Housing Affordability in Riverside and San Bernardino Counties

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Executive Summary

This report summarizes Riverside and San Bernardino Counties' housing affordability from both the supply and demand perspectives at regional and local levels, identifies local jurisdictions with the greatest affordability challenges, and offers recommendations for what communities can do to alleviate shortages of affordable housing.

Heterogeneities in household income distributions

The two inland counties were the home to 1,335,365 households in 2017, out of which 62.3% were owner households, and 37.7% were renter households. Owner households tended to be Upper Income, with 61% of these households having incomes that were above the 100% HAMFI threshold. In comparison, only 32% of renter households were as affluent. Only 7%, 8%, and 14% of owner households had incomes that were Extremely Low, Very Low, and Low Income, respectively. On the other hand, 21%, 17%, and 20% of renter households were classified as Extremely Low, Very Low, and Low Income. The proportions of households that belonged in the Low- and Middle-Income category were similar for owners and renters; 9.6% were owner households and 10.4% were renter households.

Although the overall income distributions for Riverside County and San Bernardino County were similar, the 52 cities that form the Inland region show large heterogeneities. For example, 46.1% of the City of Needles' renter households were Extremely Low Income, and 11.1% were Upper Income. Contrastingly, 5.2% and 65.4% of the renter households in Canyon Lake were Extremely Low and Upper Income.

Demand-side: cost-burdened households

We look at affordability from the demand side, or more specifically, whether a household is burdened by housing costs. Across the region, about 21.2% of households were moderately burdened by housing costs (spending 30%-50% of household income on housing costs), while 19.1% were severely burdened (spending more than 50% of household income on housing costs). More than half of the renter households were cost-burdened, and they were two times more likely to be severely burdened than owner households.

We observe a high level of spatial heterogeneity of housing cost burden status across local jurisdictions in the region. The percentage of owner households being burdened by housing costs had a wide range [21.6%, 54.2%]. The pattern applies to renter households, which have the range [41.4%, 76.3%]. In addition, cities with more cost-burdened owner households were likely to host more cost-burdened renter households.

Owner households show clear patterns of spatial concentration. There is an emerging hot spot of severely burdened owners in the Coachella Valley area in Riverside County, comprised of Cathedral City, Desert Hot Springs, Palm Springs, Rancho Mirage, Palm Desert, Indio, and Coachella. For moderately burdened owners, we observe a hot spot located closer to San Diego County, and another hot spot in the western area bordering Los Angeles County and Orange County. In contrast, the spatial distributions for cost-burdened renter households show less of a clear clustering pattern. We observe that most owners are not burdened, and that only a small proportion are moderately or severely burdened. One exception is the city of Coachella, where

20.8% of owners are moderately burdened and 33.4% are severely burdened. In contrast to owners, renters in every city are more likely to be burdened by housing costs. Of note is that 51.4% of renters are severely burdened in Adelanto city.

Supply Side: affordable and available housing stock

We used the Comprehensive Housing Affordability Strategy (CHAS) 2013 - 2017 dataset made available by the Department of Housing and Urban Development (HUD) to determine whether households that belong to certain income brackets have access to housing that is affordable to them, or if the housing is occupied by higher-income households, reducing the affordable housing stock that is available to them. We quantify this mismatch through what we define as the affordability mismatch index, which looks at the relative differences between the "affordable" and the "affordable and available" housing stocks of cities.

On average, a typical city in the Inland counties had 15.5% of housing stock affordable to owner households earning 50% of HAMFI (i.e., the upper threshold of Very Low Income), 31.4% of housing stock affordable to owner households earning 80% of HAMFI (i.e., the upper threshold of Low Income), and 42.2% of housing stock affordable to owner households earning 100% of HAMFI (i.e., the upper threshold of Low and Middle Income). The shares of housing stocks affordable to renter households at 50% and 80% of HAMFI are 18.7% and 55.5%, higher than those for owner households. The average values of the shares of the housing stock affordable & available to households at given income levels are consistently smaller than the share of housing stock affordable to those households regardless of the tenure status. In a typical city in the Inland counties, about 2 in 3 houses affordable to Very Low-Income owner households were occupied by higher-income households and were thus unavailable to them. About 1 in 2 houses affordable to Low-Income owner households were unavailable to them. The mismatch in rental housing stock was less severe. About 1 in 2 houses affordable to Extremely Low-Income renter households were unavailable to them and 1 in 3 houses affordable to Low-Income renter households was unavailable to them.

Connecting supply and demand sides

We adopted a series of multivariate linear regression models to examine why some cities are more cost-burdened than others. Results suggest that for a typical city in the region, about 2 in 3 owner households are not burdened by housing costs while about 1 in 4 renter households is moderately burdened by housing costs and 1 in 2 renter households is severely burdened by housing costs. The share of affordable housing stock plays an essential role in reducing the share of moderately burdened households. A higher level of housing affordability mismatch predicts a higher share of not burdened renter households, and lower shares of moderately or severely burdened renter households, suggesting that renters move down their income hierarchy to occupy less expensive units leaving the poorest renters no choice but to rent houses that far exceed their income level. A larger share of Hispanics predicts a larger share of moderately burdened owner households and a smaller share of not burdened (renter/owner) households. A larger median household income predicts a smaller share of severely burdened households regardless of the tenure status.

We recommend that proposed policies should prioritize affordable units by income thresholds, increase affordable housing production, and reduce cost burden gaps between the rich and the poor.

Introduction

Housing affordability is a "vexing", or even "slippery" term to precisely define, as it encompasses a number of issues, including the housing market, households' financial resources (e.g. the income distribution, credit), public policies (e.g. housing policies, economic policies), and social justice in terms of the minimally acceptable quantities of housing and non-housing goods that a household should consume (Galster and Lee 2020).

Despite the conceptual issues with defining housing affordability, several approaches have been suggested and adopted to measure it, such as the residual income approach (Kutty 2005), the housing expenditure-to-income ratio (Hulchanski and David Hulchanski 1995), and the Minimum Income Standard (Padley and Marshall 2019). How housing affordability is measured by the U.S. Housing and Urban Development (HUD) is significant in that it determines who would qualify for subsidized housing. The housing expenditure-to-income ratio approach has long been adopted by housing programs in the U.S. to measure housing affordability. More specifically, spending 30% of a household's gross income on housing costs has become the threshold indicator for housing unaffordability. Households that meet this benchmark are considered to be *housing cost-burdened*[1]. In addition, households that spend more than 50% of their income on housing costs are considered to be *severely cost-burdened*.

The issue of housing affordability isn't simply a matter of a lack of supply (Pattillo 2013). A more significant consideration is knowing whether people (especially low-income people) have access to affordable housing that is appropriate for their income level. For example, in 2010, for every 100 extremely low-income renter households (earning less than 30% of their metro area's median income), there were 56 housing units that they could afford (defined as renting for no more than 30% of their income). Despite this shortage, some of those units were unavailable because they were either occupied by higher-income people or were in disrepair. This discrepancy is coined as an affordability mismatch since only 30 affordable units were available for this vulnerable population—an acute mismatch (Bolton 2012). In 2019, only 62 affordable units were available for every 100 very low-income renter households. Only 40 affordable units were available for every 100 extremely low-income renter households (Alvarez and Steffen 2021).

California's housing market values continue to surpass the nation's market values (Jackson 2021). The median price for a single-family home in California in October 2021 was $798,440, whereas the national median home value was $353,900 (California Department of Finance 2021). Cities that are relatively more affordable, such as Riverside and Sacramento, saw greater price increases than more populous areas like the Bay Area. In 2021, only 24% of Californians can buy a single-family home at its median price (California Association of Realtors 2021). The minimum income needed to buy a home in the Riverside and San Bernardino counties were $104,000 and $79,600, respectively. Although Governor Newsom's budget proposal for the 2022 – 2023 fiscal year adds $2 billion for housing production (Newsom 2022), the short supply of housing, along with the incoming flux of generally wealthy households into cities with relatively affordable housing, will continue to exacerbate affordability mismatches by further displacing the most cost-burdened households.

