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IS AMERICA'S HOUSING AFFORDABILITY PROBLEM A HOUSING PROBLEM?

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ABSTRACT

We document what fraction of the housing stock in US cities is affordable to different family types. Rather than looking at what fraction of their income people actually pay in rent in each city, which reflects a mix of households' ability to pay and supply conditions, we look at the extent to which the housing stock is affordable using discrete housing expenditure share cutoffs and the distribution of rents in the American Community Survey from each city. We find that housing affordability is largely a problem for single-parent families and, to a lesser extent, single-person households. The vast majority of the housing stock in most US cities is affordable to two-parent households. Several of the least affordable cities by our metrics are not glamour cities in the US Northeast, California, or South Florida but rather cities with both low incomes and low rents. Even building housing at construction cost with no land value, is unlikely to seriously alleviate housing affordability concerns for single-parent households in many cities.

JEL: I31, R21, R31

Keywords: Renters. Housing supply. Poverty..

INTRODUCTION

While there are many different definitions of housing affordability, it is common to consider housing affordability for renters based on the fraction of their incomes going toward rent. Rent burdened is often defined as 30% or more of gross income going toward rent while a severely rent burdened household is usually defined as one that spends more than 50% of its gross income on housing.[1] Because low-income households spend a much larger fraction of their incomes on rent (see Figure 1), and most low-income households are renter households, it is much more common for low-income households to be rent burdened.[2]

Rental affordability thus reflects both demand and supply with the share of gross income going toward rent being the equilibrium. The demand side is the ability and willingness of households to pay rent. The supply side reflects the cost of constructing units and can be influenced by local policy, raw materials prices, and the natural geography of an area. Housing affordability can thus be seen as a numerator or denominator problem – rent is too high (the numerator) or household income is too low (the denominator). Figure 2 reveals that the numerator has been rising while the denominator has experienced little growth for renter households over the last five decades.

While there is no formal economic theory underlying the commonly used 30% and 50% thresholds for rent burden, Figure 1 suggests that renters' housing choices may be the product of utility maximization subject to subsistence concerns, similar to what Jensen and Miller (2008) find for dietary staples. Since the cost of non-housing consumption goods does not vary substantially across US cities (Handbury and Weinstein, 2015), and lower income consumers spend a larger share of their income on food, the 30% and 50% thresholds might be a shorthand for stating that subsistence concerns over food and housing characterize the utility functions of many renters.

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[1] See, for example, U.S. Department of Housing and Urban Development (2014), Larrimore and Schuetz (2017), and Favilukis, Mabille, and Van Nieuwerburgh (2019).

[2] Figure 1 is consistent with a large number of studies that find that a 1% increase in income results in a much less than 1% increase in housing expenditure. See, for example, Rosen (1979), Glaeser, Kahn, and Rappaport (2008), and Rosenthal (2014).

Figure 1: Lower Income Renters Spend More on Rent
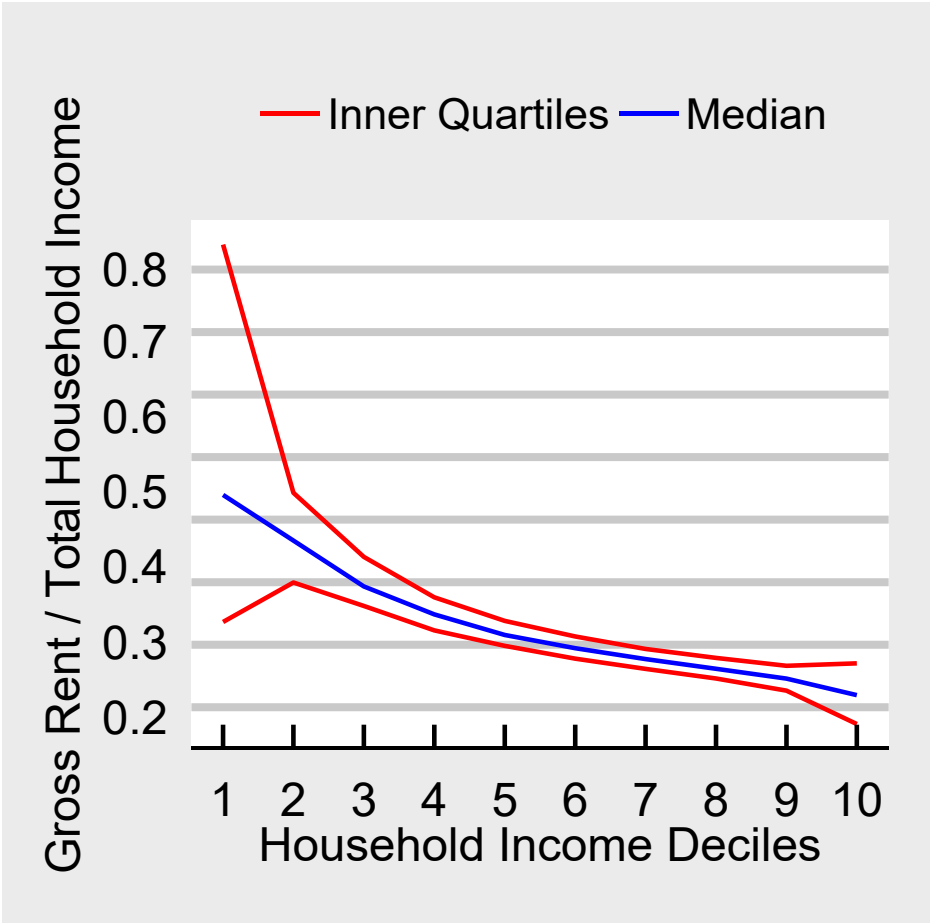
Source: Authors' calculations based on 2018 ACS Public-Use Microeconomic Sample. Green and Malpezzi (2003) present a similar graph based on earlier data.

