American Housing Survey

Rental Market Dynamics

2015–2017

U.S. Department of Housing and Urban Development | Office of Policy Development and Research

American Housing Survey

Rental Market Dynamics
2015–2017

Prepared By:

Frederick J. Eggers, Econometrica Inc.
Fouad Moumen, SP Group LLC

June 2020

Foreword

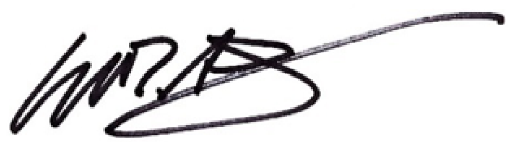
The U.S. Department of Housing and Urban Development is pleased to present the 2015–2017 Rental Dynamics report. This report, which documents the changes in the Nation's rental housing stock, is the seventh in a series that began with the 2001–2003 report. It is based on the American Housing Survey (AHS), the most comprehensive data collection on housing conditions in the United States. The AHS uses a longitudinal sample design, which means that housing units remain in the sample and are revisited every 2 years. Thus, the survey is uniquely able to track additions, losses, and changes to housing units. This longitudinal design enables HUD to track the processes of filtering and gentrification, through which rental housing units become more affordable or less affordable, respectively.

The total number of rental units experienced almost no change from the 48.7 million units of 2015, increasing by only 2,000 units. However, this net change masked much greater shifts—of more than 7 million units—from a variety of net increases and decreases; these changes were due to various mechanisms which include physical losses, new construction, and conversion of tenure between renter and owner-occupied status. Rental Dynamics also analyzes the stock by income affordability using eight affordability categories, from extremely low rent to extremely high rent, along with a "non-market" category (that is, assisted or no rent). These rental affordability categories are based on the percentage of area median income (AMI) that a household would have to earn to pay the monthly housing cost (rent plus utilities) while still spending no more than 30 percent of their income for housing. For example, the "Very Low Rent" category includes housing units that could be rented by households earning no more than 50 percent of AMI. The report thus leverages the work of HUD's field economists in tracking the median incomes in local areas to measure housing affordability where people live.

The tables in the Rental Dynamics report take a bi-directional approach to describing the changes in the rental housing stock. The "forward-looking" tables begin with the 2015 stock and examines what happened to it by 2017. Rental units may have left the stock through physical loss or conversion to owner-occupied or seasonal use. They may have become more expensive (called "gentrified" in this report), moving into categories affordable only to higher-income households, or alternatively become more affordable (called "filtered"). The report track overall changes for all of these types of changes. The "backward-looking" tables examine the sources of the rental stock as it existed in 2017. Some units may not have existed at all in 2015, being additions from new construction or other causes. Other units may have been owner-occupied. Units that were rental may have filtered in from a less affordable category or gentrified from a more affordable category.

Although the total rental stock was essentially unchanged over the period, there were notable changes in affordability. In 2015, 30.9 million units were in the low-rent or more affordable categories. By 2017, there were 28.8 million such units, a decrease of 6.9 percent (2.1 million units). The primary reason for this change was existing units becoming less affordable, although there were also some losses to the existing stock and conversion to owner-occupied. Taking a longer perspective, between 2001 and 2017, the number of low-rent or more affordable units decreased by 11.2 percent.

This report contributes to the core function of HUD's Office of Policy Development & Research to "collect and analyze national housing market data." It provides a unique view of the trajectories that rental housing units follow across time.



Seth D. Appleton
Assistant Secretary for Policy Development and Research
U.S. Department of Housing and Urban Development

Table of Contents

List of Exhibits

Executive Summary

Data from the American Housing Survey (AHS) show almost no increase in the renter-occupied housing stock from 2015 (43,991,000 units) to 2017 (43,993,000 units). The U.S. Department of Housing and Urban Development (HUD) has modified the AHS to create a dataset that combines renter-occupied units with vacant units for rent and further classifies all rental units by affordability. When vacant units are included, the rental stock still grew by only 61,000 units, from 48,682,000 to 48,743,000 units.

This report uses the modified AHS data to show that the rental stock underwent substantial changes between 2015 and 2017 despite its low growth. More than 7 million 2015 rental units were no longer classified as rentals in 2017: Approximately 4,414,000 units became part of the owner stock, 1,941,000 became seasonal units or second homes, and 838,000 were lost to the housing stock. At the same time, more than 7 million 2017 units were not classified as rentals in 2015: Approximately 3,669,000 were owner units in 2015, 1,917,000 were seasonal units or second homes, and 1,503,000 units were added to the housing stock. These flows into and out of the stock were so balanced that the 61,000-unit increase was obtained only after applying a 165,000-unit adjustment to the weights.

There were also major flows within the rental stock. The modified AHS data classifies rental units into eight affordability categories. Between 2015 and 2017, more than 19 million rental units moved from one affordability class to another. A unit is said to filter down when it becomes more affordable and to gentrify up when it becomes less affordable. This report tracks both filtration and gentrification, but understanding these flows can be difficult. An individual category can experience both gentrification *in* from more-affordable categories and gentrification *out* to less-affordable categories. The report measures net gentrification in and net filtration in for each category.

Considering both movement into and out of the rental stock and movement within the rental stock, only 45 percent of rental stock units were in the same affordability category in both years. The report shows how these flows affected the size of each category. Although the rental stock grew remarkably little, the rental stock became clearly less affordable during this period.

Non-Market Rental Units: This category, which comprises HUD-subsidized units and no-cash-rent units, decreased from 6,479,000 to 6,305,000 units. Given the specialized nature of the units in this group, there was a surprising amount of movement into and out of the category, which lost 1.3 million units to gentrification and received 1.3 million through filtration. These flows led to a net loss of 15,000 units. The biggest loss was to the owner stock, at 107,000 units; another 32,000 units were lost to the seasonal stock.

Extremely Low-Rent Units: This group includes all units with gross rents at or below the maximum rent that a household earning 30 percent of the local family median income could afford while paying no more than 30 percent of its income. It is the only lower-rent group that grew between 2015 and 2017, increasing from 2,889,000 to 3,395,000 units. Most of the increase came from flows within the rental stock, which added 575,000 net units. Although this category also gained from flows into and out of the rental stock, these gains were small; the largest was 37,000 units from the net owner to renter flow.

