



Living Standards across U.S. Metropolitan Statistical Areas

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Any opinions expressed here are my own and do not necessarily reflect those of the Federal Open Market Committee.

Introduction

About this talk

- This talk is about living standards across U.S. metropolitan statistical areas (MSAs).*
- I plan to draw on some recent research at the St. Louis Fed, supplemented with additional research from outside the Bank.
- I can entertain questions about this talk, monetary policy or related subjects during the question-and-answer session.

** See also: J. Bullard, "[Living Standards across U.S. Metropolitan Statistical Areas](#)." Remarks delivered at the Bi-State Development 2017 Annual Meeting, St. Louis, Mo., Oct. 6, 2017.*

For more details

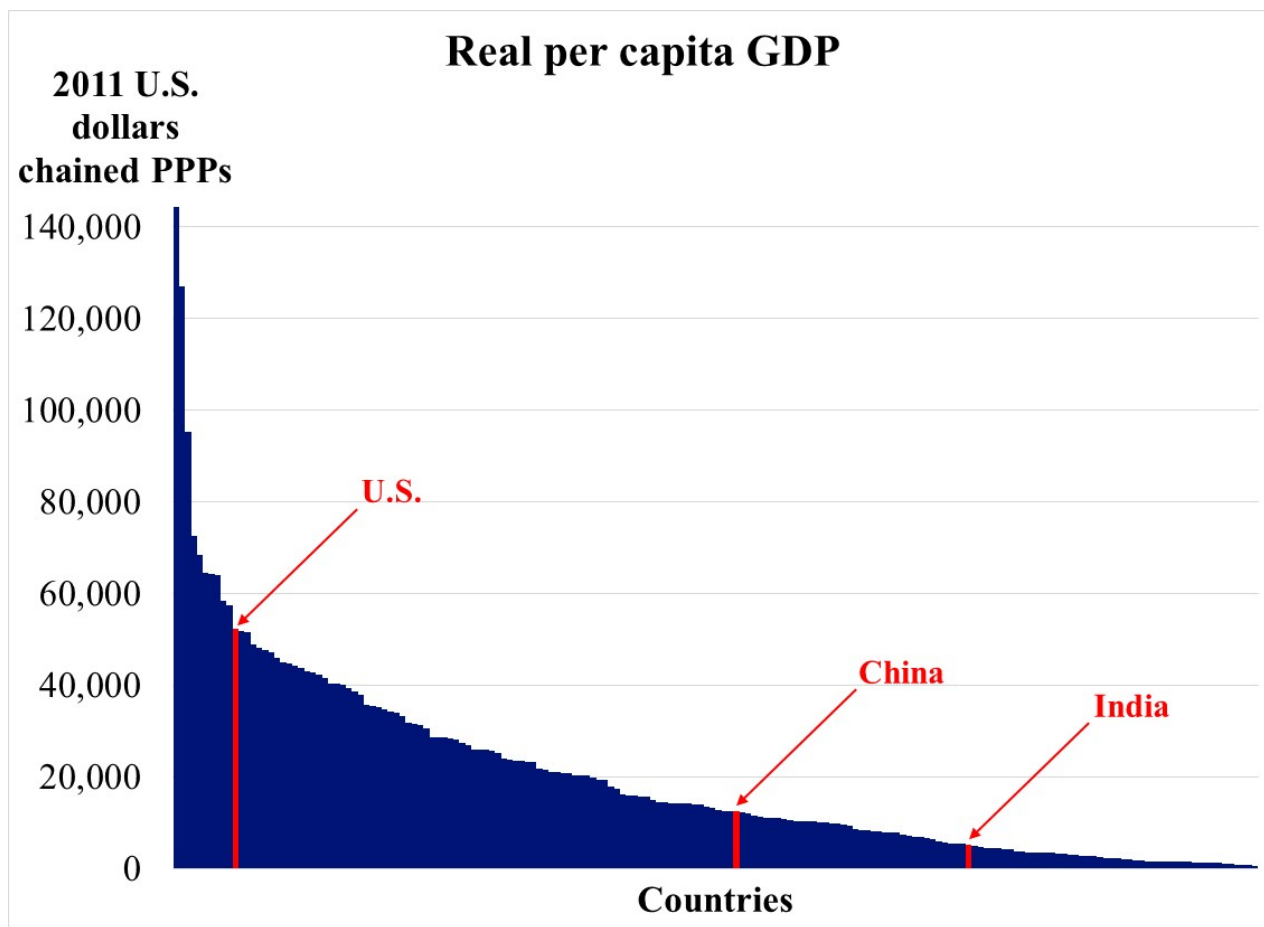
- I will be referring to St. Louis Fed research that was conducted by my Bank colleagues:
 - C.C. Coughlin, C. Gascon and K.L. Kliesen, “[Living Standards in St. Louis and the Eighth Federal Reserve District: Let’s Get Real](#),” Federal Reserve Bank of St. Louis *Review*, Fourth Quarter 2017, pp. 377-94.
- For more regional research at the St. Louis Fed, see <https://research.stlouisfed.org/publications/regional-research/>.

