

Regional Quarterly Report

GDP, personal income, and more...

The statistics discussed in this *Regional Quarterly Report* include the following: (1) advance real state gross domestic product (GDP) statistics for 2017 and revised GDP statistics for 2014–2016, (2) regional price parities and real per capita personal income for 2016, and (3) Arts and Cultural Production Satellite Account statistics for 2015 and updated statistics for 2013 and 2014. For the first time, the Bureau of Economic Analysis included state-level statistics for value added by arts and cultural industries for 2001 to 2015.

David G. Lenze prepared the section on real GDP by state, Bryan M. Vengelen and Krishna Parajuli prepared the section on regional price parities, and Nayana Kollanithara and David Guo prepared the section on the Arts and Cultural Production Satellite Account.

Advance Real State GDP Statistics for 2017

Real state GDP grew 2.1 percent on average in 2017, ranging from 4.4 percent in the state of Washington to –0.2 percent in Connecticut and Louisiana according to the advance estimates of GDP by state. Washington's growth rate accelerated in 2017 from its trend growth rate of 3.3 percent (the average annual percent change from 2011 to 2016). In both periods (2017 and 2011–2016), Washington grew at a faster pace than the nation (table 1) (the average annual growth rate from 2011 to 2016 for the United States was 2.0 percent). Retail trade contributed 1.4 percentage points to Washington's real GDP growth rate in 2017, and information services contributed 1.0 percentage point. These industries each contributed 0.2 percentage point to growth nationally. California, Florida, Texas, and six other states also grew faster than the nation in both periods.

New York and 26 other states grew slower than the United States in both periods. Notably, the decline in Connecticut's and Louisiana's real GDP in 2017 was a continuation of the declines in those states over the previous five years. The finance, management, and state and local government industries in Connecticut reduced real GDP growth in 2017 by 0.8 percentage point. In Louisiana, nondurable goods manufacturing subtracted 0.9 percentage point from real GDP growth.¹

Table 1. Real Gross Domestic Product (GDP) by State
[Percent change at annual rates]

States	2011 to 2016	2016 to 2017
Faster than U.S. growth in both 2011–2016 and 2016–2017		
California	3.4	3.0
Colorado	3.0	3.6
Florida	2.5	2.2
Georgia	2.4	2.7
Idaho	2.3	2.7
South Carolina	2.1	2.3
Tennessee	2.5	2.5
Texas	3.6	2.6
Utah	3.0	3.1
Washington	3.3	4.4
Slower than U.S. growth in both 2011–2016 and 2016–2017		
Alabama	0.8	1.2
Alaska	-1.6	0.2
Arkansas	1.1	1.1
Connecticut	-0.3	-0.2
Delaware	0.9	1.6
Hawaii	1.8	1.7
Illinois	1.1	1.2
Kansas	1.2	-0.1
Kentucky	0.7	1.8
Louisiana	-0.1	-0.2
Maine	0.7	1.4
Maryland	1.2	1.5
Mississippi	0.8	0.3
Missouri	0.8	1.1
Montana	1.6	0.6
New Hampshire	1.6	1.9
New Jersey	1.1	0.9
New Mexico	0.6	0.8
New York	1.4	1.1
Ohio	1.6	1.9
Pennsylvania	1.8	1.8
Rhode Island	0.8	1.6
South Dakota	1.0	0.3
Vermont	0.5	1.1
Virginia	0.6	2.0
Wisconsin	1.6	1.7
Wyoming	-0.9	2.0
Other states		
Arizona	1.7	3.2
Indiana	1.6	2.1
Iowa	2.8	0.5
Massachusetts	1.7	2.6
Michigan	1.9	2.3
Minnesota	2.0	1.9
Nebraska	2.0	0.6
Nevada	1.4	3.5
North Carolina	1.5	2.3
North Dakota	4.4	1.0
Oklahoma	2.9	0.5
Oregon	0.9	2.5
West Virginia	-0.2	2.6

Note. The United States grew 2.0 percent (2011–2016) and 2.1 percent (2016–2017).

Revised GDP statistics for 2014–2016

The advance state GDP statistics for 2017 are based primarily on the national GDP statistics by industry and BEA estimates of earnings by state and industry.² Substantially richer state source data are now available for earlier years and have been incorporated in revised GDP statistics for 2014–2016. In addition to a disaggregation by industry, the state GDP statistics for 2014–2016 show the distribution of income from production to labor (compensation), capital (gross operating surplus), and government (taxes on production and imports less subsidies).

Nominal GDP fell in 6 states in 2016—North Dakota (5.2 percent), Oklahoma (4.3 percent), Wyoming (3.9 percent), Alaska (3.6 percent), Louisiana (1.8 percent), and Texas (0.6 percent) (table 2). Real GDP fell in those states as well as in Delaware (1.0 percent), West Virginia (0.8 percent), Connecticut (0.3 percent), and New Mexico (0.1 percent).

In Alaska, taxes on production and imports accounted for almost half of the decline in nominal GDP in 2016 (table 3), reflecting a reduction in tax receipts from the mining industry. In Alaska's mining industry, taxes on production and imports fell \$933 million, gross operating surplus fell \$603 million, and compensation of employees fell \$514 million in 2016.

In Oklahoma, North Dakota, and Louisiana, in contrast, gross operating surplus accounted for most of the decline in nominal GDP. In Oklahoma, for example, GDP fell \$8.1 billion, gross operating surplus fell \$6.8 billion, and compensation of employees fell \$1.5 billion in 2016. Taxes on production and imports rose \$0.2 billion (table 3).

In Texas, compensation grew \$10.1 billion and taxes on production and imports rose \$3.0 billion in 2016. Nevertheless, nominal GDP fell \$10.4 billion because of a \$23.4 billion decline in gross operating surplus. In the mining industry alone, gross operating surplus fell \$33.5 billion. Texas accounted for 43 percent of U.S. mining GDP in 2016.

The decline in Wyoming's GDP was accounted for by compensation and gross operating surplus: GDP fell \$1.5 billion, compensation fell \$0.8 billion, and gross operating surplus fell \$0.7 billion; taxes on production and imports less subsidies were essentially unchanged.

Table 2. Gross Domestic Product by State
[Percent change]

	Nominal		Real	
	2015	2016	2015	2016
United States	4.0	2.8	2.7	1.5
Alabama	3.0	2.2	1.2	1.1
Alaska	-9.9	-3.6	-1.6	-3.6
Arizona	4.4	3.8	2.1	2.0
Arkansas	1.0	1.8	0.4	1.0
California	6.4	4.4	4.6	3.0
Colorado	3.3	2.6	3.6	1.4
Connecticut	3.6	1.4	1.1	-0.3
Delaware	5.4	1.5	3.0	-1.0
District of Columbia	4.5	3.4	1.9	1.5
Florida	6.8	4.4	4.2	2.6
Georgia	5.5	5.3	3.0	3.4
Hawaii	6.3	3.7	3.6	2.0
Idaho	3.7	4.5	2.6	3.5
Illinois	3.6	2.4	1.2	0.9
Indiana	2.3	3.5	0.0	2.6
Iowa	5.3	3.2	3.8	2.1
Kansas	2.2	2.1	1.4	1.7
Kentucky	2.7	2.5	0.5	1.1
Louisiana	-0.7	-1.8	1.1	-0.4
Maine	3.2	3.9	0.6	2.0
Maryland	4.0	4.3	1.5	2.5
Massachusetts	6.7	3.1	4.0	1.2
Michigan	5.6	3.5	2.6	1.9
Minnesota	2.7	3.8	0.8	2.7
Mississippi	1.6	2.7	0.1	2.0
Missouri	3.3	1.8	0.9	0.2
Montana	2.4	0.6	2.9	0.7
Nebraska	3.5	2.4	2.5	1.9
Nevada	6.8	4.3	4.1	2.1
New Hampshire	5.4	3.6	2.9	2.0
New Jersey	3.8	2.2	1.3	0.6
New Mexico	-1.7	0.3	1.6	-0.1
New York	4.8	2.9	2.0	0.5
North Carolina	5.6	3.2	2.8	1.2
North Dakota	-5.5	-5.2	-2.5	-4.9
Ohio	2.7	2.1	1.0	0.8
Oklahoma	-4.5	-4.3	2.9	-3.8
Oregon	6.8	5.1	4.8	3.8
Pennsylvania	3.5	2.0	2.6	0.9
Rhode Island	4.6	2.3	1.9	0.5
South Carolina	6.1	4.0	3.2	2.2
South Dakota	3.5	3.0	2.5	1.6
Tennessee	6.2	4.7	3.3	2.8
Texas	-0.1	-0.6	4.4	-0.4
Utah	6.0	5.3	4.2	3.3
Vermont	3.0	3.3	0.7	1.5
Virginia	4.4	2.4	1.8	0.5
Washington	6.1	5.2	3.8	3.9
West Virginia	-1.6	0.0	0.2	-0.8
Wisconsin	4.3	3.4	1.9	1.9
Wyoming	-4.9	-3.9	1.2	-3.4

