

Title

Reexamining Rental Housing Affordability in the United States

Short Abstract

Housing affordability for renter households in the United States is a major concern for planners and policymakers. Media reports have highlighted large increases in median apartment rents, especially in high job-growth cities. Nearly half of renters are cost burdened, which is defined as paying more than 30 percent of income toward housing costs, while rent burden became more prevalent for all households after the Great Recession. However, prior work treats affordability as a binary condition; little is known about the range of unaffordable housing situations faced by households. Further, attention to median rents is uninformative about the distribution of housing costs and incomes across and within groups. This paper examines variation in housing cost-income trends for renter households across the United States from 1970-2010. Using U.S. Census and American Community Survey data, I analyze how the distribution of the rent-to-income ratio has changed over time by income quintiles and levels of educational attainment. Findings show that less educated households, along with lower income households, experienced bigger increases in the ratio of housing cost to income. Further, rent burden is not symmetrically distributed within groups. Less educated and lower income groups with higher ratios experienced bigger changes during this period. The results suggest the need for precisely targeted policies to help households in extreme housing conditions.

Keywords

Affordable Housing, Cost Burden, Housing Affordability, Housing Costs, Rental Housing

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Reexamining Rental Housing Affordability in the United States

Housing affordability is a major concern not only for many residents but also for planners and policymakers in the United States. News articles have focused much attention on skyrocketing rents in cities with strong job markets like San Francisco, New York, Boston, and Washington, D.C. (e.g., Lerner, 2017; citations, year). However, other places and parts of the country, like Fort Worth, TX, Mobile, AL, and Fort Wayne, IN, have also experienced substantial growth in rents (Brandt, 2019; Paris, 2019). The issue of rising housing costs is so serious that it has attracted the attention of U.S. presidential candidates, even prompting one proposal for nationwide rent control (citation, year).

Past studies have noted large numbers of households face housing affordability problems and the trend has increased in recent years. Nearly half of all renter households are cost burdened, which is defined as paying more than 30 percent of income toward housing costs (Fernald, 2018). The percentage of lower middle and middle-income households who are rent burdened increased nearly 50 percent from 2000 to 2010, while rent burden became more prevalent for all households after the Great Recession (Colburn and Allen, 2018; Gabriel and Painter, 2019). Further, inflation adjusted median rents have risen more than 10% since 2001, while median renter household incomes are essentially unchanged (Charette et al., 2015; Mazzara, 2018). However, prior work treats housing affordability as a binary condition; little is known about the range of affordable or unaffordable circumstances faced by households. Further, attention to median rents and households is uninformative about the distribution of housing costs and incomes across and within groups.

This paper addresses these gaps by examining variation in housing cost-income trends for renter households across the United States. Using U.S. Census and American Community Survey data, I analyze how the distribution of the rent-to-income ratio has changed from 1980-2010 by income quintiles and levels of educational attainment. Findings show that less educated households, along with lower income households, experienced bigger increases in the ratio of housing cost to income. Further, rent burden is not symmetrically distributed within groups. Less educated and lower income households with higher ratios experienced bigger changes during this period. The results indicate that the most disadvantaged households within each group were hit hardest by rising rents or stagnating incomes or a combination of both. The findings suggest the need for more precisely targeted policies to help households facing extreme housing cost-income situations.

The rest of the paper proceeds as follows. The next section reviews recent literature on housing cost burden levels and trends, which categorizes households as either living in affordable or unaffordable housing conditions. Then, I describe the Census data used in this study and how different household categories are defined. The following sections present the findings on the range of housing cost-to-income ratios, their change over time, and the implications for housing policy.

Theory and Literature

According to hedonic pricing theory, housing rents reflect housing services and amenities associated with specific locations (Rosen, 1974). Amenities include access or proximity to employment centers and jobs, location in a high quality school district or school catchment area, cultural institutions, parks and open space, distance from environmental hazards or nuisances.

The conventional measure of housing affordability is the ratio of housing costs to income. Housing is considered affordable if it costs less than 30 percent of income. Households that pay more than 30 percent of income toward housing costs are considered cost burdened, while those that pay more than 50 percent are considered severely cost burdened. For renter households, rent burden (and severely rent burdened) is used synonymously with cost burdened and severely cost burdened.

By this metric, housing cost burden affects a large share of individuals and families throughout the country. In 2016, almost one in three U.S. households paid more than 30 percent of income for housing but the problem was more widespread for renters (Fernald, 2018). Approximately 47 percent of renter households, totaling more than 20 million, were rent burdened that year. The proportion of cost burdened renter households has increased since 2001 (41 percent) but is lower than its highest point in 2011 (51 percent). The calculations are based on the U.S. Census Bureau American Community Survey 1-year estimates, which offer the most current information for a given year but are less reliable than 3-year and 5-year estimates. Further, these data are collected over the course of 12 months but rents could change during that time period so these are noisy measures of rent. The survey data are limited to areas with populations greater than 65,000.

