

Housing Research Brief 3  
How Much Worse is Affordability in LA than Before?

Dowell Myers, JungHo Park, and Eduardo Mendoza  
Population Dynamics Research Group  
Sol Price School of Public Policy  
USC

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Housing is less affordable in Los Angeles than anywhere in the United States. So we are told, and local residents surely agree, but there must be better ways to measure that. More important to Angelenos is the trend in affordability. Living in Los Angeles has always been expensive, but how much less affordable has it become? And is the affordability problem growing worse in this area more rapidly than in other large metropolitan areas?

This Brief summarizes lessons for Los Angeles that are drawn from an ongoing study of housing shortages and affordability in Los Angeles and other metropolitan areas. In this Brief we compare Los Angeles city and county to the San Francisco Bay Area, all of California, and the United States as a whole.

We also introduce a new method developed as part of our Haynes Foundation-supported study. The traditional method for assessing housing affordability quantifies problems by the share of renters that pay more than 30 percent of income on rent (which is “excessive;” more than 50 percent of income is “severe”). That method does not distinguish between problems caused by rent that is too high or incomes that are too low, and for changes over time this becomes very confusing. Comparing the Bay Area is a useful illustration of this deficiency.

Further, the traditional method cannot distinguish very sharply between high and low affordability areas. Given that nationwide, roughly half (49.5%) of renters had excessive rent burden in 2017, the worst metros were generally no more than about 8 percentage points higher, while the most affordable metros had rent burden that was only 8 percentage points lower than average. And the level of affordability problem increased by roughly the same amount as the national average, by 10 percentage points, in almost every metro area between 2000 and 2017.

This relative lack of difference for affordability measurement in Los Angeles compared to the average for the nation or other metros is not the way it feels in this housing market. There must be a better way to show how affordability problems are more acute in Los Angeles and we propose how below.

## The Rent Burden Indicator of Affordability Problems

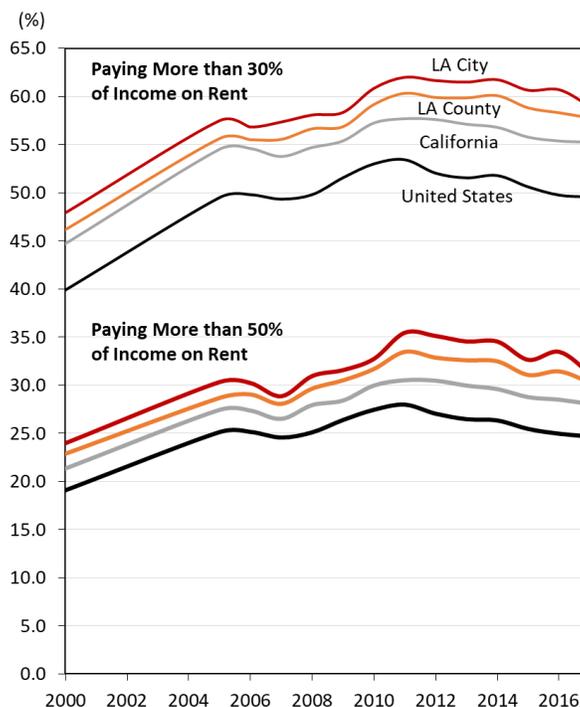
Standard practice of the federal government, as well as state and local governments, is to judge housing affordable if the household pays no more than 30 percent of its income for gross housing expenses (including rent or mortgage, utilities and applicable taxes). Households paying more than 30 percent of income for rental housing have an excessive rent burden, while households paying more than 50 percent have severe rent burden.

Renters in the Los Angeles area are frequently cited as among the most rent-burdened in the nation (HUD 2017; JCHS 2018; NLIHC 2018; NYU Furman 2017). We compare the different metro areas below, but begin first with the trends from 2000 to 2017 in the nation, Los Angeles county, and Los Angeles city. The state of California as a whole is also compared, because several of its metro areas are among the least affordable in the nation.

### *Trends in Excessive Rent Burden*

The incidence of rental affordability problems in the U.S. has risen sharply since 2000, through both the boom years of the early 2000s and again in the early post-recession period (Exhibit 1). The incidence of rent burden (more than 30% of income) peaked in the nation at 53.4% in 2011, but sustained an even higher plateau through 2014 of about 60.1% in Los Angeles county and 61.8% in Los Angeles city.

**Exhibit 1.** Trend of Rent Burden, 2000 to 2017, United States, California, and Los Angeles



Source: 2000 Census Summary Table H069; 2005-2017 American Community Survey Summary Table B25070.

Incidence of *severe* rent burden (more than 50% of income) also peaked in the nation and Los Angeles area in 2011 and then began to taper downward. Severe rent burden is a subset of total rent burden and in 2017 this remained a problem in the U.S. for 24.7% of renters, almost exactly half of the 49.5% of renters who were paying more than 30% of income for rent. In Los Angeles county, the incidence of severe rent burden was slightly greater than half of total renter burden, 30.3% compared to 57.8%; similarly, in Los Angeles city, 31.2% compared to 59.0%.

What is striking is that affordability in Los Angeles largely follows the fluctuations of the nation as a whole, with a slightly widening gap as the nation recovered after 2011 and Los Angeles sustained its high incidence of affordability problems (especially for severe rent burden). Overall, the incidence of rent burden is only moderately higher in Los Angeles than the national average, which includes rural and small metro areas, as well as larger metro areas. Rather than just in comparison to the nation, how does rental affordability in Los Angeles compare to other large metros in the U.S.?

