

Estimating Price Levels for Housing Rents in the Regional Price Parities

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Regional price parities (RPPs) measure differences in price levels across geographic areas relative to the national average price level for each year.¹ They are estimated using microdata obtained through cooperative agreements with the Consumer Price Index (CPI) program at the Bureau of Labor Statistics and the American Community Survey (ACS) at the Census Bureau. The microdata are used to generate price levels and expenditure weights for an array of consumer goods and services categories, including housing rents. Rents are an important category for regional price measures because of their wide range of price levels and large share of expenditures.

CPI data cover over 200 detailed household consumption categories.² The survey data are collected for CPI-specific index areas; thus, the Bureau of Economic Analysis (BEA) cannot directly estimate price levels or weights for states, metropolitan areas, or state metropolitan or nonmetropolitan portions.³ The CPI sample was not designed for place-to-place comparisons, and it does not fully represent smaller geographic units. Therefore, BEA uses a 5-year rolling average of the CPI price data to smooth out inconsistencies that arise when items are sparsely surveyed in smaller geographies.

BEA uses ACS data to estimate price levels and weights for a single category—housing rents. Due to the survey's large sample size—approximately 2.1 million observations representing 137.4 million housing units—the estimation can use annual files for states and state portions and 3-year moving average files for metropolitan areas.⁴ Estimates for these areas are all based on directly observed sample units.

This article describes the derivation of rents price levels used to estimate RPPs, including the hedonic model used for quality adjustment.⁵ RPPs for 2017 are shown for selected areas. These and other results are available on the BEA website (see "[Data Availability](#)"). For an explanation of how RPPs are used to estimate real personal income, see "Using Regional Price Parities to Estimate Real Personal Income."

Using Regional Price Parities to Estimate Real Personal Income

An important application of the RPPs is the adjustment of consumption-related data to control for price-level differences across regions. The adjustment begins by calculating personal income at regional price parities by dividing current-dollar personal income by the regional price parity for a given year and region.¹ Real personal income is the income at regional price parities divided by the national personal consumption expenditures (PCE) price index.² Dividing by the population yields real per capita personal income. Real personal income estimates are calculated in chained dollars, with 2012 as the reference year.

The example in the table shows how regional price parities can be used in conjunction with the PCE price index to calculate California's real estimates of regional personal income.

Real Per Capita Personal Income for California, 2017

Personal income (billions of dollars)	RPPs	Balancing factor	Personal income at RPPs (billions of dollars)	PCE price index (base year=2012)	Real personal income (billions of chained (2012)dollars)	Population (persons)	Real per capita personal income (thousands of chained (2012) dollars)
2,364.1	114.8	0.99640	2,066.4	106.1	1,948.1	39,399,349	49.4

Notes. This article uses current-dollar state personal income estimates that were released by BEA on March 26, 2019, and local area personal income estimates that were released on November 15, 2018. Personal consumption expenditures price indexes were released on July 31, 2018.

Personal income is the income received by all persons from all sources. It is the sum of net earnings by place of residence, property income, and personal current transfer receipts. For more information, see [Personal Income by State](#) and [Personal Income by County, Metro, and Other Areas](#) on BEA's website.

1. The sum across all regions of the adjusted results should equal the sum of current-dollar estimates; however, small differences arise. To correct this, the adjusted data are divided by a balancing factor equal to the ratio of the adjusted personal income sum to the unadjusted personal income sum. These factors are specific to the regions, reference period, and data series being adjusted.
2. The order of adjustment does not matter; that is, one could first divide by the national price index and then divide the resulting constant dollars by the RPPs.

Rents Price Levels

The RPP rents category represents the cost of shelter—the service that housing units provide their occupants. This covers the actual rents paid for tenant-occupied housing units as well as the implicit rents owner-occupants would pay if renting their own homes. Although RPP expenditure weights include an imputation to measure total rent expenditures for both tenants and owners, none is used for the rent price levels.⁶ Instead, tenant rent price levels are used for both.

