



RESEARCH INSTITUTE FOR HOUSING AMERICA **SPECIAL REPORT**

Diverted Homeowners, the Rental Crisis and Foregone Household Formation

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Executive Summary

Much has been written already about the housing crisis that precipitated the Great Recession. Among the long term impacts have been the emergence of a rental housing shortage and an intensified affordability crisis in the rental market. In this report, we analyze various supply and demand factors that have led to this crisis.

In so doing, we provide detailed analysis of the shifts in homeowner and rental demand. As we note, these shifts cannot be analyzed without understanding the shifts in household formation that have occurred. We utilize data from the U.S. Census and focus the analysis on 3 distinct time periods (2000, 2006, 2012) to highlight housing epochs that are relatively normal, at the peak, and near the bottom of the market. Special attention is also placed on those younger than age 45 because they represent the households most commonly making first time decisions to form a household and to own a house.

Our primary findings:

- A sharp downturn in homeowner growth since 2006 suggests that 6.0 million would-be homeowners (the expected number compared to actual) have been shifted to renting or have left the housing market.
- These diverted homeowners triggered a cascade of adjustments throughout the rental housing sector that are measurable in different ways.
- A sizable portion (roughly a third) of the diverted homeowners likely have been absorbed into single-family rentals, especially among households aged 25 to 54.
- Although larger than expected, growth in the rental sector was too small to account for both the expected rental growth and also the large number of diverted homeowners. Before disruptions to the owner-occupied market, the rental sector had been expected to grow by 4.4 million occupied units after 2006, due to the arrival of the large Millennial generation. While diverted homeowners resulted in demand for nearly 6 million additional rental units, rental housing only grew by 5.2 million.
- New construction was crippled during the financial crisis and aftermath, slowing its response to the swelling rental demand, although multifamily construction volume nearly doubled in 2012 compared to 2010, and increased another third in 2014 compared to 2012.
- The clear inference is that slightly more than 5 million otherwise-expected renters left or never entered the housing market, their growth displaced by the diverted homeowners, and diminishing overall household growth far below expectations.
- A further consequence of the resulting increase in demand and shortfall in supply in the rental market was an increase in rents, with rental affordability problems surging to record heights in 2010 and 2012. This dynamic created an increased incidence of high rental cost burdens that was remarkable for its relative uniformity across the nation.
- Detailed analysis of 9 selected large metropolitan areas finds several nuances among broadly similar trends.
 - + Nationally, there were 7.4% fewer owner-occupied homes in 2012 than would have been expected, with the greatest shortfalls found in Phoenix (-14.1%) and Los Angeles (-12.8%).
 - + The number of rented single-family homes in 2012 was greater than expected by 22.1% in the nation, but was 103.8% greater in Phoenix and 56.5% in Atlanta, while only 6.9% greater in Los Angeles.
 - + Compared to a national shortfall in the housing market in 2012 of 4.3% fewer households than expected given actual population growth, even greater shortfalls were observed in Los Angeles (-6.5%), Houston (-5.9%), and Washington, D.C. (-5.8%).

Introduction

A major rental crisis emerged in the U.S. in the aftermath of the early 2000s economic boom and subsequent Great Recession. The rental crisis is embedded in the overall economic turmoil of boom and bust, together with the restructuring of housing demand. After decades of steady or rising homeownership rates, sudden acceleration occurred after 1995, reaching an all-time peak of 69.2% homeownership in 2005, following which the rate plunged to a 3-decade low of 63.4% in 2015.¹

Turmoil in the housing market not only contributed to the financial crisis and resulting long recession, but it also was exacerbated by rising unemployment and falling incomes. Homeowner markets were badly damaged, but the resulting flight from homeownership to renting also caused harm to lower-income rental families.

Underlying the growing affordability problem is a major restructuring of housing demand that followed the Great Recession. This coincides with the large Millennial generation's entry into adulthood. Also important are effects of the under-sized Generation X and its particularly large reduction in homeownership. In the wake of the financial crisis, new construction has not been sufficient to meet this growing demand, as evidenced by declining rental vacancy rates after the Great Recession.

In this study, we delve into two principal components intertwined in this restructured housing demand, examining these for the nation as a whole, and with attention to selected metropolitan areas. First is the impact on renters created by the housing market collapse among homes for sale, the resulting financial crisis, and subsequent sharp declines in homeownership rates. The second force of change stems from the demographic surge of emerging adults that was attempting to enter the market at an unfavorable time. In the last decade, the large Millennial generation began to move into its 20s and early 30s, replacing the smaller Generation X that advanced into middle age. The result was a substantial increase in the numbers of young adults

seeking rental quarters, a sharply greater number than was experienced in the 1990s when Generation X occupied the 20s age range.

These changes are best appreciated by estimating changes in both demand and supply for two contrasting periods, 2000 to 2006 and 2006 to 2012. The combined effect of the Millennial generation's market entry and of diverted homeowners was a shock to rental markets. New construction was understandably slow to respond during the recession, and even as it has expanded from its recession lows, it still in the process of catching up to demand.

This study, while focused principally on changing sources of demand, will begin to shed light on how well the housing supply in different metropolitan areas responded to the abrupt increases in rental demand. Existing sources for filling needs included conversion of single-family housing from owned to rented status, and drawing down the pool of available single-family vacancies. Another source of housing, not estimated here, for middle-class segments of the millennial generation, stems from gentrification of older housing from working class families. While such complexities of housing supply change are beyond the scope of this study, changes in the pattern of occupied housing units are also a meaningful reflection of these dynamics.

In following sections, we study the national trends in greatest detail, while offering summary comparisons for selected metropolitan areas. In particular, we report findings for a selected group of nine large metropolitan areas:

- | | |
|--------------------|-------------------------|
| Atlanta | Phoenix |
| Boston | Seattle |
| Cleveland | St. Louis |
| Houston | Washington, D.C. |
| Los Angeles | |

1. This measure of homeownership per household is from the Housing Vacancy Survey (HVS), which is reported quarterly for the nation and four regions.

We first examine the rising affordability problem, comparing the extent of rent burden across the 50 largest metros. Rents have been rising faster than incomes on average, because of the added number of renters and slow expansion of the supply of rental housing.

To assess how housing demand has been restructured we employ a method for decomposing overall changes in accordance with, on the one hand, population growth in different age groups that have distinctly different housing propensities and, on the other, sharp changes in those propensities following the Great Recession. This method of accounting yields estimates of foregone homeownership, increased renter households, and overall foregone household formation.

Our interpretative framework is that growth in rental demand is being fed from two ends, former or would-be homeowners diverted into renting and new households, particularly among Millennials, forming in rental quarters. Total increases in rental supply have not been sufficient to house the growth of these potential rental households. As a result economically weaker households have been forced out of the market.

We support this interpretation with data showing how the changes are distributed by age group and by income segment. Although we show that changes in particular segments are more or less great in particular metropolitan areas, what is striking is how broadly these changes are distributed across the nation.

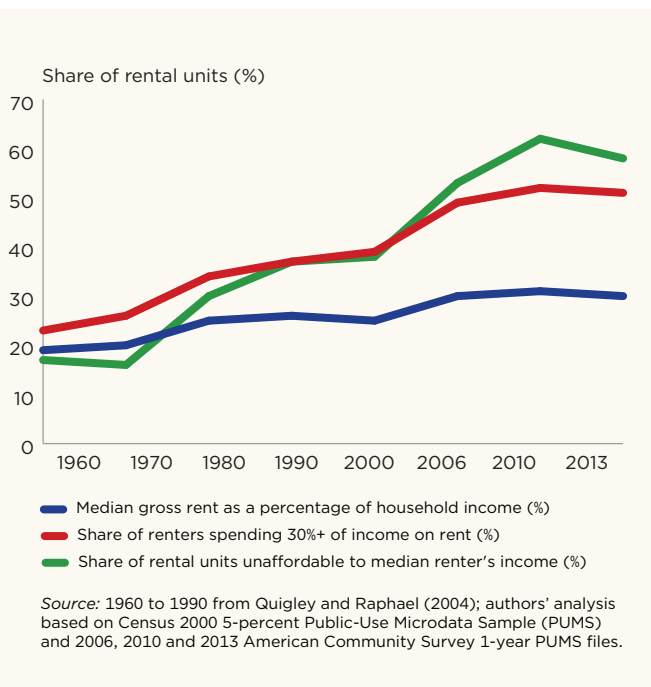


In the end, we aim to illuminate the ways that the disruption of home buying has in turn led to disruption of rental markets. The timing is unfortunate for the Millennials and also for the lower income households with whom they may compete. Their entry into adulthood is generating many potential households in a period when rental housing supply has not expanded sufficiently. What this means for the outlook for new construction in coming years is considered in the conclusion.

Rising Affordability Problems

Cost burdens for renters reached an unprecedented high level in 2010, with only slight improvements thereafter, which has stirred widespread concern among housing professionals, affordable housing advocates, and in the news media (Harvard JCHS, 2015). The proportion of renters paying more than 30% of their income for housing has ratcheted upward since 1960, with major upward surges registered in the 1970s and especially the 2000s, rising during both the economic boom and bust (Figure 1). By 2013, even after slight improvements since 2010, 52 percent of all renters bore the burden of paying over 30% of their income for housing expenses. Figure 1 also depicts changes in alternate measures of affordability.

FIGURE 1. RISING RENTAL AFFORDABILITY PROBLEM: 1960 TO 2013



Rising affordability problems involve both rising rents and falling incomes. Quigley and Raphael (2004) decomposed the decade-by-decade affordability trend from 1960 to 2000 into these two components, finding that increasing rent consistently contributed to declines in affordability,

while growth in real income mitigated or even offset the rental effects, except 1970 to 1980. If the Quigley-Raphael analysis is extended to the present study period, however, we find that declines in income, as well as increased rents, contributed to the decline in rental housing affordability in both 2000-06 and 2006-12 (Table 1). Even though the decline in affordability slowed after the Great Recession, affordability did not improve. In both periods, income changes and rent changes contribute to the overall decline. Therefore, the current and unprecedented rental affordability problem can be understood as a result of a long-term shift in the distribution of rent to more expensive brackets accompanied by declines in real incomes among renters in the 2000s.