### *Comparing Los Angeles and the Nation's Large Metros*

Rental affordability problems are compared for the 50 largest metro areas and Los Angeles city, county and metro in 2017 (Exhibit 2a) and 2000 (Exhibit 2b). Highlighted in red are the Los Angeles jurisdictions. The incidence of rent burden is represented in its two degrees of severity, moderate burden where the ratio of rent to income is between 30 and 49.9%, and severe burden, where the ratio is 50% or greater. The total height of the bar for each metro and Los Angeles components reflects the total incidence of rent burden of 30% or greater.

The graph follows the west-to-east placement of metros, sorted from high to low rent burden within each of the four major census regions in the U.S.<sup>1</sup> A single bar for the nation as a whole is displayed for comparison on the left. We repeat this display separately for 2000, using decennial census data, and 2017, using American Community Survey data.

Our primary metro for reference is Los Angeles, home to some 13.4 million people in 2017, most of whom reside in Los Angeles county (10.2 million), the remainder in Orange county, and at its core is the central city of Los Angeles (4.0 million). Bordering Los Angeles county to the east is the Riverside-San Bernardino metro, home to another 4.6 million. Together, these

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<sup>1</sup> This “west-to-east” design developed in the USC PopDynamics Group puts the West on the left, as in a map with the Pacific on the west, and the Northeast on the right, by the Atlantic. This is more intelligible than simply ranking all 50 metros or states from high to low across the page. Most graphs using states and regions place the Northeast on the left and the Pacific coast states on the right, because census numbering begins from 1 in Maine and works to higher numbers in the west. But that is the opposite, of course, of a map orientation. In fact, the most familiar alternative is a map showing the location of each metro or state, but that makes it difficult to show data values in ways that are easily compared. The west-to-east design is easily executed in Excel and is a solution others might consider.

geographic areas have the highest rent burden of any metros in the west region, and higher than any metros in the nation save Miami (Exhibit 2).

The total incidence of rent burden in the nation is substantially higher in 2017 than 2000, 49.5% compared to 39.9%, an increase of 9.6 percentage points. Similarly, the incidence of severe rent burden is proportionally higher in the nation in 2017 than 2000, 24.7% compared to 19.1%, an increase of 5.6 percentage points. Overall, the incidence of severe rent burden is roughly half of total rent burden in both 2000 and 2017, as is the change in severe burden compared to change in total burden.

Overall, there is surprising consistency over time in the incidence of excessive rent burden: severe burden is roughly half of total burden everywhere, and most metros reveal increases similar to the national average. The pattern of rent burden in most of the metros and Los Angeles jurisdictions closely resembles the national average. The incidence of rent burden has increased by a similar amount in the great majority of large metros since 2000 (9.7 percentage points on average for the 30%-of-income-standard, and 5.7 percentage points increase on average for the 50%-of-income-standard). Further, the share of total rent burden that is severe is almost exactly half of the total rent burden in every location in both years (46.8% and 49.1% in 2000 and 2017 respectively).<sup>2</sup>

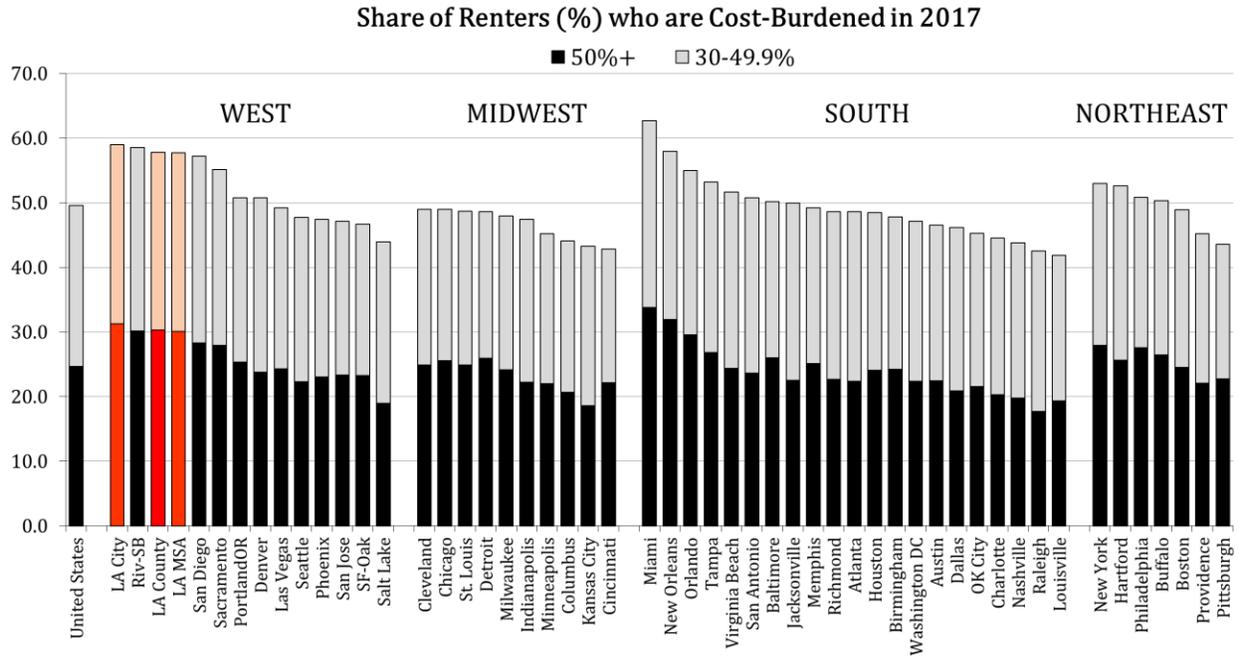
This similarity does not allow metros with extreme affordability problems to stand out statistically. In fact, a strange anomaly observed in California is the relatively affordable rents in both the San Francisco-Oakland and San Jose metro areas. The incidence of excessive rent burden is actually *lower* than the national average (Exhibit 2). There must not be a rental problem in the Bay Area, at least according to the traditional indicator.