Figure 2: A Growing Share of Renters are Cost-burdened
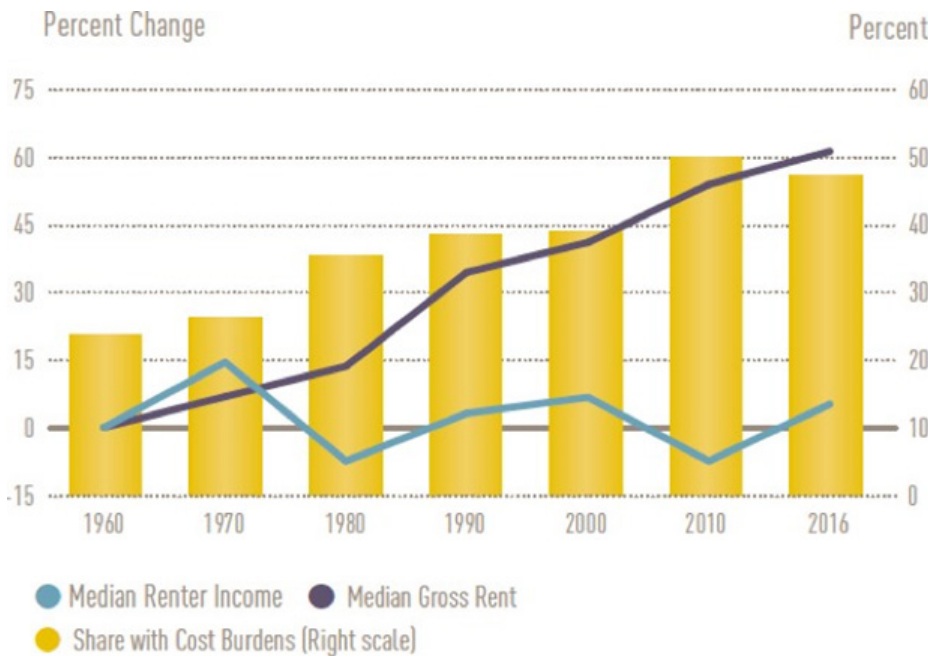
Source: Joint Center for Housing Studies of Harvard University (2018). A renter is cost-burdened if it spends 30% or more of its gross income on rent.

We adopt the subsistence approach in this paper by considering that different size households require a different minimum number of bedrooms. Rather than looking at how much households actually spend on rent to assess whether a household is rent burdened, we look at the share of housing units in an MSA that would be available to households of a given type and income level within an MSA under the 30% threshold. Even if some units are affordable to low-income households within a city, housing affordability can be a problem if not enough low-cost units are located near low-income renters within a city and households face high intraurban mobility costs.

We find that housing affordability differs dramatically by household type. In every US city in our sample, at least 50% of housing units are affordable to two-parent households at the median income. Even for two-parent households at the 30th percentile of the income distribution, more than half of rental units are affordable in the vast majority of cities. Only in coastal California do we see two-parent households facing serious affordability problems. In contrast, for single parents at the median income, the majority of the housing stock is affordable in only a handful of cities. For single parents at the 30th percentile of the income distribution, less than 10% of the housing stock is affordable in most US cities.

Our analysis reveals a surprising set of cities that are unaffordable. Of the ten least affordable cities for single parents, only one is in California and only two are in the Northeast. In all of these cities, the median rent on a two-bedroom home is less than $1,000 per month. Rather than housing costs being particularly high in these cities, incomes are often quite low.

The next section details the data we use and our methodology. We present and discuss our findings in Section 3.

DATA AND METHODOLOGY

DATA

We use data on the subset of households in the 2018 IPUMS USA 1% survey residing in a metropolitan statistical area (MSA). An MSA is loosely defined by the U.S. Office of Management and Budget (OMB) as a geographic area having "at least one urbanized core of 50,000 or more population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by community ties" (Nussle, 2008). The 2018 IPUMS data uses the 2013 definition of MSAs as defined by the OMB. Our definition of an MSA is distinct from a Core-Based Statistical Area (CBSA), which is either multiple MSAs combined or an MSA combined with a micropolitan statistical area, and excludes micropolitan statistical areas. The IPUMS data offers a granular view of the cross-section of American households at any given year, sampling 1% of all households across the country. Each household in the sample has a separate entry for each person in the household, including children.