Motivation: Literature on International Standards of Living

The cross-country literature

- I take as a motivation the very large literature comparing international standards of living.
- That literature tries to address the question of which national economies are performing relatively well and which are performing less well for their citizens.
- The literature tries to understand what makes some countries relatively well-off in terms of material well-being and what makes other countries relatively poor.
- I would like to do the same for U.S. MSAs.
- The next slide shows a chart of some recent findings from the international literature.

Real per capita GDP in 2014 internationally



Source: Penn World Table, version 9.0. PPPs refer to the purchasing power parity exchange rates.

Standard of living: from international rankings to MSA rankings

- One of the standards in the international literature is to use *real per capita income* as the key metric.
 - This is defined as total real income produced in the economy divided by the population.
 - This is the clearest measure of “standard of living.”
- We say, based on the previous chart, that the U.S. standard of living is relatively high and that the standard of living in many other countries is lower.
- The goal of this talk is to make the same types of statements for MSAs in the U.S.
- Note that the countries with a high standard of living are not necessarily the fastest-growing countries.

MSAs in the U.S.

MSA as the basic unit of analysis

- An MSA is an area containing a large population center and adjacent counties with a high degree of integration with that center, as measured by commuting patterns.
- MSAs provide the natural unit of analysis for this talk.
- A large fraction (about 90 percent) of U.S. gross domestic product (GDP) is produced in MSAs.

Population among all MSAs

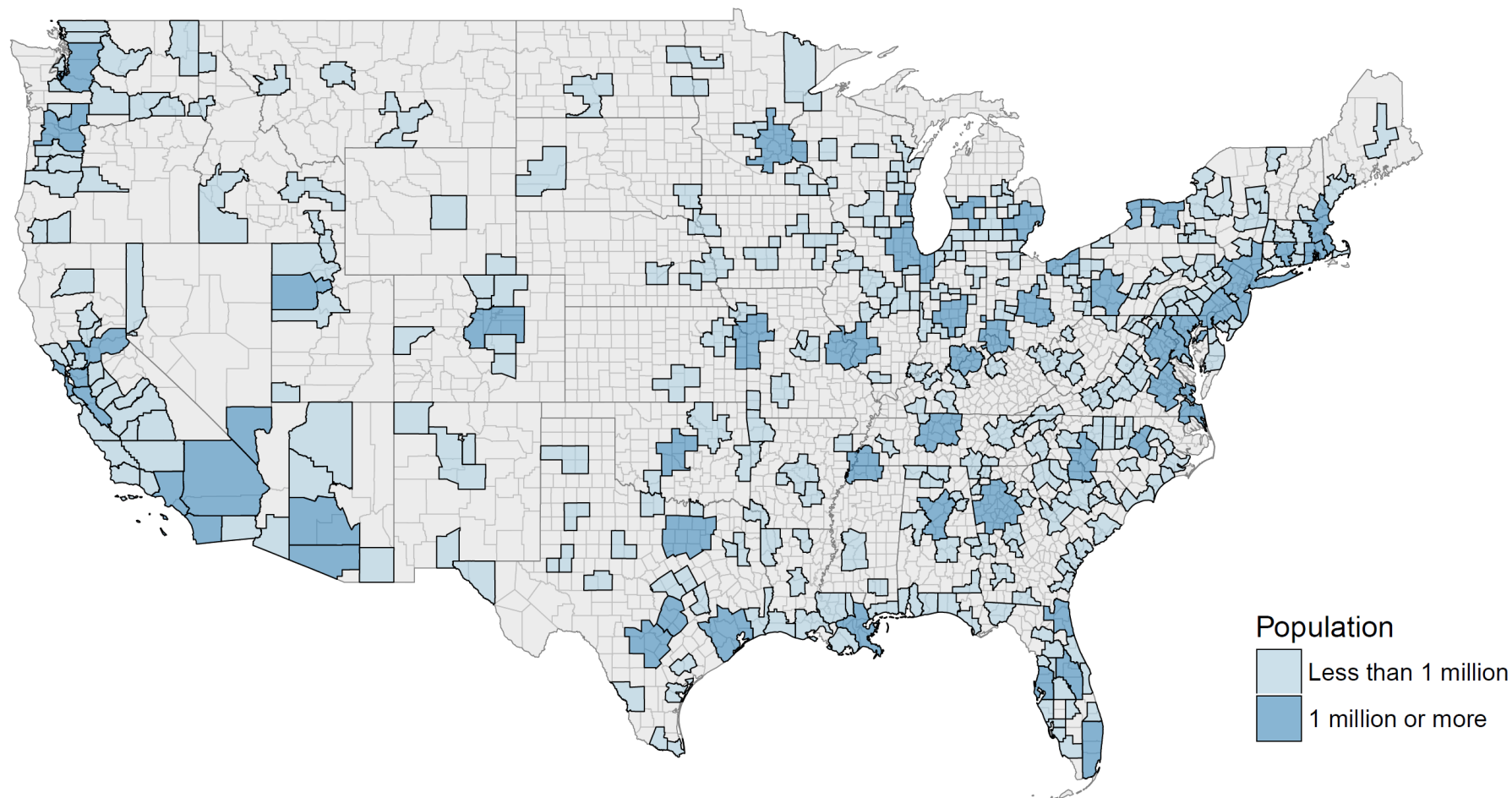
- I will consider 381 MSAs.*
- In 2015, about 86 percent of the U.S. population lived in MSAs.
- Some basic statistics:
 - The smallest was Carson City, Nev., with a population of 54K.
 - The largest was New York, with a population of 20M.
 - The median population was 238K.
 - The average population was 721K.
 - The fact that the average is significantly larger than the median means that the large MSAs are very large and skew the size distribution.