Very-Low-Rent Units: This group includes all units with gross rents higher than the extremely low-rent cap but at or below the highest rent that a household earning 50 percent of the local family median income could afford while paying no more than 30 percent of its income. During the 2015–2017 period, this category decreased from 9,344,000 to 7,724,000 units. Its loss (1,620,000 units) overwhelmed the gain among extremely low-rent units (644,000 units). Net flows within the rental stock accounted for 73 percent of the loss; 1,798,000 units gentrified, substantially offsetting the 616,000-unit gain from filtration. Losses were large among flows into and out of the rental stock: There was a 254,000-unit net loss to the owner stock and a 72,000-unit net loss to the seasonal stock, and physical losses exceeded new additions by 132,000.

Low-Rent Units: This group includes all units with gross rents higher than the very-low-rent cap but at or below the highest rent that a household earning 60 percent of the local family median income could afford while paying no more than 30 percent of its income. This group experienced a modest decline from 7,819,000 to 7,384,000 units. Most (81 percent) of the decline came from flows to other categories: 275,000 net units gentrified up, and 77,000 more units filtered down to more affordable categories than filtered in from less affordable categories. The net flow to the owner stock was 54,000 units, and the net flow to the seasonal stock was 76,000 units. The low-rent category saw 22,000 more new additions than physical losses.

Moderate-Rent Units: This group includes all units with gross rents higher than the low-rent cap but at or below the highest rent that a household earning 80 percent of the local family median income could afford while paying no more than 30 percent of its income. The moderate-rent group is typically a large component of the rental stock, and it grew from 11,222,000 to 11,579,000 units. Most (92 percent) of the increase came from a net of 328,000 units flowing into the category. Approximately 1,300,000 more units gentrified up into this category than gentrified out to less-affordable categories, whereas 972,000 more units filtered down to more-affordable categories than filtered in from less-affordable categories. The three external flows were large but mostly offsetting.

High-Rent Units: This group includes all units with gross rents higher than the moderate-rent cap but at or below the highest rent that a household earning the local family median income could afford while paying no more than 30 percent of its income. This (relatively small) component of the rental stock grew from 4,954,000 to 5,384,000 units, with most of the change accounted for by net flows among categories (316,000 units) and net additions (166,000 units). A net of 1,265,000 units gentrified into this category, while 949,000 more units filtered down to more-affordable categories than filtered in from less-affordable categories.

Very-High-Rent Units: This group includes all units with gross rents higher than the high-rent cap but at or below the highest rent that a household earning 120 percent of local family median income could afford while paying no more than 30 percent of its income. This (typically small) component of the rental stock increased from 2,467,000 to 2,601,000 units. Net additions (149,000 units) were larger than the overall increase (134,000 units). Net flows among categories accounted for a net loss of 36,000 very-high-rent units.

Extremely High-Rent Units: This group, which includes all units with gross rents higher than the very-high-rent cap, increased from 3,508,000 to 4,233,000 units during the 2015–2017 period. Net flows within categories (444,000 units) and net additions (261,000 units) explain most of the

725,000-unit increase. In the case of extremely high-rent units, gentrification and filtration are easy to understand. This group cannot benefit from filtration because there are no less-affordable units; likewise, no members of this group can gentrify further up. During this 2-year period, 1,414,000 units gentrified into this category, whereas 970,000 units filtered out of it. There was virtually no net inflow from the owner stock or from the seasonal stock.

Flows among categories were the most important factor causing categories to gain or lose units. The end result was a large gain for the extremely low-rent category; large losses for the very-low-rent and low-rent categories; and large gains for the moderate-rent, high-rent, and extremely high-rent categories.

During the 2001–2017 period, the rental stock grew by 30.4 percent, or 11.4 million units, but the number of affordable rental units actually declined. The number of rental units that were non-market, extremely low rent, or very low rent fell from 21.6 million in 2001 to 17.6 million in 2017—a decline of 4.0 million units. The 2015–2017 period accounts for 1.2 million of this 4.0-million-unit decline. The housing stock became considerably less affordable from 2015 to 2017.

Rental Market Dynamics: 2015–2017

Section 1: Introduction

The U.S. Department of Housing and Urban Development (HUD) and the U.S. Census Bureau collaborate to gather comprehensive data on the U.S. housing stock through the American Housing Survey (AHS). Data are collected on the same housing units every 2 years so that analysts can track what happens to housing units over time. Taking advantage of this unique dataset, HUD has funded a series of studies, called rental market dynamics analyses, to depict how affordable rental housing evolves between AHS surveys.[1] This report depicts changes to the rental housing market between 2015 and 2017, with particular emphasis on affordable rental housing.

[1]A companion series of studies called CINCH analyses explains how the overall housing stock evolves between AHS surveys. A complete listing of previous CINCH and rental dynamics analyses can be found at https://www.huduser.gov/portal/datasets/cinch.html.

Section 2: Changes in Rental Housing Between 2015 and 2017: An Overview

Between 2015 and 2017, the rental housing stock experienced almost no growth and became more expensive. Exhibit 2-1 was derived from the U.S. Census Bureau's Table Creator tool, which allows users to create tables from AHS survey data.[2] The total stock of renter-occupied units increased by a meager 2,000 units over the 2-year period; equally notable is how sharply monthly housing costs increased for rentals. Despite almost no growth in total renter-occupied units, the most expensive cohort (rents of $1,250 a month or more) increased by more than 2 million renters. Median monthly rents rose from $923 to $991.

Exhibit 2-1 uses the AHS measure of total housing costs, which for rentals is the sum of rent; any utility costs paid separately; and related housing costs, such as rental insurance. Economists use the term "gross rent" for this same sum.[3]

Exhibit 2-1. Renter-Occupied Housing Stock by Monthly Housing Cost, 2015–2017

Rental Category	2015	2017
Rental Housing Stock	**43,991,000**	**43,993,000**
No Cash Rent	2,139,000	1,961,000
Less than $500	6,227,000	5,710,000
$500 to $799	10,065,000	8,879,000
$800 to $1,249	13,681,000	13,516,000
$1500 or More	11,879,000	13,927,000
Median Rent (excludes No Cash Rent)	$923	$991

Exhibit 2-1 is this report's last use of publicly available AHS data. Like previous rental dynamics studies, this report uses a special dataset called the Housing Affordability Data Set (HADS), created by HUD using AHS and other data. HADS has two important advantages for rental dynamics analysis: First, it expands the definition of the housing stock to include vacant units for rent and imputes rents to these units based on other AHS data. The concept of affordable rental housing embraces both what households are currently paying for rental housing and what rents apply to units that are vacant and available to households. Second, HADS attaches an affordability rating to each unit based on the relationship between the unit's gross rent and the median income of rental households. Putting local rents into the context of local income is key to the concept of affordability, because reductions in rent or increases in income can make units more affordable.