Rents are important for the estimation of regional price levels because they have the largest share of expenditure weights (22.6 percent) across consumption categories (table 1). In addition, their price levels have the widest range across regions (95.0 index points for states). As a result, they are an important source of variation in the overall, or all items, RPPs.

Table 1. Expenditure Weight Shares and State Price Levels by Consumption Category, 2017

Consumption category	Expenditure weight shares (percent)	State price levels		
		Minimum	Maximum	Range
All items	100.0	85.7	118.5	32.8
Rents	22.6	61.4	156.4	95.0
Food	18.7	89.9	110.2	20.3
Transportation	14.0	91.3	112.6	21.3
Housing	11.7	89.5	118.4	28.9
Recreation	8.7	91.5	110.1	18.6
Education	6.9	89.8	123.0	33.2
Other	6.4	90.2	119.7	29.5
Medical	5.7	90.3	115.5	25.2
Apparel	5.2	88.7	121.3	32.6

Price levels for rents are estimated directly from tenant rent observations in the ACS. They are based on monthly contract rent, that is, the rent asked regardless of whether any goods or services may be included, such as furnishings or utilities.⁷ ACS rent observations contain characteristic information about the housing unit, such as structure type, number of bedrooms and the total number of rooms, year built, whether it is located in an urban or rural area, and if utilities are included in the monthly rent.⁸ These characteristics are used in a hedonic regression model to control for regional differences and estimate quality-adjusted rents price levels.⁹ The model specification is shown here with a summary of the characteristics in table 2.

$$\ln P_{ij} = \sum_{i=1}^M \alpha_i A_i + \sum_{n=1}^N \sum_{j=1}^J \beta_j^n Z_j^n + \varepsilon_{ij}$$

A_i is a set of area dummies with Z_j^n is the set of unit characteristics with
 $i=1, \dots, M$ geographic areas $n=1, \dots, N$ characteristics
 $j=1, \dots, J$ classification levels

One α_i and one β_j^n is equal to zero so the equation is not overidentified.

Table 3. Rents Regression Results for States, 2017

Model parameters	Estimate	Error	t	Pr > |t|
Intercept	7.006	0.023	306.5	<.0001
Area				
Alabama	-0.306	0.023	-13.3	<.0001
Alaska	0.433	0.029	15.1	<.0001
Arizona	0.082	0.023	3.6	0.0003
Arkansas	-0.323	0.024	-13.7	<.0001
California	0.564	0.022	25.7	<.0001
Colorado	0.342	0.023	15.0	<.0001
Connecticut	0.278	0.023	11.9	<.0001
Delaware	0.125	0.028	4.5	<.0001
District of Columbia	0.590	0.026	23.0	<.0001
Florida	0.220	0.022	9.9	<.0001
Georgia	-0.050	0.022	-2.2	0.0265
Hawaii	0.602	0.025	23.8	<.0001
Idaho	-0.097	0.025	-3.8	0.0001
Illinois	0.129	0.022	5.8	<.0001
Indiana	-0.148	0.023	-6.5	<.0001
Iowa	-0.131	0.024	-5.5	<.0001
Kansas	-0.143	0.024	-6.1	<.0001
Kentucky	-0.244	0.023	-10.6	<.0001
Louisiana	-0.130	0.023	-5.6	<.0001
Maine	0.076	0.026	2.9	0.0037
Maryland	0.352	0.023	15.5	<.0001
Massachusetts	0.352	0.023	15.6	<.0001
Michigan	-0.056	0.022	-2.5	0.0123
Minnesota	0.113	0.023	4.9	<.0001
Mississippi	-0.312	0.024	-13.0	<.0001
Missouri	-0.160	0.023	-7.0	<.0001
Montana	-0.030	0.027	-1.1	0.2655
Nebraska	-0.137	0.024	-5.6	<.0001
Nevada	0.122	0.023	5.2	<.0001
New Hampshire	0.309	0.026	12.0	<.0001
New Jersey	0.417	0.022	18.6	<.0001
New Mexico	-0.066	0.025	-2.7	0.0071
New York	0.431	0.022	19.5	<.0001
North Carolina	-0.072	0.022	-3.2	0.0012
North Dakota	-0.090	0.027	-3.3	0.0009
Ohio	-0.173	0.022	-7.8	<.0001
Oklahoma	-0.203	0.023	-8.7	<.0001
Oregon	0.217	0.023	9.4	<.0001
Pennsylvania	0.009	0.022	0.4	0.6953
Rhode Island	0.102	0.026	4.0	<.0001
South Carolina	-0.104	0.023	-4.5	<.0001
South Dakota	-0.199	0.027	-7.3	<.0001
Tennessee	-0.116	0.023	-5.1	<.0001
Texas	0.098	0.022	4.4	<.0001
Utah	0.092	0.024	3.8	0.0001
Vermont	0.307	0.029	10.4	<.0001
Virginia	0.240	0.023	10.6	<.0001
Washington	0.333	0.023	14.8	<.0001
West Virginia	-0.333	0.025	-13.1	<.0001
Wisconsin	-0.017	0.023	-0.7	0.4564

