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# 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.
- For some of my recent statements on monetary policy, see my remarks at Truman State University last week.\*
- I can entertain questions about this talk, monetary policy or related subjects during the question-and-answer session.

\* See J. Bullard, "[Three Questions for U.S. Monetary Policy](#)," remarks delivered at Truman State University, Kirksville, Mo., on Sept. 27, 2017.

## For more details

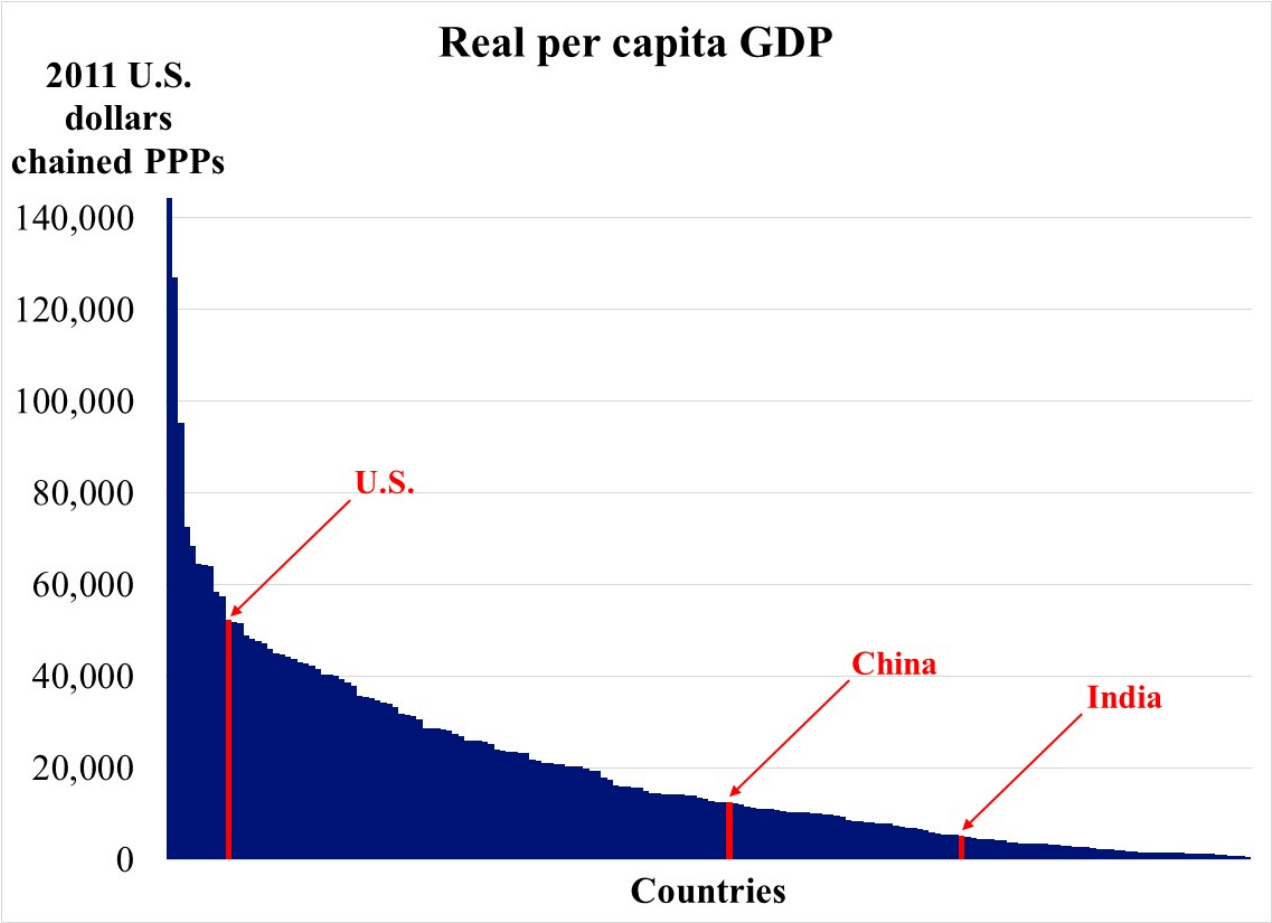
- I will be referring to St. Louis Fed research that was conducted by my Bank colleagues, C.C. Coughlin, C. Gascon and K.L. Kliesen, “[Living Standards in St. Louis and the Eighth Federal Reserve District: Let’s Get Real](#),” Federal Reserve Bank of St. Louis *Review*, Fourth Quarter 2017, pp. 377-94.
- This research is at a preliminary stage and may be incomplete. Comments are welcome.
- 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 literature is to use real per capita income, which is 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 of U.S. GDP (about 90 percent) is produced in MSAs.

