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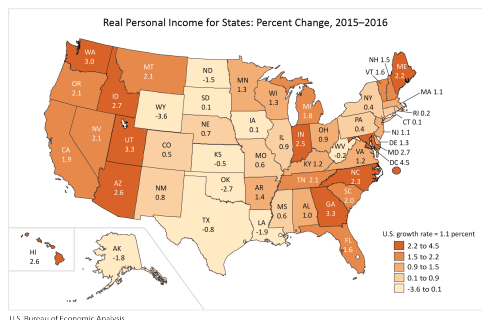
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## Real Personal Income for States and Metropolitan Areas, 2016

Real state personal income grew on average 1.1 percent in 2016, after increasing 4.7 percent in 2015, according to estimates released today by the Bureau of Economic Analysis. Real state personal income is a state's current-dollar personal income adjusted by the state's regional price parity and the national personal consumption expenditures price index. The percent change in real state personal income ranged from 3.3 percent in Utah and Georgia to -3.6 percent in Wyoming (table 1). In the District of Columbia, real personal income grew 4.5 percent. Across metropolitan areas, the percent change ranged from 6.6 percent in Jacksonville, NC to -8.1 percent in Midland, TX and Odessa, TX (table 4).



(/newsreleases/regional/rpp/2018/\_images/rpp0518.png)

## Real Personal Income in 2016

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States with the fastest growth in real personal income were Utah (3.3 percent), Georgia (3.3 percent), and Washington (3.0 percent). The District of Columbia's real personal income grew 4.5 percent.

Eight states had declining real personal income. The largest percent declines were in Wyoming (-3.6 percent), Oklahoma (-2.7 percent), and Louisiana (-1.9 percent).

Large metropolitan areas - those with population greater than two million - with the fastest growth in real personal income were Atlanta-Sandy Springs-Roswell, GA (3.4 percent), Orlando-Kissimmee-Sanford, FL (3.3 percent), and Charlotte-Concord-Gastonia, NC-SC (3.2 percent).

The three large metropolitan areas with declining real personal income were Houston-The Woodlands-Sugar Land, TX (-3.3 percent), Denver-Aurora-Lakewood, CO (-0.7 percent), and Pittsburgh, PA (-0.4 percent).

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## Regional Price Parities in 2016

Regional Price Parities (RPPs) measure the differences in price levels across states and metropolitan areas for a given year and are expressed as a percentage of the overall national price level. All items RPPs cover all consumption goods and services, including rents. Areas with high/low RPPs typically correspond to areas with high/low price levels for rents.

States with the highest RPPs were Hawaii (118.4), New York (115.6), and California (114.4) (table 3). The District of Columbia's RPP was 115.9.

States with the lowest RPPs were Mississippi (86.4), Alabama (86.6), and Arkansas (86.9).

Across states, Hawaii had the highest rents RPP (157.4) and Alabama and West Virginia had the lowest (63.2).

Large metropolitan areas with the highest RPPs were San Francisco-Oakland-Hayward, CA (124.7), New York-Newark-Jersey City, NY-NJ-PA (122.0), and Washington-Arlington-Alexandria, DC-VA-MD-WV, (119.1) (table 6).

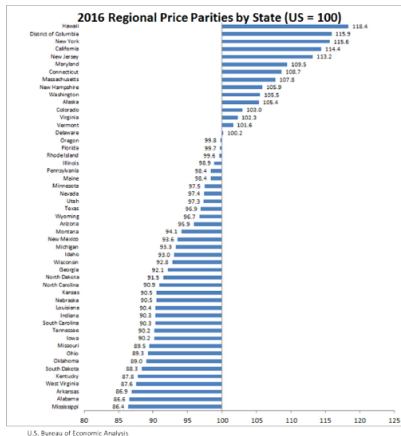
Large metropolitan areas with the lowest RPPs were Cincinnati, OH-KY-IN (89.6), Cleveland-Elyria, OH (90.2), and St. Louis, MO-IL (90.8).