Table 3. Change in State GDP and its Components for 2015 and 2016
[Millions of dollars]

	Gross domestic product		Compensation of employees		Taxes on production and imports		Subsidies		Gross operating surplus	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
United States	694,898	502,792	453,340	270,907	34,134	32,219	-833	4,542	206,591	204,209
Alabama	5,838	4,397	4,518	2,713	212	783	15	16	1,123	919
Alaska	-5,744	-1,906	712	-735	-2,100	-885	-6	7	-4,364	-280
Arizona	12,249	11,039	6,904	6,805	253	626	17	88	5,109	3,696
Arkansas	1,128	2,194	1,871	1,855	173	321	-35	41	-951	60
California	151,247	109,472	87,472	55,608	7,555	2,702	107	911	56,327	52,073
Colorado	10,165	8,141	8,446	5,607	463	725	22	58	1,276	1,868
Connecticut	8,855	3,571	4,333	766	-8	320	-22	35	4,507	2,520
Delaware	3,595	1,034	1,169	153	174	66	-19	14	2,232	830
District of Columbia	5,288	4,183	3,435	2,860	346	127	11	85	1,519	1,281
Florida	56,761	39,491	31,230	20,891	1,829	2,737	92	172	23,795	16,035
Georgia	26,555	26,964	13,423	12,884	992	984	9	54	12,149	13,149
Hawaii	4,865	3,004	2,090	1,423	478	95	9	18	2,305	1,505
Idaho	2,361	2,946	1,925	2,138	115	246	12	65	332	627
Illinois	27,020	18,553	18,009	8,848	2,270	1,124	-168	269	6,572	8,850
Indiana	7,387	11,771	4,788	7,904	42	486	-110	102	2,446	3,484
Iowa	9,105	5,689	2,822	3,426	487	705	-56	70	5,741	1,627
Kansas	3,309	3,129	2,757	682	-62	462	-65	113	549	2,098
Kentucky	4,989	4,695	4,693	2,711	93	346	-20	17	182	1,655
Louisiana	-1,588	-4,461	2,549	-1,493	-32	611	-50	43	-4,155	-3,537
Maine	1,786	2,233	1,331	1,127	280	143	-17	8	157	973
Maryland	14,115	15,643	8,302	6,270	888	632	-31	70	4,894	8,811
Massachusetts	30,628	15,287	17,308	7,738	1,211	843	-22	105	12,087	6,812
Michigan	25,036	16,585	13,980	11,058	381	1,256	11	51	10,685	4,322
Minnesota	8,573	12,525	8,186	7,421	986	771	-80	55	-678	4,387
Mississippi	1,637	2,827	897	1,435	124	434	-33	41	582	1,000
Missouri	9,229	5,310	7,931	2,104	-187	837	-134	89	1,352	2,458
Montana	1,078	299	943	597	-123	154	2	29	260	-424
Nebraska	3,941	2,834	2,176	1,842	208	212	15	108	1,571	889
Nevada	9,010	6,135	4,153	2,952	570	680	2	21	4,289	2,525
New Hampshire	3,860	2,681	1,817	1,083	300	286	-6	7	1,737	1,320
New Jersey	20,842	12,612	9,223	5,209	1,074	811	-45	101	10,500	6,693
New Mexico	-1,592	255	1,227	769	-373	25	-13	34	-2,459	-505
New York	66,704	41,899	31,737	12,396	4,772	2,086	42	521	30,237	27,938
North Carolina	26,795	16,301	12,934	8,426	470	340	-28	115	13,364	7,648
North Dakota	-3,265	-2,925	-473	-1,399	203	153	-108	122	-3,102	-1,559
Ohio	16,051	13,022	11,709	6,093	626	576	-91	53	3,625	6,405
Oklahoma	-9,024	-8,132	2,180	-1,537	14	214	-15	23	-11,232	-6,787
Oregon	13,824	11,092	7,574	6,006	290	434	36	90	5,996	4,743
Pennsylvania	24,027	14,240	15,783	3,880	1,938	1,217	-103	97	6,204	9,239
Rhode Island	2,449	1,310	1,214	730	175	72	-3	14	1,057	522
South Carolina	11,658	8,069	6,136	3,841	384	427	-9	29	5,129	3,830
South Dakota	1,590	1,421	966	709	111	42	-77	55	436	725
Tennessee	18,522	14,769	8,535	7,909	1,346	625	-18	22	8,625	6,255
Texas	-1,015	-10,441	38,396	10,073	2,843	2,967	71	130	-42,184	-23,351
Utah	8,425	7,889	4,732	5,276	155	374	11	15	3,549	2,255
Vermont	879	993	752	515	128	133	-6	7	-5	351
Virginia	20,427	11,552	13,638	4,592	841	855	-34	51	5,914	6,154
Washington	25,944	23,748	11,001	14,882	1,706	906	130	217	13,366	8,178
West Virginia	-1,148	-14	378	-672	-325	181	-10	4	-1,210	481
Wisconsin	12,568	10,421	5,665	5,368	-44	950	-9	70	6,938	4,174
Wyoming	-2,047	-1,549	-141	-831	-120	3	-2	10	-1,787	-711

Note. Gross domestic product equals compensation plus taxes on production and imports less subsidies plus gross operating surplus.

New source data

The updated state GDP estimates reflect the incorporation of newly available and revised state source data. The major source data incorporated as part of this year's annual update are summarized in table 4; additional information is provided in the state GDP methodology on the BEA website.

The estimates of compensation of employees and gross operating surplus now incorporate the annual update of the state personal income statistics released in September 2017. Among other things, that update incorporated (1) complete Quarterly Census of Employment and Wages (QCEW) data for 2016 from the Bureau of Labor Statistics (BLS) into compensation and (2) new Internal Revenue Service (IRS) data for 2015 for the income of sole proprietorships and partnerships and for rental income of persons (components of gross operating surplus).

The estimates of taxes on production and imports now incorporate state government finance data (including general sales and gross receipts taxes) for fiscal year 2016 from the Census Bureau.³

Other estimates incorporate new oil, gas, and coal production and price data for 2016 from the Energy Information Administration, value added data for 2016 from the Census Bureau's Annual Survey of Manufactures, air transportation finance data and railroad freight ton-miles data for 2016 from the Department of Transportation, income and expense data for 2016 from the Federal Deposit Insurance Corporation (FDIC), and premium and loss data for 2016 from the National Association of Insurance Commissioners (NAIC).

In general, for the goods producing industries, GDP, compensation, taxes on production and imports, and subsidies are estimated while gross operating surplus is derived as a residual. For the services producing industries, however, gross operating surplus is estimated and GDP is derived as the sum of the four components.