# Population among all MSAs

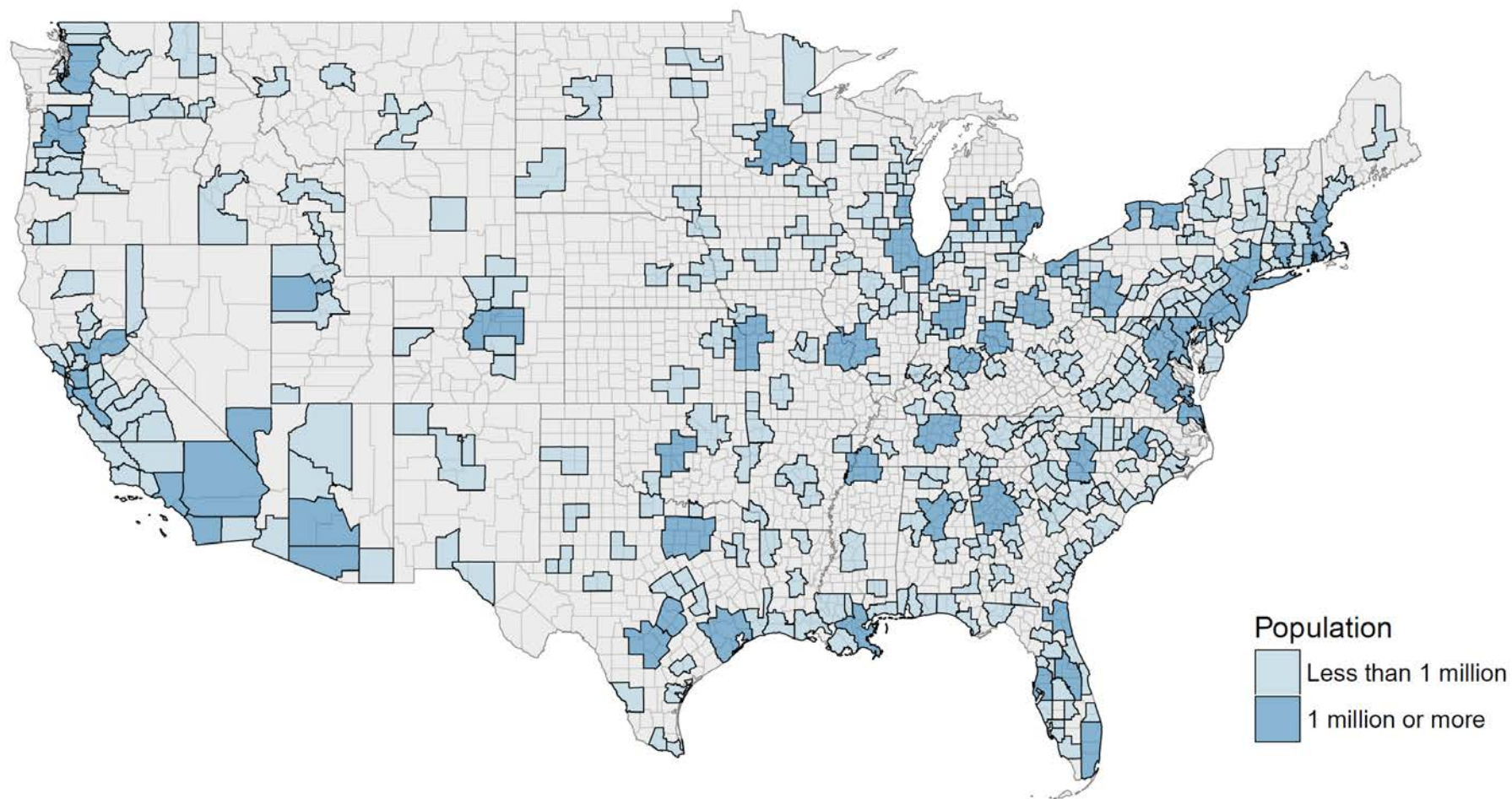
- I will consider 381 MSAs.\*
- In 2015, about 86 percent of the U.S. population lived in MSAs.
- Some basic statistics:
  - The smallest was Carson City, Nev., with a population of 54K.
  - The largest was New York, with a population of 20M.
  - The median population was 238K.
  - The average population 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.
- Recently, more systematic data have been developed that account for these differences in prices across the country.
- 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 starting with 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 rents.