To assess affordability, this paper uses eight categories, adapted from HADS:[4]

- Non-Market: Either no cash rent or a subsidized rent.

[2]The AHS Table Creator is available at https://www.census.gov/programs-surveys/ahs/data/interactive/ahstablecreator.html.
[3]Gross rent allows one to compare on equal terms a rental that includes all utilities in the rent with one where the tenant pays for utilities separately.
[4]See the HADS documentation at https://www.huduser.gov/portal/datasets/hads/HADS_doc.pdf, particularly pages 7 to 11.

- Extremely Low Rent: Affordable to renters with incomes equal to 30 percent of local area median income.
- Very Low Rent: Affordable to renters with incomes equal to 50 percent of local area median income.
- Low Rent: Affordable to renters with incomes equal to 60 percent of local area median income.
- Moderate Rent: Affordable to renters with incomes equal to 80 percent of local area median income.
- High Rent: Affordable to renters with incomes equal to 100 percent of local area median income.
- Very High Rent: Affordable to renters with incomes equal to 120 percent of local area median income.
- Extremely High Rent: All other rental units with cash rents.

For each category, "affordable" is defined as a gross rent-to-income ratio of 30 percent or less for incomes that define the boundary for that category.[5] The categories are defined relative to area median income, with an adjustment for the number of bedrooms in the unit. The boundaries of the categories will change as area median income changes; for example, if area median income increases between 2015 and 2017, then the boundaries of each category will also increase over that period.[6]

Exhibit 2-2 presents the equivalent of exhibit 2-1 using HADS data and categories. The two exhibits tell similar stories, with both the AHS data and HADS reporting that the rental stock increased only marginally between 2015 and 2017. Looking only at renter-occupied units (AHS data), the increase was 2,000 units; broadening the definition of the rental stock to include vacant units for rent (HADS) reveals an increase of 61,000.

HADS data indicate that the number of extremely low-rent units increased by 644,000 between 2015 and 2017, but the non-market, very-low-rent, and low-rent categories all lost units during this period. The decline in very-low-rent rentals was particularly large, at 1,620,000 units. It took gains in all the categories from moderate rent to extremely high rent to offset the rental stock losses from the more affordable categories.

---

[5]If local median income were $48,000 per year, then—on a monthly basis—30 percent of median income would be $1,200 and 50 percent would be $2,000. The boundary of the extremely low-rent and very-low-rent categories would thus be $360 (0.30 * $1,200) and $600 (0.30 * $2,000), respectively. A unit costing $300 per month with tenant-paid utilities of $90 per month would have a gross rent of $390; this unit would be too expensive for the extremely low-rent category but would qualify for the very low-rent category.

[6]This means that rental costs and affordability do not always move in the same direction. Continuing the example in the preceding footnote, if the costs of renting a unit are $390 in 2015 and $400 in 2017, and the boundary of the extremely low-rent category changes from $360 to $410 between 2015 and 2017, then a unit that was classified as very-low-rent in 2015 would be classified as extremely low-rent in 2017 despite higher rental costs.

Exhibit 2-2. Rental Housing Stock (Occupied and Vacant) by Affordability, 2015–2017

	2015	2017	Change	Cumulative Change
All Rental Units	**48,682,000**	**48,743,000**	**61,000**	**N/A**
Non-Market Rentals	6,479,000	6,305,000	-174,000	-174,000
Extremely Low-Rent Rentals	2,889,000	3,533,000	644,000	470,000
Very Low-Rent Rentals	9,344,000	7,724,000	-1,620,000	-1,150,000
Low-Rent Rentals	7,819,000	7,384,000	-435,000	-1,585,000
Moderate-Rent Rentals	11,222,000	11,579,000	357,000	-1,228,000
High-Rent Rentals	4,954,000	5,384,000	430,000	-798,000
Very High-Rent Rentals	2,467,000	2,601,000	134,000	-664,000
Extremely High-Rent Rentals	3,508,000	4,233,000	725,000	61,000

In Section 4, this report takes an in-depth look at the changes recorded in exhibit 2-2; Section 3 first explains the techniques used by rental dynamics analyses to track units into and out of the rental stock. These techniques apply to the rental stock overall and each affordability category.

A Note on the Use of HADS

Before 2015, the HADS files were maintained by HUD and the AHS files by the U.S. Census Bureau; researchers had access to both and could merge the two files. Beginning with the 2015 AHS survey, HADS was added to the AHS but fell subject to tighter U.S. Census Bureau restrictions designed to preserve the confidentiality of AHS respondents. For now, the HADS data can be accessed only on the internal use file maintained at the U.S. Census Bureau. To produce this report, the authors created computer code that HUD could run at the U.S. Census Bureau.[7]

[7]The authors appreciate the assistance of David A. Vandenbroucke of HUD's Office of Policy Development and Research.

Section 3: The Fundamental Structure of Rental Dynamics Analysis

A unique strength of the AHS is its longitudinal sample. The current AHS sample was drawn in 2015; the same sample was re-interviewed in 2017 and will be re-interviewed at 2-year intervals in the future. Being able to observe the same sample units at different points in time enables one to observe changes directly. Researchers are able to identify all the sample cases that were rentals in 2015 and see what their status was in 2017. There are three broad alternative outcomes:

- Some sample cases that were rentals in 2015 may remain rentals in 2017 and still be in the same affordability category.
- Some sample cases that were rentals in 2015 may remain rentals in 2017 but be in a different affordability category.
- Some sample cases that were rentals in 2015 may not be rentals in 2017. This outcome has several variants:
    - Some 2015 sample cases may be part of the owner stock in 2017.
    - Some 2015 sample cases may have become part of the seasonal or second home stock.[8]
    - Some 2015 sample cases may no longer be in the housing stock; they are lost to the housing stock, either temporarily or permanently.

Exhibit 3-1 portrays all these alternatives. Instead of counting individual sample cases, it attaches weights to those cases and can track all 48,682,000 rental units from 2015 to 2017. Exhibit 3-1 is called the forward-looking analysis because it documents what happened to 2015 rentals by 2017. Exhibit 3-2 provides row percentages for the numbers in exhibit 3-1.