Additional studies note that inflation adjusted median rents have risen more than 10% since 2001, while median renter household incomes are essentially unchanged (Charette et al., 2015; Mazzara, 2018).

An increasing proportion of higher income renter households have experienced housing cost burdens in recent years. From 2000 to 2010, the share of households in the second lowest income quintile that experienced rent burdens increased from almost 40 percent to nearly 60 percent, while the share of rent burdened households in the middle income quintile increased from almost 10 percent to nearly 25 percent (Gabriel and Painter, 2019). During this same period, the share of households in the bottom income quintile experiencing rent burdens was already high and steadily increased from 75 percent to more than 80 percent.

Additional work explores changes in affordability experienced by households during the Great Recession. A recent study finds a larger proportion of households experienced rent burden after the recession (Colburn and Allen, 2018). The share of lowest income households in the sample experiencing rent burden slightly decreases during the time period while the share of higher income households experiencing rent burden increases, based on Survey of Income and Program Participation panel data. [Income appears to be an important factor, in addition to household composition and location. Race and nativity status are not important factors, when controlling for other variables.] In order to examine trends around the recession, the study focuses on two narrow windows of data from 2004-2005 and 2009-2011. The sample ranges from approximately 4,500 to 6,200 households, depending on the year of the panel. The study uses a dichotomous variable to describe rent burden based on whether the ratio of rent to household income is less than 0.3.¹

A different study suggests that housing affordability problems during the Great Recession were not as widespread as commonly believed. The majority (nearly 63%) of renter households experienced either increased incomes and decreased housing cost burdens or decreased incomes and decreased housing cost burdens (Anacker and Li, 2016). The results are based on a sample of 9,236 renters drawn from merged American Housing Survey data from only two years: 2007 and 2009.

¹ Rent burden is used as a continuous variable in a sensitivity analysis but the results are not shown.

Many analysts have noted problems with using a household spending 30 percent of income on housing as a measure or indicator of housing affordability. The cost burden measure does not distinguish between poor households and wealthy households despite the fact the two groups will have very different levels of income remaining after housing expenses to pay for food and other essentials. The measure does not account for the size of the household or housing unit, for example larger households might occupy larger units that are more expensive than the smaller units occupied by smaller households. The measure also does not account for differences in housing quality and amenities. Finally, the measure makes an affordability determination based on income and housing costs but does not account for household preferences regarding these variables or any of the other variables mentioned above. See Herbert et al.; Kutty; Stone

Some of these problems can be easily addressed, for example by examining cost burdens for specified income groups or comparing rent burdens for households with the same number of household members or those occupying housing with the same number of bedrooms. Even setting aside these problems, there is another concern with the 30 percent measure: it is a binary indicator of affordability. This creates two issues: 1) Households with very different housing cost burdens are grouped in the same category. For example, if there are two households with similar incomes but one household spends 50% of income on housing and the other household spends 100% of income on housing, then both are considered to be living in unaffordable housing. But one household has some money left over to pay for expenses while the other household has none. 2) Households with very similar housing cost burdens are grouped into different categories. For example, if there are two households with similar incomes but one household spends 29% of income on housing and the other household spends 31% of income on housing, then the former is considered to be living in affordable housing but the latter is not. However, the incomes and amount spent on rent for these households does not differ very much.

Data and Methods

The analysis is based on data from the decennial census conducted by the U.S. Census Bureau. Data were provided in the IPUMS USA database (Ruggles et al., 2019). The following samples were obtained from IPUMS: 1980 1% metro sample (a 1-in-100 national random sample of the population), 1990 1% metro sample, 2000 5% sample (a 1-in-20 national random sample of the population), 2010 10% sample (a 1-in-10 national random sample of the population).

The Census data include several relevant variables, including household income. Household income is a measure of total monetary income for all household members who are 15 years or older during the previous calendar year and are present in the household at the time of the census. Household income is self-reported pre-tax income. It does not include government cash transfers or in-kind benefits. In the 1970 Census data, household income is not available so family total income is used instead. Note that for 1970 Census data, family total incomes were top coded at \$50,000. For the 1980 Census data, household incomes were top coded at \$75,000 (prior to adjusting for inflation). For the 1990 and 2000 Census data, household incomes were top coded by state.

Another key variable in the Census data is rent. Rent is a measure of the amount of the monthly contract rent payment for housing used by a household. The value for rent does not include utilities and heating fuel costs unless they are included in the rent contract for the housing unit. Like household income, rent is self-reported. Census respondents were instructed to report the full contract rent amount, even in payments had not been made or were paid by someone who was not a member of the household. Note that for 1980 Census data, monthly

contract rents were top coded at \$500, year 1990 rents were top coded at \$1,000, and year 2000 rents were top coded at \$1,700 (prior to adjusting for inflation).