TABLE 1. DECOMPOSITION OF CHANGES IN RENTAL AFFORDABILITY INTO RENT AND INCOME COMPONENTS

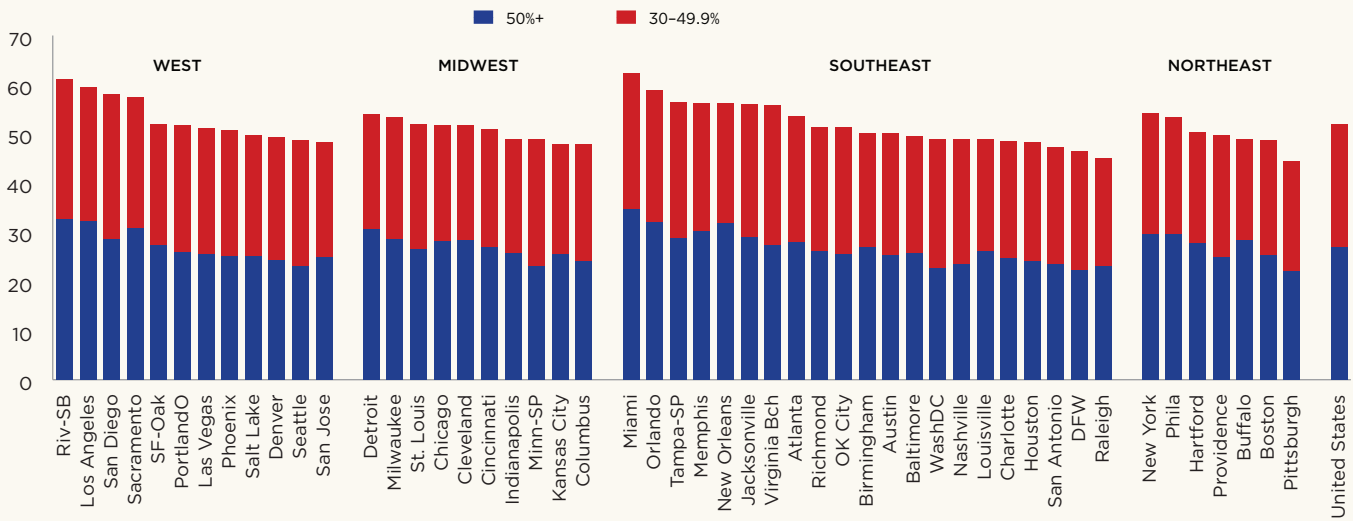
	RENTAL UNITS	AFFORDABLE TO OCCUPANTS	SHARE OF AFFORDABLE UNITS (%)
2000	33,666,613	21,026,879	62.5
2006	34,330,088	16,099,230	46.9
2012	39,507,818	16,219,319	41.1
	CHANGE IN AFFORDABILITY	DUE TO RENT	DUE TO INCOME CHANGES
2000-2006	-15.6	-5.0	-10.6
2006-2012	-5.8	-2.1	-3.7

Source: Authors' analysis based on Census 2000 5-percent Public-Use Microdata Sample (PUMS) and 2006 and 2012 American Community Survey 1-year PUMS files.

Note: The rental housing units exclude those without payment of cash rent. The affordable rental units are defined as the rental units renting for less than 30 percent of the income of median renter in each year, and affordability is measured here by the share of rental housing units that are affordable to the median renter. For the detailed explanation on decomposition method, please refer to Quigley and Raphael (2004).

The problem is remarkably widespread. Figure 2 shows that approximately one-half of the renters in the larger metropolitan areas in each U.S. region bear a high rent burden (paying more than 30% of income for gross rental expenses). Although this represents a slight improvement since 2010, the changes are negligible in comparison to the cumulative increase since 2006. Particularly high bur-

FIGURE 2. SHARE OF RENTERS (%) WHO ARE COST-BURDENED IN 2012, BY TOP 50 METROPOLITAN AREAS



Source: Authors' analysis based on 2012 American Community Survey (ACS) 1-year estimates.

dens are observed in the west and south, topped by five metropolitan areas in California and three in Florida. Areas with the lowest incidence of high rent burdens are found in Pittsburgh in the northeast and the Texas and North Carolina metros in the south. Of the total incidence of high rent burdens, approximately half in every metropolitan area is classified as severe (rental payments requiring 50% or more of tenant income). Analysis shows that the incidence of high rent burden is much greater under \$30,000 household income than above it, and for renters with incomes less than \$15,000 the total incidence exceeds 80% while the incidence of severe rent burden (spending more than 50% of income on housing) exceeds 70% (Harvard JCHS 2015: 27-28). The lowest income renters are clearly under the most severe financial pressure to sustain their homes.

Rental markets have not declined in parallel with other economic indicators since the peak of the economic expansion in 2006. Between 2006 and 2012, median household income in the nation declined from \$55,179 to \$51,371,² a decline of 6.9% in real terms, while median income of renters fell from \$33,763 to \$31,888, or a decline of 5.6%. Median house values also decreased 18.5% in real terms over the same time period. Meanwhile, the median rent continued to rise by 1.7%, albeit more slowly than the 8.3% increase observed from 2000 to 2006. At the metro level, however, rents declined in 20 of the top 50 metropolitan areas, and those declines were more common where incomes fell more markedly. Tables A and B in the Appendix provide rent, house value and income details for our selected 9 metros.

2. All monetary figures in this report are adjusted to 2012 dollars, using national CPI-U.

Accounting for Restructured Demand and Growth in Rentals

Underlying the growing affordability problem is a major restructuring of housing demand that followed the Great Recession as well as the arrival of the Millennial generation pressing into adulthood. These changes are best appreciated by contrasting two periods, 2000 to 2006 and 2006 to 2012. The shifts that occurred since 2000 are truly remarkable. In the first part of the decade housing values and homeownership rose rapidly, but after the housing collapse beginning in 2007 and in the subsequent recession and prolonged recovery, millions of households shifted to renting from owning (Bleemer et al. 2014). Others retreated from independent living completely, choosing to live with family members or doubling up with roommates (Lee and Painter 2013; Mykyta and Macartney 2012; Painter 2014).

Different demographic segments may also influence this restructuring of demand. Most important are age differences, because these correspond to generations of different sizes and also because the generations were caught at different stages of their housing lifecycle during the boom and bust. Most publicly visible are the Millennials, but the under-sized Generation X also contributed to the decline in the number of homeowners (Emmons and Noeth 2012).

MEASURING CHANGES IN POPULATION AND HOUSING DEMAND

Data sets chosen to carry out this analysis of change are the decennial census of 2000 and the American Community Survey (ACS) in 2006 and 2012. The full population and housing stock are covered in these data in a comparable fashion for the selected time points. The chosen sources also have the important advantage that their very large sample size is designed to afford coverage of metropolitan areas and even smaller geographies. Other frequently used data sets such as the Current Population Survey, Housing Vacancy Survey, or American Housing Survey lack one or more of these advantages.

Our approach in this paper is to focus on changes in two periods of time, first in the boom years from 2000 to 2006, and second in the housing bust, recession and recovery years that followed 2006, ending in 2012 for purposes of this analysis. We will adopt 2000 as a baseline of normalcy that is pre-bubble and bust, and measure changes in both housing demand and population since that date.

A primary technique for relating population growth and change to housing demand is to disaggregate population into age segments with different probabilities of dwelling choice, described here by two measures. First, household formation is represented by headship rates, the likelihood that members of a given segment are the householder of the housing unit in which they live.³ In the Census Bureau accounting system for people and housing, each occupied unit has only one “head” or “householder.” All other occupants are non-heads, including the spouse of the householder or other relatives. Thus for married couples the headship rate cannot exceed 50%, while at older ages where there are more widow(er)s, headship rates continue to rise over 60%.

The second key measure is the homeownership rate, traditionally calculated as the share of household heads that reside in an owner-occupied housing unit. That excludes spouses and non-heads from the universe of analysis. In this analysis we make use of an alternate measure, one that is based on per capita rates of homeownership that are based on population counts and not household counts.

The per capita method of homeownership measurement has been used recently by Haurin and Rosenthal (2007) and Yu and Myers (2010).⁴ This measure incorporates the headship rate by calculating the joint probability that people are both a household head and a homeowner. Homeowner headship is complemented by renter headship; the sum of the two rates being equal to total household headship. In the present analysis, renter or owner headship can be further decomposed by structure type, for example defining the joint probability of single-family renter heads compared to multifamily renter heads.

Although the traditional homeownership rate is a measure of homeownership per household, it can miss some shifts in housing demand because it ignores changes in the total number of households. Per capita homeownership links

3. The Census definition of “householder” is that this reference person on the household roster of residents is one of the persons in whose name the unit is rented to owned. Since each unit can have only one householder, and married couples often jointly lead their households, the choice of one householder is left to the occupants. The term householder is identical to the older term of household head. Similarly, the headship rate and householder rate are interchangeable in meaning.

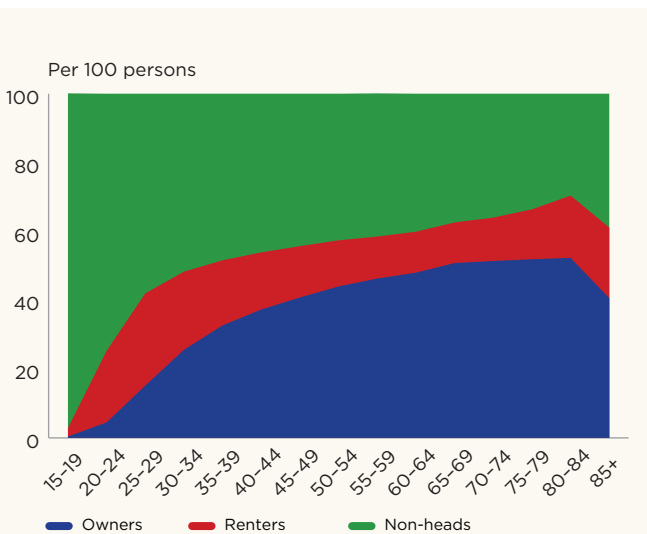
4. The benefits and implications of using the per capita measure are also addressed in Kolko (2014).

more accurately to the population universe and also has computational advantages (Yu and Myers, 2010). Population growth drives aggregate housing demand, because more people require more housing units. Rising incomes support more household formation, and perhaps, more homeownership. The key to understanding housing demand is to identify the number of people in different age segments since age corresponds to both income and family status, and therefore, the type of housing demanded.

DESCRIPTIVE DATA ON CHANGES IN HOUSING DEMAND

The differences in housing consumption by age groups are displayed for the U.S. population in the 2000 base year in Figure 3. All children are dependents in other people's households or in institutions. For age groups 15-19 and 20-24 there is a marked transition into headship of independent housing units, primarily in rental quarters, and that likelihood expands greatly by ages 25-29. Renting is at its greatest in this age range, with 26.8% of all individuals age 25-29 serving as householder of a rental unit. Thereafter, renting shrinks and homeownership expands its share of each age group, peaking at ages 80-84, when 52.3% are owner householders and 18.1% are renter householders. (The remaining 29.6 percent of the population in this age group either lives with a renting or owning householder or else lives in institutional quarters.) In fact, both owning and renting are high in later years because older people often live without a partner and so most are householders. Only after age 85 does overall headship decline as older people begin to surrender their independent living.