Table 4. Major New or Revised State Source Data Incorporated in Gross Domestic Product (GDP) by State

Goods-producing industries	
Component	Source data
Gross domestic product	Farm income and expenses from USDA; oil, gas production and prices, coal reports from EIA; mineral data from USGS; value added and payroll data from Census Bureau
Compensation of employees	Compensation of employees from state personal income at BEA
Taxes on production and imports	Government finance data, tax revenue data, building permits from Census Bureau; individual state's departments of revenue and/or finance; coal mine price and production, refinery capacity from EIA; federal land usage from DOI
Services-producing industries	
Component	Source data
Compensation of employees	Compensation of employees from state personal income at BEA
Taxes on production and imports	Government finance, tax revenue from Census Bureau; individual state's departments of revenue and/or finance; nuclear power generation, aviation data from EIA; air freight data, highway usage data from DOT; assessment data from FRB; mineral leases, revenues, rents, and royalties data from DOI
Gross operating surplus	Proprietors' income from state personal income at BEA; electricity revenue, natural gas delivery data from EIA; receipts, revenue, and payroll data from Census Bureau; transportation finance, passengers, and freight data from DOT; rail profits, interest, depreciation data from Amtrak; rail passenger data from NARP; income and expenses from FDIC, FRB, OTS, and FHLBB; premiums and losses from NAIC; Indian gaming revenue data from Casino City Press; mortgage activity data from Inside Mortgage Finance Publications; government finance data from Census Bureau to estimate surplus/deficit of government enterprises

- BEA** Bureau of Economic Analysis
- DOD** U.S Department of Defense
- DOI** U.S. Department of Interior
- DOT** U.S. Department of Transportation
- EIA** Energy Information Administration, U.S. Department of Energy
- FDIC** Federal Deposit Insurance Corporation
- FHLBB** Federal Home Loan Bank Board
- FRB** Federal Reserve Bank
- NAIC** National Association of Insurance Commissioners
- NARP** National Association of Railroad Passengers
- OTS** Office of Thrift Supervision
- USDA** U.S Department of Agriculture
- USGS** U.S. Geological Survey

Regional Price Parities and Real Per Capita Personal Income, 2016

Regional price parities

In May 2018, the Bureau of Economic Analysis (BEA) released 2016 regional price parities (RPPs) for states and metropolitan statistical areas (MSAs).⁴ RPPs provide a measure of the differences in price levels across each state and MSA relative to the national average for a specific year.⁵ For each

area, BEA publishes an all items RPP that covers all consumption goods and services and three component RPPs that cover goods, rents, and other services—all of which are indexed to the U.S. all items RPP.

States

State all items RPPs for 2016 ranged from 118.4 for Hawaii to 86.4 for Mississippi (table 5). Hawaii's price level is 18.4 percent higher than the national price level, and Mississippi's price level is 13.6 percent lower. Price levels can also be directly compared across states by taking the ratio of the RPPs. Hawaii's price level is 37.0 percent higher than Mississippi's.

Among component RPPs, rents had the widest range (94.2 index points), from 63.2 in Alabama and West Virginia to 157.4 in Hawaii. Ranges were considerably narrower for goods RPPs (16.7 index points) and other services RPPs (21.9 index points). The wide range of rents RPPs across states is an important source of the variation in state all items RPPs (chart 1).

States with above average all items RPPs generally have rents RPPs that are higher than the other component RPPs. In addition, they generally have other services RPPs higher than goods RPPs. States like California, Connecticut, Maryland, New York, New Jersey, and the District of Columbia have higher average wages, consistent with having higher price levels for other services, compared with price levels for goods. Hawaii's geographical isolation and added transportation and distribution costs led to a higher price level for goods, compared with the price level for other services.⁶

States with below average all items RPPs have rents RPPs that are lower than the other components. Additionally, these states' other services RPPs are typically lower than their goods RPPs.

Chart 1. State All Items and Component RPPs, 2016

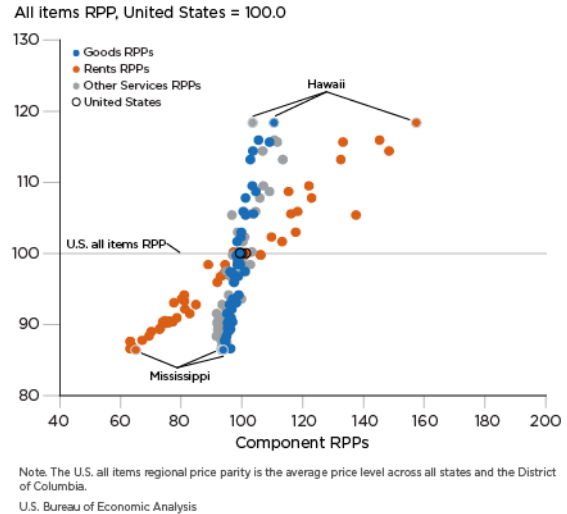


Table 5. State Real Per Capita Personal Income and Implicit Regional Price Deflator for 2015 and 2016 and Regional Price Parities for 2016

	Per capita personal income (dollars)			Real per capita personal income (chained (2009) dollars)			Implicit regional price deflator			Regional price parities 2016			
	2015	2016	Percent change	2015	2016	Percent change	2015	2016	Percent change	All items	Goods	Services	
												Rents	Other
United States ²	48,429	49,204	1.6	44,235	44,412	0.4	109.5	110.8	1.2	100.0	99.4	101.2	100.0
Alabama	38,238	38,918	1.8	40,356	40,689	0.8	94.7	95.6	1.0	86.6	96.2	63.2	93.3
Alaska	56,507	55,674	-1.5	48,949	47,831	-2.3	115.4	116.4	0.9	105.4	101.1	137.5	96.6
Arizona	39,731	40,546	2.1	37,889	38,265	1.0	104.9	106.0	1.0	95.9	97.4	91.8	97.2
Arkansas	39,060	39,722	1.7	40,967	41,371	1.0	95.3	96.0	0.7	86.9	94.7	63.8	93.3
California	54,664	56,308	3.0	44,022	44,562	1.2	124.2	126.4	1.8	114.4	103.6	148.4	106.8
Colorado	51,956	52,097	0.3	46,324	45,806	-1.1	112.2	113.7	1.3	103.0	99.8	117.6	98.5
Connecticut	68,155	69,094	1.4	57,380	57,554	0.3	118.8	120.1	1.1	108.7	104.5	115.3	109.1
Delaware	47,069	47,837	1.6	43,036	43,223	0.4	109.4	110.7	1.2	100.2	99.1	97.1	103.2
District of Columbia	73,834	75,756	2.6	57,609	59,163	2.7	128.2	128.0	-0.2	115.9	105.4	145.3	110.6
Florida	45,388	45,855	1.0	41,752	41,623	-0.3	108.7	110.2	1.4	99.7	98.3	106.1	97.0
Georgia	41,020	42,146	2.7	40,545	41,407	2.1	101.2	101.8	0.6	92.1	96.7	81.2	94.7
Hawaii	48,823	50,358	3.1	37,583	38,514	2.5	129.9	130.8	0.7	118.4	110.5	157.4	103.5
Idaho	38,931	39,543	1.6	38,148	38,477	0.9	102.1	102.8	0.7	93.0	98.1	77.6	97.5
Illinois	50,745	51,679	1.8	46,796	47,302	1.1	108.4	109.3	0.8	98.9	98.9	98.4	99.2
Indiana	41,862	43,091	2.9	42,269	43,180	2.2	99.0	99.8	0.8	90.3	96.8	73.9	93.5
Iowa	45,800	46,056	0.6	46,372	46,230	-0.3	98.8	99.6	0.8	90.2	95.2	75.1	91.8
Kansas	47,009	47,221	0.5	47,483	47,221	-0.6	99.0	100.0	1.0	90.5	95.8	74.6	93.7
Kentucky	38,504	38,934	1.1	39,805	40,161	0.9	96.7	96.9	0.2	87.8	94.3	67.1	93.1
Louisiana	42,835	42,257	-1.3	43,315	42,337	-2.3	98.9	99.8	0.9	90.4	96.5	76.2	93.3
Maine	42,875	44,094	2.8	39,772	40,570	2.0	107.8	108.7	0.8	98.4	98.5	94.4	100.5
Maryland	56,197	57,972	3.2	46,879	47,936	2.3	119.9	120.9	0.8	109.5	103.4	122.0	107.0
Massachusetts	62,755	64,122	2.2	53,529	53,860	0.6	117.2	119.1	1.6	107.8	101.1	122.9	105.8
Michigan	43,072	44,231	2.7	42,252	42,931	1.6	101.9	103.0	1.1	93.3	97.3	81.0	96.3
Minnesota	51,139	51,990	1.7	48,049	48,283	0.5	106.4	107.7	1.2	97.5	100.9	95.4	94.9
Mississippi	34,804	35,524	2.1	37,007	37,222	0.6	94.0	95.4	1.5	86.4	93.8	65.0	93.3
Missouri	42,406	42,939	1.3	43,325	43,445	0.3	97.9	98.8	0.9	89.5	95.3	73.1	92.6
Montana	42,637	43,107	1.1	41,025	41,457	1.1	103.9	104.0	0.1	94.1	98.9	80.9	95.6
Nebraska	49,572	50,016	0.9	50,052	50,043	0.0	99.0	99.9	0.9	90.5	95.6	76.2	92.0
Nevada	43,128	43,579	1.0	40,461	40,510	0.1	106.6	107.6	0.9	97.4	96.1	94.7	101.1
New Hampshire	54,543	55,945	2.6	47,310	47,837	1.1	115.3	116.9	1.4	105.9	100.4	118.3	104.4
New Jersey	60,069	61,240	1.9	48,567	48,984	0.9	123.7	125.0	1.1	113.2	102.7	132.5	113.4
New Mexico	37,938	38,393	1.2	36,910	37,145	0.6	102.8	103.4	0.6	93.6	97.0	80.2	99.8
New York	58,324	59,289	1.7	46,281	46,416	0.3	126.0	127.7	1.3	115.6	109.0	133.2	111.6
North Carolina	41,351	42,203	2.1	41,546	42,020	1.1	99.5	100.4	0.9	90.9	96.3	78.6	93.3
North Dakota	55,643	54,801	-1.5	55,110	54,213	-1.6	101.0	101.1	0.1	91.5	95.0	82.8	91.6
Ohio	43,803	44,561	1.7	44,825	45,176	0.8	97.7	98.6	0.9	89.3	96.1	72.8	91.9
Oklahoma	43,999	42,717	-2.9	44,879	43,458	-3.2	98.0	98.3	0.3	89.0	95.5	70.1	93.3
Oregon	44,424	45,482	2.4	41,112	41,266	0.4	108.1	110.2	1.9	99.8	98.9	106.0	97.2
Pennsylvania	49,815	50,730	1.8	46,458	46,672	0.5	107.2	108.7	1.4	98.4	99.4	88.8	102.7
Rhode Island	49,744	50,373	1.3	45,768	45,795	0.1	108.7	110.0	1.2	99.6	98.3	100.6	100.3
South Carolina	38,802	39,527	1.9	39,362	39,613	0.6	98.6	99.8	1.2	90.3	96.7	77.1	93.3
South Dakota	47,882	48,051	0.4	49,620	49,243	-0.8	96.5	97.6	1.1	88.3	94.9	69.3	91.5
Tennessee	42,156	43,338	2.8	42,980	43,496	1.2	98.1	99.6	1.5	90.2	96.2	75.8	93.3
Texas	46,787	46,204	-1.2	44,211	43,148	-2.4	105.8	107.1	1.2	96.9	97.2	93.7	98.6
Utah	39,775	41,018	3.1	37,657	38,142	1.3	105.6	107.5	1.8	97.3	96.7	94.3	100.3
Vermont	49,002	50,084	2.2	43,830	44,611	1.8	111.8	112.3	0.4	101.6	98.4	113.2	100.3
Virginia	52,189	52,941	1.4	46,544	46,856	0.7	112.1	113.0	0.8	102.3	99.6	109.7	100.8
Washington	53,119	54,632	2.8	46,304	46,863	1.2	114.7	116.6	1.7	105.5	103.7	116.1	101.9
West Virginia	36,566	36,673	0.3	37,734	37,906	0.5	96.9	96.7	-0.2	87.6	94.4	63.2	94.9
Wisconsin	46,025	46,809	1.7	45,202	45,679	1.1	101.8	102.5	0.7	92.8	95.9	84.8	93.4
Wyoming	56,322	55,172	-2.0	53,456	51,634	-3.4	105.4	106.9	1.4	96.7	98.7	92.9	96.1
Maximum	73,834	75,756	3.2	57,609	59,163	2.7	129.9	130.8	1.9	118.4	110.5	157.4	113.4
Minimum	34,804	35,524	-2.9	36,910	37,145	-3.4	94.0	95.4	-0.2	86.4	93.8	63.2	91.5
Range	39,030	40,232	6.1	20,699	22,018	6.1	35.9	35.4	2.1	32.0	16.7	94.2	21.9