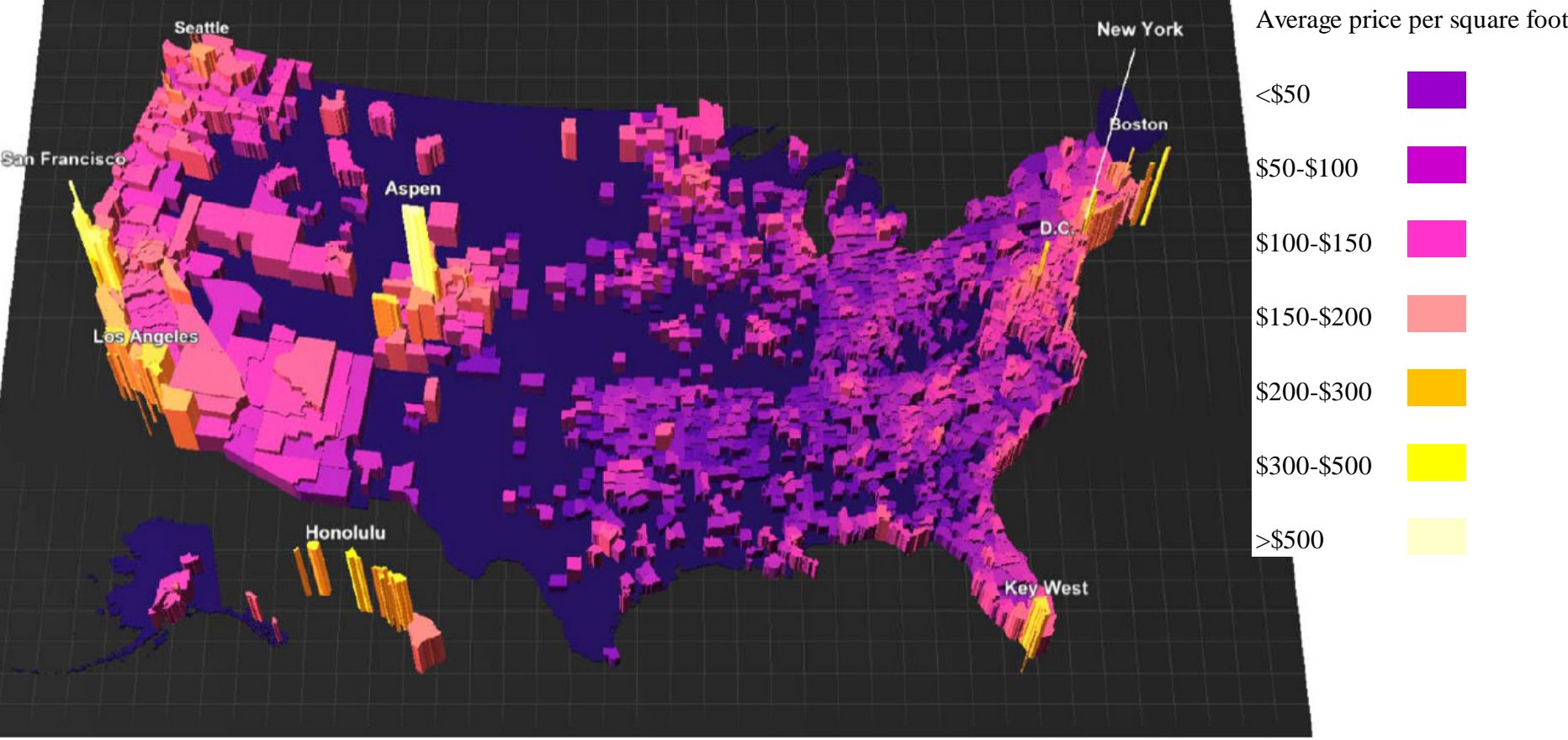


# Regional price differentials

- 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.