[1] Defining Housing Affordability. HUD. https://www.huduser.gov/portal/pdredge/pdr-edge-featd-article-081417.html

In this report, we empirically examine the housing affordability issue across all cities in Riverside and San Bernardino counties, aimed at providing evidence for affordable housing policymaking. We assess the extent of housing cost burdens for households across all income levels. Potential racial disparity is also explored. In addition, we shed light on the housing affordability mismatch by analyzing current housing stocks in terms of their affordability and availability to households at various income levels. We further discuss the impacts of the ongoing COVID-19 pandemic on housing affordability and provide policy suggestions.

To better support the decision-making process of each jurisdiction, we created an interactive web application to visualize the profile of each city. The web application also allows for easy comparison across cities. Please click on the link to use our web application.

Data & Methodology

The HUD's Comprehensive Housing Affordability Strategy (CHAS) 2013-2017 data[2] are utilized to shed light on the housing affordability issue across local jurisdictions in the two counties. The CHAS 2013-2017 data are based on the American Community Survey (ACS) 2013-2017 estimates. What is special about this data set is that it combines ACS microdata with HUD-adjusted Median Family Incomes (HAMFIs) to create estimates of the number of households that would qualify for HUD assistance (Joice 2014). HAMFI is calculated based on the median income for a HUD Metropolitan Fair Market Rent Area (HMFA), assuming it is the income for a four-person household. HAMFI is used as the basis for the Income Limits (IMs) which are the official indices for determining the eligibility of assisted housing programs, including the Public Housing, Section 8 project-based, Section 8 Housing Choice Voucher (HCV)[3], etc. By adjusting for the household size available in the ACS microdata, the CHAS data provide a unique opportunity to observe and analyze the housing affordability issue from the perspective of federal assistance.

Another unique quality of CHAS data is that it provides information on the availability of affordable housing stock. There are marked differences between what is considered "affordable" and what is "affordable and available". A housing unit is affordable to a household if they do not spend more than 30% of their income on housing costs. In contrast, the concept of "affordable and available" is formalized as vacant or occupied by a household with an income less than or equal to a given income threshold. It is possible that higher-income households choose to consume less housing, and thus occupy housing units that are affordable to lower-income households. If this is a common case within a certain locality, the affordability issue might be more severe than it appears as there would be much fewer housing units available to lower-income households.

By providing data on the "affordable" and "affordable and available" housing stocks, the CHAS data provides the opportunity to investigate affordability mismatches between what people can afford, and what is available to them. In this report, we define a housing affordability mismatch (HAM) indicator which is scale-free and allows for meaningful comparisons across jurisdictions. The indicator is formally defined as the proportion of affordable housing stock to households at a certain income level that is occupied by higher-income households. As shown in Equation (1), for jurisdiction i, AU_i is the number of housing stock affordable to households at a certain income level, AAU_i is the number of housing stock affordable and affordable to households at the same income level, and HAM_i is the housing affordability mismatch index for households at this income level. HAM_i has the range of [0, 100]. A large value is indicative of a larger mismatch.

$$HAM_i = 100 \times \frac{AU_i - AAU_i}{AU_i} \qquad (1)$$

[2] The CHAS data were obtained from the HUD website https://www.huduser.gov/portal/datasets/cp.html on Nov 3, 2020.

[3] It should be noted that HUD created the Small Area Fair Market Rent (SAFMR) demonstration program in 2012 which set the maximum rent limit at zip code level instead of the metropolitan level in select metropolitan Areas. The goal of the program is to give voucher recipients an opportunity to access and afford high-opportunity neighborhoods where prevailing rents have usually been above the HUD limit. The Inland Empire has not adopted the SAFMR for HCV and is still using the global IM which applies to all neighborhoods.

We further adopt a series of multivariate regression models to investigate why some jurisdictions had a larger proportion of households burdened by housing costs and whether/how the housing affordability mismatch is related to the cost burden status. This is accomplished by pulling a bunch of socioeconomic, demographic, and housing variables from the ACS 2013-2017 estimates for all jurisdictions in the Inland region, including race/ethnicity, median household income, population, homeownership rate, housing stock by tenure, and median property/rent value.

Household Income Distributions

The Inland region is comprised of two counties, Riverside County and San Bernardino County, and it is equivalent to the Riverside-San Bernardino-Ontario, CA MSA. Since the MSA is the HMFA, all local jurisdictions within the MSA share a HAMFI, which was $63,200 in 2017 for a four-person household. The upper thresholds (or Income Limits (ILs)) for Low (80%), Very Low (50%), and Extremely Low (30%) were thus $51,600, $32,250, and $24,600. In addition, the 100% HAMFI threshold ($63,200) was used to classify households into Low and Middle Income and Upper-Income households. That is, households that earned more than $63,200 were considered Upper-Income households, while those that earned less than $63,200 but higher than $51,600 were considered Low- and Middle-Income households. We use this classification to look at the composition of owner and renter households in the two counties.

The region was home to 1,335,365 households in 2017, comprised of 832,120 (62.3%) owner households and 503,250 (37.7%) renter households. As shown in Figure 1, a much larger proportion of owner households were Upper-Income households as they earned an income that was higher than 100% HAMFI. For the entire region, 61% of owner households were above the 100% HAMFI threshold, while only 32% of renter households were as affluent. Comparatively, 21%, 17%, and 20% of renter households were Extremely Low, Very Low, and Low Income, translating to 38% (191,235) of households that were potentially eligible for the HCV program. These percentages were much smaller for owner households — 7%, 8%, and 14%. The Low and Middle-Income categories occupied a similar proportion, which was 9.6% and 10.4% for owner and renter households respectively. At the county level, the two inland counties had very similar household income distributions in 2017, although Riverside County had a larger household population (a total of 711,725) than San Bernardino County (a total of 623,640).