Educational levels are also available in the Census data. Educational attainment is measured as the highest year of schooling or degree completed. As noted in the IPUMS codebook, the highest year of schooling completed may differ from the highest year of school attended. Households were categorized as did not graduate from high school, completed a high school diploma, completed a bachelor’s degree, or completed a master’s degree or higher, based on the educational attainment of the head of household.

The housing cost-income ratio is calculated by multiplying contract rent by 12 and then dividing by household income. Income percentiles are based on the household income rank in the national income distribution for a given year. The analysis involves using descriptive statistics to describe the distribution of housing cost-income ratios for different income and educational groups. Percentage change is calculated to examine trends over time.

The data include observations with questionable or implausible values for selected variables, including household income and rent. In the 2010 Census data, there were 5,449 renter households living in metropolitan areas where reported household income was zero or negative. No renter households in the 2010 Census data living in metropolitan areas reported zero rent. In the 1970 Census data, there were 3,319 renter households living in metropolitan areas where reported household income was zero or negative. There were 1,882 households in the 1970 Census data living in metropolitan areas that reported zero rent. Consistent with previous research, observations where households reported zero or negative income or rent were dropped due to concerns about data validity (Colburn and Allen, 2018; McClure, 2005; Steffen et al., 2015; Susin, 2007). In the 2010 Census data, an additional 1,570 households reported housing costs that were ten times or greater than household income; these observations were dropped. In the 1970 Census data, an additional 642 households reported housing costs that were ten times or greater than household income; these observations were also dropped. The final analytic sample for 2010 is 249,846 households. The final analytic sample for 1970 is 150,290 households.

The analysis focuses on households classified in the Census as living in metropolitan areas who rent their housing for cash rent. Household observations are weighted based on the sampling weights provided by IPUMS in the Census data and represent nearly 30 million households.

Findings

Table 1 – Descriptive Statistics

2010 Census (weighted)

Variable	Obs	Mean	Std. Dev.	Min	Max
Household Income	29,777,830	34681	35868	53	1048666
Housing rent	29,777,830	666	391	3	2903
Less than HS diploma	29,777,830	0.171	0.377	0	1
HS diploma or GED	29,777,830	0.260	0.438	0	1
College degree	29,777,830	0.164	0.370	0	1

Graduate degree	29,777,830	0.081	0.273	0	1
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Note: Household income and rent are adjusted for inflation (dollars in 1999).

Table 2 – Housing Cost-Income Ratio

2010 Census (weighted)

Income Quintile	Mean	Std. Dev.	Min	Max
Bottom	0.884	1.131	0.0023	9.960
2nd Lowest	0.321	0.163	0.0012	1.991
Middle	0.224	0.101	0.0008	0.978
2nd Highest	0.174	0.078	0.0005	0.687
Top	0.126	0.061	0.0001	0.455

Education Level	Mean	Std. Dev.	Min	Max
Less than HS diploma	0.506	0.740	0.0004	9.943
HS diploma or GED	0.462	0.704	0.0003	9.882
College degree	0.385	0.665	0.0001	9.960
Graduate degree	0.334	0.585	0.0005	9.951

Figure 1 – Household Income Distribution for Renters under \$250K in Metro Areas, 2010