For example, there were 9,344,000 very-low-rent units in 2015 (exhibit 3-1; unit designation count in 2017 can be identified by following that row across exhibit 3-1). Exhibit 3-2 shows that 44.4 percent of these 9,344,000 units were still classified as very-low-rent in 2017. Approximately 12.7 percent of very-low-rent units had become more affordable in 2017, whereas 27.8 percent had become less affordable and 15.2 percent were no longer classified as rentals. Within the group not classified as rentals in 2017, 7.9 percent of the original 9,344,000 units were part of the owner stock, 4.6 percent were seasonal or Usual Residence Elsewhere (URE) units, and 2.7 percent had left the stock. Exhibit 3-1 and exhibit 3-2 allow one to track the evolution of the 2015 rental stock by affordability categories and the total rental housing stock.

There is also a backward-looking rental dynamics analysis, which tells how the 2017 rental housing stock evolved from the 2015 housing stock. Using the AHS, researchers are able to identify all sample cases classified as rentals in 2017, then identify their status in 2015. There are three broad alternative outcomes:

- Some sample cases that were rentals in 2017 were also rentals in 2015 and were in the same affordability category.

[8]In AHS parlance, second homes are part of a class known as Usual Residence Elsewhere (URE).

- Some sample cases that were rentals in 2017 were also rentals in 2015 but were in a different affordability category.
- Some sample cases that were rentals in 2017 may not have been rentals in 2015. This outcome has several variants:
    - Some 2017 sample cases may have been in the owner stock in 2015.
    - Some 2017 sample cases may have been part of the seasonal or second home stock.
    - Some 2017 sample cases may be new to the AHS sample since 2015. For rental dynamics purposes, this group is split into two subgroups.
        - Newly constructed units.
        - Other additions to the stock.[9]

Exhibit 3-3 portrays all these alternatives. Instead of counting individual sample cases, it attaches weights to those cases and can track all 48,743,000 rental units from 2017 back to 2015. Exhibit 3-4 provides row percentages for exhibit 3-3.

For example, there were 7,724,000 very-low-rent units in 2017 (exhibit 3-3; unit designation count in 2015 can be identified by following that row across exhibit 3-3). Approximately 53.9 percent of these 7,724,000 units had very low rent in 2015, whereas 10.4 percent were more affordable, 23.3 percent were less affordable, and 12.4 percent were not designated as rentals. Within the group not designated as rentals in 2015, 6.4 percent of the total 7,724,000 units were part of the owner stock, 4.6 percent were seasonal or URE units, 0.8 percent were newly constructed, and 0.7 percent were other additions since 2015. Exhibit 3-3 and exhibit 3-4 allow one to track how the 2017 rental stock evolved by affordability categories and the total rental housing stock.

Exhibit 3-1 and exhibit 3-3 use weights developed for the accompanying Components of Inventory Change (CINCH) study, as rental dynamics analysis is a type of CINCH study. CINCH uses different weights for forward-looking and backward-looking analyses.[10] For example, the third row and fourth column of both exhibit 3-1 and exhibit 3-3 provide weighted counts of the same sample cases—namely, those that were very-low-rent units in both 2015 and 2017. Because different weights are used, the cell where this row and column intersect shows 4,147,000 units in 2015 and 4,167,000 units in 2017. This is true of all cells where units were rentals in both 2015 and 2017. Section 4 uses the information in exhibit 3-1 and exhibit 3-3 to explain how the rental stock evolved from 2015 to 2017; the role played by changing weights will be further examined in that section.

[9]In both cases, the sample cases were added to the AHS from new addresses in the U.S. Census Bureau's Master Address file. If the year built was 2010 or later (the latest category identified in the AHS), the new sample case is considered new construction; if built before 2010, the sample case is classified as an "other addition." New construction also includes some sample cases considered under construction in 2015 but not yet completed.
[10]CINCH weights must both measure losses accurately and sum to the 2015 stock and measure additions accurately and sum to the 2017 stock; one set of weights cannot do both.

Exhibit 3-1. Forward-Looking Rental Dynamics Analysis by Count, 2015–2017 (in Thousands)

2015 Rental Stock	Total	2017 Non-Market Rentals	2017 Extremely Low-Rent Rentals	2017 Very-Low-Rent Rentals	2017 Low-Rent Rentals	2017 Moderate-Rent Rentals	2017 High-Rent Rentals	2017 Very-High-Rent Rentals	2017 Extremely High-Rent Rentals	2017 Owner Stock	2017 Seasonal or URE	Lost to Stock in 2017
Non-Market Rentals	6,479	3,913	280	273	266	302	82	31	90	889	235	118
Extremely Low-Rent Rentals	2,889	235	662	515	265	323	157	59	141	256	189	87
Very-Low-Rent Rentals	9,344	371	810	4,147	1,511	725	134	65	165	737	430	249
Low-Rent Rentals	7,819	303	293	1,004	2,950	1,912	233	62	142	471	317	132
Moderate-Rent Rentals	11,222	259	396	436	1,158	5,619	1,411	278	303	912	352	98
High-Rent Rentals	4,954	106	169	151	161	779	2,107	583	154	513	194	37
Very-High-Rent Rentals	2,467	36	110	75	59	282	315	786	446	271	64	23
Extremely High-Rent Rentals	3,508	53	166	130	130	185	96	210	1,919	365	160	94
All 2015 Rental Stock	48,682	5,276	2,886	6,731	6,500	10,127	4,535	2,074	3,360	4,414	1,941	838

Exhibit 3-2. Forward-Looking Rental Dynamics Analysis by Percentage, 2015–2017

2015 Rental Stock	Total	2017 Non-Market Rentals	2017 Extremely Low-Rent Rentals	2017 Very-Low-Rent Rentals	2017 Low-Rent Rentals	2017 Moderate-Rent Rentals	2017 High-Rent Rentals	2017 Very-High-Rent Rentals	2017 Extremely High-Rent Rentals	2017 Owner Stock	2017 Seasonal or URE	Lost to Stock in 2017
Non-Market Rentals	6,479	60.4%	4.3%	4.2%	4.1%	4.7%	1.3%	0.5%	1.4%	13.7%	3.6%	1.8%
Extremely Low-Rent Rentals	2,889	8.1%	22.9%	17.8%	9.2%	11.2%	5.4%	2.0%	4.9%	8.9%	6.5%	3.0%
Very-Low-Rent Rentals	9,344	4.0%	8.7%	44.4%	16.2%	7.8%	1.4%	0.7%	1.8%	7.9%	4.6%	2.7%
Low-Rent Rentals	7,819	3.9%	3.7%	12.8%	37.7%	24.5%	3.0%	0.8%	1.8%	6.0%	4.1%	1.7%
Moderate-Rent Rentals	11,222	2.3%	3.5%	3.9%	10.3%	50.1%	12.6%	2.5%	2.7%	8.1%	3.1%	0.9%
High-Rent Rentals	4,954	2.1%	3.4%	3.0%	3.2%	15.7%	42.5%	11.8%	3.1%	10.4%	3.9%	0.7%
Very-High-Rent Rentals	2,467	1.5%	4.5%	3.0%	2.4%	11.4%	12.8%	31.9%	18.1%	11.0%	2.6%	0.9%
Extremely High-Rent Rentals	3,508	1.5%	4.7%	3.7%	3.7%	5.3%	2.7%	6.0%	54.7%	10.4%	4.6%	2.7%
All 2015 Rental Stock	48,682	10.8%	5.9%	13.8%	13.4%	20.8%	9.3%	4.3%	6.9%	9.1%	4.0%	1.7%

