# Estimating the Gap in Affordable and Available 

 Rental Units for FamiliesAPRIL 2019 | WHITNEY AIRGOOD-OBRYCKI \& JENNIFER MOLINSKY


# Estimating the Gap in Affordable and Available Rental Units for Families 

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## Introduction

Housing is a central component of family life and can provide a foundation for family well-being. ${ }^{1}$ While we typically think of family households as homeowners, renters are more likely than homeowners to have children in their household. ${ }^{2}$ However, migration, development, and tenure trends over the last decade have affected the availability of rental housing suitable for families. While the foreclosure crisis brought about a surge in single-family units converted from homeownership to rentals (along with a simultaneous growth in the number of renter households), following the crisis, developers in cities and suburbs across the country have constructed new rental housing that primarily consists of small, higher-end units, in part responding to the "back to the city" movement. Despite the increased number of single-family rentals, officials and commentators have expressed concern that middle-income families are not able to find suitable rental housing at a price they can afford. For low-income households with children, finding an affordable, right-sized, and safe unit can be an even greater challenge.

To attract middle-class families and provide opportunities to low-income families, cities and metropolitan regions must have a supply of adequate, affordable, and available rental housing of a size suitable for households with children. Several cities have expressed an interest in increasing the availability of family rentals (often defined as having two or more bedrooms) in order to attract a competitive workforce for business, improving families' health and well-being by providing appropriately sized affordable units, and reducing their environmental footprint by creating denser neighborhoods. Seattle, for example, is engaged in efforts to increase family-sized unit development through tax and zoning incentives. ${ }^{3}$ Vancouver, British Columbia is reviewing its guidance for high density residential developments for families with children as well as its requirements for family units in projects that involve rezoning. ${ }^{4}$ San Francisco's Planning Department released a report in 2017 outlining potential policies to encourage family-friendly housing, while Boston is seeking solutions for housing its student population in an effort to ensure that multiple-bedroom rentals are available for families, who are often outbid by groups of students and young professionals rooming together. ${ }^{5}$

[^0]Cambridge, MA's recently revised inclusionary zoning ordinance incentivizes family-sized units (with 3 or more bedrooms and at least 1100 square feet). ${ }^{6}$

Meanwhile, the lack of housing for low- and middle-income family renters in the suburbs is also problematic. For young children, living in high-opportunity neighborhoods is associated with long-term benefits for economic mobility, mental health, and education. ${ }^{7}$ These areas are often in suburbs with employment options, good school districts, and safe neighborhoods. ${ }^{8}$ Yet politics, exclusionary zoning, and NIMBYism have ensured that affordable rental housing remains limited in some suburban jurisdictions. ${ }^{9}$ Incumbent residents often discourage the construction of multifamily buildings that are suitable for families, given the perception that they will attract families who will add children to already-crowded schools. As a result, housing affordable to low-income renters is generally located in lower-opportunity neighborhoods. ${ }^{10}$

Outside of cities, rentals are also more likely to be in single-family homes. This has been particularly true since the foreclosure crisis caused greater demand for renting and conversion of single-family homes from ownership to rental. ${ }^{11}$ However, these homes are not necessarily in the highest-opportunity suburbs; a study of the Atlanta metro found that single-family rentals tend to be in older suburbs that have lower property values. ${ }^{12}$ Single-family rentals are also more costly, on median, than units in apartment buildings. ${ }^{13}$

For families to access a range of neighborhoods in cities and suburbs, there must be a supply of affordable, adequately-sized rentals. This paper attempts to quantify the gap in housing appropriately sized for families, asking whether there is a sufficient number of units to meet the demand of renter families at all income levels and across geographies. We examine the potential gap in the supply of rental units suitable for families with children nationally and in detail in four major metro areas.

The paper is organized as follows. We first explore the challenges specific to families seeking rental housing, including affordability, suitable size, and discrimination against households with children. We then present our methods and definitions. Our findings include a
${ }^{6}$ City of Cambridge (2018).
${ }^{7}$ Chetty, Hendren, \& Katz (2016); Galster \& Santiago (2017); Kling, Liebman, \& Katz (2007).
${ }^{8}$ Kneebone (2013); Reece et al. (2008); Reece et al. (2009).
${ }^{9}$ Rothwell \& Massey (2010); Scally (2013); Schuetz (2009); Briggs (2005).
${ }^{10}$ McArdle, Baldiga \& Acevedo-Garcia (2018); Sanchez, Ross, \& Gordon (2015).
${ }^{11}$ Joint Center for Housing Studies (2017).
${ }^{12}$ Immergluck (2018).
${ }^{13}$ Joint Center for Housing Studies (2017), 18.
description of renter families in our sample and an assessment of the supply gap nationally, regionally, and in four metro areas. Next, we consider the role that single-family rentals play in providing affordable, family-sized units in regions across the country. We conclude with a discussion about policy implications and areas for future research.

## I. Family Rental Housing Challenges

Families face a variety of challenges in searching for appropriate rental housing, including tight supply of affordable units, difficulty identifying suitably-sized units, discrimination in housing searches, and issues associated with safety and quality.

## Unaffordable Housing

Lack of affordable housing supply is one of the largest barriers for families seeking housing, particularly among those with low incomes. Several reports have highlighted the supply gap in affordable units for low- to extremely low-income (ELI) renters in general. ${ }^{14}$ The National Low Income Housing Coalition estimates that for every 100 low-income renters, 93 units were affordable and available (that is, not occupied already by a higher income group) in 2015. ${ }^{15}$ For ELI renters, the number dropped to only 35 affordable and available units for every 100 households. In a different analysis, the Urban Institute concluded that the rental market provided only 21 adequate, affordable, and available units for every 100 ELI renter households. ${ }^{16}$ While neither of these reports specifically considers supply deficits for households with children, they illustrate the widespread lack of affordable housing for all low-income households.

HUD's "Worst Case Housing Needs Report to Congress" provides additional context for the affordability constraints that family households face. ${ }^{17}$ HUD defines worst case needs as very low-income (VLI) renter households that experience severe rent burden (spending more than 50 percent of household income on rent and utilities), live in severely inadequate housing, or both. ${ }^{18}$ In 2015, of all the household types that experienced worst case needs, families with

[^1]children made up the largest share at 36 percent (Figure 1). In that year, 2.9 million families with children had worst case needs, an increase of 55,000 households from 2013. These 2.9 million households account for 42 percent of all VLI renter families. HUD's findings underscore the difficulty that low-income families face when searching for affordable and adequate rental housing.

Figure 1: More than a third of households with worst case needs are families with children

Share of Renter Households with Worst Case Needs


Source: JCHS tabulations of HUD, Worst Case Housing Needs Report to Congress, 2017.

The American Planning Association's 2008 Family Friendly Planning Survey also underscored the lack of affordable housing for renter families. ${ }^{19}$ APA surveyed 944 planners, planning consultants, and government officials to understand barriers to and attitudes toward family-friendly communities. The respondents worked in a variety of places, with 44 percent in cities and 20 percent in suburbs. In APA's definition, family-friendly communities should have "housing at affordable prices, access to child care, parks, pedestrian pathways, quality public schools, safe neighborhoods, and many other potential features that promote family wellbeing." ${ }^{20}$ The respondents most frequently identified the lack of affordable housing as a barrier to their communities becoming family friendly.

Unaffordable rental housing can have immense consequences for family households, particularly those with extremely low incomes. When households spend higher percentages of their income on housing, there is less money for remaining household expenses. The Joint

[^2]Center for Housing Studies has found that low-income families that spend more on housing spend less on necessities such as healthcare and food (Figure 2), while another study found that those who spent 60 percent of income on housing spent less on child enrichment - a category that includes education, childcare, toys, and games - than households spending 30 percent of income on housing. ${ }^{21}$

Figure 2: Severely cost-burdened renter households with children spend less on other necessities

Average Monthly Expenditures of Low-Income Households (Dollars)


Notes: Low-income households are in the bottom quartile of all households ranked by total spending. Not burdened households devote 30 percent or less of expenditures to housing (including utilities), while severely burdened households devote more than 50 percent.
Source: JCHS tabulations of US Bureau of Labor Statistics, 2016 Consumer Expenditure Survey.

Cost-burdened households are also at risk of housing instability, including frequent moves and evictions. ${ }^{22}$ Housing instability can negatively impact children's school achievement and development. ${ }^{23}$ High rents can also substantially limit the geographic and neighborhood options available to low-income families, ${ }^{24}$ which can put wage-earners farther from jobs and children in lower-quality schools.

## Adequate-Sized Units

Families with children typically need more than a single-bedroom unit, which can constrain the rental options available to them. The availability of larger units has shifted over the last 15 years. During the housing boom, the construction of rental units with at least three

[^3]bedrooms accelerated. From 2001 to 2007, the share of larger units exceeded 20 percent of newly constructed rental units, a record high since the Census began collecting this data in 1978. ${ }^{25}$ In the wake of the foreclosure crisis, however, new construction shifted toward a greater share of smaller apartments. By 2015, about half of newly constructed multifamily units for rent were efficiencies or one-bedroom apartments. Yet during the same period, the foreclosure crisis also resulted in the conversion of single-family homes from owner occupancy to renter occupancy. ${ }^{26}$ From 2007 to 2015 , about 3.5 million occupied single-family rentals were added to the rental stock. ${ }^{27}$ Overall, the construction of larger units before the crisis and the conversion of single-family homes to rental have had the net effect of increasing the share of larger rental units in the last 15 years.