Model parameters	Estimate	Error	t	Pr > |t|
Wyoming	0.000	.....	.....	.....
Urban versus rural				
Rural	-0.285	0.003	-88.4	<.0001
Urban	0.000	.....	.....	.....
Structure type by number of bedrooms				
Mobile and other, 0+	-0.525	0.006	-84.6	<.0001
Apartment (<=9 units), 0	-0.392	0.013	-29.7	<.0001
Apartment (<=9 units), 1	-0.394	0.006	-65.7	<.0001
Apartment (<=9 units), 2	-0.235	0.005	-45.0	<.0001
Apartment (<=9 units), 3+	-0.209	0.006	-37.2	<.0001
Apartment (10+ units), 0	-0.293	0.012	-24.7	<.0001
Apartment (10+ units), 1	-0.299	0.006	-51.5	<.0001
Apartment (10+ units), 2	-0.056	0.005	-10.4	<.0001
Apartment (10+ units), 3+	-0.135	0.007	-19.6	<.0001
Attached house, 1	-0.424	0.012	-36.1	<.0001
Attached house, 2	-0.123	0.007	-18.3	<.0001
Attached house, 3	-0.025	0.007	-3.8	0.0001
Attached house, 4+	-0.043	0.013	-3.4	0.0006
Detached house, 1	-0.435	0.009	-50.6	<.0001
Detached house, 2	-0.258	0.006	-46.1	<.0001
Detached house, 3	-0.093	0.005	-19.8	<.0001
Detached house, 4+	0.000	.....	.....	.....
Total number of rooms				
1	-0.274	0.013	-21.6	<.0001
2	-0.174	0.008	-22.2	<.0001
3	-0.231	0.007	-32.9	<.0001
4	-0.241	0.007	-36.1	<.0001
5	-0.197	0.006	-30.5	<.0001
6	-0.150	0.006	-23.3	<.0001
7	-0.092	0.007	-13.6	<.0001
8	-0.050	0.008	-6.6	<.0001
9 or more	0.000	.....	.....	.....
Utilities included				
No	0.186	0.003	62.8	<.0001
Yes	0.000	.....	.....	.....
Year built				
1939 or before	-0.266	0.003	-81.9	<.0001
1940-1979	-0.279	0.002	-112.8	<.0001
1980-1999	-0.160	0.003	-61.6	<.0001
2000 or after	0	.....	.....	.....
Summary statistics	Estimate			
Model sum of squares ¹	4,816,000			
Error sum of squares ¹	14,460,000			
Root mean squared error	5.26			
R ²	0.25			
Coefficient of variation	78.49			
Observations used ¹	522,900			

