.8	-13.3	-27.1
Per Worker Earnings	-7.2	-7.4	3.9	-19.2	-8.9	-26.0	-7.2
Compensation Per Wage & Salary Worker	-5.7	-4.1	7.3	-5.7	-8.6	-21.7	0.0
Proprietors' Income Per Proprietor	-29.9	-23.8	-36.2	-43.3	-7.7	-34.7	-45.1
Change in Rank in Size Class: 1969 to 2021							
Per Capita Personal Income	-5	-9	-51	-25	41	-67	-39
Total Employment-to-Population Ratio	-1	-2	-63	1	20	-9	-42
Wage & Salary Employment-to-Population Ratio	3	-1	-66	0	8	-6	-52
Per Worker Earnings	-3	-17	6	-43	-28	-65	-11
Compensation Per Wage & Salary Worker	4	-11	11	-29	-29	-64	-2
Proprietors' Income Per Proprietor	-19	-20	-7	-46	-11	-29	-48
Change in Percentage of Size-Class Average: 2001 to 2021							
Per Capita Gross Domestic Product	-8.1	-4.8	7.9	1.0	0.4	-0.9	6.4
Per Worker Gross Domestic Product	-5.5	-4.7	9.1	2.6	-2.6	-2.6	9.2
Change in Rank in Size Class: 2001 to 2021							
Per Capita Gross Domestic Product	0	-1	5	-1	-10	-1	13
Per Worker Gross Domestic Product	-6	-6	12	5	-3	-2	18

Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

Between 2001 and 2021, the unadjusted change in each of the GDP indicators was below the size-class average in the Phoenix, Tucson, and Lake Havasu City areas, but above average in the Prescott, Sierra Vista, and Yuma areas.

Metro Phoenix

The unadjusted time series expressed as the percentage of the average of size class 1 is displayed on the first page of Chart 30 for Metro Phoenix for each of the eight indicators. The cost-of-living-adjusted figures are presented on the second page of Chart 30 for the 2008-to-2021 period. With Metro Phoenix accounting for such a large portion of the state's economic activity — between 71-and-77 percent in 2021 depending on the economic indicator — the analysis of regional competitiveness is not significantly different for Metro Phoenix than for Arizona.

Most of the decline over time in per capita personal income in Metro Phoenix relative to the size-class average occurred during the mid-to-late 1980s and during the deep 2008-to-2010 economic recession. Per capita GDP declined relatively during and after this recession. Per worker earnings dropped relative to the size-class average primarily during the 1980s. The E-P ratios improved somewhat through most of the time series, but fell back between 2006 and 2010.

A summary of the indicators for Metro Phoenix — similar to the comparison in Tables 8 and 9 — is presented in Table 10. However, the ranks in Table 10 for the 2008-to-2021, 1969-to-2021, and 2001-to-2021 time periods are of the change in the percentage of the size-class average, while the change in the rank between the first and last year of the time series is displayed in Table 9. In addition to a comparison to all 36 metro areas with wage and salary employment of at least 1 million in 2021, Table 10 provides a comparison to the 20 metro areas located in the 15 comparison states and a comparison of Metro Phoenix to three selected metro areas: Atlanta, Denver, and Miami. The metro areas on this short list of comparison areas were chosen based on two criteria: similarity to Metro Phoenix in (1) the industrial mix and (2) size, as measured by employment.

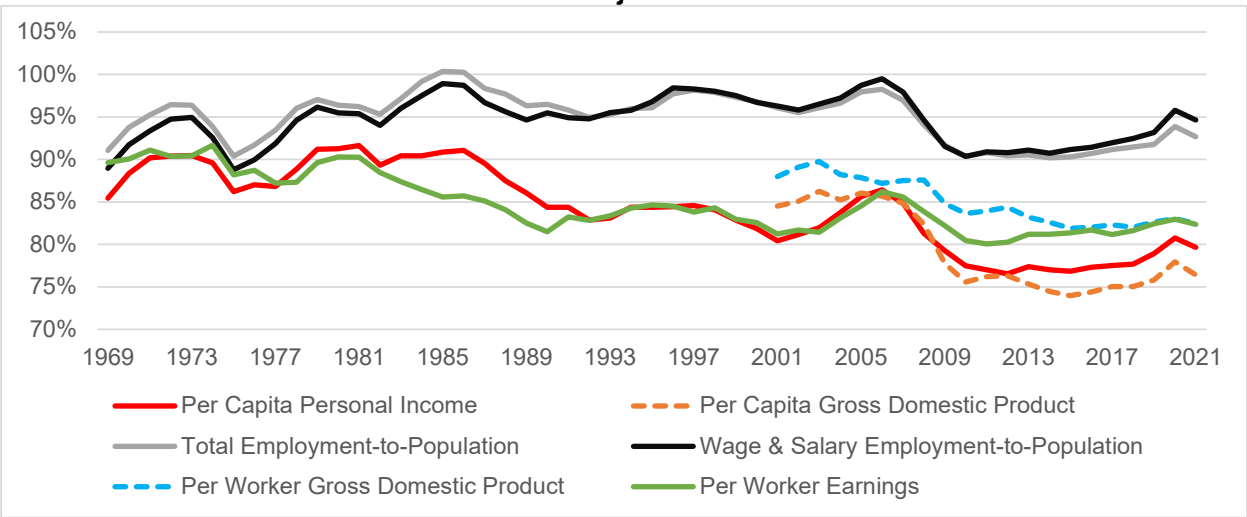
Metro Phoenix compared poorly to each of the comparison groups on each indicator in 2021. The comparison to the 20 metro areas in the comparison states was not quite as unfavorable as to all 36 metro areas in the size class. Metro Phoenix ranked third or fourth among the four metro areas on each indicator.

On the adjusted percent change between 2008 and 2021, Metro Phoenix was below average on per capita GDP and the E-P ratios, but above average on the other indicators. The unadjusted percent change between 1969 and 2021 in Metro Phoenix was considerably below average on the per capita and per worker indicators, but was above average on the E-P ratios.

The causes of the low total E-P ratio in Metro Phoenix can be determined using the ACS data for 2017 through 2021. As in the state, the E-P ratio in Metro Phoenix from 2017 through 2021 was below average in each age group except 16 to 24. Among the 36 metro areas in the size class, the E-P ratio in Metro Phoenix ranked 29th overall, between 29th and 31st in the 25-to-54, 55-to-64, and 65-and-older age groups, and 10th in the 16-to-24 age group. The E-P ratio by age group accounted for 39 percent of the overall E-P ratio shortfall in Metro Phoenix.

CHART 30
PRODUCTIVITY AND PROSPERITY MEASURES EXPRESSED AS A PERCENTAGE OF THE SIZE CLASS 1 AVERAGE, METROPOLITAN PHOENIX

Unadjusted



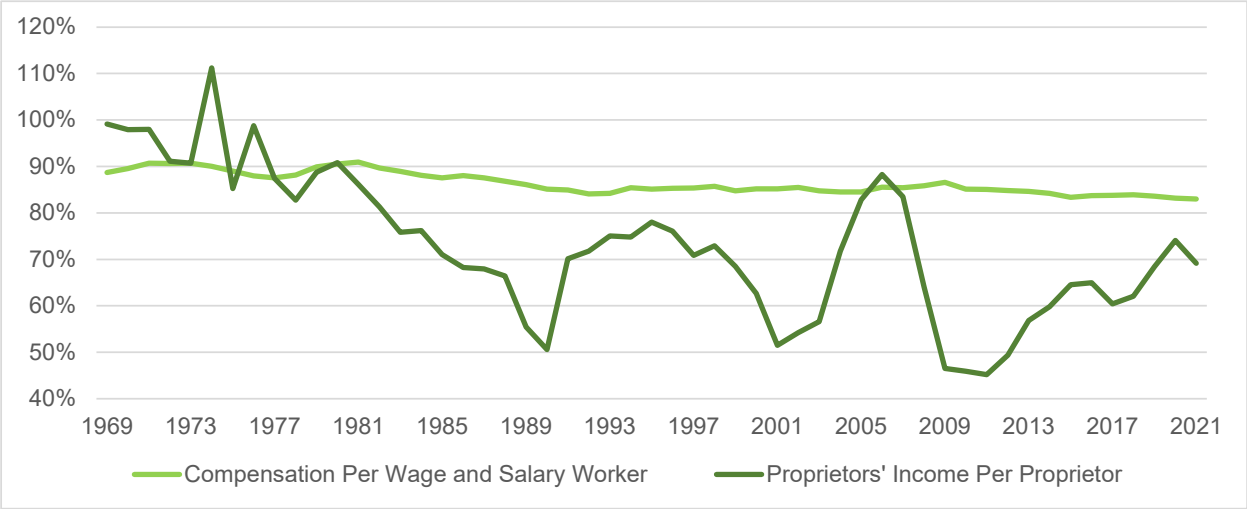


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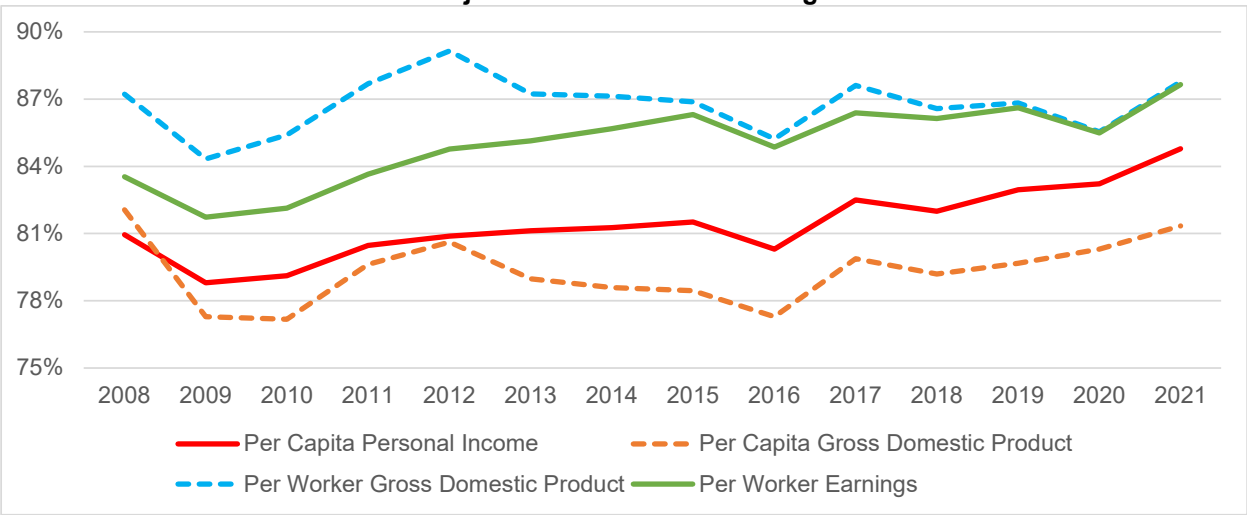
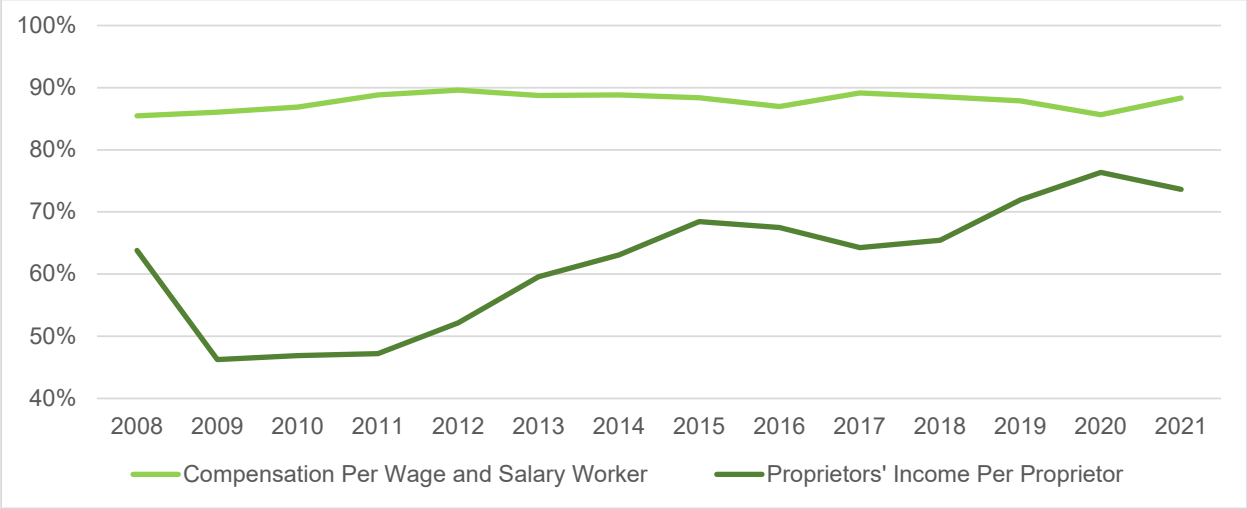
CHART 30 (continued)
PRODUCTIVITY AND PROSPERITY MEASURES EXPRESSED AS A PERCENTAGE OF THE SIZE CLASS 1 AVERAGE, METROPOLITAN PHOENIX