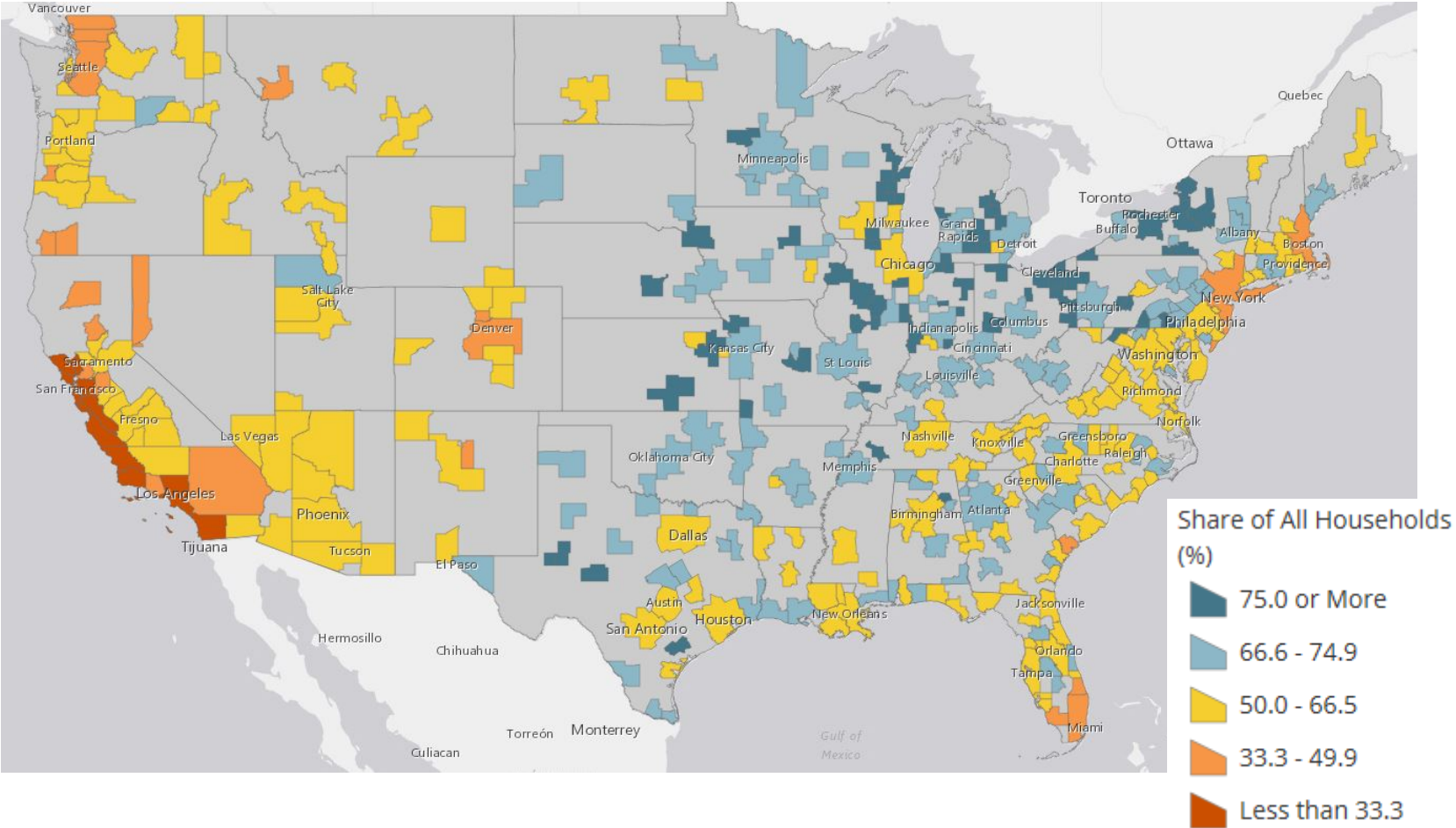
*\* Median home values are for the metro areas and are computed as averages of monthly data.*