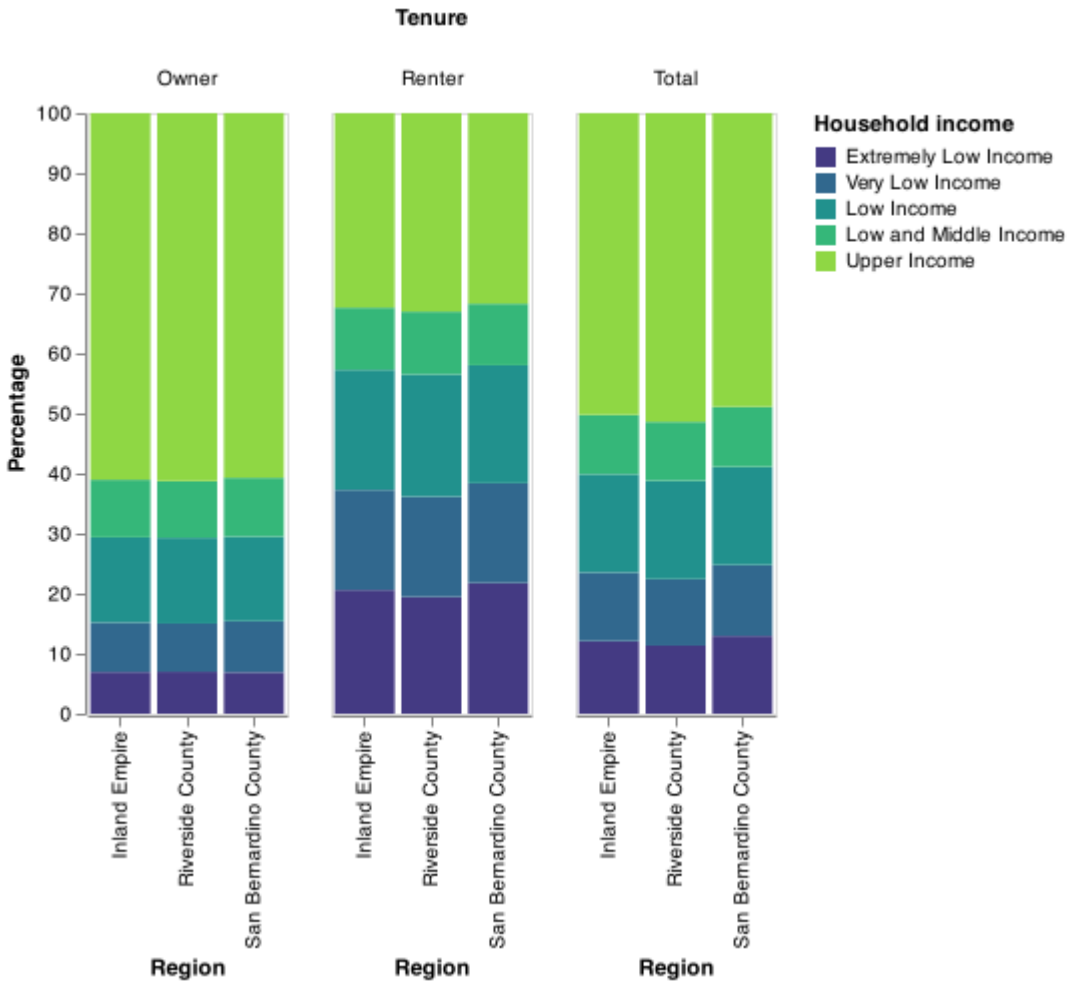


Figure 1 Household income as a percentage of HAMFI at the county and MSA levels: 2017

Large heterogeneity across cities

While the two inland counties shared similar household income distributions, the 52 cities had a much wider variation. For instance, the City of Needles hosted 46.1% Extremely Low Income, and 11.1% Upper-Income renter households, while only 5.2% of renter households in the City of Canyon Lake were classified as Extremely Low Income. The City of Eastvale was home to the largest share of affluent renter households - around 68.7% of renter households were considered Upper Income. The City of Canyon Lake was also home to the smallest share of owner households—only 2.2% were Extremely Low-Income. In contrast, the City of Coachella had a large share of owner households that were Extremely Low Income (15.5%), which was twice the regional average, and a very small share of Upper Income (32.3%) households, which was much lower than the regional average (59.4%), and it also strongly contrasted with the 79.1% in the City of Indian Wells. Figure 2 provides a visual of Needles, Canyon Lake, Coachella, and Eastvale to demonstrate how income distributions can vary across the region.

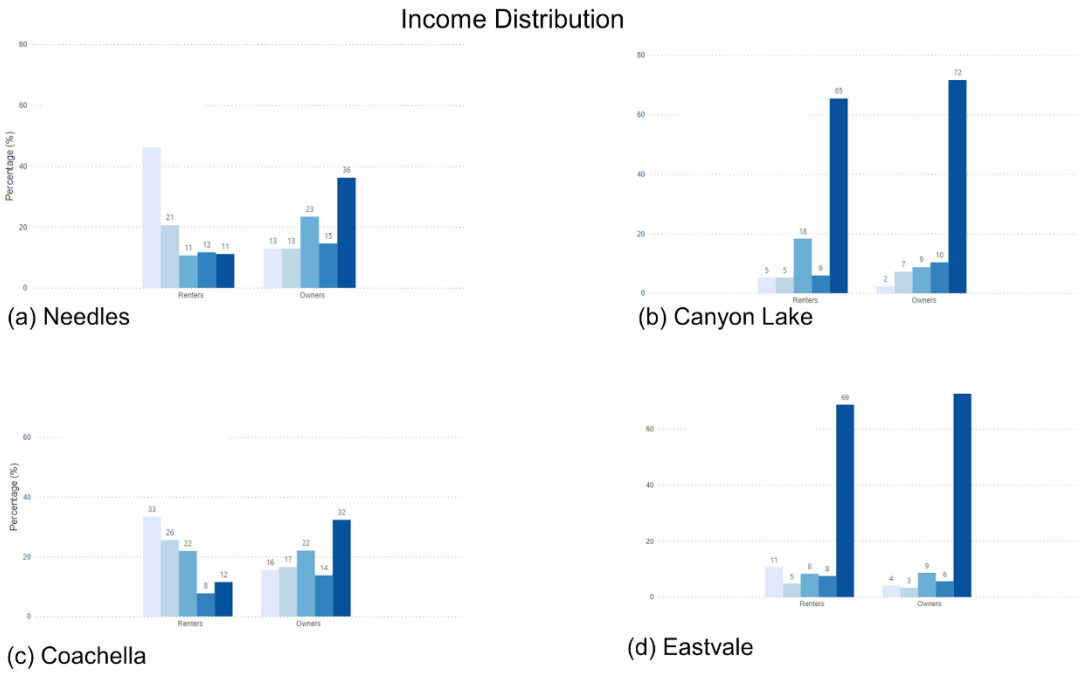


Figure 2 Household income distributions for four cities within the two counties

Cost-Burdened Households

As defined by the HUD, households who spend 30%-50% of their income on housing costs are moderately burdened, while those who spend more than 50% of their income on housing costs are severely burdened. In this section, we look at housing affordability from the perspective of housing cost burdens.

As shown in Table 1, across the region, about 21.2% of households were moderately burdened by housing costs (spending 30%-50% of household income on housing costs), while 19.1% were severely burdened (spending more than 50% of household income on housing costs). More than half of the renter households were cost-burdened, and they were two times more likely to be severely burdened than owner households.

Table 1 Cost-burdened households in the Inland Counties: 2017[4]

	Owner	Renter	Total
Not Burdened	557,215 (67%)	220,620 (43.8%)	777,835 (58.2%)
Moderately Burdened	152,460 (18.3%)	129,990 (25.8%)	282,450 (21.2%)
Severely Burdened	113,515 (13.6%)	141,570 (28.1%)	255,085 (19.1%)
Total	832,120	503,250	1,335,365

Looking at the profiles of individual local jurisdictions, we observe a high level of spatial heterogeneity. The percentage of owner households being burdened by housing costs had a wide range [21.6%, 54.2%]. The pattern applies to renter households, which have the range [41.4%, 76.3%]. The percentage of cost-burdened owner households has a moderate and positive correlation with the percentage of cost-burdened renter households (Pearson's Correlation Coefficient = 0.318, p-value=0.02), indicating that cities with more cost-burdened owner households were likely to host more cost-burdened renter households. This positive relationship is corroborated by the fact that several cities made into both the top/bottom ten lists of the percentage of cost-burdened owner/renter households as shown in Table 2. Three cities, including Coachella, Adelanto, and Desert Hot Springs, made the top ten in both renter and owner rankings. Four cities, including Redlands, Twentynine Palms, Calimesa, and Blythe, made the bottom ten in both renter and owner rankings. We do observe several outliers. For instance, Eastvale ranked the top 6th in the percentage of cost-burdened owner households (38.4%), while it ranked the bottom 5th for cost-burdened renter households (46.8%). Similarly, Palm Desert ranked the top 9th for cost-burdened owner households (36%), while it ranked in the bottom 6^{h} for cost-burdened renter households (48.2%).

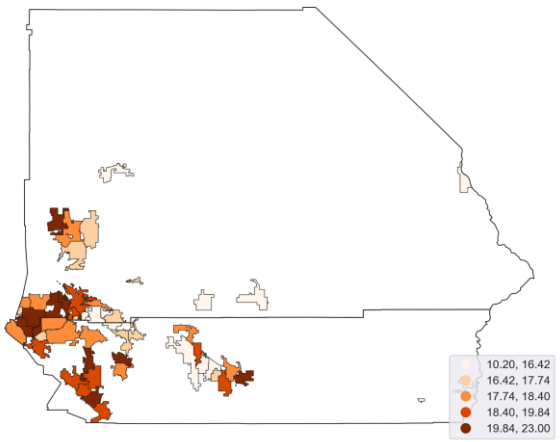
[4] Households with zero or negative income are assumed to have severe burdens, while households paying no cash rent are assumed to be without burdens.