Adjusted for the Cost of Living





Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 10
COMPARISON TO METROPOLITAN AREAS IN SIZE CLASS 1, METROPOLITAN PHOENIX

	Percentage-Point Difference From Average		Rank		
	36 Metros*	20 Metros^	36 Metros*	20 Metros^	4 Metros~
2021 Adjusted for the Cost of Living					
Per Capita Personal Income	-15.2	-13.0	33	17	4
Per Capita Gross Domestic Product	-18.7	-16.4	29	13	3
Total Employment-to-Population Ratio	-5.4	-7.5	28	16	4
Wage and Salary E-P Ratio	-7.3	-3.6	31	13	3
Per Worker Gross Domestic Product	-12.2	-9.7	28	12	3
Per Worker Earnings	-12.4	-9.4	30	14	3
Compensation Per Wage & Salary Worker	-11.7	-10.6	29	14	3
Proprietors' Income Per Proprietor	-26.4	-18.7	30	14	3
2008-to-2021 Change Adjusted for the Cost of Living					
Per Capita Personal Income	3.8	1.8	8	5	1
Per Capita Gross Domestic Product	-0.7	-1.5	14	8	1
Total Employment-to-Population Ratio	-1.4	-2.9	19	14	4
Wage and Salary E-P Ratio	0.0	-1.2	15	12	3
Per Worker Gross Domestic Product	0.6	1.1	13	5	1
Per Worker Earnings	4.1	3.3	8	5	1
Compensation Per Wage & Salary Worker	2.9	0.2	6	6	1
Proprietors' Income Per Proprietor	9.8	18.7	15	5	2
1969-to-2021 Change					
Per Capita Personal Income	-5.8	-6.0	26	15	4
Total Employment-to-Population Ratio	1.6	1.3	14	9	3
Wage and Salary E-P Ratio	5.7	5.8	14	7	2
Per Worker Earnings	-7.3	-8.3	26	15	3
Compensation Per Wage & Salary Worker	-5.7	-8.3	23	16	4
Proprietors' Income Per Proprietor	-30.0	-27.2	32	17	3
2001-to-2021 Change					
Per Capita Gross Domestic Product	-8.1	-10.0	27	15	2
Per Worker Gross Domestic Product	-5.5	-7.0	28	14	1

* In size class 1.
^ In comparison states in size class 1.
~ Atlanta, Denver, Miami, and Phoenix metro areas.

Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

The age distribution of the population accounted for 61 percent of the overall E-P ratio shortfall. The share of the population in Metro Phoenix was above average in the age groups with little workforce participation — younger-than-16 and 65-and-older — but was below average among those 25-to-64 years of age. The population share in Metro Phoenix ranked 10th among the 36 metro areas in SC1 in the under-16 and 16-to-24 age groups and 11th in the 65-and-older age group, but 27th in the 25-to-54 age group and 31st in the 55-to-64 age group.

Metro Tucson

Metro Tucson accounted for between 12-and-14 percent of the state's economic activity in 2021, depending on the economic indicator. The time series for the eight indicators are displayed in Chart 31 for Metro Tucson, expressed as the percentage of the average of size class 2. Per capita personal income and per worker earnings declined in Metro Tucson relative to the size-class average during the 1970s and 1980s, but have rebounded a bit since 2000. The E-P ratios have fluctuated without a trend.

The eight indicators are summarized in Table 11. In addition to a comparison to all 41 metro areas in size class 2, Table 11 provides a comparison to the 15 metro areas located in the 15 comparison states and a comparison of Metro Tucson to three selected metro areas: Albuquerque, Charleston SC, and Columbia SC.

Metro Tucson compared poorly to the size-class average on each indicator in 2021. The comparison to the 15 metro areas in the comparison states was not quite as unfavorable. The Tucson area ranked between second and fourth among the four metro areas.

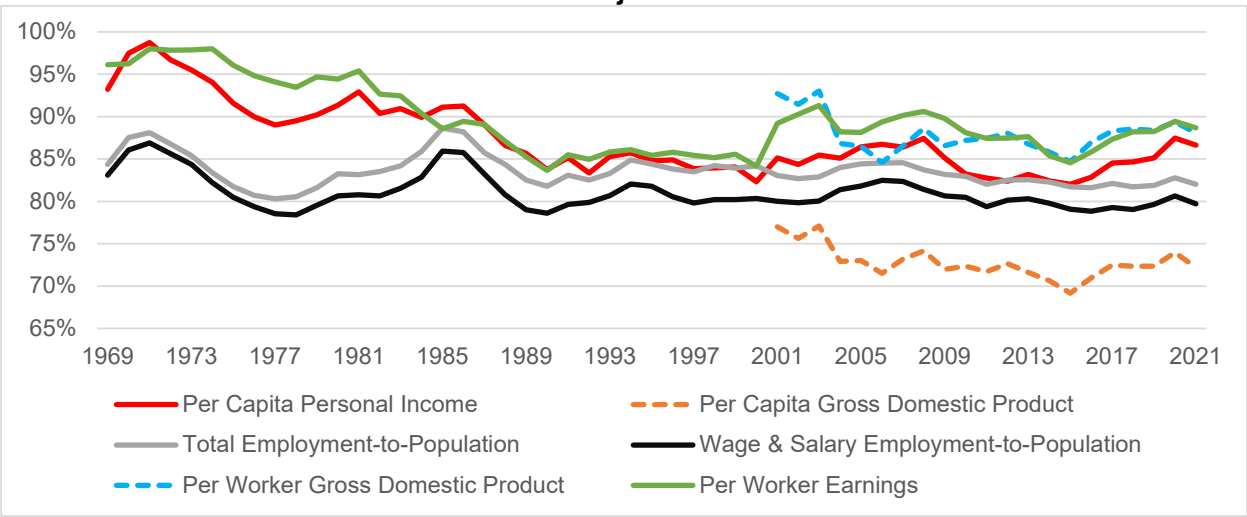
On the adjusted percent change between 2008 and 2021, Metro Tucson's performance was mixed — below average on some indicators but above average on others. The unadjusted percent change in Metro Tucson between 1969 and 2021 was below average on each indicator. The Tucson area's unadjusted percent change between 2001 and 2021 was below average for both of the GDP indicators.

The very low total E-P ratio in Metro Tucson was in part due to the area's low E-P ratio in each age group. From 2017 through 2021, the E-P ratio by age group accounted for 60 percent of the overall E-P ratio shortfall in Metro Tucson. Among the 41 metro areas in SC2, the E-P ratio in Metro Tucson ranked 39th overall, between 35th and 41st in the 25-to-54, 55-to-64, and 65-and-older age groups, and 16th in the 16-to-24 age group.

The age distribution of the population accounted for 40 percent of the low overall E-P ratio. The share of the population in Metro Tucson was considerably above average in the 65-and-older age group, but was below average in the key working-age group of 25-to-54 years of age and in the 55-to-64 age group. The population share in Metro Tucson ranked third among the 41 metro areas in SC2 in the under-16 age group and first in the 65-and-older age group, but last in the 25-to-54 age group and 30th in the 55-to-64 age group.

CHART 31
PRODUCTIVITY AND PROSPERITY MEASURES EXPRESSED AS A PERCENTAGE OF THE SIZE CLASS 2 AVERAGE, METROPOLITAN TUCSON

Unadjusted



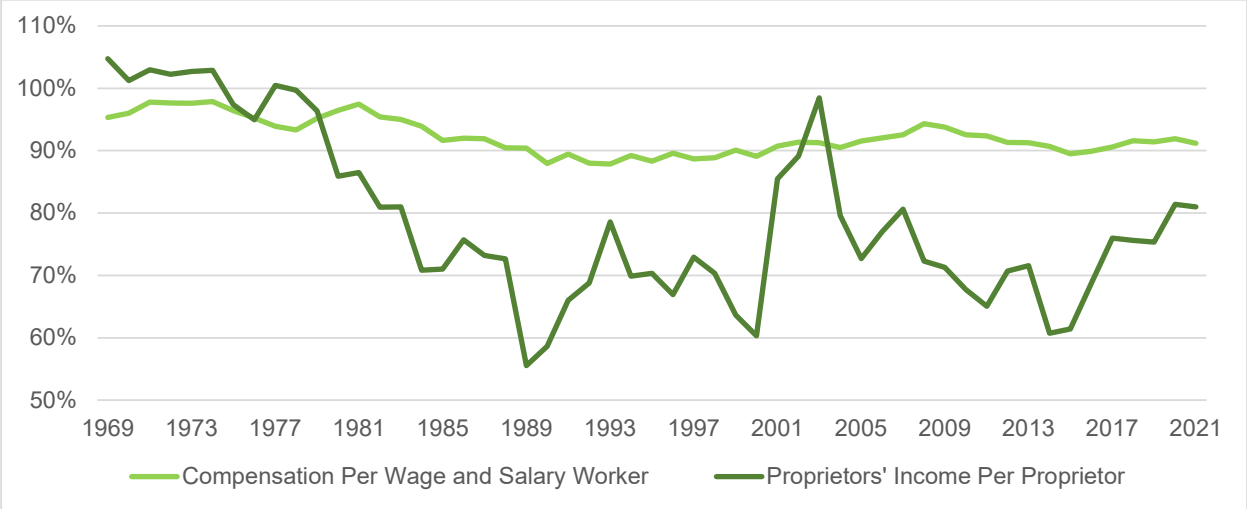


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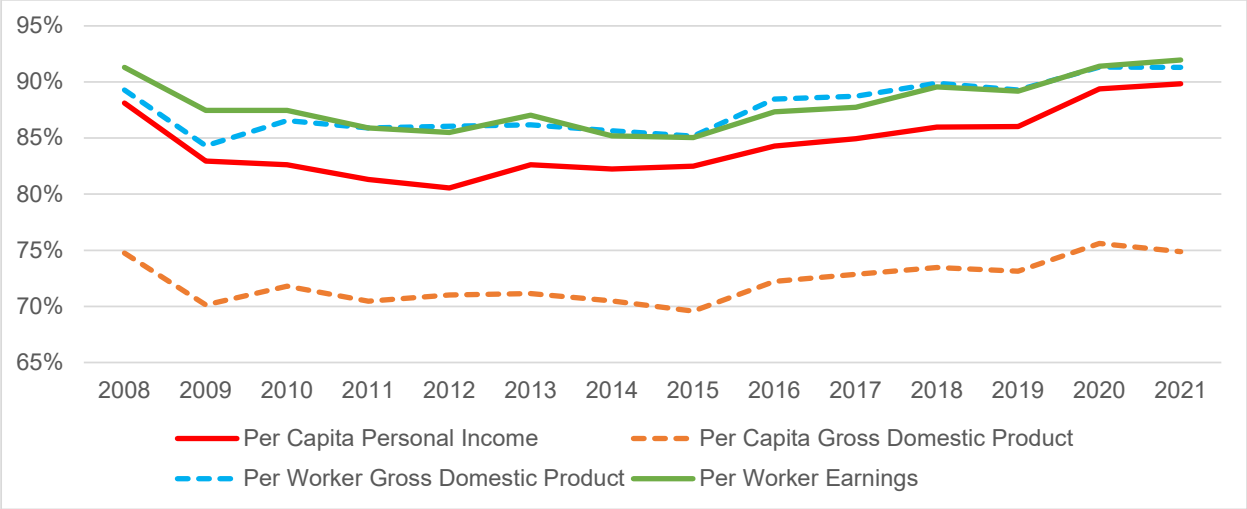
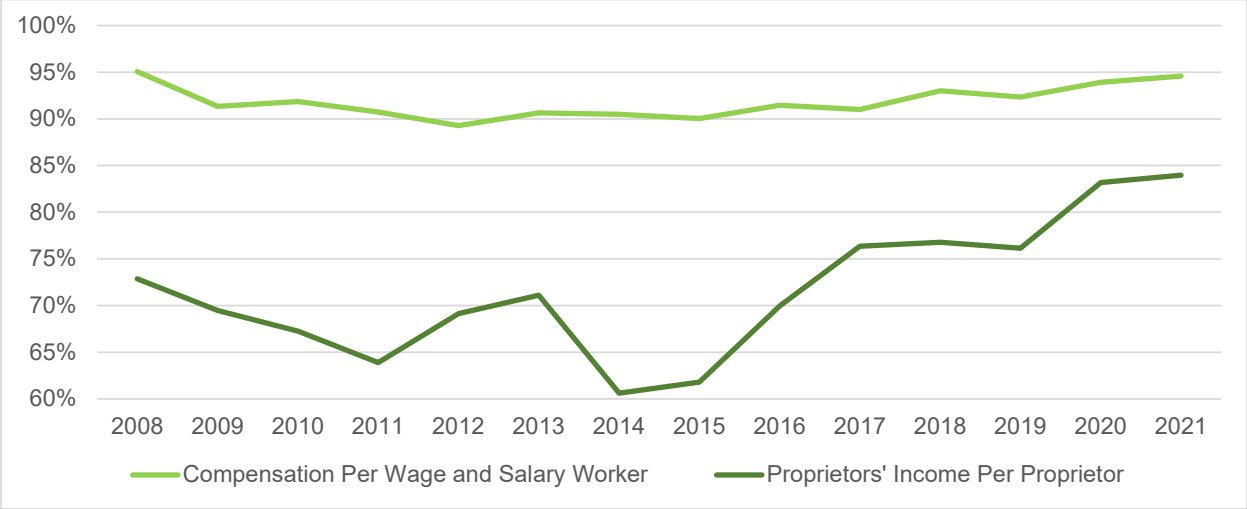
CHART 31 (continued)
PRODUCTIVITY AND PROSPERITY MEASURES EXPRESSED AS A PERCENTAGE OF THE SIZE CLASS 2 AVERAGE, METROPOLITAN TUCSON