** Because of data availability, I will not include Enid, Okla., which was classified as an MSA in 2015.*

Population among large MSAs

- I will also consider the subset of large MSAs, defined as having a population of at least 1M.
- In 2015, about 56 percent of the U.S. population lived in the 53 large MSAs.
- Some basic statistics for large MSAs:
 - The smallest was Tucson, Ariz., with a population of 1M.
 - The largest was New York, with a population of 20M.
 - The median population was 2.3M.
 - The average population was 3.4M.
 - The average is still greater than the median, but the skewness is not as pronounced as for the entire set of MSAs.

MSAs in the U.S.



Source: Census Bureau. Last observation: 2015.

Price Levels by MSA

Regional price levels

- Prices can vary greatly across the U.S.
- We all have an intuitive sense that some places are expensive locations to live and other places are inexpensive.
- In recent years, more systematic data have been developed that account for these differences in prices across the country.
- **Main idea:** I will use these newer regional price level data to calculate real income per capita across MSAs.

Regional price parities

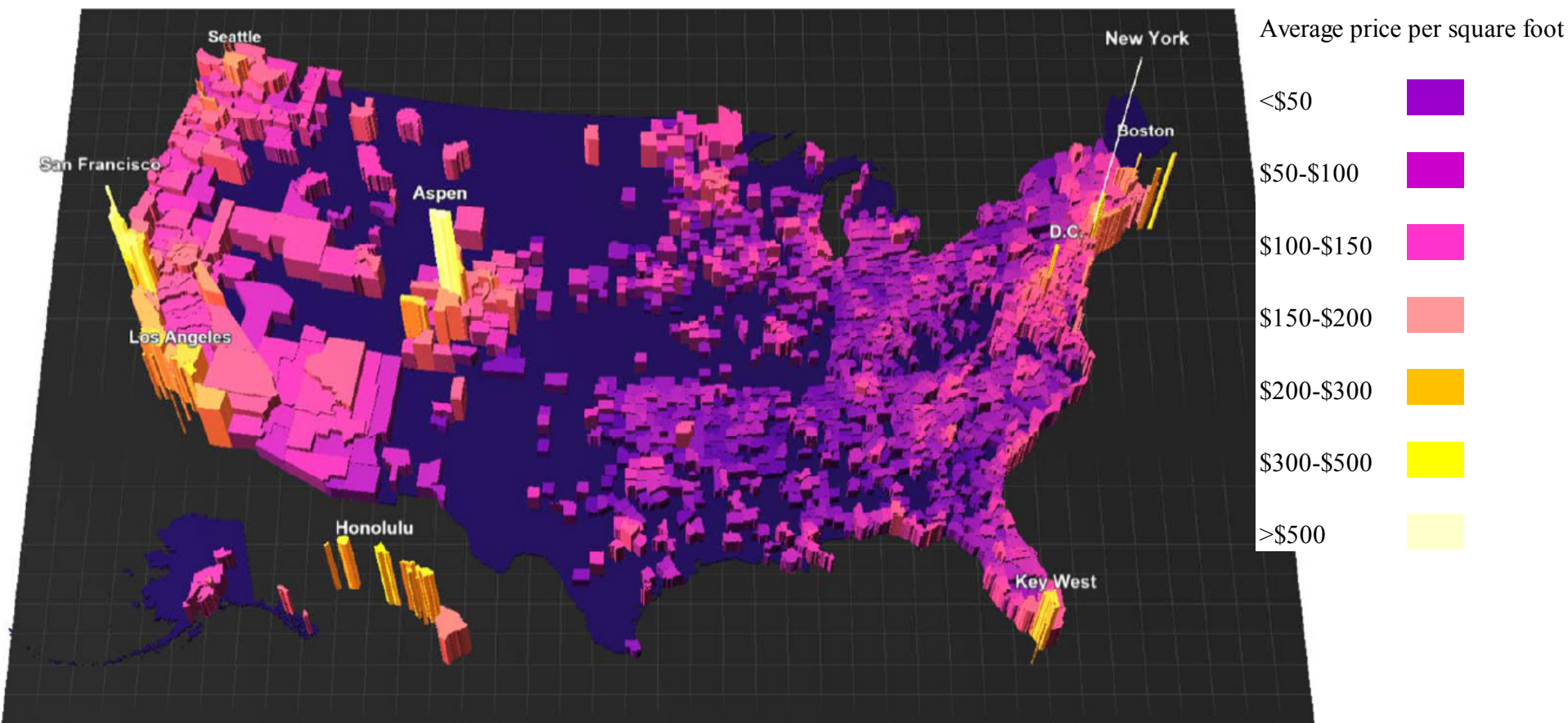
- The data are called Regional Price Parities (RPPs) and they measure the differences in price levels across MSAs for a given year.
 - The Bureau of Economic Analysis started publishing RPPs in 2014.
 - Data are available beginning in 2008.
- RPPs are expressed as a percentage of the national price level.
- I will use all items RPPs, which cover all consumption goods and services, including housing.