Table 2 Ranking Cities by Percentage of Cost-Burdened Households by Tenure

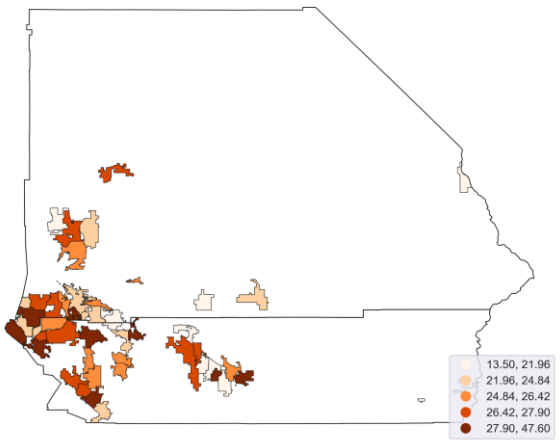
Rank	High to Low (Highest 10 Cities)				Low to High (Lowest 10 Cities)			
	Owner		Renter		Owner		Renter	
	City	Cost Burdened	City	Cost Burdened	Owner	Cost Burdened	Renter	Cost Burdened
1	Coachella	54.2%	Indian Wells	76.3%	Barstow	21.6%	Blythe	41.4%
2	Cathedral City	41.4%	Adelanto	72%	Needles	21.6%	La Quinta	42.8%
3	Perris	40.2%	Coachella	69%	Redlands	25.7%	Twentynine Palms	43.3%
4	Rancho Mirage	40%	Montclair	63.5%	Loma Linda	27%	Canyon Lake	43.4%
5	Indio	39.9%	Desert Hot Springs	63.4%	Grand Terrace	28%	Eastvale	46.8%
6	Eastvale	38.4%	Hemet	61.9%	Twentynine Palms	28%	Palm Desert	48.2%
7	Adelanto	37.6%	Corona	61.9%	Riverside	28.6%	Calimesa	49.1%
8	Palm Springs	36.3%	San Bernardino	61.8%	Calimesa	28.8%	Yucaipa	49.9%
9	Palm Desert	36%	Moreno Valley	60.5%	Blythe	29.3%	Beaumont	50%
10	Desert Hot Springs	36%	Colton	60.3%	Yucca Valley	29.5%	Redlands	50.2%

We further look at the spatial patterns of housing cost burdens in the 52 cities of the Inland region. A couple of choropleth maps are displayed in Figure 3. Visually, the left two maps demonstrate that owner households show clear patterns of spatial concentration. There is an emerging hot spot of severely burdened owners in the Coachella Valley area in Riverside County, comprised of Cathedral City, Desert Hot Springs, Palm Springs, Rancho Mirage, Palm Desert, Indio, and Coachella (Figure 3(c)). For moderately burdened owners, we observe a hot spot located closer to San Diego County, and another hot spot in the western area bordering Los Angeles County and Orange County. The spatial clustering pattern is also confirmed with formal spatial autocorrelation tests.

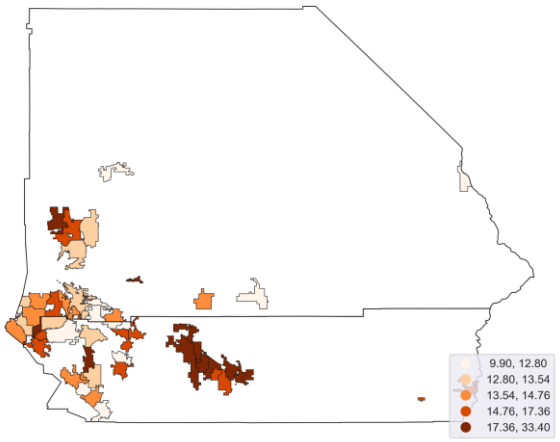
In contrast, the spatial distributions for cost-burdened renter households show less of a clear clustering pattern. For instance, cities with the highest concentrations of severely burdened renters include Adelanto, San Bernardino, Highland, Calimesa, Hemet, Menifee, Yucca Valley, and Coachella. These cities are scattered across the two counties.



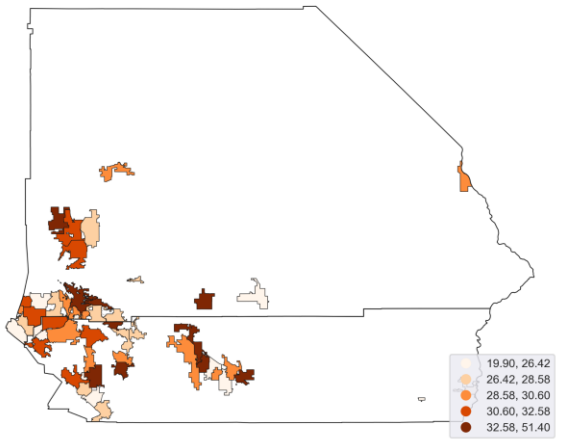
(a) Moderately Burdened, Owners



(b) Moderately Burdened, Renters



(c) Severely Burdened, Owners



(d) Severely Burdened, Renters

Figure 3 Spatial patterns of proportions of households that were burdened by housing costs: (a) Moderately Burdened, Owners (b) Moderately Burdened, Renters (c) Severely Burdened, Owners (d) Severely Burdened, Renters

We further contrast the housing cost burden status between owners and renters in the 52 cities with a ternary diagram as shown in Figure 3. The ternary diagram is a powerful visualization tool for exploring compositional data, which is defined as being comprised of strictly positive components whose sum is constant. Here, three proportions related to Not burdened, Moderately Burdened, and Severely Burdened for a city always sum up to 100, and thus can be considered as compositional data. In the ternary diagram, these three proportions are represented by the horizontal, right, and left axes, respectively. If a city lies near the top corner, it has a large proportion of Moderately Burdened households. The same logic can be applied to the proportions in the left corner (Severely Burdened) and right corner (Not Burdened.) Most of the data points that represent owners cluster near the right corner, indicating

that most owners are not burdened and that only a small proportion are moderately or severely burdened. One exception is the city of Coachella, where 20.8% of owners are moderately burdened and 33.4% are severely burdened. In contrast to the data patterns we see of owners, the renters' data points are shifted to the left, indicating renters in every city are more likely to be burdened by housing costs. Of note is that 51.4% of renters are severely burdened in Adelanto city.

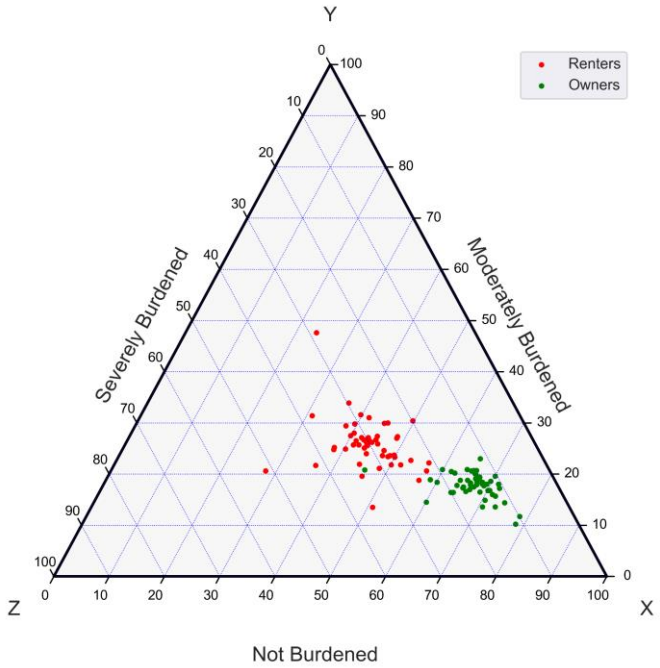


Figure 4 Ternary diagram for percentages of "Not burdened", "Moderately Burdened", and "Severely Burdened" households in cities of the Inland region

We further examine the housing affordability issue in the Inland counties from the supply side – how many existing houses are affordable (and available) to households earning a certain level of income? Specifically, we look at the share of current housing stocks that are affordable (and available) to households with an income at various HAMFI/LM levels (e.g., 80%, 50%, and 30%) (Joice 2014). Renter households are assumed to afford to rent a house if 30% of their household incomes can cover housing costs. Owner households are assumed to afford to purchase a house if the house's value is no more than 3.36 times the household's income. Overcrowding is avoided by adjusting the HAMFI based on the size of the housing unit. For instance, a two-bedroom unit is assumed to be suitable for three people.