Adjusted for the Cost of Living





Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 11
COMPARISON TO METROPOLITAN AREAS IN SIZE CLASS 2, METROPOLITAN TUCSON

	Percentage-Point Difference From Average		Rank		
	41 Metros*	15 Metros^	41 Metros*	15 Metros^	4 Metros~
2021 Adjusted for the Cost of Living					
Per Capita Personal Income	-10.2	-4.1	35	10	3
Per Capita Gross Domestic Product	-25.1	-22.0	39	13	4
Total Employment-to-Population Ratio	-18.0	-17.6	41	15	4
Wage and Salary E-P Ratio	-20.3	-19.9	41	15	4
Per Worker Gross Domestic Product	-8.7	-5.3	32	9	2
er Worker Earnings	-8.0	-4.1	34	9	3
Compensation Per Wage & Salary Worker	-5.4	-3.4	30	9	3
Proprietors' Income Per Proprietor	-16.0	4.6	32	7	2
2008-to-2021 Change Adjusted for the Cost of Living					
Per Capita Personal Income	1.7	0.1	18	7	3
Per Capita Gross Domestic Product	0.1	-1.4	22	7	2
Total Employment-to-Population Ratio	-1.7	-2.9	28	12	3
Wage and Salary E-P Ratio	-1.7	-2.6	29	12	3
Per Worker Gross Domestic Product	2.0	1.5	18	7	2
Per Worker Earnings	0.7	-0.6	21	7	3
Compensation Per Wage & Salary Worker	-0.5	-1.0	24	8	3
Proprietors' Income Per Proprietor	11.1	-1.0	24	11	4
1969-to-2021 Change					
Per Capita Personal Income	-6.6	-9.1	31	11	4
Total Employment-to-Population Ratio	-2.3	-0.5	25	8	3
Wage and Salary E-P Ratio	-3.4	-1.6	25	9	3
Per Worker Earnings	-7.4	-13.6	36	15	4
Compensation Per Wage & Salary Worker	-4.1	-12.0	33	13	3
Proprietors' Income Per Proprietor	-23.8	-15.2	39	13	3
2001-to-2021 Change					
Per Capita Gross Domestic Product	-4.8	-5.7	31	10	3
Per Worker Gross Domestic Product	-4.7	-5.2	34	12	4

* In size class 2.
^ In comparison states in size class 2.
~ Albuquerque NM, Charleston SC, Columbia SC, and Tucson metro areas.

Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

Metro Yuma

Metro Yuma accounted for approximately 2.0-to-2.5 percent of the state's economic activity in 2021. The time series for the eight indicators are displayed in Chart 32 for Metro Yuma, expressed as the percentage of the average of size class 5. Per capita personal income in Metro Yuma relative to the size-class average declined from the mid-1970s through the 1990s, but has recovered some since then. The E-P ratios also decreased from the mid-1970s through the 1990s, but have fluctuated without a trend since then. Since 1969, per worker earnings have fluctuated without any trend.

The eight indicators for Metro Yuma are summarized in Table 12. In addition to a comparison to all 85 metro areas in size class 5, Table 12 provides a comparison to the 37 metro areas located in the 15 comparison states and a comparison of Metro Yuma to three selected metro areas: Abilene TX, Albany GA, and Wichita Falls TX.

Metro Yuma compared very poorly to the size-class average in 2021 on the per capita indicators and the E-P ratios. The per worker indicators compared favorably.

On the adjusted percent change between 2008 and 2021, Metro Yuma's performance was above average except on proprietors' income per proprietor. The unadjusted percent change between 1969 and 2021 was far below average on per capita personal income, the E-P ratios, and proprietors' income per proprietor, but above average on the other indicators. Between 2001 and 2021, each of the GDP indicators performed better in Metro Yuma than average.

The very low total E-P ratio in Metro Yuma was in part due to the area's low E-P ratio in each age group. From 2017 through 2021, the E-P ratio by age group accounted for 62 percent of the overall E-P ratio shortfall in Metro Yuma. Among the 85 metro areas in SC5, the E-P ratio in Metro Yuma ranked 83rd overall, 61st in the 16-to-24 age group, 69th in the key 25-to-54 age group, 84th in the 55-to-64 age group, and last in the 65-and-older age group.

The age distribution of the population accounted for 38 percent of the low overall E-P ratio. The share of the population in Metro Yuma was below average in the 25-to-54 and 55-to-64 age groups, but above average in the age groups with little workforce participation: younger-than-16 and 65-and-older. The population share in Metro Yuma ranked 10th among the 85 metro areas in SC5 in the under-16 age group and 20th in the 65-and-older age group, but 71st in the 25-to-54 age group and 81st in the 55-to-64 age group.

CHART 32
PRODUCTIVITY AND PROSPERITY MEASURES EXPRESSED AS A PERCENTAGE OF THE SIZE CLASS 5 AVERAGE, METROPOLITAN YUMA

Unadjusted

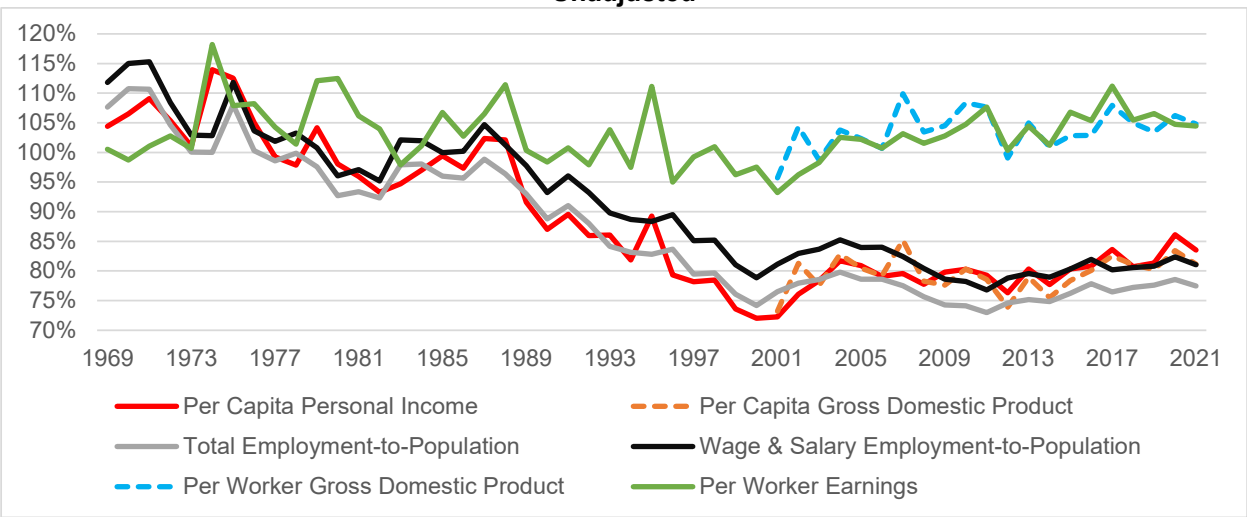


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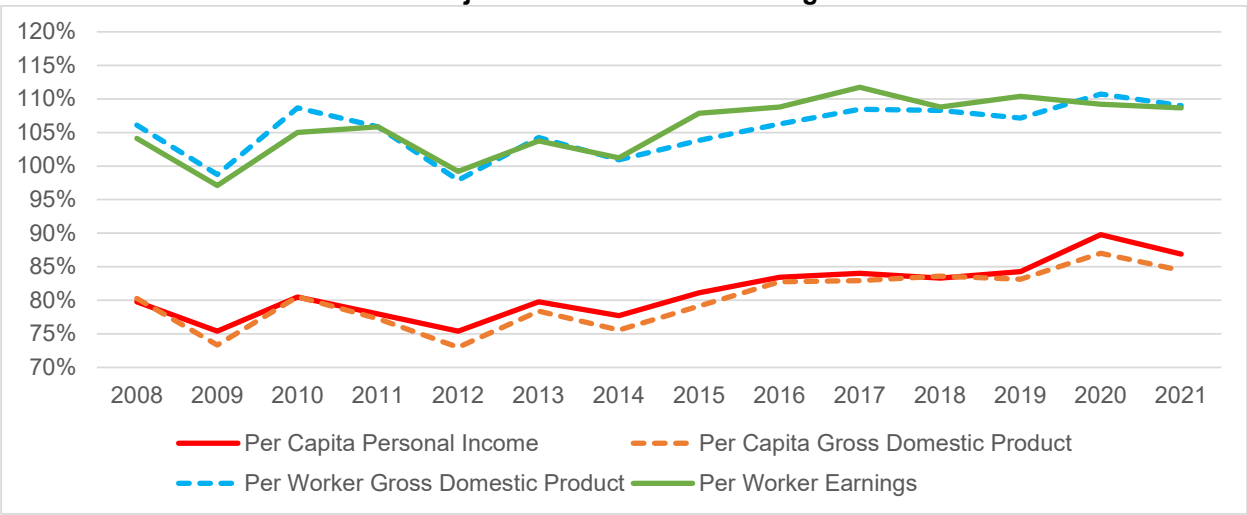
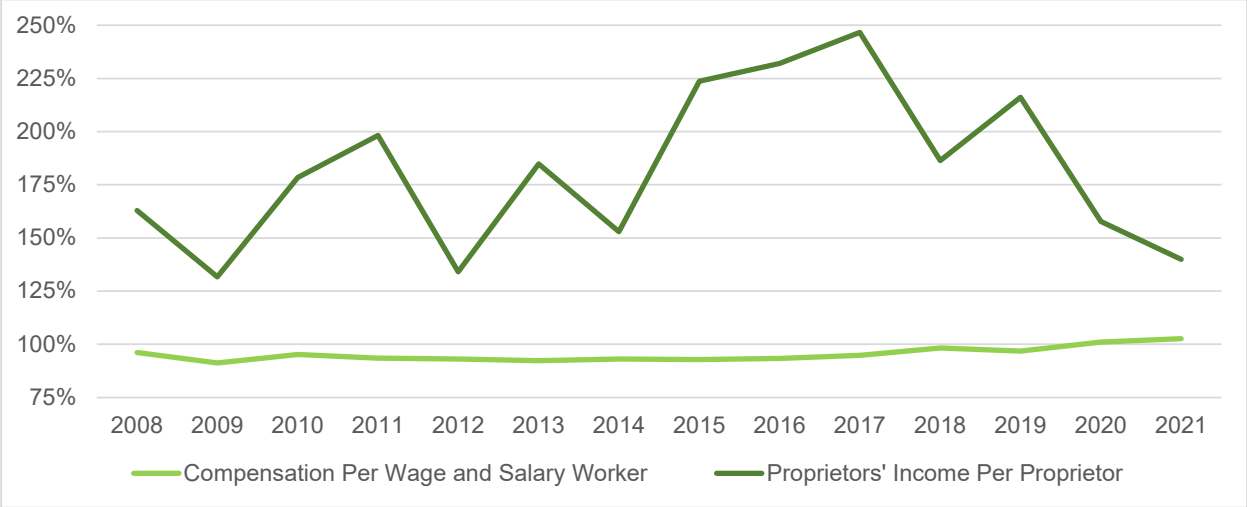
CHART 32
PRODUCTIVITY AND PROSPERITY MEASURES EXPRESSED AS A PERCENTAGE OF THE SIZE CLASS 5 AVERAGE, METROPOLITAN YUMA

Adjusted for the Cost of Living





Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 12
COMPARISON TO METROPOLITAN AREAS IN SIZE CLASS 5, METROPOLITAN YUMA