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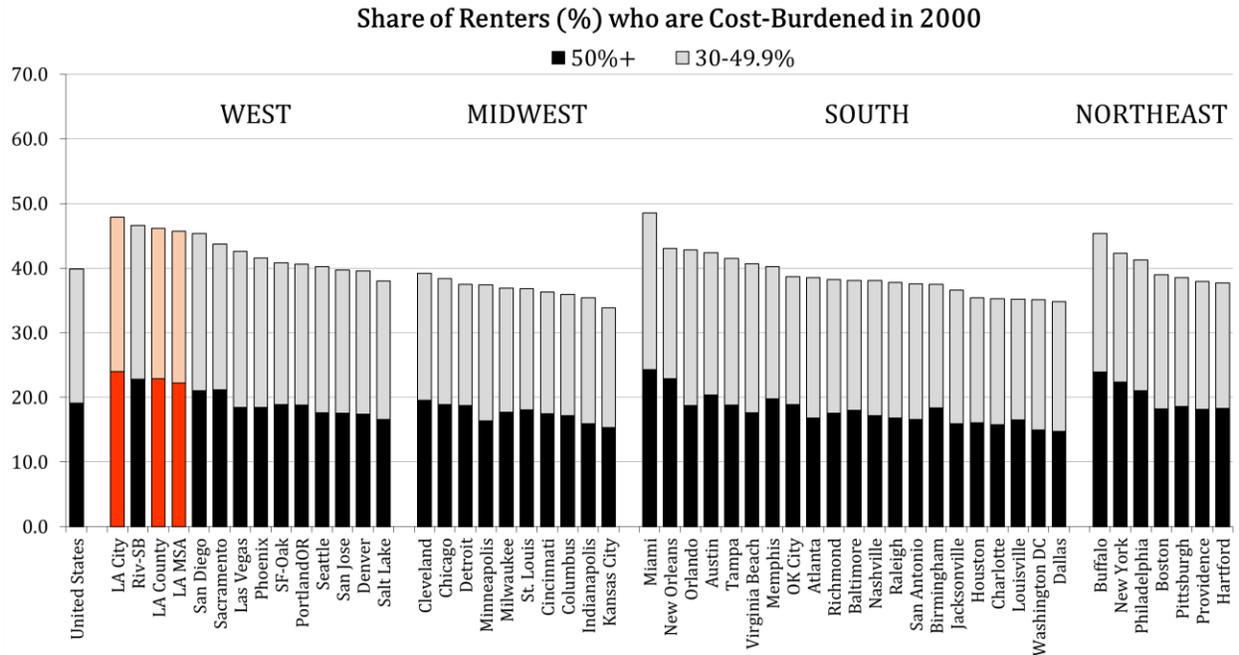
<sup>2</sup> These percentages are the share of total rent burden that is severe, found as the percent severe rent burden divided by the percent excessive rent burden in the given year, both about half.

**Exhibit 2.** Share of Renter Households who are Cost-Burdened, United States, Largest 50 Metropolitan Areas, and Los Angeles Components, 2000 and 2017

**(a) 2017**



**(b) 2000**



Source: 2000 Census Summary Table H069; 2017 American Community Survey Summary Table B25070.

## A Constant Quartile Measure of Changing Affordability

The traditional measure of excessive rent burden only expresses an average affordability outcome for each geographic area. One problem is that we cannot tell if rising affordability problems are concentrated at the bottom of the market or spreading into the middle. Another limitation is inability to determine if rising rent burden is due to higher rents or lagging incomes, and it may be a different combination in different areas. Yet a third drawback of the conventional measurement, as witnessed by local residents and voters, is that the average incidence of affordability problems does not correspond well to local experience renting at the high or low end of the housing market. Changes in the average do not allow people to place themselves in the data picture. To be more persuasive, some additional descriptive measurement could be helpful, particularly if it could be summarized in a simple indicator.

Complaints of residents in Los Angeles and elsewhere often center on declining availability of lower-priced rentals, and conversely about the glut of rentals being offered in much higher brackets. In particular, a frequent complaint is that new construction is bringing no relief because it only adds rental units in higher brackets.

A growing mismatch is perceived between the renter population and the housing stock. In terms of affordability, that means specifically a growing mismatch between rents and incomes. How might we represent that mismatch?

### *Definition of Constant Quartiles*

The approach we have developed to measuring affordability focuses on the mismatch, comparing the present renter distribution by rent and income to what was observed in a baseline year for the same jurisdiction. We define four equal quartiles in the rental market and then measure the shift over time among these quartiles. Given that complaints are not about the average but about changes in the distribution and relative access to rentals in different brackets, we aim to summarize in simple, clear fashion the mismatch that characterizes declining relative affordability in any area.