Paired with decreasing household sizes, ${ }^{28}$ the growth in the supply of larger units would theoretically provide adequately sized housing for family households. However, competition with households without children poses a significant challenge for families searching for rental housing. For example, particularly in the aftermath of the recession, roommate households may occupy units that would otherwise be available to households with children. Indeed, the share of adults aged 23-65 living in non-family roommate situations increased from 3.5 percent of adults in that age group in 2006 to 4.3 percent in $2016 .{ }^{29}$ A recent Zillow study found that doubled-up roommate households were most common in high-cost urban areas. ${ }^{30}$ In areas with large student populations, the tension between roommate households and families can be even greater. In 2013, 36,000 of Boston's 72,000 college and graduate students lived in rental housing throughout the city. About one-third of these students lived in units classified as 1-3 unit family residential properties. ${ }^{31}$ The student population has also propelled higher rents in neighborhoods that are near universities, further reducing the supply of affordable family-sized units. ${ }^{32}$

[^4]
## Discrimination

Discrimination against households with children adds to the challenges that families face in searching for rental housing. The Fair Housing Act prohibits landlords from discriminating against households on the basis of familial status, making it illegal to deny housing to those with children and preventing landlords from having an "unreasonable restriction on the total number of persons who may reside in a dwelling." ${ }^{33}$ Despite these protections, family households still experience discrimination when searching for housing. ${ }^{34}$ Of the 8,385 Fair Housing complaints that HUD received in 2016, 882 resulted from familial status discrimination. In their recent paired tests pilot study on discrimination against families with children, HUD found that families with two children were shown fewer units and units with higher rents than families with only one child. ${ }^{35}$ Families with children received differential treatment in their search for one-bedroom apartments in particular.

## Unsafe or Inadequate Housing

Households with families face a number of other challenges when they seek rental housing. Lead paint is a risk to young children. While landlords are required by federal law to disclose any known risks from lead in housing built before 1978, only a handful of state and local laws require property owners to remove or cover the paint. Since removing lead paint can be costly, landlords may seek to deter renters with children out of concern for liability, even though such deterrence runs afoul of fair housing law. Another possible outcome is that families with few rental choices accept a unit with known lead hazards. Finding suitable units in good physical shape, in safe neighborhoods with space for outdoor play and away from pollution caused by highways or industry, can also be challenging.

Given the challenges that family households must confront, it is crucial to have an ample rental stock to meet the demand of renter families. Nearly all of the APA survey respondents indicated that families are "important to community growth, sustainability, and diversity." ${ }^{36}$ Families are a valuable source of social capital for communities. ${ }^{37}$ Households with children

[^5]also contribute to the economic health of cities; cities with more family households are more economically prosperous. ${ }^{38}$ The supply of family-friendly rental housing is an important consideration for attracting families and the many benefits they bring.

Meanwhile, in lower-density locations where families with children make up a larger share of the population, building more rental units with multiple bedrooms can be a difficult sell, given concerns that more children will add to overcrowded schools and overburdened local budgets. Yet providing more family-sized rentals at different price points is an important means of making more widely available the amenities enjoyed by higher-opportunity communities.

## II. Methods and Definitions

We estimate the family-sized supply gap as the difference between the number of renter households with children and the number of units that are affordable, right-sized, and available. We begin this section by defining family households and affordable, right-sized, and available units. Next, we describe our data sources and method for estimating the supply gap.

## Family Households

For the purpose of this paper, we define family households as any configuration of adults residing with any children under the age of 18. The adults may be married, partnered, or single. They may be parents, grandparents, or otherwise related (such as an aunt or uncle). The adults may also be unrelated to each other or to the children in the household. In accordance with HUD's methodology for defining family households in the Worst Case Needs report, we omit households whose householder is under the age of 18 . Our definition of family households is intentionally broad to capture the full range of traditional and non-traditional families that exist. Throughout this brief, we use the term "family household" to refer to households with children and "other households" or "childless households" to refer to households with no children.

## Affordable, Right-Sized, and Available Housing

Family-friendly rental housing might encompass a host of features, such as on-site play areas, proximity to daycare or schools, or apartment layouts that enhance parents' abilities to

[^6]oversee their children. For the purposes of this paper, we focus on three key variables only: cost, size, and availability.

## Affordable

For rental housing to be suitable for families, it must be affordable relative to the household income. There are several methods for measuring housing affordability, but the 30percent standard has become the most common. Typically, households are considered to be cost burdened if they pay more than 30 percent of their annual income on rent and utilities. Households that pay more than 50 percent of their household income are termed severely cost burdened. HUD has adopted the 30-percent measure and incorporated it into its Housing Choice Voucher program. Critics of the 30-percent rule suggest that it is an arbitrary cutoff and can be particularly problematic for households with children, as larger households typically have higher expenses for food, clothing, medical care, and other necessities than those faced by a single person or couple. ${ }^{39}$ Alternative definitions of affordability consider the combined expenses of housing and transportation or households' total expenses. ${ }^{40}$ Despite the merits of alternative definitions, the 30-percent cost burden guideline is common in both regulatory programs and housing scholarship and serves as a reasonable standard. ${ }^{41}$

To categorize housing units by their affordability level, we use data from the American Community Survey (ACS) to calculate the percentage of area median income (AMI) that a household would have to earn in order to expend less than 30 percent of its income on a specific housing unit. Because the ACS does not provide AMI information, we used HUD's income limits documentation, which provides the median income for most metropolitan areas. In some cases, HUD provides AMIs for areas that are smaller than the entire metro; when this occurred, we used the AMI of the metro's principal city. The equation for calculating the income for which a unit is affordable, expressed as a percentage of AMI, is:

$$
\text { Percent AMI }=((\text { Annual Rent }+ \text { Utilities }) / .3 / \text { AMI }) * 100
$$

We coded the percent AMI into eight income categories to enumerate the units in each percent AMI band that households could afford. We similarly categorized households by

[^7]expressing their incomes as a percent of the AMI. ${ }^{42}$ The income bands are mutually exclusive; even though a unit that is affordable at 50 percent AMI is also affordable at 80 percent AMI, the unit is only accounted for once in the 30-50 percent AMI band. This process resulted in the number of units affordable and the number of households within each AMI category.

The housing costs in the affordability estimate include annual contract rent and utilities. Vacant units for rent and rented units that are not yet occupied do not have an associated utilities cost in the ACS. Because it was important these units be included in our analysis, and because utilities can contribute substantially to housing costs, we estimated utility costs for these units based on the median cost for units within the same metro, with the same number of bedrooms, and in the same contract rent affordability band. Though utility spending varies with household income, this utility imputation provided a better estimation of vacant unit housing costs than would the contract rent alone.

## Right-Sized

Adequate size can be difficult to define because families have diverse needs and preferences for overall unit size and for the number of bedrooms they need. For example, households may have different expectations about the number and genders of children who should share bedrooms. Cultural background could also influence household perceptions of overcrowding.

While there are varying regulatory and cultural standards for unit size, HUD's Keating memo suggested that two persons per bedroom is generally a reasonable guideline for determining the appropriate number of bedrooms. ${ }^{43}$ The memo does not constitute a firm occupancy policy, but instead acknowledges that judgments about appropriate occupancy depend on housing units' and households' unique characteristics, including (among other variables) room size, children's genders and ages, and definitions of adequate size according to state and local law. Given the infeasibility of determining the ideal unit size for every household

[^8]in this study, the HUD guideline provides a starting point for examining the supply of family rental housing.

We operationalize the appropriate unit size for each household by first calculating the household size from the individual file of the American Community Survey. To estimate the number of bedrooms needed, we divide the household size by two and round up to the nearest whole number. A family of five would thus require a three-bedroom apartment. For households with more than 8 members, we classify the number of bedrooms required as $5+$. Because the smallest family in our analysis would at a minimum have an adult and a child, which would require one bedroom, we omit zero-bedroom studio or efficiency apartments from the analysis and from the supply counts presented. Because by custom a parent and child would ideally not share a bedroom, our study may underestimate the number of two bedroom units needed by small families. In addition, because we do not consider the gender of children in a given household, we also may underestimate the number of bedrooms sought by households with children of different genders.

Physical inadequacy is an important problem, but we omit it from our analysis because the ACS does not provide information on this dimension. While physical inadequacy accounts for a small percentage of worst case needs ${ }^{44}$ and has decreased over time, ${ }^{45}$ it is particularly relevant to low-income renters. Because we omit structural inadequacies from our analysis, the supply gap we estimate below is likely larger among the lowest-income bands. ${ }^{46}$

## Available

Finally, family-sized housing must be available, meaning a unit is not occupied by a household that can afford to pay more for housing or by a household that does not have children. Household/housing mismatches impact the availability of family-sized rental housing. The mismatch can encompass a variety of dynamics related to the income group that can afford the unit and the number of bedrooms the household needs. Higher-income households may occupy rental units that are affordable to households in a lower income category, making the unit unavailable to the lowest-possible-income household that could inhabit it. ${ }^{47}$ Smaller renter

[^9]households could also be over-housed, occupying more bedrooms than is necessary for the members in a household (e.g., a one-person household living in a three-bedroom apartment). In areas with a large college student or millennial population, family-sized housing units may be unavailable because young adult renters are living together in larger units. ${ }^{48}$

In our definition, available units are not: 1) occupied by a higher-income household (of any type) that could afford a higher-cost unit, or 2) occupied by a household paying appropriate rent for its income but that has no children. We include the first criterion to account for competition among income groups for low-cost units. The second criterion accounts for competition between family households and roommate households; this includes competition for one-bedroom apartments with single- and two-person nonfamily households. All households deserve affordable and quality housing, but our aim here is to assess how much of the rental supply is available to families with children given other households' needs for the same-sized and priced units.