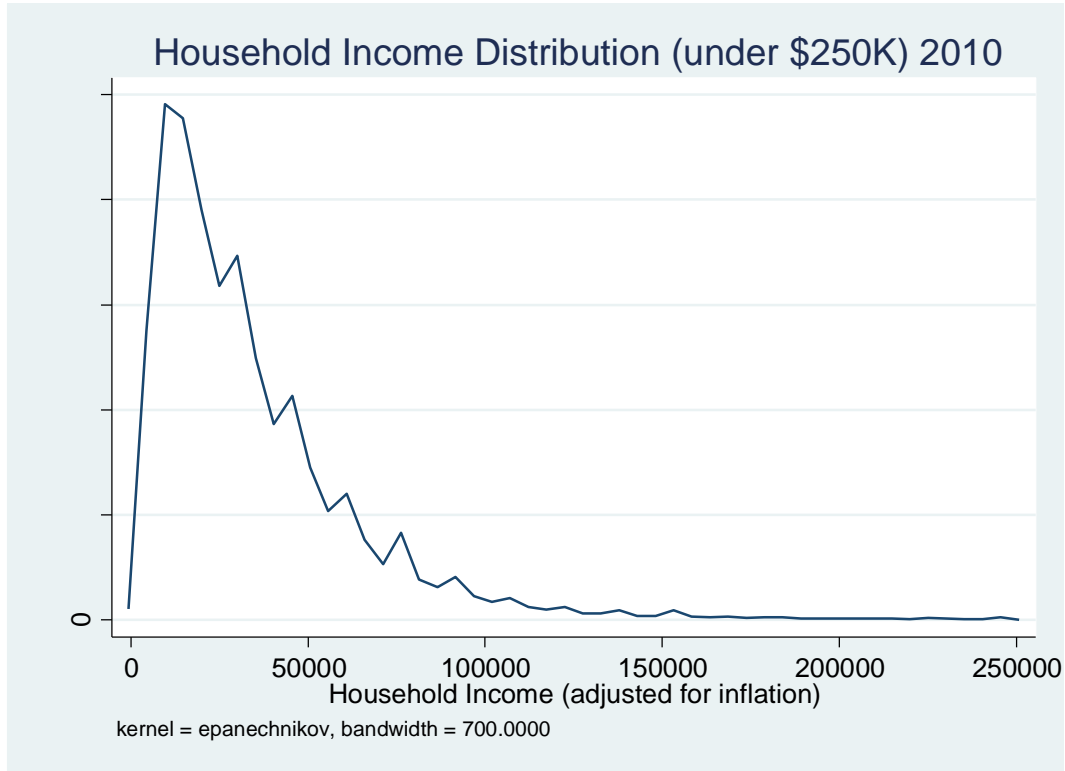


Figure 2 – Housing Rent Distribution for Renters in Metro Areas, 2010

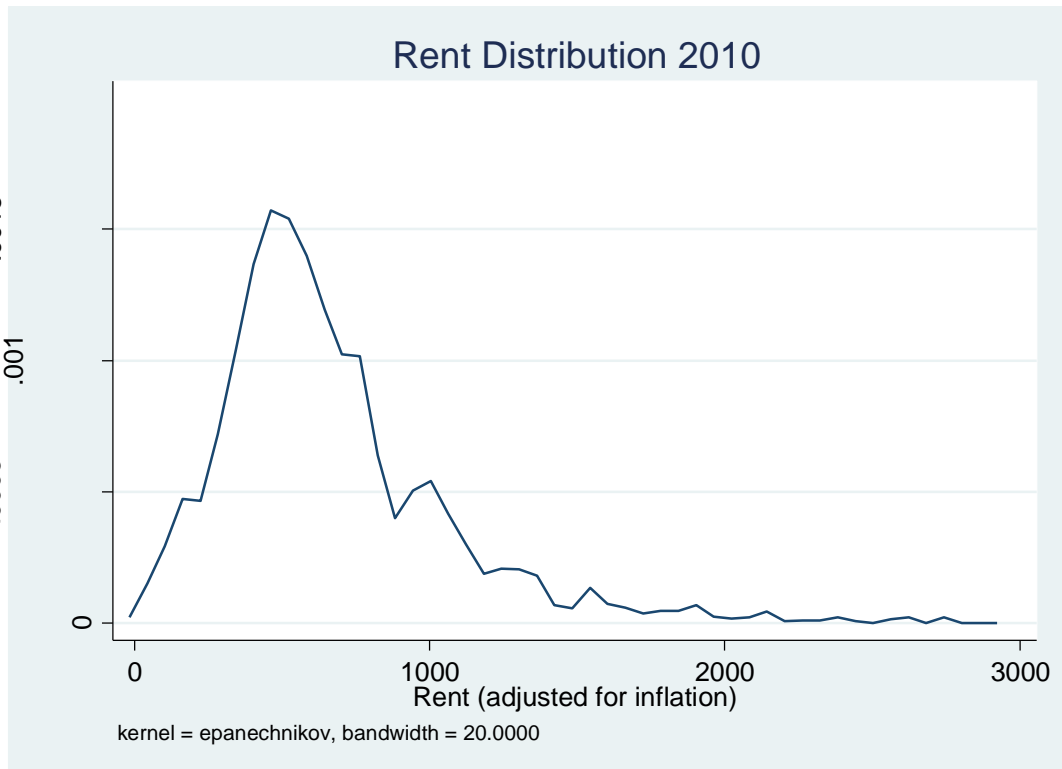


Figure 3 – Household Income Distribution for Renters in Metro Areas, 1970