1. Rounded to four significant digits.

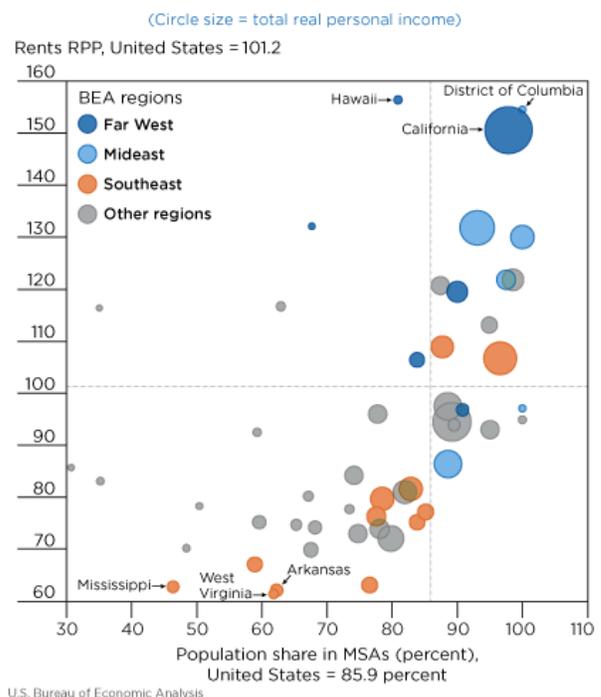
Results for 2017

Area parameters, (a_i) in the model, measure rents price levels across regions. Along with separately estimated rents expenditure weights, these are aggregated with the price levels and weights of other consumption categories to estimate an overall RPP for each area.¹⁰ In addition to these all items RPPs, BEA also publishes three component RPPs that cover goods, rents, and other services. Component RPPs are estimated for the United States as well as for each area (table 4). All RPPs are indexed to the U.S. all items RPP, equal to 100.0.

Any pair of RPPs can be compared by evaluating their ratio.¹¹ In 2017, the U.S. RPP for rents was 101.2, meaning across the United States, the price level for rents was 1.2 percent higher than the national average for all goods and services. Across states, Hawaii had the highest rents RPP (156.4), and West Virginia had the lowest RPP (61.4). Hawaii's rents RPP is 54.5 percent higher than the national average price level for rents (101.2) and is 154.7 percent higher than West Virginia's RPP.

Across states, rents RPPs generally increase with the share of population residing in the metropolitan portion (chart 1). The metropolitan portion comprises all counties within the state that belong to a metropolitan statistical area (MSA).¹² These population shares range from 30.7 percent in Wyoming, where less than one-third of residents live in an MSA, to 100.0 percent in Delaware, New Jersey, and Rhode Island, where all residents reside in an MSA. In the District of Columbia, the share is also 100.0 percent. The national average is 85.9 percent.

Chart 1. State Rents RPP by Population Share in MSAs, 2017



Across states and large metropolitan areas—34 MSAs with a population greater than 2 million—rents RPPs were highest in the Midwest and Far West regions and were lowest in the Southeast, Great Lakes, and Midwest regions (tables 4 and 5).¹³

Hawaii had the highest rents RPP (156.4) across states. Its population is concentrated in the Urban Honolulu, HI MSA, on the island of Oahu, a location that constrains the amount of land available for housing. California had the second highest rents RPP (150.6) across states. The rents RPP in the District of Columbia was 154.5. In California and the District of Columbia, the population share living in an MSA is very high—97.9 percent and 100.0 percent, respectively.

Across large metropolitan areas—34 MSAs with a population greater than 2 million—the three highest rents RPPs were in California: San Francisco-Oakland-Hayward, CA (195.0), San Diego-Carlsbad, CA (168.0), and Los Angeles-Long Beach-Anaheim, CA (165.9).

State rents RPPs were lowest in the Southeast region. West Virginia had the lowest rents RPP (61.4), followed by Arkansas (62.1), and Mississippi (62.8). In these states, the population share living in an MSA is considerably smaller than the national average, ranging from 46.3 percent in Mississippi to 62.2 percent in Arkansas.

Large metropolitan areas with the lowest rents RPPs are in the Great Lakes, Southeast, and Midwest regions. Cleveland-Elyria, OH, had the lowest result (77.2), followed by Cincinnati, OH-KY-IN (78.7), and Pittsburgh, PA (79.4).