	Percentage-Point Difference From Average		Rank		
	85 Metros*	37 Metros^	85 Metros*	37 Metros^	4 Metros~
2021 Adjusted for the Cost of Living					
Per Capita Personal Income	-13.1	-11.2	79	33	4
Per Capita Gross Domestic Product	-15.6	-11.3	70	27	4
Total Employment-to-Population Ratio	-22.5	-20.3	83	35	4
Wage and Salary E-P Ratio	-19.0	-15.0	80	34	4
Per Worker Gross Domestic Product	9.0	11.3	16	7	1
Per Worker Earnings	8.7	11.5	17	6	1
Compensation Per Wage & Salary Worker	2.6	4.4	27	9	1
Proprietors' Income Per Proprietor	40.0	42.7	10	6	1
2008-to-2021 Change Adjusted for the Cost of Living					
Per Capita Personal Income	7.1	5.9	14	10	1
Per Capita Gross Domestic Product	4.1	4.1	27	10	1
Total Employment-to-Population Ratio	1.8	0.9	26	15	2
Wage and Salary E-P Ratio	0.6	-0.2	39	21	3
Per Worker Gross Domestic Product	2.9	3.9	32	11	1
Per Worker Earnings	4.5	5.1	24	11	1
Compensation Per Wage & Salary Worker	6.5	6.9	10	4	1
Proprietors' Income Per Proprietor	-22.9	-21.8	72	30	2
1969-to-2021 Change					
Per Capita Personal Income	-20.9	-21.2	80	34	3
Total Employment-to-Population Ratio	-30.2	-25.4	81	33	4
Wage and Salary E-P Ratio	-30.7	-24.3	79	33	4
Per Worker Earnings	3.9	1.7	36	15	2
Compensation Per Wage & Salary Worker	7.3	2.7	30	15	2
Proprietors' Income Per Proprietor	-36.2	-24.4	72	27	3
2001-to-2021 Change					
Per Capita Gross Domestic Product	7.9	7.0	29	14	2
Per Worker Gross Domestic Product	9.1	8.9	13	6	1

* In size class 5.
^ In comparison states in size class 5.
~ Abilene TX, Albany GA, Wichita Falls TX, and Yuma metro areas.

Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

Metro Prescott

Metro Prescott accounted for 1.75-to-3 percent of the state's economic activity in 2021. The time series for the eight indicators are displayed in Chart 33 for Metro Prescott, expressed as the percentage of the average of size class 5. Per capita personal income fell from the 1970s through the 1990s in Metro Prescott relative to the size-class average, but has improved since 2012. Per worker earnings dropped considerably versus the size-class average from the 1970s through the 1980s; since then it has fluctuated without trend. The E-P ratios in Metro Prescott have fluctuated with trend throughout the time series.

The eight indicators for Metro Prescott are summarized in Table 13. In addition to a comparison to all 85 metro areas in size class 5, Table 13 provides a comparison to the 37 metro areas located in the 15 comparison states and a comparison of Metro Prescott to three selected metro areas: Coeur d'Alene ID, Grand Junction CO, and Redding CA.

Metro Prescott was considerably below the size-class average on each indicator in 2021 versus the 37-metro average, but was above average relative to all 85 areas on per worker GDP and proprietors' income per proprietor.

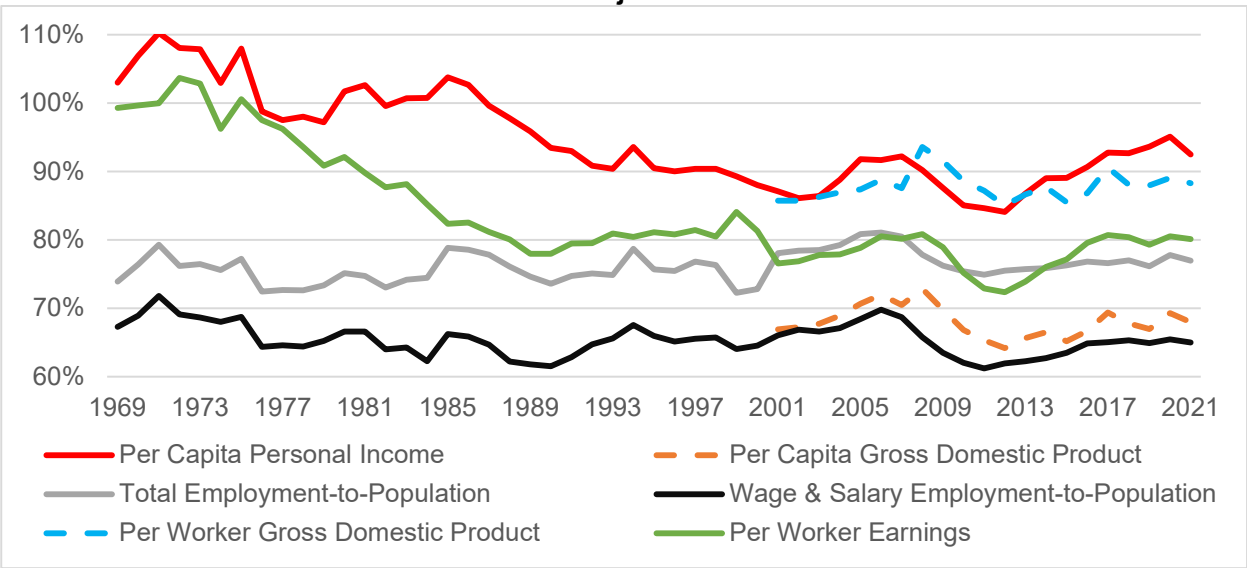
On the adjusted percent change between 2008 and 2021, Metro Prescott's performance was mixed: below average on the E-P ratios but near-to-above average on the others. Between 1969 and 2021, the unadjusted percent change in Metro Prescott was considerably below the size-class average on per capita personal income and per worker earnings (including both of its components). The unadjusted percent change between 2001 and 2021 on the two GDP indicators was mixed in Metro Prescott.

The very low total E-P ratio in Metro Prescott was in part due to the area's below-average E-P ratio in each age group. From 2017 through 2021, the E-P ratio by age group accounted for 34 percent of the overall E-P ratio shortfall in Metro Prescott. Among the 85 metro areas in SC5, the E-P ratio in Metro Prescott ranked 82nd overall, 50th to 51st in the 16-to-24 and 25-to-54 age groups, and 76th to 79th in the 55-to-64 and 65-and-older age groups.

The age distribution of the population accounted for 66 percent of the low overall E-P ratio. The share of the population in Metro Prescott was far above average in the 55-to-64 and 65-and-older age groups, ranking second and first, respectively among the 85 metro areas in SC5. In contrast, the population share in Metro Prescott was much below average in the three younger age groups, ranking between 83rd and 85th.

CHART 33
PRODUCTIVITY AND PROSPERITY MEASURES EXPRESSED AS A PERCENTAGE OF THE SIZE CLASS 5 AVERAGE, METROPOLITAN PRESCOTT

Unadjusted



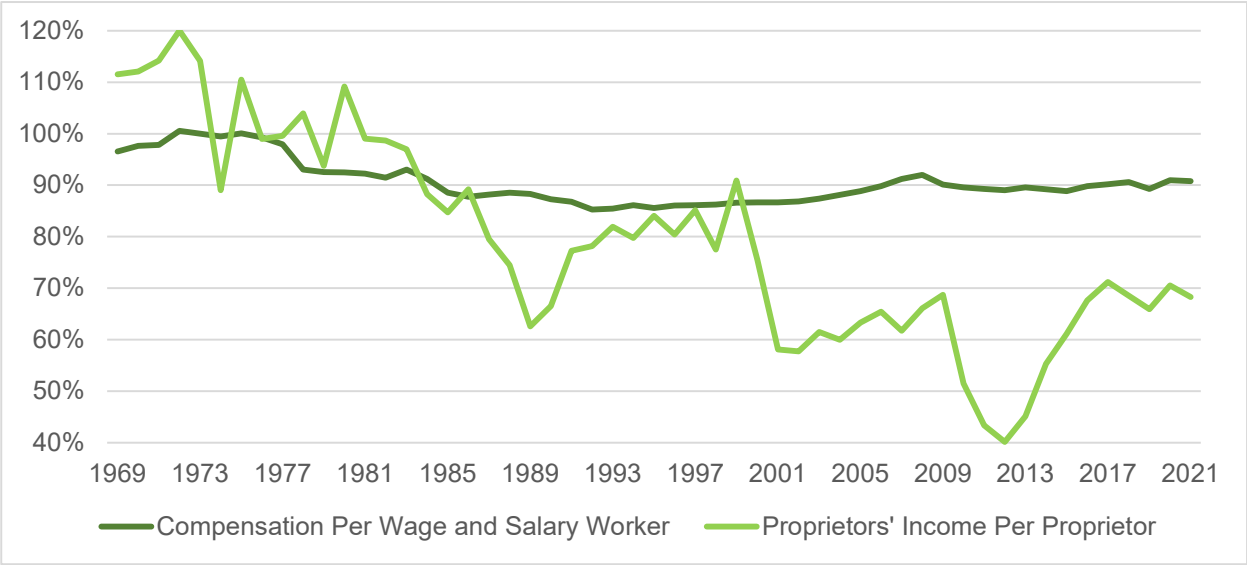


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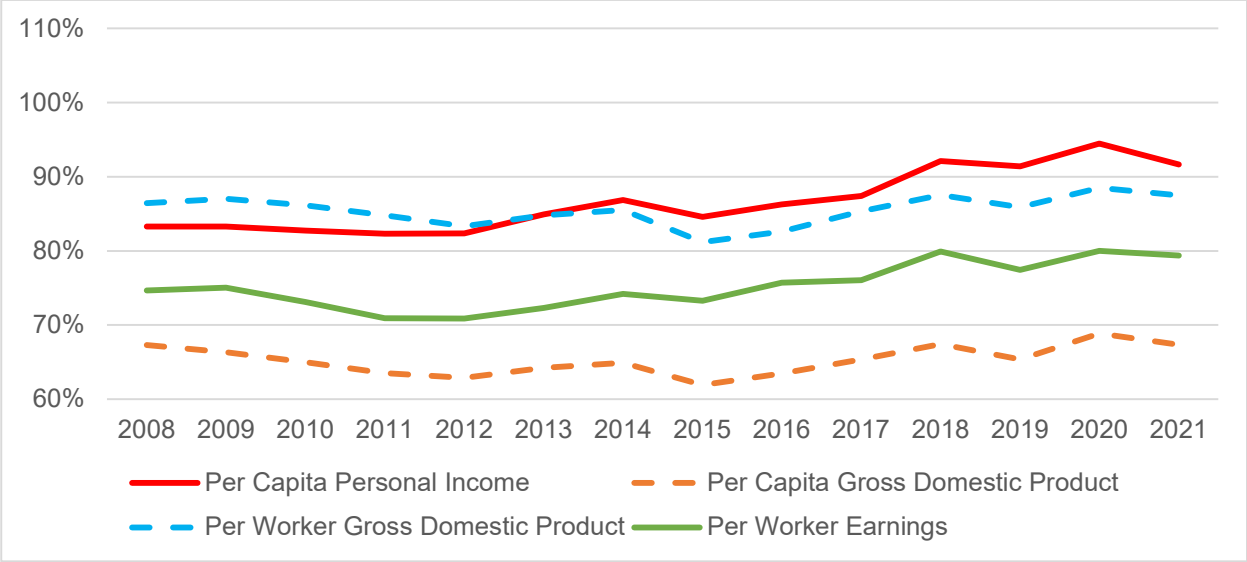
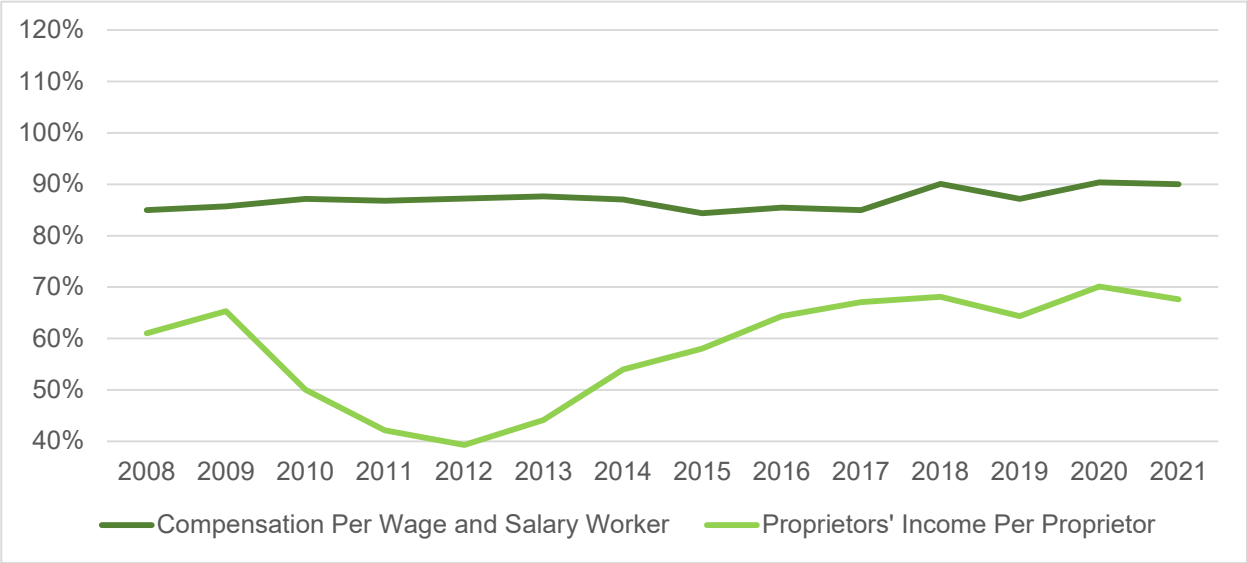
CHART 33 (continued)
PRODUCTIVITY AND PROSPERITY MEASURES EXPRESSED AS A PERCENTAGE OF THE SIZE CLASS 5 AVERAGE, METROPOLITAN PRESCOTT