FIGURE 3. PER CAPITA RATES OF HEADSHIP AND HOMEOWNERSHIP IN 2000, UNITED STATES, BY 5-YEAR AGE GROUP

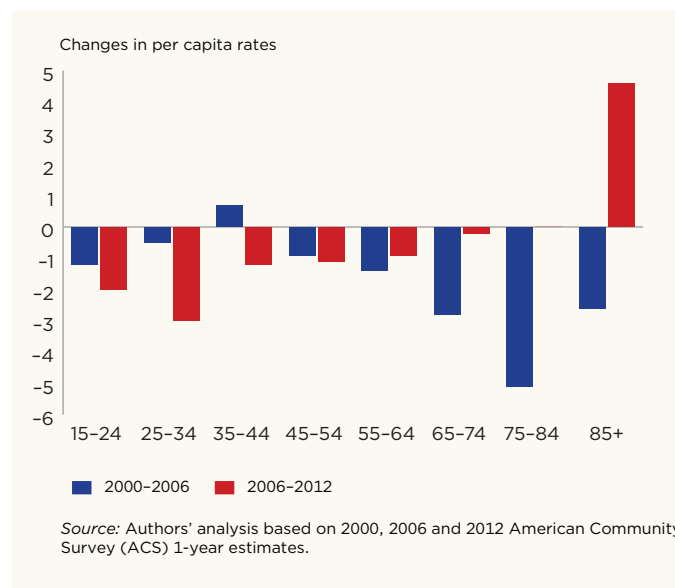


Source: Authors' analysis based on Census 2000 5-percent Public-Use Microdata Sample (PUMS).

Descriptive changes in total household headship after 2000 are reported in Figure 4. Household formation rates (headship probabilities) have been generally falling, but in the post-recession period declines were most pronounced for people under age 35. The observed declines in total headship are the sum of household gains and losses distributed across different categories of housing: owner headship, renter headship in single-family structures, or renter headship in multifamily structures. We can better understand the overall household changes by displaying these for each tenure and structure category in Figures 5-7.

Owner headship rates in Figure 5 reveal relatively small changes in each age group by 2006, while very substantial losses were registered between 2006 and 2012 (Figure 5), with the exception of the oldest age group. Ownership declines of about five percentage points were observed at ages 25-34 and 35-44, representing both Millennials and Gen Xers. These per capita ownership changes resemble those estimated by the traditional rates of ownership per household, which also show the deepest losses at age 25-34 (-8.8 percentage points), followed by 35-44 (-7.7) and 45-54 (-4.6). The per capita changes at age 15-24 are very slight compared to the per household ownership changes (-5.3), because the per capita rate takes account of how few of these very young adults are even household heads.⁵

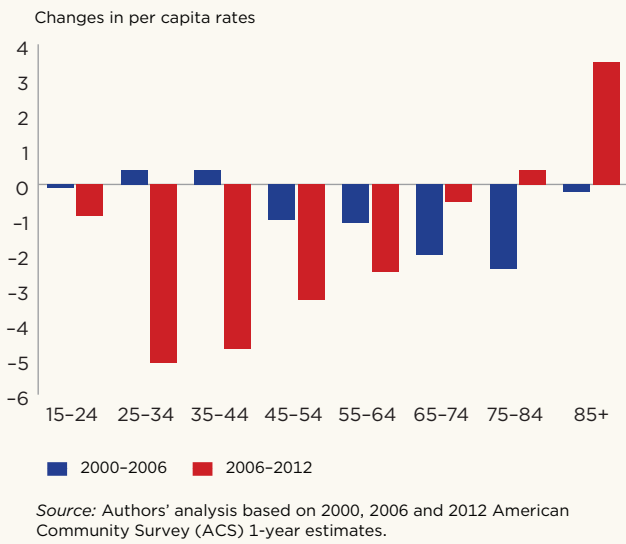
FIGURE 4. NET CHANGE IN PER CAPITA TOTAL HEADSHIP RATES, BY AGE, 2000-06 AND 2006-12



Source: Authors' analysis based on 2000, 2006 and 2012 American Community Survey (ACS) 1-year estimates.

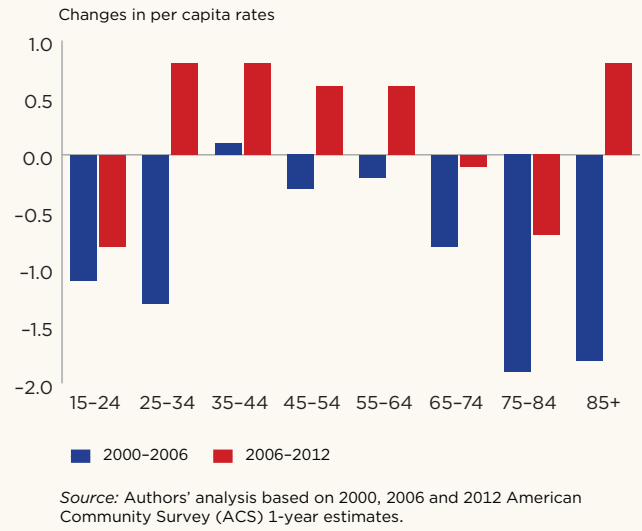
5. In 2006, only 2.2% of people age 15-24 were owner heads, and that fell to 1.3% in 2012, a loss of nearly 1.0 percentage point. In contrast, on a per household basis, 17.8% of householders age 15-24 were owners, falling to 12.5% in 2012. But again, in this age group where most people are not household heads, homeownership was based on only 1.3% of the people.

FIGURE 5. NET CHANGE IN PER CAPITA OWNER HEADSHIP RATES, BY AGE, 2000-06 AND 2006-12



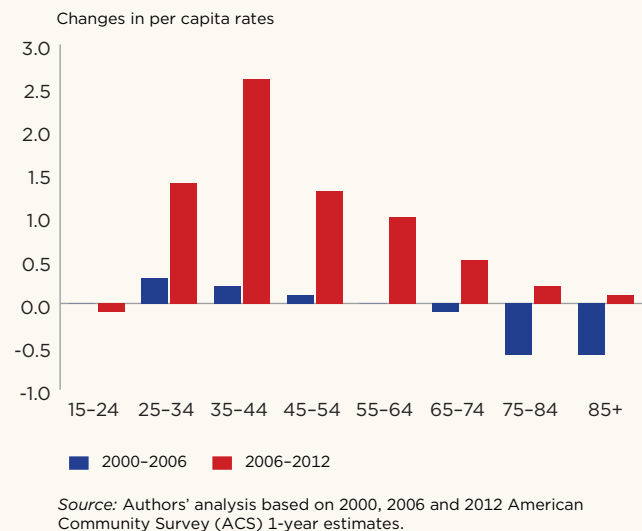
Among renters, most reside in multifamily structures (25.3 million in 2012), whereas a large and growing number (14.5 million in 2012) reside in single-family units. Accordingly, we identify these two types of rental headship for separate inspection. Multifamily renter headship was generally declining during the boom years, especially among adults under age 35 or over age 75. Some of these losses could have been due to renters moving into homeownership but at least as probable, the losses were due to households that exited headship and became non-heads. After 2006, however, multifamily rentership declined among the youngest and oldest, but it also registered small increases between ages 25 and 64 (Figure 6).

FIGURE 6. NET CHANGE IN PER CAPITA MULTIFAMILY RENTAL HEADSHIP RATES, BY AGE, 2000-06 AND 2006-12



A much different portrait of rental change was observed among single-family renters (Figure 7). Single-family rental headship had remained relatively stable in the boom years among all age groups except the oldest, where it declined slightly. After 2006, large increases were observed, with the largest gain (2.6 percentage points) among ages 35-44. This shift into single-family renting was roughly two-thirds as large as the loss from homeownership among this age group that is at the peak age for raising school-age children.

FIGURE 7. NET CHANGE IN PER CAPITA SINGLE-FAMILY RENTAL HEADSHIP RATES, BY AGE, 2000-06 AND 2006-12



We should note that the demographic shifts in the number of people in each age group during this period were so substantial that they would have had noticeable impacts on housing markets even if per capita rates of housing demand remained constant. What is not known is how the population-age shifts may have either amplified or counterbalanced the changes in housing demand that we observe in Figures 4 through 7. We explore this dimension in the next section.

DECOMPOSING POPULATION AND BEHAVIOR EFFECTS ON DECLINING HOUSEHOLD FORMATION

In order to investigate how much of the decline in overall household formation is attributed to the changing population sizes in each age group and to changing behavior, we decompose the overall demand changes into population and behavior components, both of which are age-related.⁶ Given that overall housing demand per capita is a weighted average of age-specific headship rates, defined as the propensity of a person in a particular age group being a householder, we can disentangle change in total headship rate into the portion contributed to the changes in the weights (population shares by age group) and the component due to changes in age-specific headship rates. The former can be interpreted as the changes in housing demand per capita due to population share shifts; the latter would reflect the changes in housing demand due to changes in behavior or housing choices, given a certain age structure. The exact procedure is found in the Appendix.

The overall headship rate declined by 0.9 percentage points to 45.9 percent in 2012 from 46.8 in 2006. The result of our decomposition in Table 2 shows that population shifts counteracted some of the effects of the declining age-specific headship rates. Holding fixed age-specific headship rates in 2006, demographic shifts contributed an increase in the total headship rate of 0.4 percentage points. This was mainly due to the increased shares of persons in older ages (55 to 74), who generally have larger likelihood of being a householder. On the other hand, the age-specific headship rates declined among almost all age groups from 2006 to 2012 which contributed to the decline of total headship rate by 1.3 percentage points. Most of this headship decline was concentrated under age 35, an age range dominated by the Millennial generation.

This simple analysis indicates that substantial changes in housing choices, reflected by headship rates, rather than demographic forces, were driving the dramatic shifts in housing demand in recent years. We will next examine how people responded to changes in housing market conditions by highlighting how housing demand changed for different types of housing tenure and structure types, as well as by age.

TABLE 2. DECOMPOSITION OF CHANGES IN PER CAPITA HOUSING DEMAND INTO CONTRIBUTION OF POPULATION SHARE CHANGES AND CONTRIBUTION OF AGE-SPECIFIC RATE CHANGES, 2006 TO 2012

AGE	TOTAL PER CAPITA HEADSHIP RATE		CONTRIBUTION TO CHANGE IN HEADSHIP	DUE TO POP. SHARE CHANGES	DUE TO AGE-SPECIFIC RATE CHANGES
	2006	2012	2006-2012		
Total (15+)	46.8	45.9	-0.9	0.4	-1.3
15-24	12.6	10.5	-0.4	-0.0	-0.4
25-34	45.2	42.2	-0.5	-0.0	-0.5
35-44	52.6	51.3	-1.4	-1.2	-0.2
45-54	55.7	54.5	-0.6	-0.4	-0.2
55-64	58.0	57.1	1.0	1.2	-0.1
65-74	60.6	60.4	0.9	0.9	-0.0
75-84	63.3	63.3	-0.2	-0.2	0.0
85+	57.0	61.6	0.2	0.1	0.1

Source: Authors' analysis based on 2006 and 2012 American Community Survey 1-year PUMS files.