Table 4. Regional Price Parities and Population Shares by State, 2017

	Regional price parities						Population shares (percent)	
	All items	Goods	Services				Metropolitan portion	Nonmetropolitan portion
			Rents			Other		
			Total	Metropolitan portion	Nonmetropolitan portion			
United States ¹	100.0	99.4	101.2	107.2	65.3	100.0	85.9	14.1
Alabama	86.7	96.5	63.1	66.5	47.8	93.3	76.5	23.5
Alaska	104.4	101.4	132.1	137.6	112.9	95.6	67.7	32.3
Arizona	96.4	96.8	93.0	95.8	51.8	98.4	95.0	5.0
Arkansas	86.5	94.9	62.1	68.1	48.6	93.3	62.2	37.8
California	114.8	103.5	150.6	153.6	98.1	107.0	97.9	2.1
Colorado	103.2	99.6	120.7	125.9	91.7	97.7	87.4	12.6
Connecticut	108.0	104.0	113.1	114.3	111.1	109.0	94.9	5.1
Delaware ²	100.1	98.9	97.1	97.8	.....	103.3	100.0	.....
District of Columbia ²	116.9	105.6	154.5	157.5	.....	109.5	100.0	.....
Florida	99.9	98.5	106.7	108.5	83.9	96.9	96.6	3.4
Georgia	92.5	96.9	81.6	87.5	54.3	95.2	82.9	17.1
Hawaii	118.5	111.3	156.4	168.4	110.2	103.2	80.9	19.1
Idaho	93.0	98.5	77.7	81.2	66.9	96.7	73.4	26.6
Illinois	98.5	98.3	97.5	103.3	58.1	99.2	88.5	11.5
Indiana	89.8	96.2	73.9	77.0	60.4	92.7	78.1	21.9
Iowa	89.8	95.0	75.2	82.6	62.2	90.9	59.6	40.4
Kansas	90.0	95.7	74.2	80.1	61.0	92.6	68.2	31.8
Kentucky	87.9	94.6	67.1	73.8	53.7	93.1	58.9	41.1
Louisiana	90.1	96.8	75.2	79.5	51.3	93.3	83.8	16.2
Maine	98.4	98.6	92.5	99.9	74.2	101.6	59.3	40.7
Maryland	109.4	103.6	121.8	124.8	81.6	106.8	97.5	2.5
Massachusetts	107.9	101.8	121.8	123.7	93.7	106.0	98.6	1.4
Michigan	93.0	97.4	81.0	83.3	68.2	95.3	82.0	18.0
Minnesota	97.5	101.3	96.0	103.6	70.1	94.1	77.8	22.2
Mississippi	85.7	94.1	62.8	72.4	51.5	93.3	46.3	53.7
Missouri	89.5	95.5	73.0	78.5	54.4	92.3	74.7	25.3
Montana	94.6	99.4	83.1	90.1	75.8	94.7	35.2	64.8
Nebraska	89.6	95.2	74.7	81.5	60.4	91.1	65.3	34.7
Nevada	97.6	95.9	96.8	98.8	85.3	100.5	90.8	9.2
New Hampshire	105.8	100.9	116.7	120.2	107.5	104.8	62.9	37.1
New Jersey ²	112.9	102.0	130.0	132.0	.....	114.8	100.0	.....
New Mexico	93.3	97.0	80.2	87.0	65.9	99.1	67.1	32.9
New York	115.8	108.8	131.8	136.5	78.9	113.1	93.1	6.9
North Carolina	91.3	96.6	79.7	83.2	61.8	93.3	78.5	21.5
North Dakota	90.1	94.8	78.3	80.6	73.8	90.8	50.4	49.6
Ohio	88.9	95.8	72.1	74.6	61.1	91.7	79.8	20.2
Oklahoma	89.0	95.8	69.9	74.9	56.9	93.3	67.5	32.5
Oregon	99.5	99.1	106.4	112.2	79.4	95.9	83.8	16.2
Pennsylvania	97.9	99.4	86.4	89.7	61.6	102.9	88.6	11.4
Rhode Island ²	98.6	98.4	94.9	95.7	.....	101.5	100.0	.....
South Carolina	90.4	96.9	77.2	80.3	54.0	93.3	85.2	14.8
South Dakota	88.2	94.7	70.2	79.9	59.7	90.7	48.4	51.6
Tennessee	90.4	96.4	76.3	80.7	56.9	93.3	77.6	22.4
Texas	97.0	97.1	94.5	98.2	65.1	98.5	89.2	10.8
Utah	97.0	96.6	93.9	96.3	82.2	99.6	89.5	10.5
Vermont	102.5	98.5	116.4	129.5	101.8	101.4	35.0	65.0
Virginia	102.1	99.8	108.9	116.5	59.5	100.5	87.7	12.3
Washington	106.4	104.4	119.5	124.2	85.7	101.6	90.0	10.0
West Virginia	87.0	94.6	61.4	62.0	55.7	94.9	61.8	38.2
Wisconsin	92.4	95.8	84.2	87.9	70.8	92.9	74.1	25.9
Wyoming	95.2	99.2	85.7	90.3	81.9	95.3	30.7	69.3
Maximum	118.5	111.3	156.4	168.4	112.9	114.8	100.0	69.3
Minimum	85.7	94.1	61.4	62.0	47.8	90.7	30.7	1.4
Range	32.8	17.2	95.0	106.4	65.1	24.1	69.3	67.8