# 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.

# RPPs 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 does not take into account 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

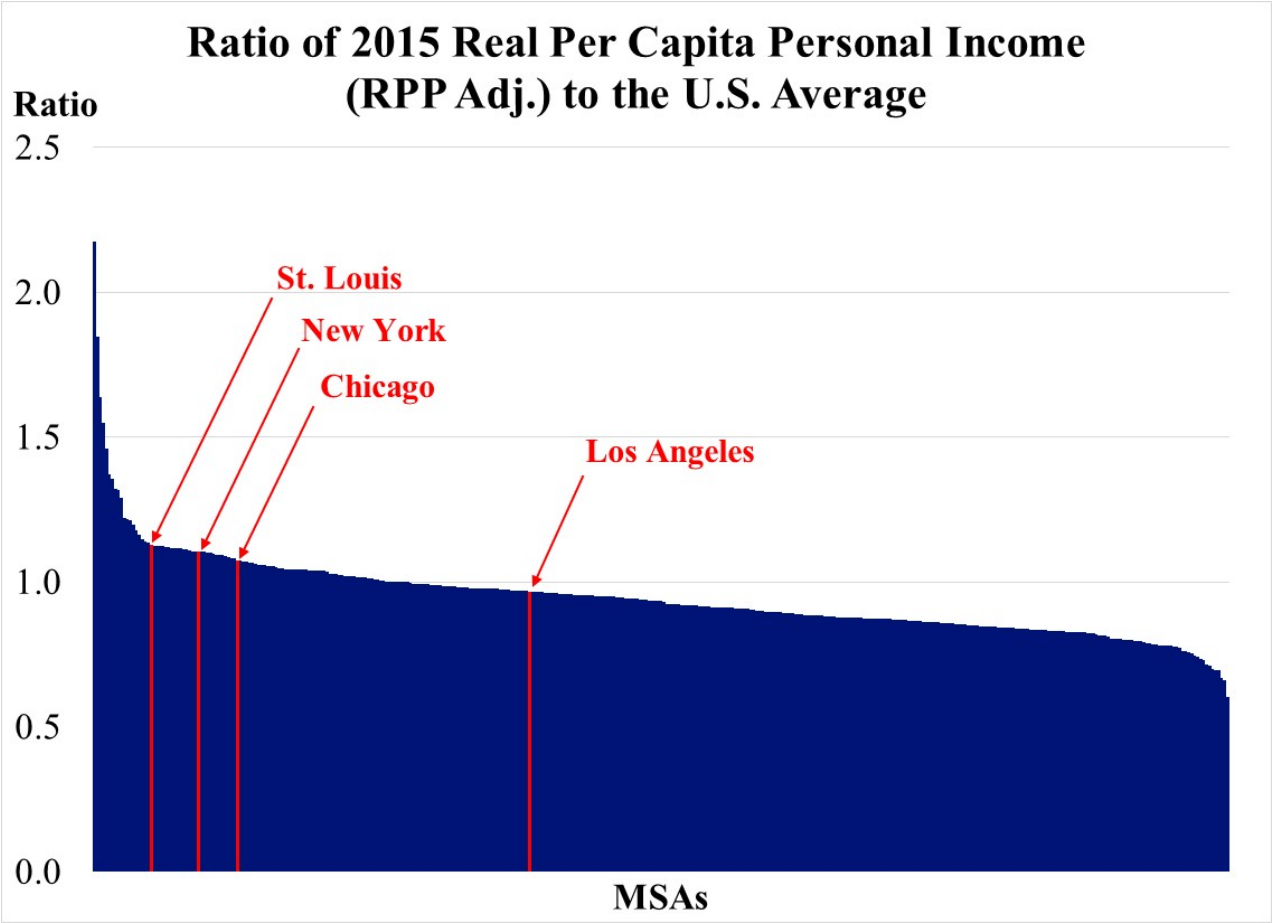
- The measure of real income I use is per capita personal income in 2009 chained dollars.
  - Another possibility is to look at median household income. For details, see the Coughlin et al. paper cited earlier.
- Dividing by the RPP for a particular MSA then gives a measure of real income per capita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