6. The decomposition method used here is based on the method of Card and Raphael (2013) used to identify the contribution of immigrants to poverty rates.

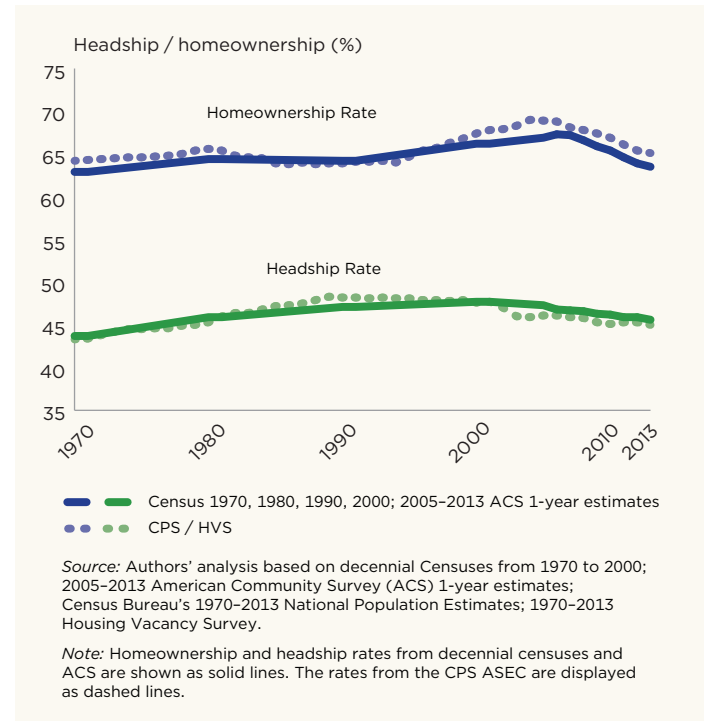
Diversion of Owners into Renting

The decline in homeownership after 2006 is a dominant feature of the contemporary housing market. The peak homeownership rate occurred during a period from 2004 to 2006, spiking in late 2004 to 69.2% of households (Figure 8), as measured by the quarterly Housing Vacancy Survey (HVS).⁷ Measurement of the homeownership rate in the HVS is roughly 1.5 percentage points higher than in the decennial census or the American Community Survey (ACS). For this research that includes metropolitan areas, as well as the full population, including even those who are not household heads, we must use the ACS as our basis for measuring trends over time. In 2006, the ACS homeownership rate stood at 67.3%, falling to 63.9% by 2012, a 3.4 percentage point decline that parallels the 3.6 percentage point decline in the HVS in the same period.

To fully account for the population's flexible formation of households in addition to their tenure choice, we adopt the per capita framework for measuring homeownership, such that per capita probabilities of owning, renting and non-headship sum to 1.0. According to this alternate measurement system of homeownership rates, the national per capita homeownership rate in 2012 was 29.3% of people, rather than 63.9% of households.

To estimate how many potential homeowners have been diverted into renting, we produce a very simple simulation of how many households have been diverted from the owner market to the rental market. We use per capita rates of householders who own and rent by age, race/ethnicity, and structure type in the year 2000 to simulate housing tenure status of the population in 2012 and compare the simulated estimates to the actual number of households in 2012.

FIGURE 8. HEADSHIP AND HOMEOWNERSHIP IN THE UNITED STATES, 1970 TO 2013



7. The HVS is a quarterly survey with substantial sampling variability. Although the highest reported homeownership rate was 69.2% in 2014Q4, it varied slightly above or below 69.0% virtually every quarter from 2004 through 2006. By 2012Q4 the HVS rate had fallen to 65.4%.

TABLE 3. ACTUAL AND SIMULATED NUMBER OF HOUSEHOLDS IN 2012, UNITED STATES, BY TENURE AND STRUCTURE TYPE (UNIT: THOUSANDS, %)

AGE	ACTUAL NUMBER OF HOUSEHOLDS			SIMULATED NUMBER OF HOUSEHOLDS IN 2012	DIFFERENCE BETWEEN ACTUAL AND SIMULATED	
	2000	2006	2012		IN NUMBER OF HHS	AS % OF SIMULATED
Total	105,480	111,617	115,970	121,168	-5,198	-4.3
Owners	69,819	75,075	74,227	80,194	-5,967	-7.4
Single-family	60,073	65,461	65,386	68,934	-3,548	-5.1
Multi-family	3,804	4,204	3,900	4,583	-683	-14.9
Other	5,941	5,410	4,941	6,677	-1,735	-26.0
Renters	35,662	36,543	41,742	40,974	769	1.9
Single-family	10,612	11,340	14,519	11,895	2,624	22.1
Multifamily	23,479	23,351	25,268	27,358	-2,091	-7.6
Other	1,570	1,851	1,956	1,720	236	13.7

Source: Authors' analysis based on Census 2000 5-percent Public-Use Microdata Sample (PUMS) and 2006 and 2012 American Community Survey 1-year PUMS files.

Note: Simulated number of households in 2012 is calculated by multiplying number of population in 2012 by age and race/ethnicity by age-race/ethnicity-structure type specific headship rates in 2000. 'Other' category includes mobile homes, boat, RV, van, etc.

The differences in the number of householders (equivalently, occupied housing units) in each category are displayed in Table 3. As noted before, the decrease in the expected number of households was substantial. At 2000 headship rates, the country would have been expected to have an additional 5.2 million households in 2012. At 2000 (per capita) homeownership rates, the country would have been expected to have an additional 3.5 million single-family owners, and additional 2.4 million owners in multifamily and other structures in 2012. In fact, there are more renters in 2012 than would have been expected using 2000 rates. While it is not remarkable that the number of renters increased in the recession, it is remarkable that there was such a large shift in the composition of these renters. In 2012, there were 2.6 million more single-family renters than would have been expected at 2000 rates. This increase was driven completely by the increase after the recession.⁸ At the same time, there were 2.1 million fewer multifamily renters in 2012 than would have been expected. An increase of 4.0 had been expected, but only 1.9 million was realized. In fact, of the 6.0 million diverted homeowners, only 2.6 million were accommodated by the unexpected rise in single-family renting, thus leaving 3.2 million unexpected households to rent multifamily housing or be dropped out of the housing market. The multifamily rental sector could not absorb all these newly generated renters.

From these data we can begin to conceptualize the cascade of changes that passed through the housing market. The diversion of 6.0 million would-be homeowners was split first with 2.6 million landing in rented single-family units and the rest landing in other rentals (or dissolved). Meanwhile, multifamily rentals already had been expected to grow by 4.0 million from 2006 to 2012, but only realized 1.9 million of that growth due to depressed housing construction (see discussion in a later section). The remaining diverted homeowners and the anticipated growth of Millennial renters thus collided in a multifamily rental market that was severely undersupplied. The resulting net shortfall of 5.2 million fewer total households than expected is composed of renters displaced by the diverted homeowners, plus young Millennials who were denied opportunity to form households in the first place. In the competition for scarce units we cannot be sure who “won” the units, but those with the lowest incomes and the highest payment burdens had distinctly lower chances.

In our nine focus cities, shown in Table 4, the same patterns are largely confirmed. However, there were more dramatic shifts in some places than others. As with the nation as a whole, the number of single-family owner occupiers fell everywhere, and the number of single-family renters increased substantially. Among our 9 focus cities, the largest percentage declines in single-family owners were in Los Angeles and Phoenix. The percentage increase in single-family renters was not as large in Los Angeles because single-family rental units were already a sizeable portion of the single-family housing stock. On the other hand, the actual number of single-family rental units in Phoenix in

8. Although the table focuses on the overall differences from 2000–2012, we conducted auxiliary simulations that discovered that the change in single family renters was driven by changes after the recession. These results are available upon request. Figure 7 also helps demonstrate this point.

TABLE 4. FORGONE HOUSEHOLDS (SIMULATED LESS ACTUAL) IN UNITED STATES AND NINE METROPOLITAN AREAS IN 2012, BY TENURE AND STRUCTURE TYPE

	U.S.	ATL	BOS	CLE	HOU	LA	PHX	STL	SEA	DC
Difference between actual and simulated number of households in 2012 (units: thousands)										
Total	-5,198	-110	-74	-15	-131	-292	-74	-35	-63	-129
Owner	-5,967	-119	-20	-36	-70	-300	-157	-48	-79	-86
Single-family	-3,548	-93	-5	-25	-32	-269	-112	-32	-67	-85
Multifamily	-683	-1	-12	-9	-11	-7	-5	-6	6	3
Other	-1,735	-25	-3	-2	-27	-24	-39	-10	-19	-4
Renter	769	9	-53	21	-61	8	83	14	16	-43
Single-family	2,624	92	15	26	9	41	135	30	35	25
Multifamily	-2,091	-84	-69	-8	-74	-35	-51	-17	-20	-69
Other	236	2	1	2	3	3	-2	0	1	1
Difference between actual and simulated number, as percentage of expected number of households in 2012 (unit: %)										
Total	-4.3	-5.4	-4.0	-1.8	-5.9	-6.5	-4.5	-3.0	-4.4	-5.8
Owner	-7.4	-8.8	-1.8	-6.1	-5.2	-12.8	-14.1	-5.9	-8.8	-6.1
Single-family	-5.1	-7.4	-0.6	-4.6	-2.6	-12.9	-11.5	-4.2	-8.5	-6.7
Multifamily	-14.9	-2.5	-5.9	-26.1	-29.1	-3.9	-15.3	-19.5	10.9	2.1
Other	-26.0	-41.9	-12.2	-22.1	-28.5	-32.3	-37.5	-25.2	-32.6	-27.7
Renter	1.9	1.3	-7.3	7.7	-7.0	0.4	16.2	4.3	3.0	-5.3
Single-family	22.1	56.5	18.3	39.6	4.2	6.9	103.8	33.3	26.3	13.0
Multifamily	-7.6	-17.0	-10.7	-3.8	-12.0	-2.3	-14.0	-7.6	-5.0	-11.3
Other	13.7	6.9	48.7	167.9	10.7	15.3	-8.4	4.4	13.7	15.7

Source: Authors' analysis based on Census 2000 5-percent Public-Use Microdata Sample (PUMS) and 2012 American Community Survey 1-year PUMS files.

Note: Simulated number of households in 2012 is calculated by multiplying number of population in 2012 by age and race/ethnicity by age-race/ethnicity-structure type specific headship rates for that locale in 2000. Other category includes mobile homes, boat, RV, van, etc.