1. The U.S. all items regional price parity is the average price level across all states and the District of Columbia.
2. All counties in Delaware, the District of Columbia, New Jersey, and Rhode Island are metropolitan.

Table 5. Regional Price Parities by Large Metropolitan Area, 2017

	Regional price parities			
	All items	Goods	Services	
			Rents	Other
United States ¹	100.0	99.0	101.8	100.1
U.S. nonmetropolitan portion	87.5	94.2	63.3	93.7
Atlanta-Sandy Springs-Roswell, GA	96.8	98.4	94.8	96.4
Austin-Round Rock, TX	100.5	98.1	119.4	93.5
Baltimore-Columbia-Towson, MD	107.2	103.1	114.7	105.7
Boston-Cambridge-Newton, MA-NH	111.8	102.3	140.8	107.1
Charlotte-Concord-Gastonia, NC-SC	93.8	97.6	87.5	93.5
Chicago-Naperville-Elgin, IL-IN-WI	103.4	99.3	113.9	102.3
Cincinnati, OH-KY-IN	90.0	95.1	78.7	91.3
Cleveland-Elyria, OH	90.2	95.8	77.2	91.8
Columbus, OH	92.3	96.0	84.5	92.2
Dallas-Fort Worth-Arlington, TX	100.2	98.7	105.9	98.8
Denver-Aurora-Lakewood, CO	106.3	100.5	133.4	98.0
Detroit-Warren-Dearborn, MI	95.8	98.7	86.2	98.5
Houston-The Woodlands-Sugar Land, TX	101.7	95.3	104.3	107.7
Indianapolis-Carmel-Anderson, IN	92.0	96.1	83.2	92.3
Kansas City, MO-KS	93.1	96.6	82.4	95.4
Las Vegas-Henderson-Paradise, NV	97.5	95.0	96.8	101.5
Los Angeles-Long Beach-Anaheim, CA	117.1	104.4	165.9	106.3
Miami-Fort Lauderdale-West Palm Beach, FL	108.4	101.6	130.0	101.5
Minneapolis-St. Paul-Bloomington, MN-WI	102.2	104.5	110.4	95.9
New York-Newark-Jersey City, NY-NJ-PA	122.3	109.4	153.1	117.7
Orlando-Kissimmee-Sanford, FL	98.3	98.1	105.8	93.5
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	105.4	100.7	109.6	108.2
Phoenix-Mesa-Scottsdale, AZ	97.7	96.2	98.9	98.5
Pittsburgh, PA	94.0	98.4	79.4	96.4
Portland-Vancouver-Hillsboro, OR-WA	101.7	99.0	120.6	95.8
Riverside-San Bernardino-Ontario, CA	107.2	100.2	117.8	107.4
Sacramento—Roseville—Arden-Arcade, CA	102.0	95.0	119.1	101.5
St. Louis, MO-IL	91.4	94.9	82.4	92.3
San Antonio-New Braunfels, TX	94.4	97.8	90.3	93.5
San Diego-Carlsbad, CA	116.0	98.6	168.0	107.1
San Francisco-Oakland-Hayward, CA	128.0	112.2	195.0	113.5
Seattle-Tacoma-Bellevue, WA	111.8	107.3	138.5	103.9
Tampa-St. Petersburg-Clearwater, FL	98.9	95.2	103.9	100.6
Washington-Arlington-Alexandria, DC-VA-MD-WV	118.4	105.3	164.4	109.8
Maximum	128.0	112.2	195.0	117.7
Minimum	90.0	94.9	77.2	91.3
Range	38.0	17.3	117.8	26.4