We propose a **constant quartile mismatch** method for measuring the net results of rent escalation and income changes over a number of years. If rents and incomes are broken into quartiles in a base year, we can use that metric to compare the distribution in a later year. The bottom quartile (Q1) is the rental cost below which 25% of the rental units are found. The 50% quartile (Q2), also known as the median, marks the rental rate below which half of the rental units are found, and the 75% quartile (Q3) is the rental rate below which 75% of the rental units are found. The highest quartile, Q4, is the top of the rental distribution lying above the 75% breakpoint. In most common use the median rent and quartiles are redefined every year, but our method calls for holding these base year calculations constant, adjusting only for national inflation in the value of a dollar over time.

We adopt 2000 as the base year, representing the beginning of the century and also the last “normal” year preceding the 2000s economic boom, housing bubble, Great Recession, and the struggling recovery. The decennial census data for 2000 are used to calculate the base year quartiles and the most recent American Community Survey data are used to calculate the current distribution. We measure “mismatch” by the deviations over time from these baseline distributions.

The rental distributions in future years are sorted into the constant quartile categories, showing for example how the percentage of units in 2016 in the 2000-defined bottom quartile are falling short of the original 25% quartile share while those in higher quartiles may be exceeding their original 25% shares.<sup>3</sup> In our method, identical calculations are carried out for renters’ incomes, so that the shift in incomes can be compared to the shift in rents in the same metro. This is an important advantage for explaining why affordability might feel like it’s more of a problem some places than others.

### *Findings on Changing Affordability in California and the United States*

The results of this basic calculation are demonstrated for the United States as a whole and California in Exhibit 3. Rents have shifted upward in the U.S., with 39% of renters paying rents in 2016 that were formerly in the 25% top bracket. Conversely, the share with bottom bracket rents has declined from 25% to 17%. In California, nearly half the renters (49%) are now forced to pay rents in the traditional top bracket, a share that is 24 percentage points higher than it was in 2000. Conversely, the shares paying rents in the traditional bottom brackets (below the median) have fallen to 14% (Q1) and 16% (Q2).

Renters’ incomes have also shifted since 2000. In the U.S. we find a slight increase in the share that fall into the former top quartile, growing to 26%, and a similar slight increase in the bottom quartile (Exhibit 3, upper panel). Since the shares must sum to 100%, the gains at the two extremes are matched by a decline to 23% in the upper middle quartile of renters’ incomes.

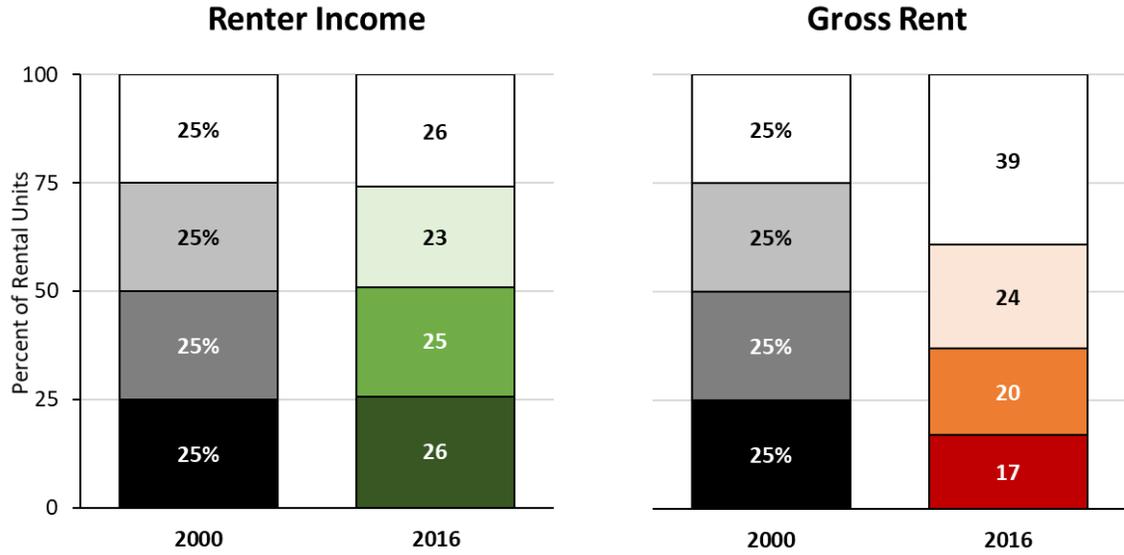
In contrast to this slight polarization in the U.S., income gains in California were more substantial in the top quartile, expanding to 29% (Exhibit 3, lower panel). In compensation, the two middle quartiles each contracted to 23%, while the bottom quartile remained with 25% of the renters in 2016. These small income shifts were not enough to offset the large movement of rents into the top quartile. The mismatch of rents and incomes is clearly growing wider in California than in the nation as a whole.