1. The implicit price deflator for the United States is equal to the national personal consumption expenditures price index, with a base of 2009.
2. The U.S. all items regional price parity is the average price level across all states and the District of Columbia.

Note. Per capita personal income uses Census Bureau midyear population estimates available as of December 2017.

Metropolitan areas

All items RPPs for large metropolitan areas—MSAs with a 2016 population greater than 2 million—ranged from 124.7 for San Francisco-Oakland-Hayward, CA, to 89.6 for Cincinnati, OH-KY-IN (table 6). San Francisco-Oakland-Hayward, CA's price level is 24.7 percent higher than the national price level, and Cincinnati, OH-KY-IN's is 10.4 percent lower. Taking the ratio of the RPPs, San Francisco-Oakland-Hayward, CA's price level is 39.2 percent higher than Cincinnati, OH-KY-IN's.

Among component RPPs for large MSAs, rents had the widest range (113.0 index points), from 77.9 in Cleveland-Elyria, OH, to 190.9 in San Francisco-Oakland-Hayward, CA. Across large MSAs, the ranges were considerably narrower for goods RPPs (16.4 index points) and other services RPPs (25.0 index points). Rents RPPs and other services RPPs had wider ranges for large MSAs, compared with states, suggesting that price levels vary more for more detailed geographies (tables 5 and 6).

As was seen with states, large MSAs with higher all items price levels generally have other services RPPs that are higher than the goods RPPs (chart 2). Large MSAs with lower-than-average price levels generally have other services RPPs that are lower than the goods RPPs.

Chart 2. Large MSA¹ All Items and Component RPPs, 2016

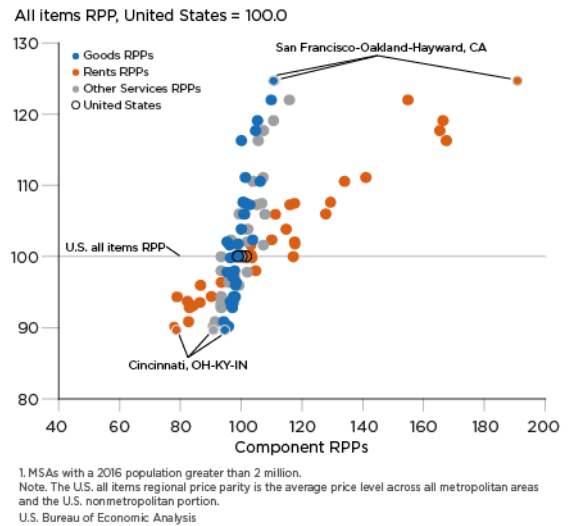


Table 6. Large Metropolitan Areas Real Per Capita Personal Income and Implicit Regional Price Deflator for 2015 and 2016 and Regional Price Parities for 2016