Exhibit 3-3. Backward-Looking Rental Dynamics Analysis by Count, 2015–2017 (in Thousands)

2017 Rental Stock	Total	2015 Non-Market Rentals	2015 Extremely Low-Rent Rentals	2015 Very-Low-Rent Rentals	2015 Low-Rent Rentals	2015 Moderate-Rent Rentals	2015 High-Rent Rentals	2015 Very-High-Rent Rentals	2015 Extremely High-Rent Rentals	2015 Owner Stock	2015 Seasonal or URE	New Construction by 2017	Other Additions by 2017
Non-Market Rentals	6,305	3,897	230	355	284	247	104	36	53	785	203	26	85
Extremely Low-Rent Rentals	3,533	285	670	821	299	412	172	112	169	293	192	24	84
Very-Low-Rent Rentals	7,724	288	514	4,167	1,002	437	152	72	134	483	358	60	57
Low-Rent Rentals	7,384	283	259	1,532	2,975	1,173	161	59	130	417	241	59	95
Moderate-Rent Rentals	11,579	311	322	731	1,928	5,639	796	294	187	670	418	136	147
High-Rent Rentals	5,384	82	156	126	233	1,405	2,113	318	99	431	218	159	44
Very-High-Rent Rentals	2,601	33	57	62	58	272	593	799	212	222	121	137	35
Extremely High-Rent Rentals	4,233	90	139	161	133	302	153	436	1,930	368	166	235	120
All 2017 Rental Stock	48,743	5,269	2,347	7,955	6,912	9,887	4,244	2,126	2,914	3,669	1,917	836	667

Exhibit 3-4. Backward-Looking Rental Dynamics Analysis by Percentage, 2015–2017

2017 Rental Stock	Total	2015 Non-Market Rentals	2015 Extremely Low-Rent Rentals	2015 Very-Low-Rent Rentals	2015 Low-Rent Rentals	2015 Moderate-Rent Rentals	2015 High-Rent Rentals	2015 Very-High-Rent Rentals	2015 Extremely High-Rent Rentals	2015 Owner Stock	2015 Seasonal or URE	New Construction by 2017	Other Additions by 2017
Non-Market Rentals	6,305	61.8%	3.6%	5.6%	4.5%	3.9%	1.6%	0.6%	0.8%	12.5%	3.2%	0.4%	1.3%
Extremely Low-Rent Rentals	3,533	8.1%	19.0%	23.2%	8.5%	11.7%	4.9%	3.2%	4.8%	8.3%	5.4%	0.7%	2.4%
Very-Low-Rent Rentals	7,724	3.7%	6.7%	53.9%	13.0%	5.7%	2.0%	0.9%	1.7%	6.3%	4.6%	0.8%	0.7%
Low-Rent Rentals	7,384	3.8%	3.5%	20.7%	40.3%	15.9%	2.2%	0.8%	1.8%	5.6%	3.3%	0.8%	1.3%
Moderate-Rent Rentals	11,579	2.7%	2.8%	6.3%	16.7%	48.7%	6.9%	2.5%	1.6%	5.8%	3.6%	1.2%	1.3%
High-Rent Rentals	5,384	1.5%	2.9%	2.3%	4.3%	26.1%	39.2%	5.9%	1.8%	8.0%	4.0%	3.0%	0.8%
Very-High-Rent Rentals	2,601	1.3%	2.2%	2.4%	2.2%	10.5%	22.8%	30.7%	8.2%	8.5%	4.7%	5.3%	1.3%
Extremely High-Rent Rentals	4,233	2.1%	3.3%	3.8%	3.1%	7.1%	3.6%	10.3%	45.6%	8.7%	3.9%	5.6%	2.8%
All 2017 Rental Stock	48,743	10.8%	4.8%	16.3%	14.2%	20.3%	8.7%	4.4%	6.0%	7.5%	3.9%	1.7%	1.4%

Section 4: Changes in Rental Housing Between 2015 and 2017: Stock-Level Details

Exhibit 4-1 presents the most straightforward explanation for how the housing stock grew from 2015 to 2017.[11] It shows that more than 7 million units that were classified as rentals in 2015 were not classified as rentals in 2017, while more than 7 million units that not classified as rentals in 2015 became rentals in 2017. The net loss to the owner stock was 745,000; flows to and from the seasonal stocks were roughly equal (-24,000 net), and additions exceeded losses by 665,000 units. During this 2-year period, more than 14 million units flowed out of and into the rental stock, but the total rental stock changed by only 61,000 units. The total change was less than 0.5 percent of the gross flows.

Exhibit 4-1. Flows Out of and Into Rental Stock, 2015–2017

Factor	Count
Rental Units in 2015	**48,682,000**
2015 rental units lost to owner stock in 2017	4,414,000
2015 rental units lost to seasonal and other related use in 2017	1,941,000
2015 rental units lost to the stock by 2017	838,000
2015 rental units that remained rentals in 2017	41,489,000
Forward-Looking Weights Above	
Weight adjustment	165,000
Backward-Looking Weights Below	
2017 rental units from 2015	41,654,000
2017 rental units that were owner stock in 2015	3,669,000
2017 rental units that were seasonal and other related use in 2015	1,917,000
2017 rental units added by new construction	836,000
2017 rental units added by other means	667,000
Rental Units in 2017	**48,743,000**
Gross flow out of and into rental stock (excludes weight adjustment)	14,282,000
Net inflow from owner stock*	-745,000
Net inflow from seasonal and related stock*	-24,000
Net addition over losses*	665,000

* Outward flows use forward-looking weights; inward flows use backward-looking weights.