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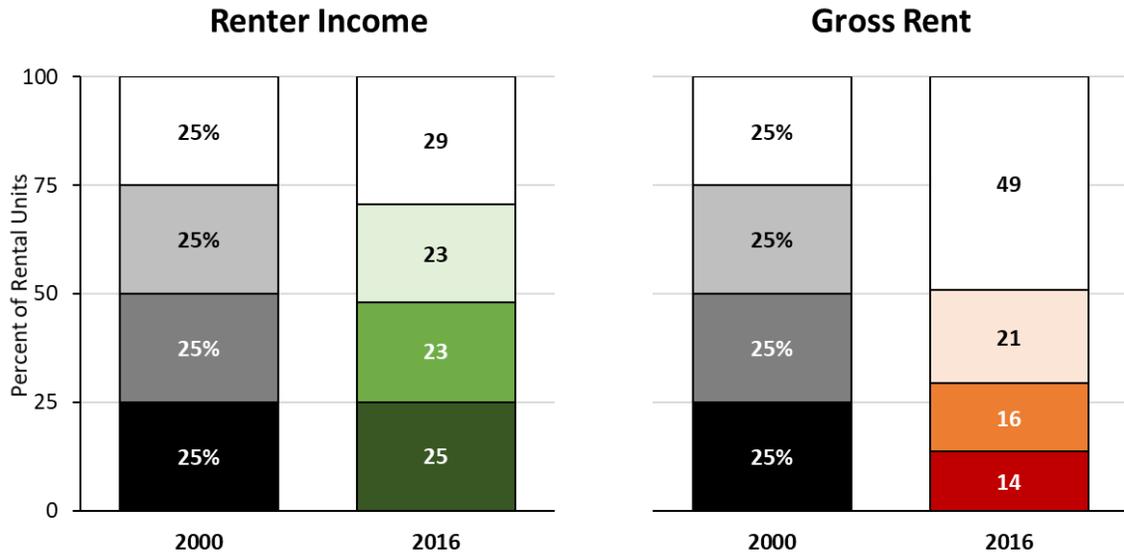
<sup>3</sup> This brief focuses on 2016 as the latest observation year because it is the most recent available in our microdata. The USC PopDynamics Group recently produced constant quartile mismatch results for every single year since 2006 when the complete annual American Community Survey (ACS) data first became available. New releases of annual ACS data each fall will allow us to continue tracing changes in the rent-income affordability mismatch using this constant quartile method.

**Exhibit 3.** Quartile Distribution of Renter Households by Income and Rent, Under Inflation-adjusted Constant Quartile Breaks, 2000 and 2016, United States and California

(a) United States



(b) California



*Note:* Percentages may not add up to 100 due to rounding at the first decimal place.

*Source:* 2000 Decennial Census and 2016 American Community Survey IPUMS Microdata files.

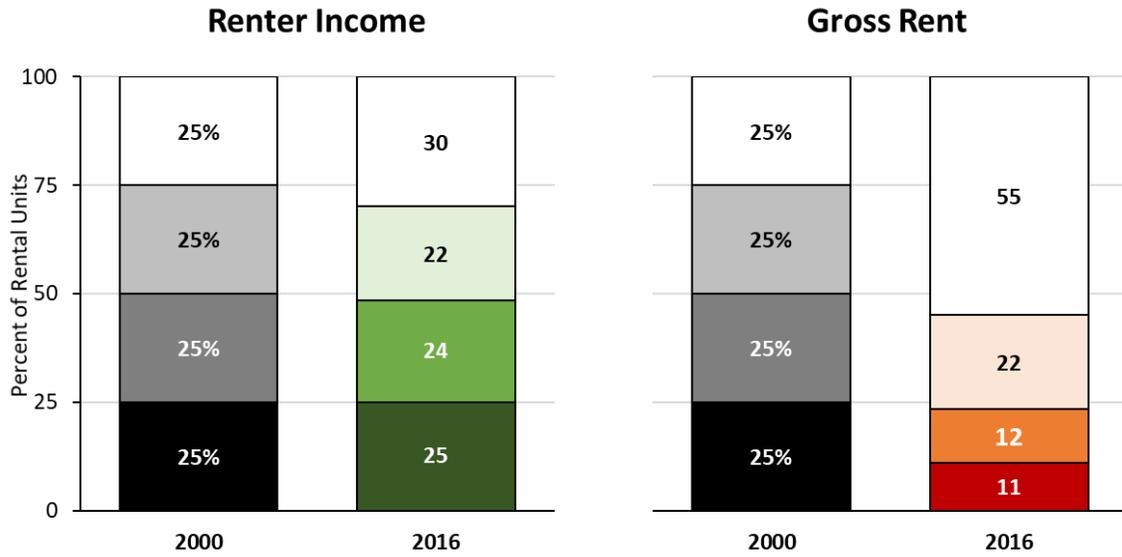
## *Findings on Changing Affordability in Los Angeles*

The Los Angeles area appears to have worse rental affordability conditions than the nation, as shown previously in Exhibit 2 with the traditional rent burden indicator. Yet its changes since 2000 on the traditional indicator did not appear much worse than the national average. Here we examine the evidence from the constant quartile method broken out specifically for Los Angeles county and city (Exhibit 4). In Los Angeles county, over half the renters (55%) in 2016 were forced to pay rents in the traditional top bracket, a share that is 30 percentage points higher than in 2000. Conversely, the shares paying rents in the traditional bottom brackets (below the median) have fallen to 11% (Q1) and 12% (Q2).