	Per capita personal income (dollars)			Real per capita personal income (chained (2009) dollars)			Implicit regional price deflator			Regional price parities 2016			
	2015	2016	Percent change	2015	2016	Percent change	2015	2016	Percent change	All items	Goods	Services Rents	Other
United States ²	48,451	49,246	1.6	44,255	44,450	0.4	109.5	110.8	1.2	100.0	99.0	101.7	100.1
United States nonmetropolitan portion	37,861	38,239	1.0	39,544	39,630	0.2	95.7	96.5	0.8	87.6	93.9	63.8	93.8
Atlanta-Sandy Springs-Roswell, GA	45,934	47,348	3.1	43,814	44,598	1.8	104.8	106.2	1.3	96.3	98.3	93.5	95.9
Austin-Round Rock, TX	51,128	51,566	0.9	47,171	46,820	-0.7	108.4	110.1	1.6	100.0	97.9	117.2	93.4
Baltimore-Columbia-Towson, MD	55,468	57,189	3.1	47,360	48,393	2.2	117.1	118.2	0.9	107.2	102.8	116.0	105.2
Boston-Cambridge-Newton, MA-NH	68,712	70,157	2.1	57,067	57,317	0.4	120.4	122.4	1.7	111.1	101.4	141.0	107.2
Charlotte-Concord-Gastonia, NC-SC	45,609	46,679	2.3	44,798	45,297	1.1	101.8	103.0	1.2	93.5	97.4	86.5	93.4
Chicago-Naperville-Elgin, IL-IN-WI	54,518	55,621	2.0	48,177	48,625	0.9	113.2	114.4	1.1	103.8	100.1	114.8	102.2
Cincinnati, OH-KY-IN	47,787	48,668	1.8	48,836	49,278	0.9	97.9	98.8	0.9	89.6	94.6	78.7	90.9
Cleveland-Elyria, OH	48,019	48,968	2.0	48,829	49,292	0.9	98.3	99.3	1.0	90.2	95.9	77.9	90.9
Columbus, OH	46,904	47,725	1.8	46,335	46,550	0.5	101.2	102.5	1.3	93.0	96.9	84.2	93.4
Dallas-Fort Worth-Arlington, TX	51,062	51,099	0.1	46,868	46,270	-1.3	108.9	110.4	1.4	100.2	99.0	103.2	99.9
Denver-Aurora-Lakewood, CO	57,081	56,892	-0.3	49,837	48,728	-2.2	114.5	116.8	2.0	106.0	100.8	127.9	99.3
Detroit-Warren-Dearborn, MI	47,310	48,692	2.9	45,119	46,061	2.1	104.9	105.7	0.8	95.9	98.2	86.7	99.3
Houston-The Woodlands-Sugar Land, TX	53,859	51,913	-3.6	48,845	46,378	-5.1	110.3	111.9	1.5	101.6	96.2	103.2	107.3
Indianapolis-Carmel-Anderson, IN	48,207	49,681	3.1	47,673	48,602	1.9	101.1	102.2	1.1	92.8	97.2	83.0	93.5
Kansas City, MO-KS	48,394	48,514	0.2	47,250	47,011	-0.5	102.4	103.2	0.8	93.7	96.5	82.4	97.1
Las Vegas-Henderson-Paradise, NV	41,915	42,284	0.9	39,216	39,247	0.1	106.9	107.7	0.7	97.8	95.4	96.5	102.0
Los Angeles-Long Beach-Anaheim, CA	55,585	57,160	2.8	43,409	44,087	1.6	128.0	129.7	1.3	117.7	104.8	165.4	107.4
Miami-Fort Lauderdale-West Palm Beach, FL	51,454	52,210	1.5	44,034	44,037	0.0	116.9	118.6	1.5	107.6	100.6	129.4	100.9
Minneapolis-St. Paul-Bloomington, MN-WI	55,599	56,723	2.0	49,894	50,311	0.8	111.4	112.7	1.2	102.3	103.9	110.1	96.7
New York-Newark-Jersey City, NY-NJ-PA	64,679	65,846	1.8	48,846	48,992	0.3	132.4	134.4	1.5	122.0	109.9	154.9	115.9
Orlando-Kissimmee-Sanford, FL	39,337	40,169	2.1	36,907	37,210	0.8	106.6	108.0	1.3	98.0	97.9	104.8	93.4
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	57,327	58,589	2.2	49,654	50,209	1.1	115.5	116.7	1.0	105.9	101.2	111.3	107.9
Phoenix-Mesa-Scottsdale, AZ	41,443	42,218	1.9	39,235	39,455	0.6	105.6	107.0	1.3	97.1	97.2	97.7	96.5
Pittsburgh, PA	50,622	51,187	1.1	49,296	49,264	-0.1	102.7	103.9	1.2	94.3	98.1	78.9	98.1
Portland-Vancouver-Hillsboro, OR-WA	49,217	50,489	2.6	44,660	45,034	0.8	110.2	112.1	1.7	101.7	99.0	117.7	97.5
Riverside-San Bernardino-Ontario, CA	35,762	36,807	2.9	30,619	31,088	1.5	116.8	118.4	1.4	107.4	101.6	117.6	106.8
Sacramento--Roseville--Arden-Arcade, CA	50,026	51,370	2.7	45,079	45,693	1.4	111.0	112.4	1.3	102.0	95.4	117.6	102.0
St. Louis, MO-IL	48,876	49,519	1.3	49,347	49,480	0.3	99.0	100.1	1.1	90.8	94.3	82.7	91.4
San Antonio-New Braunfels, TX	44,127	44,284	0.4	42,912	42,595	-0.7	102.8	104.0	1.2	94.4	97.5	90.2	93.4
San Diego-Carlsbad, CA	53,963	55,168	2.2	42,663	43,063	0.9	126.5	128.1	1.3	116.3	100.1	167.6	105.6
San Francisco-Oakland-Hayward, CA	81,241	84,675	4.2	60,324	61,639	2.2	134.7	137.4	2.0	124.7	110.7	190.9	111.0
Seattle-Tacoma-Bellevue, WA	62,883	64,553	2.7	52,574	53,003	0.8	119.6	121.8	1.8	110.5	106.3	134.0	104.0
Tampa-St. Petersburg-Clearwater, FL	43,352	43,807	1.0	39,917	39,843	-0.2	108.6	109.9	1.2	99.8	96.5	103.5	101.8
Washington-Arlington-Alexandria, DC-VA-MD-WV	65,155	66,733	2.4	50,150	50,861	1.4	129.9	131.2	1.0	119.1	105.4	166.4	110.7
Maximum	81,241	84,675	4.2	60,324	61,639	2.2	134.7	137.4	2.0	124.7	110.7	190.9	115.9
Minimum	35,762	36,807	-3.6	30,619	31,088	-5.1	97.9	98.8	0.7	89.6	94.3	77.9	90.9
Range	45,479	47,868	7.8	29,705	30,551	7.3	36.8	38.6	1.3	35.1	16.4	113.0	25.0

1. The implicit price deflator for the United States is equal to the national personal consumption expenditures price index, with a base of 2009.
2. The U.S. all items regional price parity is the average price level across all metropolitan areas and the U.S. nonmetropolitan portion.

Note. Per capita personal income uses Census Bureau midyear population estimates available as of March 2017.

Per capita personal income

Per capita personal income (PCPI) is nominal personal income divided by population. Estimating real PCPI for states and MSAs requires two price adjustments. The first adjustment estimates PCPI at RPPs by controlling for relative price differences across regions. The second adjustment uses the national personal consumption expenditures (PCE) price index to control for price changes over time. The product of a region's RPP and the PCE price index for a given year is the region's implicit regional price deflator (IRPD). Change in the IRPD is an implicit measure of regional inflation. For a more detailed example of how real PCPI is estimated, see the box "Using Regional Price Parities (RPPs) to Estimate Real Personal Income."

Using Regional Price Parities (RPPs) to Estimate Real Personal Income

An important application of the RPPs is the adjustment of consumption-related data to control for differences in price levels across regions. In this article, the RPPs are used to adjust current-dollar personal income on a per capita basis. 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 2009 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 real estimates of regional personal income.

Real Per Capita Personal Income for Hawaii, 2016

Personal income (billions of dollars)	Regional price parities (RPPs)	Balancing factor	Personal income at RPPs (billions of dollars)	PCE price index (base year=2009)	Real personal income (billions of chained (2009) dollars)	Populations (persons)	Real per capita personal income (thousands of chained (2009) dollars)
71.9	1.184	0.997	61.0	1.10789	55.0	1,428,683	38.5

Notes. This article uses current-dollar state personal income estimates that were released by the Bureau of Economic Analysis on March 22, 2018, and local area personal income estimates that were released on November 16, 2017. Personal consumption expenditures price indexes were released on August 3, 2017.

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 [State Personal Income and Employment](#) and [Local Area Personal Income](#) 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.

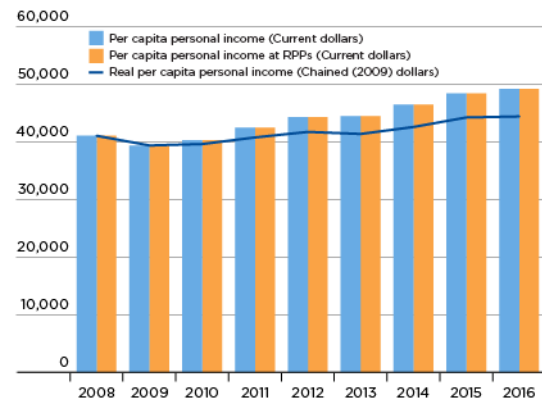
States

Charts 3, 4, and 5 show the impact of the two adjustments for the United States, Hawaii, and Mississippi for 2008 to 2016, respectively. The United States shows no difference between the PCPI and PCPI at RPPs, because the U.S. all items RPP—the average across all states and components—is 100.0 for all years. Hawaii's 2016 PCPI at RPPs (\$42,669) is lower than its PCPI (\$50,358) because it has an RPP greater than 100.0 (table 7). Above average price levels yield a downward adjustment. By contrast, Mississippi's 2016 PCPI at RPPs (\$41,238) is higher than its PCPI (\$35,524). Mississippi's lower price level yields an upward adjustment. The application of the RPPs narrows the range of incomes across states from \$40,232 for PCPI to \$24,394 for PCPI at RPPs.