Why regional price differentials?

- Why does the cost of living differ across cities?
- One key reason is housing costs.
- Housing cost differentials can be substantial and are one primary driver of cost-of-living differences:
 - As an example, Zillow data show that in 2015 the median home value in St. Louis was \$105 per square foot, whereas the median home value in San Francisco was \$479 per square foot.*
 - That is a ratio of nearly 5 to 1!
- The next two slides show that certain parts of the country tend to have high housing costs per square foot.

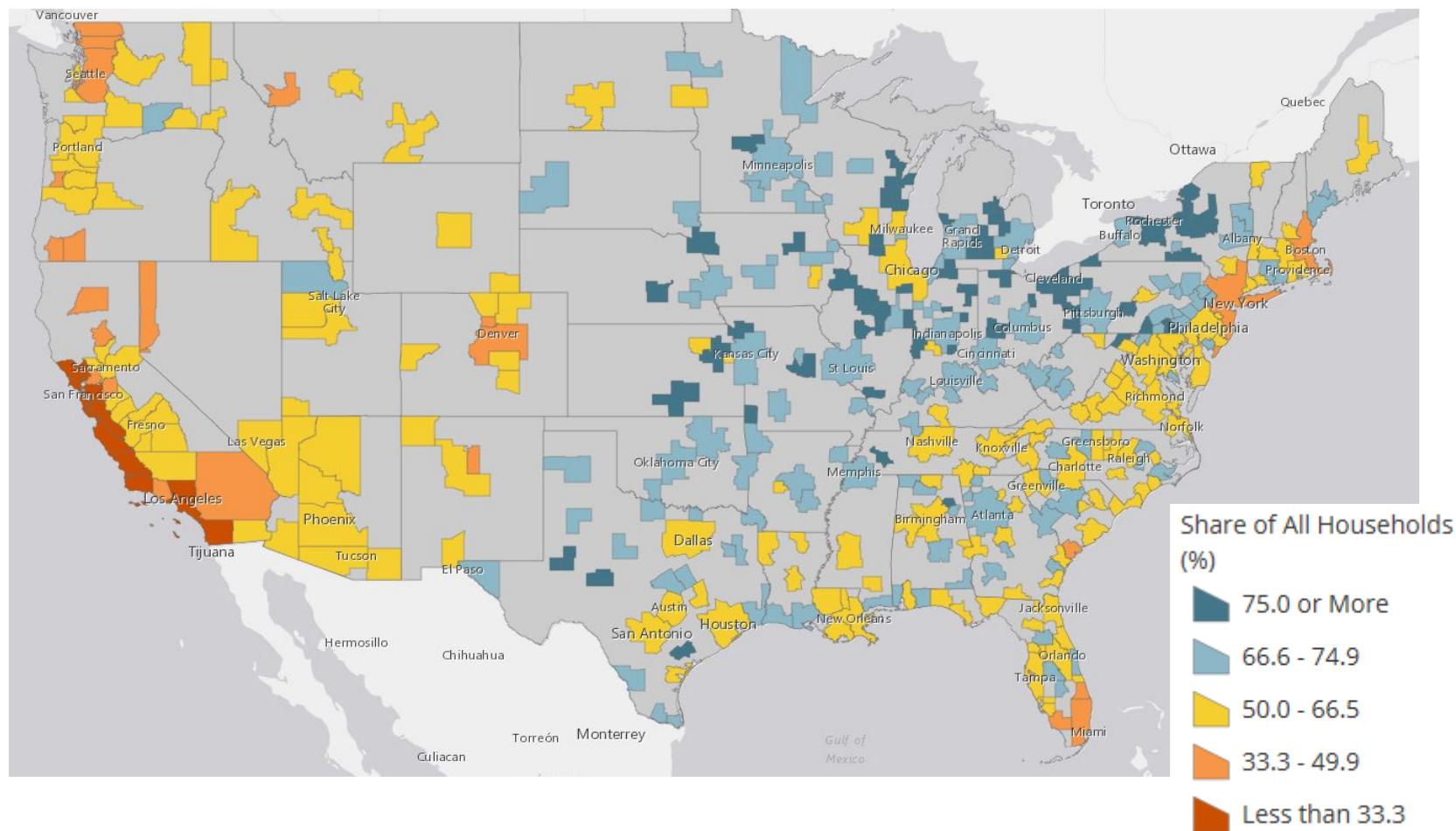
** Median home values are for the metro areas and are computed as averages of monthly data.*