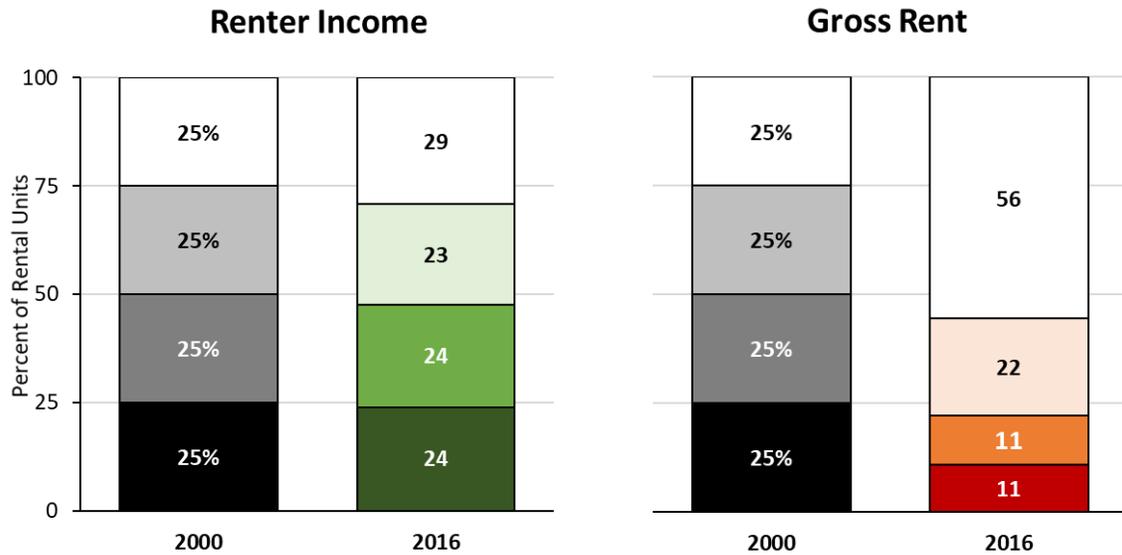
The severe upward shift in rents in Los Angeles might not be a problem if the income distribution of renters also shifted upward. However, as shown in Exhibit 4 (upper panel), the share of renters in the two bottom income brackets in Los Angeles county remains virtually the same as before. Meanwhile the share in the traditional highest income bracket for Los Angeles county renters has expanded moderately to 30%, an increase of 5 percentage points, not enough to keep up with the 30 percentage points increase in the share now paying top-level rents. By comparison with the national average, renters' incomes in the U.S. as a whole expanded very slightly, by 1 percentage point, in both the top and bottom quartiles. This slight income polarization was even deeper in Los Angeles county, where the share in the middle two income quartiles declined by a total of 4 percentage points. Los Angeles city demonstrates a very similar pattern with the entire county, but with a slightly stronger skew towards top-level rents (Exhibit 4, bottom panel).

**Exhibit 4.** Quartile Distribution of Renter Households by Income and Rent, Under Inflation-adjusted Constant Quartile Breaks, 2000 and 2016, Los Angeles County and City

(a) Los Angeles County



(b) Los Angeles City



*Note:* Percentages may not add up to 100 due to rounding at the first decimal place.

*Source:* 2000 Decennial Census and 2016 American Community Survey IPUMS Microdata files.

## *Findings on Changing Affordability in the Bay Area*

The Bay Area, consisting of the San Francisco-Oakland and San Jose metros,<sup>4</sup> is the largest and most important area in California for comparison with Los Angeles. It also poses something of a puzzle because the rent burden affordability analysis above of the 50 largest metro areas (Exhibit 2) found that rent burden was substantially **lower** in both the San Francisco-Oakland and San Jose metros than in Los Angeles, even lower **than average** for the United States. Is housing really more affordable in the Bay Area? This anomaly has also appeared in previous studies, although no comment or explanation was offered (Collinson 2011; JCHS 2018; NLIHC 2018; NYU Furman 2017; Urban Institute 2017).

This finding of greater affordability is surprising in light of the substantially higher rents in the two Bay Area metros. Median rent in 2016 was \$1,750 in San Francisco-Oakland and \$2,076 in San Jose, compared to \$1,340 in Los Angeles county. Median rent may have been lower in LA in 2016 but it grew more rapidly since 2000, by 37.3%, than in the Bay Area metros (35.0% and 27.6%, respectively in San Francisco-Oakland and San Jose). Rents in the Bay Area metros, particularly San Jose (containing Silicon Valley), were substantially higher in 2000 than Los Angeles (\$1,627 and \$976 in San Jose and LA respectively, all adjusted to 2016 dollars) because the “dot.com” economic bubble had pushed up Bay Area demand substantially faster in the late 1990s.

Starting from a lower base, the rise in rents in Los Angeles county marked a steeper increase. Nonetheless, the tech-driven Bay Area economy still enjoyed substantial gains in median renter income between 2000 and 2016, rising 19.0% and 11.3%, respectively in San Francisco-Oakland and San Jose, compared to a 3.9% increase in Los Angeles county. Accordingly, Bay Area income trends likely supported strong rent increases while at the same time also **cushioning** the effects of rising rents on renters in higher income brackets and holding down the growth in rent burden.

These are a lot of facts to keep in mind, but what do they mean for affordability? Here the constant quartile method might prove valuable for measuring the mismatch of rents and incomes in ways that make more intuitive sense.