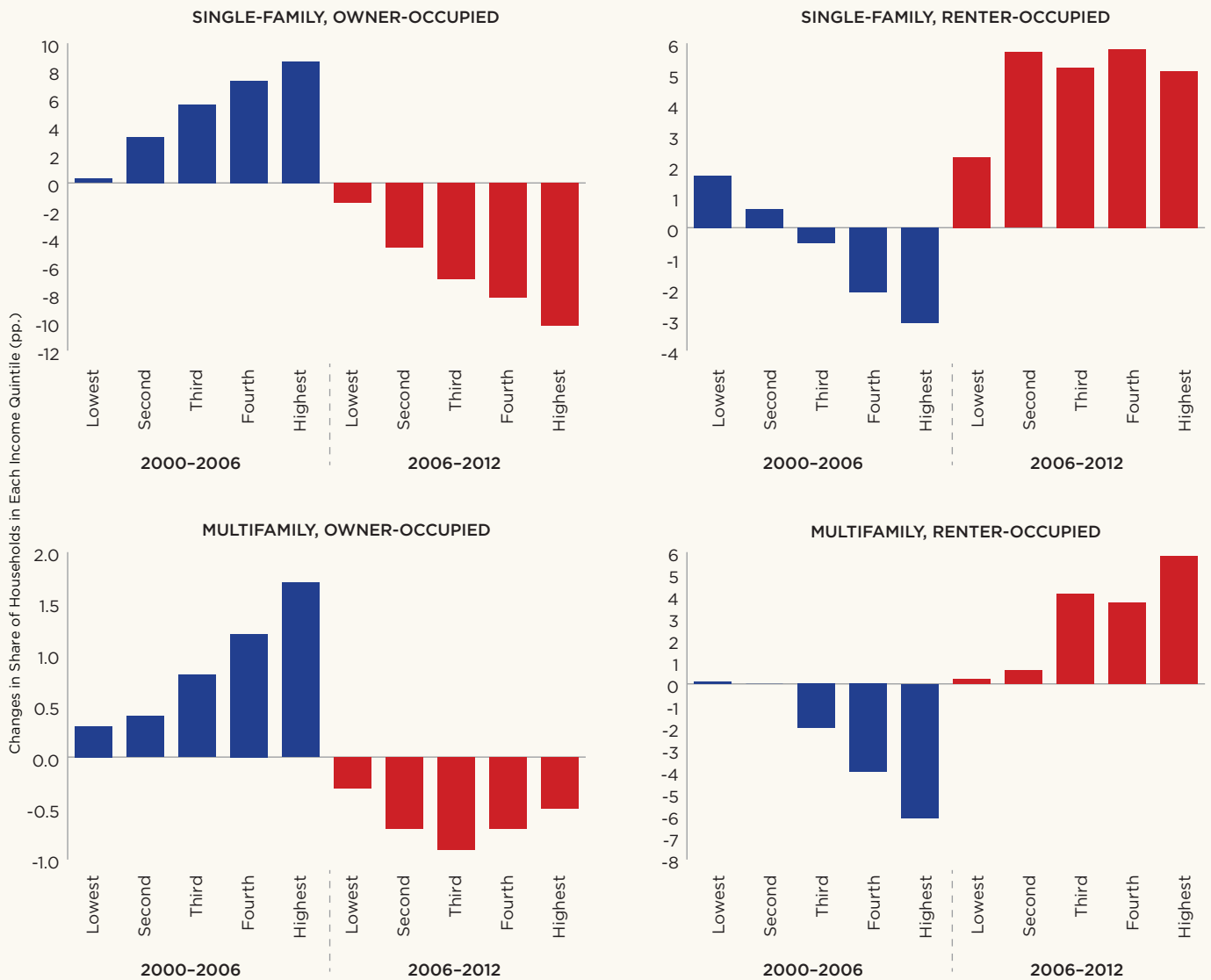
2012, about 266,000 units, doubled what was expected at 2000 rates. The percentage increase in single-family rental units in 5 of the 9 cities was over 22 percent of the expected number of units (the national average). While all metropolitan areas experienced a diversion in the number of households that might have been formed, only three (Boston, Washington, DC, and Houston) lost both owner and renter households relative to what was expected. The other areas experienced a diversion of owner households, but gained renter households. There was a shortfall in the number of actual versus expected multifamily renter households in all areas.

CHANGE IN THE HOUSING DEMAND OF MILLENNIALS BY INCOME QUINTILE

We next focus on Millennials, defined here as all households younger than 35. In this section we decompose the change in the housing demand of Millennials by income quintile in order to determine what portion of the change might be attributed to changes in demand by higher or lower income groups.

As before, we highlight the changes in two periods, 2000-06 and 2006-12, showing the tenure and structure choices of young adult households belonging to each quintile. As Figure 9 reveals, after the crisis there was a decline in both multifamily and single-family ownership in all income quintiles. Conversely, renting in these structure types expanded in all quintiles. What is most notable is the fact that even among the highest quintile, where presumably the millennials would have resources to own, we observe a large increase in both single-family and multifamily rentals which accompanies a large decline in single family ownership among the highest quintiles. This shift has not drawn as much attention in recent work and the addition of such a large share of higher-income renters has the potential to account for part of the increase in rents in the multifamily sector. As is evident in Figure 9, the share of single-family rentals also increased in the highest quintiles, but the increase in single-family rentals was much more broadly based across income quintiles, whereas the increase in the share in the multifamily rental sector was largest in the top half of the income distribution. It is worth noting that there was a large reduction in the number of households that were in the market, and that these reductions were likely largest in the bottom half of the income distribution.

FIGURE 9. CHANGES IN SHARE OF HOUSEHOLDS IN EACH QUINTILE BY TENURE AND STRUCTURE TYPE, HOUSEHOLDS HEADED BY AGES 15 TO 34, 2000 TO 2006 AND 2006 TO 2012



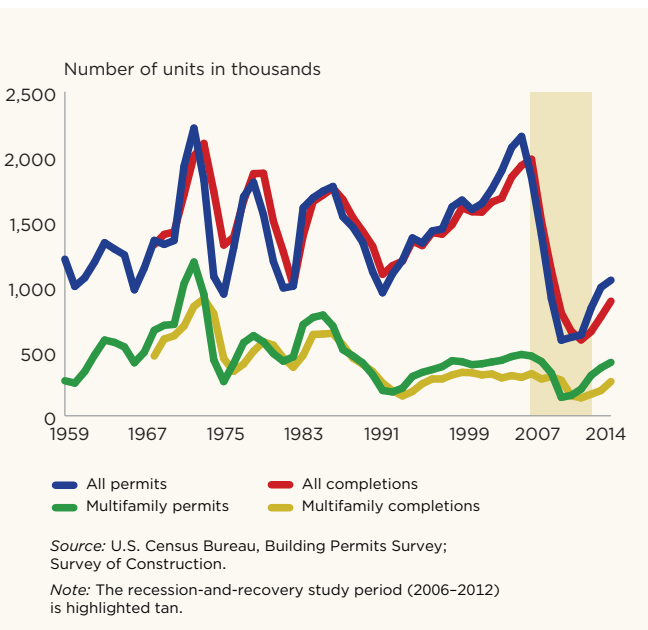
Source: Authors' analysis based on Census 2000 5-percent Public-Use Microdata Sample (PUMS) and 2006 and 2012 American Community Survey 1-year PUMS files.

New Construction and Vacancies

The financial crisis severely curtailed housing construction nationwide. The damage to production systems made for a much more protracted downturn in construction than experienced in previous recessions. Figure 10 shows how much deeper and prolonged the downturn was from 2007 to 2011. The graph also shows how housing completions typically lag behind building permits. Further, an overhang of unoccupied new units produced at the end of the housing boom of the mid-2000s meant that there was less demand to support construction for sale; however, escalating demand for rental units beginning in 2008 drew down available vacancies and led to rising rents.

Given the rise in real rents, greater multifamily construction in particular might have been expected than was forthcoming. Presumably, if the increase in rental demand by households had been accompanied by increases in housing supply in either the single family or multifamily sector, then there would not be such pressure on prices to rise. Only in 2011, did permits, particularly for multifamily units, begin a strong recovery. Multifamily construction volume

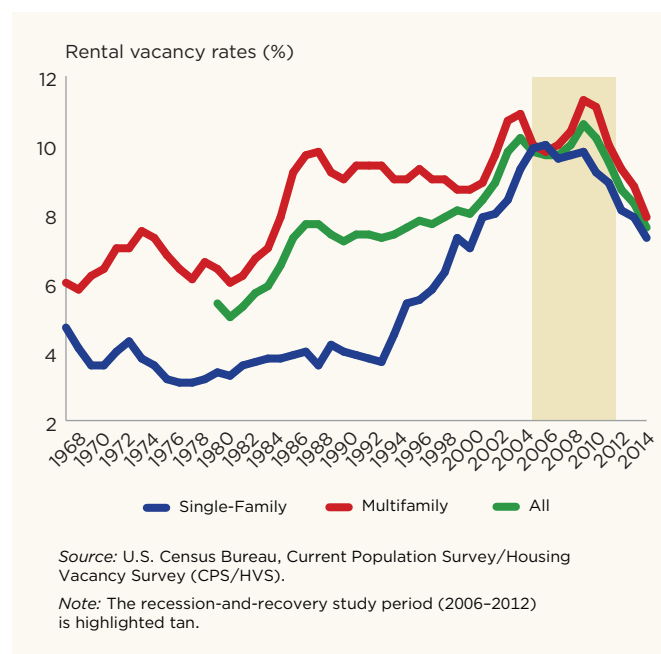
FIGURE 10. PERMITS AND COMPLETIONS OF NEW RESIDENTIAL HOUSING UNITS, ALL UNITS AND MULTIFAMILY UNITS, UNITED STATES, 1968 TO 2014



escalated by 97.7% between 2010 and 2012, with construction rising another 32.4% between 2012 and 2014. In comparison, the total number of permits issued for new housing in all structure types increased 37.2% from 2010 to 2012 and 26.1% from 2012 to 2014.

More salient to the analysis of rental prices is the vacancy rate. To the extent that vacancy rates are increasing, one would expect prices to fall to adjust, and when vacancy rates are decreasing, prices would rise. As we have already noted in Table 1, real rents continued to rise through the Great Recession. Figure 11 shows that one reason they may have continued to rise is that vacancy rates, after a modest increase at the beginning of the Great Recession, fell to levels last seen in the late 1990s. Single-family rental vacancies never increased during the period 2006–2012, and multifamily vacancies were much lower in 2012 than at the height of the boom.

FIGURE 11. RENTAL VACANCY RATES (CPS/HVS), BY STRUCTURE TYPE, UNITED STATES, 1968 TO 2014



Vacancy levels are somewhat distorted by rapid increases or declines in construction because all new units are initially vacant. However, as further evidence of tightness in the rental markets, the Census Bureau Survey of Market Absorption reports that apartments newly built in 2012 and 2013 had achieved 94% or better absorption within 12 months of completion, a virtually full occupancy level not seen since 2005.⁹ We conclude from this evidence that housing supply responses have been insufficient to keep up with the increase in rental demand.

9. Census Bureau, Survey of Market Absorption: 2014 report (issued April 2015), <http://www.census.gov/housing/soma/files/annual14/Chart-G.pdf>.