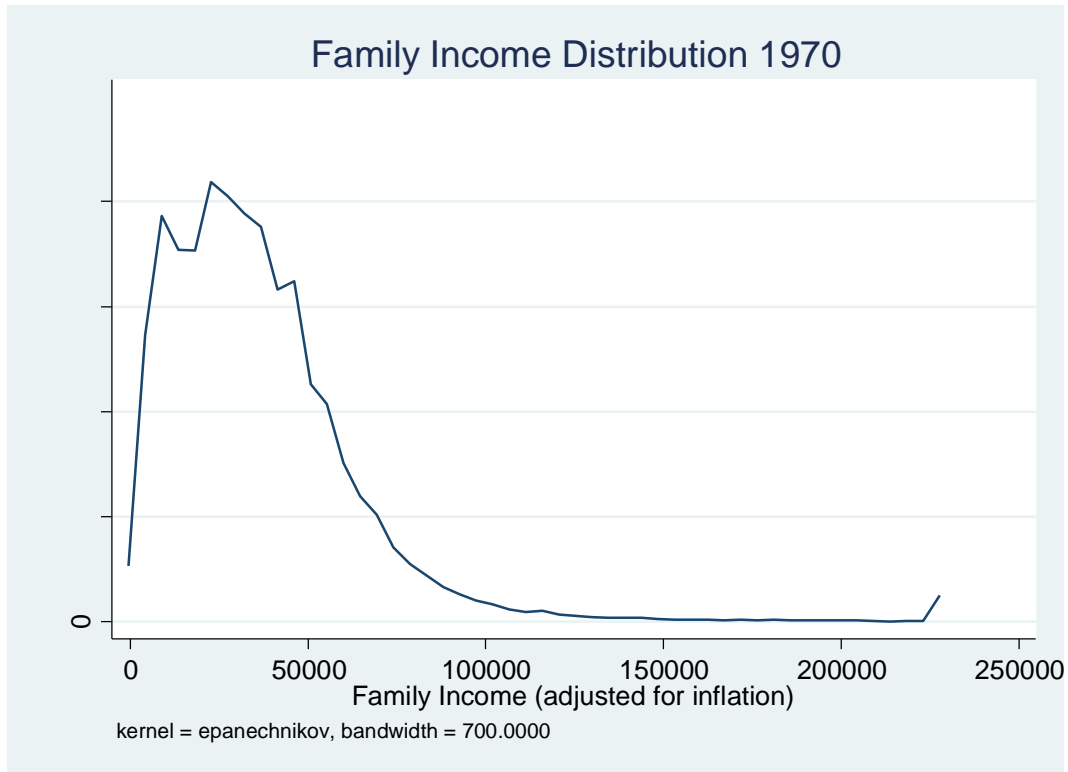


Figure 4 – Housing Rent Distribution for Renters in Metro Areas, 1970

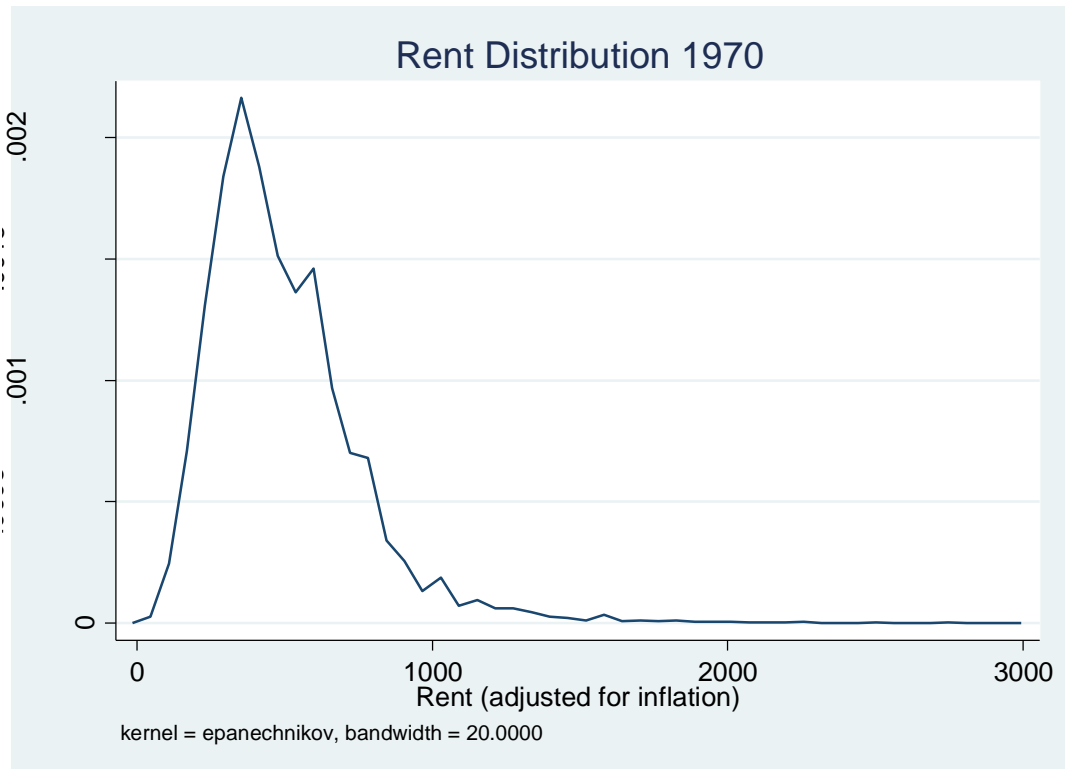


Figure 5 – Housing Cost-Income Ratio for Bottom Income Quintile, 2010