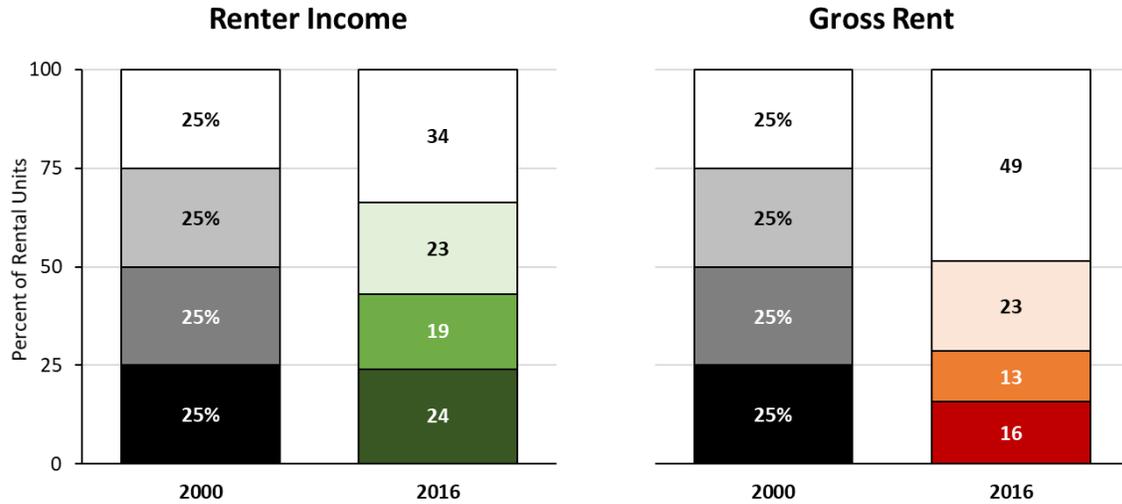
The San Francisco-Oakland metro (Exhibit 5) did not experience as large a shift of renters into the former top rent quartile as Los Angeles county, a 24 percentage point gain, compared to a 30 point gain in Los Angeles. More striking is that renters’ incomes (adjusted for inflation) in SF-Oakland shifted an extra 9 percentage points into the top income quartile, compared to the 5-point shift in the share in Los Angeles county.

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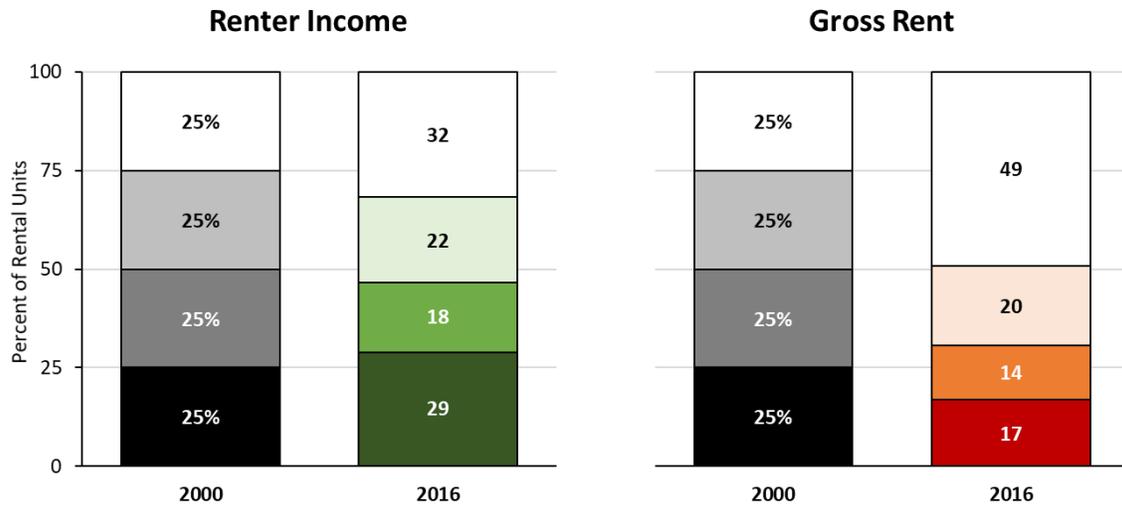
<sup>4</sup> San Francisco-Oakland metro area consists of five adjacent counties (Alameda, Contra Costa, Marin, San Francisco, and San Mateo) while San Jose metro area consists of Santa Clara and San Benito counties.

**Exhibit 5.** Quartile Distribution of Renter Households by Income and Rent, Under Inflation-adjusted Constant Quartile Breaks, 2000 and 2016, San Francisco-Oakland and San Jose Metros

(a) San Francisco-Oakland Metropolitan Area



(b) San Jose Metropolitan Area



*Note:* Percentages may not add up to 100 due to rounding at the first decimal place.

*Source:* 2000 Decennial Census and 2016 American Community Survey IPUMS Microdata files.

The San Jose metro (Exhibit 5, lower panel) experienced a shift identical to San Francisco-Oakland into the top rental quartile but renters' incomes did not shift quite as much into the top bracket (up 7 points instead of 9). Overall, both the Bay Area metros experienced a less abrupt upward shift than Los Angeles into the top rent bracket and both also experienced greater growth than LA in the top income quartile for renters.

The story is different for San Jose in the *bottom* income quartile. San Jose's share of renters in the lowest income bracket increased to 29%, a 4-point gain, while San Francisco-Oakland's share decreased by 1 point and Los Angeles county held even. Thus the growth of San Jose metro renters in the bottom bracket placed greater demand on rentals available in the bottom rent quartile. Unfortunately, that rental share declined by 8 percentage points, compared to a 9 percentage point decline in San Francisco-Oakland, and a 14-point decline in Los Angeles county. The mismatch at the bottom of the rental market thus depends on changes in both incomes and rents.

Overall, the Bay Area metros generally have had a less severe upward shift in rent distribution than Los Angeles, and they also have benefited from greater increases in incomes at the high end than Los Angeles. What distinguishes the San Jose metro, however, is its widening income polarization that also is increasing the share of renters in the lowest bracket without a greater increase in rentals in the bottom quartile. All this is made readily apparent by the constant quartile affordability mismatch indicators displayed in Exhibit 5.

### *Summary Comparison of Los Angeles and the Rest*

Understanding the state of affordability in Los Angeles and elsewhere requires us to take account of the mismatch of rents and incomes at both the top end, where the greatest growth of rentals has been occurring, and at the bottom, where the greatest problems of affordability may fall. To summarize how Los Angeles fares relative to the Bay Area or the nation, Exhibit 6 pulls together all these quartile changes.