1. The U.S. all items regional price parity is the average price level across all metropolitan areas and the U.S. nonmetropolitan portion.

Data Availability

Real personal income data, regional price parities, and implicit regional price deflators are available on the [BEA website](#). Data are available for 2008 to 2017 for states, metropolitan areas, and state metropolitan and nonmetropolitan portions.

The regional price parities for 2015 and 2016, [released in May 2019](#), were revised to incorporate updated price levels and expenditure weights. As a result, real personal income and implicit regional price deflators for 2015 and 2016, released for states in September 2018 and for local areas in November 2018, were also revised. In addition, real per capita personal income for states for 2010 to 2016, released in September 2018, was revised to incorporate revised population estimates. For further information about these data, email the Regional Prices Branch at rpp@bea.gov.

Acknowledgments

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1. BEA regional price parity statistics are based in part on restricted access CPI data from BLS. The BEA statistics expressed herein are products of BEA, not BLS.

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1. RPPs are calculated for the 50 states and the District of Columbia, metropolitan areas, and state metropolitan and nonmetropolitan portions. Estimates for metropolitan areas include an estimate for the nonmetropolitan portion of the United States to provide complete coverage of all U.S. counties.
 2. For a listing of CPI expenditure categories, see [chapter 17](#) of the *Handbook of Methods* on the Bureau of Labor Statistics website.
 3. For a description of methods used to reconcile the CPI geographies with states and metropolitan areas, see *Real Personal Income and Regional Price Parities* on the BEA website.
 4. For ACS sample size data, see the [Census website](#). For housing units, see [American FactFinder](#).
 5. For a description of methods used to estimate rents expenditure weights, see *Real Personal Income and Regional Price Parities* on the BEA website.
 6. See note 5 above.
 7. For more information on ACS variable, see [2008 Subject Definitions](#) on the Census website.
 8. The hedonic model with the utilities indicator yields rents price levels that control for differences between contract rent observations with utilities and for those without. For estimating all items RPPs, the price levels and expenditures for utilities are calculated separately using CPI data. The results are included in the housing category.
 9. This approach has been used in other federal government analyses of regional price levels. For example, see this [2002 Federal Register study](#) to set regional salary levels.
 10. The aggregation combines 16 expenditure classes composed of 9 categories—apparel, education, food, housing, medical, recreation, rents, transportation, and other—subdivided into goods and services. Apparel consists only of goods, rents consists only of services, and the other seven categories consist of both goods and services.
 11. RPPs are independently estimated for states, metropolitan areas, and state metropolitan and nonmetropolitan portions. They can be compared within but not across geographies. It is incorrect to compare a state RPP with a state portion RPP.
 12. A metropolitan statistical area consists of a core county or group of counties in which there is an urban area with a population of at least 50,000 plus adjacent counties with a high degree of social and economic integration as measured through commuting ties.
 13. For a listing of states by BEA region, see the [BEA website](#).