The difference between PCPI at RPPs and real PCPI for any state reflects the adjustment using the PCE price index. Charts 3 through 5 show no difference between the PCPI at RPPs and real PCPI in the base year 2009, because the PCE price index is 100.0. Hawaii's 2016 PCPI is higher than its real PCPI (\$38,514). Mississippi's 2016 PCPI is lower than its real PCPI (\$37,222). These relationships hold for every year from 2008 to 2016, reflecting each state's relative price levels

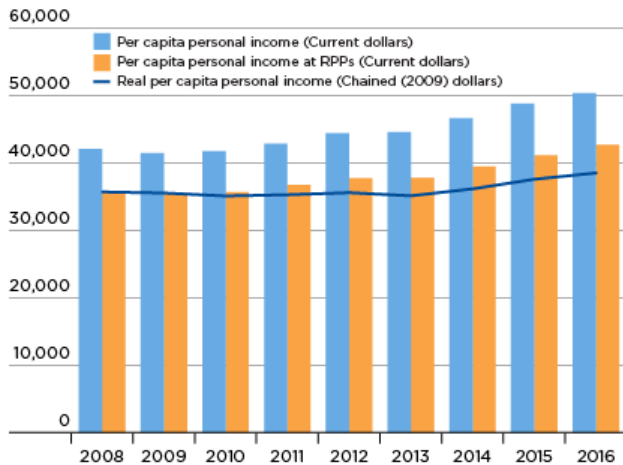
and national price levels over time. Adjusting state PCPI at RPPs with the PCE price index narrows the range to \$22,018 for real PCPI.

Chart 3. United States Price Adjusted Per Capita Personal Income, 2008–2016



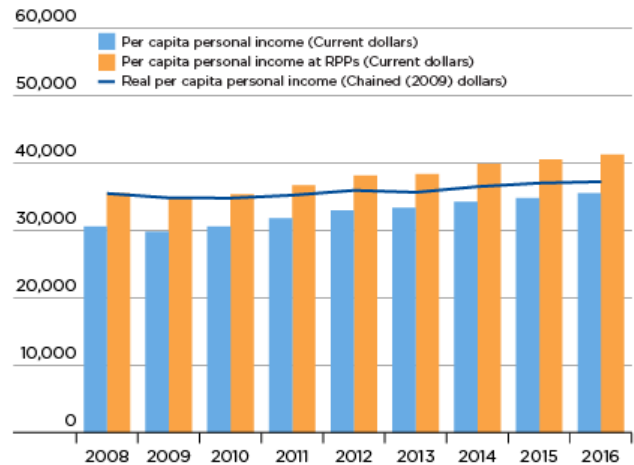
Notes. Per capita personal income uses Census Bureau midyear population estimates available as of December 2017. Per capita personal income and real per capita personal income data are available on BEA's Web site. U.S. Bureau of Economic Analysis

Chart 4. Hawaii Price Adjusted Per Capita Personal Income, 2008–2016



Notes. Per capita personal income uses Census Bureau midyear population estimates available as of December 2017. Per capita personal income and real per capita personal income data are available on BEA's Web site. U.S. Bureau of Economic Analysis

Chart 5. Mississippi Price Adjusted Per Capita Personal Income, 2008–2016



Notes. Per capita personal income uses Census Bureau midyear population estimates available as of December 2017. Per capita personal income and real per capita personal income data are available on BEA's Web site. U.S. Bureau of Economic Analysis

Table 7. Per Capita Personal Income, Personal Income at Regional Price Parities (RPPs), and Real Personal Income for Select States, 2016

	Per capita personal income (current dollars)	Per capita personal income at RPPs (current dollars)	Real per capita personal income (chained (2009) dollars)
United States	49,204	49,204	44,412
Hawaii	50,358	42,669	38,514
Mississippi	35,524	41,238	37,222
Across all states			
Maximum	75,756	65,547	59,163
Minimum	35,524	41,153	37,145
Range	40,232	24,394	22,018

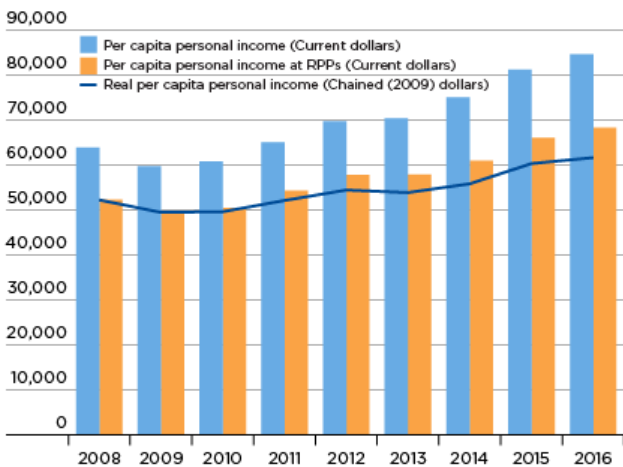
Notes. Real personal income data for all states are available on [BEA's website](#). Per capita personal income uses Census Bureau midyear population estimates available as of December 2017.

Large metropolitan areas

The adjustment process for the San Francisco-Oakland-Hayward CA, and for Cincinnati, OH-KY-IN, for 2008 to 2016 are shown in charts 6 and 7, respectively. San Francisco-Oakland-Hayward, CA's 2016 PCPI at RPP (\$68,289) is lower than its PCPI (\$84,675) because it has an RPP above 100.0 (table 8). Cincinnati, OH-KY-IN's 2016 PCPI at RPPs (\$54,595) is higher than its PCPI (\$48,668); its lower price level yields an upward adjustment. Across large MSAs, the application of the RPPs narrows the range from \$47,868 for PCPI to \$33,847 for PCPI at RPPs.

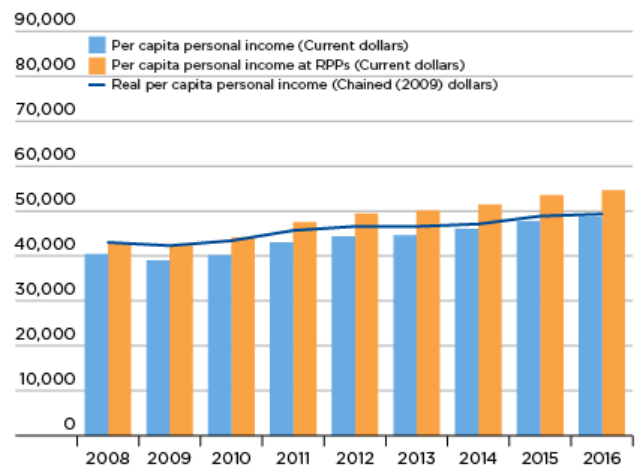
The difference between PCPI at RPPs and real PCPI for any MSA reflects the adjustment using the PCE price index. San Francisco-Oakland-Hayward, CA's 2016 PCPI is higher than its real PCPI (\$61,639). Cincinnati, OH-KY-IN's 2016 PCPI is lower than its real PCPI (\$49,278). As with the state examples above, these relationships hold for every year from 2008 to 2016, reflecting their lower relative prices and national price levels over time. The application of the PCE price index narrows the range of incomes to \$30,551 for real PCPI.