Adjusted for the Cost of Living





Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 13
COMPARISON TO METROPOLITAN AREAS IN SIZE CLASS 5, METROPOLITAN PRESCOTT

	Percentage-Point Difference From Average		Rank		
	85 Metros*	37 Metros^	85 Metros*	37 Metros^	4 Metros~
2021 Adjusted for the Cost of Living					
Per Capita Personal Income	-8.3	-6.4	65	25	4
Per Capita Gross Domestic Product	-32.7	-29.2	84	36	4
Total Employment-to-Population Ratio	-23.1	-20.8	84	36	4
Wage and Salary E-P Ratio	-35.0	-31.8	85	37	4
Per Worker Gross Domestic Product	3.7	-10.7	27	29	2
Per Worker Earnings	-6.9	-18.5	66	36	4
Compensation Per Wage & Salary Worker	-8.2	-8.5	78	36	4
Proprietors' Income Per Proprietor	5.7	-31.0	31	30	4
2008-to-2021 Change Adjusted for the Cost of Living					
Per Capita Personal Income	8.4	7.0	9	7	2
Per Capita Gross Domestic Product	0.0	-0.2	49	21	3
Total Employment-to-Population Ratio	-0.9	-1.9	51	24	2
Wage and Salary E-P Ratio	-0.8	-1.5	47	23	2
Per Worker Gross Domestic Product	2.2	1.9	38	15	3
Per Worker Earnings	0.9	5.2	42	9	2
Compensation Per Wage & Salary Worker	-0.8	5.4	53	5	2
Proprietors' Income Per Proprietor	14.8	7.3	32	14	2
1969-to-2021 Change					
Per Capita Personal Income	-10.5	-10.7	67	28	4
Total Employment-to-Population Ratio	3.0	7.0	51	19	4
Wage and Salary E-P Ratio	-2.3	2.4	56	24	4
Per Worker Earnings	-8.9	-21.6	67	36	4
Compensation Per Wage & Salary Worker	-8.6	-10.6	68	29	3
Proprietors' Income Per Proprietor	-7.7	-35.6	46	31	4
2001-to-2021 Change					
Per Capita Gross Domestic Product	1.0	0.0	43	20	2
Per Worker Gross Domestic Product	-2.6	2.4	59	13	1

* In size class 5.
^ In comparison states in size class 5.
~ Coeur d'Alene ID, Grand Junction CO, Prescott, and Redding CA metro areas.

Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

Metro Flagstaff

Metro Flagstaff accounted for approximately 2 percent of the state's economic activity in 2021. The time series for the eight indicators are displayed in Chart 34 for Metro Flagstaff, expressed as the percentage of the average of size class 5. Relative to the size-class average, per capita personal income in Metro Flagstaff has improved considerably since 1989. The E-P ratios have fluctuated without trend. Per worker earnings dropped during the 1970s but has climbed since the late 1990s versus the size-class average.

The eight indicators for Metro Flagstaff are summarized in Table 14. In addition to a comparison to all 85 metro areas in size class 5, Table 14 provides a comparison to the 37 metro areas located in the 15 comparison states and a comparison of Metro Flagstaff to three selected metro areas: Grand Junction CO, Las Cruces NM, and Santa Fe NM.

Metro Flagstaff compared favorably to the size-class average in 2021 except on compensation per wage and salary worker and per worker earnings. Each indicator compared better relative to the 37 metro areas than to all 85 metros.

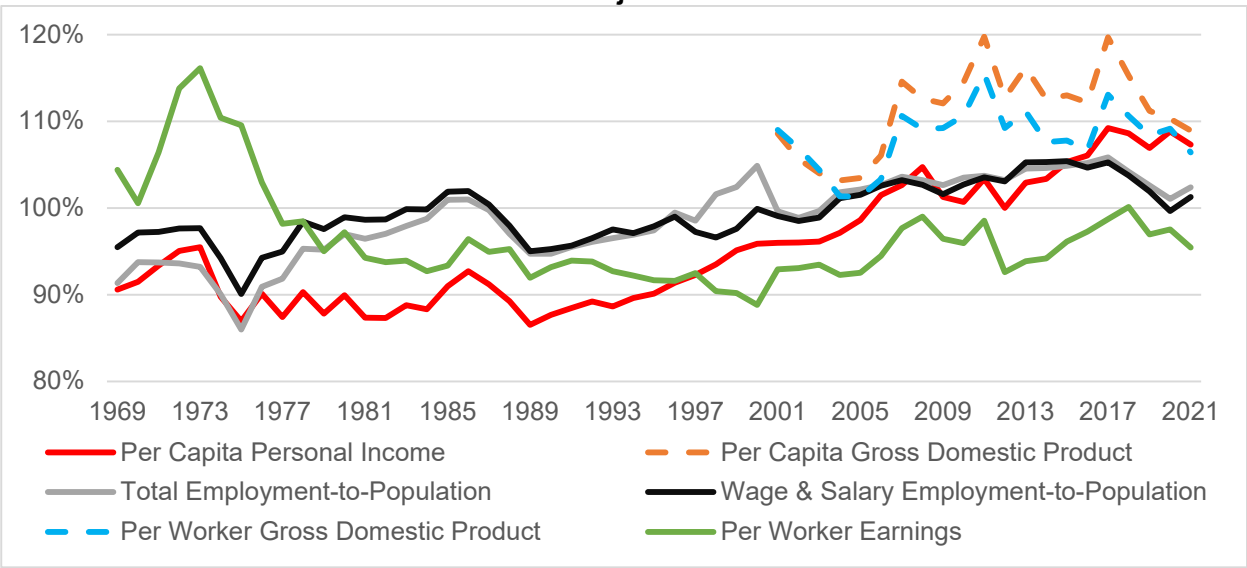
The adjusted percent change between 2008 and 2021 in Metro Flagstaff was above average for the per capita and per worker indicators, except for compensation per wage and salary worker, but below average for both E-P ratios. The unadjusted percent change between 1969 and 2021 was well above average for per capita personal income and both E-P ratios, but generally below average for the per worker indicators.

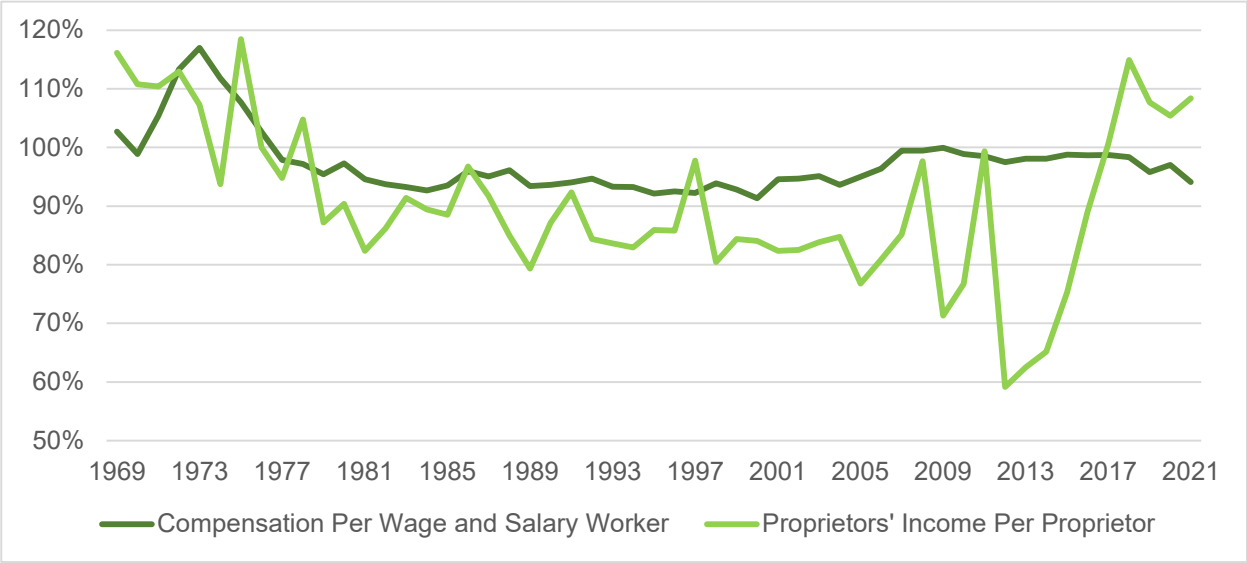
From 2017 through 2021, the E-P ratio by age group in Metro Flagstaff was considerably below average in the 16-to-24 age group, ranking 69th among the 85 metro areas in SC5, but was close to average in the other age groups. The E-P ratio in Metro Flagstaff ranked 45th overall, including 52nd in the key 25-to-54 age group, 47th in the 55-to-64 group, and 31st in the 65-and-older age group.

The above-average total E-P ratio in Metro Flagstaff entirely resulted from the area's age distribution. The share of the population in Metro Flagstaff was considerably above the size-class average in the 16-to-24 age group (ranked seventh), but below average in the other age groups, with ranks ranging from 63rd to 77th among the 85 metro areas in SC5.

CHART 34
PRODUCTIVITY AND PROSPERITY MEASURES EXPRESSED AS A PERCENTAGE OF THE SIZE CLASS 5 AVERAGE, METROPOLITAN FLAGSTAFF

Unadjusted

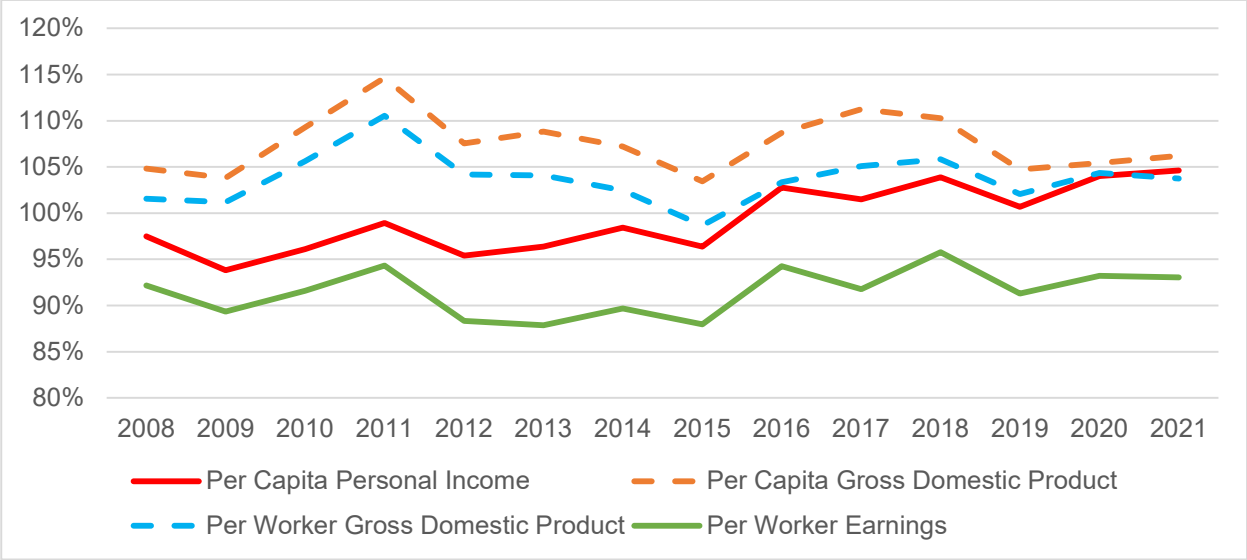


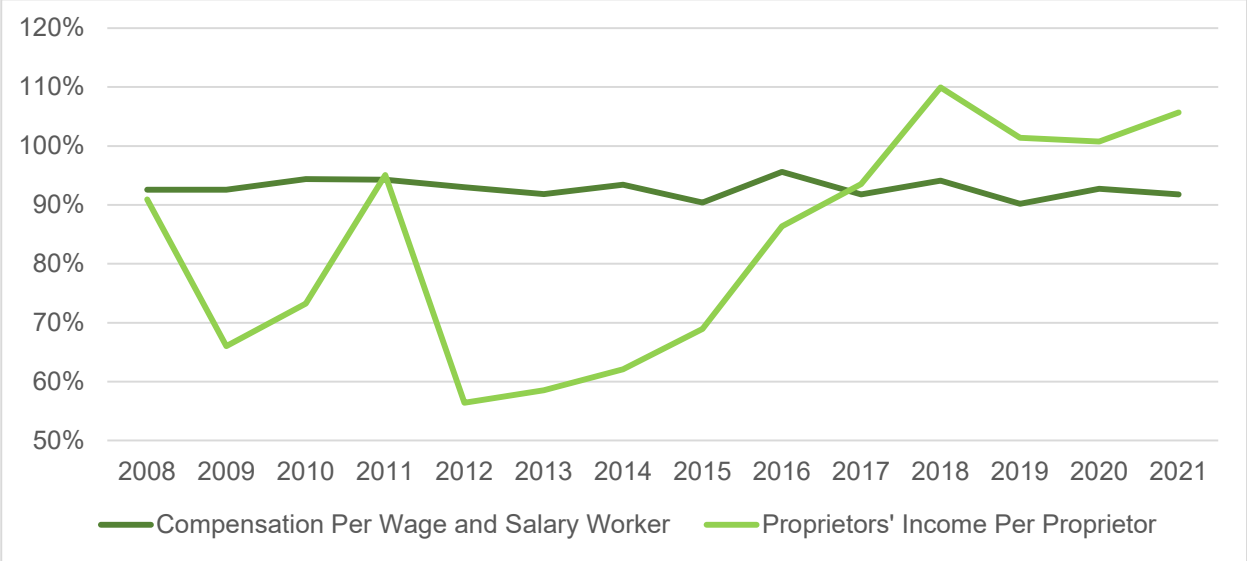


(continued)