Median home values



Source: metrocosm.com based on Zillow data. M. Galka, "This 3D Map Shows America's Most Expensive Housing Markets," blog post, Sept. 2, 2016.

Share of households that can afford payments on the median-priced single-family home



Source: Joint Center for Housing Studies of Harvard University.

Regional price parities by MSA

- In 2015, 59 MSAs were more expensive than the nation at large; that is, they had an RPP larger than 100 percent.
- Some basic statistics for RPPs by MSA:
 - The least expensive was Beckley, W.Va., with an RPP of 79.7 percent.
 - The most expensive was Honolulu, with an RPP of 124.5 percent.
 - The median RPP was 93 percent.
 - The average RPP (population weighted) was 101.7 percent.
 - St. Louis' RPP was 90.6 percent.

Real Income Per Capita across MSAs

The calculation

- The main idea here is to take real income per capita for each MSA and adjust it based on the regional level of prices for that MSA.
- This type of calculation gives the standard of living as the average level of real income per person for a particular location, analogous to the cross-country literature.
- I do not have the median for these data, only the average.
 - The average can be influenced by the income inequality within the MSA.
 - Later in the talk, I will consider another study that looks at income inequality by MSA.

Real income per capita across MSAs

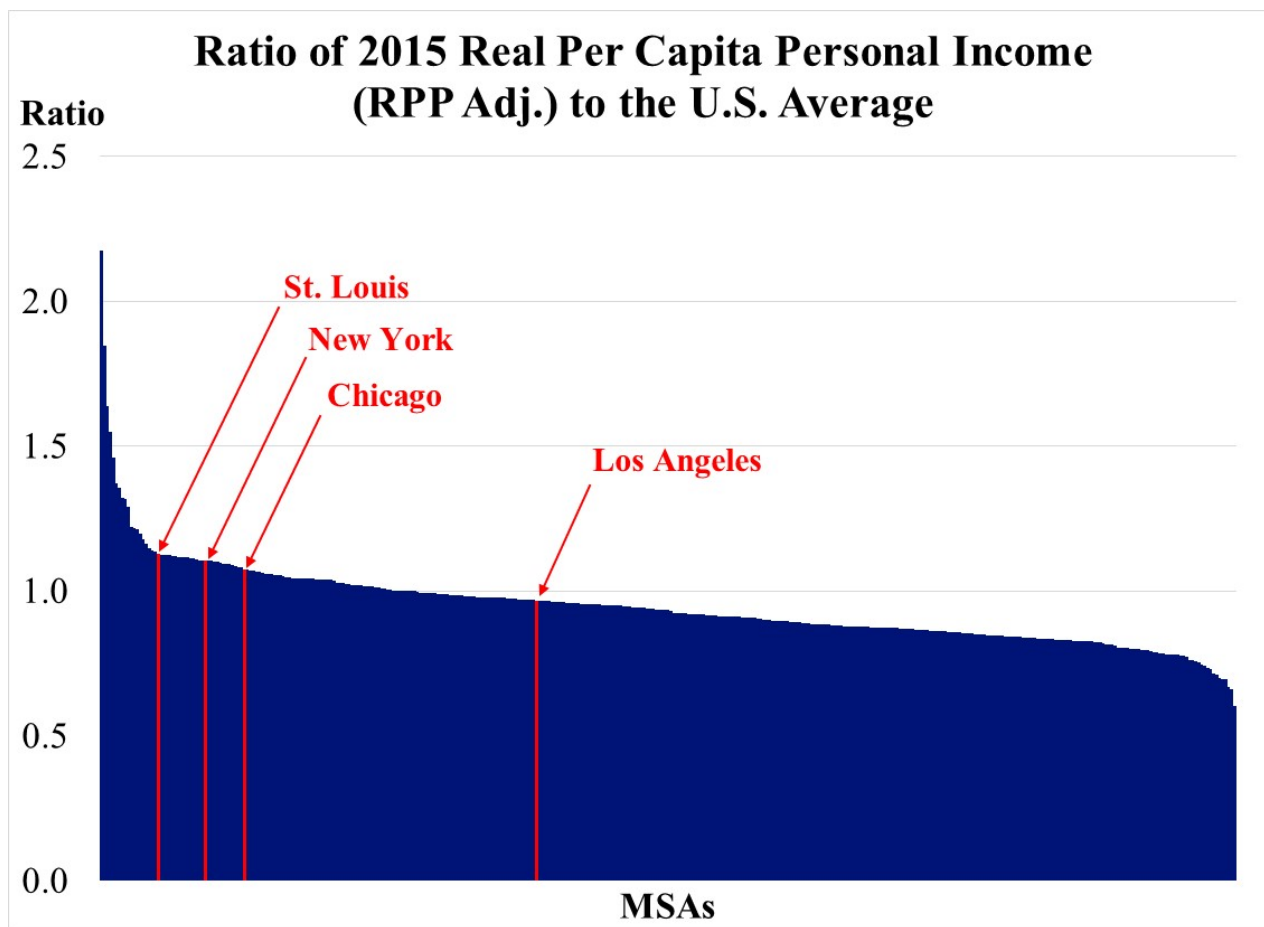
- The measure of real income I use is per capita personal income in 2009 chained dollars.
 - Another possibility is to look at median household income.
For details, see the Coughlin, *et al.*, paper cited earlier.
- Dividing by the RPP for a particular MSA then gives a measure of real income per capita adjusted for regional price level differentials.
- I will focus on 2015, the most recent year for which data were available when this analysis was done.