# 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 No. 7.
- Among the complete set of 381 MSAs, St. Louis ranks No. 20, which is within the top 6 percent.
- Said differently, 94 percent of all MSAs have a lower standard of living than St. Louis.

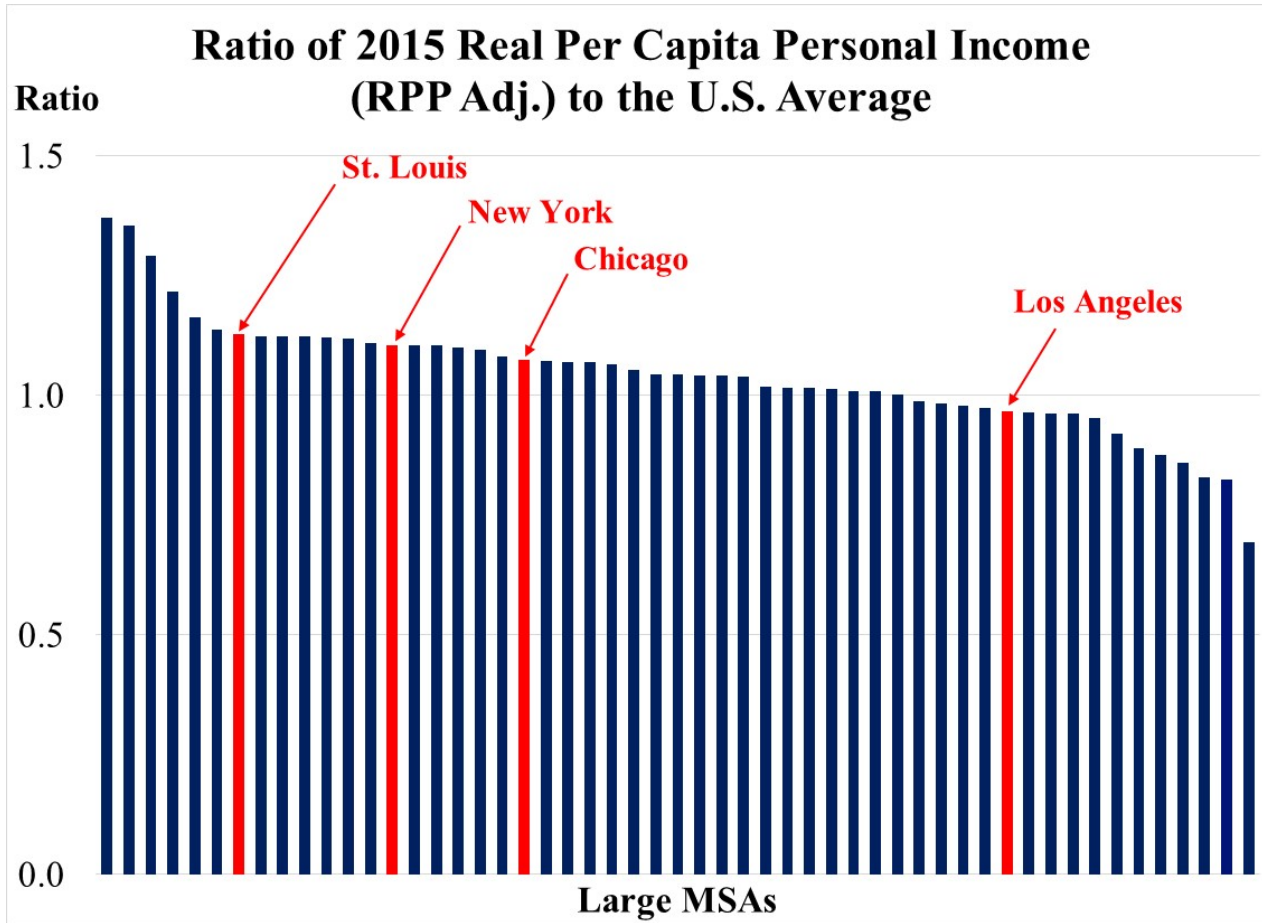


# Real income across all MSAs



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, Calif.	1	1.37
San Francisco	2	1.35
Boston	3	1.29
Hartford, Conn.	4	1.22
Seattle	5	1.16
Washington	6	1.14
<b>St. Louis</b>	<b>7</b>	<b>1.13</b>
Nashville, Tenn.	8	1.12
Minneapolis	9	1.12
Houston	10	1.12

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

# 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.
- 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, Calif.	1	1.37	124.1
San Francisco	2	1.35	121.9
Boston	3	1.29	110.3
Hartford, Conn.	4	1.22	100.8
Seattle	5	1.16	109.4
Washington	6	1.14	119.1
<b>St. Louis</b>	<b>7</b>	<b>1.13</b>	<b>90.6</b>
Nashville, Tenn.	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.

# Distribution of income across MSAs versus across countries

- To keep some perspective, let's remember that the international income distribution is far more unequal than the MSA income distribution.
- One way to see this is to compare the 90<sup>th</sup> percentile to the 10<sup>th</sup> percentile across countries and across MSAs.
- For the set of all MSAs, the ratio is 1.37.
- For the international data, the ratio is 28.2, a huge number which makes the differences between U.S. MSAs seem small.
  - This remains true if one focuses on a more homogeneous group of countries. For example, the ratio is 3.8 for European countries and 2.1 for OECD countries.