The IPUMS data provide household-level information such as geographical location, the total annual income, whether the dwelling is rented or owned, the annual gross rental rate of all dwellings in the rental stock, the number of bedrooms in each dwelling, and the composition of each household. We identify the number of non-adult children in each household as children of the head of household that are less than 18 years of age.

The final dataset contains records on 919,346 households and 2,268,871 persons across 260 MSAs.

METHODOLOGY

We first ask what percentage of rental units in a metropolitan area each household type can afford at varying levels of income. We focus on three household types: single parents with one or two children, married couples with exactly two children, and single-person households with no kids. For each household type, we consider a rental unit affordable if the monthlygross rent is less than or equal to 30% of either the 30th percentile or the median of the monthly income distribution for a given household type and MSA.

To control for the minimum quantity of housing needed for each household type we assign a certain type of rental unit to each household type. For single parents, we look at what percentage of two- and three-bedroom rentals they can afford. For married couples with two children, we look at three- and four-bedroom rentals. For single-person households, we consider studio and one-bedroom rentals.[3]

To illustrate the procedure, consider the case of single-person households in the Rocky Mount, NC MSA. First, we generate the sample distribution of annual household income for all single-person household in Rocky Mount, NC. We then compute the median and 30th percentile of that distribution. Next, we generate the sample distribution of monthly rent for all studio and one-bedroom homes in Rocky Mount, NC. Lastly, we compute the percentage of those rental units whose monthly rent is less than each of the affordability cutoffs.

We do not report any observations for which the size of the sample used to compute the affordability cutoffs is less than 30. The minimum cell size is why we include single-parent households with one or two children instead of restricting our analysis to the set with exactly two children. Our assumption is that, conditional on living in a particular MSA, the income distributions of single parents with one child and single parents with two children are not radically different from one another.

We also compute the distribution of renter types for each MSA. We break down renters into the following categories: single parents with children, married couples with children, married couples without children, single-person households, and other non-family households without children. The categories are chosen to get a complete picture of the distribution of renters in each MSA.

# RESULTS

WHO IS RENT BURDENED?

Rental affordability differs dramatically across household types. As Panel a) of Figure 3 shows, the vast majority of the housing stock in most cities is affordable to two-parent families with kids making the median income for that household type in that city. We define an appropriate rental unit for these households as one three or four bedrooms. Even two- parent households at the 30th percentile (Panel b) can afford most rental units in their city with the exception of families in some parts of Southern California.

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[3] We include three-bedroom rentals in the sample for single-parents with two children to increase the sample size. In the full sample of two- and three-bedroom rentals 64% are two-bedroom units. In the full sample of three- and four-bedroom rental units, 80% are three-bedroom units. In the full sample of studio and one-bedroom rentals, 82% are one-bedroom units.

Figure 3: Share of 3BR and 4BR Rental Units Affordable to Married Couples with 2 Children
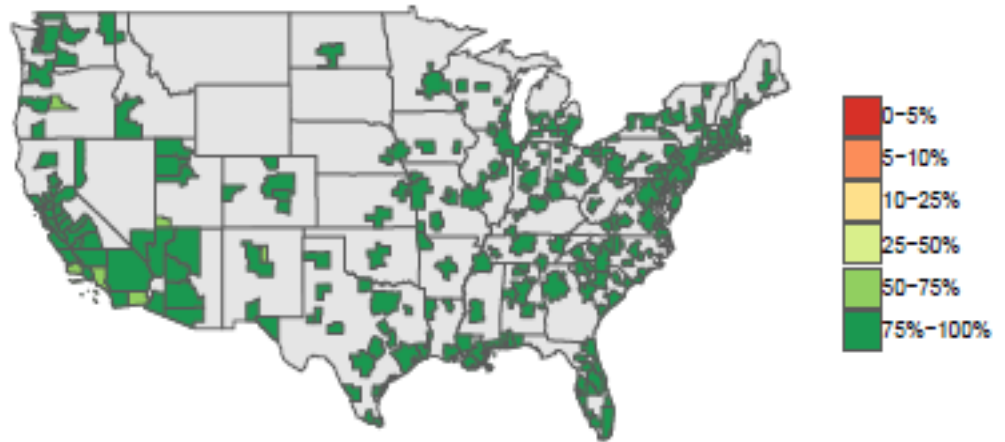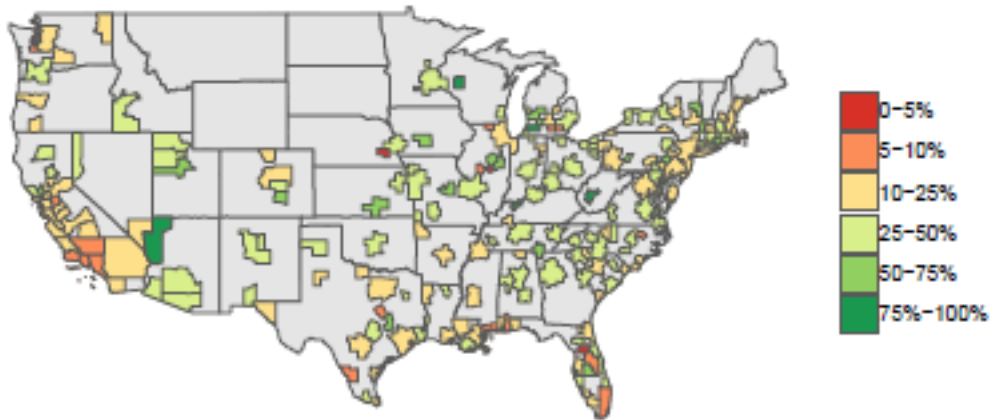