On average, a typical city in the Inland counties had 15.5% of housing stock affordable to owner households earning 50% of HAMFI (i.e., the upper threshold of Very Low Income), 31.4% of housing stock affordable to owner households earning 80% of HAMFI (i.e., the upper threshold of Low Income), and 42.2% of housing stock affordable to owner households earning 100% of HAMFI (i.e., the upper threshold of Low and Middle Income). However, the distribution of affordable housing stock is far from uniform across these cities. In Needles, as high as 64% of the housing stock is affordable to owner households earning 50% of HAMFI. This is a sharp contrast to the city of Indian Wells, which only has 1% of its housing stock affordable to owner households in the same income bracket. Needles is also the second-highest ranked city in terms of having a housing stock that is affordable to owner households earning 80% of HAMFI. The abundant affordable housing stock helps explain why Needles ranked as one of the least cost-burdened owner households (21.6%). Like Needles, Barstow was also abundant in affordable housing stock and was also one of the least cost-burdened owner households (21.6%). However, we also observe cities with relatively abundant housing stock but suffered from severe affordability issues. For instance, Adelanto is one of ten cities that had the largest share of housing stock affordable to owner households earning 50% or 80% of HAMFI, but it was also in the top ten list for having a large share of cost-burdened owner households. One reason for this discrepancy is that households in Adelanto have relatively low incomes (median income of $34,450). So, even though many houses were affordable, the quantity of affordable housing is not enough and more affordable housing is needed to satisfy the need of the population. It is also interesting to observe that cities that ranked in the bottom ten (Eastvale is the only exception) in the share of affordable housing stock did not make it into the top ten cities that had the greatest share of cost-burdened owner households. This observation emphasizes why it is important to consider perspectives from both the supply and demand sides. A small share of affordable housing stock might serve its purpose in cities with certain demographics while a large share might not be enough in other cities.

Table 3 Descriptive statistics of affordable housing stock in cities of the Inland region

	Owner Households			Renter Households		
Upper threshold of	**Very Low Income (at 50% of HAMFI)**	**Low Income (at 80% of HAMFI)**	**Low and Middle Income (at 100% of HAMFI)**	**Extremely Low Income (at 30% of HAMFI)**	**Very Low Income (at 50% of HAMFI)**	**Low Income (at 80% of HAMFI)**
mean	15.5%	31.4%	42.2%	7.6%	18.7%	55.5%
std	14.1%	24.1%	27.8%	4.4%	14.2%	23.8%
min	1%	3%	5%	2%	4%	8%
25%	6%	13.8%	21.3%	4.8%	9%	40.8%
50%	10%	22.5%	35.5%	7%	14%	55.5%
75%	21%	46.3%	60.8%	9%	24%	73%
max	64%	91%	95%	25%	79%	98%

As shown in Table 3, in a typical city in the Inland counties, the shares of housing stocks affordable to renter households at 50% and 80% of HAMFI are 18.7% and 55.5%, higher than those for owner households. On the other hand, renters typically had lower incomes and wealth than owners. Like the pattern we observed for owners, Adelanto ranked high in the share of housing stocks affordable to renter households at 80% of HAMFI. However, a large share of renter households was cost-burdened and ranked 2nd. In contrast to the pattern we observed for owners, Indian Wells had insufficient affordable housing for renters at the 50% of HAMFI threshold, and it also had the greatest share of cost-burdened renters out of all the cities. As shown in Figure 5(b), about 47% of renter households in Indian Wells were extremely low or very low income. However, only 8% of rental housing was affordable to very low-income households, which left many rental families occupying housing that was cost-burdening to them. The vastly different demographics between renter and owner households in this city is striking. While it hosted 79% Upper Income Owners, 78% of renters were Extremely Low, Very Low, or Low Income. Targeted place-based local policies stand a better chance of addressing the housing affordability issue.

Table 4 Ranking Cities by Share of Affordable Housing Stock by Tenure (Top 10)

Rank	Owner Households				Renter Households			
	City	at 50% of HAMFI	City	at 80% of HAMFI	City	at 50% of HAMFI	City	at 80% of HAMFI
1	Needles	64%	Barstow	91%	Needles	79%	Barstow	98%
2	Barstow	61%	Needles	82%	Blythe	57%	Needles	97%
3	Blythe	40%	Twentynine Palms	79%	Barstow	56%	Blythe	90%
4	Twentynine Palms	40%	Adelanto	78%	Coachella	40%	Desert Hot Springs	89%
5	Adelanto	38%	Blythe	77%	Twentynine Palms	34%	Adelanto	87%
6	Hemet	35%	Yucca Valley	65%	Desert Hot Springs	30%	Twentynine Palms	87%
7	Yucca Valley	32%	Desert Hot Springs	64%	Calimesa	30%	Yucca Valley	85%
8	San Jacinto	29%	Victorville	62%	Adelanto	28%	Coachella	83%
9	Calimesa	28%	Coachella	62%	Yucca Valley	27%	Apple Valley	80%
10	Desert Hot Springs	28%	Hemet	59%	Big Bear Lake	27%	Big Bear Lake	77%

Table 5 Ranking Cities by Share of Affordable Housing Stock by Tenure (Bottom 10)

Rank	Owner Households				Renter Households			
	City	at 50% of HAMFI	City	at 80% of HAMFI	City	at 50% of HAMFI	City	at 80% of HAMFI
1	Indian Wells	1%	Indian Wells	3%	Chino Hills	4%	Chino Hills	8%
2	Norco	2%	Norco	4%	Rancho Cucamonga	5%	Canyon Lake	10%
3	Canyon Lake	2%	Chino Hills	4%	Ontario	7%	Eastvale	13%
4	Murrieta	3%	Eastvale	5%	Corona	7%	Rancho Cucamonga	16%
5	Temecula	3%	Temecula	5%	Temecula	7%	Temecula	18%
6	Chino Hills	3%	Chino	7%	Murrieta	7%	Murrieta	23%
7	Fontana	5%	Canyon Lake	8%	Grand Terrace	8%	Chino	23%
8	Eastvale	5%	Rancho Cucamonga	8%	Eastvale	8%	Corona	26%
9	Chino	5%	Murrieta	8%	Moreno Valley	8%	Grand Terrace	32%
10	Rancho Cucamonga	5%	Upland	9%	Indian Wells	8%	Upland	32%

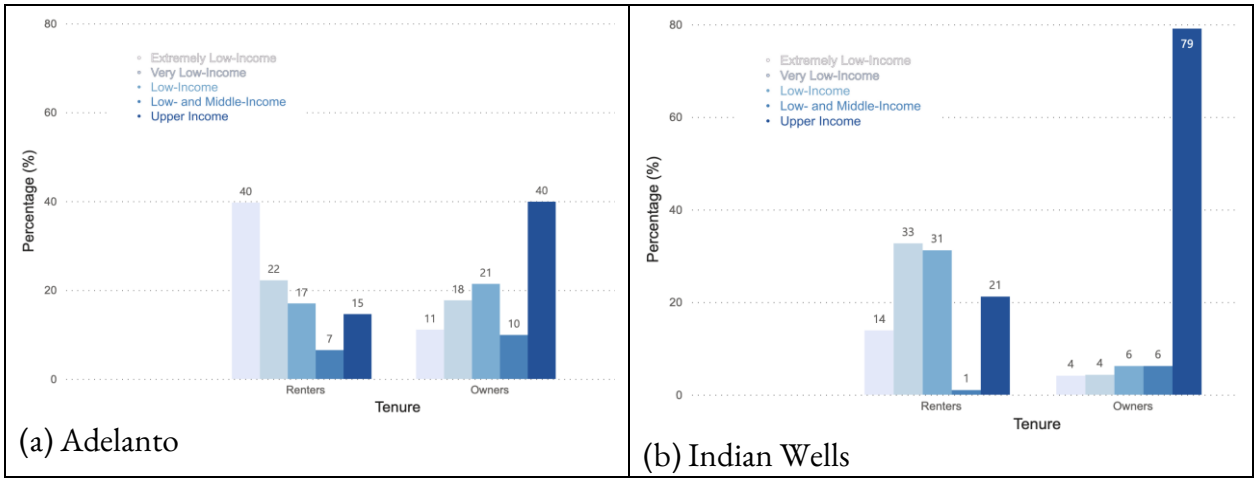


Figure 5 Household Income Distribution in (a) City of Adelanto (b) City of Indian Wells