Vacant units all meet these criteria and are thus classified as available.

## Data Sources

The primary data source for this analysis is the 2015 American Community Survey (ACS) Public Use Microdata Samples (PUMS). The PUMS consist of two files: one contains characteristics of the household, while the other contains data on each individual in a household. We used the individual records to identify households with children, and the household records provided additional information about household income and monthly housing costs. We used the Missouri Census Data Center MABLE/Geocorr14 crosswalk to match the ACS Public Use Microdata Areas to metropolitan statistical areas. We restricted our sample to renters and rental units located in the 358 metropolitan areas for which HUD provides the median income. ${ }^{49} \mathrm{~A}$ list of the metropolitan areas is included in the Appendix.

To identify the rental housing supply gap, we tabulated the number of family households and the number of affordable, adequate, and available rental units; the gap is the difference between the demand for units and the supply of units. We include units that are vacant for rent and rented but not yet occupied in our housing supply estimation. We estimate the supply gap for all metros pooled nationally, for regions pooled by population size, and for four individual

[^10]metros across the United States. Our methods produce the most conservative estimate because it does not take into account the structural adequacy of the units or the geographic mismatch of where units are and where households are. Additionally, we do not account for latent household or family formation, both of which are likely influenced by housing affordability and housing options in many metros.

## III. Characteristics of Renter Family Households

Families with children make up a sizable proportion of renter households. Of the 43.6 million renter households in the United States, just over one-third ( 14.8 million) are families with children. In comparison, about 30 percent of owner households have children. The majority of renter families ( 87 percent) in 2015 live in the 358 metropolitan areas included in this study. The average renter family in our study sample consists of four members with two children and two adults. The majority of these family households (57 percent) have a married or partnered couple present. Single-parent households also make up a large share at 41 percent. However, about a third of these single-parent households have another related or unrelated adult present. This includes the 12 percent of single-parent households that have three generations including a grandparent, parent, and child. Additionally, 1.5 percent of households with children in our study sample are grandparents living with their grandchildren but with no middle generation present.

Renter families more frequently have black or Hispanic heads of household than owner families: 23 percent of renter families are black and 31 percent are Hispanic; for owner families, 9 percent are black and 16 percent are Hispanic. Renter families also tend to be younger than owner households and renters without children. Renter family heads of household have an average age of 37 , compared to a median age of 43 for owner family head of household, and 70 percent of renter families are headed by someone aged 25 to 44 .

The majority of renter families in our study metros live in two- or three-bedroom units: 40 percent of all renter families live in two-bedroom units with an additional 38 percent occupying three-bedroom units (Figure 3). In contrast, renter households without children live in smaller units, with more than two-thirds living in one- or two-bedroom units. The units where renter families live are located in a variety of structure types. The majority of studio, one-bedroom, and two-bedroom units occupied by renter families are in small apartment buildings with 2 to 20

Figure 3: Renter households with children occupy larger units and are more likely to live in single-family homes than renters without children
Share of Households


Number of bedrooms


Structure Type
■ Renters without children

Source: JCHS tabulations of US Census Bureau, 2015 ACS 1-year Estimates.
units; a total of 3.6 million renter families ( 29 percent) live in these small apartment buildings. Attached and detached single-family homes encompass the vast majority of family units with three or more bedrooms. In fact, 46 percent of renter families in our sample ( 5.9 million) live in single-family homes, a substantially larger share than the 26 percent of renter households without children living in single-family homes.

While renter households with children have higher incomes than those without children, they also have greater housing and non-housing expenses. The median renter family in our study metros has a monthly income of $\$ 3,280$ while renters with no children make $\$ 2,930$. After paying for rent, the median ELI family household has only $\$ 110$ left over to pay for everything else. According to the Economic Policy Institute's Family Budget Calculator, the smallest family household in the most affordable metros would need more than $\$ 2,500$ each month to cover non-housing necessities for a modest but adequate standard of living. ${ }^{50} \mathrm{~A}$ single-person household in the same metro would need just over $\$ 1,800$ to cover equivalent necessities.

The supply gap in affordable family-sized housing is evident in the high rates of cost burden among renter families. Renter families in our study metros are the most frequently cost-

[^11]burdened group of all household types of any tenure. Just over half ( 52 percent) of renter families in our sample are cost burdened, paying more than 30 percent of their income for housing - but more than half of those renters experience severe burdens (paying more than half their income for housing). In comparison, 23 percent of owner families and 48 percent of renters with no children are burdened. Family households tend to be more burdened because they occupy larger units and therefore have higher housing costs. Some family households may also trade higher housing costs for safer neighborhoods or better school districts. Renter households with children had monthly median housing costs reaching $\$ 1,080$ in 2015 while renters without children spent $\$ 950$ each month on housing.

Some renter families take smaller apartments to decrease their housing expenses, with 16 percent ( 2.1 million households) in our sample living in overcrowded conditions with a person-to-bedroom ratio greater than two. These overcrowded renter families include nearly 5.3 million children. Larger households are more likely to face crowding: nearly half of overcrowded households have at least three children, compared to only 19 percent of family households that are not overcrowded. Most of these overcrowded renters live in one- or two-bedroom apartments, which have lower median rents than larger units. Just over 60 percent of overcrowded families with at least three children live in two-bedroom apartments.

Overcrowding is a function of affordability in most metros. The share of overcrowded families is highest in metros with higher median housing costs. For example, 40 percent of families with children in Los Angeles and 29 percent in New York are overcrowded. In less expensive metros, such as Cincinnati and Albuquerque, less than 10 percent of families with children are overcrowded. Across all metros, there is a moderate correlation (0.45) between metro median rents and the share of overcrowded family households but only a weak correlation (0.07) between the share of one- or two- bedroom units and the degree of overcrowding. When there are not enough affordable units of appropriate size available, renter families make tradeoffs between space and price.

## IV. Family Rental Housing Supply Gap

The supply gap in rental units affordable, available, and right-sized for families is largest for those with the lowest incomes, with affordable two-bedroom units in shortest supply. Across metropolitan regions of all sizes, this gap is mostly driven by a lack of affordable supply. For the
lowest-income households, there is physically not enough affordable housing to meet the staggering need. High cost burdens impact this group the most; after paying for housing, these households have very few resources left over to pay for everything else. However, higherincome occupancy and competition with childless households have also contributed to a family supply gap across affordability bands: 1.7 million households without children occupy units that would otherwise be affordable and available to extremely low-income renters making less than 30 percent AMI while 4.0 million households without children occupy units affordable at 30 to 50 percent AMI. While roommate households do out-compete family households for larger units, 61 percent of the childless households occupying affordable units are comprised of only one member; however, the majority of these childless households (75 percent) live in one-bedroom apartments. An additional 12.4 million higher-income households (both family and non-family) occupy units that would otherwise be affordable.

## The Supply Gap is Largest for Extremely Low-Income Renters

Across all geographies, the supply gap is largest for extremely low-income renters. At the national scale, there are 3.1 million ELI renter households with children and 3.2 million units with at least one bedroom affordable to ELI renter families. Thus, for every 100 ELI renter families, there are 105 affordable units in our study sample. However, 27 of every 100 units are occupied by higher-income occupants, most making between 30 and 50 percent AMI, and 56 are occupied by childless households, making them unavailable to ELI families. This leaves only 22 affordable and available units for every 100 ELI renter families, amounting to a deficit of 2.4 million units (Table 1).

The rental housing supply is insufficient across all sizes of units that are affordable to ELI families, but available two-bedroom apartments are in particularly short supply (Figure 4). There are only 58 affordable two-bedroom units for every 100 ELI renter families with three or four people. Forty of these units are occupied by higher-income or childless households. Even if all of these units were available to ELI families, there still would not be enough affordable twobedroom units to meet household demand. The supply gap for two-bedroom rentals affordable to the lowest-income families is 1.4 million units nationally with only 18 affordable and available units for every 100 ELI renter families requiring a unit of this size.

The gap in affordable supply for families extends up the income ladder depending on the number of bedrooms needed. There is an insufficient supply of available two-, three-, and five-

Table 1. National supply deficit of affordable, available family rental units

## Number of Households in each income category

| Household Income | Number of Bedrooms Needed |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | 2 | 3 | 4 | 5+ |
| <=30\% AMI | 733,840 | 1,744,672 | 518,838 | 73,165 | 10,623 |
| 30\%-50\%AMI | 388,334 | 1,450,837 | 555,632 | 74,272 | 16,133 |
| 50-60\% AMI | 124,674 | 625,033 | 250,294 | 40,800 | 6,005 |
| 60\%-80\%AMI | 177,834 | 1,058,052 | 415,105 | 67,720 | 14,792 |
| 80-100\%AMI | 92,177 | 783,920 | 326,110 | 55,826 | 13,324 |
| 100-120\%AMI | 52,354 | 563,807 | 246,345 | 41,677 | 12,683 |
| 120\%+ AMI | 87,288 | 1,465,923 | 631,551 | 126,384 | 34,844 |