(a) At Median Income of Household Type in the MS
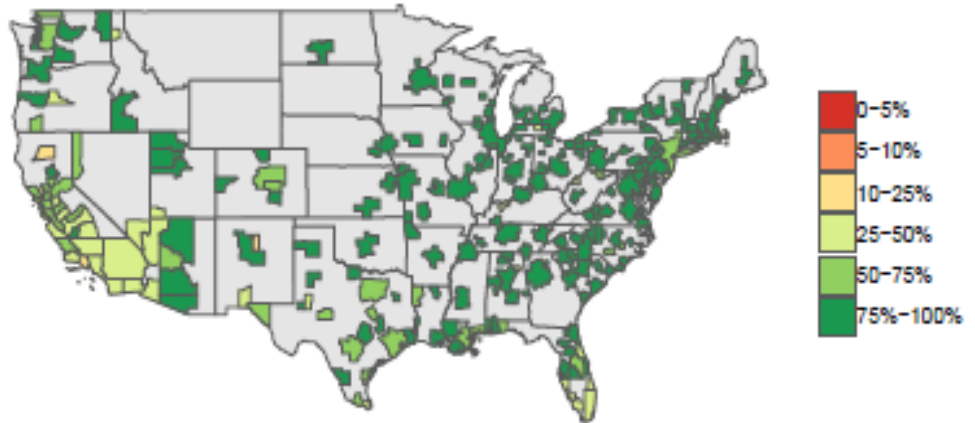
(b) At 30th Percentile of Income Distribution of Household Type in the MSA

In contrast, as Figure 4 shows, less than 25% of the rental stock in most US cities is affordable to single-parent households that make the median income for that household type in that city where we again assume that adequate housing for a single parent with two kids is a rental unit with two or three bedrooms. For single-parent households at the 30th percentile of the income distribution, the situation is even more dire with less than 5% of housing units available to them.

Figure 4: Share of 2BR and 3BR Rental Units Affordable to Single Parents with 1 or 2 Children

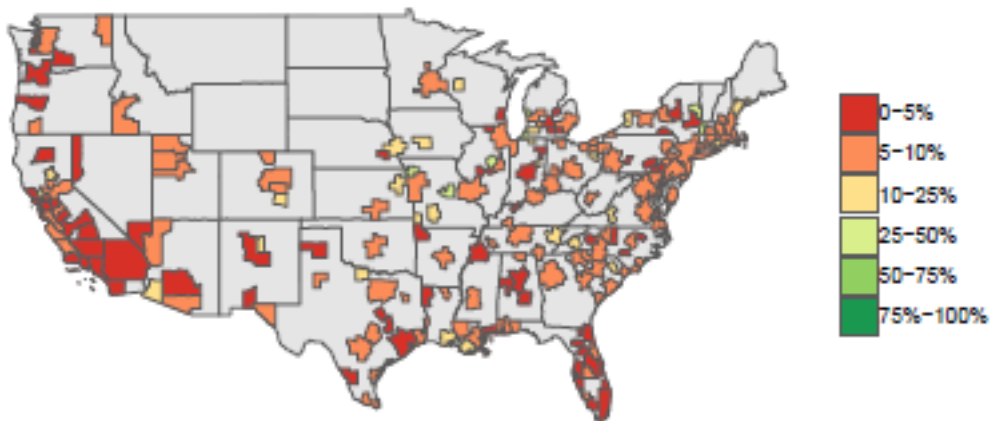*(a) At Median Income of Household Type in the MSA*

(b) At 30th Percentile of Income Distribution of Household Type in the MSA

The story for singles, shown in Figure 5, lies somewhere in between those of married couples with kids and single-parent households. For the median single (Panel a), only a few cities are truly unaffordable. When we move to singles making 30% of income for that household type, less than 25% of the housing stock is affordable in most US cities.