Housing affordability mismatch

In addition to the discussion of the affordability of the housing stock, it is also important to know to what extent affordable units are matched to the households that need them most. We measure this through the number/share of the housing units affordable and available to households whose incomes are low or very low. Here, "available" is defined as vacant or occupied by a household with an income less than or equal to the income threshold in question. It is possible that higher-income households prefer homes with less housing costs, and thus occupy housing units that are affordable to lower-income households. This practice exacerbates the issue of housing affordability. Lower-income households will encounter a more challenging case of housing affordability than it appears since fewer housing units will be available to them.

As shown in Table 6, the average values of the shares of the housing stock affordable & available to households at given income levels are consistently smaller than the share of housing stock affordable to those households regardless of the tenure status. The mismatch is more severe for housing stock affordable to lower-income households as indicated by the higher housing affordability mismatch values for lower-income households in Table 7. Indeed, in a typical city in the Inland counties, about 2 in 3 houses affordable to Very Low-Income owner households were occupied by higher-income households and were thus unavailable to them. About 1 in 2 houses affordable to Low-Income owner households were unavailable to them. The mismatch in rental housing stock was less severe. About 1 in 2 houses affordable to Extremely Low-Income renter households were unavailable to them and 1 in 3 houses affordable to Low-Income renter households was unavailable to them. Tables 8 and 9 list the top and bottom 10 cities in the share of affordable & available housing stock in the Inland counties. The lists do not change much from the affordability rankings in Tables 4 and 5, suggesting that the existing housing stock plays a larger role than the mismatch factor.

Table 6 Descriptive statistics of the share of affordable & available housing stock in cities of the Inland Counties

	Owner Households			Renter Households		
Upper threshold of	**Very Low Income (at 50% of HAMFI)**	**Low Income (at 80% of HAMFI)**	**Low and Middle Income (at 100% of HAMFI)**	**Extremely Low Income (at 30% of HAMFI)**	**Very Low Income (at 50% of HAMFI)**	**Low Income (at 80% of HAMFI)**
mean	5.54%	15.88%	24.37%	4.27%	12.67%	41.29%
std	5.23%	12.62%	17.19%	3.5%	10.82%	19.28%
min	0%	1%	3%	1%	2%	3%
25%	2%	6.75%	10%	2%	6%	28%
50%	3%	10.5%	18.5%	4%	9.5%	39.5%
75%	7.25%	25%	39.25%	5%	15%	55.25%
max	21%	45%	60%	17%	60%	79%

Table 7 Descriptive statistics of the Housing Affordability Mismatch indicator in cities of the Inland Counties

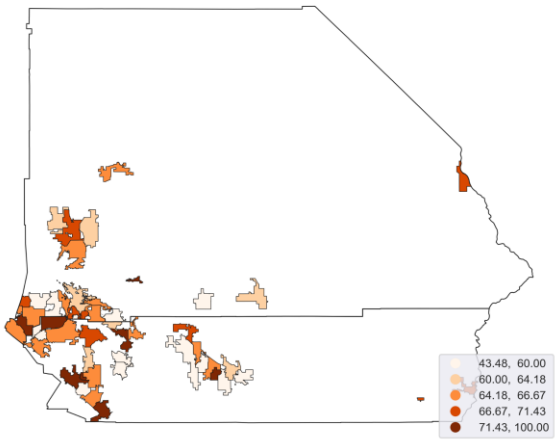
	Owner Households			Renter Households		
Upper threshold of	**Very Low Income (at 50% of HAMFI)**	**Low Income (at 80% of HAMFI)**	**Low and Middle Income (at 100% of HAMFI)**	**Extremely Low Income (at 30% of HAMFI)**	**Very Low Income (at 50% of HAMFI)**	**Low Income (at 80% of HAMFI)**
mean	66.81	51.54	43.9	46.76	34.83	27.01
std	11.05	9.72	8.69	16.44	12.18	8.76
min	43.48	33.33	20	0	12.5	10
25%	60	45.6	38.22	35.12	25.7	21.86
50%	66.67	50	44.26	50	32.66	25.95
75%	69.14	55.94	50	57.14	41.3	31.19
max	100	87.5	66.67	80	70	70

Table 8 Ranking Cities by Share of Affordable & Available Housing Stock by Tenure (Top 10)

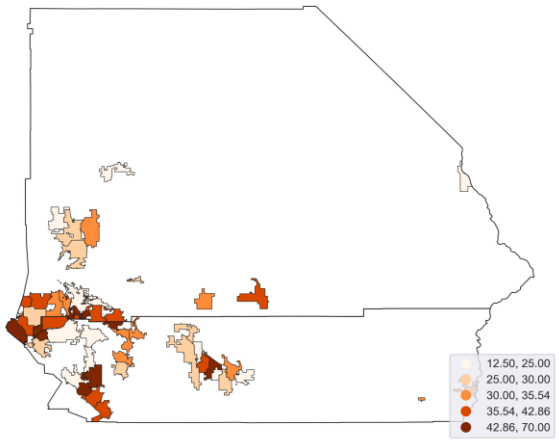
Rank	Owner Households				Renter Households			
	City	at 50% of HAMFI	City	at 80% of HAMFI	City	at 50% of HAMFI	City	at 80% of HAMFI
1	Barstow	21%	Needles	45%	Needles	60%	Needles	79%
2	Needles	19%	Adelanto	42%	Barstow	44%	Barstow	78%
3	Hemet	16%	Twentynine Palms	38%	Blythe	38%	Desert Hot Springs	73%
4	Adelanto	15%	Hemet	38%	Coachella	31%	Adelanto	71%
5	Twentynine Palms	15%	Desert Hot Springs	36%	Adelanto	23%	Coachella	70%
6	Yucca Valley	14%	Yucca Valley	35%	Twentynine Palms	21%	Blythe	69%
7	Blythe	13%	Barstow	35%	Desert Hot Springs	21%	Indian Wells	63%
8	Yucaipa	13%	Blythe	34%	Big Bear Lake	20%	Highland	62%
9	San Jacinto	12%	Coachella	34%	La Quinta	18%	Twentynine Palms	59%
10	Calimesa	11%	San Jacinto	30%	Yucca Valley	18%	San Bernardino	59%

Table 9 Ranking Cities by Share of Affordable & Available Housing Stock by Tenure (Bottom 10)

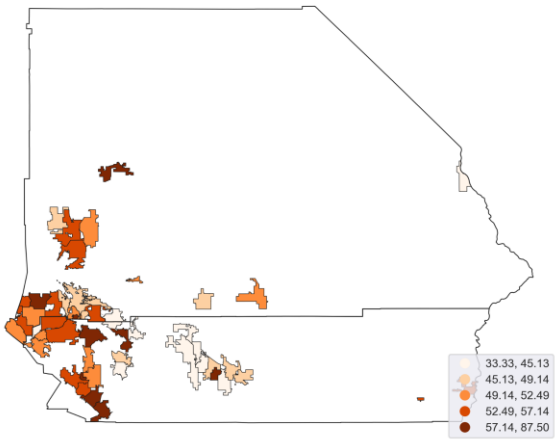
Rank	Owner Households				Renter Households			
	City	at 50% of HAMFI	City	at 80% of HAMFI	City	at 50% of HAMFI	City	at 80% of HAMFI
1	Indian Wells	0%	Indian Wells	1%	Chino Hills	2%	Canyon Lake	3%
2	Canyon Lake	0%	Temecula	1%	Canyon Lake	3%	Chino Hills	5%
3	Temecula	0%	Canyon Lake	1%	Wildomar	3%	Eastvale	10%
4	Beaumont	1%	Chino Hills	2%	Loma Linda	3%	Temecula	13%
5	Murrieta	1%	Norco	2%	Rancho Cucamonga	3%	Rancho Cucamonga	13%
6	Norco	1%	Eastvale	3%	Murrieta	4%	Chino	16%
7	Chino	1%	Murrieta	3%	Temecula	4%	Murrieta	17%
8	Chino Hills	1%	Chino	3%	Eastvale	4%	Upland	21%
9	Lake Elsinore	2%	Rancho Cucamonga	3%	Ontario	5%	Corona	21%
10	Moreno Valley	2%	Upland	4%	Upland	5%	Grand Terrace	22%