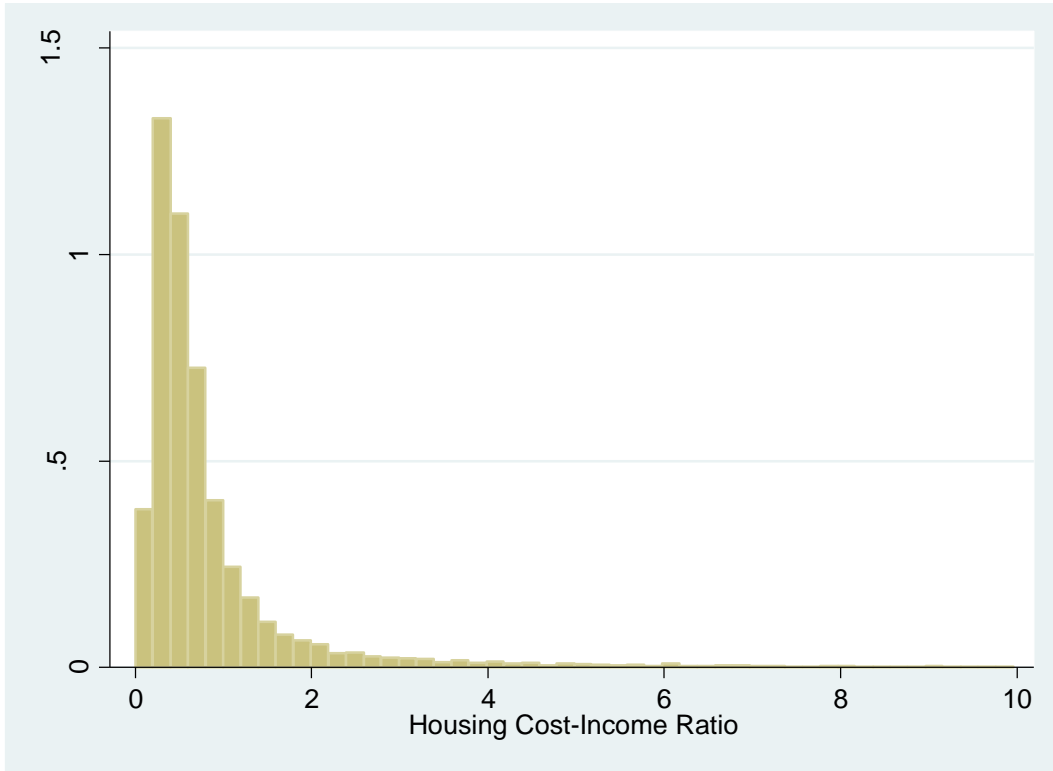


Figure 6 – Housing Cost-Income Ratio (0 to 1) for Bottom Income Quintile, 2010

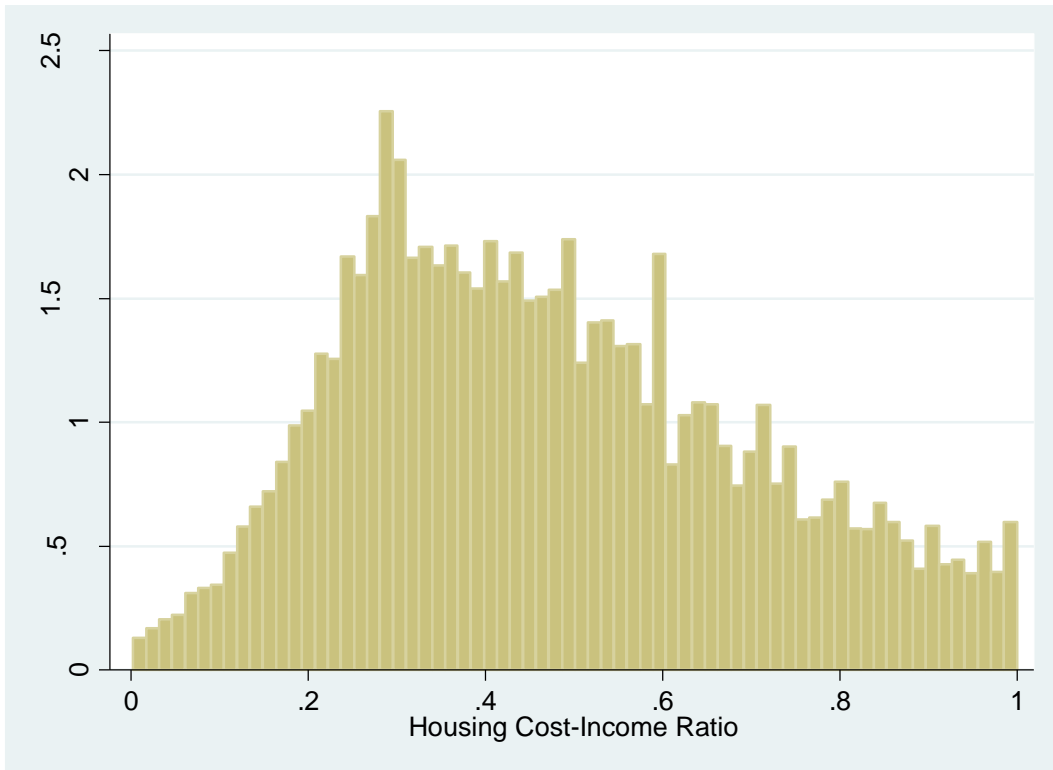


Figure 7 – Income and Rent Distribution for Renters under \$100K in Metro Areas, 2010