Results for the St. Louis MSA

- In 2015, the St. Louis MSA had an RPP-adjusted real personal income that was more than 12 percent higher than the national average.
- Among the 53 largest MSAs, St. Louis ranks 7th.
- Among the complete set of 381 MSAs, St. Louis ranks 20th, which is within the top 6 percent.
 - Said differently, 94 percent of all MSAs across the nation have a lower standard of living than St. Louis.
- Among the complete set of MSAs, the larger MSAs tend to rank higher overall.*

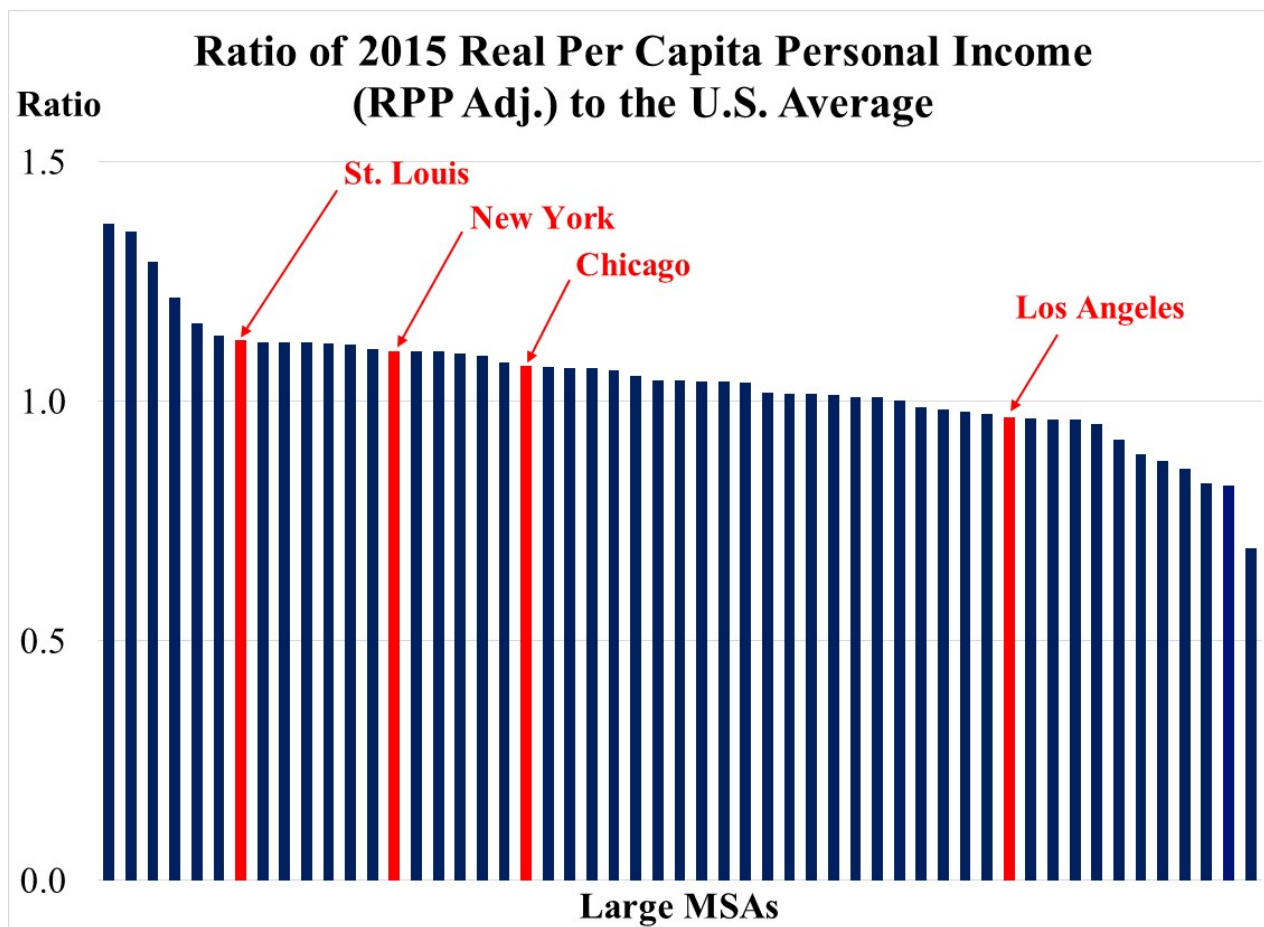
** This is broadly consistent with E. Glaeser, 2011, Triumph of the City, Penguin Press, London.*