CHART 34 (continued)
PRODUCTIVITY AND PROSPERITY MEASURES EXPRESSED AS A PERCENTAGE OF THE SIZE CLASS 5 AVERAGE, METROPOLITAN FLAGSTAFF

Adjusted for the Cost of Living





Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 14
COMPARISON TO METROPOLITAN AREAS IN SIZE CLASS 5, METROPOLITAN FLAGSTAFF

	Percentage-Point Difference From Average		Rank		
	85 Metros*	37 Metros^	85 Metros*	37 Metros^	4 Metros~
2021 Adjusted for the Cost of Living					
Per Capita Personal Income	4.6	6.9	24	7	2
Per Capita Gross Domestic Product	6.2	11.6	31	10	1
Total Employment-to-Population Ratio	2.4	5.4	43	17	3
Wage and Salary E-P Ratio	1.3	6.3	40	14	1
Per Worker Gross Domestic Product	3.7	5.9	27	12	1
Per Worker Earnings	-6.9	-4.5	66	24	3
Compensation Per Wage & Salary Worker	-8.2	-6.7	78	24	4
Proprietors' Income Per Proprietor	5.7	7.8	31	14	2
2008-to-2021 Change Adjusted for the Cost of Living					
Per Capita Personal Income	7.1	5.5	15	11	2
Per Capita Gross Domestic Product	1.4	1.1	40	16	1
Total Employment-to-Population Ratio	-0.8	-2.1	50	25	1
Wage and Salary E-P Ratio	-1.4	-2.6	55	25	2
Per Worker Gross Domestic Product	2.2	3.1	38	13	1
Per Worker Earnings	0.9	1.3	42	15	2
Compensation Per Wage & Salary Worker	-0.8	-0.5	53	21	3
Proprietors' Income Per Proprietor	14.8	15.9	32	13	2
1969-to-2021 Change					
Per Capita Personal Income	16.7	16.7	10	7	2
Total Employment-to-Population Ratio	11.1	16.2	26	9	1
Wage and Salary E-P Ratio	5.8	12.9	45	16	2
Per Worker Earnings	-8.9	-11.4	67	29	3
Compensation Per Wage & Salary Worker	-8.6	-13.7	68	31	3
Proprietors' Income Per Proprietor	-7.7	0.4	46	15	2
2001-to-2021 Change					
Per Capita Gross Domestic Product	0.4	-1.4	47	22	1
Per Worker Gross Domestic Product	-2.6	-2.9	59	26	1

* In size class 5.
^ In comparison states in size class 5.
~ Flagstaff, Grand Junction CO, Las Cruces NM, and Santa Fe NM metro areas.

Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

Metro Lake Havasu City

Metro Lake Havasu City accounted for 1.4-to-2.2 percent of the state's economic activity in 2021. The time series for the eight indicators are displayed in Chart 35 for Metro Lake Havasu City, expressed as the percentage of the average of size class 6. Per capita personal income in Metro Lake Havasu City fell relative to the size-class average from the 1970s through the 1990s, with little change since then. The E-P ratios have declined modestly versus the size-class average. Per worker earnings fell considerably relative to the size-class average during the 1970s but has been nearly steady since then.

The eight indicators for Metro Lake Havasu City are summarized in Table 15. In addition to a comparison to all 91 metro areas in size class 6, Table 15 provides a comparison to the 33 metro areas located in the 15 comparison states and a comparison of Metro Lake Havasu City to three selected metro areas: Homosassa Springs FL, Punta Gorda FL, and Sherman-Denison TX.

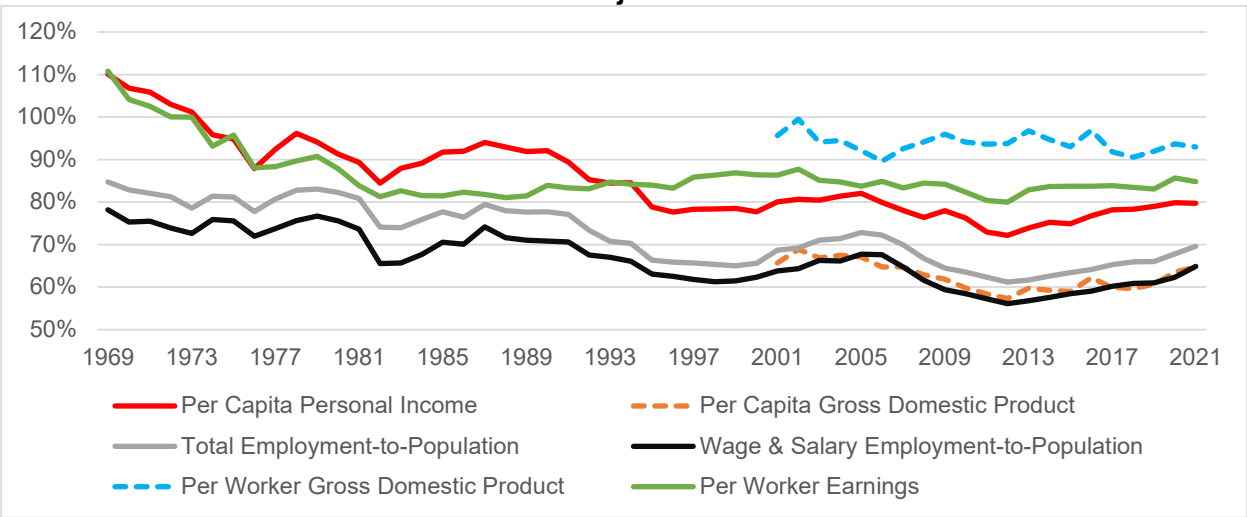
Metro Lake Havasu City was below the size-class average on each indicator in 2021 and far below on most. On the adjusted percent change between 2008 and 2021, Metro Lake Havasu City's performance was above average on each indicator. However, large percentage drops occurred between 1969 and 2021 on an unadjusted basis in per capita personal income, the E-P ratios, and per worker earnings (including both components).

The very low total E-P ratio in Metro Lake Havasu City was in part due to the area's low E-P ratio in each age group — by a sizable degree except among those 16-to-24 years old. From 2017 through 2021, the E-P ratio by age group accounted for 57 percent of the overall E-P ratio shortfall in Metro Lake Havasu City. Among the 91 metro areas in SC6, the E-P ratio in Metro Lake Havasu City ranked 86th overall and between 78th and 88th in the 25-to-54, 55-to-64, and 65-and-older age groups.

The age distribution of the population accounted for 43 percent of the low overall E-P ratio. The share of the population in Metro Lake Havasu City was far above average in the 65-and-older age group and also above average in the 55-to-64 age group, ranking sixth and fourth, respectively among the 91 metro areas in SC6. In contrast, the population share in Metro Lake Havasu City ranked between 85th and 87th in the three younger age groups.

CHART 35
PRODUCTIVITY AND PROSPERITY MEASURES EXPRESSED AS A PERCENTAGE OF THE SIZE CLASS 6 AVERAGE, METROPOLITAN LAKE HAVASU CITY

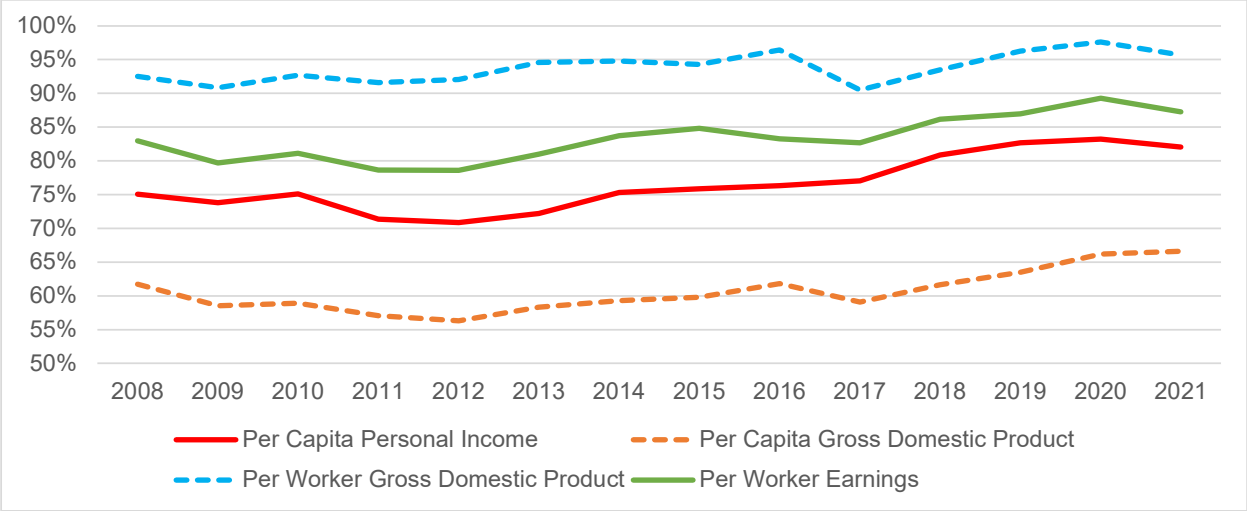
Unadjusted

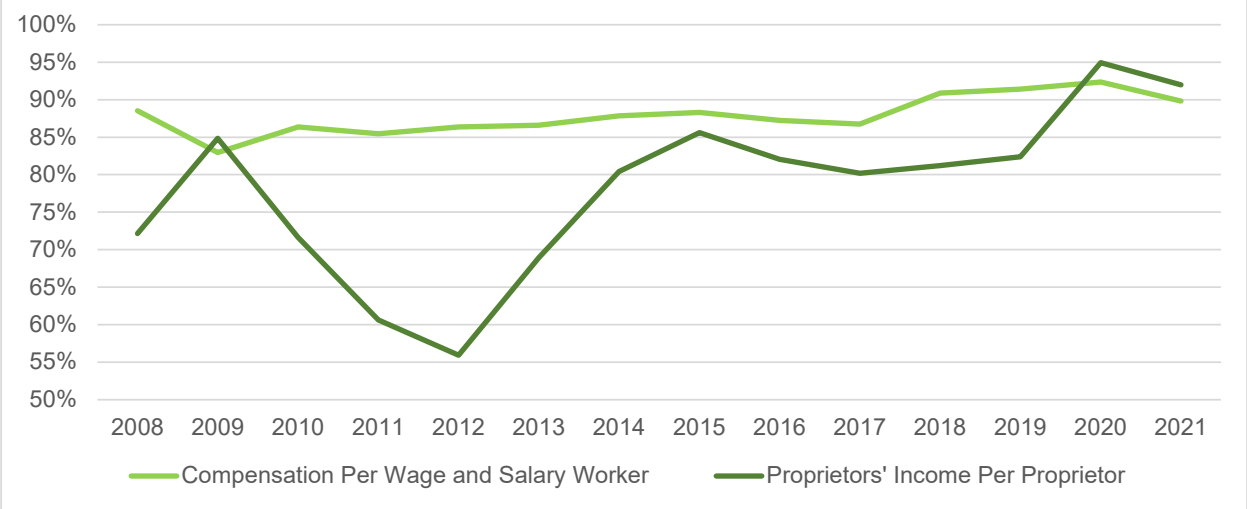


(continued)