Chart 6. San Francisco-Oakland-Hayward, CA Price Adjusted Per Capita Personal Income, 2008-2016



Notes. Per capita personal income uses Census Bureau midyear population estimates available as of March 2017. Per capita personal income and real per capita personal income data are available on BEA's Web site. U.S. Bureau of Economic Analysis

Chart 7. Cincinnati, OH-KY-IN Price Adjusted Per Capita Personal Income, 2008-2016



Notes. Per capita personal income uses Census Bureau midyear population estimates available as of March 2017. Per capita personal income and real per capita personal income data are available on BEA's Web site. U.S. Bureau of Economic Analysis

Table 8. Per Capita Personal Income, Personal Income at Regional Price Parities (RPPs), and Real Personal Income for Select Large Metropolitan Areas, 2016

	Per capita personal income (current dollars)	Per capita personal income at RPPs (current dollars)	Real per capita personal income (chained (2009) dollars)
United States	49,246	49,246	44,450
United States nonmetropolitan portion	38,239	43,906	39,630
San Francisco-Oakland-Hayward, CA	84,675	68,289	61,639
Cincinnati, OH-KY-IN	48,668	54,595	49,278
Across large metropolitan areas			
Maximum	84,675	68,289	61,639
Minimum	36,807	34,442	31,088
Range	47,868	33,847	30,551

Notes. Real personal income data for all metropolitan areas are available on [BEA's website](#). Per capita personal income uses Census Bureau midyear population estimates available as of March 2017.

Data Availability

Real personal income data, regional price parities, and implicit regional price deflators are available on [BEA's website](#). Data are available for 2008 to 2016 for states, state metropolitan and nonmetropolitan portions, and metropolitan areas.

The regional price parities for 2014 and 2015, released in July 2016, were revised to incorporate updated price levels and expenditure weights. As a result, real personal income and implicit regional price deflators for 2014 and 2015, released for states in September 2017 and for local areas in November 2017, were also revised. In addition, real per capita personal income for states for 2010 to 2015, released in September 2017, was revised to incorporate revised population estimates.

For further information about these data, e-mail the Regional Prices Branch at rpp@bea.gov.

Acknowledgments

We gratefully acknowledge the collaboration of the Bureau of Labor Statistics (BLS) and the Census Bureau for allowing us to access their data. In particular, we thank the staff of the Consumer Price Index program in the Office of Prices and Living Conditions at BLS and the staff of the Social, Economic, and Housing Statistics Division of the Census Bureau for their technical and programmatic assistance.¹

1. The BEA Regional Price Parity statistics are based in part on restricted access Consumer Price Index data from the Bureau of Labor Statistics. The BEA statistics expressed herein are products of BEA and not BLS.

Arts and Cultural Production Satellite Account

On March 6, 2018, the Bureau of Economic Analysis (BEA) released Arts and Cultural Production Satellite Account (ACPSA) data for 2015; it also released updated data for 2013 and 2014. With the most recent data release, BEA, for the first time, included state-level statistics for value added by arts and cultural industries for 2001 to 2015.

Value added is defined as the gross output of an industry or sector less its intermediate inputs. It measures the contribution of an industry or a sector to gross domestic product (GDP). Its usefulness lies in its ability to provide a broad measure of value created by a specific sector within the economy.

Nationally, ACPSA value added increased 6.3 percent in 2015 to \$763.6 billion dollars (table 9). ACPSA value added can be split into two categories: (1) core arts and cultural production industries and (2) supporting arts and cultural production industries. The core industries increased 8.1 percent in 2015 to \$153.0 billion dollars. The core industries consist of industries whose output is identified as primarily contributing to arts and culture. The supporting industries increased 5.9 percent in 2015 to \$583.8 billion dollars. Supporting industries consist of industries whose output supports the core category through publication, dissemination of the creative process, or other supportive functions.

Table 9. Value Added by Arts and Cultural Production Industries

[Millions of dollars]

Industry	2014	2015	Dollar change	Percent change
Total	718,555	763,569	45,014	6.3
Core arts and cultural production	141,558	152,954	11,396	8.1
Performing arts	48,278	52,942	4,664	9.7
Performing arts companies	16,627	17,801	1,174	7.1
Promoters of performing arts and similar events	9,045	10,453	1,408	15.6
Agents/managers for artists	2,496	2,706	210	8.4
Independent artists, writers, and performers	20,110	21,982	1,872	9.3
Museums	5,176	5,261	85	1.6
Design services	79,783	86,109	6,326	7.9
Advertising	31,198	33,099	1,901	6.1
Architectural services	15,288	17,168	1,880	12.3
Landscape architectural services	2,650	2,779	129	4.9
Interior design services	8,019	8,875	856	10.7
Industrial design services	1,707	1,791	84	4.9
Graphic design services	7,473	8,073	600	8.0
Computer systems design	3,132	3,430	298	9.5
Photography and photofinishing services	9,630	10,150	520	5.4
All other design services	687	743	56	8.2
Fine arts education	3,270	3,422	152	4.6
Education services	5,050	5,219	169	3.3
Supporting arts and cultural production	551,007	583,765	32,758	5.9
Art support services	107,149	110,652	3,503	3.3
Information services	341,331	363,051	21,720	6.4
Publishing	75,331	77,694	2,363	3.1
Motion pictures	93,091	99,280	6,189	6.6
Sound recording	13,398	14,854	1,456	10.9
Broadcasting	122,368	127,844	5,476	4.5
Other information services	37,144	43,379	6,235	16.8
Manufacturing	14,430	15,039	609	4.2
Construction	9,409	10,195	786	8.4
Wholesale and transportation industries	30,775	33,517	2,742	8.9
Retail industries	47,912	51,311	3,399	7.1
All other industries	25,991	26,851	860	3.3

Within the core arts, the performing arts and design services industries were the leading contributors to growth. Performing arts, which increased \$4.76 billion dollars (9.7 percent) in 2015, includes performing arts companies, promoters of performing arts and similar events, and independent artists, writers, and performers. Performing arts companies increased \$1.2 billion dollars (7.1 percent); promoters of performing arts and similar events increased \$1.4 billion dollars (15.6 percent); while independent artists, writers, and performers increased \$1.9 billion dollars (9.3 percent). Design services, which increased \$6.3 billion dollars (7.9 percent) in 2015, was paced by increases in advertising and architectural services. The increase in supporting arts industries was led by increases in other information services and motion pictures, where both industries increased \$6.2 billion dollars (16.8 percent and 6.6 percent, respectively) in 2015.

Performing arts

In terms of value added, California, New York, Florida, and Tennessee accounted for 63.6 percent of the national total for performing arts (table 10). Among the four states, Tennessee was the outlier as its economy was smaller than the other three. In terms of overall GDP in 2015, California, New York, and Florida were also among top four largest states while Tennessee ranked 18th.

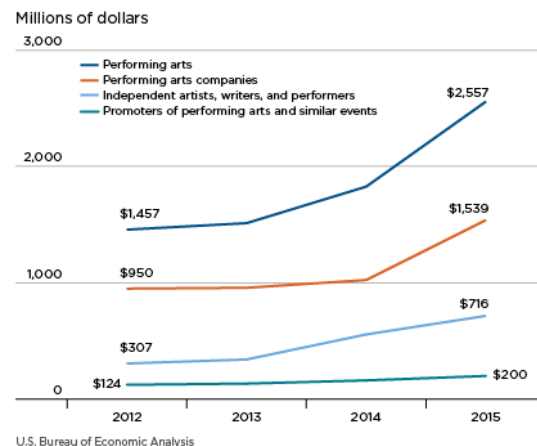
Table 10. Performing Arts Value Added, Select States, 2015

	Millions of dollars	Percent of U.S. performing arts companies total
United States	52,942	100.0
California	18,131	34.2
New York	10,217	19.3
Florida	2,749	5.2
Tennessee	2,557	4.8
Texas	1,879	3.5
Nevada	1,387	2.6
Illinois	1,188	2.2
Ohio	1,086	2.1
Massachusetts	1,084	2.0
New Jersey	1,025	1.9

Tennessee has played a critical role in the development of many forms of American popular music, including rock and roll, blues, country, and rockabilly. Beale Street in Memphis is considered by many to be the birthplace of the blues. Memphis is also home to Sun Records, where musicians such as Elvis Presley, Johnny Cash, Carl Perkins, Jerry Lee Lewis, Roy Orbison, and Charlie Rich began their recording careers and where rock and roll took shape in the 1950s. With Memphis being the birthplace of rock 'n roll and Nashville nicknamed "Music City" because it is considered the center of the country music recording industry, Tennessee's performing arts industry is driven by its outsized role in the music industry.