Across large metropolitan areas, San Francisco-Oakland-Hayward, CA had the highest rents RPP (190.9) and Cleveland-Elyria, OH had the lowest (77.9).

Across all metropolitan areas, San Jose-Sunnyvale-Santa Clara, CA had the highest rents RPP (213.3) and Gadsden, AL

had the lowest (51.5).

Estimates of real personal income and regional price parities for state metropolitan and nonmetropolitan portions can be found at <https://www.bea.gov/itable/iTable/iTableHtml.cfm?reqid=70&step=1&isuri=1&acrdn=8>). Supplemental tables are available upon request.



(/newsreleases/regional/rpp/2018/\_images/rpp0518\_chart\_01.png)

### Updates to Real Personal Income

Today, BEA also released revised real personal income statistics for states and metropolitan areas for 2014-2015 and real per capita personal income statistics for states for 2010-2013. These revisions were made to incorporate newly available source data. BEA will update real personal income for states on September 25, 2018 with the release of state personal income. Real personal income for metropolitan areas will be updated on November 15, 2018 with the release of local area personal income.

Next release: May 2019 - Real Personal Income for States and Metropolitan Areas, 2017.

## Technical Notes on Regional Price Parities and Implicit Regional Price Deflators

Price indexes commonly measure price changes over time. The BEA's personal consumption expenditures (PCE) price index and the Bureau of Labor Statistics' consumer price index (CPI) are two examples. Spatial price indexes measure price level differences across regions for one time period. An example of these type of indexes are purchasing power parities (PPPs), which measure differences in price levels across countries for a given period, and can be used to convert estimates of per capita GDP into comparable levels in a common currency. The regional price parities (RPPs) that BEA has developed compare regions within the United States, but without the need for currency conversion. An implicit regional price deflator (IRPD) can be derived by combining the RPPs and the U.S. PCE price index.

**Regional Price Parities.** The RPPs are calculated using price quotes for a wide array of items from the CPI, which are aggregated into broader expenditure categories (such as food, transportation or education)<sup>1</sup>. Data on rents are obtained separately from the Census Bureau's American Community Survey (ACS). The expenditure weights for each category are constructed using CPI expenditure weights, BEA's personal consumption expenditures, and ACS rents expenditures<sup>2</sup>.

The broader categories and the data on rents are combined with the expenditure weights using a multilateral aggregation method that expresses a region's price level relative to the U.S.<sup>3</sup>.

For example, if the RPP for area A is 120 and for area B is 90, then on average, prices are 20 percent higher and 10 percent lower than the U.S. average for A and B, respectively. If the personal income for area A is \$12,000 and for area B is \$9,000, then RPP-adjusted incomes are \$10,000 (or  $\$12,000/1.20$ ) and \$10,000 (or  $\$9,000/0.90$ ), respectively. In other words, the purchasing power of the two incomes is equivalent when adjusted by their respective RPPs.

**Implicit Regional Price Deflator.** The IRPD is a regional price index derived as the product of two terms: the regional price parity and the U.S. PCE price index.

The implicit regional price deflator will equal current dollar personal income divided by real personal income in chained dollars. The growth rate or year-to-year change in the IRPDs is a measure of regional inflation<sup>4</sup>.

Detailed information on the methodology used to estimate the RPPs may be found on the regional methodology page of the BEA website: [www.bea.gov/regional/methods.cfm](http://www.bea.gov/regional/methods.cfm) (/regional/methods.cfm).

## Additional Information

### Resources

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Historical time series for these estimates can be accessed in BEA's Interactive Data Application ([/itable/](#)).

Access BEA data by registering for BEA's Data Application Programming Interface ([/API/signup/](#)) (API).

For more on BEA's statistics, see our monthly online journal, the Survey of Current Business ([/scb/](#)).

BEA's news release schedule ([/newsreleases/news\\_release\\_schedule.htm](#)).