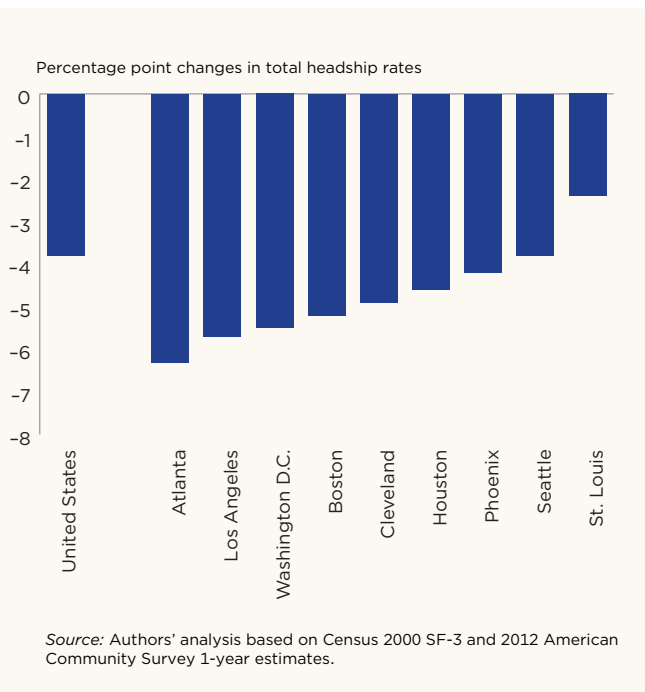
Changes in Living Arrangements of Millennials

Young adults have been the most impacted by housing market changes because, as new market entrants, they fully confront the shortage of available opportunities. The millennial generation is prominent nationwide, but their opportunities vary across metropolitan areas. We next document how their living arrangements have changed over the study period. Specifically, we describe how the rate of forming new households has fallen and how those millennials that are not living as independent households are choosing to share housing.

CHANGES IN THE HEADSHIP RATE OF MILLENNIALS

The decline in the headship rates of young adults since 2000 has been the largest of any age group. Nationwide, there has been a decline in the headship rate of this age group by 3.8 percentage points (Figure 12). The decline was even more dramatic in Atlanta (-6.3) and Los Angeles

FIGURE 12. CHANGES IN PER CAPITA RATE OF HOUSEHOLD FORMATION IN THE UNITED STATES AND NINE SELECTED METROPOLITAN AREAS, AGES 15 TO 34, 2000 TO 2012



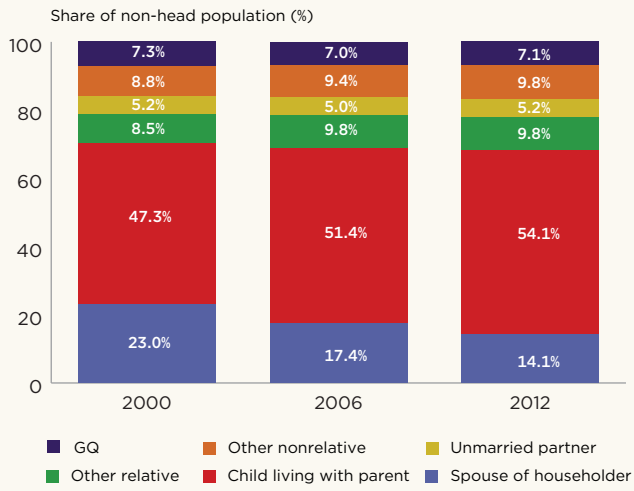
(-5.7). The decline in cities like Los Angeles may have been expected, but the decline in cities like Houston (-4.6) could not be attributed solely to the depressed housing market there. As was observed in Table 4, both ownership and rental demand was smaller in Houston than expected, but what was different from other places is that this decline was driven completely by a decline in headship.

The city with the smallest decline in headship rates among those aged 15-34 was St. Louis (-2.4). However, this was still a notable decline. The decline in each of our other focus metros is at least as large as the national average. One small surprise is that the decline in Phoenix (-4.2) was not as large as in Los Angeles, which also experienced an enormous housing shock. Part of the reason may have been due to the availability of single-family rentals that opened up in Phoenix, but another part of the explanation may be due to the fact that there was a large reduction in the population of new immigrants to Phoenix after the recession (Calnan and Painter, 2014), which may have tempered the reduction in headship rates in this age group in Phoenix because new immigrants typically have the lowest headship rates in the general population.

SHARED LIVING ARRANGEMENTS OF MILLENNIALS

When young people fail to form households where do they live? Much has been written about the increased rate of millennials living in their parents' homes. The data in Figure 13 suggest that the largest change between 2006 and 2012 in the living arrangements of non-independent millennials is, in fact, living with parents — an increase of 2.7 percentage points (from 51.4 to 54.1). However, the proportion of those aged 15-34 that were living with parents had already increased from 2000-2006 by an even greater amount, 4.1 percentage points (from 47.3 percent to 51.4). Accordingly, the change in living arrangements during the recession, as with other demographic mobility trends, appears to be simply a continuation of the trend underway in the early part of the decade (Myers and Lee 2016).

FIGURE 13. LIVING ARRANGEMENTS OF NON-INDEPENDENT YOUNG PEOPLE AGES 15 TO 34 IN THE UNITED STATES, 2000, 2006 AND 2012



Source: Authors' analysis based on Census 2000 5-percent Public-Use Microdata Sample (PUMS) and 2006 and 2012 American Community Survey 1-year PUMS files.

Note: Living arrangements of non-householders are defined by relationship to the householder in whose home they live or by their GQ status. GQ signifies group quarters, such as dormitories, military barracks and nursing homes.

Interestingly, after the crisis there was no change in the proportion of nonheads living with other relatives. This percentage had increased from 8.5 to 9.8 percent from 2000-2006, but did not increase further during the recession. Keep in mind that the previous section of this analysis noted that there were more nonheads overall in this age range, so the absolute number of nonheads living with relatives other than parents did increase, but the proportion did not. We do observe, however, that there was an increase of 0.4 percentage points in the proportion of young adults that were living with roommates.

Accompanying some of these increases in the proportions of millennials living with others was the very large reduction in the proportion that were living with a spouse. This

percentage decreased fairly dramatically from 2000 until 2012. This change was from 23 percent to 17.4 percent in the middle of the decade to 14.1 percent in 2012, and was not offset by an increase in living with partner.

In sum, the recession did not appear to alter trends in the living arrangements of millennials that were not living independently. The possible exception was the increase in the proportion living with roommates. However, the decline in the marriage rates and the increase in the proportion of millennials living with parents was consistent across the study period.

The trends in the study metropolitan areas are consistent with most of the findings in the nation as a whole. Detailed living arrangements are displayed in the Appendix, section F. In every area, there was a decline in the proportion living with a spouse. The decline was greatest in Phoenix (11.1 percentage points) and smallest in Seattle (7.4). As with the entire nation, the proportion of millennials living with parents increased over the study period ranging from an increase of 13.4 percentage points (Atlanta) to 2.1 percentage points (Seattle). However, the proportion living with parents actually fell in the metropolitan areas of Boston, Cleveland, St. Louis, and Washington, D.C., during the recession period. This suggests that the recession was not the primary driver of children living with parents.

The nine metropolitan areas experienced varied other trends in the proportion of non-heads living in shared living arrangements. The proportions of young adults living with roommates and with unmarried partners increased in St. Louis, which explains the decline in the proportion of this population living with parents. Some areas had increases in the number of young adults living with roommates such as Boston and Washington, D.C., which may reflect how young adults that were not proximate to parents were adjusting to decreasing rental affordability. Other areas had coinciding increases and decreases in the percentage living with roommates vs. unmarried partners.

Conclusion

The most visible indicator of the rental housing crisis is the record-high affordability problem created by rising rents while renters' incomes have declined. Yet the evidence presented in this report suggests the root of the problem is that many more renters have been added than was expected according to the trends before 2006. Growth in renters came from the arrival in adulthood of the large millennial generation, but an even larger source of growth came from would-be homeowners who were diverted into renting.

This study focuses on the restructuring of housing demand that occurred in the six years of change from 2006, signifying the heights of the pre-recession housing boom, to 2012, thus encompassing the period of the Great Recession and its faltering recovery. Since 2012 the housing recovery has begun to take hold, but the nation's rental housing crisis remains largely unabated from its earlier creation (Harvard JCHS 2015).

The total growth in households from 2006 to 2012, 4.4 million, fell markedly short of what had been expected given the ongoing population growth, an anticipated 9.6 million growth. Among young people aged 15 to 34 in 2012, most of the downturn in household formation was accommodated by increased residence with parents.

However, the shortfall of 5.2 million households, more than just a simple net loss from the housing market, is explained by a cascade of would-be homeowners into renting, which over-burdened that sector, followed by a loss of would-be renters from the market. To comprehend this intricate restructuring of demand, we need to consider both actual changes from 2006 to 2012 and comparisons to what

was previously expected. The expectations are based on the household formation and homeownership rates that prevailed in each age group in 2000.

Our summary accounting in Table 5 outlines an overview of the restructuring of housing demand during the Great Recession and its aftermath. Fully 5.2 million fewer households than expected were residing in the housing market in 2012. The foregone households were dissolved or never created, and the would-be householders are living doubled up with roommates, their parents, or other friends and relatives.

Rental markets did not contain large enough supply to sustain all the possible rental households, even when we take account of the rental conversion of existing single-family homes that may have been formerly owned. The financial crisis severely curbed new construction capacities, making it difficult for supply to meet the burgeoning demand. Due to the total added demand and the delayed response by new supply, rents were pushed upward despite renters' declining incomes. The lowest income households began carrying extreme payment burdens, putting them under greatest pressure to exit the housing market.

TABLE 5. THE CASCADE OF DIVERTED AND DISSOLVED HOUSEHOLDS: ACTUAL AND EXPECTED GROWTH IN RENTERS AND OWNERS, 2006 TO 2012 (MILLIONS)

	2006 ACTUAL	2012 ACTUAL	2012 EXPECTED*	GROWTH EXPECTED	GROWTH ACTUAL	FOREGONE = ACTUAL GROWTH RELATIVE TO EXPECTED
Homeowners	75.08	74.23	80.19	5.11	-0.85	-5.96
Renters	36.54	41.74	40.97	4.43	5.20	0.77
Total Households	111.62	115.97	121.17	9.55	4.35	-5.20

* Expected households based on group-specific rates prevailing in 2012.

Source: Table 4 "Actual and Simulated" households in 2012.

The end result of these cascading changes and the mounting competition is that many more renters are suffering affordability problems. The incidence of high cost burdens (paying more than 30% of their income for rent) rose from 49.8% of renters in 2006 to 52.0% in 2012. Severe rent burdens (requiring more than 50% of income) also increased, rising from 25.1% in 2006 to 27.0% in 2012.