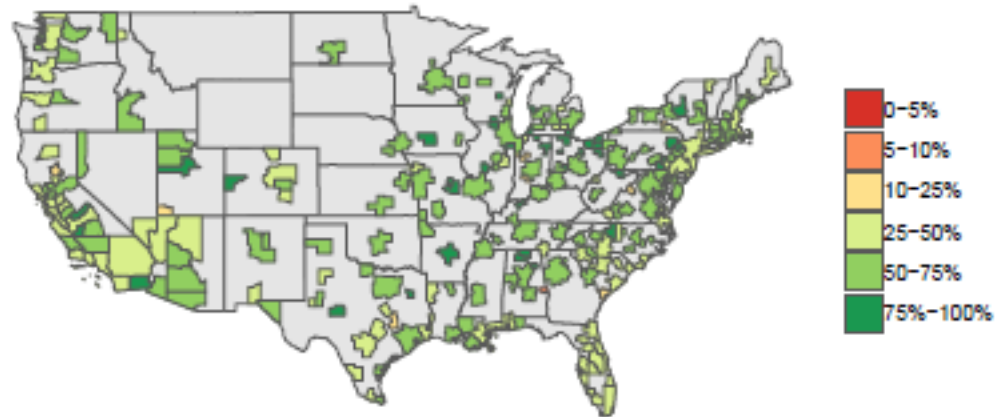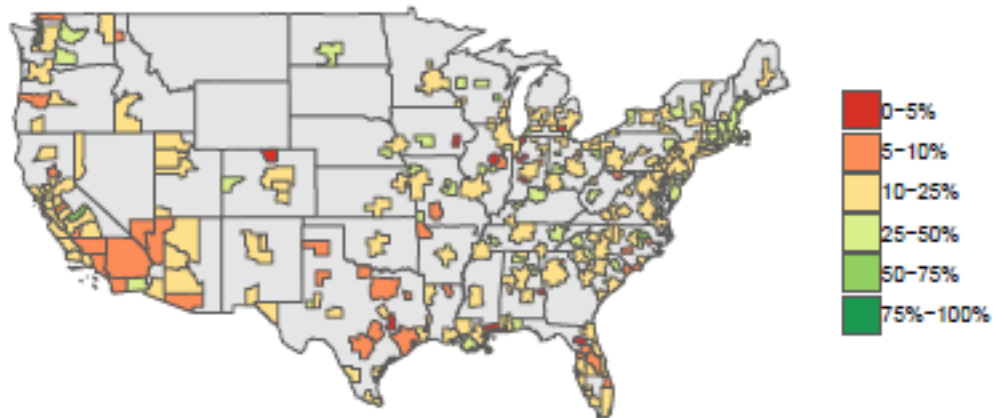**Figure 5: Share of Studio and 1BR Rental Units Affordable to Singles Living Alone with No Kids**

(a) At Median Income of Household Type in the MSA

(b) At 30th Percentile of Income Distribution of Household Type in the MSA

WHERE IS RENT AFFORDABILITY A PROBLEM?

As Figures 3 through 5 illustrate, the problem of rental affordability is not limited to glamor cities like New York City, Miami, and Los Angeles. Table 1 lists the ten least affordable MSAs in our sample. Panel A lists them for single-parent households while Panel B lists them for single households. The three least affordable cities for single-parent households are Johnston PA, Rocky Mount NC, and Utica-Rome NY. In all of the least affordable cities, single-parent households at the 30th percentile of the income distribution can afford less than two percent of two- and three-bedroom homes using the 30% of gross income housing affordability cutoff. The rents in these cities do not seem particularly high. The median rent for a two-bedroom home is less than $1,000 per month in all ten of the least affordable cities and averages just $786. However, median annual incomes average less than $30,000 per year in seven of the ten least affordable cities. In Table 2, we rank cities by affordability for single-parent households

excluding cities with less than 350,000 people. While the set of cities differs, it remains the case that only two of the ten least affordable cities, Miami-Fort Lauderdale-West Pam Beach and Santa Maria-Santa Barbara, are in parts of the country we typically think of as high cost or supply constrained.

Table 1: Least Affordable MSAs for Renters

For the two columns under the 'Affordability' label, each numeric entry is the percentage of rental units in the MSA each demographic can afford at each of the cutoffs. p30 refers to the cutoff corresponding to the 30 percent of the 30th percentile of the distribution of household income for the demographic. med rent 1br and med rent 2br refers to median monthly gross rent in each MSA for a one-bedroom and two-bedroom home respectively. p30 inc and med inc refer to the thirtieth percentile and median of annual gross household income for a household of that type in that MSA. % renters refers to the percent of all renters in the MSA that are single-parent and single-person households in panels a and b, respectively.

Panel a: Single Parents w/ 1-2 Children

Affordability			MSA Information			
msa	p30	med	% renters	med rent 2br	p30 inc	med inc
Johnstown, PA	0.00%	56.40%	19.13%	$630	$8,300	$29,000
Rocky Mount, NC	0.00%	6.59%	24.24%	$670	$3,880	$12,000
Utica-Rome, NY	0.00%	13.52%	19.37%	$740	$6,300	$25,000
Tuscaloosa, AL	0.18%	32.93%	17.39%	$850	$6,000	$30,000
Merced, CA	0.22%	11.35%	20.09%	$960	$7,100	$25,200
Saginaw, MI	0.24%	17.26%	18.94%	$770	$15,500	$25,000
Ocala, FL	0.52%	3.78%	23.44%	$832	$11,000	$19,060
Springfield, IL	0.61%	7.87%	21.51%	$800	$15,000	$25,000
Albuquerque, NM	0.71%	27.23%	15.44%	$890	$14,200	$32,000
Average	0.29%	25.66%	20.34%	$786	$9,768	$26,156