Supply of available and affordable housing units in each income category
Number of Bedrooms

| Unit affordability | 1 | 2 | 3 | 4 | $5+$ |
| :--- | :---: | :---: | :---: | :---: | :---: |
| $<=30 \%$ AMI | 124,973 | 319,511 | 181,077 | 35,961 | 4,165 |
| $30 \%-50 \%$ AMI | 557,362 | $1,299,122$ | 528,910 | 82,734 | 13,466 |
| $50-60 \%$ AMI | 249,132 | $1,011,389$ | 535,718 | 82,625 | 16,143 |
| $60 \%-80 \%$ AMI | 359,859 | $1,431,334$ | $1,244,432$ | 221,552 | 39,972 |
| $80-100 \%$ AMI | 188,956 | 835,462 | 915,960 | 259,798 | 40,236 |
| $100-120 \%$ AMI | 80,672 | 476,413 | 609,904 | 212,249 | 35,778 |
| $120 \%+$ AMI | 163,824 | 818,226 | $1,188,773$ | 560,223 | 142,126 |

Difference between supply of units and number of households

| Supply gap | Number of Bedrooms |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  | Units <br> (Share) | 2 <br> Units <br> (Share) | 3 <br> Units <br> (Share) | 4 <br> Units <br> (Share) | Units <br> (Share) |
| $<=30 \%$ AMI | $-608,798$ | $-1,424,728$ | $-337,761$ | $-37,204$ | $-6,458$ |
|  | $(17)$ | $(18)$ | $(35)$ | $(49)$ | $(39)$ |
| $30 \%-50 \%$ AMI | 169,358 | $-151,240$ | $-26,363$ | 8,488 | $-2,668$ |
|  | $(144)$ | $(90)$ | $(95)$ | $(111)$ | $(83)$ |
| $50-60 \%$ AMI | 124,612 | 386,750 | 285,589 | 41,825 | 10,138 |
|  | $(200)$ | $(162)$ | $(214)$ | $(203)$ | $(269)$ |
| $60 \%-80 \%$ AMI | 182,419 | 373,653 | 829,639 | 153,832 | 25,179 |
|  | $(203)$ | $(135)$ | $(300)$ | $(327)$ | $(270)$ |
| $80-100 \%$ AMI | 96,839 | 51,630 | 589,850 | 204,147 | 26,912 |
|  | $(205)$ | $(107)$ | $(281)$ | $(466)$ | $(302)$ |
| $100-120 \%$ AMI | 28,438 | $-87,395$ | 363,766 | 170,572 | 23,095 |
|  | $(154)$ | $(84)$ | $(248)$ | $(509)$ | $(282)$ |
| $120 \%+$ AMI | 76,677 | $-647,630$ | 557,222 | 433,839 | 107,282 |
|  | $(188)$ | $(56)$ | $(188)$ | $(443)$ | $(408)$ |

[^12]Figure 4: The supply gap is largest for extremely low-income renter families Number of Affordable and Available Units per 100 Family Households


Source: Author tabulations of US Census Bureau, 2015 American Community Survey 1-Year Estimates.
bedroom units that are affordable to very low-income (VLI) households making 30 to 50 percent AMI, though these gaps are much smaller than those for ELI renters. The supply of available and affordable two-bedroom units for VLI families is short by 151,715 units; this equates to 90 affordable and available two-bedroom units for every 100 VLI families needing a unit that size. Some of the pressure on the affordable supply at 30 to 50 percent AMI comes from higherincome households occupying these lower-cost units. About 3.3 million higher-income renters reside in units affordable at 30 to 50 percent AMI; more than half ( 59 percent) of these renters make between 50 and 80 percent AMI. The lack of affordable supply at 30 to 50 percent AMI is problematic because it forces renters in this income band to either pay too much for higher-cost housing or occupy units affordable to ELI households. In fact, renter families making between 30 and 50 percent AMI occupy 51 percent of the units that are affordable but unavailable to ELI renters.

Available and affordable two-bedroom units are also lacking for renter families making more than 100 percent AMI. At this income level, the supply gap is driven by childless and higher-income households occupying units rather than by an actual construction deficit. About three-quarters of the units that are affordable to families making 100 to 120 percent AMI are occupied by childless or higher-income households. Similarly, three-quarters of the units affordable at the highest income band are occupied by childless households. While there is a slight gap in two-bedroom apartments for families making more than 100 percent AMI, the
excess supply of larger units that are available and affordable for these families helps absorb their housing needs.

## All Regions Have Low-Income Rental Supply Gaps

All regions across the country have affordable rental supply gaps that mirror the national pattern. Metropolitan areas in the West have the largest supply gap (Figure 5). These metropolitan areas lack about 611,000 units for ELI households, leaving only 13 of every 100 ELI families with the possibility of accessing affordable, right-sized housing. Taking affordability first, the West does not have enough low-cost rentals to accommodate the number of ELI families at 77 affordable units for every 100 households. Of those 77 units, 43 are occupied by a higher-income household and 21 are occupied by renter households with no children. While there are not enough rentals of any size that are both affordable and available to ELI households in the West, two-bedroom units are in particularly short supply at a deficit of about 350,000 units, or 11 units available for every 100 families that need a two-bedroom unit. There is a smaller but still substantial deficit of rental housing for VLI households, and the West has the greatest relative shortage of VLI-affordable units. The majority of demand among VLI families in the West is concentrated among households that would require two- or threebedroom units, while there is a slight excess supply of one-bedroom units.

Figure 5: All regions have extremely low-income supply gaps
Number of Affordable and Available Units per 100 Family Households


[^13]Metros in the South similarly lack affordable rental units for families, but the gap is largest for units affordable to ELI households: the shortage totals about 923,000 units, leaving only 20 affordable and available units for every 100 ELI family households. There is a supply shortfall across all bedroom sizes for ELI families, but two-bedroom units are again the most needed unit size. The number of available and affordable two-bedroom rentals can serve only one out of every six ELI families requiring a unit of that size. There are generally enough units for VLI families in southern metros, assuming that perfect income sorting occurs. However, there are about 5,000 VLI families needing a unit with five-bedrooms or more and only 4,000 affordable and available units of this size for a ratio of 73 units to 100 large VLI family households. Two-bedroom units are also lacking for VLI renter families. The shortfall amounts to about 45,000 units, though three- and four-bedroom affordable and available VLI units bring the gap down to under 24,000 or 97 units for every 100 households requiring a two- to fourbedroom apartment.

Though metros in the Northeast and Midwest have less severe supply deficits for renter families, they also lack an adequate number of family-sized units for ELI households. In Northeastern metros, a supply deficit of about 426,000 units leaves only 29 of every 100 ELI renter families with available, affordable housing. Two-bedroom units account for almost twothirds of the low-cost supply shortfall. An additional shortfall of 45,000 units exists for VLI renter families requiring at least two bedrooms. A similar pattern holds in the Midwest, though the gap is exclusively among ELI renter families. There are enough rental units for only 27 percent of ELI families. The gap is greatest among one- and two-bedroom apartments. As in the West and South, metros in the Northeast and Midwest have a family rental supply gap in one- and twobedroom units affordable to low- and moderate-income families making over 60 AMI , but there are enough larger units in each income band to absorb the demand.

## Supply Gaps in Four Metropolitan Areas

While the national and regional aggregations provide an overview of the extent of the supply gap, families are ultimately constrained by location. The dynamics within individual metropolitan areas highlight the local dimension of the affordable rental supply gap. We chose four metropolitan areas to examine: Boston, Atlanta, Chicago, and Los Angeles. These metros have populations near or above 5 million and exhibit variations in rental housing stock and affordability. Boston and Los Angeles are two of the most expensive cities for renters, with monthly median rents at or above $\$ 1,300$. Atlanta and Chicago are relatively less expensive,