Continued increases in construction after 2012 have begun to ease the rental crisis slightly. Nonetheless, vacancies have continued to tighten and rents are still rising, which is consistent with our assessment of pent-up rental demand. What the close examination of the period from 2006 to 2012 reveals is how much the fate of renters has worsened in concert with the diversion of 6 million would-be homeowners into a crowded rental market that was plagued by a delayed supply response due to the Great Recession. Once the homeownership rate ceases its sustained fall of the past several years, and when planned multifamily housing additions come on line, we may see that renters' prospects are finally improved. But given the accumulated backlog, relief for renters will require an even stronger rise in new multifamily construction in the decade ahead.

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Appendix: Method for Decomposing Population and Behavior Effects on Housing Demand

The decomposition, after Card and Raphael (2013), is conducted as follows:

$$\begin{aligned}
 \Delta \text{headship} &= \text{headship}_{2012} - \text{headship}_{2006} \\
 &= \sum w_{i,2012} \text{headship}_{i,2012} - \sum w_{i,2006} \text{headship}_{i,2006} \\
 &= \sum w_{i,2012} \text{headship}_{i,2012} - \sum w_{i,2006} \text{headship}_{i,2012} \\
 &\quad + \sum w_{i,2006} \text{headship}_{i,2012} - \sum w_{i,2006} \text{headship}_{i,2006} \\
 &= \sum (w_{i,2012} - w_{i,2006}) \text{headship}_{i,2012} + \sum w_{i,2006} (\text{headship}_{i,2012} - \text{headship}_{i,2006})
 \end{aligned}$$

where $w_{i,t}$ is the share of population in an age group i at time t , headship_t is the headship rate at time t , and $\text{headship}_{i,t}$ is the age-specific headship rate for an age group i at time t . The result of decomposition answers the question of how much of the decline in housing demand, measured by headship rate, during the bust period can be explained by demographic shifts, holding household formation rates constant, and changes in housing demand, controlling for the age structure of the population.

Appendix: Characteristics of Nine Selected Metro Areas

A. RENT AND HOUSE VALUE

TABLE A-1. MEDIAN GROSS RENT IN UNITED STATES AND NINE METROPOLITAN AREAS IN 2000, 2006, AND 2012 (UNIT: DOLLARS ADJUSTED TO 2012, %)

	MEDIAN GROSS RENT			2000-2006		2006-2012	
	2000	2006	2012	DIFF.	% CHANGE	DIFF.	% CHANGE
U.S.	803	869	884	66	8.3	15	1.7
ATL	972	965	929	-8	-0.8	-36	-3.7
BOS	1,039	1,201	1,162	162	15.6	-39	-3.3
CLE	732	748	720	17	2.3	-28	-3.8
HOU	787	852	873	65	8.2	21	2.5
LA	991	1,187	1,233	195	19.7	46	3.9
PHX	880	926	936	45	5.2	10	1.1
SEA	975	973	1,079	-2	-0.2	106	10.9
STL	697	760	767	62	8.9	7	1.0
DC	1,078	1,290	1,424	212	19.7	134	10.4

Source: U.S. Census Bureau, 2000 Decennial Census; 2006, 2012 American Community Survey (ACS) 1-year estimates.

TABLE A-2. MEDIAN HOUSE VALUE IN UNITED STATES AND NINE METROPOLITAN AREAS IN 2000, 2006, AND 2012 (UNIT: THOUSAND DOLLARS ADJUSTED TO 2012, %)

	MEDIAN HOUSE VALUE			2000-2006		2006-2012	
	2000	2006	2012	DIFF.	% CHANGE	DIFF.	% CHANGE
U.S.	159	211	172	51	32.3	-39	-18.5
ATL	184	213	161	29	15.6	-52	-24.4
BOS	288	460	358	172	59.7	-102	-22.1
CLE	162	170	139	9	5.4	-31	-18.2
HOU	121	148	141	26	21.8	-6	-4.3
LA	301	688	429	387	128.4	-260	-37.8
PHX	170	303	156	134	78.9	-147	-48.5
SEA	279	396	294	117	41.9	-102	-25.8
STL	134	173	155	39	29.4	-18	-10.5
DC	254	517	368	263	103.7	-150	-28.9

Source: U.S. Census Bureau, 2000 Decennial Census; 2006, 2012 American Community Survey (ACS) 1-year estimates.

B. HOUSEHOLD INCOME

TABLE B-1. MEDIAN HOUSEHOLD INCOME IN UNITED STATES AND NINE METROPOLITAN AREAS IN 2000, 2006 AND 2012 (UNIT: DOLLARS ADJUSTED TO 2012, %)

	MEDIAN HOUSEHOLD INCOME			2000-2006		2006-2012	
	2000	2006	2012	DIFF.	% CHANGE	DIFF.	% CHANGE
U.S.	55,991	55,179	51,371	-812	-1.4	-3,808	-6.9
ATL	69,192	63,266	54,628	-5,926	-8.6	-8,638	-13.7
BOS	73,379	73,051	71,738	-328	-0.4	-1,313	-1.8
CLE	56,997	52,302	46,944	-4,695	-8.2	-5,358	-10.2
HOU	59,585	57,228	55,910	-2,357	-4.0	-1,318	-2.3
LA	61,347	63,225	57,271	1,878	3.1	-5,954	-9.4
PHX	59,825	59,064	51,359	-761	-1.3	-7,705	-13.0
SEA	68,539	69,087	65,677	548	0.8	-3,410	-4.9
STL	59,493	56,675	52,243	-2,817	-4.7	-4,432	-7.8
DC	84,816	89,945	88,233	5,129	6.0	-1,712	-1.9

Source: U.S. Census Bureau, 2000 Decennial Census; 2006, 2012 American Community Survey (ACS) 1-year estimates.

TABLE B-2. MEDIAN RENTAL HOUSEHOLD INCOME IN UNITED STATES AND NINE METROPOLITAN AREAS IN 2000, 2006 AND 2012 (UNIT: DOLLARS ADJUSTED TO 2012, %)

	MEDIAN RENTAL HOUSEHOLD INCOME			2000-2006		2006-2012	
	2000	2006	2012	DIFF.	% CHANGE	DIFF.	% CHANGE
U.S.	36,482	33,763	31,888	-2,719	-7.5	-1,875	-5.6
ATL	44,832	36,908	32,745	-7,924	-17.7	-4,163	-11.3
BOS	45,638	41,099	40,379	-4,539	-9.9	-720	-1.8
CLE	33,487	27,626	25,168	-5,861	-17.5	-2,458	-8.9
HOU	39,862	34,658	35,017	-5,204	-13.1	359	1.0
LA	41,860	42,420	39,905	560	1.3	-2,515	-5.9
PHX	39,810	38,246	35,587	-1,564	-3.9	-2,659	-7.0
SEA	44,698	41,567	42,848	-3,131	-7.0	1,281	3.1
STL	34,512	29,438	27,659	-5,073	-14.7	-1,779	-6.0
DC	53,959	53,588	55,529	-371	-0.7	1,941	3.6

Source: U.S. Census Bureau, 2000 Decennial Census; 2006, 2012 American Community Survey (ACS) 1-year estimates.

TABLE B-3. MEDIAN OWNER HOUSEHOLD INCOME IN UNITED STATES AND NINE METROPOLITAN AREAS IN 2000, 2006 AND 2012 (UNIT: DOLLARS ADJUSTED TO 2012, %)

	MEDIAN OWNER HOUSEHOLD INCOME			2000-2006		2006-2012	
	2000	2006	2012	DIFF.	% CHANGE	DIFF.	% CHANGE
U.S.	68,429	68,882	65,514	453	0.7	-3,368	-4.9
ATL	85,108	79,154	71,608	-5,954	-7.0	-7,546	-9.5
BOS	94,066	95,386	96,081	1,320	1.4	695	0.7
CLE	70,626	67,343	62,646	-3,283	-4.6	-4,697	-7.0
HOU	78,139	76,315	75,514	-1,824	-2.3	-801	-1.0
LA	87,174	89,912	84,029	2,738	3.1	-5,883	-6.5
PHX	71,652	72,091	63,958	439	0.6	-8,133	-11.3
SEA	86,598	88,324	86,153	1,726	2.0	-2,171	-2.5
STL	71,470	69,114	66,797	-2,356	-3.3	-2,317	-3.4
DC	106,759	111,542	112,287	4,783	4.5	745	0.7

Source: U.S. Census Bureau, 2000 Decennial Census; 2006, 2012 American Community Survey (ACS) 1-year estimates.

C. RENT AND HOUSE VALUE COMPARED TO HOUSEHOLD INCOME

TABLE C-1. RENTAL HOUSEHOLDS PAYING 30-49.9% OF THEIR HOUSEHOLD INCOME FOR HOUSING IN UNITED STATES AND NINE METROPOLITAN AREAS IN 2000, 2006 AND 2012 (UNIT: THOUSANDS, %)

	RENTAL HOUSEHOLDS PAYING 30-49.9% OF THEIR HOUSEHOLD INCOME FOR HOUSING						2000-2006			2006-2012		
	2000		2006		2012		DIFF.	% CHANGE	PP.	DIFF.	% CHANGE	PP.
	NUM.	(%)	NUM.	(%)	NUM.	(%)						
U.S.	6,760	20.8	8,307	24.6	9,665	25.0	1,548	22.9	3.9	1,357	16.3	0.4
ATL	105	21.7	134	25.0	168	25.7	28	26.7	3.3	34	25.5	0.7
BOS	128	20.7	153	26.8	151	23.4	25	19.7	6.0	-2	-1.2	-3.4
CLE	50	19.7	53	23.0	63	23.4	4	7.7	3.4	9	17.6	0.3
HOU	117	19.4	159	25.2	184	24.0	42	35.6	5.8	24	15.3	-1.2
LA	444	23.5	506	26.8	566	27.2	62	14.0	3.3	60	11.8	0.5
PHX	83	23.1	110	26.1	143	25.7	27	33.1	3.0	33	30.0	-0.4
SEA	98	22.6	108	23.8	137	25.8	10	10.5	1.2	29	26.8	2.0
STL	51	18.7	63	22.8	78	25.3	12	22.6	4.1	15	24.5	2.5
DC	124	20.1	151	25.5	196	26.4	28	22.3	5.4	45	29.5	0.9

Source: U.S. Census Bureau, 2000 Decennial Census; 2006, 2012 American Community Survey (ACS) 1-year estimates.

Note: PP refers to percentage point change.