### Definitions

**Personal income** is the income received by, or on behalf of, all persons from all sources: from participation as laborers in production, from owning a home or business, from the ownership of financial assets, and from government and business in the form of transfers. It includes income from domestic sources as well as the rest of world. It does not include realized or unrealized capital gains or losses.

**Per capita personal income** is calculated as the total personal income of the residents of a given area divided by the population of the area. In computing per capita personal income, BEA uses Census Bureau mid-year population estimates.

Personal income is measured before the deduction of personal income taxes and other personal taxes and is reported in current dollars (no adjustment is made for price changes). Comparisons for different regions and time periods reflect changes in both the price and quantity components of regional personal income.

The estimate of personal income for the United States is the sum of the state estimates and the estimate for the District of Columbia; it differs slightly from the estimate of personal income in the national income and product accounts (NIPAs) because of differences in coverage, in the methodologies used to prepare the estimates, and in the timing of the availability of source data.

**Regional price parities (RPPs)** are regional price levels expressed as a percentage of the overall national price level for a given year. The price level is determined by the average prices paid by consumers for the mix of goods and services consumed in each region.

Detailed CPI price data are adjusted to obtain average price levels for BLS-defined areas<sup>5</sup>. These are allocated to counties in combination with direct price and expenditure data on rents from the ACS.

County data are then aggregated to states and metropolitan areas.

**Personal income at RPPs** is current-dollar personal income divided by the price parity<sup>6</sup> for a given year and region. A balancing factor is applied so that the sum of personal income at RPPs across regions equals the current dollar sum.

**Real personal income** is personal income at RPPs divided by the national PCE chain-type price index. The result is real personal income in chained dollars (using 2009 as the reference year). Using Alaska in 2016 as an example:

(1) Personal Income is divided by the RPP	(2) Balancing factor is applied	(3) Personal Income at RPPs is deflated by the U.S. PCE Price Index	<b>2016 Alaska Real Personal Income</b>
\$41.3 / 1.054 = \$39.2	\$39.2 / 0.997 = \$39.3	\$39.3 / 1.108 = \$35.5	<b>\$35.5</b>

(/newsreleases/regional/rpp/2018/\_images/rpp0518\_formula\_01.png)

Estimates of real personal income in the United States are derived as the sum of the regional estimates divided by the U.S. PCE Price Index.

**Implicit Regional Price Deflator (IRPD)** is the product of the RPP times the national PCE price index. It is equal to personal income divided by real personal income. See also the Technical Note.

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Table 2. Real Per Capita Personal Income by State, 2015-2016

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Table 4. Real Personal Income and Implicit Regional Price Deflators by Metropolitan Area, 2015-2016

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<sup>1</sup> The BEA Regional Price Parity statistics are based in part on restricted access Consumer Price Index data from the Bureau of Labor Statistics (BLS). The BEA statistics presented herein are products of BEA and not BLS.

<sup>2</sup> To estimate RPPs, CPI price quotes are quality adjusted and pooled over 5 years. The ACS rents are also quality adjusted and are either annual for states or pooled over 3 years for metropolitan areas. The expenditure weights are specific for each year.

<sup>3</sup> The multilateral system that is used is the Geary additive method. Any region or combination of regions may be used as the base or reference region without loss of consistency.

<sup>4</sup> The growth rate of the implicit regional price deflators will not necessarily equal the region or metro area price deflators published by the BLS. This is because the CPI deflators are calculated directly while the IRPDs are indirect estimates, and because of differences in the source data and methodology.

<sup>5</sup> The CPI represents about 93 percent of the total U.S. population, including almost all residents of urban or metropolitan areas. In the Northeast region, rural area prices (exclusive of rents) are assumed to be the same as those in the small metropolitan areas of the CPI; in the Midwest, South, and West regions, they are assumed to be the same as those in the nonmetropolitan urban areas of the CPI.

<sup>6</sup> RPP should first be divided by 100.

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