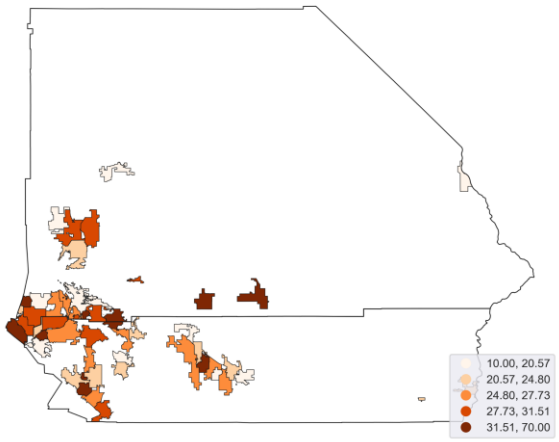
(a) At 50% of HAMFI, Owners



(b) At 50% of HAMFI, Renters



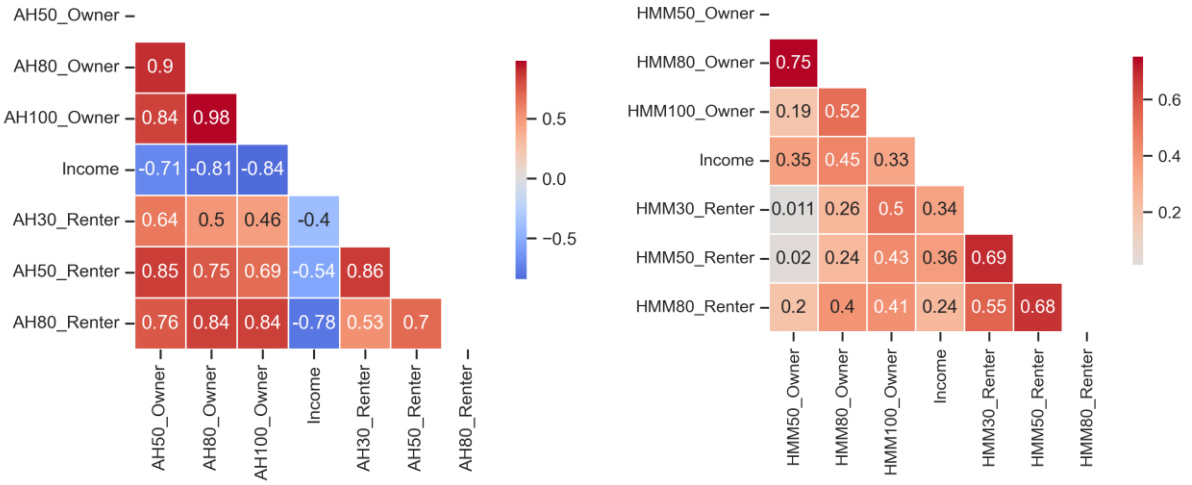
(c) At 80% of HAMFI, Owners



(d) At 80% of HAMFI, Renters

Figure 6 Spatial patterns of housing affordability mismatch: proportions of housing stock that are affordable to households at a certain income level but are occupied by higher-income households: (a) At 50% of HAMFI, Owners (b) At 50% of HAMFI, Renters (c) At 80% of HAMFI, Owners (d) At 80% of HAMFI, Renters

A negative correlation is established between a city's median income level and the share of its affordable housing stock. A moderate positive correlation is found between a city's median income level and its housing affordability mismatch level. These two relationships suggest a more precarious affordability status for households in wealthier cities.



(a) % Affordable Housing Units

(b) Housing Affordability Mismatch index

Figure 7 Correlation Coefficients between Median Income and (a) % Affordable Housing Unit (b) Housing Affordability mismatch in Cities of the Inland region

Social Determinants of Housing Cost Burdens

In this section, we adopted a series of multivariate linear regression models to examine why some cities are more cost-burdened than others. In the models, the dependent variables are shares of owner/renter households not burdened, Moderately Burdened, and Severely Burdened by housing costs. We look at the city's demographic composition, the share of affordable housing stock, the level of housing affordability mismatch, the number of rental/owner housing units, the median gross rent/property value, and the median household income.

The regression results are displayed in Table 10. All the intercepts are significant. For a typical city in the region, about 2 in 3 owner households are not burdened by housing costs while about 1 in 4 renter households is moderately burdened by housing costs, and 1 in 2 renter households is severely burdened by housing costs. The share of affordable housing stock plays an essential role in reducing the share of moderately burdened households, which applies to both renters and owners. Its role is even more significant for renters as a higher share predicts a lower share of severely burdened renter households. The housing affordability mismatch index is only relevant in models for renter households. All other factors equal, a higher level of mismatch predicts a higher share of not burdened renter households, and lower shares of moderately or severely burdened renter households. This could be explained by the possibility that renters move down their income hierarchy to occupy less expensive units, resulting in more of them not being overwhelmed by housing costs. However, this potential explanation points to a more serious issue – the poorest renters would have no choice but to rent houses that far exceed their income level.

We also observe ethnic disparity in housing affordability at the city level. The share of not burdened households is only significantly associated with the share of the Hispanics and the relationship is negative, which indicates a certain level of ethnic disparities in housing affordability. The share of Hispanics is also significant in the model of moderately burdened owner households. Since it is positive, it means a higher share of Hispanics predicts a larger share of moderately burdened owner households. This ethnic disparity also plays a role in the model of moderately burdened renter households, and the magnitude is greater. In addition, the median household income is significantly and negatively associated with the share of severely burdened households regardless of the tenure status. In contrast, it is significantly and positively associated with the share of moderately burdened households. These two aspects suggest that in wealthier cities, fewer households are severely burdened, but more households are prone to be moderately burdened.

Table 10 Regression results for housing cost burden status in cities of the Inland counties

	Owner Households			Renter Households		
	Not Burdened	Moderately Burdened	Severely Burdened	Not Burdened	Moderately Burdened	Severely Burdened
Intercept	66.93*** (0.57)	17.83*** (0.25)	15.24*** (0.47)	44.42*** (0.73)	25.68*** (0.54)	29.91*** (0.57)
Average housing affordability mismatch	0.10 (0.10)	-0.01 (0.04)	-0.09 (0.08)	0.44*** (0.12)	-0.21** (0.09)	-0.24** (0.09)
% Affordable rental housing stock				0.49*** (0.15)	-0.29** (0.11)	-0.20* (0.12)
% Affordable owner housing stock	-0.003 (0.13)	-0.14** (0.06)	0.14 (0.11)			
% Black	0.11 (0.19)	0.04 (0.08)	-0.15 (0.16)	-0.22 (0.22)	-0.02 (0.17)	0.24 (0.17)
% Asian	0.07 (0.14)	-0.08 (0.06)	0.01 (0.11)	-0.01 (0.17)	0.08 (0.13)	-0.06 (0.13)
% Hispanic	-0.095* (0.05)	0.05** (0.02)	0.04 (0.04)	-0.09 (0.07)	0.11** (0.05)	-0.02 (0.05)
% Other	0.49 (0.49)	0.10 (0.21)	-0.59 (0.40)	-0.11 (057)	-0.34 (0.43)	-0.23 (0.45)
Population (log)	-1.62 (1.72)	0.75 (0.75)	0.88 (1.43)	2.36 (1.77)	-0.84 (1.33)	-1.52 (1.39)
% Homeownership	-0.10 (0.10)	0.02 (0.04)	0.09 (0.08)	-0.15 (0.12)	-0.02 (0.09)	0.17* (0.1)
Median Household Income (in 1k)	0.09 (0.10)	0.06 (0.05)	-0.16* (0.09)	0.17 (0.11)	0.18** (0.08)	-0.35*** (0.08)
Rental Housing Units (in 1k)				-0.03 (0.17)	-0.05 (0.13)	0.08 (0.14)
Owner Housing Units (in 1k)	0.15 (0.13)	-0.05 (0.06)	-0.10 (0.11)			
Median Gross Rent				3.38 (6.5)	-11.66** (4.88)	7.77 (5.11)