Exhibit 4-2 looks at flows within the rental stock among affordability categories. The first section measures the flows using exhibit 3-1 and forward-looking CINCH weights, and the second section measures the flows using exhibit 3-3 and backward-looking CINCH weights. These two sections tell almost identical stories: There was considerable filtration within the rental stock (approximately 8.5 million units moved to more-affordable categories), but there was even more gentrification (approximately 10.1 million units moved to less-affordable categories). The end result in both panels was a 2.4-million-unit net movement to less-affordable categories. Gentrification was the story of the 2015–2017 period.

[11] Exhibit 4-1 uses the bottom rows of exhibits 3-1 and 3-3 to explain how the housing stock grew from 2015 to 2017.

Exhibit 4-2. Flows Within the Rental Stock, 2015–2017

Factor	Count
Forward-Looking Analysis: 2015 to 2017	
Units flowed to more affordable categories in 2017	8,478,000
Units were in the same category in 2017	22,103,000
Units flowed to less affordable categories in 2017	10,908,000
Net flows to more affordable categories in 2017	-2,430,000
Backward-Looking Analysis: 2017 From 2015	
Units flowed from less affordable categories in 2015	8,520,000
Units were in the same category in 2015	22,190,000
Units flowed from more affordable categories in 2015	10,944,000
Net flows from less affordable categories in 2015	-2,424,000
Forward-Looking Gross Flows	**19,386,000**
Weight adjustment*	78,000
Backward-Looking Gross Flows	**19,464,000**

* Sum of backward-looking off-diagonal rental cells minus sum of forward-looking off-diagonal rental cells.

Taken together, exhibit 4-1 and exhibit 4-2 depict a very fluid rental market. Of the 48.7 million rental units, 7.2 million were no longer classified as rentals in 2017, 19.4 to 19.5 million were still classified as rentals but belonged to a different affordability category, and 7.1 million units were added to the rental stock. Only 45 percent of the rental stock (22.1 to 22.2 million units) were in the same affordability category in both years.

Section 5: Changes in Rental Housing Between 2015 and 2017: Affordability-Level Details

The tools developed in exhibit 3-1 and exhibit 3-3 and used in exhibit 4-1 and exhibit 4-2 to demonstrate changes in the stock can also be applied to each affordability category to examine the mechanisms that caused a category to increase or decrease between 2015 and 2017, as shown in exhibit 5-1. This analysis condenses exhibit 4-1 by looking at net flows into and out of the rental stock, but it also expands upon exhibit 4-1 by including the flows between affordable categories contained in exhibit 4-2. These flows cancel out at the stock level, but not at the category level.

Rows two through four of exhibit 5-1 require some explanation. For all but the non-market category, filtration can occur in two directions: Units from less-affordable categories can filter down into another category, and units from that category can filter further down to more-affordable categories. Row three nets out those flows. For all but the extremely high-rent category, gentrifying can similarly occur in two directions: Units from more-affordable categories can gentrify up into another category, and units from that category can gentrify further up to less-affordable categories. Row four nets those flows. Row two nets rows three and four. Negative numbers indicate that units left the category.

Details by Affordability Category

Five of the eight affordability categories grew between 2015 and 2017. The only lower-rent category to grow was the extremely low-rent category; the non-market, very-low-rent, and low-rent categories declined. There was a decided shift toward less-affordable housing, as the 644,000-unit gain in the extremely low-rent category was outweighed by the 2,229,000-unit decrease in the other three lower-rent categories. The four higher-rent categories increased by a combined 1,546,000 units. All of these shifts took place during a time when the rental stock increased by only 61,000 units.

This section examines the inflows and outflows of each category to see how these shifts came about. Exhibit 5-1 provides information on four net flows: net flows across categories, net flows from owner to rental stock, net flows from seasonal and related stock, and additions minus losses from the housing stock. Exhibit 3-1 and exhibit 3-3 are used to break down the net flows, when appropriate.

Non-Market Rental Units: This category comprises HUD-subsidized units and no-cash-rent units. According to Table Creator, there were 4.5 million HUD-assisted units and 2.0 million no-cash-rent units in 2017, slightly more than the total reported in exhibit 5-1. This category experienced the smallest percentage change, declining by 2.7 percent. Given the specialized nature of the units in this group, there was a surprising amount of movement into and out of the category, which lost 1.3 million units to gentrification and gained 1.3 million through filtration. The biggest loss was to the owner stock, at 107,000 units; another 32,000 units were lost to the seasonal stock. Physical losses were slightly larger than additions, for a net loss of 7,000 units. New construction accounted for only 26,000 of the 111,000 additions.

Exhibit 5-1. Changes From 2015 to 2017 by Affordability Category (in Thousands)

Affordability Categories	Non-Market	Extremely Low Rent	Very Low Rent	Low Rent	Moderate Rent	High Rent	Very High Rent	Extremely High Rent	Stock
Rental Units in 2015	**6,479**	**2,889**	**9,344**	**7,819**	**11,222**	**4,954**	**2,467**	**3,508**	**48,682**
Flows among affordable categories	-15	575	-1,182	-352	328	316	-36	444	78*
From less to more (filtration)	1,309	1,750	616	-77	-972	-949	-665	-970	42*
From more to less (gentrification)	-1,324	-1,175	-1,798	-275	1,300	1,265	629	1,414	36
Net owner to rental	-104	37	-254	-54	-242	-82	-49	3	-745
Net seasonal to rental	-32	3	-72	-76	66	24	57	6	-24
Net additions minus losses	-7	21	-132	22	185	166	149	261	665
Change in weight	-16	8	20	25	20	6	13	11	87**
Rental Units in 2017	**6,305**	**3,533**	**7,724**	**7,384**	**11,579**	**5,384**	**2,601**	**4,233**	**48,743**
2015–2017 change	-174	644	-1,620	-435	357	430	134	725	61
Absolute value of inflows and outflows (excludes weight changes)	3,650	3,395	4,973	5,329	7,302	4,015	2,160	2,922	33,746
Flows as a percentage of 2017 units	57.9%	96.1%	64.4%	72.2%	63.1%	74.6%	83.0%	69.0%	69.2%

* At the sample level, these flows cancel out because what flows out of one cell must flow into another. When forward-looking weights are applied to half the flows and backward-looking weights to the other half, however, there is a small residual. This residual is the weight adjustment in exhibit 4-2.
** This is the weight adjustment for the diagonal elements not covered in the exhibit 4-2 adjustment.

Extremely Low-Rent Units: This category is the only lower-rent group that grew between 2015 to 2017, increasing from 2,889,000 to 3,395,000 units. Most of the increase came from flows within the rental stock, which added 575,000 net units. Although this category also gained from flows into and out of the rental stock, these other gains were small; the largest was 37,000 units from the net owner to renter flow.