CHART 35 (continued)
PRODUCTIVITY AND PROSPERITY MEASURES EXPRESSED AS A PERCENTAGE OF THE SIZE CLASS 6 AVERAGE, METROPOLITAN LAKE HAVASU CITY

Adjusted for the Cost of Living





Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 15
COMPARISON TO METROPOLITAN AREAS IN SIZE CLASS 6, METROPOLITAN LAKE HAVASU CITY

	Percentage-Point Difference From Average		Rank		
	91 Metros*	33 Metros^	91 Metros*	33 Metros^	4 Metros~
2021 Adjusted for the Cost of Living					
Per Capita Personal Income	-18.0	-16.8	88	30	4
Per Capita Gross Domestic Product	-33.4	-26.7	89	31	3
Total Employment-to-Population Ratio	-30.4	-26.2	89	32	3
Wage and Salary E-P Ratio	-35.1	-29.5	89	32	3
Per Worker Gross Domestic Product	-4.3	-0.7	49	17	2
Per Worker Earnings	-12.7	-9.5	82	28	1
Compensation Per Wage & Salary Worker	-10.2	-7.3	80	26	3
Proprietors' Income Per Proprietor	-8.0	-9.2	44	17	1
2008-to-2021 Change Adjusted for the Cost of Living					
Per Capita Personal Income	7.0	5.2	12	8	1
Per Capita Gross Domestic Product	4.9	7.3	29	11	1
Total Employment-to-Population Ratio	2.9	2.2	22	9	2
Wage and Salary E-P Ratio	3.3	3.0	20	8	1
Per Worker Gross Domestic Product	3.1	7.2	37	12	1
Per Worker Earnings	4.3	5.0	31	10	1
Compensation Per Wage & Salary Worker	1.3	2.1	41	13	2
Proprietors' Income Per Proprietor	19.8	18.9	17	7	1
1969-to-2021 Change					
Per Capita Personal Income	-30.3	-34.8	90	33	4
Total Employment-to-Population Ratio	-15.1	-10.1	84	30	4
Wage and Salary E-P Ratio	-13.3	-8.8	79	31	4
Per Worker Earnings	-26.0	-32.9	90	33	4
Compensation Per Wage & Salary Worker	-21.7	-31.0	88	33	4
Proprietors' Income Per Proprietor	-34.7	-32.1	79	25	2
2001-to-2021 Change					
Per Capita Gross Domestic Product	-0.9	1.2	53	18	2
Per Worker Gross Domestic Product	-2.6	0.8	55	18	1

* In size class 6.
^ In comparison states in size class 6.
~ Homosassa Springs FL, Lake Havasu City, Punta Gorda FL, and Sherman-Denison TX metro areas.

Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

Metro Sierra Vista

Metro Sierra Vista accounted for less than 1.5 percent of the state's economic activity in 2021. The time series for the eight indicators are displayed in Chart 36 for Metro Sierra Vista, expressed as the percentage of the average of size class 6. A significant decline occurred in each indicator relative to the size-class average during the 1970s. Lesser decreases generally were experienced into the 1990s in Metro Sierra Vista. Per capita personal income and per worker earnings relatively improved from the late 1990s into the mid-2000s.

The eight indicators for Metro Sierra Vista are summarized in Table 16. In addition to a comparison to all 91 metro areas in size class 6, Table 16 provides a comparison to the 33 metro areas located in the 15 comparison states and a comparison of Metro Sierra Vista to three selected metro areas: New Bern NC, San Angelo TX, and Sumter SC.

In 2021, Metro Sierra Vista compared quite poorly to the size-class average on the E-P ratios and on proprietors' income per proprietor. It also was below average on per capita GDP, but was above average on per worker GDP, per worker earnings, and compensation per wage and salary worker.

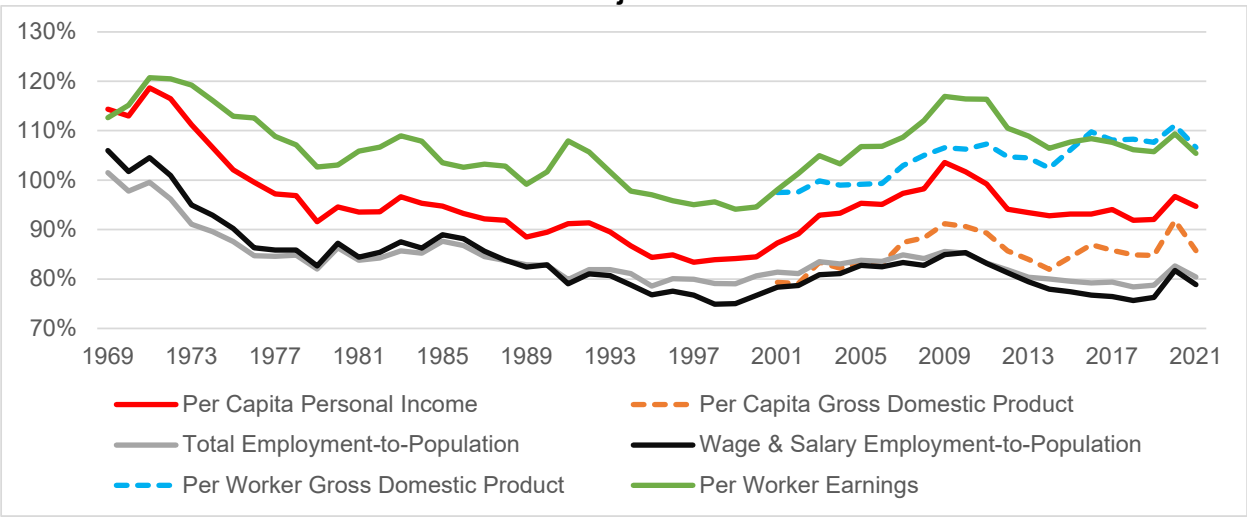
The adjusted percent change between 2008 and 2021 in Metro Sierra Vista was below average on the E-P ratios, but above average on the other indicators. The unadjusted percent change between 1969 and 2021 in Metro Sierra Vista was much below average except for compensation per wage and salary worker. Between 2001 and 2021, the unadjusted percent change was well above average for each of the GDP indicators.

The very low total E-P ratio in Metro Sierra Vista was largely due to the area's low E-P ratio in each age group. From 2017 through 2021, the E-P ratio by age group accounted for 73 percent of the overall E-P ratio shortfall in Metro Sierra Vista. Among the 91 metro areas in SC6, the E-P ratio in Metro Sierra Vista ranked 80th overall, and between 70th and 83rd in each age group.

The age distribution of the population accounted for 27 percent of the low overall E-P ratio in Metro Sierra Vista. The share of the population in Metro Sierra Vista was above average in the under-16 and 65-and-older age groups, but was below average in each of the working-age groups from 16 through 64 years of age. The population share in Metro Sierra Vista ranked 10th among the 91 metro areas in SC6 in the 65-and-older age group, but between 57th and 77th in the age groups from 16-through-64 years of age.

CHART 36
PRODUCTIVITY AND PROSPERITY MEASURES EXPRESSED AS A PERCENTAGE OF THE SIZE CLASS 6 AVERAGE, METROPOLITAN SIERRA VISTA

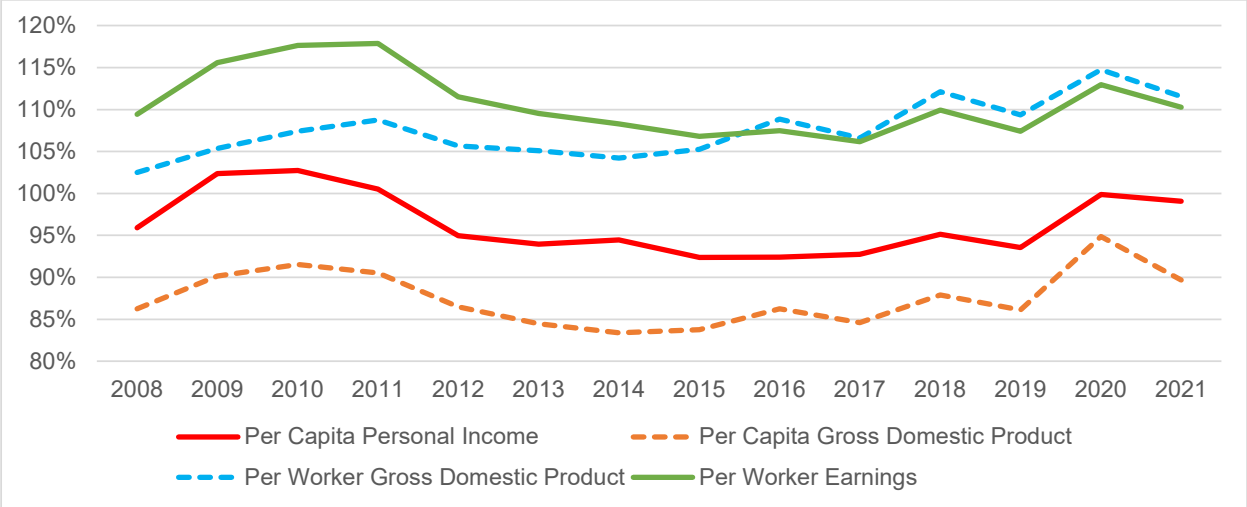
Unadjusted

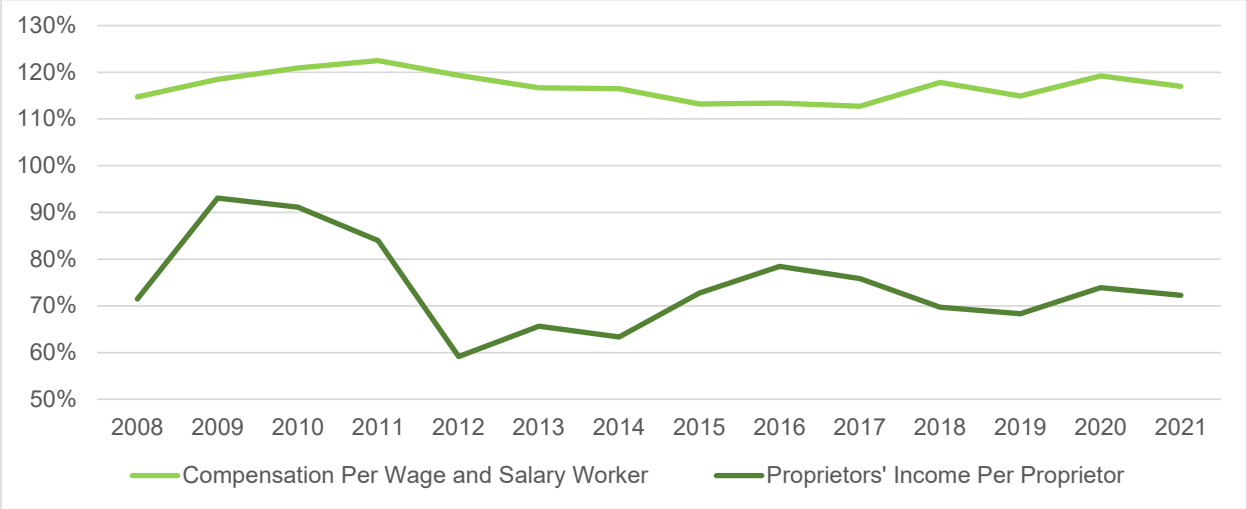


(continued)

CHART 36 (continued)
PRODUCTIVITY AND PROSPERITY MEASURES EXPRESSED AS A PERCENTAGE OF THE SIZE CLASS 6 AVERAGE, METROPOLITAN SIERRA VISTA

Adjusted for the Cost of Living





Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 16
COMPARISON TO METROPOLITAN AREAS IN SIZE CLASS 6, METROPOLITAN SIERRA VISTA

	Percentage-Point Difference From Average		Rank		
	91 Metros*	33 Metros^	91 Metros*	33 Metros^	4 Metros~
2021 Adjusted for the Cost of Living					
Per Capita Personal Income	-0.9	0.5	43	13	3
Per Capita Gross Domestic Product	-10.3	-1.3	62	20	3
Total Employment-to-Population Ratio	-19.6	-14.7	85	28	4
Wage and Salary E-P Ratio	-21.1	-14.3	24	27	4
Per Worker Gross Domestic Product	11.6	15.8	16	4	2
Per Worker Earnings	10.3	14.4	16	5	1
Compensation Per Wage & Salary Worker	17.0	20.7	5	1	1
Proprietors' Income Per Proprietor	-27.8	-28.7	75	25	4
2008-to-2021 Change Adjusted for the Cost of Living					
Per Capita Personal Income	3.2	0.8	28	13	2
Per Capita Gross Domestic Product	3.4	6.5	35	14	3
Total Employment-to-Population Ratio	-3.7	-5.1	71	28	4
Wage and Salary E-P Ratio	-3.9	-5.1	73	28	4
Per Worker Gross Domestic Product	9.1	13.8	19	6	2
Per Worker Earnings	0.8	1.6	42	13	3
Compensation Per Wage & Salary Worker	2.2	3.4	33	9	3
Proprietors' Income Per Proprietor	0.7	0.1	47	16	2
1969-to-2021 Change					
Per Capita Personal Income	-19.6	-24.4	82	30	4
Total Employment-to-Population Ratio	-21.1	-15.2	88	32	4
Wage and Salary E-P Ratio	-27.1	-21.7	90	33	4
Per Worker Earnings	-7.2	-13.9	67	27	4
Compensation Per Wage & Salary Worker	0.0	-9.4	58	27	4
Proprietors' Income Per Proprietor	-45.1	-42.3	83	28	4
2001-to-2021 Change					
Per Capita Gross Domestic Product	6.4	9.5	33	9	2
Per Worker Gross Domestic Product	9.2	12.8	20	6	2

* In size class 6.
^ In comparison states in size class 6.
~ New Bern NC, San Angelo TX, Sierra Vista, and Sumter SC metro areas.

Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

Arizona Summary: Metropolitan Areas and Nonmetropolitan Portion

The eight indicators calculated from the BEA's data are summarized in Table 17 for the seven metro areas and the nonmetro portion of Arizona, calculated as the percentage-point difference from the relevant size-class average/U.S. nonmetro average.

Looking first at the productivity (per worker) indicators in 2021 adjusted for the cost of living, the Phoenix and Tucson metro areas compare poorly to their size-class averages. In the rest of the state, however, the comparison to the relevant average is mixed, with the Flagstaff, Sierra Vista, and Yuma metro areas and the nonmetro area comparing favorably on at least some of the indicators. On the employment-to-population ratios, only the Flagstaff metro area exceeds its average. Metro Phoenix is clearly below average, while the rest of the state is far below average. Given the low E-P ratio, most of the state compares more unfavorably on the prosperity (per person) indicators than on the productivity indicators. The exception is Metro Flagstaff, the only area of the state with above-average prosperity.

Historically, the various areas of the state generally did not compare as poorly to their relevant average as in 2021. While some areas experienced an improvement in some indicators between 1969 and 2021 (on an unadjusted basis), deterioration over time is more common. However, largely due to the relative decline in the cost of living across Arizona between 2008 and 2021, improvements in the adjusted indicators are more common than deterioration between 2008 and 2021.

Given the magnitude of the shortfall in the employment-to-population ratios in most of the state and the effect that this has on the prosperity indicators, Table 18 summarizes the percentage-point difference from the relevant size-class average/U.S. nonmetro average in the E-P ratio by age group and in the share of the population by age group for each of the seven metro areas and the nonmetro portion of Arizona based on the 2017-to-2021 ACS data. With the exception of Metro Flagstaff, which has an overall E-P ratio slightly higher than its size-class average, both the age distribution and the E-P ratio by age group contribute to the low overall E-P ratio. In most of the state, a low E-P ratio in most or all age groups has more of an effect on the overall E-P ratio than the age distribution.

The Office of the University Economist has written two papers examining the reasons for Arizona's poor performance on productivity and prosperity measures.[9] Unfortunately, data quality is insufficient to undertake the type of detailed analysis necessary to identify the specific population characteristics contributing to the state's low workforce participation, other than the age distribution.

[9] "Causes of Arizona's Low Incomes" (September 2019) https://ccpr.wpcarey.asu.edu/sites/default/files/income09-19.pdf and "The Magnitude and Causes of Arizona's Low Per Capita Income" (February 2010) https://ccpr.wpcarey.asu.edu/sites/default/files/income2-10.pdf.

TABLE 17
PERCENTAGE-POINT DIFFERENCE FROM SIZE-CLASS AVERAGE/U.S. NONMETROPOLITAN AVERAGE

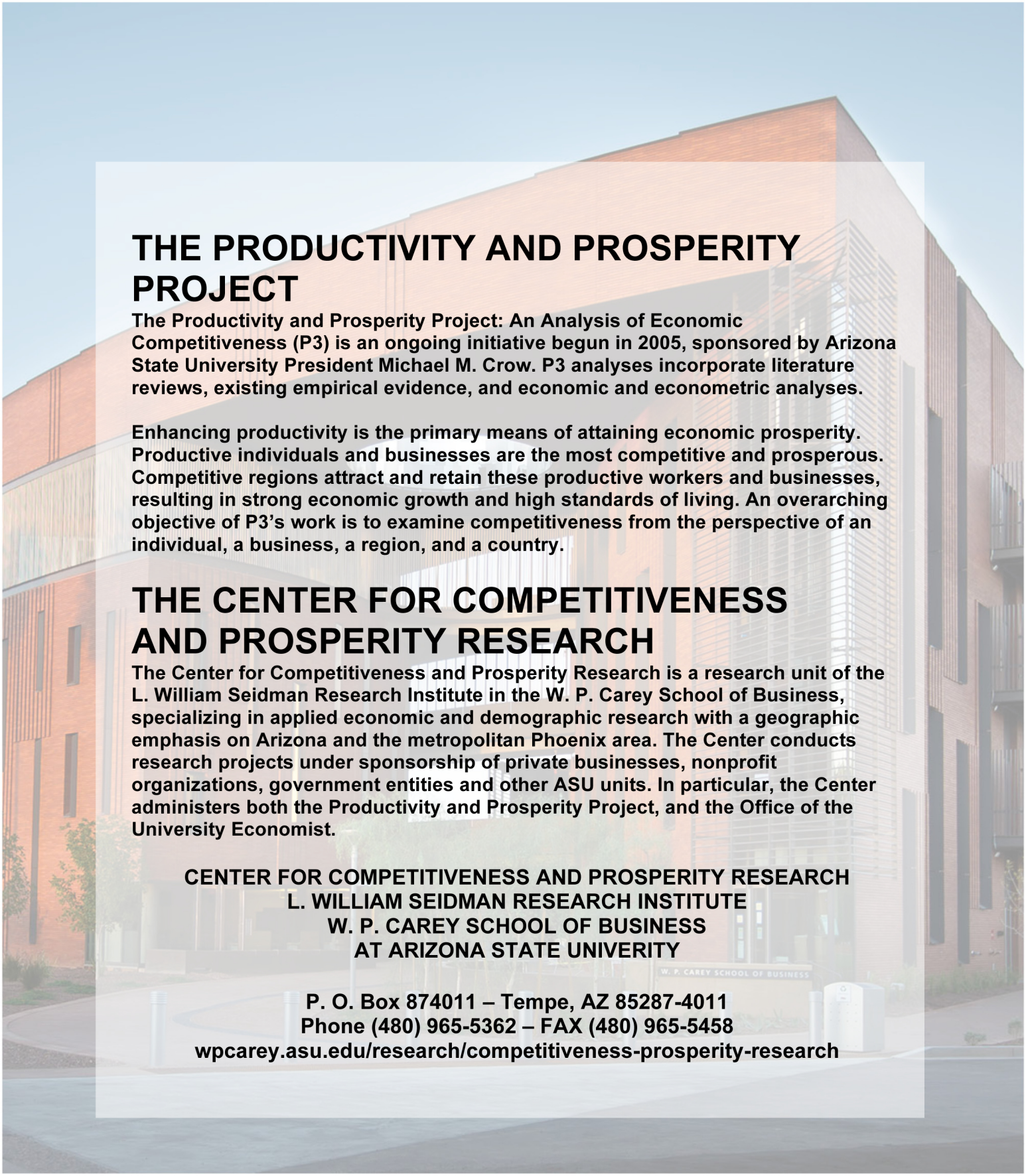
	Phoenix	Tucson	Yuma	Prescott	Flagstaff	Lake Havasu City	Sierra Vista	Non-metro Area
2021 Adjusted for the Cost of Living								
Per Capita Personal Income	-15.2	-10.2	-13.1	-8.3	4.6	-18.0	-0.9	-2.0
Per Capita Gross Domestic Product	-18.7	-25.1	-15.6	-32.7	6.2	-33.4	-10.3	-1.1
Total Employment-to-Population Ratio	-7.3	-18.0	-22.5	-23.1	2.4	-30.4	-19.6	-21.4
Wage & Salary E-P Ratio	-5.4	-20.3	-19.0	-35.0	1.3	-35.1	-21.1	-24.0
Per Worker Gross Domestic Product	-12.2	-8.7	9.0	-12.5	3.7	-4.3	11.6	25.9
Per Worker Earnings	-12.4	-8.0	8.7	-20.6	-6.9	-12.7	10.3	9.1
Compensation Per Wage & Salary Worker	-11.7	-5.4	2.6	-10.0	-8.2	-10.2	17.0	20.5
Proprietors' Income Per Proprietor	-24.4	-16.0	40.0	-32.3	5.7	-8.0	-27.8	-35.6
2008-to-2021 Change Adjusted for the Cost of Living								
Per Capita Personal Income	3.9	1.7	7.1	8.4	7.1	7.0	3.2	19.1
Per Capita Gross Domestic Product	-0.8	0.1	4.1	0.0	1.4	4.9	3.4	9.8
Total Employment-to-Population Ratio	-1.4	-1.7	1.8	-0.9	-0.8	2.9	-3.7	0.7
Wage & Salary E-P Ratio	0.0	-1.7	0.6	-0.8	-1.4	3.3	-3.9	-0.5
Per Worker Gross Domestic Product	0.6	2.0	2.9	1.1	2.2	3.1	9.1	11.4
Per Worker Earnings	4.1	0.7	4.5	4.7	0.9	4.3	0.8	11.9
Compensation Per Wage & Salary Worker	2.8	-0.5	6.5	5.0	-0.8	1.3	2.2	15.1
Proprietors' Income Per Proprietor	9.8	11.1	-22.9	6.6	14.8	19.8	0.7	8.3
1969-to-2021 Unadjusted Change								
Per Capita Personal Income	-5.8	-6.6	-20.9	-10.5	16.7	-30.3	-19.6	6.1
Total Employment-to-Population Ratio	1.6	-2.3	-30.2	3.0	11.1	-15.1	-21.1	1.6
Wage & Salary E-P Ratio	5.6	-3.4	-30.7	-2.3	5.8	-13.3	-27.1	-13.8
Per Worker Earnings	-7.2	-7.4	3.9	-19.2	-8.9	-26.0	-7.2	-18.8
Compensation Per Wage & Salary Worker	-5.7	-4.1	7.3	-5.7	-8.6	-21.7	0.0	-0.9
Proprietors' Income Per Proprietor	-29.9	-23.8	-36.2	-43.3	-7.7	-34.7	-45.1	-109.1
2001-to-2021 Unadjusted Change								
Per Capita Gross Domestic Product	-8.1	-4.8	7.9	1.0	0.4	-0.9	6.4	7.4
Per Worker Gross Domestic Product	-5.5	-4.7	9.1	2.6	-2.6	-2.6	9.2	-0.2

Source: Calculated from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE 18
PERCENTAGE-POINT DIFFERENCE FROM SIZE-CLASS AVERAGE/U.S. NONMETROPOLITAN AVERAGE, 2017-TO-2021 AVERAGE

	Phoenix	Tucson	Yuma	Prescott	Flagstaff	Lake Havasu City	Sierra Vista	Non-metro Area
Employment -to-Population Ratio								
Total	-2.16	-4.23	-7.13	-6.56	0.19	-8.33	-5.80	-14.14
Age 16 to 24	5.01	0.76	-4.45	-1.60	-7.06	-1.07	-4.15	-15.48
Age 25 to 54	-1.67	-3.15	-3.95	-1.54	-0.74	-4.36	-6.09	-24.83
Age 55 to 64	-2.61	-6.58	-10.05	-7.46	-0.84	-13.20	-8.47	-8.68
Age 65 or Older	-2.82	-3.52	-6.94	-2.64	0.49	-5.04	-2.23	-4.16
Share of Total Population								
Less Than Age 16	0.90	-1.57	2.86	-5.62	-1.71	-3.98	0.23	2.95
Age 16 to 24	0.47	1.87	0.06	-5.11	8.87	-4.02	-1.05	-0.25
Age 25 to 54	-1.42	-3.87	-1.68	-8.30	-1.52	-5.60	-1.64	-1.73
Age 55 to 64	-0.95	-0.60	-3.12	4.25	-1.40	2.72	-0.46	-1.27
Age 65 or Older	0.99	4.17	1.87	14.77	-4.25	10.89	2.94	0.28
Share of Shortfall/Surplus in Total E-P Ratio Due to the E-P Ratio by Age Group	38.9%	60.0%	62.3%	33.7%	0.0%	57.0%	73.1%	88.7%

Source: Calculated from data of the U.S. Department of Commerce, Census Bureau, American Community Survey, Five-Year Average From 2017 Through 2021.



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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