Median Property Value	-0.22 (0.16)	-0.09 (0.07)	0.32** (0.14)			
R-squared	0.48	0.57	0.45	0.53	0.48	0.53
R-squared Adj.	0.34	0.45	0.30	0.40	0.36	0.40

Standard errors in parentheses.
* p<.1, ** p<.05, ***p<.01

Discussions & Policy Implications

This report demonstrated that availability plays an important role in assessing affordability for low-income households. Since these households bear most of the weight of housing insecurity, prioritizing affordable units by income thresholds can alleviate the extreme cost burdens that they often face. Tackling housing affordability issues require a multi-pronged approach that upscales construction of all ranges of housing, especially in the affordable categories, diversifies cities by implementing inclusive policies, and reduces the cost burden gap between the rich and the poor.

Smaller geography – neighborhoods

We have observed a very large heterogeneity of household distributions across cities in the region. The spatial sorting process over the past decades has led to residential inequality and income segregation across cities within this region. Looking closer could reveal complex spatial structures and patterns within cities. Indeed, residential racial and income segregation at the neighborhood level has long been the focus of academic work and public policy. A further investigation of housing affordability at the neighborhood level and a comparison between the within- and between-city income inequality/segregation could provide important policy implications for urban planning and housing policies.

Neighborhood-sensitive subsidy structure

HUD determines rental assistance limits of the voucher program based on the Fair Market Rent (FMR), which is the value of typical gross rents found at the 40th percentile of the county or metropolitan area level. Many critics have argued that basing rental caps on FMRs causes voucher recipients to be concentrated in disadvantaged neighborhoods (McClure 2010; Ellen and Horn 2016; Galster 2019). This is because the metropolitan-level IMs are traditionally lower than prevailing rents in more expensive and usually higher-opportunity neighborhoods. To assess the impact of FMRs on housing choice accessibility, HUD created the Small Area Fair Market Rent (SAFMR) demonstration program in 2012 for select metropolitan areas (Kahn and Newton 2013). Maximum rental limits were set at the zip code level instead of the metropolitan level. Research findings were not consistent across the U.S. For example, when SAFMRs were used, higher concentrations of voucher households were found in higher opportunity neighborhoods in Dallas, Texas, but in lower opportunity neighborhoods in Chattanooga, Tennessee (Reina, Acolin, and Bostic 2019). These regional variations imply that rental limits do influence the mobility of voucher households, but that rental limits alone are not the sole factor that influences neighborhood characteristics (Schwartz, McClure, and Taghavi 2016). Thus, more studies are needed to assess the effect of rental caps when jointly considered with other factors that influence decision-making. It is pertinent and critical to evaluate the demographics and general environment of Inland Southern California before deciding to adopt such an adjustment.

Housing in the COVID-19 era

Housing affordability has been exacerbated by the COVID-19 pandemic. The pandemic has led to the loss of income or jobs for many families, accompanied by sharply increased housing prices due to rising demand and demographic change. Many government policies have been implemented to provide protections for households like income support, eviction moratorium, and mortgage forbearance. These policy interventions have kept many at-risk families stay under a roof. However, short-term policy interventions are not enough to solve the housing affordability issue. According to the Zillow estimates, the rent for a typical rental house in the Inland counties was $2,469 in December 2021, representing a 28 percent rise from $1,931 in March 2020[5]. Similarly, the value of a typical owner-occupied house in this region rose from $388,404 in March 2020 to $534,393 in December 2021, a 37.6 percent increase. Although a large wave of eviction has not been observed following the expiration of the CDC orders for eviction moratorium in August 2021, potentially due to the emergency rental assistance program as well as the various emergency income support (e.g., stimulus check, monthly child tax credit payments), it is not addressing how the rental housing insecurity will be stabilized once these emergency programs expire. In addition, the rental housing quality problem is likely to be exacerbated by the pandemic. With landlords not collecting rent on time from their tenants, they may find it difficult to keep up with the maintenance of their properties. A survey of rental property owners in ten large cities shows that 31% of landlords reported deferring maintenance spending in 2020, which was up from just 5% in 2019 (Joint Center for Housing Studies, 2022). The creation of a permanent and fully funded housing safety net to address the growing housing affordability mismatch we see today would be beneficial.

Policy Recommendations

1. Increase housing development rate to match the rate at which the economy and population are growing.

California and its regions are not building enough new housing to accommodate population growth. Statewide, population increased by 9.1% from 2000 to 2017. The number of housing units increased by 5.3% in the same period (Mawhorter 2019). The California State Legislature has emphasized addressing housing concerns during the 2021 Legislative Session, where they enacted many bills largely aimed at alleviating barriers to housing construction. It remains to be seen whether legislative action will translate to more housing being built.

The most striking detail from this report is that cities dominated by high-income households have an extreme lack of not only affordable but also affordable and available units. These cities may benefit from working with the Housing Accountability Unit (HAU) to develop strategies for increasing their supply and meeting their housing allocations under the Regional Housing Needs Assessments.

[5] Inventory Down 40% from Pre-Covid Level as Price Growth Intensifies (December 2021 Market Report). Zillow Research. https://www.zillow.com/research/december-2021-market-report-30530/

2. Expand the HCV program to accommodate more households.

The current budget for federal housing assistance falls short of reaching the majority of qualifying households because of limited funding. Prospective beneficiaries are often put on a waitlist for several years before they can be served (Acosta and Gartland 2021). When the number of people on the waitlist accumulates, undesirable Inventory Down 40% from Pre-Covid Level as Price Growth Intensifies (December 2021 Market Report). Zillow Research. 5consequences emerge and put more people at risk of being evicted. Moreover, rental rates have increased at a faster rate than income growth, thus widening the affordability gap. According to the Center on Budget and Policy Priorities (CBPP), rental rates increased by 8.6% from 2001 to 2015, whereas the renter household median income decreased by 6.2% (Fischer and Sard 2017).

Unfortunately, evictions are more likely to occur when the affordability gap continues to widen, the housing stock remains low, and when governmental assistance is unavailable to the majority of eligible households. Inaction will further displace vulnerable groups. Although evictions are not reflected in credit histories, rental histories can be acquired by other means, such as through tenant screening companies or public records. Thus, people with past evictions are vulnerable to discrimination. They may be asked to pay higher rates or be required to make advanced payments, making it significantly more challenging for people with previous eviction histories to secure affordable housing.

Preventing evictions should be a high priority of housing assistance programs to curb (and ideally, ultimately eliminate) the propagation of homelessness and poverty. To accomplish this, federal and local governments should consider placing more emphasis on increasing funding for such programs and continue to monitor their programs' efficacy.

3. Create policies that level the cost burden playing field across all socioeconomic classes.

We found that virtually across all cities, high-income households have greater access to affordable and available units compared to low-income households. With such a high correlation between income level and availability, the people who need affordable housing the most are also the ones who have the least amount available to them. Effective policies will need to be based on research studies that assess how income-specific challenges affect a household's ability to secure housing. This approach to policymaking could produce tailored solutions based on household income thresholds, rather than blanket solutions that are heavily based on an area's median income and imposed rental limits.

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