TABLE C-2. RENTAL HOUSEHOLDS PAYING MORE THAN 50% OF THEIR HOUSEHOLD INCOME FOR HOUSING IN UNITED STATES AND NINE METROPOLITAN AREAS IN 2000, 2006 AND 2012 (UNIT: THOUSANDS, %)

	RENTAL HOUSEHOLDS PAYING MORE THAN 50% OF THEIR HOUSEHOLD INCOME FOR HOUSING						2000-2006			2006-2012		
	2000		2006		2012		DIFF.	% CHANGE	PP.	DIFF.	% CHANGE	PP.
	NUM.	(%)	NUM.	(%)	NUM.	(%)						
U.S.	6,210	19.1	8,481	25.1	10,454	27.0	2,271	36.6	6.1	1,974	23.3	1.9
ATL	82	16.8	136	25.3	182	27.9	54	65.6	8.5	47	34.5	2.6
BOS	112	18.2	145	25.3	163	25.3	32	28.7	7.1	19	13.1	0.0
CLE	49	19.5	64	27.6	77	28.4	15	30.1	8.1	12	19.4	0.8
HOU	97	16.0	147	23.2	186	24.2	49	50.7	7.1	39	26.7	1.1
LA	421	22.2	541	28.6	671	32.3	120	28.5	6.4	130	24.0	3.7
PHX	66	18.5	94	22.2	140	25.1	27	41.4	3.7	46	49.6	2.9
SEA	76	17.6	98	21.6	122	23.0	22	28.9	4.0	24	24.7	1.4
STL	49	18.1	70	25.4	82	26.6	20	40.9	7.3	12	17.7	1.2
DC	92	15.0	126	21.3	168	22.6	34	37.3	6.3	42	32.9	1.3

Source: U.S. Census Bureau, 2000 Decennial Census; 2006, 2012 American Community Survey (ACS) 1-year estimates.

Note: PP refers to percentage point change.

D. PER CAPITA RATE OF HEADSHIP

**TABLE D-1. PER CAPITA RATE OF HEADSHIP IN UNITED STATES;
NINE METROPOLITAN AREAS IN 2000, 2006 AND 2012, ALL AGES (UNIT: %)**

	PER CAPITA RATE OF HEADSHIP, ALL AGES			2000-2006 PP.	2006-2012 PP.	2000-2012 PP.
	2000	2006	2012			
U.S.	47.7	46.8	45.9	-0.9	-0.9	-1.8
ATL	47.2	45.8	45.1	-1.4	-0.7	-2.1
BOS	47.7	46.5	45.8	-1.2	-0.7	-1.9
CLE	50.4	49.2	49.8	-1.2	0.6	-0.6
HOU	46.4	44.0	44.0	-2.4	-0.1	-2.5
LA	43.1	41.2	40.2	-1.9	-1.0	-2.9
PHX	47.6	45.8	45.6	-1.8	-0.2	-2.0
SEA	49.4	49.1	47.6	-0.4	-1.5	-1.8
STL	49.6	49.1	48.7	-0.5	-0.4	-0.9
DC	47.7	46.2	44.6	-1.5	-1.6	-3.1

Source: U.S. Census Bureau, 2000 Decennial Census; 2006, 2012 American Community Survey (ACS) 1-year estimates.

Note: PP refers to percentage point change.

**TABLE D-2. PER CAPITA RATE OF HEADSHIP IN UNITED STATES;
NINE METROPOLITAN AREAS IN 2000, 2006 AND 2012, AGE 15-34 (UNIT: %)**

	PER CAPITA RATE OF HEADSHIP, ALL AGES			2000-2006 PP.	2006-2012 PP.	2000-2012 PP.
	2000	2006	2012			
U.S.	29.8	28.3	26.0	-1.5	-2.3	-3.8
ATL	32.5	29.8	26.2	-2.7	-3.5	-6.3
BOS	29.5	26.3	24.3	-3.3	-2.0	-5.2
CLE	31.5	27.5	26.5	-3.9	-1.0	-4.9
HOU	30.5	27.2	25.9	-3.3	-1.3	-4.6
LA	26.1	22.3	20.5	-3.9	-1.8	-5.7
PHX	31.9	30.3	27.6	-1.6	-2.6	-4.2
SEA	33.8	32.6	30.0	-1.2	-2.6	-3.8
STL	30.9	30.5	28.5	-0.4	-2.0	-2.4
DC	30.9	27.3	25.4	-3.6	-1.9	-5.5

Source: U.S. Census Bureau, 2000 Decennial Census; 2006, 2012 American Community Survey (ACS) 1-year estimates.

Note: PP refers to percentage point change.

E. PER CAPITA RATE OF HOMEOWNERSHIP

**TABLE E-1. PER CAPITA RATE OF HOMEOWNERSHIP IN UNITED STATES;
NINE METROPOLITAN AREAS IN 2000, 2006 AND 2012, ALL AGES (UNIT: %)**

	PER CAPITA RATE OF HOMEOWNERSHIP, ALL AGES			2000-2006 PP.	2006-2012 PP.	2000-2012 PP.
	2000	2006	2012			
U.S.	31.6	31.5	29.3	-0.1	-2.1	-2.2
ATL	31.5	31.6	28.8	0.1	-2.8	-2.7
BOS	29.0	29.9	28.1	0.8	-1.8	-1.0
CLE	34.3	34.5	32.5	0.2	-2.1	-1.8
HOU	28.3	28.0	27.0	-0.3	-1.0	-1.3
LA	22.0	21.6	19.5	-0.4	-2.1	-2.5
PHX	32.3	31.4	28.1	-0.9	-3.4	-4.3
SEA	30.7	31.1	28.3	0.4	-2.8	-2.4
STL	35.5	35.9	33.9	0.3	-2.0	-1.6
DC	30.4	31.4	28.1	0.9	-3.3	-2.3

Source: U.S. Census Bureau, 2000 Decennial Census; 2006, 2012 American Community Survey (ACS) 1-year estimates.

Note: PP refers to percentage point change.

**TABLE E-2. PER CAPITA RATE OF HOMEOWNERSHIP IN UNITED STATES;
NINE METROPOLITAN AREAS IN 2000, 2006 AND 2012, AGE 15-34 (UNIT: %)**

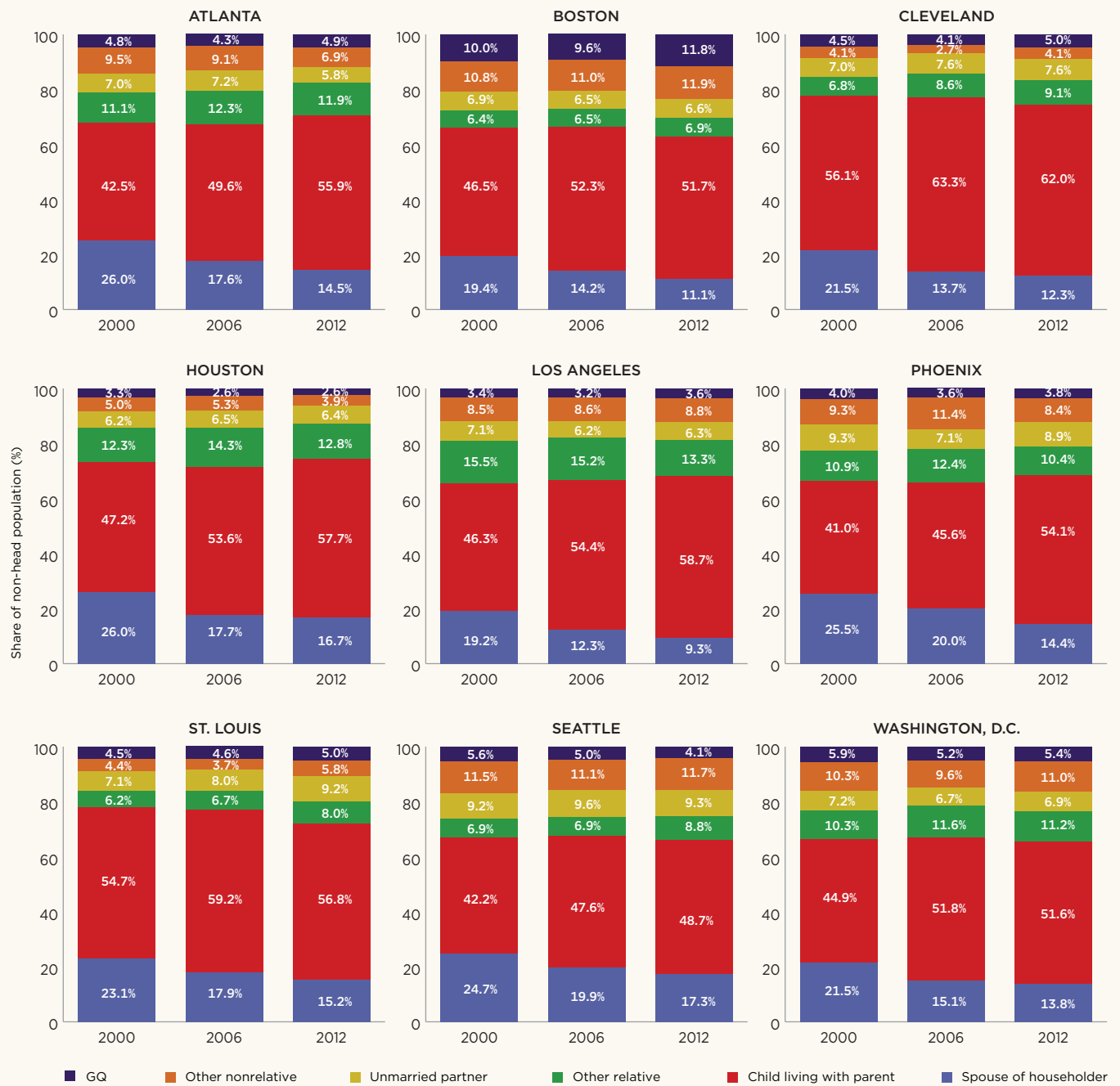
	PER CAPITA RATE OF HOMEOWNERSHIP, 15-34			2000-2006 PP.	2006-2012 PP.	2000-2012 PP.
	2000	2006	2012			
U.S.	11.6	11.4	8.5	-0.3	-2.9	-3.1
ATL	13.8	13.1	8.6	-0.7	-4.5	-5.2
BOS	9.3	8.7	6.6	-0.6	-2.1	-2.7
CLE	12.9	12.0	8.6	-0.9	-3.5	-4.4
HOU	10.1	9.9	8.2	-0.2	-1.7	-2.0
LA	6.1	5.3	3.7	-0.8	-1.6	-2.4
PHX	13.3	13.8	9.1	0.4	-4.7	-4.3
SEA	11.3	11.9	8.0	0.7	-3.9	-3.3
STL	14.1	14.5	11.7	0.4	-2.8	-2.4
DC	11.0	11.1	8.0	0.2	-3.2	-3.0

Source: U.S. Census Bureau, 2000 Decennial Census; 2006, 2012 American Community Survey (ACS) 1-year estimates.

Note: PP refers to percentage point change.

F. LIVING ARRANGEMENTS OF NON-INDEPENDENT YOUNG PEOPLE AGES 15 TO 34

FIGURE F-1. LIVING ARRANGEMENTS OF NON-INDEPENDENT YOUNG PEOPLE AGES 15 TO 34



Source: Authors' analysis based on Census 2000 5-percent Public-Use Microdata Sample (PUMS) and 2006 and 2012 American Community Survey 1-year PUMS files.

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