Real income across all MSAs



Sources: Bureau of Economic Analysis and author's calculations.

Real income across large MSAs



Sources: Bureau of Economic Analysis and author's calculations.

Real income across large MSAs: the top 10

MSA	Rank	Ratio of 2015 Real Per Capita Personal Income (RPP Adj.) to U.S. Average
San Jose CA	1	1.37
San Francisco	2	1.35
Boston	3	1.29
Hartford CT	4	1.22
Seattle	5	1.16
Washington DC	6	1.14
St. Louis	7	1.13
Nashville TN	8	1.12
Minneapolis	9	1.12
Houston	10	1.12

Sources: Bureau of Economic Analysis and author's calculations.

What about High-Cost versus Low-Cost MSAs?

High-cost versus low-cost MSA strategies

- Among these top 10 large MSAs, some have a high cost of living, while others have a low cost of living.
 - This could be viewed as different MSAs having different “strategies” for delivering a high standard of living.
- One way to measure this is to list the MSAs for which the associated RPP is below the national average versus ones where it is above the national average.
- The following table reproduces the previous table with this additional column.
- Just two cities in the top 10, St. Louis and Nashville, have a cost of living less than the national average.

Real income and RPP among the top 10

MSA	Rank	Ratio of 2015 Real Per Capita Personal Income (RPP Adj.) to U.S. Average	RPP (U.S. =100)
San Jose CA	1	1.37	124.1
San Francisco	2	1.35	121.9
Boston	3	1.29	110.3
Hartford CT	4	1.22	100.8
Seattle	5	1.16	109.4
Washington DC	6	1.14	119.1
St. Louis	7	1.13	90.6
Nashville TN	8	1.12	93.9
Minneapolis	9	1.12	102.4
Houston	10	1.12	100.9

Sources: Bureau of Economic Analysis and author's calculations.