Panel b: Single-person Households

Affordability MSA Information						
msa	**p30**	**med**	**% renters**	**med rent 1br**	**p30 inc**	**med inc**
East Stroudsburg, PA	0.00%	77.35%	25.31%	$850	$22,050	$40,000
Lawrence, KS	0.00%	26.13%	42.11%	$770	$11,640	$26,300
Gainesville, FL	0.90%	35.53%	47.74%	$785	$14,000	$29,800
College Station-Bryan, TX	1.22%	20.05%	42.57%	$820	$12,500	$26,000
Michigan City-La Porte, IN	1.81%	29.99%	35.08%	$630	$16,700	$23,000
Lafayette-West Lafayette, IN	2.00%	22.56%	41.36%	$769	$12,000	$25,000
Bloomington, IN	2.36%	22.40%	40.53%	$670	$10,800	$23,300
Iowa City, IA	2.53%	64.60%	37.18%	$660	$15,000	$31,470
Fort Collins, CO	2.78%	48.74%	28.82%	$1,035	$23,000	$38,900
Bloomington, IL	2.91%	73.66%	40.14%	$600	$12,000	$28,000
Average	**1.65%**	**42.10%**	**38.08%**	**$759**	**$14,969**	**$29,177**

Table 2: Least Affordable MSAs for Renters in MSAs with population of at least 350,000.

This table displayed identical information as Table 1, except only considering MSAs with a population greater than or equal to 350,000.

Panel a: Single Parents w/ 1-2 Children

Affordability	MSA Information					
msa	p30	med	% renters	med rent 2br	p30 inc	med inc
Albuquerque, NM	0.71%	27.23%	15.44%	$890	$14,200	$32,000
Santa Maria-Santa Barbara, CA	0.93%	6.25%	15.93%	$1,643	$20,000	$40,000
Greensboro-High Point, NC	1.66%	26.80%	18.15%	$800	$13,400	$28,000
Las Vegas-Henderson-Paradise, NV	1.68%	19.88%	14.73%	$1,060	$21,600	$36,000
Lansing-East Lansing, MI	1.70%	23.49%	16.50%	$890	$16,500	$30,500
Port St. Lucie, FL	1.80%	26.73%	18.75%	$1,090	$17,300	$40,000
Hickory-Lenoir-Morganton, NC	1.99%	38.89%	21.20%	$670	$13,200	$24,900
Orlando-Kissimmee-Sanford, FL	2.00%	7.53%	14.06%	$1,191	$22,000	$30,000
Lancaster, PA	2.16%	10.10%	12.56%	$1,050	$19,600	$29,100
Miami-Fort Lauderdale-West Palm Beach, FL	2.46%	5.70%	13.77%	$1,390	$20,000	$30,800
Average	1.71%	19.26%	16.11%	$1,067	$17,780	$32,130

Panel b: Single-person Households

Affordability	MSA Information					
msa	p30	med	% renters	med rent 1br	p30 inc	med inc
Gulfport-Biloxi-Pascagoula, MS	4.62%	41.16%	36.04%	$630	$12,000	$23,500
Las Vegas-Henderson-Paradise, NV	5.55%	47.57%	33.82%	$876	$18,900	$34,300
Fayetteville, NC	5.77%	54.00%	32.26%	$710	$14,500	$29,000
Austin-Round Rock, TX	5.97%	46.64%	36.16%	$1,095	$27,000	$43,000
Fayetteville-Springdale-Rogers, AR-MO	6.40%	70.73%	29.75%	$660	$16,200	$30,000
Orlando-Kissimmee-Sanford, FL	7.07%	30.75%	27.92%	$1,028	$21,000	$35,000
Bakersfield, CA	7.64%	53.62%	21.45%	720	$15000	$29,600
Eugene, OR	8.05%	29.17%	33.43%	$770	$14,000	$26,300
Springfield, MO	8.14%	53.38%	38.07%	$600	$14,400	$24,400
Los Angeles-Long Beach-Anaheim, CA	8.35%	35.44%	28.73%	$1,270	$22,700	$43,100
Average	**6.75%**	**46.25%**	**31.76%**	**$836**	**$17,570**	**$31,820**

IMPLICATIONS
IS THERE A PROBLEM? INTRA-URBAN MOBILITY COSTS

While at first glance, it may be tempting to conclude that housing affordability is not a problem for single parents in some parts of the country because some housing stock is affordable to them, it is important to bear in mind that our analysis is at the MSA level. To the extent that lower-income households face high mobility costs, either in a pecuniary sense or because of a loss of community services or connections, the within-MSA location of the housing that is affordable to them matters.

Both pecuniary and non-pecuniary moving costs matter. This is especially true for low-income households. Weinberg, Friedman, and Mayo (1981) develop a micro-founded model of residential urban mobility and find search and moving costs to be a major factor in determining the rate of intra-urban mobility. Henderson and Ioannides (1989) jointly estimate a model of tenure, length of stay, and consumption level choice. They find evidence that less-wealthy, less-educated households have less intra-urban mobility.