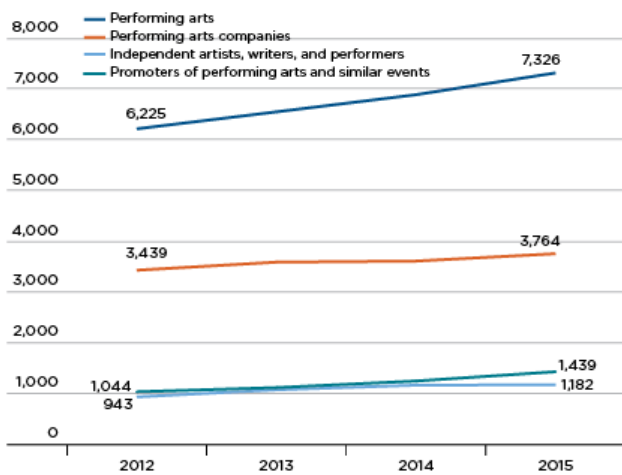
The performing arts industry in Tennessee has seen large increases in value added, employment, and average compensation since 2012. Between 2012 and 2015, value added in Tennessee grew 75.5 percent from \$1.5 billion to \$2.6 billion dollars (chart 8). Within performing arts, from 2012 to 2015, value added for performing arts companies increased \$589 million dollars (62.0 percent). Value added for independent artists, writers, and performers grew \$409 million dollars (133.2 percent) from 2012 to 2015.

Chart 8. Tennessee Performing Arts Value Added



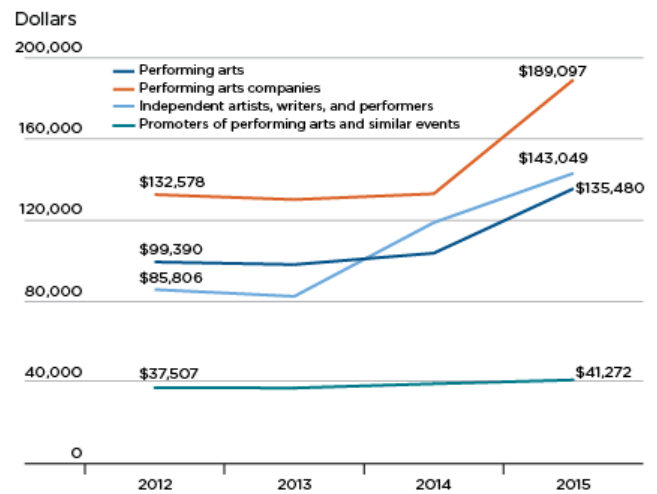
Employment (the number of jobs) and the average compensation for those jobs in the performing arts industry have also experienced double-digit increases between 2012 and 2015. Employment increased from 6,225 to 7,326 (17.7 percent), while average compensation in those performing arts jobs increased from \$99,390 to \$135,480 (36.3 percent) (chart 9 and chart 10). The increase in employment was led by increases in employment in promoters of performing arts and similar events and performing arts companies with 37.8 percent and 9.5 percent growth, respectively, from 2012 to 2015. The increase in average compensation was led by significant increases in compensation in performing arts companies and independent artists, writers, and performers. From 2012 to 2015, average compensation in performing arts companies increased from \$132,578 to \$189,097. Average compensation for independent artists, writers, and performers increased from \$85,806 to \$143,049.

Chart 9. Tennessee Performing Arts Employment



U.S. Bureau of Economic Analysis

Chart 10. Tennessee Performing Arts Average Compensation



U.S. Bureau of Economic Analysis

Motion pictures

Unsurprisingly, California and New York account for 77.8 percent of the national total of value added for the motion pictures industry in 2015 (table 11). In 2015, motion pictures contributed \$49.1 billion dollars to California's economy, representing 2.0 percent of California's total GDP. In New York, motion pictures contributed \$28.2 billion dollars to the state economy, representing 1.9 percent of its economy. Louisiana, whose overall GDP is the 24th largest among states, had the third-largest share of value added in the motion pictures industry at \$2.7 billion dollars (1.1 percent of its economy).

Table 11. Motion Pictures Value Added, Select States, 2015

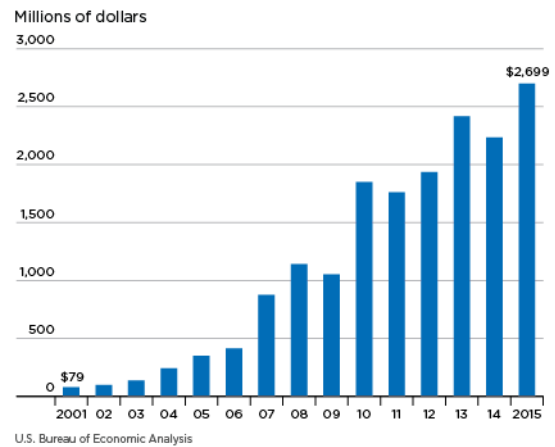
	Millions of dollars	Percent of U.S. motion picture total
United States	99,280	100.0
California	49,120	49.5
New York	28,150	28.4
Louisiana	2,699	2.7
Texas	2,122	2.1
Florida	1,624	1.6
Connecticut	1,583	1.6
Georgia	1,463	1.5
New Jersey	1,349	1.4
Tennessee	1,220	1.2
Pennsylvania	969	1.0

Several factors contribute to the development of motion pictures and film within a specific location. These factors include natural resources—such as the weather, landscape, and local scenery—as well as access to capital, such as the existing labor force (human capital) and production-related infrastructure (physical capital)—all of which impact the cost of production. New York was the center of early film production due to access to skilled labor and existing infrastructure. The growth in popularity of motion pictures contributed to the demand that necessitated year-round production, and California weather was uniquely suited to provide year-round production.

While advancements in digital effects have decreased the reliance of film production on a specific physical locale, the cost of production spending continues to be important in motion picture development. One way that states or localities have tried to attract motion picture production has been by providing financial incentives to mitigate the cost of production. These incentives include grants, rebates, or tax credits, with various additional requirements, such as minimum spender caps. The rationale for offering these incentives is not only to entice out-of-state production companies to film in-state and increase in-state spending but also to allow for the long-term development of the motion pictures industry, related infrastructure, and skilled labor within the state. Louisiana has actively provided financial incentives for the motion picture industry beginning in 2002. That year, the Louisiana state legislature established (1) an incremental 10 percent tax credit on both production spending and resident payroll for projects totaling \$300,000–\$1 million and (2) a 15 percent production spending tax credit and a 20 percent resident payroll tax credit for projects over \$1 million.⁷

Since 2001, valued added in the motion pictures industry in Louisiana has increased significantly, and the industry has become a bigger part of the state's economy. In 2001, the motion pictures industry contributed \$79 million dollars to Louisiana's economy, representing less than 0.1 percent of Louisiana's total GDP (chart 11). From 2001 to 2015, valued added in the motion pictures industry has grown over 3,000 percent with jumps in growth in 2007, 2010, 2013, and 2015. In 2015, the motion pictures industry contributed 1.1 percent to the Louisiana economy.

Chart 11. Louisiana Motion Pictures Value Added



1. Real GDP in Louisiana's petroleum and coal products manufacturing fell 23 percent in 2017.
2. BEA estimates of wages and salaries by state and industry, rather than earnings, were used for mining and real estate. U.S. Department of Agriculture estimates of farm income and expenses by state were used to estimate agriculture GDP.
3. In addition, new state and local government finance data for fiscal year 2015 for property taxes and severance taxes (among other things) from the Census Bureau were incorporated.
4. The Office of Management and Budget defines MSAs as one or more counties with a high degree of social and economic integration, with a core urban population of 50,000 or more.
5. RPPs are calculated for the 50 states and the District of Columbia, state metropolitan and nonmetropolitan portions, and metropolitan areas. Estimates for metropolitan areas include an estimate for the nonmetropolitan portion of the United States to provide complete coverage of all U.S. counties.
6. See Bettina H. Aten, "[Regional Price Parities and Real Regional Income for the United States](#)," *Social Indicators Research* 131.1 (2017): 123-143.
7. Office of Entertainment Industry Development, Louisiana Department of Economic Development, Inc. (2003). *The Economic Impact Analysis of Louisiana's Entertainment Tax Credit Programs*. Baton Rouge, LA: Loren C. Scott & Associates.



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