Table 2. Supply gap by bedrooms and household income for four metro areas


[^14]Table 2. Supply gap by bedrooms and household income for four metro areas

| Chicago |  |  |  |  |  |  | Los Angeles |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | 2 | 3 | 4 | 5+ |  |  | 1 | 2 | 3 | 4 | 5+ |  |
| Household Income | Units (Share) | Units (Share) | Units (Share) | Units (Share) | Units (Share) | deficit | Household Income | Units (Share) | Units (Share) | Units (Share) | Units (Share) | Units (Share) | deficit |
| <=30\% AMI | $\begin{gathered} -22,932 \\ (16) \end{gathered}$ | $\begin{gathered} \hline-61,993 \\ (16) \end{gathered}$ | $\begin{gathered} -14,890 \\ (35) \end{gathered}$ | $\begin{gathered} -2,161 \\ (36) \end{gathered}$ | $\begin{aligned} & \hline-81 \\ & (72) \end{aligned}$ | 102,058 | <=30\% AMI | $\begin{gathered} -19,175 \\ (10) \end{gathered}$ | $-72,504$ <br> (6) | $-28,687$ <br> (7) | $\begin{gathered} \hline-3,098 \\ (16) \end{gathered}$ | $\begin{gathered} \hline-731 \\ (19) \end{gathered}$ | 124,195 |
| 30\%-50\%AMI | $\begin{gathered} 16,036 \\ (238) \end{gathered}$ | $\begin{gathered} 11,409 \\ (124) \end{gathered}$ | $\begin{gathered} 737 \\ (103) \end{gathered}$ | $\begin{gathered} -746 \\ (84) \end{gathered}$ | $\begin{gathered} 234 \\ (176) \end{gathered}$ | 512 | $\begin{array}{\|l\|} \hline 30 \%- \\ 50 \% A M I \\ \hline \end{array}$ | $\begin{gathered} -2,747 \\ (78) \end{gathered}$ | $\begin{gathered} -72,270 \\ (10) \end{gathered}$ | $\begin{gathered} -41,037 \\ (11) \end{gathered}$ | $\begin{gathered} -4,325 \\ (15) \end{gathered}$ | $\begin{gathered} -379 \\ (29) \end{gathered}$ | 120,758 |
| 50-60\% AMI | $\begin{aligned} & 3,438 \\ & (208) \end{aligned}$ | $\begin{gathered} 28,439 \\ (266) \end{gathered}$ | $\begin{gathered} 12,967 \\ (262) \end{gathered}$ | $\begin{aligned} & 1,145 \\ & (162) \end{aligned}$ | $\begin{gathered} 55 \\ (125) \end{gathered}$ | Surplus | 50-60\% AMI | $\begin{gathered} 25,963 \\ (897) \end{gathered}$ | $\begin{gathered} -21,022 \\ (42) \end{gathered}$ | $\begin{gathered} -17,595 \\ (19) \end{gathered}$ | $\begin{gathered} -2,545 \\ (33) \end{gathered}$ | $\begin{aligned} & -13 \\ & \text { (97) } \end{aligned}$ | 41,175 |
| 60\%-80\%AMI | $\begin{aligned} & 5,831 \\ & (224) \end{aligned}$ | $\begin{gathered} 12,707 \\ (138) \end{gathered}$ | $\begin{gathered} 26,200 \\ (308) \end{gathered}$ | $\begin{aligned} & 5,792 \\ & (417) \end{aligned}$ | $\begin{gathered} 685 \\ (231) \end{gathered}$ | Surplus | $\begin{aligned} & \text { 60\%- } \\ & 80 \% A M I \end{aligned}$ | $\begin{gathered} 65,866 \\ (995) \end{gathered}$ | $\begin{gathered} 11,581 \\ (119) \end{gathered}$ | $\begin{gathered} -18,369 \\ (47) \end{gathered}$ | $\begin{gathered} -2,981 \\ (54) \end{gathered}$ | $\begin{gathered} -889 \\ (33) \end{gathered}$ | 22,239 |
| 80-100\%AMI | $\begin{aligned} & 1,156 \\ & (153) \end{aligned}$ | $\begin{gathered} -1,593 \\ (93) \end{gathered}$ | $\begin{gathered} 22,301 \\ (320) \end{gathered}$ | $\begin{aligned} & 6,872 \\ & (522) \end{aligned}$ | $\begin{gathered} 2,296 \\ (1125) \end{gathered}$ | Surplus | 80-100\%AMI | $\begin{gathered} 29,245 \\ (789) \end{gathered}$ | $\begin{gathered} 68,515 \\ (267) \end{gathered}$ | $\begin{gathered} -2,794 \\ (90) \end{gathered}$ | $\begin{aligned} & -426 \\ & (93) \end{aligned}$ | $\begin{gathered} -1,594 \\ (24) \end{gathered}$ | 4,814 |
| 100-120\%AMI | $\begin{gathered} 728 \\ (171) \end{gathered}$ | $\begin{gathered} -3,737 \\ (71) \end{gathered}$ | $\begin{aligned} & 7,351 \\ & (215) \end{aligned}$ | $\begin{aligned} & 4,221 \\ & (438) \end{aligned}$ | $\begin{gathered} 155 \\ (121) \end{gathered}$ | Surplus | $\begin{aligned} & \text { 100- } \\ & \text { 120\%AMI } \end{aligned}$ | $\begin{gathered} 12,464 \\ (525) \end{gathered}$ | $\begin{gathered} 34,390 \\ (241) \end{gathered}$ | $\begin{gathered} 10,702 \\ (155) \end{gathered}$ | $\begin{aligned} & 2,655 \\ & (159) \end{aligned}$ | $\begin{gathered} -835 \\ (57) \end{gathered}$ | 835 |
| 120\%+ AMI | $\begin{aligned} & 1,972 \\ & (240) \end{aligned}$ | $\begin{gathered} -18,745 \\ (52) \end{gathered}$ | $\begin{gathered} 11,353 \\ (167) \end{gathered}$ | $\begin{aligned} & 8,480 \\ & (300) \end{aligned}$ | $\begin{aligned} & 2,388 \\ & (337) \end{aligned}$ | Surplus | 120\%+ AMI | $\begin{aligned} & 9,123 \\ & (183) \end{aligned}$ | $\begin{aligned} & 1,376 \\ & (101) \end{aligned}$ | $\begin{gathered} 49,809 \\ (183) \end{gathered}$ | $\begin{gathered} 24,354 \\ (284) \end{gathered}$ | $\begin{aligned} & 3,113 \\ & (158) \end{aligned}$ | Surplus |

[^15]with median rents of about $\$ 1,000$. Boston and Chicago both have an older rental stock with a large portion built before 1940, while Atlanta and Los Angeles are newer. The share of renters in these four metros ranges from about 40 percent to 50 percent, and between 25 and 35 percent of renters are families with children.

Of the four metropolitan areas, Boston has the smallest affordable supply gap for renter families (Table 2). Boston has about 728,400 renter households, and families make up onequarter of all renter households in the metro. Forty percent of all occupied rental units with at least one bedroom are affordable to ELI and VLI renters. Subsidized housing plays a large role in the Boston metro's affordability. In 2015, nearly a fifth of all rentals in the metro were supported through HUD subsidies, which typically serve ELI and VLI households. ${ }^{51}$ Boston's rental housing stock is primarily comprised of older, small apartment buildings. Apartments affordable to ELI and VLI renters tend to be in 2-4 unit structures built before 1940.

Median housing costs for Boston's renters reach \$1,300. Family renters pay more at the median $(\$ 1,400)$ and childless renters pay less $(\$ 1,260)$. Despite higher housing costs, renter families also have higher incomes, making $\$ 46,400$ annually or $\$ 3,870$ per month at the median. In comparison, the median childless renter makes $\$ 2,400$ less annually and has an

Figure 6: Boston and Chicago have smaller affordable supply gaps than Atlanta and Los Angeles


Source: Author tabulations of US Census Bureau, 2015 American Community Survey 1-Year Estimates.

[^16]income of $\$ 3,670$ per month. The high housing costs have left 52 percent of family households and 48 percent of childless households with cost burdens.

Despite the supply of subsidized housing in Boston, there is still a rental supply gap for ELI families (Figure 6). Boston has about 181,000 renter families, and nearly one-third of these households have incomes at or below 30 percent AMI. For every 100 ELI family households in the Boston metro, about 212 units are affordable. Of those 212 units, 135 are occupied by childless households. The vast majority of these childless renters (80 percent) in ELI units are one-person households. An additional 41 of the units are affordable but occupied by a higherincome household, with renters making 30 to 50 percent AMI occupying most of these units. This leaves 36 affordable, available units for every 100 ELI family households in the Boston metro. The total gap between supply and demand for ELI renters in Boston is about 38,000 units, leaving two-thirds of ELI renter families without even the possibility of accessing an affordable, right-sized unit. Two-bedroom units have the largest deficit at 22,500 units. The supply gap in two-bedroom apartments extends into the 30-50 percent AMI and 100 percent AMI and greater affordability bands. As with the national supply gap, there are enough larger units in the VLI and higher-income affordability categories to account for two-bedroom supply shortfalls.

Atlanta has a greater deficit of affordable rental housing. Atlanta, with 837,977 renter households, has more renters than Boston; 35 percent of these households include children. The distribution of affordable units skews toward households making between 50 and 80 percent AMI, which aligns with the higher proportion of single-family rentals and newer units which generally command higher rents. In fact, less than one-third of all occupied rental units are affordable to VLI and ELI renters. The smaller share of subsidized housing contributes to the deficit of affordable housing; less than 8 percent of the rental stock receives HUD assistance. However, as in Boston, just over half of Atlanta's renter families are cost burdened. Though Atlanta's median rent is substantially lower than that in Boston, at $\$ 1,083$ for families and $\$ 970$ for childless households, median incomes are even lower. The median renter family makes $\$ 3,330$ per month while childless renters make $\$ 3,170$.

The family rental supply gap in Atlanta amounts to 67,100 units. The shortfall is entirely in units affordable to ELI and VLI renter families: of the total deficit, there is a supply gap of 63,000 units for ELI families and 3,700 for VLI families. For every 100 ELI families, there are 56 affordable units. Fifteen of these units are occupied by higher-income households - usually
households making between 30 and 50 percent AMI. An additional 31 units are occupied by childless households typically consisting of one person. Only 11 units are both affordable and available for every 100 ELI family households in the Atlanta metro. Even with perfect sorting of households by income and unit size, 89 percent of ELI renter families in Atlanta would be unable to find an affordable, right-sized home.

While there are almost 55,700 affordable and available units in Atlanta for VLI families, they are unevenly distributed by unit size, with a surplus of two-bedroom units. The twobedroom surplus absorbs the deficit of one-bedroom VLI units. However, for every 100 VLI renter family households needing units with three or more bedrooms, 78 units are affordable and available to meet this need. Affordable VLI units with higher-income renters are typically occupied by households making between 50 and 80 percent AMI. There are surpluses of units in these affordability bands.

Chicago has a larger supply gap by number of units than Boston and Atlanta. Despite having a smaller rentership rate ( 37 percent), Chicago has a larger renter population than Boston and Atlanta. Out of Chicago's 1.4 million renters, 420,800 are families, and nearly onethird of family renters are ELI. Though 12 percent of Chicago's rental housing receives HUD subsidies, this support is not large enough to meet demand for assistance. Among those ELI and VLI renters in Chicago, 54 percent of family renters and 48 percent of childless renters have cost burdens. Compared to Atlanta's, Chicago's median rents are similar (\$1,070 for families and $\$ 880$ for childless renters), but renters' incomes are smaller ( $\$ 3,120$ per month for family renters and $\$ 3,070$ for non-family renters on median), contributing to these higher rates of cost burden.