# What about Income Inequality within MSAs?

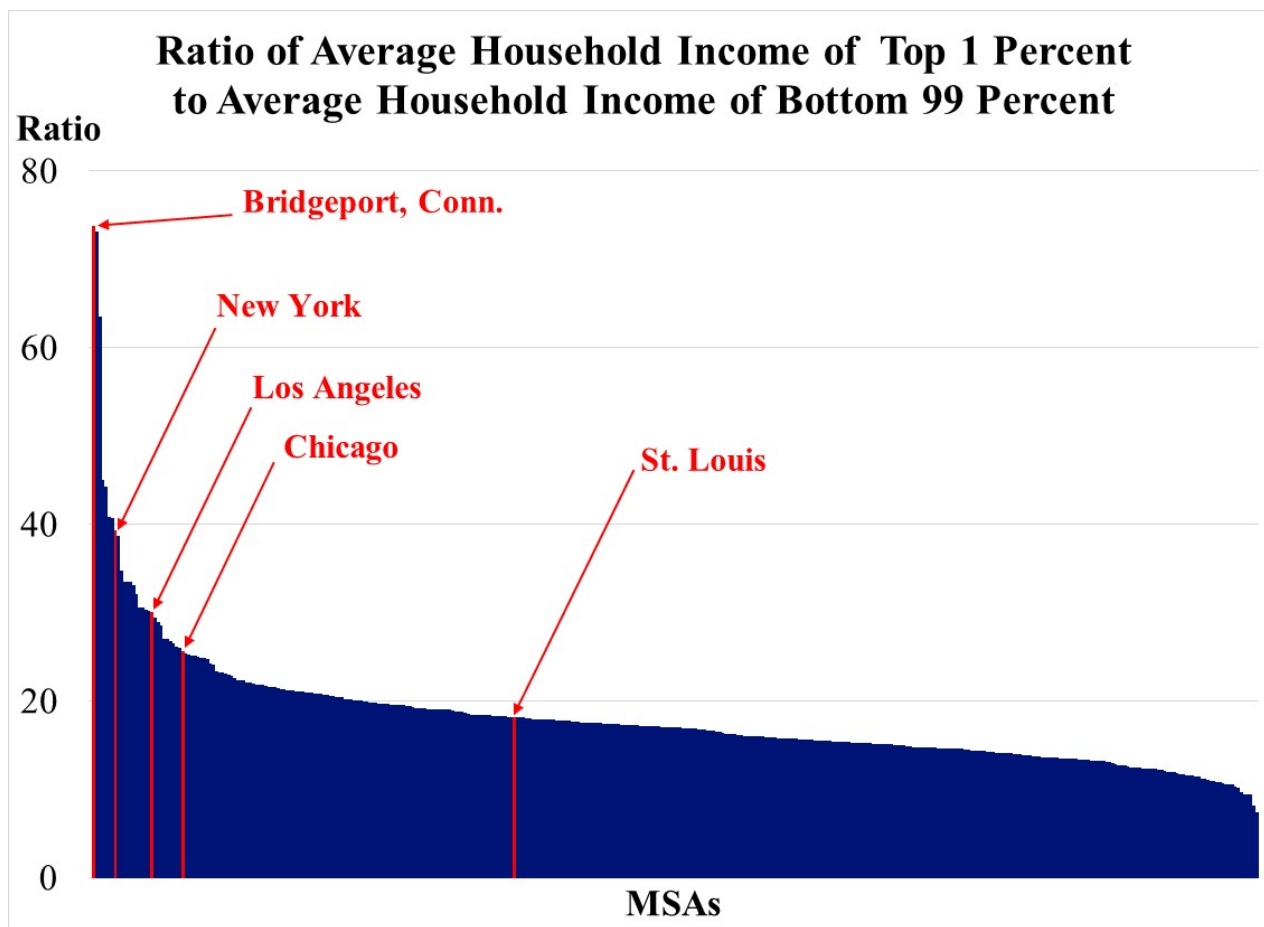
# Measures of income inequality within MSAs

- There is also the question of income inequality within an MSA. 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.

This slide was updated Oct. 24, 2017, to clarify the position of highlighted cities on the chart.

# 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, Calif.	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, Conn.	4	1.22	100.8	17.9
Seattle	5	1.16	109.4	21.6
Washington	6	1.14	119.1	15.5
<b>St. Louis</b>	<b>7</b>	<b>1.13</b>	<b>90.6</b>	<b>18.2</b>
Nashville, Tenn.	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 top 10 MSAs

- Among the top 10 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.

*This slide was added Oct. 24, 2017.*

# 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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