Very-Low-Rent Units: Typically, this is a large component of the rental stock, comprising 15.2 percent of the rental stock in 2017. During the 2015–2017 period, this category lost 17.3 percent of its 2015 units. This loss (1,620,000 units) overwhelmed the gain from extremely low-rent units (644,000 units). Net gentrification accounted for 73 percent of the loss—1,798,000 units gentrified substantially, offsetting the 616,000 gain from filtration. Losses were large among the other three types of flows: There was a 254,000-unit net loss to the owner stock and a 72,000-unit net loss to the seasonal stock, and physical losses exceeded new additions by 132,000.

Low-Rent Units: This group experienced a modest 5.6-percent decline between 2015 and 2017. Most (81 percent) of the decline came from flows to other categories: 275,000 net units gentrified up, and 77,000 more units filtered down to more-affordable categories than filtered in from less-affordable categories. The net flow to the owner stock was 54,000 units, and the net flow to the seasonal stock was 76,000 units. The low-rent category saw 22,000 more new additions than physical losses.

Moderate-Rent Units: The moderate-rent group is typically a large component of the rental stock, comprising 24 percent of the 2015 rental stock; it added 357,000 units between 2015 and 2017, for growth of 3.2 percent. Most (92 percent) of the increase came from a net of 328,000 units flowing into the category. Approximately 1,300,000 more units gentrified up into this category than gentrified out to less-affordable categories, whereas 972,000 more units filtered down to more-affordable categories than filtered in from less-affordable categories. The three external flows were large but mostly offsetting: The net flow from moderate rentals to the owner stock was 242,000 units, counterbalanced by a net flow of 66,000 units from the seasonal stock into the moderate rental group and a 185,000-unit excess of new additions over physical losses. The physical losses were roughly balanced between temporary losses and permanent losses at 44,000 and 54,000 units, respectively; in the same way, new construction and other additions were roughly equal at 136,000 and 147,000 units, respectively.

High-Rent Units: This (relatively small) component of the rental stock grew by 8.7 percent between 2015 and 2017. Most of the change was accounted for by net flows among categories (316,000 units) and net additions (166,000 units). A net of 1,265,000 units gentrified into this category, whereas 949,000 more units filtered down to more-affordable categories than filtered in from less-affordable categories. During this period, 159,000 high-rent units were added by new construction and another 44,000 were added by other means; only 37,000 high-rent units from 2015 became physical losses.

Very-High-Rent Units: This (typically small) component of the rental stock increased by 5.4 percent between 2015 and 2017. Net additions (149,000 units) were larger than the overall increase (134,000 units). During this period, 137,000 very-high-rent units were added by new construction and another 35,000 were added by other means; only 23,000 high-rent units from 2015 became physical losses. Net flows among categories accounted for a net loss of 36,000 very-high-rent units. Net inflows from the seasonal sector added 57,000 units, whereas net outflows to the owner sector removed 49,000 units.

Extremely High-Rent Units: This group's increase over its 2015 level (20.9 percent) was the second highest among all the categories. Gentrification (444,000 units) and net additions (261,000 units) explain most of the 725,000-unit increase. In the case of extremely high-rent units, gentrification and filtration are easy to understand. This group cannot benefit from filtration because there are no less-affordable units; likewise, no members of this group can gentrify further up. From 2015 to 2017, 1,414,000 units gentrified into this category, whereas 970,000 units filtered out of it. New construction contributed 235,000 units, and another 120,000 were added by other means. Physical losses amounted to 94,000 units. There was virtually no net inflow from the owner stock (3,000 units) or from the seasonal stock (6,000 units).

Details by Type of Flow

Filtering and Gentrification: Flows among categories were the most important factors that caused categories to gain or lose units, affecting all but the non-market and very-high-rent categories. The end result was a large gain for the extremely low-rent category; large losses for the very-low-rent and low-rent categories; and large gains for the moderate-rent, high-rent, and extremely high-rent categories.

For the extremely low-rent category, net filtration was the major direction of flow. This means the flow in from less-affordable categories was much larger than the flow out to the only more-affordable category (the non-market category).

For the five categories where flows among categories were a major contributor to change, net gentrification was the major contributor. The sign of the flow was different, however: The flow was negative for the very-low-rent and low-rent categories, as many more units flowed out to less-affordable categories than flowed in from more-affordable categories. For the moderate-rent, high-rent, and extremely high-rent categories, many more units flowed in from more-affordable categories than flowed out to less-affordable categories. (As pointed out earlier, units in the extremely high-rent category cannot gentrify.)

Flows Between Owner and Rental Stock: Flows between the owner and rental stock favored the owner stock for six of the eight categories; overall, 745,000 more rental units became part of the owner stock than the reverse. Only the extremely low-rent and extremely high-rent categories gained net units via from the owner stock and these gains were small, at 3,000 and 6,000 units, respectively. For the remaining six categories, losses to the owner stock were important. Over all eight categories, the average gross flows between the owner and rental sectors was 1,010,000 units.

Flows Between Seasonal and Rental Stock: These flows benefited the moderate-rent category and all the high-rent categories. The extremely low-rent category had a small gain (3,000 units) from the seasonal sector, whereas the net flow out to the seasonal sector was an important loss for all the other low-rent categories. Over all eight categories, the average gross flows between the seasonal and rental sectors was 480,000 units.

Additions and Losses to the Housing Stock: These flows were an important source of losses for the very-low-rent category and an important source of gains for the moderate-, high-, very-high, and extremely high-rent categories. Over all eight categories, the average gross flow was 293,000 units. The type of addition or loss varied systematically across the eight categories; new construction accounted for only 20 percent of the additions for non-market and extremely low-rent units, but it accounted for 40 to 50 percent of additions for very-low-rent, low-rent, and moderate-rent units as well as for 65 to 80 percent of additions for high-rent, very-high-rent, and extremely high-rent units. Permanent losses accounted for 34 percent of losses among non-market units; 45 to 60 percent of losses among extremely low-rent, very-low-rent, low-rent, and moderate-rent units; and 20 percent of losses among high-rent, very-high-rent, and extremely high-rent units.