Family-sized units affordable to ELI renters are in greatest demand in Chicago. While there are 89 affordable units for every 100 ELI renter families, 21 of these are occupied by higher-income renters and 48 are occupied by childless households. Most of the higher-income renters make between 30 and 50 percent AMI. The total gap for ELI families is 102,058 units, leaving 80 percent of metro Chicago ELI families without the possibility of finding affordable housing. As in other metros, two-bedroom units have the greatest demand and shortfall at 62,000 units. There is a slight deficit of four-bedroom VLI units as well, amounting to about 750 units. The surplus of five-bedroom units at this affordability level absorbs some of this deficit, leaving a shortage of about 500 units. In sum, Chicago lacks 102,600 units affordable to ELI and VLI families.

Los Angeles is the largest and most expensive of the four metros. The metro has a high rentership rate of 52 percent; 2,337,773 renters live in the metro, including 796,776 family households. Its housing stock is newer and skews toward moderate- and high-income affordability, and the share of rental housing that receives HUD assistance is the smallest of the four metros at 7 percent. Median rent in Los Angeles is $\$ 1,380$ for families and $\$ 1,340$ for childless households. Of the four metros, Los Angeles is the only one where childless households have higher median incomes ( $\$ 3,717$ per month) than families ( $\$ 3,583$ ). In Los Angeles, unlike in the other metros, nearly one-third of family renters make more than 120 percent AMI, but an additional third make less than 50 percent AMI.

The metro is unaffordable for the majority of renters: 62 percent of family households and 54 percent of childless households are cost burdened. The affordable housing gap for families in Los Angeles reaches more than 300,000 units across affordability bands, extending from ELI up to 120 percent AMI.

Among ELI and VLI renters, supply deficits are extant across all unit sizes. There are 56 affordable units for every 100 ELI renter families in the Los Angeles metro. Only seven units are affordable and available, leaving 93 percent of ELI families without the possibility of finding an affordable, right-sized unit. As in other metros, higher-income renters occupy 23 percent of affordable units and childless households occupy an additional 65 percent. The total ELI supply deficit amounts to more than 124,000 units. The VLI deficit, 121,000 units, is almost as severe, with 83 percent of VLI renter families lacking the possibility of accessing affordable, right-sized units. For moderate- and higher-income affordability bands, the deficit exists primarily among larger units. The metro is short 41,000 units with two bedrooms or more at 50 to 60 percent AMI; two-thirds of renter families in this income band that require at least two bedrooms do not have the possibility of finding available and affordable housing. At 60 to 100 percent AMI there is a 27,000 -unit shortfall for rental housing with three or more bedrooms, leaving a third of larger renter families without affordable and available housing. At 100 to 120 percent AMI, a small shortfall of about 800 also exists for units with five bedrooms or more. In sum, Los Angeles is short 314,000 affordable and available units for its renter families.

## Single-Family Rentals are an Important Source of Affordable Housing for Families

Across all affordability levels and in all regions of the country, single-family rentals (SFRs) are a substantial source of available and right-sized family-sized housing. SFRs have a
median size of three bedrooms. They typically command higher rents and have a national median of $\$ 1,150$, higher than the $\$ 950$ median for units in a multifamily building. Nevertheless, SFRs are available at even the lowest affordability level.

For ELI renters making up to 30 percent AMI, single-family rentals account for just over a fifth of the affordable and available rental housing stock, and 35 percent of affordable and available units with at least three bedrooms. The shares of SFRs increase with each affordability level (Figure 7). For the highest-income renter families making more than 120 percent AMI, more than half of the affordable and available housing stock consists of SFRs.

Figure 7: Single-family rentals make up a substantial share of affordable and available family-sized housing


Source: Author tabulations of US Census Bureau, 2015 American Community Survey 1-Year Estimates.

In addition to being more predominant at the higher end of the rental market, singlefamily rentals are also geographically concentrated in southern metros. Forty percent of available single-family rentals at any affordability level are located in the South, with 30 percent in the West and 19 percent in the Midwest. The West encompasses an outsized share of SFRs at higher affordability thresholds, while the Midwest and Northeast have disproportionate shares of lower-cost SFRs. Southern metros fall in the mid-range, with more SFRs in the 60 to 100 percent AMI affordability categories.

Figure 8: Single-family rentals make up about a fifth of the units available and affordable to VLI renters in all regions


Source: Author tabulations of US Census Bureau, 2015 American Community Survey 1-Year Estimates.

In the South, Midwest, and West, SFRs account for well over half the share of the units that are available to the highest-income renters, ranging from 64 percent in the Midwest to 68 percent in the West (Figure 8). The share in the Northeast is considerably lower at only 32 percent. In all regions, SFRs make up a smaller but not insignificant share of available rentals affordable to the lowest-income renters: 15 percent of available units affordable to ELI renter families in the Northeast are SFRs, compared to between 21 and 25 percent in the other three regions.

## Conclusions

In metropolitan areas across the country, there is an insufficient supply of units affordable to low-income renter families. The problem is exacerbated by imperfect sorting of households by income and household size. Higher-income renters who could afford rent that is more expensive by the 30-percent affordability standard occupy millions of units that would be affordable to those with lower incomes. Renter families also compete with childless households, though many of these are single-person households rather than agglomerated roommate households. Two-bedroom apartments are in particularly short supply in metros across the country as family households compete with childless households for these units. Affordable but
unavailable units are common across metros of all sizes, and renter family demand for units affordable at 30 percent AMI consistently exceeds existing supply.

The family rental supply gap mirrors the larger lack of deeply affordable units for all renters. Low-income family and childless renter households alike have limited affordable housing options. The affordability crisis is evident in high rates of cost burden, particularly among the lowest-income households: 85 percent of ELI renters in metro areas are cost burdened, the majority of which spend more than 50 percent of income on housing. When housing consumes a large portion of household income, households cut back on other necessities, and families in particular spend less on food and healthcare; ${ }^{52}$ these cutbacks can be detrimental to the health and well-being of children.

The findings highlight the importance of increasing the public and private low-income rental supply and providing assistance for households in the private rental market. Currently, the primary affordable housing production program, the Low Income Housing Tax Credit, targets affordability at 30 to 60 percent AMI. However, the family rental gap is largest at the ELI affordability level; without a voucher, LIHTC units are unaffordable to ELI renters. Some filtering of units does occur, but increasing the higher-end and moderately affordable supply alone will not be a sufficient approach. Given the surplus of units at higher price points, expansion of household-based rental assistance such as Housing Choice Vouchers would increase options for ELI families.

At the local level, communities that have inclusionary housing programs might consider requiring that a certain share of units be sized for families, most likely - given the analysis presented here - at two bedrooms. Municipalities might also evaluate whether putting resources into affordable housing for students or young professionals might reduce some of the competition for housing suitable for families, as Boston has discussed in its housing plan, Housing a Changing City: 2030. ${ }^{53}$

Planners should also engage with property owners when single-family homes are converted to rentals to ensure that these rentals are properly regulated and meet the standard for quality housing. Single-family rentals are an important source of affordable housing across all income categories and can expand rental housing options. Unlike new construction,

[^17]conversions do not require approval and community support. Single-family rentals have the potential to combat NIMBY opposition and increase affordable housing in existing neighborhoods. However, these properties may require additional inspection to ensure that landlords are not milking a property for profit with minimal investment ${ }^{54}$ and that renters have a suitable living environment. Planners also may need to account for the potential reconversion of these units into homeowner-occupied structures and be prepared to assist renter families who could be displaced.

This study is a first step in understanding the supply constraints that renter families face. While we don't suggest that families should receive ultimate priority, we do encourage planners and policymakers to consider the needs of families with children. Due to the computational limitations of public ACS data, we could not fully take into consideration many of the important local aspects of this problem. Different types of rental housing at varying affordability levels are distributed unevenly within metropolitan areas. Jurisdictional boundaries and housing submarkets affect the local geography of affordable housing. For families, proximity to quality schools might also impact housing affordability and location decisions. Thus, neighborhoodlevel characteristics and housing supply shape where families choose to live and how much they must spend. As much as possible, future research should examine family-sized supply deficiencies and constraints at the neighborhood level.