In the top quartile, Los Angeles rents shifted upward (30 percentage points) by more than estimated in any location we compared, more than doubling the normal share established for the top quartile in 2000 (Exhibit 6). That upward shift in rents was offset by small gains in the share of renters that shifted into the top income quartile. Whereas in the nation as a whole, there was a 1 percentage point upward shift, in California that was 4 points, Los Angeles county 5 points, and San Francisco-Oakland 9 points.

The difference between the rental and income changes in shares provides a net measure of mismatch in the upper quartile. Los Angeles city had a 27-point mismatch, followed by LA county with 25 points, and the national average of 13 percentage points. Of the Bay Area metros, San Jose had the greatest mismatch in the top quartile, 17 percentage points.

The bottom quartile measures the affordability problem from the other direction, showing a shortfall of rentals (negative) as units shift out of the bottom quartile (Exhibit 6). These losses are offset by minimal changes in renters' share in the bottom income quartile, and in fact, as discussed, San Jose actually had a 4-point gain in its share of renters with low incomes. Whereas, the nation experienced a mismatch that grew by 9 points in the bottom quartile, equal to California's, Los Angeles county suffered a 14-point mismatch. The San Jose metro was close behind (12-point shortfall), followed by San Francisco-Oakland (8 points).

Taken together, the high and low-end mismatches in the rental market can be summed to describe the overall share of renters that are misaligned due to overall shifts in rents upward relative to any changes in incomes. This is an aggregate perspective that does not account for unit-level matches of rents and incomes, but it is the aggregate level where policy and planning attempt to prepare opportunity for individual renters to find their own home.

**Exhibit 6.** Summary of Combined Mismatch Effects of Rent and Income Shifts, 2000 to 2016, Selected Areas, with Comparison to the Traditional Rent Burden Affordability Measure

	United States	California	Los Angeles County	Los Angeles City	SF-Oakland Metro	San Jose Metro
<b>Top Quartile</b>						
Rent Increase *	14	24	30	31	24	24
Income Increase *	1	4	5	4	9	7
Difference	13	20	25	27	15	17
<b>Bottom Quartile</b>						
Rent Increase	-8	-9	-14	-14	-9	-8
Income Increase	1	0	0	-1	-1	4
Difference	-9	-9	-14	-13	-8	-12
<b>Top and Bottom</b>						
Differences Combined **	22	29	39	40	23	29
<b>Traditional Affordability</b>						
% excessive rent burden (30%+)	50	55	58	61	47	48
% severe rent burden (50%+)	25	28	31	33	23	22

Note:

\* Increase is calculated as the quartile share in 2016 less the initial 25% share in 2000.

\*\* "Combined" is calculated as top quartile difference minus bottom quartile difference.

The combined differences from the top and bottom quartiles are summarized in Exhibit 6. (This leaves aside potential mismatches in the middle two quartiles that are ambiguous as to direction and surely, in any event, reflect the mismatches experienced in the top and bottom quartiles.) For the nation as a whole, there is a 22-point mismatch that represents the growing affordability problem since 2000. California as a whole has a 29-point mismatch. San Jose metro closely resembles the statewide number, while San Francisco-Oakland has a 23-point mismatch that is close to the national average. Los Angeles county and city stand at 39-point and 40-point mismatches, nearly twice the national average.

In comparison, the traditional rent burden indicator of affordability shows Los Angeles only slightly worse off than the nation as a whole (50% affordability problem in the nation, versus 58% in LA county and 61% in LA city) as previously shown in Exhibit 2. And the traditional

indicator shows both the Bay Area metros as *more affordable* than the national average. The proposed new mismatch indicator does a better job of explaining this Bay Area anomaly, with San Jose now substantially worse (29) than the national average (22). The new mismatch indicator is also much more effective at highlighting the even more dire conditions in Los Angeles.

## Conclusion

No longer is the housing affordability problem about just the simple question of “how many are burdened” or “what percent are burdened,” as measured by the traditional indicator. The problem is growing too widespread and complex. The findings on the traditional indicator also are too similar between places to inspire local solutions. And it is downright crazy when the San Francisco Bay Area is judged more affordable than the national average.

The fact of continuing citizen resistance to housing solutions also suggests that new measurements could be useful if they can provide more meaningful insights to local citizens and decision makers, something that can help lift the hood on the workings of affordability problems and let us tell better under-the-hood stories about change over time and differences between cities.

The proposed constant quartile mismatch method can open the hood on affordability and explain local experiences of a worsening problem in an intuitive and visual language. It also will allow planners to easily quantify the “what if we were back in X time” mental scenario that many cities seem to base their goals on. A city can’t really be more like some other city, but it sure can look to its recent past as a reasonable reference for what it is today.

The USC PopDynamics Group has a history of innovation with census data, applied to both population and housing topics, and we are finding more ways to use the tremendous resource of the American Community Survey that is provided to us annually. We will continue to trace affordability mismatch across time for different places, using the new data released each fall. As problems have grown ever greater in the 21<sup>st</sup> century, so has the urgency of this research.

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The new series of housing research briefs addresses total housing needs, rental housing problems, displacement and housing dislodgement, and who benefits from newly built housing, with particular reference to Los Angeles but also comparing other metros. We gratefully acknowledge the kind support of the Haynes Foundation, but the authors alone are responsible for any findings and opinions expressed.

For more resources please visit: <https://sites.usc.edu/popdynamics/housing/>