Whether analyzed by affordability category or by type of flow, the result was a 2017 rental stock that was less affordable than the 2015 rental stock. HUD's report to Congress on worst case housing needs provides a good discussion of how reduced affordability affects lower-income households.[12]

[12]Watson, N. E., Steffen, B. L., Martin, M., & Vandenbroucke, D. A. (2020). *Worst Case Housing Needs: 2019 Report To Congress.* U.S. Department of Housing and Urban Development. https://www.huduser.gov/portal/publications/worst-case-housing-needs-2020.html

Section 6: Affordable Rental Housing Since 2001

Exhibit 6-1 tracks the housing stock, the overall rental housing stock, and the most affordable rental segments during the 2001–2017 period. Although the rental stock grew by 30.4 percent (11.4 million units) during this 16-year period, the number of affordable rental units actually declined. The number of rental units that were non-market, extremely low rent, or very low rent fell from 21.6 million in 2001 to 17.6 million in 2017, a decline of 4.0 million units. The number of affordable *market* units—those with either extremely low rents or very low rents—fell from 13.3 million in 2001 to 11.3 million units in 2017, a decline of 2.0 million units.

Rental housing became markedly less affordable during this period—this is true whether affordability takes non-market units into account. Non-market, extremely low-rent, or very low-rent units accounted for 57.8 percent of the rental stock in 2001 but only 36.0 percent in 2017, and for 18.3 percent of the total housing stock in 2001 but only 12.8 percent in 2017.

The drop-off in affordable units between 2015 and 2017 was particularly sharp: The number of non-market, extremely low-rent, and very-low-rent units declined by 1.2 million units, with extremely low-rent and very-low-rent units accounting for 1.0 million.

Counting this study, there have been seven rental dynamics studies covering seven 2-year periods between 2001 and 2017. There was no study for the 2013–2015 period because HUD and the U.S. Census Bureau drew a new AHS sample in 2015; for this reason, it was impossible to track the 2013 sample units to 2015.

Exhibit 6-1. Total and Affordable Rental Housing, 2001–2017

Unit Type	2001	2003	2005	2007	2009	2011	2013	2015	2017
In Thousands									
Non-market, extremely low-rent, and very-low-rent units	21,597	22,128	21,631	20,032	18,042	19,049	19,218	18,712	17,562
Extremely low-rent and very-low-rent units	13,264	13,909	13,025	11,571	11,197	11,404	11,680	12,233	11,257
All rental units	37,392	38,171	38,444	39,712	40,311	43,504	44,564	48,682	48,743
Housing stock	118,196	120,777	124,377	128,203	130,112	132,419	132,832	134,790	137,403
As a Percentage of Housing Stock									
Non-market, extremely low-rent, and very-low-rent units	18.3%	18.3%	17.4%	15.6%	13.9%	14.4%	14.5%	13.9%	12.8%
Extremely low-rent and very-low-rent units	11.2%	11.5%	10.5%	9.0%	8.6%	8.6%	8.8%	9.1%	8.2%
All rental units	31.6%	31.6%	30.9%	31.0%	31.0%	32.9%	33.5%	36.1%	35.5%
As a Percentage of Rental Stock									
Non-market, extremely low-rent, and very-low-rent units	57.8%	58.0%	56.5%	50.4%	44.8%	43.7%	43.1%	38.4%	36.0%
Extremely low-rent and very low-rent units	35.5%	36.4%	34.0%	29.1%	27.8%	26.2%	26.2%	25.1%	23.1%

Note: Data from 2001 through 2013 are from Eggers, F. J., & Moumen, F. (2016). *Rental Market Dynamics: 2011–2013.* U.S. Department of Housing and Urban Development. https://www.huduser.gov/portal/datasets/cinch/cinch13/Rental-Dynamics-Report.pdf

Exhibit 6-2 compares the forces at work in each of these seven periods.

In four periods, the affordable rental stock fell; in each of those periods, gentrification accounted for half or more of the decline. In three of those four periods, more units that were rentals in the base year became owner units in the final year than the inverse. In six of the seven periods, more units that were rentals in the base year became seasonal units than seasonal units became rentals. These flows were important contributors in the four periods when the number of affordable units declined. In five of the seven periods, losses exceeded additions. Net losses were important contributors in three of the four periods when the number of affordable units declined.

Exhibit 6-2. Changes in the Affordable Rental Stock Over 2-Year Periods, 2001–2017 (in Thousands)

Factor	2001–2003*	2003–2005*	2005–2007*	2007–2009*	2009–2011*	2011–2013*	2015–2017*	2001–2017**
Base Year Non-Market, Extremely Low-Rent, and Very-Low-Rent Units	**21,597**	**22,128**	**21,631**	**20,032**	**18,042**	**19,081**	**18,712**	**21,597**
Base-year rental to owner	-1,654	-1,967	-1,802	-1,489	-1,355	-1,678	-1,882	-11,827
Base-year owner to rental	1,791	1,708	1,702	1,600	1,778	1,532	1,561	11,672
Net Owner to Rental	**137**	**-259**	**-100**	**111**	**423**	**-146**	**-321**	**-155**
Base-year rental to seasonal	-875	-933	-939	-806	-612	-786	-854	-5,805
Base-year seasonal to rental	708	796	600	725	885	744	753	5,211
Net Seasonal to Rental	**-167**	**-137**	**-339**	**-81**	**273**	**-42**	**-101**	**-594**
Base-year rental lost to stock	-465	-488	-592	-542	-353	-306	-454	-3,200
Rental new construction	255	262	192	155	181	78	110	1,233
Rental additions by other means	304	389	300	246	157	159	226	1,781
Net Additions – Losses	**94**	**163**	**-100**	**-141**	**-15**	**-69**	**-118**	**-186**
Net Inflow from Less Affordable Category	**321**	**-257**	**-1,375**	**-1,370**	**50**	**11**	**-631**	**-3,251**
Change in weight of sample units affordable in both years	259	-30	362	-324	278	383	21	949
Final Year Non-Market, Extremely Low-Rent, and Very-Low-Rent Units	**22,241**	**21,609**	**20,081**	**18,227**	**19,049**	**19,218**	**17,562**	**17,562**
CHANGE: Final Year – Base Year	**644**	**-519**	**-1,550**	**-1,805**	**1,007**	**137**	**-1,150**	**-4,035**

Note: Data from 2001 through 2013 are from Eggers & Moumen (2016).
* Calculations for each 2-year period use weights specially constructed for that period. Because weights change between periods, the count of units for one column's base year is not equal to the count of units for the previous column's final year. For example, the count of affordable rental units in 2003 is 22,241,000 in the first column and 22,128,000 in the second column, for a difference of -113,000.
** The last column sums the factors across all seven periods. For this column, factors do not add up to the total change because of the differences described in the preceding note, the sum of which is -799,000.fa

U.S. Department of Housing and Urban Development
Office of Policy Development and Research
Washington, DC 20410-6000

EQUAL HOUSING
OPPORTUNITY

August 2020