[^18]
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## Appendix

Table A1: Metropolitan areas included in the study sample

| Metropolitan Area | Renter Households | Metropolitan Area | Renter Households |
| :---: | :---: | :---: | :---: |
| Abilene, TX | 25,068 | Boston-Cambridge-Newton, MA-NH | 728,414 |
| Akron, OH | 106,205 | Boulder, CO | 48,871 |
| Albany, GA | 29,815 | Bowling Green, KY | 25,660 |
| Albany-Schenectady-Troy, NY | 136,965 | Bremerton-Silverdale, WA | 33,825 |
| Albuquerque, NM | 123,301 | Bridgeport-Stamford-Norwalk, CT | 116,682 |
| Alexandria, LA | 25,853 | Brownsville-Harlingen, TX | 46,565 |
| Allentown-Bethlehem-Easton, PA-NJ | 104,391 | Brunswick, GA | 19,339 |
| Altoona, PA | 14,679 | Buffalo-Cheektowaga-Niagara Falls, NY | 178,448 |
| Amarillo, TX | 39,109 | Burlington, NC | 24,657 |
| Ames, IA | 16,121 | Burlington-South Burlington, VT | 30,735 |
| Anchorage, AK | 52,864 | Canton-Massillon, OH | 53,945 |
| Ann Arbor, MI | 61,311 | Cape Coral-Fort Myers, FL | 88,446 |
| Anniston-Oxford-Jacksonville, AL | 14,598 | Cape Girardeau, MO-IL | 14,023 |
| Appleton, WI | 24,586 | Carson City, NV | 8,697 |
| Asheville, NC | 66,030 | Casper, WY | 13,321 |
| Athens-Clarke County, GA | 39,699 | Cedar Rapids, IA | 32,302 |
| Atlanta-Sandy Springs-Roswell, GA | 837,977 | Champaign-Urbana, IL | 44,206 |
| Atlantic City-Hammonton, NJ | 35,632 | Charleston, WV | 32,025 |
| Auburn-Opelika, AL | 26,518 | Charleston-North Charleston, SC | 109,589 |
| Augusta-Richmond County, GA-SC | 77,054 | Charlotte-Concord-Gastonia, NC-SC | 344,585 |
| Austin-Round Rock, TX | 331,269 | Charlottesville, VA | 32,792 |
| Bakersfield, CA | 123,832 | Chattanooga, TN-GA | 79,358 |
| Baltimore-Columbia-Towson, MD | 386,113 | Cheyenne, WY | 16,376 |
| Bangor, ME | 20,939 | Chicago-Naperville-Elgin, IL-IN-WI | 1,365,352 |
| Barnstable Town, MA | 23,136 | Chico, CA | 42,101 |
| Baton Rouge, LA | 103,255 | Cincinnati, OH-KY-IN | 311,060 |
| Battle Creek, MI | 16,118 | Clarksville, TN-KY | 48,224 |
| Bay City, MI | 10,925 | Cleveland, TN | 17,040 |
| Beaumont-Port Arthur, TX | 54,029 | Cleveland-Elyria, OH | 325,552 |
| Bellingham, WA | 31,989 | Coeur d'Alene, ID | 19,424 |
| Bend-Redmond, OR | 24,969 | College Station-Bryan, TX | 48,627 |
| Billings, MT | 23,949 | Colorado Springs, CO | 106,160 |
| Binghamton, NY | 35,906 | Columbia, MO | 32,475 |
| Birmingham-Hoover, AL | 149,875 | Columbia, SC | 113,848 |
| Bismarck, ND | 16,949 | Columbus, GA-AL | 60,297 |
| Bloomington, IL | 28,143 | Columbus, IN | 9,649 |
| Bloomington, IN | 29,181 | Columbus, OH | 329,289 |
| Boise City, ID | 79,450 | Corvallis, OR | 15,245 |


| Metropolitan Area | Renter Households | Metropolitan Area | Renter Households |
| :---: | :---: | :---: | :---: |
| Crestview-Fort Walton Beach-Destin, FL | 47,365 | Fort Collins, CO | 47,824 |
| Cumberland, MD-WV | 13,314 | Fort Smith, AR-OK | 39,533 |
| Dallas-Fort Worth-Arlington, TX | 1,103,016 | Fort Wayne, IN | 56,924 |
| Dalton, GA | 19,568 | Fresno, CA | 150,341 |
| Danville, IL | 9,671 | Gadsden, AL | 10,305 |
| Danville, VA | 15,060 | Gainesville, FL | 51,557 |
| Davenport-Moline-Rock Island, IA-IL | 51,303 | Gainesville, GA | 23,189 |
| Dayton, OH | 129,923 | Glens Falls, NY | 14,870 |
| Decatur, AL | 17,972 | Goldsboro, NC | 19,873 |
| Decatur, IL | 15,160 | Grand Forks, ND-MN | 17,642 |
| Deltona-Daytona Beach-Ormond Beach, FL | 79,206 | Grand Junction, CO | 21,437 |
| Denver-Aurora-Lakewood, CO | 416,457 | Grand Rapids-Wyoming, MI | 116,887 |
| Des Moines-West Des Moines, IA | 80,638 | Great Falls, MT | 13,427 |
| Detroit-Warren-Dearborn, MI | 568,364 | Greeley, CO | 34,036 |
| Dothan, AL | 55,970 | Green Bay, WI | 42,552 |
| Dover, DE | 21,387 | Greensboro-High Point, NC | 126,208 |
| Dubuque, IA | 10,947 | Greenville, NC | 34,112 |
| Duluth, MN-WI | 33,665 | Greenville-Anderson-Mauldin, SC | 117,296 |
| Durham-Chapel Hill, NC | 96,869 | Gulfport-Biloxi-Pascagoula, MS | 63,901 |
| Eau Claire, WI | 23,395 | Hagerstown-Martinsburg, MD-WV | 32,321 |
| El Centro, CA | 20,205 | Hanford-Corcoran, CA | 23,267 |
| El Paso, TX | 113,954 | Harrisburg-Carlisle, PA | 78,875 |
| Elizabethtown-Fort Knox, KY | 20,197 | Harrisonburg, VA | 20,216 |
| Elkhart-Goshen, IN | 23,021 | Hartford-West Hartford-East Hartford, CT | 171,566 |
| Elmira, NY | 12,294 | Hattiesburg, MS | 21,504 |
| Erie, PA | 43,340 | Hickory-Lenoir-Morganton, NC | 45,771 |
| Eugene, OR | 66,360 | Hinesville, GA | 15,001 |
| Evansville, IN-KY |  | Honolulu, HI | 148,292 |
| Fairbanks, AK | 42,141 | Hot Springs, AR | 14,292 |
| Fargo, ND-MN | 15,563 | Houma-Thibodaux, LA | 21,808 |
| Farmington, NM | 45,711 | Houston-The Woodlands-Sugar Land, TX | 1,020,373 |
| Fayetteville, NC | 13,437 | Huntington-Ashland, WV-KY-OH | 44,378 |
| Fayetteville-Springdale-Rogers, ARMO | 75,256 | Huntsville, AL | 61,232 |
| Flagstaff, AZ | 79,848 | Idaho Falls, ID | 15,434 |
| Flint, MI | 19,426 | Indianapolis-Carmel-Anderson, IN | 299,323 |
| Florence, SC | 52,554 | Iowa City, IA | 28,188 |
| Florence-Muscle Shoals, AL | 28,730 | Ithaca, NY | 18,674 |
| Fond du Lac, WI | 10,309 | Jackson, MI | 18,994 |


| Metropolitan Area | Renter Households | Metropolitan Area | Renter Households |
| :---: | :---: | :---: | :---: |
| Jackson, MS | 78,720 | Logan, UT-ID | 16,134 |
| Jackson, TN | 19,055 | Longview, TX | 31,810 |
| Jacksonville, FL | 217,372 | Longview, WA | 13,165 |
| Jacksonville, NC | 34,250 | Los Angeles-Long Beach-Anaheim, CA | 2,337,773 |
| Janesville-Beloit, WI | 19,554 | Louisville/Jefferson County, KY-IN | 179,998 |
| Johnson City, TN | 27,589 | Lubbock, TX | 55,506 |
| Johnstown, PA | 16,856 | Lynchburg, VA | 34,911 |
| Jonesboro, AR | 19,806 | Macon-Bibb County, GA | 39,043 |
| Joplin, MO | 25,318 | Madera, CA | 18,105 |
| Kalamazoo-Portage, MI | 43,845 | Madison, WI | 109,274 |
| Kankakee, IL | 14,295 | Manchester-Nashua, NH | 57,386 |
| Kansas City, MO-KS | 303,221 | Manhattan, KS | 21,995 |
| Kennewick-Richland, WA | 32,920 | Mankato-North Mankato, MN | 11,912 |
| Killeen-Temple, TX | 76,513 | Mansfield, OH | 15,374 |
| Kingsport-Bristol-Bristol, TN-VA | 36,978 | McAllen-Edinburg-Mission, TX | 76,535 |
| Kingston, NY | 23,578 | Medford, OR | 33,737 |
| Knoxville, TN | 119,804 | Memphis, TN-MS-AR | 222,277 |
| Kokomo, IN | 10,133 | Merced, CA | 39,944 |
| La Crosse-Onalaska, WI-MN | 19,719 | Miami-Fort Lauderdale-West Palm Beach, FL | 933,728 |
| Lafayette, LA | 63,377 | Michigan City-La Porte, IN | 12,745 |
| Lafayette-West Lafayette, IN | 37,885 | Midland, TX | 18,386 |
| Lake Charles, LA | 27,019 | Milwaukee-Waukesha-West Allis, WI | 266,496 |
| Lake Havasu City-Kingman, AZ | 30,210 | Minneapolis-St. Paul-Bloomington, MNWI | 443,642 |
| Lakeland-Winter Haven, FL | 80,604 | Missoula, MT | 16,751 |
| Lancaster, PA | 66,046 | Mobile, AL | 64,920 |
| Lansing-East Lansing, MI | 71,576 | Modesto, CA | 78,078 |
| Laredo, TX | 29,499 | Monroe, LA | 30,064 |
| Las Cruces, NM | 30,165 | Monroe, MI | 12,910 |
| Las Vegas-Henderson-Paradise, NV | 406,073 | Montgomery, AL | 58,101 |
| Lawrence, KS | 21,980 | Morgantown, WV | 20,601 |
| Lawton, OK | 22,989 | Morristown, TN | 17,792 |
| Lebanon, PA | 19,227 | Mount Vernon-Anacortes, WA | 16,025 |
| Lewiston, ID-WA | 8,007 | Muncie, IN | 17,928 |
| Lewiston-Auburn, ME | 17,165 | Muskegon, MI | 17,167 |
| Lexington-Fayette, KY | 90,912 | Myrtle Beach-Conway-North Myrtle Beach, | 70,379 |
| Lima, OH | 14,557 | Napa, CA | 19,755 |
| Lincoln, NE | 55,633 | Naples-Immokalee-Marco Island, FL | 42,548 |
| Little Rock-North Little RockConway, AR | 119,929 | Nashville-Davidson-MurfreesboroFranklin, TN | 251,403 |