One reason for Henderson and Ioannides (1989)'s finding is that moving costs may be higher for low-income households. Clark, Duque-calvache, and Palomares-linares (2017) find empirical evidence in Granada, Spain that having family present in a neighborhood, and more social connections with neighbors both decreases the likelihood of a household moving outside the neighborhood. Hedman (2013) examines data from Uppsala, Sweden and similarly finds that family presence is a strong deciding factor in neighborhood choice. Hedman (2013) also finds that the effect of family presence is stronger for Non-Western migrants, and people of low socioeconomic backgrounds. This suggests that the benefits provided by an established social network in a neighborhood are strongest for poorer households, and the moving cost associated with losing those benefits are potentially large.

There has been little economic research to date that attempts to understand the nature of the benefits of having an existing social network in a neighborhood provides to its residents. One can imagine that having neighbors you trust to watch your children has value in that you can save money on babysitting, and you might feel more comfortable allowing your children to play outside without your supervision. Eldercare by neighbors may also be more important for low-income households. Exchanging such services in the community, rather than paying for them, requires long-term ties that are not present when moving to a new neighborhood.

Moving may also limit households' labor market opportunities. Bayer, Ross, and Topa (2008) find evidence that informal hiring networks formed from neighborhood social interactions "has a significant impact on a wide range of labor market outcomes." Hellerstein, McInerney, and Neumark (2011) also find evidence of local labor markets and that these networks are more important for low-skilled workers and minorities. This suggests that losing social connections around a place of residence due to a move may make it more difficult to find work in the future.

WILL LOOSENING SUPPLY RESTRICTIONS SOLVE THE PROBLEM?

Economists have frequently pointed to land use restrictions and onerous development approval processes as decreasing housing affordability; see Gyourko and Molloy (2015) for a review of the evidence. Fur- thermore, land use restrictions have tightened in most cities in the last decade (Gyourko, Hartley, and Krimmel, 2019). While it is unquestionably true that decreasing regulatory barriers would improve housing affordability, our analysis suggests that alone may not be enough to substantially mitigate the problem for low-income renters in many cities. We conclude this because it is likely infeasible to build a two-bedroom unit that would rent at less than $1,000 per month with reasonable assumptions about construction costs and return on capital for the developer and her lenders.

To understand why, consider the following calculation. In the least expensive US cities, mean hard costs per unit of multifamily housing are approximately $150,000 (Fannie Mae, 2019). These costs exclude the costs of land and soft development costs. Even were the developer to require only a 5% return on capital (both debt and equity), the unit would have to yield $625 per month in net rents. Assuming expenses are 40% of gross income, the monthly rent on such a unit would have to be $1,042 which exceeds the median monthly rent of existing two-bedroom units in our least affordable cities (see Table 1).

In the calculation above, we have taken the unit mix and construction quality as given. We can instead hypothesize building a very small two-bedroom unit with inexpensive construction materials. Once again, we exclude land costs. Excluding any land costs, the 25th percentile of the costs of constructing multifamily housing are $124 per square foot (RSMeans, 2019). Assuming a two-bedroom of 800 square feet, it would cost $99,200 to build such a unit. If expenses are 40% of gross income and the required net rental yield is 5%, the landlord would have to earn gross rents of $8,267 per year to net $4,960 per year after she pays expenses implying a monthly rent of $689 on the unit. A rent that low would alleviate the cost burdens for our single-parent households. However, since rental yield on such units is risky, in part due to higher rental default rates among low-income tenants, the cost of capital may be 8% or higher requiring a monthly rent of over $1,100.

To truly make housing more affordable in our least affordable cities, we would need housing built at an even lower cost. The 30th percentile of the income distribution of single- parent households is our least affordable cities in less than $10,000 (see Table 1). Even when we confine our analysis to cities with population of at least 350,000, the 30th percentile of the income distribution of single parent households is less than $18,000 (see Table 2). Monthly rent would have to be less than $450 per month for these households to not be cost-burdened. Even allowing the household to spend 50% of its income on rent, such that it would be cost-burdened but not severely cost-burdened, monthly rent would need to be less than $750 per month. At the median income for single-parent households, monthly rent would need to be less than $800 per month for the household not to be cost-burdened.

While our calculations above focus on multifamily housing, Glaeser and Gyourko (2018) suggest the minimum cost of building an economy-quality single-family home in a lightly regulated market is approximately $200,000 and a 2,000 square foot home. Assuming a landlord with a low cost of capital is willing to rent out such a unit for a 5% gross yield (i.e., not incorporating the expenses the landlord would have to pay) implies the annual rent would need to be $10,000 per year or $833, still above the affordable rent of many single- family renter households. Furthermore, more realistically assuming expenses of at least 25% of gross rental revenue would imply the landlord needs to charge at least $13,333 per year ($1,111 per month) to earn a 5% rental yield net of expenses.