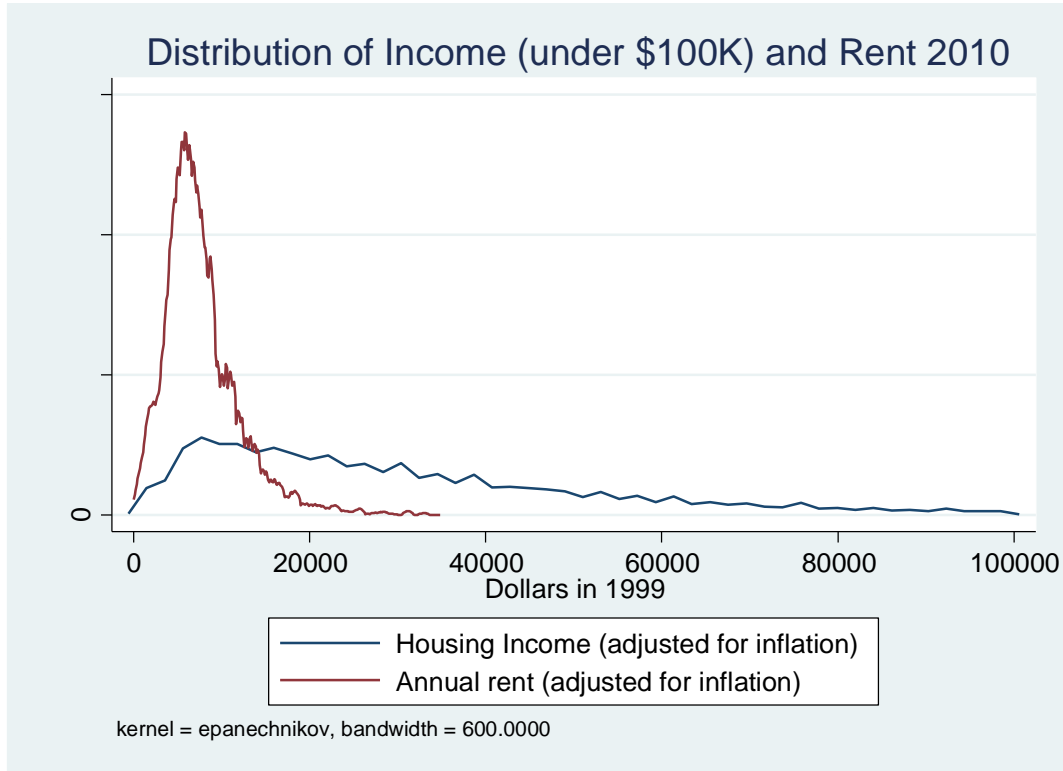


Figure 8 – Change in Rent Burden (1970-2010) for Lowest Income Quintile Households