| Metropolitan Area | Renter Households | Metropolitan Area | Renter Households |
| :---: | :---: | :---: | :---: |
| New Haven-Milford, CT | 138,399 | Rapid City, SD | 17,552 |
| New Orleans-Metairie, LA | 208,682 | Reading, PA | 47,617 |
| New York-Newark-Jersey City, NY-NJ-PA | 3,690,402 | Redding, CA | 27,546 |
| Niles-Benton Harbor, MI | 20,712 | Reno, NV | 80,812 |
| North Port-Sarasota-Bradenton, FL | 105,493 | Richmond, VA | 182,410 |
| Norwich-New London, CT | 40,430 | Riverside-San Bernardino-Ontario, CA | 558,333 |
| Ocala, FL | 34,572 | Roanoke, VA | 49,028 |
| Ocean City, NJ | 15,088 | Rochester, MN | 22,961 |
| Odessa, TX | 18,390 | Rochester, NY | 152,688 |
| Ogden-Clearfield, UT | 55,828 | Rockford, IL | 45,462 |
| Oklahoma City, OK | 203,190 | Rocky Mount, NC | 25,172 |
| Olympia-Tumwater, WA | 40,299 | Rome, GA | 15,155 |
| Omaha-Council Bluffs, NE-IA | 132,055 | Sacramento-Roseville-Arden-Arcade, CA | 350,954 |
| Orlando-Kissimmee-Sanford, FL | 367,265 | Saginaw, MI | 25,158 |
| Oshkosh-Neenah, WI | 27,771 | Salem, OR | 58,738 |
| Owensboro, KY | 15,154 | Salinas, CA | 67,743 |
| Oxnard-Thousand Oaks-Ventura, CA | 102,104 | Salisbury, MD-DE | 49,203 |
| Palm Bay-Melbourne-Titusville, FL | 78,441 | Salt Lake City, UT | 134,326 |
| Panama City, FL | 49,027 | San Angelo, TX | 18,556 |
| Parkersburg-Vienna, WV | 12,760 | San Antonio-New Braunfels, TX | 338,712 |
| Pensacola-Ferry Pass-Brent, FL | 72,495 | San Diego-Carlsbad, CA | 557,362 |
| Peoria, IL | 48,343 | San Francisco-Oakland-Hayward, CA | 808,515 |
| Philadelphia-Camden-Wilmington, PA-NJ-DE | 784,897 | San Jose-Sunnyvale-Santa Clara, CA | 295,824 |
| Phoenix-Mesa-Scottsdale, AZ | 696,023 | San Luis Obispo-Paso Robles-Arroyo Grand, CA | 43,481 |
| Pine Bluff, AR | 14,223 | Sandusky, OH | 10,188 |
| Pittsburgh, PA | 325,598 | Santa Cruz-Watsonville, CA | 42,940 |
| Pittsfield, MA | 19,777 | Santa Fe, NM | 20,433 |
| Pocatello, ID | 9,864 | Santa Maria-Santa Barbara, CA | 72,630 |
| Port St. Lucie, FL | 53,818 | Santa Rosa, CA | 78,711 |
| Portland-South Portland, ME | 64,449 | Savannah, GA | 74,216 |
| Portland-Vancouver-Hillsboro, ORWA | 364,686 | Scranton-Wilkes-Barre-Hazleton, PA | 77,259 |
| Prescott, AZ | 29,612 | Seattle-Tacoma-Bellevue, WA | 598,222 |
| Providence-Warwick, RI-MA | 268,582 | Sebastian-Vero Beach, FL | 17,143 |
| Provo-Orem, UT | 53,955 | Sheboygan, WI | 15,636 |
| Pueblo, CO | 24,072 | Sherman-Denison, TX | 15,485 |
| Punta Gorda, FL | 20,360 | Shreveport-Bossier City, LA | 75,965 |
| Racine, WI | 24,134 | Sioux City, IA-NE-SD | 22,481 |
| Raleigh, NC | 180,579 | Sioux Falls, SD | 36,944 |


|  | $\begin{array}{c}\text { Renter } \\ \text { Households }\end{array}$ |  | Metropolitan Area |
| :--- | :---: | :--- | :---: |$]$| Renter |
| :---: |
| Metropolitan Area |


[^0]:    ${ }^{1}$ Bratt (2002).
    2 Joint Center for Housing Studies (2015).
    ${ }^{3}$ Seattle Public Schools (2018).
    ${ }^{4}$ City of Vancouver, "Housing Options for Families."
    ${ }^{5}$ San Francisco Planning Department (2017); City of Boston (2014).

[^1]:    ${ }^{14}$ Low-income households make up to 80 percent of area median income while extremely low-income households make up to 30 percent of area median income.
    ${ }^{15}$ National Low Income Housing Coalition (2017).
    16 Getsinger et al. (2017).
    17 US Department of Housing and Urban Development (2017).
    18 Under HUD's definition, severely inadequate housing has at least one of four problems: 1) Unit does not have hot water, a flush toilet, or a bathtub or shower; 2) Unit has been uncomfortably cold in the past winter due to broken heating equipment for a period of 24 hours or for three episodes lasting at least six hours each; 3) Unit lacks electricity or has exposed wiring, a room without a working wall outlet, and had

[^2]:    at least three blown fuses or tripped circuits in the last 90 days; 4) Unit leaks, has holes in the floor, has open cracks in the walls or ceiling, has more than one square foot of peeling paint or plaster, or has had rats in the past 90 days. See US Department of Housing and Urban Development (2017).
    ${ }^{19}$ Israel \& Warner (2008).
    20 lbid.

[^3]:    ${ }^{21}$ Joint Center for Housing Studies (2018); Newman \& Holupka (2014).
    ${ }^{22}$ Joint Center for Housing Studies (2015); Center on Budget and Policy Priorities (2009).
    ${ }^{23}$ Fowler et al. (2015); Fantuzzo et al. (2012).
    ${ }^{24}$ Furman Center (2018).

[^4]:    ${ }^{25}$ US Census Bureau, "Characteristics of New Housing."
    ${ }^{26}$ Pfeiffer \& Lucio (2015); Immergluck (2018).
    27 JCHS tabulations of American Community Survey summary tables.
    28 JCHS tabulations of Current Population Survey estimates.
    29 JCHS tabulations of American Community Survey 1-year estimates.
    ${ }^{30}$ Bretz (2017).
    ${ }^{31}$ City of Boston (2017).
    32 Ibid.

[^5]:    ${ }^{33}$ US Department of Justice, "The Fair Housing Act."
    ${ }^{34}$ Desmond et al. (2013).
    ${ }^{35}$ US Department of Housing and Urban Development (2016).
    ${ }^{36}$ Israel \& Warner (2008).
    ${ }^{37}$ Donati \& Prandini (2007).

[^6]:    ${ }^{38}$ Reese (2012).

[^7]:    ${ }^{39}$ Herbert, Hermann, \& McCue (2018); Stone (2006a).
    ${ }^{40}$ Stone (2006b); Hamidi, Ewing, \& Renne (2016).
    ${ }^{41}$ Herbert, Hermann, \& McCue (2018).

[^8]:    ${ }^{42}$ For purposes of determining eligibility for their programs, HUD does adjust AMI by the number of persons in the household. Larger households would therefore have a higher median income cutoff than smaller households. In this study, we use HUD's reported median family income for the metro without adjusting for family size.
    ${ }^{43}$ US Department of Housing and Urban Development (1998). The Keating memo was written in 1991 by then HUD General Counsel Frank Keating and stated that a standard of two persons per bedroom would generally be considered of reasonable size and in accord with fair housing law.

[^9]:    44 US Department of Housing and Urban Development (2017).
    ${ }^{45}$ Weicher, Eggers, \& Moumen (2017).
    ${ }^{46}$ According to HUD's Worst Case Needs estimates, about 7 percent of rental units affordable up to 80 percent AMI were moderately or severely inadequate in 2015. See US Department of Housing and Urban Development (2017).
    ${ }^{47}$ National Low Income Housing Coalition (2017).

[^10]:    ${ }^{48}$ Housing a Changing City (2014).
    ${ }^{49}$ US Department of Housing and Urban Development, "Income Limits."

[^11]:    ${ }^{50}$ Necessary expenditures in the Family Budget Calculator include food, child care, transportation, health care, taxes, clothing, personal care, household supplies, reading materials, and school supplies.

[^12]:    Note: Share refers to the percent of family households who could potentially access affordable, rightsized housing given perfect sorting by household size and income.

[^13]:    Source: Author tabulations of US Census Bureau, 2015 American Community Survey 1-Year Estimates.

[^14]:    Note: Share refers to the percent of family households who could potentially access affordable, right-sized housing given perfect sorting by household size and income.

[^15]:    Note: Share refers to the percent of family households who could potentially access affordable, right-sized housing given perfect sorting by household size and income.

[^16]:    ${ }^{51}$ US Department of Housing and Urban Development, "Picture of Subsidized Housing."

[^17]:    ${ }^{52}$ Joint Center for Housing Studies (2018).
    ${ }^{53}$ City of Boston (2014).

[^18]:    ${ }^{54}$ Mallach (2013).