Figure 6: Rent per Bedroom Decreases with the Number of Bedrooms
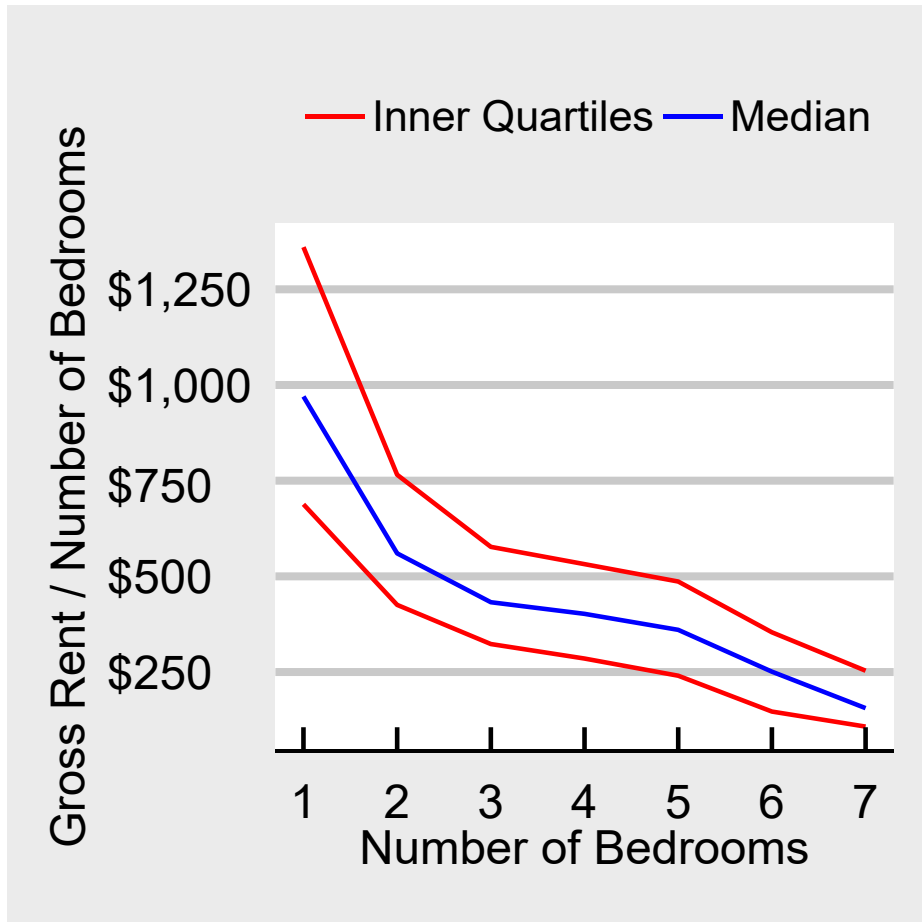
Source: Authors' calculations based on 2018 ACS Public-Use Microeconomic Sample.

While it might be possible to reduce the costs of new construction by building very small homes, there are fixed costs associated with building items all units must have, such as a bathroom and kitchen, that imply construction costs will not scale down directly with square footage. Figure 6 plots average rents by unit size in the ACS and illustrates that, indeed, rent per bedroom falls with the number of bedrooms.

While new supply will not be affordable to many rent-burdened single-parent house-holds, it may be affordable to slightly higher income renters that would then vacate existing units. Rosenthal (2014) finds that creating affordable housing through this filtering mechanism is one way of supplying affordable housing to low-income households in most cities, especially in cities with low rates of home price appreciation. In particular, Rosenthal (2014) finds that the income of the occupant of a home falls quickly with the age of the home. Been, Ellen, and O'Regan (2019) explore the argument that filtering improves affordability and generally concur based on their assessment of current research. More directly, Asquith, Mast, and Reed (2019) show that new market rate construction of large apartment buildings in low-income areas reduces rents on existing buildings on average by 5-7%.

However, it remains unclear whether the filtering process can deliver low enough rents even if there were no regulatory barriers whatsoever to constructing new housing supply. Rosenthal (2014) finds upward rather than downward filtering in some cities, particularly those with faster home price appreciation. Certainly, filtering is likely to be more successful in preserving housing affordability when the new units are nearer substitutes to the existing stock. There is also little evidence that developers will choose to build new market-rate construction in neighborhoods most in need of affordable units.

FUTURE RESEARCH.

More research is needed to explore ways to provide more affordable housing for single parents. Single parents could benefit from sharing a rental unit with another single parent. Figure 6 shows that median gross rent per bedroom is monotonically decreasing in the number of bedrooms. From a housing subsistence perspective, a single parent with one child could save 28% on rent by splitting a four-bedroom rental with another single-parent. As discussed above, there could also be non-pecuniary benefits gained by splitting household and childcare duties. Future research should investigate the determinants of the rate of multi-family household formation.

CONCLUSIONS

We have studied the availability of housing units in US cities to households of different types. We find that a small fraction of size-appropriate housing units are available to single-parent households in most US cities. Furthermore, the affordability problems are widespread rather than only in coastal and high-income cities.

Building small, low quality two- and three-bedroom units would alleviate some housing affordability problems for some rent-burdened households. New housing construction usually goes to higher income households but, through a filtering process, reduces housing costs for lower income households by freeing up existing housing units. However, even substantially relaxing land use restrictions and regulatory barriers in development is unlikely to reduce the cost of construction enough to significantly reduce housing affordability problems for many single-parent households. In most of the country, the problem for these renters is not one of insufficient supply of housing but rather one of insufficient incomes.

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