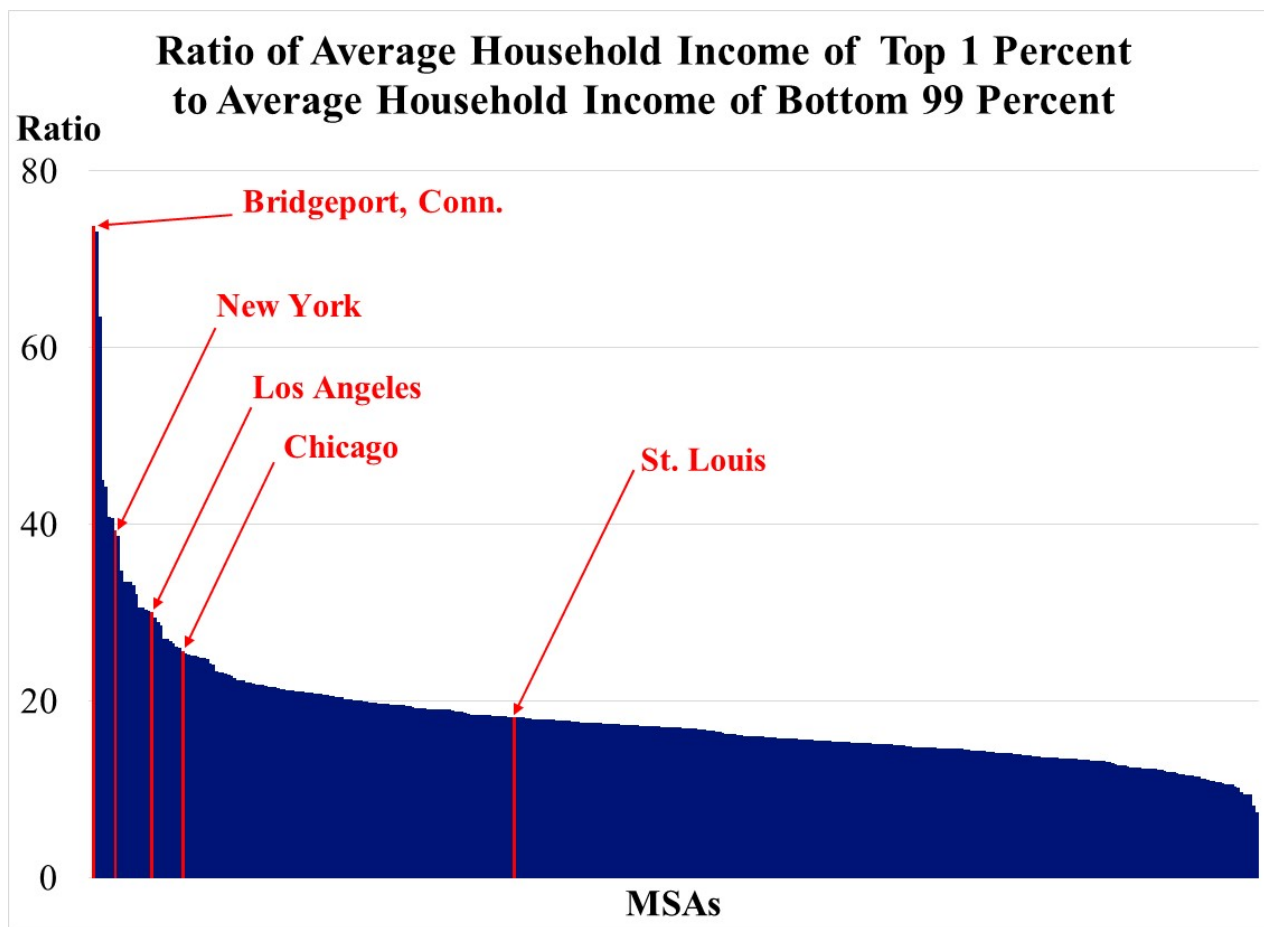
What about Income Inequality within MSAs?

Measures of income inequality within MSAs

- High average income values could be influenced by some households with extremely high income. Which MSAs have high income inequality?
- The per capita concept used here does not account for the distribution of the income within an MSA.
- Other research, however, has studied the issue of income inequality across MSAs.*
- St. Louis income inequality is near the average, while some other top 10 MSAs in real per capita income have higher-than-average income inequality, according to this study.

* See E. Sommeiller, M. Price and E. Wazeter, “Income inequality in the U.S. by state, metropolitan area, and county.” Economic Policy Institute Report, June 16, 2016.

Inequality is generally higher in larger metro areas



Source: Sommeiller, Price and Wazeter, 2016. The chart includes 380 MSAs and shows data for 2013; data on Lynchburg, Va., are not available.

Real income, RPP and inequality among the top 10

MSA	Rank	Ratio of 2015 Real Per Capita Personal Income (RPP Adj.) to U.S. Average	RPP (U.S. =100)	Inequality
San Jose CA	1	1.37	124.1	32.1
San Francisco	2	1.35	121.9	30.5
Boston	3	1.29	110.3	30.6
Hartford CT	4	1.22	100.8	17.9
Seattle	5	1.16	109.4	21.6
Washington DC	6	1.14	119.1	15.5
St. Louis	7	1.13	90.6	18.2
Nashville TN	8	1.12	93.9	19.7
Minneapolis	9	1.12	102.4	19.7
Houston	10	1.12	100.9	28.6

Sources: Bureau of Economic Analysis, author's calculations and Sommeiller, Price and Wazeter, 2016. Inequality is measured by the ratio of the average household income of the top 1 percent to the average household income of the bottom 99 percent.

Bottom line on the top 10 MSAs

- Among the top 10 large MSAs, only St. Louis and Nashville can simultaneously claim:
 - a higher-than-average standard of living,
 - a lower-than-average cost of living, and
 - moderate income inequality.

Economic Growth and Living Standards

Is there a link between growth rates and living standards?

- In the cross-country literature, it is well understood that some of the fastest-growing economies are ones with a relatively low standard of living.
- China and India, in particular, have grown faster than the U.S. for some time but have relatively low real income per capita.
- The same may be said of the MSA data—some of the MSAs with relatively low real per capita income may be among the fastest growing.
- I do not have enough data here to make good judgments about growth rates across U.S. MSAs.

Conclusion

Conclusion

- Adjusting for price differences across MSAs is essential for generating meaningful comparisons of living standards across MSAs.
- In this talk, I have used recent data on regional price parities to calculate real income per capita across U.S. MSAs.
- The facts uncovered through this analysis may provide the basis for future research on why some cities are more successful than others.



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