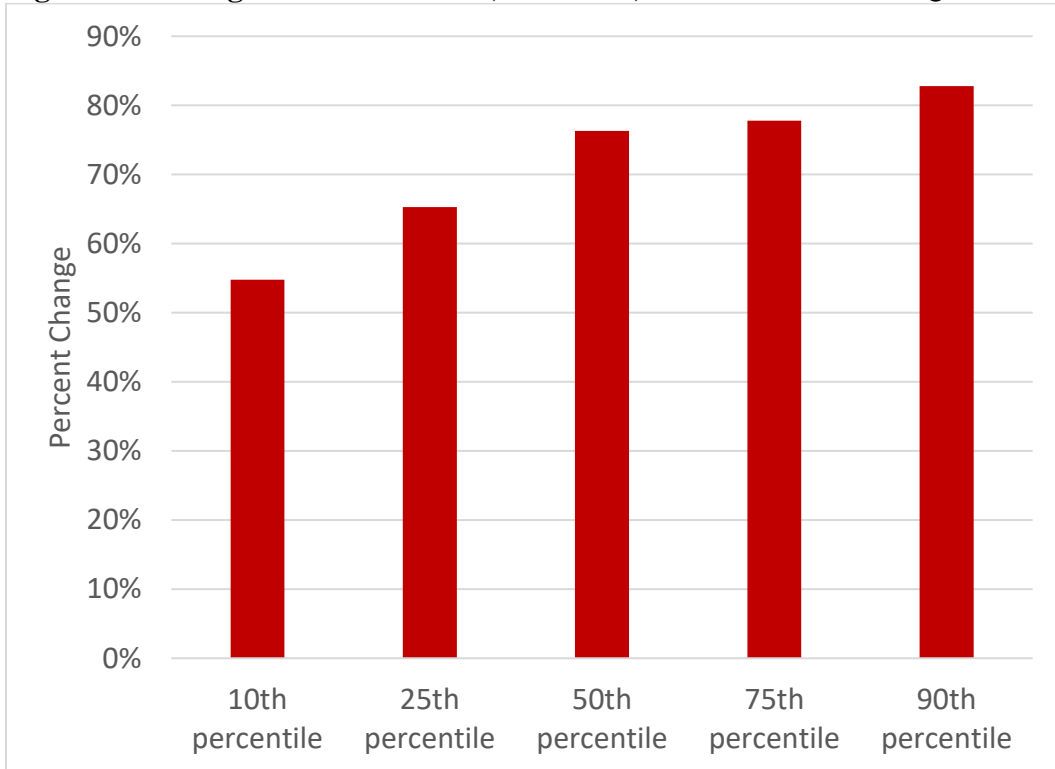
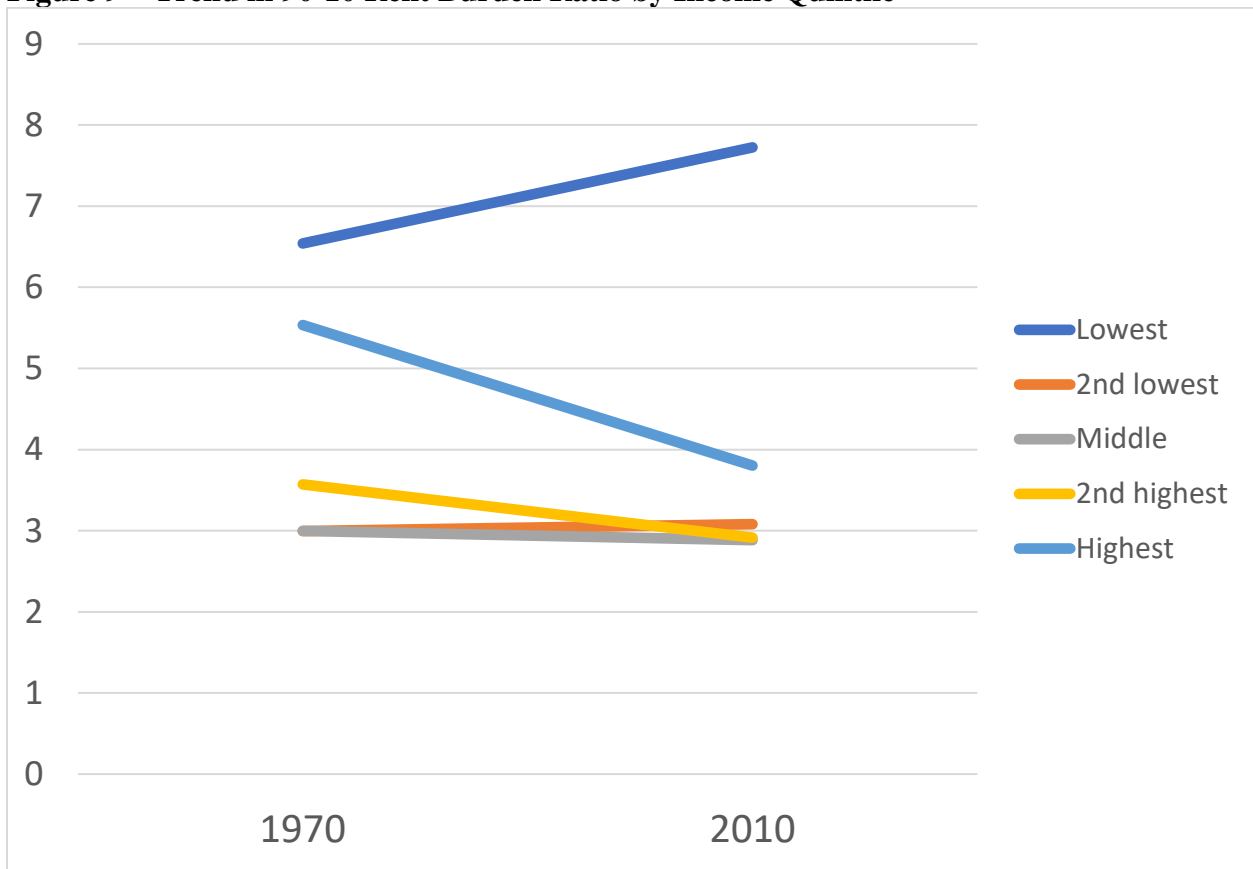


Figure 9 – Trend in 90-10 Rent Burden Ratio by Income Quintile



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Appendix Figure 1 – Household Income Distribution for Renters in Metro Areas, 2010

